REPORT

2023 Site Development, Operations and Environmental Monitoring

Arnprior Waste Disposal Site

Township of McNab/Braeside, Ontario

Submitted to:

Town of Arnprior
105 Elgin Street West
P.O. Box 130
Arnprior, Ontario
K7S 3H4

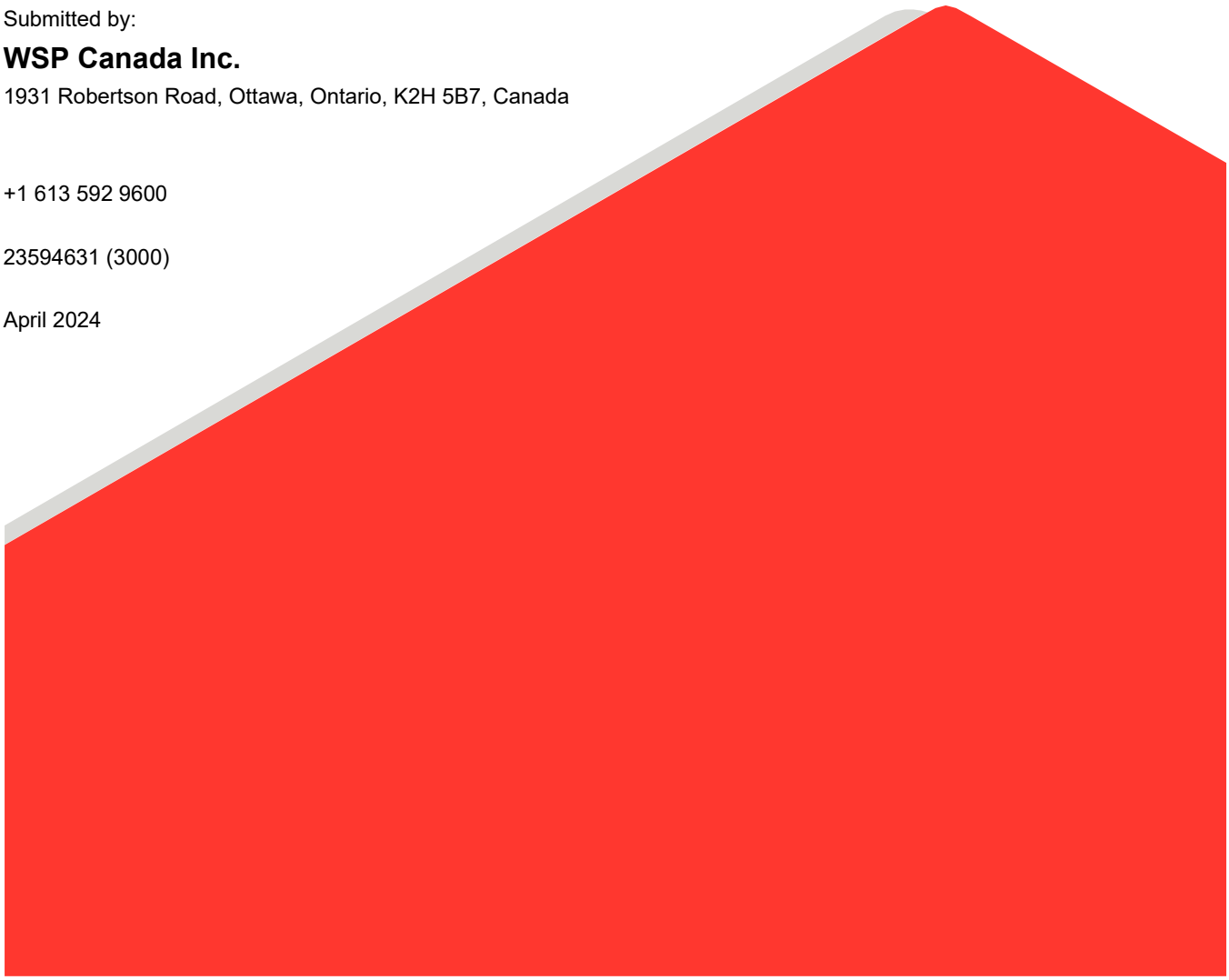
Submitted by:

WSP Canada Inc.
1931 Robertson Road, Ottawa, Ontario, K2H 5B7, Canada

+1 613 592 9600

23594631 (3000)

April 2024



Appendix D-Monitoring and Screening Checklist
General Information and Instructions

General Information: The checklist is to be completed, and submitted with the Monitoring Report.
Instructions: A complete checklist consists of:
(a) a completed and signed checklist, including any additional pages of information which can be attached as needed to provide further details where indicated.
(b) completed contact information for the Competent Environmental Practitioner (CEP)
(c) self-declaration that CEP(s) meet(s) the qualifications as set out below and in Section 1.2 of the Technical Guidance Document.

Definition of Groundwater CEP:
For groundwater, the CEP must have expertise in hydrogeology and meet one of the following:
(a) the person holds a licence, limited licence or temporary licence under the *Professional Engineers Act*; or
(b) the person holds a certificate of registration under the *Professional Geoscientists Act, 2000* and is a practicing member, temporary, member or limited member of the Association of Professional Geoscientists of Ontario. O. Reg. 66/08, s. 2..
Definition of Surface water CEP:
A CEP for surface water assessments is a scientist, professional engineer or professional geoscientist as described in (a) and (b) above with demonstrated experience and post-secondary education, either a diploma or degree, in hydrology, aquatic ecology, limnology, aquatic biology, physical geography with specialization in surface water, and/or water resource management.

The type of scientific work that a CEP performs must be consistent with that person's education and experience. If an individual has appropriate training and credentials in both groundwater and surface water and is responsible for both areas of expertise, the CEP may then complete and validate both sections of the checklist.

Monitoring Report and Site Information	
Waste Disposal Site (WDS) Name	Arnprior Waste Disposal Site
Location (e.g. street address, lot, concession)	Part of Lots 9, 10 & 11, Concession XIII
GPS Location (taken within the property boundary at front gate/ front entry)	390860 m E 5034788 m N, 18T
Municipality	Township of McNab - Amalgamated Township of McNab/Braeside
Client and/or Site Owner	Town of Arnprior
Monitoring Period (Year)	2023
This Monitoring Report is being submitted under the following:	
Environmental Compliance Approval (ECA) Number (formerly "Certificate of Approval" (C of A)) :	A412603
Director's Order No.:	
Provincial Officer's Order No.:	

Other:			
Report Submission Frequency	◉ **Annual** ○ **Other**		
The site is: **(Operation Status)**	◉ **Open** ○ **Inactive** ○ **Closed**		
Is there an active waste transfer station at the site?	○ **Yes** ◉ **No**		
Does this WDS have a Closure Plan?	◉ **Not yet submitted** ○ **Submitted and under review** ○ **Submitted and approved**		
Total Approved Capacity	Unknown	*Units*	Cubic Metres
Maximum Approved Fill Rate		*Units*	Tonnes per Day
Total Waste Received within Monitoring Period (Year)	8,224	*Units*	Cubic Metres
Total Waste Received within Monitoring Period (Year) *Describe the methodology used to determine this quantity*	Estimated		
Estimated Remaining Capacity	136,138	*Units*	Cubic Metres
Estimated Remaining Capacity *Describe the methodology used to determine this quantity*	Direct Survey (GPS/Total Station)		
Estimated Remaining Capacity *Date Last Determined*	December 2023		
Non-Hazardous Approved Waste Types	☒ Domestic ☒ Industrial, Commercial & Institutional (IC&I) ☐ Source Separated Organics (Green Bin) ☒ Tires	☒ Contaminated Soil ☒ Wood Waste ☒ Blue Box Material ☐ Processed Organics ☒ Leaf and Yard Waste	☐ Food Processing/Preparation Operations Waste ☒ Hauled Sewage Other:
Subject Waste Approved Waste Classes: Hazardous & Liquid Industrial *(separate waste classes by comma)*	None		

Year Site Opened *(enter the Calendar Year only)*	1960	**Current ECA Issue Date**	March 10, 2020
Is your Site required to submit Financial Assurance?		○ **Yes** ◉ **No**	
Describe how your WDS is designed.		◉ Natural Attenuation only ○ Fully engineered Facility ○ Partially engineered Facility	
Does your Site have an approved Contaminant Attenuation Zone?		◉ **Yes** ○ **No**	
If closed, specify ECA, control or authorizing document closure date:		N/A	
Has the nature of the operations at the site changed during this monitoring period?	○ **Yes** ◉ **No**		
If yes, provide details:			

Have any measurements been taken since the last reporting period that indicate landfill gas volumes have exceeded the MOE limits for subsurface or adjacent buildings? (i.e. exceeded the LEL for methane)	◯ Yes ◉ No

Groundwater WDS Verification:

Based on all available information about the site and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

1) The monitoring program continues to effectively characterize site conditions and any groundwater discharges from the site. All monitoring wells are confirmed to be in good condition and are secure:	◯ **Yes** ◉ **No**	New lock required on BR08-1D. Casing repair required for groundwater monitors BR-8D and BR-8S.
2) All groundwater, leachate and landfill gas sampling and monitoring for the monitoring period being reported on was successfully completed as required by ECA or other relevant authorizing/ control document(s):	◉ **Yes** ◯ **No** ◯ **Not Applicable**	If no, list exceptions below or attach information.

Groundwater Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**

3) a) Some or all groundwater, leachate and landfill gas sampling and monitoring requirements have been established or defined outside of a ministry ECA, authorizing, or control document *, or Ministry concurrence.*	◯ **Yes** ◉ **No** ◯ **Not Applicable**	
b) If yes, the sampling and monitoring identified under 3(a) for the monitoring period being reported on was successfully completed in accordance with established protocols, frequencies, locations, and parameters developed as per the Technical Guidance Document:	◯ **Yes** ◯ **No** ◉ **Not Applicable**	If no, list exceptions below or attach additional information.

Groundwater Sampling Location	**Description/Explanation for change (change in name or location, additions, deletions)**	**Date**

4) All field work for groundwater investigations was done in accordance with Standard Operating Procedures (SOP) as established/outlined per the Technical Guidance Document (including internal/external QA/QC requirements) (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	○ **Yes** ◉ **No**	WSP Canada Inc. standard practices were followed as described in the report.
Sampling and Monitoring Program Results/WDS Conditions and Assessment:		
5) The site has an adequate buffer, Contaminant Attenuation Zone (CAZ) and/ or contingency plan in place. Design and operational measures, including the size and configuration of any CAZ, are adequate to prevent potential human health impacts and impairment of the environment.	○ **Yes** ◉ **No**	An amended ECA No. A412603 was issued on March 10, 2020 which removed the deadline for submission of a revised trigger mechanism. The Town undertook and submitted an Options Assessment that considered contingency options available to alleviate groundwater compliance issues at the Site. Timing of next steps will be determined following comments on the Options Assessment. Refer to Section 11.1 of the Report.
6) The site meets compliance and assessment criteria.	○ **Yes** ◉ **No**	See attached sheet.
7) The site continues to perform as anticipated. There have been no unusual trends/ changes in measured leachate and groundwater levels or concentrations.	○ **Yes** ◉ **No**	Elevated concentrations of some leachate indicator parameters at OV-10 may be attributed to the landfill based on a change in the understanding of groundwater flow direction from previous years. A new well has been installed in January 2023 to evaluate further.

1) Is one or more of the following risk reduction practices in place at the site: ***(a)*** **There is minimal reliance on natural attenuation of leachate due to the presence of an effective waste liner and active leachate collection/ treatment; or** ***(b)*** **There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or** ***(c)*** **The site meets the following two conditions (typically achieved after 15 years or longer of site operation):** ***i.*** **The site has developed stable leachate mound(s) and stable leachate plume geometry/ concentrations; and** ***ii.*** **Seasonal and annual water levels and water quality fluctuations are well understood.**	○ **Yes** ● **No**	**Note which practice(s):**	☐ **(a)** ☐ **(b)** ☐ **(c)**
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	● **Yes** ○ **No** ○ **Not Applicable**	See attached sheet.	

Groundwater CEP Declaration:

I am a licensed professional Engineer or a registered professional geoscientist in Ontario with expertise in hydrogeology, as defined in Appendix D under Instructions. Where additional expertise was needed to evaluate the site monitoring data, I have relied on individuals who I believe to be experts in the relevant discipline, who have co-signed the compliance monitoring report or monitoring program status report, and who have provided evidence to me of their credentials.

I have examined the applicable Environmental Compliance Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed, *as deemed appropriate for this site in my professional judgement,* the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended), and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025-2005 (E)- General requirements for the competence of testing and calibration laboratories*, or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature and will be rectified for the next monitoring/reporting period. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

○ **No changes to the monitoring program are recommended**	
◉ **The following change(s) to the monitoring program is/ are recommended:**	An additional overburden and bedrock monitoring well was installed near the southern corner of CAZ Area B in January 2023 to discern groundwater flow direction and possible landfill leachate impacts at the southern property boundary. It is recommended that these monitoring wells be included in the monitoring program for 2023.
◉ **No Changes to site design and operation are recommended**	
○ **The following change(s) to the site design and operation is/are recommended:**	
Name:	Trish Edmond, P.Eng. with demonstrated relevant experience.
Seal:	

Signature:		**Date:**	30 April 2024
CEP Contact Information:			
Company:	WSP Canada Inc.		
Address:	1931 Robertson Road, Ottawa, ON, K2H 5B7		
Telephone No.:	613-592-9600	Fax No. :	613-592-9601
E-mail Address:	tedmond@golder.com		
Co-signers for additional expertise provided:			
Signature:		**Date:**	
Signature:		**Date:**	

Surface Water WDS Verification:

Provide the name of surface water body/bodies potentially receiving the WDS effluent and the approximate distance to the waterbody (including the nearest surface water body/bodies to the site):	
Name (s)	On-site wetland / perennial ponds

Distance(s)	Approximately 250 to 480 metres downstream of the landfill.

Based on all available information and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

1) The current surface water monitoring program continues to effectively characterize the surface water conditions, and includes data that relates upstream/background and downstream receiving water conditions:	(●) **Yes** ( ) **No**	If no, identify issues (Type Here):
2) All surface water sampling for the monitoring period being reported was successfully completed in accordance with the ECA or relevant authorizing/control document(s) (if applicable):	(●) **Yes** ( ) **No** ( ) **Not applicable**	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date

3) a) Some or all surface water sampling and monitoring program requirements for the monitoring period have been established outside of a ministry ECA or authorizing/control document, *or Ministry concurrence.*	( ) **Yes** (●) **No** ( ) **Not Applicable**	
b) If yes, all surface water sampling and monitoring identified under 3 (a) was successfully completed in accordance with the established program from the site, including sampling protocols, frequencies, locations and parameters) as developed per the Technical Guidance Document:	( ) **Yes** ( ) **No** (●) **Not Applicable**	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date

4) All field work for surface water investigations was done in accordance with SOP, including internal/external QA/QC requirements, as established/outlined as per the Technical Guidance Document, MOE 2010, or as amended. (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	○ **Yes** ◉ **No**	WSP Canada Inc. standard practices were followed as described in the report.

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

5) The receiving water body meets surface water-related compliance criteria and assessment criteria: i.e., there are no exceedances of criteria, based on MOE legislation, regulations, Water Management Policies, Guidelines and Provincial Water Quality Objectives and other assessment criteria (e.g., CWQGs, APVs), as noted in Table A or Table B in the Technical Guidance Document (Section 4.6):	○ **Yes** ◉ **No**

If no, list parameters that exceed criteria outlined above and the amount/percentage of the exceedance as per the table on the following page or provide details in an attachment:

Parameter	Compliance or Assessment Criteria or Background	Amount by which Compliance or Assessment Criteria or Background Exceeded
e.g. Nickel	e.g. ECA limit, PWQO, background	e.g. X% above PWQO
Dissolved Oxygen at SW-1 (May, Sept, Dec) Total Phosphorous (Sept) Boron at SW-1 (Sept) Iron at SW-1 (Sept, Dec)	PWQO	48%, 44% and 46% below PWQO for dissolved oxygen in May, September and December, respectively. 46% above PWQO for total phosphorous in September. 40% above PWQO for boron in September. 13% above PWQO for iron in September and December.
Unionized Ammonia at SW-2 (May) Dissolved Oxygen at SW-2 (Sept, Dec) Iron at SW-2 (May and Dec)	PWQO	28% above PWQO for unionized ammonia in May. 32% and 36% below PWQO for DO in September and December. 70% and 30% above PWQO for iron in May and December, respectively.
6) In my opinion, any exceedances listed in Question 5 are the result of non-WDS related influences (such as background, road salting, sampling site conditions)?	○ **Yes** ◉ **No**	SW-2 is interpreted to be impacted by the landfill and possibly by other industrial activities (like wood waste and railway fill of unknown quality). SW-1 is interpreted to be possibly impacted by the landfill or other industrial activities. SW-1 and SW-2 are located within the onsite wetland. Natural wetland systems and their sediments can adsorb contaminants as a natural sink. These contaminants can be released from time to time which could be contributing to the iron trigger exceedances sometimes observed at SW-1 and SW-2.

7) All monitoring program surface water parameter concentrations fall within a stable or decreasing trend. The site is not characterized by historical ranges of concentrations above assessment and compliance criteria.	○ **Yes** ◉ **No**	SW-2 has periodic exceedances of PWQO and water quality at this location is consistent over time, however concentrations of boron and potassium appear to be potentially increasing. Water quality at all other surface water monitoring locations at the site is generally consistent over time.
8) For the monitoring program parameters, does the water quality in the groundwater zones adjacent to surface water receivers exceed assessment or compliance criteria (e.g. , PWQOs, CWQGs, or toxicity values for aquatic biota (APVs)):	○ Yes ○ No ◉ Not Known ○ Not Applicable	If yes, provide details and whether remedial measures are necessary
9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):	◉ **Yes** ○ **No** ○ **Not Applicable**	No action taken, parameter concentrations have been consistent.

Surface Water CEP Declaration:

I, the undersigned hereby declare that I am a Competent Environmental Practitioner as defined in Appendix D under Instructions, holding the necessary level of experience and education to design surface water monitoring and sampling programs, conduct appropriate surface water investigations and interpret the related data as it pertains to the site for this monitoring period.

I have examined the applicable Environmental Compliance Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed, *as deemed appropriate for this site in my professional judgement,* the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended), and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025-2005 (E)- General requirements for the competence of testing and calibration laboratories,* or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature or will be rectified for future monitoring events. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

Select Date

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

◉ **No Changes to the monitoring program are recommended** ○ **The following change(s) to the monitoring program is/are recommended:**	
◉ **No changes to the site design and operation are recommended** ○ **The following change(s) to the site design and operation is/ are recommended:**	

CEP Signature	
Relevant Discipline	P.Eng. with demonstrated relevant experience.
Date:	30 April 2024
CEP Contact Information:	Trish Edmond
Company:	WSP Canada Inc.
Address:	1931 Robertson Road Ottawa, Ontario K2H 5B7
Telephone No.:	613-592-9600
Fax No. :	613-592-9601
E-mail Address:	tedmond@golder.com

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Arnprior Waste Disposal Site
2023 MECP Checklist

Sections 6 & 9 – The Site Meets Groundwater Compliance and Assessment Criteria & Trigger Values for Contingency Plans or Site Remedial Action Exceeded

Not including iron, manganese and TDS, which are problematic leachate indicator parameters due to their presence in the background monitor, at least one leachate indicator parameter from Section 8.2.2 exceeded the trigger concentration in either the spring or fall round or both of the spring and fall monitoring rounds in monitors BR-5D, BR6D, BR-10, and BR-12. It is interpreted that exceedances of trigger concentrations in monitors, BR-5D, BR-6D, and BR-12 result from the effect of the wood waste historically deposited on the CAZ lands north of the Canadian Pacific Rail line, road salting and/or the effect of the landfill. It is interpreted that exceedances of trigger concentrations in monitors BR-10 result from road salt, wood waste, or other industrial activities formerly undertaken on the CAZ lands but not by landfill leachate, based on the piper plots. It is important to note that the leachate indicator parameters exceeding the trigger concentrations at these locations all have concentrations which are generally consistent, consistently variable, or slightly decreasing over time.

Distribution List

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1 E-Copy	Ministry of Environment, Conservation and Parks
1 Copy	Township of McNab/Braeside
1 Copy	Town of Arnprior
1 E-Copy	WSP, Ottawa

Executive Summary

This 2023 Annual Site Development, Operations and Environmental Monitoring Report has been prepared to fulfill the annual reporting requirements as set out in the Provisional Certificate of Approval (C of A.) No. A412603.

The Executive Summary highlights key points from the report only; for complete information and findings, as well as the limitations, the reader should examine the complete report.

The volume of material added to the waste mound (including waste and daily/interim cover material) between the December 2022 survey and the December 2023 survey is estimated to be 8,224 cubic metres.

The annual airspace consumed has ranged between 5,987 and 12,845 cubic metres over the past ten years. Assuming the annual waste receipt rate remains around the average 8,693 cubic metres per year between 2013 and 2023, the remaining landfill life is approximately 15 to 16 years.

The 2023 field investigation activities included groundwater level measurements and sampling of groundwater in May and November and surface water in May, September, and November. There were no deviations from the groundwater or surface water monitoring programs outlined in the 2022 Site Development, Operations and Environmental Monitoring Report (WSP, 2023).

The direction of groundwater flow in the overburden and in the bedrock at the Site is interpreted to be in a north, north-easterly and east direction towards the Ottawa River. As a result of the more recent groundwater elevations observed, it is possible that horizontal groundwater flow in the overburden in CAZ area D has an eastward component.

Conventional borehole logs detailing the geological conditions encountered in each borehole augered during the previous investigation programs were obtained and reviewed in 2006. There is a limited thickness of overburden downgradient of the Site which explains why there are no overburden compliance monitoring wells. The bedrock encountered at the Site generally consists of limestone, siltstone, shale and/or sandstone.

The groundwater data from background monitoring wells (OV-13, BR-13S and BR-13D), the background surface water location (SW-10), and the monitoring well most indicative of leachate quality (OV-7) were examined to determine site-specific *leachate indicator parameters*. Thirteen parameters typically monitored in the groundwater and often monitored in the surface water were identified as site-specific *leachate indicator parameters,* and they include: alkalinity, ammonia (for groundwater) and unionized ammonia (for surface water), boron, barium, chloride, iron, hardness, potassium, manganese, sodium, TDS, DOC, and dissolved reactive phosphorus (for groundwater) and total phosphorus (for surface water). These parameters were primarily used to evaluate Site compliance with trigger mechanisms.

Based on historical results, the historical tannin and lignin concentrations, the piper trilinear diagrams, the groundwater flow directions, and the 2023 monitoring activities, groundwater monitors OV-7, BR-1D, BR1S have been interpreted to be impacted by landfill leachate. Groundwater monitors BR-5D, BR-5S, BR-6D, BR6S, BR8D, BR-8S, BR-9D, BR-9S, BR-12, BR 08-1D, BR 08-1S, BR 08-2S and BR 08-2D are interpreted to be impacted by wood waste deposited on the CAZ Areas, and/or by landfill leachate. It is possible that groundwater monitors BR-5D, BR-5S, BR-6D and BR-6S and BR-12 are also impacted by road salt. Groundwater monitors BR7D, BR7S, BR-10 and BR-11 are interpreted to be impacted by road salt, wood waste, or other industrial activities on the CAZ lands but not by landfill leachate. Groundwater monitors BR08-3D and BR08-3S are interpreted to be potentially

impacted by landfill leachate, as well as wood waste or other industrial activities in the CAZ lands. Recent groundwater elevation data suggests that groundwater monitors BR-3, OV-9, and OV-10 could be downgradient of a part of the landfill. The addition of OV-23 lessens that eastward component of flow, making it more north-easterly. At OV-10, increasing trends have been reported for several leachate indicator parameters, including barium, and sodium since 2006, with other parameters occasionally increasing and then stabilizing. Similar increasing trends are being observed at BR-3, including concentrations of ammonia, hardness, potassium, TDS, chloride, and sodium. Although there are no increasing trends being observed at OV9, with the exception of sodium concentrations, elevated concentrations, of boron, and sulphate were observed in 2023. It is interpreted that OV-9, OV-10, and BR-3 may be potentially impacted by landfill leachate. OV-23 has been identified as potentially impacted by landfill leachate because it is downgradient or cross-gradient of OV-9. Insufficient data is available to comment on BR-23S and BR-23D. The samples collected from these groundwater monitors will be evaluated carefully in 2023, along with ongoing assessment of groundwater flow direction to assess ongoing trends. Some additional parameters were observed to be increasing at BR-8S / BR-8D and BR08-1S in 2023; these trends will continue to be monitored.

The water quality data for locations SW-10, SW-11, and SW-12 suggest a consistent water quality that is not being impacted by the landfill. The concentrations of dissolved oxygen, total phosphorous and aluminum were outside their respective PWQO during the May sampling session at SW-10 (SW-10 was dry in September and December). The concentration of total iron was outside the PWQO during the spring sampling session at SW-11, and the concentration of total phosphorus was outside the PWQO during the spring monitoring session at SW-12. The concentration of aluminum was outside the PWQO in the summer at SW-11. There were no other exceedances of the PWQO during the 2023 sampling sessions at these locations. There were no exceedances of the CCME guidelines for chloride for short-term exposure at SW-10, SW-11, or SW-12. There was one exceedance of the CCME guidelines for chloride for long term exposure at SW-10. There was no exceedance of the CCME guidelines for boron at these locations during 2023. Historical exceedances observed at these sampling locations may be natural or may be attributable to road salting activities and/or industrial activities.

All of the surface water sampling stations sampled within and on the periphery of the wetland (SW-1, SW2, SW21, and SW-22) had one or more parameters that did not meet the PWQO (unionized ammonia, dissolved oxygen, total phosphorus, boron, and/or iron) in 2023. These exceedances may be attributable to the landfill, industrial activities associated with the railway or lumber industries (i.e., the wood waste). Evaporation from the stagnant water within the wetland may be resulting in elevated parameter concentrations in surface water. Surface water sampling locations SW-18 located within the Ottawa River is interpreted not to be impacted by the landfill leachate even aluminum, unionized ammonia, and total iron exceeded PWQO during at least one of the spring and fall monitoring sessions in 2023as Alkalinity, BOD, hardness, nitrate and potassium, exceeded the historical maximum background concentration (at the river background location, SW-26) at SW-18 at various times in 2023. The data will be evaluated in 2023 to determine if this could be a trend. SW-19, located in close proximity to the Ottawa River, is interpreted to be potentially impacted by landfill leachate. The background surface water sampling location within the Ottawa River, SW-26, was found to have similar water quality to SW-18 with respect to PWQO exceedances in 2023. Water quality within the river (i.e., SW-18) is distinctly different than the ephemeral/intermittent stream and the ponds/wetland.

At surface water sampling station SW-2, leachate indicator parameter unionized ammonia and alkalinity exceeded the PWQO trigger concentrations during at least one monitoring session in 2023. No other PWQO trigger concentrations were exceeded in 2023 at surface water sampling station SW-2. Boron exceeded the respective PWQO trigger concentration at surface water sampling station SW-1 during the fall monitoring session in 2023, and

alkalinity exceeded the PWQO trigger concentration during all monitoring sessions in 2023. The concentrations of alkalinity and unionized ammonia exceeding the trigger concentrations at SW-2 in 2023 were within the historical concentrations at this location. Note that the CCME criteria for chloride and boron were not exceeded at SW1 or SW-2 in 2023. A review of the 2023 surface water concentrations indicates that contingency measures are not required at this time.

The concern with beaver dams at landfills is with the potential for failure, causing potentially leachate-impacted water and sediment to suddenly be released to downstream surface waters. For this reason, the extent of beaver activity within the wetland watershed was monitored during the 2023 monitoring, with an emphasis on documenting the location and age of the beaver dams. As in previous years (since 2014), beaver activity was reported upstream of SW-2 in 2023. In 2023, no beaver activity was observed during monitoring events. Beaver activity will continue to be monitored during the 2024 monitoring program to determine the extent of the beaver activity and if steps need to be taken to control the activity.

Groundwater and surface water monitoring programs will be continued in order to evaluate site compliance on an ongoing basis, and a proposed groundwater and surface water monitoring program for 2024 is presented in **Section 13.0** of this report.

Condition 28.1 of the revised ECA received on March 10, 2020 (see **Section 12.2**) required that by no later than June 30, 2020, the Town shall submit to the District Manager contingency measures to address groundwater compliance at the Site. This deadline was subsequently changed to December 31, 2020, following the submission of a “Request for Pandemic Related Temporary Regulatory Relief (Alternate Arrangement) for Waste Disposal Sites and Waste Management System” by the Town dated June 15, 2020. In a letter dated December 3, 2020, Golder provided the District Manager with the Town’s preferred contingency option to address the groundwater compliance issue. It is considered that the submission of this letter fulfills the requirements of Condition 28.1. Comments dated April 16, 2021, from MECP groundwater reviewer Thomas Guo were received on the 2020 Annual Monitoring Report (Golder, 2021) and on the December 3, 2020, letter titled “Arnprior Waste Disposal – Groundwater Compliance Contingency Plan”. Comments dated April 23, 2021, from MECP surface water reviewer Lauren Forrester were received on the 2020 Annual Monitoring Report (Golder, 2021) and on the December 3, 2020, letter titled “Arnprior Waste Disposal – Groundwater Compliance Contingency Plan”. Golder addressed these comments within the 2021 Annual Monitoring Report.

As discussed in **Section 2.5** of this report, the Town intends to enter into discussion with the MECP to determine how the fill beyond approved limits, which is now understood to consist of waste material, is to be managed.

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1.0 INTRODUCTION

This report serves as the 2023 Site development and operations report and presents the results of monitoring activities carried out during 2023 at the Arnprior Waste Disposal Site (Site).

The Arnprior Waste Disposal Site is located on Part of Lots 9, 10, and 11, Concession XIII in the Geographic Township of McNab, which is now part of the amalgamated municipality of the Township of McNab/Braeside, Ontario. The Site is situated south of County Road Number 3 (Usborne Street) and north of County Road Number 1 (River Road) (see Key Plan, **Figure 1**). This Site is operated under Amended Environmental Compliance Approval (ECA) No. A412603, issued on March 10, 2020. The Site originally operated under Provisional Certificate of Approval (C of A) No. A412603, dated October 26, 1999, which was amended by Notices on June 20, 2003, April 28, 2008, August 18, 2017, and October 12, 2018. The 2008 notice was an administrative amendment to resolve discrepancies between the approval documents and Annual Reports regarding the size of the Site and Contaminant Attenuation Zone (CAZ), and the 2017 notice added a requirement for an assessment for a landfill gas venting system in the final cover as part of the Closure Plan for the Site, approved waste diversion activities at the Site, added a requirement to update the proposed trigger mechanism and contingency plan, and added associated documents to Schedule A. The 2018 amendment was a minor change regarding an updated date for submission of the trigger mechanism. The March 2020 revision of the ECA was initiated by changes to the requirements to submit an updated trigger mechanism, as discussed in **Section 12.2** of this report; the amended ECA generally incorporates the previously issued amendments to the C of A No. A412603, dated October 26, 1999.

This report has been prepared to fulfil the reporting requirements outlined in Condition 20 of ECA No. A412603.

Historically, the CAZ land located north and northeast of the existing approved landfill (between a Canadian Pacific Rail Line and Usborne Street) was owned by various industrial owners some of whom processed wood. It has been reported that much of this property is covered with wood waste fill and the property was used for lumber industry related activities. In addition, berms on this Site related to the rail line are of unknown fill quality.

2.0 OPERATIONS

2.1 Description of Operations

The Site consists of a 9.6 hectare landfilling area (6.2-hectare waste footprint surrounded by a 30-metre buffer) within a total Site area of 40.4 hectares, as shown in **Figure 2**. The landfill has been in operation since about 1970. The Site operations were subcontracted to Tomlinson Environmental Services Inc. (Tomlinson) between 2011 and 2023 and to McCrea Excavating Ltd as of summer 2023.

A summary of the operations at the Arnprior Waste Disposal Site with respect to compliance with the conditions of ECA A412603 (issued March 10, 2020) at the time of 2023 is shown in **Table 1**. The Site is in compliance with the conditions as available in 2023 with respect to the inspection and reporting as required in the ECA.

2.2 Site Plan Preparation

On December 6, 2023, a Site survey was conducted by WSP Canada Inc. (WSP) using total station survey equipment to prepare a Site plan showing the existing Site conditions in 2023. The survey allowed WSP to calculate the fill volume placed since the previous survey, which was conducted in December 2022 by Golder.

The Site plan, showing the landfill conditions in December 2023, is provided in **Figure 2**. Selected cross-sections showing the recent survey in comparison to historical surveys and proposed fill limits are provided in **Figure 3**; cross-sections A and J are not shown, and no new fill was placed in these areas in 2023.

2.3 Cover Quantities

For 2023, the Town of Arnprior estimated 2,684 cubic metres of sand was used as daily cover. In 2023 4,983 tonnes of leaf and yard/ wood waste was received, and ground in late October. Subsequently, this material was used as daily cover over the winter months of late 2023 and 2024.

An estimated total of 2,298 tonnes of final cover material was stockpiled for future use in 2023.

2.4 Air Space Utilization and Quantity of Waste Received

The volume of material added to the waste mound between December 20, 2022, and December 6, 2023, was calculated by WSP based on a comparison of the topographic data collected within the active waste disposal area (see **Figure 2**) during the Site surveys carried out by WSP in December 2023 and previous surveys. The volume of material added to the waste mound (including waste and daily/interim cover material) between the December 2022 survey and the December 2023 survey is estimated to be 8,224 cubic metres. The volume of material added to the waste mound in 2023 was less than annual volumes between 2020 and 2022 but similar to fill volumes between 2013 and 2019, with the average volume of material added to the waste mound per year between 2013 and 2019 being 7,427 cubic metres. The increase in the volume of material added to the waste mound between 2020 and 2022 could be due in part to a larger amount of landfill material accepted compared to previous years.

The quarterly masses of waste received and landfilled (excluding dewatered sludge) by the Town of Arnprior in 2023 were as follows:

- January to March – 797 tonnes
- April to June – 1,028 tonnes
- July to September – 935 tonnes
- October to December – 889 tonnes

These quantities are based on estimates of the average weight of municipal garbage collected weekly from the curbside in addition to the known weight and estimated volumes of garbage delivered in vehicles and other containers for direct disposal at the landfill. Assuming a waste density of 0.41 tonnes per cubic metre (CSR, 2003), the volumes of waste received (prior to compaction) are estimated to be:

- January to March – 1,944 cubic metres
- April to June – 2,507 cubic metres
- July to September – 2,280 cubic metres
- October to December – 2,168 cubic metres

Approximately 534 tonnes of dewatered sludge were received from the Town of Arnprior Sewage Treatment Plant in 2023. It is noted that the sludge has been dewatered to approximately 25%, is anaerobic and has minimal odours due to the upgrades at the Water Pollution Control Centre.

The Town also stockpiled approximately 2,298 tonnes of clean fill in 2023 to be used as cover material during final closure.

2.5 Remaining Capacity

The overall volumetric capacity remaining at the Arnprior Waste Disposal Site was estimated by WSP based on a comparison of the annual topographic surveys conducted in December between 2013 and 2023 and the approved final contour elevations over the entire licensed fill limit. Based on this comparison, the total volumetric capacity remaining at the Arnprior Waste Disposal Site in December 2023 is estimated to be 179,538 cubic metres, which includes the final cover. The final cover is required to be 0.7 metres over the area of the landfill (6.2 hectares) for a volume of approximately 43,400 cubic metres. Therefore, the estimated airspace remaining for waste and daily cover is estimated to be 136,138 cubic metres.

The annual airspace consumed has ranged between approximately 5,990 and 12,845 cubic metres over the past eleven years. From 2008 to 2012, the annual airspace consumed ranged from 11,087 cubic metres to 19,310 cubic metres per year (Golder, 2013). The annual airspace consumed between 2013 and 2019 has been consistently lower than the previous six years, and the average airspace consumed over that time period was approximately 7,430 cubic metres per year. Between 2020 and 2022, the airspace consumed is more consistent with the consumed airspace between 2008 to 2012. This could be partially due to the increase in cover material used on Site, a higher amount of waste landfilled, as well as the inclusion of a small fill stockpile within the survey in 2021. The average 11-year airspace consumption is estimated to be about 8,688 cubic metres based on survey information between 2013 and 2023.

As reported in previous years, there is a fill beyond approved limits within the landfill footprint that was previously understood to consist primarily of clay material placed within the landfill footprint in approximately 2015 prior to the establishment of the clean fill stockpile area. As it was understood this material was clean soil material available for use, this volume was not previously considered as contributing to the airspace consumed at the Site. Partial removal of this overfill area was undertaken in 2017. During removal, previously landfilled waste material and leachate were encountered at a depth shallower than anticipated; excavation activities were immediately stopped to avoid the potential flow of leachate overland and to mitigate the development of odours. The exposed area was re-covered with clay. As a result, the full depth of the overfill area was not excavated, and the remaining fill beyond approved limits is considered to be waste contributing to the airspace consumed. As such, when comparing the remaining airspace in 2016 and 2017, the apparent airspace consumed between those years was 18,930 cubic metres, which is not reflective of the waste and cover materials added to the waste mound as part of regular operations in 2017. Assuming the annual waste receipt rate remains around the 11-year average of 8,693 cubic metres per year between 2013 and 2023, the remaining landfill life is approximately 15 to 16 years.

Selected cross-sections showing the December 2023 survey in comparison to the topographic elevation as of December 2022 based on the combined surveys between 2013 and 2022 and proposed fill limits are provided in **Figure 3**. Landfilling activities were not undertaken in the area of the fill beyond approved limits in 2023, so it is not shown in the sections in **Figure 3**. Now that it is understood that the fill beyond approved limits consists of waste material and not clean soil, the Town intends to enter into discussion with the MECP to determine how this material is to be managed.

2.6 Major Activities and Capital Works

No new capital works projects were undertaken in 2023.

2.7 Public Complaints and Response

No Complaints were received in 2023.

3.0 2023 SITE INVESTIGATION METHODOLOGY

From January 5 to 10, 2023, three new boreholes were advanced using air percussion drilling methods and monitoring wells installed. The borehole drilling was coordinated and observed by a WSP field technician who located the boreholes, monitored the drilling operations, and logged the monitoring well installations. Bedrock was encountered between 10.0 and 10.7 metres. The monitoring wells are identified as OV-23, BR-23S, and BR23D, as shown in **Figure 2**. These new monitoring wells were installed toward the south side of CAZ Area B to discern groundwater flow direction and possible landfill leachate impacts at the southern property boundary. The preferred locations for the screened intervals of the monitoring wells were determined based on observations during the drilling program and details of existing monitoring wells. The monitoring wells were constructed of 0.05 metre diameter, threaded, PVC slot #10 screen and solid risers. Silica sand backfill was placed in the boreholes around the screened portions of the monitors. Bentonite was used to seal the borehole up to ground surface. The monitoring well installation details are provided in **APPENDIX B**.

Following the borehole drilling and installation of monitoring wells, a survey of the horizontal coordinates and the elevation of the ground surface and top of the PVC pipes was completed by WSP.

4.0 FIELD ENVIRONMENTAL MONITORING PROCEDURES

4.1 Objectives

The objectives of the 2023 environmental monitoring program were:

- To comply with the annual monitoring and reporting requirements stipulated in Conditions 20 and 27 of ECA No. A412603.
- To monitor background groundwater and surface water quality; groundwater quality immediately downgradient of the landfilled area; surface water quality at various locations in the vicinity of the Site; and to interpret results.
- To assess Site compliance with site-specific trigger levels relating to potential groundwater and surface water impacts due to leachate generated within the waste disposal area.

4.2 Groundwater Monitoring

The 2023 groundwater monitoring program followed the program outlined in **Table 5** of the 2022 Site Development, Operations and Environmental Monitoring Report by WSP Canada Inc. (WSP Canada Inc., 2023). The locations of all the groundwater monitors that WSP sampled are illustrated on the Site Plan (**Figure 2**). The groundwater levels in the monitors included in the sampling sessions were measured on May 24, 2023, and November 25, 2023. The spring groundwater monitoring session was conducted on May 24, 25 and 26, 2023. The fall groundwater monitoring session was conducted on November 25 and 26, 2023.

The 2023 groundwater monitoring program was the same as the 2022 groundwater monitoring program. Volatile organic compounds (VOCs) are analyzed every five years and were included as part of the 2019 spring monitoring session. The next scheduled session is in the spring of 2024.

In 2023, a groundwater monitor condition survey was carried out during each groundwater monitoring session. In the fall of 2022, it was noted that BR08-1D requires a new lock. The new lock was available in 2023, but the hole in the casing needs to be drilled larger to accommodate the lock. In 2021, it was noted that BR-8D and BR-8S required the casings to be lowered. This process was started during the spring monitoring session and was planned to be completed during the fall monitoring session. Due to frozen ground conditions during the fall monitoring

session, BR-8D and BR-8S could not be repaired. These repairs are planned for 2024. No other maintenance issues were identified during the surveys.

All monitors sampled during 2023 were developed through the removal of at least three standing volumes of water or until dry, using dedicated samplers, which have been provided in each groundwater monitor. Sampling of groundwater was generally performed immediately after monitor development.

The temperature, pH and electrical conductivity of the groundwater samples were measured in the field at the time of sample collection. All field instruments were calibrated in the field prior to use. All samples collected were entered on a Chain of Custody Form and placed in coolers with ice packs until they were delivered in person to the private analytical laboratory.

The groundwater samples were collected, prepared, and preserved in the field as follows:

- One plastic bottle, field filtered to 0.45 microns and preserved with nitric acid for analysis of aluminum, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, iron, lead, magnesium, manganese, molybdenum, nickel, potassium, selenium, silver, sodium, vanadium and zinc.
- One clear glass bottle, field filtered to 0.45 microns and preserved with hydrochloric acid for mercury analysis.
- One plastic bottle, unfiltered and unpreserved, for analysis of dissolved organic carbon (DOC).
- One plastic bottle, unfiltered and unpreserved, for analysis of alkalinity, chloride, sulphate, pH, dissolved reactive phosphorus (orthophosphate) and conductivity.
- One plastic bottle, unfiltered and unpreserved for analysis of total dissolved solids (TDS).
- One plastic bottle, unfiltered and preserved with sulphuric acid for analysis of total phosphorus.
- One glass vial, unfiltered and preserved with sulphuric acid for analysis of ammonia.
- Hardness was calculated based on the laboratory calcium and magnesium concentrations.

Bureau Veritas Laboratories performed all laboratory chemical and physical analyses on the groundwater samples. The Report of Analyses sheets from Bureau Veritas Laboratories are provided in **APPENDIX A**. The reportable detection limits (RDLs) for the specific groundwater analyses were commensurate with the standards established in the MECP's (formerly Ministry of Environment [MOE]), Ontario Drinking Water Quality Standards, Objectives and Guidelines (MOE, 2003).

4.3 Surface Water Monitoring

As outlined in **Table 6** of the 2022 Site Development, Operations and Environmental Monitoring Report (Golder, 2023), surface water samples were taken during the prescribed periods of the year at stations SW-1, SW-2, SW-10, SW-11, SW-12, SW-18, SW-19, SW-21, SW-22, SW-23 and SW-26 except when a station was dry or frozen. **Figure 2** shows the locations of these surface water sampling stations.

Surface water sampling sessions were carried out on May 29, September 21 and December 3, 2023. There were no deviations from the surface water monitoring program outlined in the 2022 Site Development, Operations and Environmental Monitoring Report (Golder, 2023).

The temperature, pH, dissolved oxygen, and electrical conductivity of the surface water samples were measured in the field at the time of sample collection. All field instruments were calibrated in the field prior to use. All samples collected were entered on a Chain of Custody Form and placed in coolers with ice packs until they were delivered in person to the private analytical laboratory.

The surface water samples were collected, prepared, and preserved in the field as follows:

- One plastic bottle, unfiltered and preserved with nitric acid for analysis of barium, beryllium, boron, cadmium, calcium, chromium, cobalt, iron, lead, magnesium, manganese, molybdenum, nickel, potassium, selenium, silver, sodium, vanadium and zinc.
- One plastic bottle, field filtered to 0.45 microns and preserved with nitric acid for analysis of dissolved barium, beryllium, boron, cadmium, calcium, chromium, cobalt, iron, lead, magnesium, manganese, molybdenum, nickel, potassium, selenium, silver, sodium, vanadium and zinc.
- One plastic bottle, field filtered to 0.45 microns and preserved with ammonium hydroxide for analysis of chromium.
- One clear glass bottle, field filtered to 0.45 microns and preserved with hydrochloric acid for mercury analysis.
- One plastic bottle, field filtered to 0.45 microns, and lab filtered to 0.2 microns with no preservative for analysis of aluminum.
- One plastic bottle, unfiltered and unpreserved, for analysis of DOC.
- One plastic bottle, unfiltered and unpreserved, for analysis of alkalinity, chloride, hardness, nitrate, sulphate, temperature, and conductivity.
- One plastic bottle, unfiltered and unpreserved, for analysis of biological oxygen demand (BOD).
- One plastic bottle, unfiltered and preserved with sulphuric acid for analysis of total phosphorus.
- One glass vial, unfiltered and preserved with sulphuric acid for analysis of ammonia.
- One plastic bottle, unfiltered and unpreserved, for analysis of TDS and total suspended solid (TSS).
- Unionized ammonia was calculated based on the laboratory ammonia concentration and the field temperature and pH measurements.
- Hardness was calculated based on the laboratory dissolved calcium and magnesium concentrations.

Bureau Veritas Laboratories performed all laboratory chemical and physical analyses on the surface water samples. The Report of Analyses sheets from Bureau Veritas Laboratories are provided in **APPENDIX A**. The RDLs for the specific surface water analyses were commensurate with the standards established in the Provincial Water Quality Objectives (PWQO) (MOE, 1994b, reprinted 1999).

4.4 Landfill Gas Monitoring

In the 2013 Site Development, Operations and Environmental Monitoring Report (Jp2g, 2014), it was recommended that landfill gas monitoring be undertaken. All monitoring wells at the Site have screens below the water table. Monitoring for landfill gas in these wells will not provide information about potential lateral migration of landfill gas since this migration will occur above the water table. The Town could consider the installation of shallow landfill gas

monitoring wells at the western property boundary to properly assess lateral subsurface migration of landfill gas. Landfill gas monitoring is not listed as a requirement in the ECA.

5.0 GEOLOGICAL CONDITIONS

Borehole logs detailing the geological conditions encountered during the previous investigation programs conducted by Robinson Consultants Inc., Golder and WSP are provided in **APPENDIX B**. The following discussion is based on a review of the information in **APPENDIX B** and the following maps:

- Natural Resources Canada – Topographical Map 31F8, Arnprior, 8th Edition, 1994
- Ministry of Natural Resources, Ontario Geological Survey – Map P2726, Paleozoic Geology, Arnprior – Quyon Area, 1984
- Geological Survey of Canada – Surficial Geology, Map 1599A Arnprior, 1976

5.1 Overburden Geology

Based on the borehole logs, overburden located within the CAZ northeast of the Canadian Pacific Railway line ranges from 0.5 to 1.8 metres in thickness and consists of topsoil, sawdust fill and/or sand and gravel fill. In particular, sawdust fill is noted to be present at monitors BR-8S, BR-8D, BR-9S and BR-9D.

5.2 Bedrock Geology

The regional bedrock geology consists of Precambrian rocks and Lower to Middle Ordovician formations. The region is transected by several faults, which generally trend in a northwesterly to southeasterly direction. One fault is reported to the southwest of the Site with the landfill situated on the up-thrown side. In Robinson (1997b), it is reported that this fault is believed to coincide with the bedrock scarp observed on Site.

In the direct area of the Site, the Paleozoic geology consists of the Gull River Formation, the Rockcliffe Formation and the Oxford Formation. The Gull River Formation consists of interbedded silty dolostone, lithographic to fine crystalline limestone, oolitic limestone, shale, and fine-grained calcareous quartz sandstone. The Rockcliffe Formation consists of interbedded fine-grained light greenish grey quartz sandstone, shaly limestone, and shale. The Oxford and March Formations are often combined and consist of sublithographic to fine crystalline dolostone and interbedded quartz sandstone, sandy dolostone and dolostone, respectively.

According to Robinson (1997b), the Rockcliffe Formation occurs as outcrops or near surface bedrock in the study area and on adjacent properties. Red and green shale layers were observed in test holes and in outcrops. Robinson also reports that the test holes encountered primarily limestone bedrock. Shale layers were encountered in the limestone, primarily nearer the surface. In monitor BR-4, a conglomerate unit was encountered, and Robinson interprets this as indicative of the base of the Rockcliffe Formation. Bedrock monitors BR-5, BR-6 and BR-7 are located along Usborne Street north and east of the Site and were drilled through the limestone of the March Formation and Oxford Formation. Shale was encountered in the upper regions of BR-6, which is believed to be the base of the Rockcliffe Formation.

Limestone and/or shale were encountered in the boreholes BR 08-1 and BR 08-3 from the ground surface to depths of 12.14 metres and 15.85 metres, respectively. BR 08-2 consisted of approximately 0.76 metres of sand and gravel fill underlain by sandstone, followed by layers of limestone, siltstone and shale. No field evidence indicative of soil or groundwater impacts was noted during the installation of these monitoring wells.

6.0 PHYSICAL HYDROGEOLOGY

6.1 Groundwater Level Data

Reference elevation data for the groundwater monitors installed at the Arnprior Waste Disposal Site are presented in **Table 2**.

Groundwater elevations in the overburden are fairly consistent over time, with previously reported slightly overall decreasing groundwater elevation trends between 2009 and 2015 at groundwater monitors OV-5, OV-7, OV-9 and OV13, and with slightly overall decreasing groundwater elevation trends since 2012 at OV-10; however, this trend is stabilizing. In the spring of 2016, groundwater elevations in all overburden monitors were higher than in recent years at their respective locations. Between 2016 and 2020, groundwater elevations at most overburden wells remained slightly elevated compared to pre-2016 conditions, with the exception of OV-7, which decreased to within historic conditions. In 2021, the groundwater elevation increased slightly in the spring and decreased back to or near to typical (i.e., pre-2016) historical levels at OV-2, OV-5, OV-7, OV-9 and OV-10 in the fall of 2021. In 2022, water levels at OV-5, OV-9, and OV-10 were elevated compared to 2020 and 2021. Water levels at these wells remained elevated in spring and summer 2023. In fall 2023, elevations generally decreased to values consistent with elevations observed prior to 2020. Groundwater elevations at OV-13 decreased by approximately 2 m to pre-2016 elevations in both spring and fall of 2022. An overall downward trend continued at OV-13 in 2023. Water levels at OV-2 and OV-7 in 2023 remained consistent with historic concentrations.

Historically, groundwater elevations at OV-9 were typically lower than elevations reported at OV-10 which is located just south of OV-9, and groundwater flow in this area was generally interpreted to be cross-gradient from the landfill. Due to persistent issues with monitoring well OV-9 heaving out of the ground, the well was replaced in the summer of 2017 and was re-surveyed in 2019. Evidence of heaving at OV-9 has not been reported since the re-surveying in 2019; however, will be monitored during the 2024 monitoring session. Groundwater elevations at this location reported in November 2017 and during the 2018 monitoring session were similar to elevations reported at OV-10, making the interpretation of the direction of groundwater flow different from previous years. In 2021, groundwater elevations at OV-9 were higher than at OV-10, but elevations were slightly higher at OV-10 than at OV-9, in 2022 and 2023. As a result, the overburden groundwater in this portion of the study area was interpreted to be moving toward the east. This would mean that OV-9 and OV-10 are slightly downgradient of a small portion of the landfill. In 2023 OV-23 was drilled to attempt to better understand groundwater flow in this area of the Site. (see **Section 6.3**).

The depth to groundwater reported at OV-4 during the fall 2018 monitoring session is more consistent with historical data from monitoring well OV-5 and vice versa. While it was not possible to confirm, it was assumed that the data recorded at these wells were accidentally mis-transcribed and switched, with the intent that if groundwater elevation measurements showed results consistent with November 2018 results during the 2019 monitoring session, this assumed mislabelling would be corrected in the 2019 annual monitoring report. During the November 2019 monitoring session, there was some confusion in the field around the association of groundwater level measurements to groundwater monitors, resulting in it not being possible to rely on the measurements recorded at OV-4 and OV-5. As such, groundwater levels at OV-4 and OV-5 in the fall of 2019 were not included in the 2019 report nor subsequent reports. Since the fall of 2020, monitoring well OV-4 has been observed to be blocked between 4.46 metres and 4.40 metres below top of casing.

Groundwater elevations in the bedrock are fairly consistent over time, with the exception of the groundwater elevations at groundwater monitor BR-13D, which consistently varies three to five metres over time, and BR-3,

which varied three to five metres between 2013 to 2016 and between 2019 and 2020. In general, groundwater elevations in most bedrock groundwater monitors have been observed to be slightly elevated in the spring of 2016, 2017 and 2019; however, were slightly lower and more consistent with historical groundwater elevations from fall 2020 to fall 2021. In 2022 and 2023, many of the bedrock groundwater monitoring wells had slightly elevated water levels in the spring, generally returning levels in the fall except those noted below.

Some specific trends at bedrock groundwater monitors are provided below:

- The groundwater elevation at BR-13D has been observed to be decreasing since spring of 2018, with an approximate 5 m decrease in elevations in spring and fall 2022, marking a historic low for groundwater elevations at this location. Groundwater levels in the spring and summer of 2023 recovered to values comparable to recent historical data.
- Groundwater elevations observed at monitor BR-11 were elevated over 1 metre above historical elevations in the fall of 2019, fall of 2020, and spring and fall of 2021, but returned to within historic elevation ranges in 2022 and 2023.
- An historical low groundwater elevation was observed at BR-12 in the fall of 2020 (by about 1 metre) and continued to decrease in 2021. Groundwater elevations at BR-12 in 2022 and 2023 returned to within pre-2020 historic ranges.
- Groundwater elevations at BR-1D had been lower between 2014 and 2016 compared to historical data at this location, however returned to pre-2013 elevations in 2017. Since 2017, groundwater elevations at BR-1D have been slightly variable, ranging between 79 and 76 masl.
- Groundwater elevations at BR-1S were significantly lower in 2019 (approximately 5 to 6 metres) compared to historical data. In the spring of 2020, the groundwater elevation at BR-1S returned to historical levels, but in the fall of 2020, and in both the spring and fall of 2021, groundwater levels were similar to 2019. In 2022, groundwater elevations returned to levels consistent with historic ranges of around 82 to 83 masl. In 2023 groundwater elevations were slightly below values observed in 2022 but remained above the values observed between 2019 and 2021.

6.2 Hydraulic Gradients

6.2.1 Vertical Component

During the May 2023 monitoring event, a downward vertical gradient was observed in multi-level bedrock monitoring wellsBR-1S/BR-1D, BR-9S/BR-9D, BR-13S/BR-13D, BR-18S/BR-18D and BR-23S/BR-23D. An upward vertical gradient was observed at BR-6S/BR-6D and BR-7S/BR-7D. A vertical gradient was not observed at BR-5S/BR-5D and BR-8S/BR-8D.

During the November groundwater monitoring event, a downward vertical gradient was observed in multi-level bedrock monitoring wells BR-1S/BR-1D, BR-5S/BR-5D, BR-9S/BR-9D, and BR-13S/BR-13D, BR-18S/BR-18D and BR-23S/BR-23D. An upward vertical gradient was observed at BR-6S/BR-6D and BR-7S/BR-7D. A vertical gradient was not observed at BR-8S/BR-8D.

Monitoring wells installed in July 2008 (BR 08-1S/BR 08-1D, BR 08-2S/BR 08-2D and BR 08-3S/BR 08-3D) were surveyed in January 2019. The vertical gradients in multi-level bedrock monitoring wells BR 08-2S/BR 08-2D and BR 08-3S/BR 08-3D were estimated to be downward or recharging during both 2023 monitoring sessions. No vertical gradient was observed at BR 08-1S/BR 08-1D during the spring and fall 2023 monitoring sessions.

Based on the spring and fall data available at boreholes OV-13/BR-13S and OV-23/BR-23S, the vertical gradient between the overburden and bedrock at the Site was downward or recharging.

6.2.2 Horizontal Component

The horizontal hydraulic gradients for the overburden and bedrock flow system at the Site were estimated from the 2023 groundwater elevation data. The horizontal hydraulic gradient in the overburden groundwater flow system from borehole OV-13 to borehole OV-7 was estimated to be 0.011 in a northward direction in both spring 2023 and fall 2023. In the shallow bedrock, the horizontal hydraulic gradient from monitoring well BR-13S to BR-9S was estimated to be 0.011 in a north-northeast direction in both spring and fall 2023. These bedrock and overburden horizontal gradients are generally similar to the values obtained in previous years.

6.3 Horizontal Groundwater Flow Conditions

The horizontal groundwater flow direction within the shallow bedrock zone near the Site is shown in **Figure 4** for the spring 2023 groundwater elevation data and **Figure 5** for the fall 2023 groundwater elevation data. Data from the new shallow bedrock monitoring well BR-23S was not included in the interpretation of the shallow bedrock groundwater contours due to an installation depth below other shallow bedrock wells. . In general, the groundwater flow direction is north, north-easterly, and east toward the Ottawa River. With the addition of monitoring well BR-18S, there is now also a more noticeable component of easterly flow.

The horizontal groundwater flow direction within the overburden near the Site is shown in **Figure 6** for the spring 2023 groundwater elevation data and **Figure 7** for the fall 2023 groundwater elevation data. In general, the groundwater flow direction is towards the north, northeast and east. The easterly component hadn't been observed in previous years, but as discussed in **Section 6.1**, monitoring well OV-9 was replaced in 2017, and water elevation data from this location is providing more information about horizontal groundwater flow direction in the overburden. As a result of the more recent groundwater elevations observed, it is possible that horizontal groundwater flow in the overburden in this area has an eastward component and that OV-9 and OV-10 are slightly downgradient of a small portion of the landfill.

With this more recently identified easterly flow in the bedrock and possibly the overburden, it was identified in recent annual monitoring reports that it would be helpful to install additional monitoring wells in the southern corner of CAZ Area B or the eastern corner of CAZ Area D if either of these locations is accessible. Monitoring wells OV-23, BR-23S, and BR-23D were installed in January 2023.

The newly installed monitoring wells were installed at the south corner of CAZ Area B. Overburden groundwater in the south corner of CAZ Area B is interpreted to flow eastward or northeastward in 2023. Groundwater flow within the shallow bedrock in the south corner of CAZ Area B is interpreted to have less of an easterly component in the shallow bedrock than had previously been understood.

7.0 IDENTIFICATION OF SITE-SPECIFIC LEACHATE INDICATOR PARAMETERS

A *leachate indicator parameter* for a landfill site is defined as being a parameter which is useful in determining the presence/absence of landfill leachate impact on water resources, assessing the degree of leachate impact on water resources, and is useful in determining the extent of leachate impact near the landfill site.

For a parameter to be useful as a *leachate indicator parameter* at a landfill site, the following characteristics are desirable:

The parameter is present in relatively low concentrations in background water quality near the Site and characterized by significantly higher concentrations in leachate generated at the landfill site.

The concentration of a *leachate indicator parameter* should not vary significantly over time at background monitoring locations (i.e., low variability is desirable) in order to be a reliable indicator of leachate impact.

The trend in the parameter concentration must be relatively consistent over time (allowing for seasonal variations in quality) in terms of the persistence of elevated levels in leachate relative to background conditions (i.e., parameter concentration should not vary dramatically over short periods of time, such that during one monitoring event, the concentration is indicative of background conditions, whereas, during another monitoring event, the concentration at the same monitoring location is indicative of leachate impact).

For natural attenuation landfill sites, conservative parameters which are relatively mobile in the groundwater flow system (i.e., chloride) and are not subject to attenuation mechanisms (i.e., adsorption, biological uptake, precipitation, etc.) are most appropriate for characterizing the extent of leachate impact from a landfill site on water resources; potential leachate constituents characterized by a lower mobility in the subsurface environment (i.e., heavy metals) are typically attenuated by the soil in close proximity to the fill area and, thus, the extent of impact on groundwater resources is minimal.

Parameter concentrations in groundwater and surface water should exhibit spatial variations in concentration relative to the location of the fill area(s) and physical hydrogeological setting of the Site (i.e., higher parameter concentrations immediately downgradient from the fill area with progressively lower concentrations with increasing distances downgradient from the fill area).

The groundwater data from background monitoring wells at the Arnprior Waste Disposal Site, specifically OV-13, BR-13S and BR-13D, and the monitoring well most indicative of leachate quality, OV-7, were examined to determine site-specific *leachate indicator parameters*. Thirteen parameters typically monitored in the groundwater and often monitored in the surface water were identified as site-specific *leachate indicator parameters,* and they include: alkalinity, ammonia (for groundwater) and unionized ammonia (for surface water), boron, barium, chloride, iron, hardness, potassium, manganese, sodium, TDS, DOC and dissolved reactive phosphorus (for groundwater) and total phosphorus (for surface water). It is recommended that these parameters be primarily used to define the extent of landfill leachate related impacts and to evaluate Site compliance with specific trigger mechanisms as discussed in the following sections.

It is acknowledged that several of these parameters would also be indicative of impact associated with wood waste and/or road salting activities. This is particularly relevant when evaluating potential impact from the landfill on the CAZ land located northeast of the Canadian Pacific Railway line. Specifically, wood waste can contain high concentrations of the *leachate indicator parameters* TDS, alkalinity, DOC, iron and manganese and elevated levels

of hardness, sodium, and potassium. Other *leachate indicator parameters,* such as boron and barium, may also be elevated. With respect to road salting activities, *leachate indicator parameters* chloride, sodium and TDS may be elevated.

8.0 GROUNDWATER QUALITY

The groundwater quality in the vicinity of the Arnprior Waste Disposal Site was assessed by collecting groundwater samples from the existing monitoring wells and submitting them for chemical and physical analyses. The results of the field and laboratory chemical and physical analyses conducted during the 2023 monitoring program are presented in **APPENDIX C,** along with relevant Ontario Drinking Water Quality Standards, Objectives and Guidelines (ODWQS, MOE, 2003) and the data from previous monitoring sessions, including data from monitoring wells not included in the 2023 monitoring program. Data from the 2013 monitoring session is provided in a separate table within **APPENDIX C**, with the exception of the background data that is included with all historical data in the main tables in **APPENDIX C**. **APPENDIX D** contains graphs of all *leachate indicator parameter* concentrations versus time for monitoring wells included in the 2023 monitoring program. These graphs are useful for ascertaining trends in the data but are not specifically referenced in the remainder of the report.

Historical groundwater chemical data were collected by Robinson Consultants Inc. The exact sampling methodology used by Robinson is unclear. For example, sample filtration and preservation methods may vary from WSP's sampling program. Therefore, some differences in historical data prior to 2005 data may be attributable to this factor. Sampling methods implemented by Jp2g during the 2013 monitoring program are documented in the 2013 Site Development, Operations and Environmental Monitoring Report (Jp2g, 2014).

Discussions relating to compliance with the ODWQS relate specifically to both non-health related objectives (i.e., aesthetic parameters) and health-related parameters for which a Maximum Acceptable Concentration (MAC) or Interim Maximum Acceptable Concentration (IMAC) has been established.

8.1 Quality Assurance/Quality Control

Two blind groundwater duplicates were analyzed during each of the spring and fall groundwater monitoring sessions in 2023 as part of the quality assurance/quality control (QA/QC) protocol. In addition, the laboratory performs equipment blanks as an internal method of QA/QC. All laboratory QA/QC results were reported to be within acceptable criteria limits by the laboratory in 2023.

Analytical results on blind sample duplicates are deemed to be outside of acceptable tolerance limits if the relative percent difference (RPD) between the original sample and its duplicate is greater than 50%, and both analytical results are greater than 10 times the detection limit, or if the RPD is greater than 30% and both analytical results are greater than 20 times the detection limit. During the spring monitoring event, one parameter (dissolved sulphate, 31.1%) was outside the acceptable tolerance limit for the sample at BR-10 (Dup 1). It is noted that both the original result and duplicate result were within the historical range of concentrations recorded at BR-10. All other parameter concentrations at BR-10 in the spring and all parameter concentrations at the other duplication locations in the spring and fall were within acceptable tolerance limits during the spring and fall monitoring sessions.

8.2 Background Water Quality and Trigger Concentrations

MECP Guideline B-7 (MOEE, 1994a) addresses the level of off-site leachate impact on groundwater considered acceptable by the MECP and defines the level of impact on groundwater beyond which some form of remedial measure(s) would be warranted.

Under MECP Guideline B-7 (the “Reasonable Use Guideline”), a change in the quality of groundwater on adjacent properties will only be acceptable if the quality is not degraded in excess of fifty percent of the difference between background concentrations and established water quality criteria for aesthetic related parameters, and twenty-five percent of the difference between background conditions and established water quality criteria for health-related parameters. In this assessment, the Reasonable Use Performance Objectives (RUPO) are calculated on the basis of the established background concentrations and the ODWQS, with details provided below. Also, trigger levels are established based on the greater of 75 percent of the RUPO or the median background concentration. ECA No. A412603, issued March 10, 2020, stipulates that trigger values shall be 75% of the RUPO.

Condition 28.2 of ECA No. A412603 requires that within six (6) months of the receipt of comments on the submission mentioned in Condition 28.1 from the District Manager (see **Section 12.1** of this Report), the Owner shall submit to the Director for approval an amendment application for an update to this ECA that will include details of the contingency plan to be implemented as approved by the District Manager and a proposed deadline for an update to the trigger mechanism.

8.2.1 Overburden Background Water Quality

Prior to 2001, background groundwater conditions were represented by monitor OV-5 for the overburden and several nearby bedrock residential wells. In 2001, monitoring wells OV-13, BR-13S and BR-13D were installed to provide a more suitable background source of water quality data at the Site. These monitoring wells are located over 100 metres upgradient of the active landfill. It should be noted that these new background monitoring wells are located closer to River Road and, as such, could be impacted by road salting activities.

Historic groundwater quality at monitoring well OV-13 is somewhat variable, with concentrations of *leachate indicator parameters* historically being higher in the spring monitoring event than the fall monitoring event. Water quality from OV-13 is characterized by elevated concentrations of manganese (exceeding the ODWQS three times) and TDS (occasionally exceeding the ODWQS), slightly elevated concentrations of chloride (typically in the spring), and low or non-detect concentrations of boron. Concentrations of iron have historically exceeded the ODWQS twice. Elevated chloride and TDS concentrations are likely the result of road salting on River Road.

The background groundwater quality for each of the *leachate indicator parameters*, the RUPO and current trigger concentrations for the overburden are presented in the following table.

Leachate Indicator Parameters	ODWQS[2] (mg/L)	n	Background Range[1] (mg/L)	Reasonable Use Performance Objective Based on Median Background Concentration (mg/L)	Trigger Concentration (75% of the RUPO or Median Background Value) (mg/L)
Alkalinity	- -	46	200 – 367	- -	- -
Ammonia	- -	45	<0.02 – 0.09	- -	- -
Barium	1 (MAC)	45	0.08 – 0.24	0.35	>0.26
Boron	5 (IMAC)	47	<0.01 – 0.06	1.27	>0.95
Chloride	250 (AO)	47	<1 – 85	142	>106
Iron	0.3 (AO)	47	0.01 – 1.83*	0.18	>0.13
Hardness	- -	41	190 – 424	- -	- -
Manganese	0.05 (AO)	45	<0.002 – 0.17*	0.03	>0.02
Potassium	- -	46	2.9 – 5.3	- -	- -
Sodium	200 (AO)	46	8 – 32	110	>82
DOC	5 (AO)	36	0.6 – 2.1	3.0	>2.24
TDS	500 (AO)	47	200 – 645*	455	>410**
Dissolved Reactive Phosphorus	- -	36	<0.01 – 0.09	- -	- -

Notes:

Entered by: AP

Checked by: JD

mg/L – milligrams per Litre

n – Number of groundwater samples collected

AO – Aesthetic Objective

MAC – Maximum Acceptable Concentration

IMAC – Interim Maximum Acceptable Concentration

NC – Median concentration exceeds ODWQS hence it is not possible to calculate the RUPO

ODWQS – Ontario Drinking Water Quality Standards (2003)

* Maximum background concentration exceeds ODWQS

** Median background concentration is greater than 75% of the RUPO.

[1] Background data obtained from monitor OV-13

[2] ODWQS values presented relate specifically to non-health related parameters (i.e., aesthetic parameters) and health related parameters for which a MAC or IMAC has been established

The calculated RUPO concentrations (MECP Guideline B-7) and trigger concentrations for the *leachate indicator parameters* will be modified, as required, based on additional background groundwater quality data, which will be obtained during future monitoring programs.

8.2.2 Bedrock Background Water Quality

Robinson (2005) suggests that monitoring well BR-13S is representative of the Rockcliffe Formation and that monitoring well BR-13D is representative of the March-Oxford Formation. This cannot be verified based on the borehole log available for monitoring wells BR-13S and BR-13D.

Historic groundwater quality at monitoring wells BR-13S and BR-13D is characterized by elevated concentrations of TDS and chloride. Iron and manganese parameters measured from BR-13S and BR-13D have exceeded the ODWQS on occasion, while TDS measured from these bedrock background wells frequently exceeds the ODWQS. In general, water quality within the bedrock is more mineralized than the overburden.

The concentration of ammonia reported at BR-13D in the fall of 2020 (2.7 mg/L) and at BR-13S in the spring of 2020 (8.5 mg/L) are considered outliers and have not been included in the background range. Should future concentrations of ammonia at BR-13S and BR-13D be in line with the higher concentrations observed in 2020, the RUPO and trigger concentrations will be updated accordingly.

The background groundwater quality for each of the *leachate indicator parameters*, the RUPO and current trigger concentrations for the bedrock are presented in the table below:

Leachate Indicator Parameters	ODWQS[2] (mg/L)	n	Background Range[1] (mg/L)	Reasonable Use Performance Objective Based on Median Background Concentration (mg/L)	Trigger Concentration (75% of the RUPO or Median Background Value) (mg/L)
Alkalinity	- -	92	220 – 355	- -	- -
Ammonia	- -	91	<0.02 – 0.47	- -	- -
Barium	1 (MAC)	87	<0.002 – 0.23	0.32	>0.24
Boron	5 (IMAC)	92	0.01 – 0.49	1.31	>0.98
Chloride	250 (AO)	92	6 – 88	153	>115
Iron	0.3 (AO)	89	<0.01 – 1*	0.18	>0.13
Hardness	- -	79	205 – 431	- -	- -
Manganese	0.05 (AO)	87	<0.002 – 0.41*	0.03	>0.02
Potassium	- -	89	2 – 10	- -	- -
Sodium	200 (AO)	89	8 – 45	118	>89
DOC	5 (AO)	72	0.6 – 2.2	3.2	>2.4
TDS	500 (AO)	90	262 – 588*	498	>495**
Dissolved Reactive Phosphorus	- -	72	<0.01 – 0.1	- -	- -

Notes:

Entered by: AP
Checked by: JD

mg/L – milligrams per Litre
n – Number of groundwater samples collected
AO – Aesthetic Objective
MAC – Maximum Acceptable Concentration
IMAC – Interim Maximum Acceptable Concentration
NC – Median concentration exceeds ODWQS hence it is not possible to calculate the RUPO
ODWQS – Ontario Drinking Water Quality Standards (2003)

* Maximum background concentration exceeds ODWQS

** Median background concentration is greater than 75% of the RUPO

1 Background data obtained from monitors BR-13S and BR-13D

2 ODWQS values presented relate specifically to non-health related parameters (i.e., aesthetic parameters) and health related parameters for which a MAC or IMAC has been established

The calculated RUPO concentrations (MECP Guideline B-7) and trigger concentrations for the *leachate indicator parameters* will be modified, as required, based on additional background groundwater quality data, which will be obtained during future monitoring programs.

8.3 Landfill Leachate Quality

Landfill leachate quality is represented by monitoring well OV-7. During May and November, the groundwater quality in this monitor met the ODWQS with the exception of DOC, TDS, iron, and manganese. The groundwater quality at this location during 2023 was generally similar to monitoring sessions conducted since December 1992. Generally, parameter concentrations at this location are staying constant or decreasing slightly. In comparison to background conditions (maximum values at OV-13) for the overburden, all site-specific *leachate indicator parameters* at OV-7 were elevated above maximum background conditions The groundwater quality at OV-7 was also compared to PWQO in 2023. Parameter concentrations that exceeded their respective PWQO values in May and November include unionized ammonia, boron, cobalt, iron, and phosphorus.

8.4 Impact Evaluation Monitoring Wells

In Robinson (2005), it is presumed that the March-Oxford Formation is encountered by those wells located north and east of the waste disposal site, along Usborne Street (CAZ Area A and CAZ Area B), including BR-5 (deep and shallow), BR-6 (deep and shallow), BR-10, BR-11, and BR-12. Additionally, Robinson (2005) reports that monitoring wells BR-2, BR-3 and BR-4 were completed to similar elevations and may also intersect the March-Oxford Formation.

The following discussion of impact evaluation monitoring wells includes the monitoring wells, which were included in the 2023 monitoring program, which are not representative of background water or leachate quality. These monitoring wells include OV-9, OV-10, OV-23, BR-1S, BR-1D, BR-3, BR-5S, BR-5D, BR-6S, BR-6D, BR7S, BR7D, BR-8S, BR-8D, BR-9S, BR-9D, BR-10, BR-11, BR-12, BR 08-1S, BR 08-1D, BR 08-2S, BR 08-2D, BR 08-3S, BR 08-3D, BR-23S and BR-23D. It should be noted that other monitoring wells exist at the Site; however, they were not included in the 2023 monitoring program.

Table 3 summarizes the physical and chemical parameters with reported levels exceeding their respective trigger values, trends in groundwater quality, a comparison of the groundwater quality to background conditions, and a hydrogeological interpretation of the groundwater quality data from the impact evaluation monitors.

8.5 Piper Trilinear Plots

Piper trilinear diagrams of groundwater quality at all monitoring wells sampled in 2023 are provided in **Figures 8** and **9** for spring and fall, respectively. The diagrams reveal a distinct plotting of presumed leachate-impacted monitoring wells, including OV-7, OV-9, BR-1S, BR-1D, and BR-6D. The leachate-impacted cluster for the fall monitoring session shows OV-10 plotting with BR-6D, BR-1D, and BR-1S instead of OV-7, with OV-7 plotting within the “background / undifferentiated cluster” (see below), which is unexpected as OV-7 represents landfill leachate quality. OV-9 and BR-6D plot close to the background, undifferentiated monitoring wells, in the spring of 2023 and spring and fall of 2023, respectively. In the spring of 2022, BR-1S plotted outside of all clusters but closest to the landfill leachate impacted cluster. A second cluster exists for monitoring wells BR8D (spring), BR9S, BR11, BR-12, BR 08-2D, BR 08-3D (spring) and BR 08-3S, and OV-9 (fall). Since BR-8 and BR-9 are located within the area of wood waste (the borehole logs for these wells indicate the presence of between one and two metres of sawdust have been deposited in this area), and BR-11 and BR-12 are downgradient of the wood waste, this result supports the argument that the groundwater plume at the Usborne Street property line is at least partially impacted from the

effects of wood waste. It also suggests that monitoring wells BR 08-2D, BR 08-3D and BR 08-3S installed in the CAZ in 2008 are also at least partially impacted by wood waste.

A third cluster, representing background or undifferentiated conditions, is evident on both plots. Historically BR-6D, which is located on the Usborne Street property boundary down-gradient of both the landfill and the wood waste, and BR 08-1D, which is located within the CAZ, plotted between this cluster and the cluster representing landfill leachate-impacted groundwater and supports the supposition of a combined (wood waste and landfill leachate related) source. Since 2010, BR-6D plots closer to or within (as in 2023) the leachate impacted cluster, although its water quality of leachate-indicator parameters has not substantially changed in that time. Between 2016 and 2019, BR 08-1D has plotted outside of and between the three identified clusters; in the spring and fall of 2023, BR 08-1D and BR 08-1S plotted within the background/undifferentiated cluster. BR-9S has historically plotted within the landfill leachate plus wood waste grouping and continued to do so in 2023.

As in previous years, monitoring well OV-10 plotted within the background/undifferentiated cluster in the spring of 2023. However, in the fall of 2023, OV-10 plotted with landfill leachate impacted, similar to the fall of 2022. Although this may be an outlier, it could be an indication of leachate impact at OV-10 as concentrations of some parameters have been increasing in recent years, and it is interpreted that there may be some leachate impact observed at OV-10.

8.6 VOC Concentrations

The next scheduled VOC monitoring session is 2024.

8.7 Interpreted Extent of Groundwater Plume

Historically, groundwater quality down-gradient of the landfill site has been described by Robinson Consultants as being impacted by the landfill, industrial activities (rail and lumber activities) and/or road salting activities.

Based on historical results, historical tannin and lignin concentrations, the piper trilinear diagrams, the groundwater flow directions, and the 2023 monitoring activities, groundwater monitors OV-7, BR-1D, BR-1S have been interpreted to be impacted by landfill leachate. Groundwater monitors BR-5D, BR-5S, BR-6D, BR-6S, BR-8D, BR-8S, BR-9D, BR-9S, BR-12, BR 08-1D, BR 08-1S, BR 08-2S and BR 08-2D are interpreted to be impacted by wood waste deposited on the CAZ Areas, and/or by landfill leachate. It is also possible that groundwater monitors BR-5D, BR-5S, BR-6D, BR-6S and BR-12 are also influenced by road salting. Groundwater monitors BR-7D, BR-7S, BR-10, and BR-11 are interpreted to be impacted by road salt, wood waste, or other industrial activities on the CAZ lands but not by landfill leachate. Groundwater monitors BR 08-3D and BR 08-3S are interpreted to be potentially impacted by landfill leachate, as well as wood waste or other industrial activities in the CAZ lands. BR 08-3D and BR 08-3S have historically been interpreted to not be impacted by landfill leachate due to low chloride concentration and based on their position on the piper plots; however, based on their location between the waste and locations further downgradient that are interpreted to be potentially leachate impacted, it is considered possible that landfill leachate is impacting groundwater at this location. It is noted that BR 08-3D and BR 08-3S are screened at a higher elevation than further downgradient wells BR-5D and BR-5S, respectively, which are interpreted to be potentially impacted by landfill leachate; this difference in elevation may also be contributing to differences in groundwater quality. It is noted that some additional parameters were observed to be increasing at BR-8S / BR-8D and at BR 08-1S in 2023, as presented in **Table 3**; these trends will continue to be monitored.

As discussed in **Section 6.3**, recent groundwater elevations at OV-9 and OV-10 indicate there may be an eastward component of flow within the overburden, suggesting that OV-9 and OV-10 are downgradient of a portion of the landfill. The addition of OV-23 lessens that eastward component of flow, making it more north-easterly. OV-10 was previously interpreted to be only cross-gradient of the landfill along with BR-3. The reason for elevated concentrations of several parameters at BR-3 and OV-10 could be associated with the landfill, but additional groundwater elevation data is required to validate this. At OV-10, increasing trends have been reported for several leachate indicator parameters, including barium and sodium since 2006, with other parameters occasionally increasing and then stabilizing. Similar increasing trends are being observed at BR-3, including concentrations of ammonia, hardness, potassium, TDS, chloride and sodium since 2009. Although there are no increasing trends being observed at OV-9, with the exception of sodium concentrations, elevated concentrations of boron and sulphate were observed in 2023. It is interpreted that OV-9, OV-10, and BR-3 may be potentially impacted by landfill leachate. OV-23 has been identified as potentially impacted by landfill leachate because it is downgradient or cross-gradient of OV-9. Insufficient data is available to comment on BR-23S and BR-23D. The samples collected from these groundwater monitors will be evaluated carefully in 2024, along with an ongoing assessment of groundwater flow direction to assess ongoing trends.

It is expected that concentrations of iron, manganese, TDS, and DOC are equally likely to originate from the wood waste as from the landfill leachate and that these parameters are particularly problematic as landfill leachate indicators, while the distribution of barium and boron in the shallow and deep monitors in the licensed landfill area, CAZ Area A and CAZ Area B (BR-1S, BR-1D, BR08-2S, BR08-2D, BR-8D, and others) suggested that these parameters may be better indicators of impact by landfill leachate. The low concentrations of barium and boron in BR-7D, BR-7S, BR-11, BR 08-3D and BR 08-3S, which are interpreted to be impacted by road salt, wood waste or other industrial activities on the CAZ lands but not by landfill leachate, are consistent with this interpretation.

A map showing the water wells within 500 metres from the landfill boundaries is provided (based on MECP water well records) in **Figure 10**. It is noted that there are no residential wells that are downgradient from the Site.

9.0 GROUNDWATER COMPLIANCE ASSESSMENT

Groundwater compliance to MECP Guideline B-7 (MOEE, 1994a) is assessed on the basis of exceedances of the RUPO values and associated trigger values provided in the tables in **Sections 8.2.1** and **8.2.2** at overburden and bedrock monitoring wells, respectively, that are located at or near the Site boundary. Bedrock monitoring wells at the Site boundary include BR-5D, BR-5S, BR-6D, BR-6S, BR-7D, BR-7S, BR-10, BR-11, BR-12, BR-23S and BR-23D. Overburden monitoring wells at the Site boundary include OV-10 and OV-23. With respect to the two 2023 monitoring rounds, they will be referred to herein as the spring round and fall round.

Leachate indicator parameters iron, manganese, and TDS in both the spring and fall sampling and barium during the fall sampling exceeded their respective trigger concentrations from **Section 8.2.1** at monitor OV-10. TDS has historically been detected in the background monitor at similar concentrations to the spring and fall 2023 concentrations in the groundwater from monitor OV-10. The concentration of iron in the spring and fall of 2023 at OV-10 was comparable to historical maximum concentrations in the background well. Concentrations of manganese that exceed the trigger concentration were increasing since 2012, however, are stable since 2017. Trigger exceedances of TDS, iron and manganese have not previously been attributed to deteriorating groundwater quality due to the landfill. However, due to the increasing trends in some leachate indicator parameters observed at OV-10 and the more recent interpretation of groundwater flow direction, it is possible that these exceedances could be indicative of deteriorating groundwater quality.

OV-23 lies downgradient or cross-gradient to OV-9 and is also interpreted to potentially be impacted by landfill leachate based on the similarity of sampling data. Trigger concentrations exceeded at BR-23D and BR-23S were limited to sodium, iron, manganese, and TDS. These two monitoring wells require further data to comment on whether they are impacted by landfill leachate or not.

Not including iron, manganese and TDS, which are problematic *leachate indicator parameters* due to their presence in the background monitor, at least one *leachate indicator parameter* from **Section 8.2.2** exceeded the trigger concentration in either the spring or fall round or both of the spring and fall monitoring rounds in monitors, BR-5D, BR6D, BR-10, and BR-12. It is interpreted that exceedances of trigger concentrations in monitors, BR-5D, BR-6D, and BR-12 result from the effect of the wood waste historically deposited on the CAZ lands north of the Canadian Pacific Rail line, road salting and/or the effect of the landfill. It is interpreted that exceedances of trigger concentrations in monitors BR-10 result from road salt, wood waste, or other industrial activities formerly undertaken on the CAZ lands but not by landfill leachate, based on the piper plots. It is important to note that the leachate indicator parameters exceeding the trigger concentrations at these locations all have concentrations which are generally consistent, consistently variable, or slightly decreasing over time.

In accordance with ECA No. A412603, issued March 10, 2020, the 2023 data has been interpreted using 75% of the RUPO or the median background value to determine the trigger concentrations. The Town is taking actions to address groundwater compliance issues at the Site, which are discussed in **Section 12.0**.

10.0 SURFACE WATER QUALITY

Currently monitored surface water sampling stations are shown in **Figure 2**.

According to Robinson Consultants Inc. (1997b), the Arnprior Waste Disposal Site is drained by two watersheds to the Ottawa River. The northern watershed drains most of the landfill area. The watershed is drained by a small intermittent stream through a series of perennial ponds. This watershed has a step-like longitudinal profile with two base levels. One level is located down gradient of the Waste Disposal Site west of the railroad track. Surface water locations SW-2, SW-3, SW-4, SW-5 and SW-6 are located along this level, which is controlled by a bedrock ledge. This level is followed downstream by another sill-like scarp to the Ottawa River. Surface water location SW-1 is located along this feature.

The northern watershed is characterized by the occurrence of a series of ponds on both sides of the railroad tracks and by a wetland area north and east of the tracks. Robinson reports that the wetland area behaves as a sink to numerous nutrients, metals, and potential contaminants. Processes of the wetland area would include adsorption to settling sediments, plant adsorption, microbial activities, and dilution effects.

In addition, the Ottawa River is monitored at locations SW-18 and SW-19 where water from the wetland is expected to possibly discharge to the river. In the case of station SW-19, the actual sampling location is approximately 5 metres upstream of the river. The additional upstream background sampling station for the Ottawa River (SW-26), which was added to the surface water sampling program in 2010, is located approximately 400 metres northwest (upstream) of SW-18.

The southern watershed is approximately twice as large as the northern watershed and approaches the southern boundary of the property. This watershed area is drained by an ephemeral stream (i.e., SW-10) that becomes an intermittent stream (i.e., SW-11 and SW-12) at the downgradient bedrock ledge at the railroad tracks.

The results of the field and laboratory chemical and physical analyses conducted during the 2023 monitoring program are presented in **APPENDIX C,** along with relevant PWQO (MOE, 1994b) and the data from previous monitoring sessions. Data from the 2013 monitoring session is provided in a separate table within **APPENDIX C**, with the exception of the data from the background station (SW-10), which is included with all historical data in the main tables in **APPENDIX C**. **APPENDIX D** contains graphs of all leachate indicator parameter concentrations versus time for surface water sampling locations included in the 2023 monitoring program. These graphs are useful for ascertaining trends in the data but are not specifically referenced in the remainder of the report.

10.1 Flow Conditions

Flow conditions in surface water bodies can have an impact on the parameter concentrations measured and the interpretation of compliance. Stagnant water bodies present the opportunity for some *leachate indicator parameters* to increase for reasons potentially unrelated to landfill leachate effects. Statements regarding flow conditions and some observations at each surface water sampling station during the 2023 monitoring events are provided in the following table.

Sample Station		Surface Water Flow (2023)	Comments
SW-1	May	Approx. 3.6 L/s	Clear, no colour, mild sulphur odour, no sediment
SW-1	Sep.	Approx. 3.4 L/s	Clear, no colour, mild sulphur odour, no sediment
SW-1	Dec	Approx. 4.3 L/s	Clear, no colour, sulphur odour, no sediment
SW-2	May	Not measured	Clear, no colour, no odour, no sediment, flow through culvert
SW-2	Sep.	Not measured	Clear, no colour, no odour, no sediment, little flow through culvert
SW-2	Dec	Not measured	Clear, no colour, no odour, no sediment, little flow through culvert
SW-10	May	Not Measured	Clear, no colour, no odour, no sediment. Insufficient depth of water to measure flow
SW-10	Sep.	Dry	Dry
SW-10	Dec	Dry	Dry
SW-11	May	Approx. 2.7 L/s	Clear, no colour, no odour, no sediment
SW-11	Sep.	Approx. 3.2 L/s	Clear, no colour, no odour, no sediment
SW-11	Dec	Approx. 6.5 L/s	Clear, no colour, no odour, no sediment
SW-12	May	Approx. 3.5 L/s	Clear, no colour, no odour, no sediment
SW-12	Sep.	Approx. 6.1 L/s	Clear, no colour, no odour, no sediment
SW-12	Dec	Approx. 7.2 L/s	Clear, no colour, no odour, no sediment
SW-18	May	River, not measured	Clear, beige tinge, no odour, no sediment
SW-18	Sep.	River, not measured	Clear, beige tinge, no odour, no sediment
SW-18	Dec	River, not measured	Clear, beige tinge, no odour, no sediment
SW-19	May	Approx. 1.72 L/s	Clear, no colour, no odour, no sediment
SW-19	Sep.	Dry	Dry
SW-19	Dec	Approx. 3.1L/s	Clear, no colour, no odour, no sediment

Sample Station		Surface Water Flow (2023)	Comments
SW-21	May	Not measured	Clear, no colour, no odour, no sediment, no measurable flow
SW-21	Sep.	Not measured	Clear, beige tinge, no odour, no sediment, no measurable flow
SW-21	Dec	Not measured	Clear, no colour, sulphur odour, no sediment, no measurable flow
SW-22[1]	May	Not measured	Clear, light beige colour, no odour
SW-22	Sep.	Not Measured	Clear, beige tinge, no odour, no sediment
SW-22	Dec	Not measured	Clear, beige tinge, organic odour, insufficient water for sampling
SW-23	May	Dry	Dry
SW-23	Sep.	Dry	Dry
SW-23	Dec	Dry	Dry
SW-26	May	River, not measured	Clear, beige tinge, no odour, no sediment
SW-26	Sep.	River, not measured	Clear, beige tinge, no odour, no sediment
SW-26	Dec	River, not measured	Clear, beige tinge, no odour, no sediment

Notes:

[1]The presence or absence of sediments within surface water sample SW-22 during the May monitoring session was inadvertently missed in the field notes.

Entered by: AP
Checked by: JD

Photographs of sampling stations at the time of each sampling event have been included in **APPENDIX E**.

10.2 Quality Assurance/Quality Control

One blind surface water duplicate was analyzed during the spring, summer and fall surface water monitoring session in 2023 as part of the QA/QC protocol. In addition, the laboratory performs equipment blanks as an internal method of QA/QC. All laboratory QA/QC results for surface water were within acceptable tolerance limits in May, September, and December 2023.

Analytical results on blind sample duplicates are deemed to be outside of acceptable tolerance limits if the RPD between the original sample and its duplicate is greater than 50%, and both analytical results are greater than 10 times the detection limit, or if the RPD is greater than 30% and both analytical results are greater than 20 times the detection limit. All parameter concentrations were within acceptable tolerance limits during the spring, summer, and fall monitoring sessions.

It was noted during the 2022 monitoring program that it is possible that the data that have been reported as “dissolved aluminum” historically may, in fact, have been total aluminum. This has been corrected (i.e., dissolved aluminum analyzed and reported) in 2023. Historic results for dissolved aluminum provided in **APPENDIX C** may be reported higher than actual historic dissolved aluminum concentrations.

10.3 Background Conditions and Revised PWQO Trigger Concentrations

Background surface water quality for the Site is represented by the data available from SW-10 (south of the active landfill). There currently is no distinct background surface water source for the wetland to the north of the Site, and hence, SW-10 is used to represent background for all surface water bodies around the Site. Surface water quality at this station is characterized by repeated exceedances of the PWQOs for total phosphorus, aluminum, and iron (including total phosphorus and iron in April 2023). Occasional concentrations outside of the PWQOs for dissolved oxygen, cadmium, vanadium, and zinc are noted in historical data, and copper, cobalt, lead, phenols and silver have exceeded their respective PWQOs on one occasion. For comparison purposes, as discussed in **Section 12.0**, the surface water quality has also been compared to the Canadian Council of Ministers of Environment (CCME) Water Quality Guideline for the Protection of Aquatic Life (CWQG) for boron and chloride (CCME, 2015). The background surface water quality does not exceed the CCME guideline for boron (1.5 mg/L) or the short-term exposure CCME guideline for chloride (640 mg/L). The background surface water quality often exceeds the CCME guideline for long-term exposure of chloride (120 mg/L), including in spring 2023. The parameter concentrations measured at SW-10 are generally consistent to slightly variable with time. In 2023, SW-10 was dry during the summer and fall monitoring events.

The background surface water quality for each of the *leachate indicator parameters* for background surface water station SW-10, compliance parameter concentrations and current trigger parameter concentrations are presented below. It should be noted that the following PWQO trigger concentrations deviate from the values used by Robinson Consultants Inc., but they are the same as in the 2005 Operations and Environmental Monitoring Report (Golder, 2006). In the 2013 Site Development, Operations and Environmental Monitoring Report (Jp2g, 2014), Jp2g recommended using the trigger mechanism currently in use, with the exception of changing the guideline for boron from the PWQO of 0.2 mg/L to the CCME guideline of 1.5 mg/L. Condition 20.2 of the ECA indicates that surface water quality at the Site should be assessed with respect to PWQO. Since the use of the CCME guideline is acceptable to the MECP reviewer (Golder, 2015), it is presented and discussed in the following section but not used to assess trigger compliance. The MECP reviewer also recommended using the CCME guideline for chloride. For the same reasons, the CCME chloride criteria (for short-term and long-term exposure) are used for discussion, but not used to assess trigger compliance at the Site. The chloride guideline should not be used on its own to make decisions about compliance of the Site.

Condition 28.2 of ECA No. A412603 requires that within six months of the receipt of comments on the submission mentioned in Condition 28.1 from the District Manager (see **Section 12.1** of this Report), the Owner shall submit to the Director for approval an amendment application for an update to this ECA that will include details of the contingency plan to be implemented as approved by the District Manager and a proposed deadline for an update to the trigger mechanism.

Leachate Indicator Parameters	PWQO (mg/L)	n	Background Range[1] (mg/L)	75th Percentile Compliance for Parameters with PWQO (mg/L)	PWQO Trigger Parameter Concentration (higher of PWQO or 75th Percentile) or CCME Criteria (mg/L)
Alkalinity	75% Bkgd	33	118 – 370	290	<290[3]
Unionized Ammonia	0.02	32	<0.02 (2.0)**	NC	>0.02
Barium	- -	28	0.02 – 0.077	- -	- -
Boron	0.2 (1.5 [2])	28	<0.01 – 0.18	0.04	>0.2 (>1.5[2])
Chloride	640 [2] 120 [2]	34	10.7 – 422	170.5	>640[2] >120[2]
Iron	0.3	34	0.06 – 2.5*	0.74	>0.74
Hardness	- -	33	130 – 700	- -	- -
Manganese	- -	27	<0.005 – 0.16	- -	- -
Potassium	- -	33	3 – 8.4	- -	- -
Sodium	- -	33	0.5 – 240	- -	- -
DOC	- -	23	1.28 – 13	- -	- -
TDS	- -	34	163 – 1470	- -	- -
Total Phosphorus	0.03	32	0.06 – 0. 42 (1.01***)	0.19	>0.19

Notes: Entered by: AP

mg/L – milligrams per Litre Checked by: JD

n – Number of surface water samples collected

PWQO – Provincial Water Quality Objectives (1994b)

* Value exceeds the PWQO

** The value of 2.0 mg/L was obtained in November 1993 however the total ammonia concentration was 0.28 mg/L; therefore, the 2.0 mg/L appears to be an error and will not be included in the evaluation of trigger concentrations.

*** The value of 1.01 mg/L was obtained in May 1995 and appears to be an error and will not be included in the evaluation of trigger concentrations

NC – 75th percentile value not calculated because >50% of data for parameter are “non-detects”

[1] Background surface water quality based on SW-10

[2] CCME Water Quality Guidelines for the Protection of Aquatic Life for short term and long term exposure, respectively.

[3] The trigger value for alkalinity is based on the 75th percentile value at the background location.

The calculated surface water PWQO trigger parameter concentrations based on data available from surface water sampling stations SW-10 will be modified, as required, based on additional background surface water quality data, which will be obtained during future monitoring programs.

10.4 Discussion

Table 4 summarizes the physical and chemical parameters with reported levels exceeding their respective trigger values based on PWQO, trends in surface water quality, a comparison of the surface water quality to background conditions, and an interpretation of the surface water quality data.

10.4.1 Southern Ephemeral/Intermittent Stream

The southern watershed containing the ephemeral/intermittent stream is outside the southern boundary of the property. Based on the stream's location and water quality data, it is interpreted not to be impacted by landfill leachate. The concentrations of chloride and sodium at SW-11 and SW-12 have historically shown a very slight increasing trend over time. The concentrations of chloride and sodium are generally highest at upstream monitoring station SW-10, indicating that the source is not related to the landfill. Based on the elevated concentration of these parameters, it is considered that these results are likely related to road salting activities and/or industrial activities. While there were some parameters with elevated concentrations in the summer and/or fall of 2023, as noted in **Table 4**, the recent and historic water quality data for locations SW-10, SW11 and SW-12 suggest a generally consistent water quality that is not being impacted by the landfill.

The concentrations of dissolved oxygen, total phosphorus, and aluminum were outside their respective PWQO during the May sampling session at SW-10 (SW-10 was dry in September and December). The concentration of total iron was outside the PWQO during the spring monitoring session at SW-11, and the concentration of total phosphorus was outside the PWQO during the spring monitoring session at SW-12. The concentration of aluminum was outside the PWQO in the summer at SW-11. There were no other exceedances of the PWQO during the 2023 sampling sessions at SW-10, SW-11, or SW-12. There were no exceedances of the CCME guidelines for chloride for short-term exposure at SW-10, SW-11, or SW-12. There was one exceedance of the CCME guidelines for chloride for long term exposure at SW-10. There was no exceedance of the CCME guidelines for boron at these locations during 2023. Historical exceedances observed at these sampling locations may be natural or may be attributable to road salting activities and/or industrial activities.

10.4.2 Ponds/Wetland

All of the surface water sampling stations sampled within and on the periphery of the wetland (SW-1, SW2, SW21 and SW-22) had one or more parameters that did not meet the PWQO (unionized ammonia, dissolved oxygen, total phosphorous, boron and/or iron) in 2023. There were no exceedances of the CCME guideline for boron or chloride (short-term and long-term exposure) at these locations during 2023. SW-23 was dry (or had insufficient volume to sample) during the spring, summer and fall sampling sessions, SW-21 was dry (or had insufficient volume to sample) during the summer and fall sampling sessions, and SW-22 was dry (or had insufficient volume to sample) during the winter sampling session. Historically, an overall decreasing trend in dissolved oxygen has been observed from 2005 to 2016 at these locations, with the exception of SW-23, which has only been sampled three times since 2004 due to dry conditions. Reported concentrations of dissolved oxygen appear to be stabilizing or increasing at these locations based on the data from recent monitoring sessions (2017 to 2023). The PWQO exceedances observed at SW1, SW-2, SW-21, SW-22, and SW-23 may be attributable to the landfill and historic industrial activities associated with the railway or lumber industries (i.e., the wood waste). As well, evaporation from the stagnant water within the wetland may be resulting in elevated parameter concentrations in surface water. Concentrations of other leachate indicator parameters at SW-2 are not observed to be increasing with the exception of boron and potassium, which were interpreted in 2023 to be possibly increasing (concentrations remain within the historic range at this location at this time).

10.4.3 Ottawa River

Surface water sampling location SW-18 within the Ottawa River is interpreted not to be impacted by the landfill leachate, even though the concentration of aluminum, unionized ammonia and total iron was above the PWQO criteria during at least one of the spring and fall monitoring sessions in 2023. The background surface water sampling location SW-26, within the Ottawa River, had similar water quality to SW-18 in 2023, with SW-26 water sample concentrations of aluminum outside the PWQO in the spring and fall and slightly below PWQO in the summer, monitoring session. Concentration of total iron exceeded the PWQO concentration at SW-26 during the spring and fall sampling sessions in 2023. Total phosphorus also exceeded the PWQO at SW-26 in the spring of 2023. There were no exceedances of the CCME guidelines for chloride (short-term and long-term exposure) or boron at either of these locations during 2023. As indicated in **Table 4**, BOD, nitrite, hardness, and potassium exceeded the historical maximum background concentration (at the river background location, SW-26) at SW-18 in the one or more of the spring, summer or fall of 2023. The data will be evaluated in 2024 to determine if this could be a trend.

Water quality within the river is distinctly different than the ephemeral/intermittent stream and the ponds/wetland. Surface water sampling location SW-19, located approximately 5 metres upstream along a tributary which flows into the Ottawa River, is interpreted to possibly be impacted by landfill leachate. In 2023 parameter concentrations not meeting PWQO at SW-19 included unionized ammonia in the spring and dissolved oxygen in the fall. Although it is interpreted that SW-19 may be impacted by landfill leachate, dissolved oxygen, total phosphorous, boron and iron have periodically been outside the PWQO trigger concentrations at this location in the last number of years but in general, water quality has remained consistent. SW-19 was dry (or had insufficient volume to sample) in the summer of 2023.

10.4.4 Beaver Dams

The concern with beaver dams at landfills is with the potential for failure, causing potentially leachate impacted water and sediment to suddenly be released to downstream surface waters. For this reason, the extent of beaver activity within the wetland watershed was monitored during 2023, with an emphasis on documenting the location and age of the beaver dams.

Beaver activity was noted upstream of sampling location SW-2 during the 2021 sampling sessions. Beaver activity in this area has been reported since 2014. Beaver activity was observed during the 2022 monitoring session, but there were no changes to existing dam features. No new beaver activity was noted in 2023. Beaver activity will continue to be monitored during the 2024 monitoring program to determine the extent of the beaver activity and if steps need to be taken to control the activity.

11.0 SURFACE WATER COMPLIANCE ASSESSMENT

This section provides a surface water compliance assessment under MECP Policy 1 and Policy 2 (MOE, 1994b) based on the surface water PWQO trigger mechanism developed for the Arnprior Waste Disposal Site as outlined in **Section 10.3**.

For the purpose of this surface water quality compliance assessment, the PWQO and the surface water triggers are applied to surface water sampling stations SW-1 and SW-2. SW-1 is located where the northern wetland flows off the landfill site CAZ, and SW-2 is located near the inlet of the northern wetland. The point of compliance at SW-2 was added in the 2008 Annual Report (Golder, 2009), as recommended by the MECP, to provide an earlier warning further upstream of potential impacts by landfill site contaminants to the receiving surface water regime. The trigger parameters include alkalinity, boron, iron, total phosphorus, and unionized ammonia. Iron and total phosphorus

represent Policy 2 parameters, and the remaining parameters are Policy 1 parameters. Chloride will be compared to the CCME guideline for comparison purposes since there is not a PWQO for chloride.

At surface water sampling station SW-2, leachate indicator parameters unionized ammonia and alkalinity exceeded the PWQO trigger concentrations during all (alkalinity or just the summer (unionized ammonia) monitoring sessions in 2023. No other PWQO trigger concentrations were exceeded in 2023 at surface water sampling station SW-2. Boron exceeded the respective PWQO trigger concentration at surface water sampling station SW-1 during the summer monitoring session in 2023 and alkalinity during all monitoring sessions in 2023. The concentrations of unionized ammonia and boron exceeding the trigger concentrations at SW-1 and SW-2 in 2023 were within the historical concentrations at these locations.,. Note that the CCME criteria for chloride and boron were not exceeded at SW-1 or SW-2 in 2023. A review of the 2023 surface water concentrations indicates that contingency measures are not required at this time. As discussed in **Section 10.4.2**, the PWQO exceedances observed at SW1 and SW-2 may be attributable to the landfill, historic industrial activities associated with the railway or lumber industries (i.e., the wood waste). As well, evaporation from the stagnant water within the wetland may be resulting in elevated parameter concentrations in surface water. While leachate indicator parameter concentrations have been observed to be variable over time at SW-1 and SW-2, increasing trends are not being observed.

12.0 MECP CORRESPONDENCE

12.1 Groundwater Compliance

As discussed in the 2020 Annual Monitoring Report (Golder, 2021), a revised ECA for the Site was received on March 10, 2020. Condition 28.1 of the revised ECA A412603 required that by no later than June 30, 2020, the Town shall submit to the District Manager contingency measures to address groundwater compliance at the Site. This deadline was subsequently changed to December 31, 2020, following the submission of a “Request for Pandemic Related Temporary Regulatory Relief (Alternate Arrangement) for Waste Disposal Sites and Waste Management System” by the Town dated June 15, 2020.

In a letter dated December 3, 2020, Golder provided the District Manager with the Town’s preferred contingency option to address the groundwater compliance issue. It is considered that the submission of this letter fulfills the requirements of Condition 28.1. This letter is provided in **APPENDIX F**.

Groundwater comments (dated April 16, 2021) and surface water comments (dated April 23, 2021) on the 2020 Annual Monitoring Report (Golder, 2021) and on the contingency measures presented in the December 3, 2020, letter was received from MECP on May 19, 2021. **Section 12.2** of the 2021 Annual Monitoring Report (Golder, 2022) provides a response to the comments. In providing the response, the MECP Environmental Officer stated that the MECP agrees that obtaining a “right of first refusal” to purchase the downgradient groundwater rights may comply with the requirements in the Reasonable Use Guideline (RUG) (Guideline B-7) (given that there are currently no groundwater users downgradient from the Site), but that the MECP will require a detailed proposal that includes the legal instruments to be used to obtain these rights before the MECP could provide a definite response. Comments and the cover email are provided in **APPENDIX F**.

Subsequently, a call was held on November 3, 2021, between the MECP, the Town, the Town’s legal counsel and Golder to discuss progress on resolving groundwater compliance concerns at the Site, including communications that had been had with the downgradient property owner. A summary of this call is provided in **APPENDIX F**. As a result of this meeting, it was agreed that the Town and their legal counsel would provide a list to the MECP of possible legal options that would involve registration on title of the property to restrict groundwater use and that the MECP would review and identify which options would be acceptable prior to further engagement with the

downgradient property owner so as not to spend time on an option with the downgradient property owner that would be unacceptable to the MECP.

As requested in the November 3, 2021, call, in an email from MECP Environmental Officer Thandeka Ponalo dated November 18, 2021, it was confirmed that the six-month deadline to fulfill Condition 28.2 of ECA No. A412603 had not been triggered by the comments received in May 2021. This email is provided in **APPENDIX F**.

12.2 Groundwater and Surface Water Comments

Groundwater comments and surface water comments on the 2020 Annual Monitoring Report (Golder, 2021) and on the contingency measures presented in the December 3, 2020, letter was received from MECP on May 19, 2021. These comments were addressed in the 2021 Annual Monitoring Report (Golder, 2022). Comments on the 2022 Annual Monitoring Report were not received by the Town in 2023.

13.0 PROPOSED 2024 ENVIRONMENTAL MONITORING PROGRAM AND ACTIVITIES

13.1 Objectives

The objectives of the 2024 environmental monitoring program are:

To comply with the annual monitoring and reporting requirements stipulated in Conditions 20 and 27 of Certificate of Approval No. A412603.

To continue to monitor background groundwater and surface water quality, leachate quality, groundwater quality immediately downgradient of the landfilled area, and surface water quality at various locations in the vicinity of the Site.

To assess Site compliance with site-specific trigger levels relating to groundwater and surface water impacts due to landfill leachate-related impacts.

13.2 Groundwater Component

The groundwater monitoring program proposed for 2024 is provided in **Table 5 and** is the same as the monitoring program completed in 2023, with the inclusion of the new groundwater monitoring wells installed in 2024.

13.3 Surface Water Component

The proposed 2024 surface water monitoring program is provided in **Table 6**. There are no proposed changes from the 2023 program.

13.4 Landfill Gas Component

Jp2g recommended monitoring landfill gas from on Site groundwater monitoring wells. Due to the construction of the groundwater monitoring wells and the location of the water table, monitoring the groundwater monitoring wells will not provide information on the lateral migration of landfill gas. Landfill gas monitoring from on Site groundwater monitoring wells is not recommended for 2024.

13.5 Site Activities

Beaver activity at the Site will be documented with field notes and photographs where appropriate. A groundwater monitor condition survey will be carried out in the spring and fall of 2024.

13.6 Compliance Related Activities

Trigger mechanisms and contingency measures were proposed in the 2013 Site Development, Operations and Environmental Monitoring Report (Jp2g, 2014). The recommended contingencies included installing groundwater monitoring wells on adjacent downgradient properties and/or acquiring additional CAZ. Given the historical land use around the Site and known requirements of the existing property owner(s), this proposed contingency measure is not readily achievable.

Condition 28.1 of the revised ECA received on March 10, 2020 (see **Section 12.2**) required that by no later than June 30, 2020, the Town shall submit to the District Manager contingency measures to address groundwater compliance at the Site.

In a letter dated December 3, 2020, Golder provided the District Manager with the Town's preferred contingency option to address the groundwater compliance issue. It is considered that the submission of this letter fulfills the requirements of Condition 28.1. This is discussed further in **Section 12.1**.

As discussed in **Section 2.5** of this report, the Town intends to enter into discussion with the MECP to determine how the fill beyond approved limits, which is now understood to consist of waste material, is to be managed.

14.0 LIMITATIONS AND USE OF REPORT

This report was prepared for the exclusive use of the Town of Arnprior. The report, which specifically includes all tables, figures, and appendices, is based on data and information collected by WSP Canada Inc. (WSP) and is based solely on the conditions at the Site at the time of the work, supplemented by historical information and data obtained by Golder and others as described in this report. Each of these reports must be read and understood collectively and can only be relied upon in their totality.

WSP has relied in good faith on all information provided and does not accept responsibility for any deficiency, misstatements, or inaccuracies contained in the reports as a result of omissions, misinterpretation, or fraudulent acts of the persons contacted or errors or omissions in the reviewed documentation.

The assessment of environmental conditions at this Site has been made using the results of physical measurements and chemical analyses of liquids from a number of locations. The Site conditions between sampling locations have been inferred based on conditions observed at borehole locations. Subsurface conditions may vary from these sampled locations.

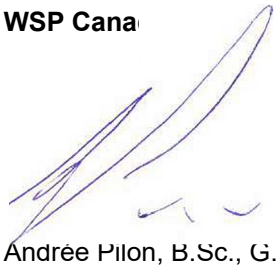
The services performed, as described in this report, were conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

Any use which a third party makes of this report, or any reliance on, or decisions to be made based on it, are the responsibilities of such third parties. WSP accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The findings and conclusions of this report are valid only as of the date of this report. If new information is discovered in future work, including excavations, borings, or other studies, WSP should be requested to re-evaluate the conclusions of this report, and to provide amendments as required. The groundwater monitors installed during previous investigations by WSP, or other consultants have been left in place. These groundwater monitors are the property of the Town of Arnprior and not WSP.

Signature Page

WSP Cana



Andrée Pilon, B.Sc., G.I.T
Geoscientist

Trish Edmond, M.E.Sc., P.Eng.
Senior Principal Geo-environmental Engineer

AP/AC/PLE/ap/kdv
https://wsponline.sharepoint.com/sites/gld-170792/project files/5 technical work/report/00_report/23594631-2023 arnprior wds amr final report - for client review.docx

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Tables

Table 1 – Review of Conditions of Environmental Compliance Approval No. A412603

Condition No.	Item	Comments
1.1	The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Site is notified of the ECA and the conditions herein and shall take all reasonable measures to ensure the person complies with the same.	Understood
1.2	Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this ECA.	Understood
2.1	Except as otherwise provided for in this ECA, the Site shall be designed, developed, constructed, operated, modified and maintained in accordance with the application for this ECA and the supporting documentation listed in Schedule "A".	Understood
3.1	The issuance of, and compliance with, this ECA does not: (a) relieve any person of any obligation to comply with any provision of the EPA or any other applicable statute, regulation or other legal requirement; or (b) limit in any way the authority of the Ministry to require certain steps be taken or to request that any further information related to compliance with this ECA be provided to the Ministry; unless a provision of this ECA specifically refers to the other requirement or authority and clearly states that the other requirement or authority is to be replaced or limited by this ECA.	Understood
4.1	The Owner or Operator remain responsible for any contravention of any other condition of this ECA or any applicable statute, regulation, or other legal requirement resulting from any act or omission that caused an adverse effect or impairment of air and/or water quality.	Understood
5.1	Any information requested by the Ministry concerning the Site and its operation under this ECA, including but not limited to any records required to be kept by this ECA shall be provided in a timely manner.	Understood
5.2	The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action, under this ECA or under any statute, regulation or subordinate legal instrument, in relation to the information, shall not be construed as: (a) an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any condition of this ECA or any statute, regulation or other subordinate legal requirement; or (b) acceptance by the Ministry of the information's completeness or accuracy.	Understood
5.3	Any information related to this ECA and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, R.S.O. 1990, C. F-31.	Understood
6.1	Where there is a conflict between a provision of any document, including the application, referred to in this ECA, and the conditions of this ECA, the conditions in this ECA shall take precedence.	Understood
6.2	Where there is a conflict between the application and a provision in any documents listed in Schedule "A", the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the Ministry approved the amendment in writing.	Understood
6.3	Where there is a conflict between any two documents listed in Schedule "A", other than the application, the document bearing the most recent date shall take precedence.	Understood
6.4	The conditions of this ECA are severable. If any condition of this ECA, or the application of any condition of this ECA to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this ECA shall not be affected thereby.	Understood

Condition No.	Item	Comments
7.1	Pursuant to Section 197 of the EPA , no person having an interest in the Site shall deal with the Site in any way without first giving a copy of this ECA to each person acquiring an interest in the Site as a result of the dealing.	Understood
7.2	In the event any land is acquired that will be included as part of the Site, two (2) copies of a completed Certificate of Requirement, containing a registerable description of the Site, shall be submitted to the Director for the Director's signature within sixty (60) calendar days of a notice being issued for the Site that incorporates the land into the ECA.	Understood
7.3	In the event any land is acquired that will be included as part of the Site as discussed in Condition 7.2 then the Certificate of Requirement shall be registered in the appropriate land registry office on title to the Site and a duplicate registered copy shall be submitted to the Director within ten (10) calendar days of receiving the Certificate of Requirement signed by the Director.	Understood
8.1	The Owner shall notify the Director , in writing, and forward a copy of the notification to the District Manager, within 30 days of the occurrence of any changes in the following information: ■ the ownership of the Site; ■ the Operator of the Site; ■ the address of the Owner or Operator; ■ the partners, where the Owner is or at any time becomes a partnership and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c. B-17 shall be included in the notification; and ■ the name of the corporation where the owner is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C-39 shall be included in the notification.	Understood
8.2	No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance and is satisfied with the arrangements made to ensure that all conditions of this ECA will be carried out and that sufficient financial assurance is deposited with the Ministry to ensure that these conditions will be carried out.	Understood
9.1	No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the EPA, OWRA or the PA, of any place to which this ECA relates, and without limiting the foregoing: ■ to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this ECA are kept; ■ to have access to, inspect, and copy any records required to be kept by the conditions of this ECA; ■ to inspect the Site, related equipment and appurtenances; ■ to inspect the practices, procedures, or operations required by the conditions of this ECA; and ■ to sample and monitor for the purposes of assessing compliance with the terms and conditions of this ECA, or the EPA, OWRA or the PA.	Understood
10.1	The service area from which the landfill receives waste shall be limited to the Town of Arnprior, Village of Braeside and the Township of McNab.	Understood
10.2	a) The hours of operation for the Site are: Monday through Saturday, 9:00 a.m. to 4:00 p.m. b) The Owner may change the hours of operation for the Site with the approval of the District Manager.	Understood

Condition No.	Item	Comments
11.1	The Owner shall install a sign at the main entrance/exit to the Site on which is legibly displayed the following information: a) The name of the Site and Owner; b) the number of this Approval; c) the operating hours of the Site; d) a twenty-four (24) hour telephone number that can be used to reach the Owner in the event of a complaint or an emergency; e) the type of waste that is approved for receipt at the Site; f) a warning against unauthorized access; and g) a warning against dumping outside the Site.	Update to the sign is planned for spring of 2023 to correct operating hours
12.1	The Site shall be operated and maintained such that the vermin, vectors, dust, litter, odour, noise and traffic do not create a nuisance.	In Compliance
13.1	Burning of waste at the Site is prohibited.	Understood
13.2	Notwithstanding Condition 13.1, the burning of brush, trees and clean wood may be conducted at the Site in accordance with Section 4.21 and Item no. 3 of Appendix E of the Ministry's "Guidance Manual for Landfill Sites Receiving Municipal Waste" dated November 1993.	Understood
14.1	No waste shall be received, landfilled or removed from the Site unless Trained Personnel are present and supervises the operations during operating hours. Landfilling and waste diversion activities shall not be undertaken when Trained Personnel are not present to supervise these operations.	Understood
14.2	The Site shall be operated and maintained in a safe and secure manner. During non-operating hours, the Site entrance and exit gates shall be locked and the Site shall be secured against access by unauthorized persons.	In Compliance
15.1	A training plan specific to the Site shall be developed and implemented to ensure that all employees that operate the Site or carry out any activity required under this Approval are trained in the operation related to that activity.	In Compliance
16.1	If at any time the Owner receives complaints regarding the operation of the Site, the Owner shall respond to these complaints according to the following procedure: a) The Owner shall record and number each complaint, either electronically or in a log book, and shall include the following information: the nature of the complaint, the name, address and the telephone number of the complainant if the complainant will provide this information and the time and date of the complaint; b) The Owner, upon notification of the complaint, shall initiate appropriate steps to determine possible causes of the complaint, proceed to take the necessary actions to eliminate the cause of the complaint and forward a formal reply to the complainant; and c) The Owner shall complete and retain on-site a report written within one (1) week of the complaint date, listing the actions taken to resolve the complaint and any recommendations for remedial measures, and managerial or operational changes to reasonably avoid the recurrence of similar incidents.	Understood
17.1	Any spills, fires and emergency situations at the Site resulting from activities approved under this ECA and with impacts to the environment or the health and safety of the public shall be forthwith reported directly to the Ministry's Spills Action Centre (1-800-268-6060) and shall be cleaned up immediately.	Understood

Condition No.	Item	Comments
17.2	In addition, the Owner shall submit, to the District Manager a written report within three (3) business days of the emergency situation under Condition 17.1, outlining the nature of the incident, remedial measures taken, handling of waste generated as a result of the emergency situation and the measures taken to prevent future occurrences at the Site.	Understood
17.3	All wastes resulting from an emergency situation shall be managed and disposed of in accordance with Reg. 347.	Understood
17.4	All equipment and materials required to handle the emergency situations shall be: a) kept on hand at all times that waste landfilling and/or handling is undertaken at the Site; and b) adequately maintained and kept in good repair.	Understood
17.5	The Owner shall ensure that the emergency response personnel are familiar with the use of such equipment and its location(s).	Understood
18.1	A visual inspection of the entire Site and all equipment on the Site shall be conducted each day the Site is in operation to ensure that: a) the Site is secure; b) that the operation of the Site is not causing any nuisances including those from dust, odours, vectors, vermin, birds, litter, noise and traffic; c) that the operation of the Site is not causing any visual negative impacts on the environment or the health and safety of the public; and d) that the Site is being operated in compliance with this Approval. Any deficiencies discovered as a result of this inspection shall be remedied immediately, including temporarily ceasing operations at the Site if needed.	In compliance
18.2	A record of the inspections shall be kept in a daily log book that includes: a) the name of the person that conducted the inspection; b) the date and time of the inspection; c) the list of any deficiencies discovered; d) the recommendations for remedial action; and e) the date, time and description of actions taken.	In compliance
18.3	A record shall be kept in the daily log book of all refusals of waste shipments, the reason(s) for refusal, and the origin of the waste, if known.	In compliance
19.1	A daily log shall be maintained in written or electronic format and shall include the following information: a) the type, date and time of arrival, hauler, and quantity (tonnes) of all waste and cover material received at the Site; b) the area of the Site in which waste disposal operations are taking place; c) a record of litter collection activities and the application of any dust suppressants; d) a record of the daily inspections; and e) a description of any out-of-service period of any control, treatment, disposal or monitoring facilities, the reasons for the loss of service, and action taken to restore and maintain service.	In compliance
20.1	By March 31st of each year, an annual monitoring report (the "Annual Report") shall be submitted to the Regional Director reporting the results of the monitoring carried out during the previous calendar year.	Understood

Condition No.	Item	Comments
20.2	The Annual Report shall include but not be limited to the following information: a) the results and an interpretive analysis of the results of all leachate, groundwater, and surface b) water and monitoring, including an assessment of the need to amend the monitoring programs; c) an assessment of groundwater quality and compliance with Guideline B-7 and ODWO; d) an assessment of surface water quality and compliance with PWQO; e) an assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the Site, and the adequacy of and need to implement the contingency plans; f) site plans showing the existing contours of the Site; areas of landfilling operation during the reporting period; areas of intended operation during the next reporting period; areas of excavation during the reporting period; the progress of final cover, vegetative cover, and any intermediate cover application; facilities existing, added or removed during the reporting period; and site preparations and facilities planned for installation during the next reporting period; calculations of the volume of waste, daily and intermediate cover, and final cover deposited or placed at the Site during the reporting period and a calculation of the total volume of Site capacity used during the reporting period; g) a calculation of the remaining capacity of the Site and an estimate of the remaining Site life; h) a summary of the total annual quantity of waste received on a quarterly basis at the Site; i) a summary of any complaints received and the responses made; j) a discussion of any operational problems encountered at the Site and corrective action taken; k) any changes to the Design and Operations Report and the Closure Plan that have been approved by the Director since the last Annual Report; l) a report on the status of all monitoring wells and a statement as to compliance with Ontario Regulation 903; and m) any other information with respect to the Site which the Regional Director may require from time to time.	In compliance
21.1	The Site is approved for the landfilling of solid non-hazardous waste from domestic, commercial and industrial sources, and de-watered sewage sludge.	Understood
21.2	Dewatered sludge shall be disposed in accordance with the following sub-conditions: a) sewage sludge shall be covered immediately following disposal and following incorporation into the active fill; b) no sewage sludge shall be disposed of at the tipping face of the landfill used by the general public; and c) access road and buffer areas shall be clear of any sludge material at all times.	Understood
21.3	The maximum amount of waste landfilled at the Site shall not exceed 12,000 tonnes per year.	In compliance
22.1	Waste shall only be landfilled within the confines of the 6.2 hectares fill area and final top waste contours approved under this ECA.	Understood
22.2	No waste shall be deposited at the Site after the final contours have been attained as shown on Figure 4 and Figure 5 of Item no. 11 of Schedule "A".	Understood
22.3	No additional waste shall be landfilled in the Fill Beyond Approved Limits area identified in Figure 5 of Item no. 11 of Schedule "A".	Understood
23.1	The minimum thickness of daily cover shall be 150 millimetres as indicated in Item no. 11 of Schedule "A".	Understood

Condition No.	Item	Comments
23.2	A suitable stockpile of clean cover material, which shall be equivalent to 50% of the quantity of the required annual daily cover material shall be maintained at the Site as a contingency measure.	In compliance
23.3	The use of processed (chipped and/or mulched) wood as an alternative daily cover is allowed at the Site subject to the following sub-conditions: a) i. The source of all construction, demolition and woodwaste coming to the landfill Site shall be limited to within the approved service area. ii. Notwithstanding Condition 23.3 (a) (i) above, woodwaste suitable for chipping and/or mulching may be received from outside the approved service area provided it is within 100 kilometres of the Site. b) Stockpiling of waste shall be limited to wood or wood products with maximum dimensions of 30 metres by 15 metres by 10 metres. c) Stockpiles shall be located a minimum of 30 metres away from any forested area. d) Stockpiles shall be processed (chipped and/or mulched) once a year at a minimum, and shall not exceed the annual daily cover requirements of the Site by volume.	In compliance
24.1	The minimum thickness of intermediate cover shall be 300 millimetres as indicated in Item no. 11 of Schedule “A”.	Understood
24.2	The Site is approved to import up to 6,000 cubic metres of hydrocarbon contaminated (non-hazardous) soil to be used as an intermediate cover.	Understood
25.1	The maximum height of the peak/crown for the refuse and final cover shall not exceed 120.0 metres above the assumed elevation datum, as indicated in Figure 4 and Figure 5 of Item no. 11 of Schedule "A".	Understood
25.2	The final completed contours shall include 0.7 metre of final cover. This final cover shall consist of 0.6 metre of silt and/or clay overlain by 0.1 metre of topsoil or soil capable of sustaining vegetation.	Understood
26.1	Guideline B-7 levels are established on Pages 17 and 18 of Item no. 9 of Schedule "A". Trigger levels shall be 75% of the Guideline B-7 levels at the CAZ boundary.	Understood
27.1	a) The Owner shall carry out the groundwater monitoring program in accordance with Item no. 11 of Schedule "A". b) Any proposed changes to the groundwater monitoring program shall be subject to the approval of the Regional Director.	Understood
27.2	a) The Owner shall carry out the surface water sampling program in accordance with Item no. 11 of Schedule "A". b) The surface water sampling program is subject to any changes to the OWRA, and/or to recommendations made by the Ministry. c) Any proposed changes to the surface water monitoring program shall be subject to the approval of the Regional Director.	Understood
28.1	By no later than June 30, 2020, the Owner shall submit to the District Manager contingency measures to address groundwater compliance at the Site.	Complete

Condition No.	Item	Comments
28.2	Within six (6) months of the receipt of comments on the submission mentioned in Condition 28.1 from the District Manager, the Owner shall submit to the Director for approval an amendment application for an update to this ECA. The amendment application shall include: a) details of the contingency plan to be implemented as approved by the District Manager; and b) a proposed deadline for an update to the trigger mechanism.	Understood
29.1	No less than one (1) year prior to the planned closure of the Site, the Owner shall submit to the Director for approval, with copies to the District Manager, a detailed Site closure plan pertaining to the termination of landfilling operations at this Site, post-closure inspection, maintenance and monitoring, and end use. The plan shall include the following: a) final contour plan; b) a description of the proposed end use of the Site; c) a description of the procedures for closure of the Site, including: i. advance notification of the public of the landfill closure; ii. posting of a sign at the Site entrance indicating the landfill is closed and identifying any alternative waste disposal arrangements; iii. completion, inspection and maintenance of the final cover and landscaping; iv. Site security; v. removal of unnecessary landfill-related structures, buildings and facilities; vi. final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water, stormwater and landfill gas; and vii. a schedule indicating the time-period for implementing sub-conditions (i) to (vi) above; d) descriptions of the procedures for post-closure care of the Site, including: i. operation, inspection and maintenance of the control, treatment, disposal and monitoring ii. facilities for leachate, groundwater, surface water, stormwater and landfill gas; iii. monitoring of Site settlement; iv. record keeping and reporting; and v. complaint contact and response procedures; e) an assessment of the adequacy of and need to implement the contingency plans for leachate; f) an assessment of the need for a landfill gas venting system in the final cover; and g) an updated estimate of the contaminating life span of the Site, based on the results of the monitoring programs to date.	Understood
29.2	The Site shall be closed in accordance with the closure plan as approved by the Director.	Understood
30.1	Waste diversion activities are hereby approved to be to be conducted at the Site in accordance with the Design and Operations Report listed in Item no. 11 of Schedule "A".	Understood

Table 2 – Groundwater Elevations

Monitoring Well	Ground Surface Elev. (m)	Top of Pipe Elev. (m)	Ground-water Depth (mbTOP) April 30, 2008	Ground-water Elev. (m) April 30, 2008	Ground-water Depth (mbTOP) November 27, 2008	Ground-water Elev. (m) November 27, 2008	Ground-water Depth (mbTOP) April 24, 2009	Ground-water Elev. (m) April 24, 2009	Ground-water Depth (mbTOP) November 27, 2009	Ground-water Elev. (m) November 27, 2009
BR-1S	85.04	85.40	2.20	83.20	2.31	83.09	3.03	82.37	3.14	82.26
BR-1D	85.04	85.36	8.61	76.75	8.84	76.52	7.78	77.58	7.84	77.52
BR-3	89.63	89.86	2.51	87.35	2.665	87.20	2.10	87.76	2.175	87.69
BR-5S	83.95	84.39	6.87	77.52	7.68	76.71	6.87	77.52	6.91	77.48
BR-5D	83.95	84.37	7.74	76.63	7.91	76.46	6.96	77.41	6.995	77.38
BR-6S	82.06	82.79	6.67	76.12	7.26	75.53	6.17	76.62	6.23	76.56
BR-6D	82.06	82.77	6.46	76.31	7.07	75.70	6.54	76.23	6.62	76.15
BR-7S	79.69	80.76	4.9	75.86	5.02	75.74	4.64	76.12	4.71	76.05
BR-7D	79.69	80.76	4.76	76.00	4.88	75.88	4.5	76.26	4.53	76.23
BR-8S	85.17	85.90	3.17	82.73	3.19	82.71	2.63	83.27	2.665	83.24
BR-8D	85.17	85.95	3.66	82.29	3.49	82.46	3.00	82.95	3.045	82.91
BR-9S	84.80	85.61	2.58	83.03	2.68	82.93	2.09	83.52	2.135	83.48
BR-9D	84.80	85.80	9.17	76.63	9.53	76.27	8.865	76.94	8.90	76.90
BR-10	80.63	81.57	2.33	79.24	2.38	79.19	2.28	79.29	2.34	79.23
BR-11	82.38	83.37	3.67	79.70	3.65	79.72	3.06	80.31	3.115	80.26
BR-12	83.20	84.46	1.37	83.09	1.53	82.93	1.23	83.23	1.295	83.17
BR-13S	107.15	107.87	17.93	89.94	18.02	89.85	17.43	90.44	17.61	90.26
BR-13D	107.15	107.86	19.86	88.00	19.985	87.88	20.30	87.56	20.38	87.48
OV-2	*85.14*	*85.90*	0.83	85.07	1.02	84.88	0.75	85.15	0.81	85.09
OV-4	*108.65*	*109.22*	18.41	90.81	18.56	90.66	18.2	91.02	18.26	90.96
OV-5	*89.73*	*90.12*	2.62	87.50	3.04	87.08	2.84	87.28	2.90	87.22
OV-7	86.46	87.20	2.96	84.24	3.07	84.13	2.12	85.08	2.16	85.04
OV-9	87.00	87.67	1.01	86.66	1.11	86.56	0.96	86.71	1.085	86.59
OV-10	87.02	88.49	1.115	87.38	1.195	87.30	1.05	87.44	1.17	87.32
OV-13	107.15	107.75	17.29	90.46	17.43	90.32	17.16	90.59	17.31	90.44
BR 08-1S	82.23	83.06	—	---	1.67	—	1.25	—	1.31	---
BR 08-1D	82.23	83.02	—	---	3.12	—	5.16	—	5.20	---
BR 08-2S	86.27	87.03	—	---	4.34	—	3.64	—	3.695	---
BR 08-2D	86.27	86.99	—	---	4.65	—	4.06	—	4.115	---
BR 08-3S	85.41	86.26	—	---	3.28	—	2.64	—	2.70	---
BR 08-3D	85.41	86.35	—	---	4.12	—	3.85	—	3.91	---

Monitoring Well	Ground Surface Elev. (m)	Top of Pipe Elev. (m)	Ground-water Depth (mbTOP) May 17, 2010	Ground-water Elev. (m) May 17, 2010	Ground-water Depth (mbTOP) November 29, 2010	Ground-water Elev. (m) November 29, 2010	Ground-water Depth (mbTOP) May 9, 2011	Ground-water Elev. (m) May 9, 2011	Ground-water Depth (mbTOP) November 29, 2011	Ground-water Elev. (m) November 29, 2011
BR-1S	85.04	85.40	3.76	81.64	3.72	81.68	3.61	81.79	3.84	81.56
BR-1D	85.04	85.36	7.97	77.39	7.91	77.45	7.84	77.52	8.07	77.29
BR-3	89.63	89.86	2.46	87.40	2.41	87.45	2.38	87.48	2.62	87.24
BR-5S	83.95	84.39	7.61	76.78	7.66	76.73	7.29	77.10	7.69	76.70
BR-5D	83.95	84.37	7.95	76.42	8.10	76.27	7.31	77.06	7.43	76.94
BR-6S	82.06	82.79	7.47	75.32	7.32	75.47	6.72	76.07	7.44	75.35
BR-6D	82.06	82.77	7.28	75.49	7.18	75.59	6.43	76.34	7.41	75.36
BR-7S	79.69	80.76	5.54	75.22	5.59	75.17	4.86	75.90	5.83	74.93
BR-7D	79.69	80.76	5.43	75.33	5.50	75.26	4.84	75.92	5.75	75.01
BR-8S	85.17	85.90	3.62	82.28	3.60	82.30	3.46	82.44	3.70	82.20
BR-8D	85.17	85.95	3.39	82.56	3.34	82.61	3.24	82.71	3.45	82.50
BR-9S	84.80	85.61	2.75	82.86	2.71	82.90	2.62	82.99	2.31	83.30
BR-9D	84.80	85.80	9.61	76.19	9.555	76.25	9.45	76.35	9.63	76.17
BR-10	80.63	81.57	2.39	79.18	2.34	79.23	2.30	79.27	2.33	79.24
BR-11	82.38	83.37	3.84	79.53	3.80	79.57	3.67	79.70	2.97	80.40
BR-12	83.20	84.46	1.78	82.68	1.73	82.73	1.23	83.23	1.36	83.10
BR-13S	107.15	107.87	17.98	89.89	18.4	89.47	17.55	90.32	18.44	89.43
BR-13D	107.15	107.86	23.15	84.71	21.97	85.89	20.18	87.68	25.04	82.82
OV-2	*85.14*	*85.90*	0.98	84.92	0.92	84.98	0.90	85.00	0.99	84.91
OV-4	*108.65*	*109.22*	18.40	90.82	18.34	90.88	18.29	90.93	18.45	90.77
OV-5	*89.73*	*90.12*	3.04	87.08	3.00	87.12	2.94	87.18	3.18	86.94
OV-7	86.46	87.20	2.36	84.84	2.315	84.89	2.28	84.92	2.51	84.69
OV-9	87.00	87.67	1.20	86.47	1.17	86.50	1.10	86.57	1.16	86.51
OV-10	87.02	88.49	1.195	87.30	1.16	87.33	1.09	87.41	2.11	86.38
OV-13	107.15	107.75	17.54	90.21	18.06	89.69	17.30	90.45	17.90	89.85
BR 08-1S	82.23	83.06	1.96	---	1.92	---	1.53	---	1.98	---
BR 08-1D	82.23	83.02	6.57	---	6.515	---	6.01	---	6.40	---
BR 08-2S	86.27	87.03	4.25	---	3.76	---	3.53	---	3.02	---
BR 08-2D	86.27	86.99	4.53	---	4.21	---	3.98	---	4.69	---
BR 08-3S	85.41	86.26	3.36	---	3.04	---	2.77	---	3.02	---
BR 08-3D	85.41	86.35	5.06	---	4.90	---	4.74	---	5.05	---

Monitoring Well	Ground Surface Elev. (m)	Top of Pipe Elev. (m)	Ground-water Depth (mbTOP) May 6, 2012	Ground-water Elev. (m) May 6, 2012	Ground-water Depth (mbTOP) November 12, 2012	Ground-water Elev. (m) November 12, 2012	Ground-water Depth (mbTOP) June 2013	Ground-water Elev. (m) June 2013	Ground-water Depth (mbTOP) October 2013	Ground-water Elev. (m) October 2013
BR-1S	85.04	85.40	4.13	81.27	4.52	80.88	3.44	81.96	3.67	81.73
BR-1D	85.04	85.36	8.42	76.94	8.59	76.77	8.20	77.16	d.i.	—
BR-3	89.63	89.86	3.19	86.67	3.20	86.66	5.32	84.54	6.14	83.72
BR-5S	83.95	84.39	7.67	76.72	8.19	76.20	7.67	76.72	7.74	76.65
BR-5D	83.95	84.37	8.03	76.34	8.22	76.15	8.45	75.92	8.92	75.45
BR-6S	82.06	82.79	7.31	75.48	7.52	75.27	7.39	75.40	n.m.	—
BR-6D	82.06	82.77	7.16	75.61	7.39	75.38	7.32	75.45	n.m.	—
BR-7S	79.69	80.76	5.61	75.15	5.80	74.96	5.53	75.23	6.00	74.76
BR-7D	79.69	80.76	5.50	75.26	5.70	75.06	5.50	75.26	5.95	74.81
BR-8S	85.17	85.90	3.96	81.94	4.22	81.68	3.12	82.78	3.65	82.25
BR-8D	85.17	85.95	3.80	82.15	4.03	81.92	3.47	82.48	3.93	82.02
BR-9S	84.80	85.61	3.11	82.50	3.48	82.13	2.60	83.01	3.16	82.45
BR-9D	84.80	85.80	9.93	75.87	10.16	75.64	10.14	75.66	10.50	75.30
BR-10	80.63	81.57	2.41	79.16	2.53	79.04	2.35	79.22	2.48	79.09
BR-11	82.38	83.37	3.86	79.51	3.88	79.49	3.30	80.07	3.74	79.63
BR-12	83.20	84.46	1.60	82.86	2.00	82.46	1.45	83.01	1.90	82.56
BR-13S	107.15	107.87	18.30	89.57	18.33	89.54	18.35	89.52	19.06	88.81
BR-13D	107.15	107.86	20.80	87.06	20.01	87.85	23.81	84.05	26.61	81.25
OV-2	*85.14*	*85.90*	1.38	84.52	1.46	84.44	0.84	85.06	1.15	84.75
OV-4	*108.65*	*109.22*	18.84	90.38	18.99	90.23	18.55	90.67	14.15[1]	95.07[1]
OV-5	*89.73*	*90.12*	3.33	86.79	3.66	86.46	3.71	86.41	4.30	85.82
OV-7	86.46	87.20	2.69	84.51	2.88	84.32	3.16	84.04	3.42	83.78
OV-9	87.00	87.67	1.20	86.48	1.29	86.38	1.62	86.05	dry	—
OV-10	87.02	88.49	1.27	87.22	1.40	87.09	2.42	86.07	2.98	85.51
OV-13	107.15	107.75	17.78	89.97	17.94	89.81	17.90	89.85	18.44	89.31
BR 08-1S	82.23	83.06	2.01	—	2.93	—	1.72	—	1.98	—
BR 08-1D	82.23	83.02	6.53	—	6.39	—	5.03	—	5.14	—
BR 08-2S	86.27	87.03	3.90	—	4.07	—	3.98	—	4.55	—
BR 08-2D	86.27	86.99	4.49	—	4.56	—	4.75	—	5.23	—
BR 08-3S	85.41	86.26	3.29	—	3.31	—	3.19	—	3.81	—
BR 08-3D	85.41	86.35	5.45	—	5.96	—	5.56	—	6.53	—

Monitoring Well	Ground Surface Elev. (m)	Top of Pipe Elev. (m)	Ground-water Depth (mbTOP) May 30, 2014	Ground-water Elev. (m) May 30, 2014	Ground-water Depth (mbTOP) November 17, 2014	Ground-water Elev. (m) November 17, 2014	Ground-water Depth (mbTOP) May 4, 2015	Ground-water Elev. (m) May 4, 2015	Ground-water Depth (mbTOP) November 15, 2015	Ground-water Elev. (m) November 15, 2015
BR-1S	85.04	85.40	3.23	82.17	3.31	82.09	3.20	82.20	3.43	81.97
BR-1D	85.04	85.36	9.60	75.76	9.67	75.69	9.54	75.82	9.79	75.57
BR-3	89.63	89.86	1.61	88.25	1.69	88.17	1.58	88.28	1.83	88.03
BR-5S	83.95	84.39	7.68	76.71	7.74	76.65	7.60	76.79	7.99	76.40
BR-5D	83.95	84.37	7.73	76.64	7.75	76.62	7.61	76.76	8.02	76.35
BR-6S	82.06	82.79	7.06	75.73	7.09	75.70	6.99	75.80	7.54	75.25
BR-6D	82.06	82.77	6.80	75.97	6.86	75.91	6.75	76.02	7.40	75.37
BR-7S	79.69	80.76	5.17	75.59	5.23	75.53	5.22	75.54	5.77	74.99
BR-7D	79.69	80.76	5.07	75.69	5.10	75.66	4.99	75.77	5.69	75.07
BR-8S	85.17	85.90	3.02	82.88	3.07	82.84	3.00	82.90	3.38	82.52
BR-8D	85.17	85.95	3.40	82.55	3.39	82.56	3.31	82.64	3.70	82.25
BR-9S	84.80	85.61	2.58	83.03	2.63	82.98	2.53	83.08	2.92	82.69
BR-9D	84.80	85.80	10.00	75.80	10.01	75.79	9.895	75.91	10.19	75.61
BR-10	80.63	81.57	2.36	79.21	2.40	79.17	2.28	79.29	2.43	79.14
BR-11	82.38	83.37	3.82	79.55	3.83	79.54	3.74	79.63	3.51	79.86
BR-12	83.20	84.46	1.48	82.98	1.50	82.97	1.38	83.08	1.46	83.00
BR-13S	107.15	107.87	18.36	89.51	18.13	89.74	18.31	89.56	18.62	89.25
BR-13D	107.15	107.86	22.10	85.76	22.12	85.74	22.02	85.84	22.36	85.50
OV-2	*85.14*	*85.90*	0.86	85.04	0.94	84.96	0.88	85.02	1.30	84.60
OV-4	*108.65*	*109.22*	18.60	90.62	18.58	90.64	18.49	90.73	18.64	90.58
OV-5	*89.73*	*90.12*	3.80	86.32	3.76	86.36	3.64	86.48	3.79	86.33
OV-7	86.46	87.20	3.05	84.15	3.12	84.08	3.02	84.18	3.21	83.99
OV-9	87.00	87.67	1.60	86.07	dry	---	2.12	85.55	2.31	85.36
OV-10	87.02	88.49	2.10	86.39	2.15	86.34	2.09	86.40	2.34	86.15
OV-13	107.15	107.75	17.96	89.79	18.00	89.75	17.89	89.86	18.04	89.71
BR 08-1S	82.23	83.06	1.80	---	1.80	---	1.72	---	1.99	---
BR 08-1D	82.23	83.02	5.20	---	5.26	---	5.20	---	5.43	---
BR 08-2S	86.27	87.03	4.01	---	4.04	---	3.94	---	4.09	---
BR 08-2D	86.27	86.99	4.69	---	4.70	---	4.60	---	4.77	---
BR 08-3S	85.41	86.26	3.20	---	3.18	---	3.12	---	3.25	---
BR 08-3D	85.41	86.35	5.99	---	6.06	---	6.00	---	6.14	---

Monitoring Well	Ground Surface Elev. (m)	Top of Pipe Elev. (m)	Ground-water Depth (mbTOP) April 18, 2016	Ground-water Elev. (m) April 18, 2016	Ground-water Depth (mbTOP) October 29, 2016	Ground-water Elev. (m) October 29, 2016	Ground-water Depth (mbTOP) May 23, 2017	Ground-water Elev. (m) May 23, 2017	Ground-water Depth (mbTOP) November 21, 2017	Ground-water Elev. (m) November 21, 2017
BR-1S	85.04	85.40	2.66	82.74	3.47	81.93	2.70	82.70	2.99	82.41
BR-1D	85.04	85.36	8.92	76.44	9.48	75.88	8.90	76.46	8.15	77.21
BR-3	89.63	89.86	4.20	85.66	5.95	83.91	4.28	85.58	4.41	85.45
BR-5S	83.95	84.39	6.93	77.46	7.71	76.68	7.19	77.20	7.65	76.74
BR-5D	83.95	84.37	6.96	77.41	8.59	75.78	7.35	77.02	7.83	76.54
BR-6S	82.06	82.79	6.89	75.90	7.72	75.07	6.52	76.27	7.25	75.54
BR-6D	82.06	82.77	6.60	76.17	7.62	75.15	6.81	75.96	7.02	75.75
BR-7S	79.69	80.76	4.81	75.95	6.00	74.76	5.00	75.76	5.54	75.22
BR-7D	79.69	80.76	4.77	75.99	5.91	74.85	4.87	75.89	5.39	75.37
BR-8S	85.17	85.62	2.30	83.32	3.04	82.58	2.48	83.14	2.66	82.96
BR-8D	85.17	85.53	2.37	83.16	3.13	82.40	2.56	82.97	2.74	82.79
BR-9S	84.80	85.61	2.08	83.53	3.11	82.50	2.26	83.35	2.36	83.25
BR-9D	84.80	85.80	9.12	76.68	9.81	75.99	8.94	76.86	9.09	76.71
BR-10	80.63	81.57	2.23	79.34	2.47	79.10	2.27	79.30	2.29	79.28
BR-11	82.38	83.37	3.66	79.71	3.35	80.02	3.70	79.67	3.64	79.73
BR-12	83.20	84.46	1.28	83.18	1.81	82.65	1.34	83.12	1.32	83.14
BR-13S	107.15	107.87	18.02	89.85	18.66	89.21	18.40	89.47	18.44	89.43
BR-13D	107.15	107.86	21.28	86.58	22.19	85.67	21.31	86.55	21.40	86.46
OV-2	*85.14*	*85.90*	1.01	84.89	2.28	83.62	1.11	84.79	0.78	85.12
OV-4	*108.65*	*109.22*	17.05	92.17	17.84	91.38	16.17	93.05	16.27	92.95
OV-5	*89.73*	*90.12*	2.85	87.27	4.11	86.01	2.90	87.22	3.10	87.02
OV-7	86.46	87.20	2.14	85.06	3.04	84.16	2.09	85.11	3.06	84.14
OV-9	87.00	87.67	0.95[2]	86.72[2]	1.99[2]	85.68[2]	0.94[2]	—[2]	1.17	86.63
OV-10	87.02	88.49	1.58	86.91	2.61	85.88	1.64	86.85	1.84	86.65
OV-13	107.15	107.75	16.16	91.59	16.91	90.84	16.08	91.67	16.18	91.57
BR 08-1S	82.23	83.06	1.54	—	2.11	—	1.67	—	1.79	—
BR 08-1D	82.23	83.02	1.51	—	2.09	—	1.65	—	1.77	—
BR 08-2S	86.27	87.03	3.08	—	3.84	—	3.03	—	3.19	—
BR 08-2D	86.27	86.99	4.00	—	4.91	—	4.05	—	4.20	—
BR 08-3S	85.41	86.26	2.78	—	3.66	—	2.98	—	3.11	—
BR 08-3D	85.41	86.35	4.76	—	5.13	—	4.70	—	4.85	—

Monitoring Well	Ground Surface Elev. (m)	Top of Pipe Elev. (m)	Ground-water Depth (mbTOP) May 15, 2018	Ground-water Elev. (m) May 15, 2018	Ground-water Depth (mbTOP) October 26, 2018	Ground-water Elev. (m) October 26, 2018	Ground-water Depth (mbTOP) May 29, 2019	Ground-water Elev. (m) May 29, 2019	Ground-water Depth (mbTOP) November 13, 2019	Ground-water Elev. (m) November 13, 2019
BR-1S	85.04	85.40	3.04	82.36	3.06	82.34	8.01	77.39	8.72	76.68
BR-1D	85.04	85.36	7.36	78.00	7.30	78.06	8.11	77.25	8.81	76.55
BR-3	89.63	89.86	4.77	85.09	4.83	85.03	7.98	81.88	8.40	81.46
BR-5S	83.95	84.39	7.15	77.24	7.70	76.69	6.58	77.81	7.72	76.67
BR-5D	83.95	84.37	7.24	77.13	8.29	76.08	6.57	77.80	7.95	76.42
BR-6S	82.06	82.79	6.76	76.03	7.56	75.23	6.17	76.62	7.36	75.43
BR-6D	82.06	82.77	6.37	76.40	7.35	75.42	5.71	77.06	7.12	75.65
BR-7S	79.69	80.76	4.78	75.98	5.79	74.97	5.39	75.37	5.62	75.14
BR-7D	79.69	80.76	4.63	76.13	5.66	75.10	5.26	75.50	5.47	75.29
BR-8S	85.17	85.62	2.85	82.77	3.88	81.74	2.38	83.24	2.88	82.74
BR-8D	85.17	85.53	2.9	82.63	4.01	81.52	2.35	83.18	2.87	82.66
BR-9S	84.80	85.61	2.29	83.32	3.01	82.60	2.09	83.52	2.72	82.89
BR-9D	84.80	85.80	8.90	76.90	9.28	76.52	8.31	77.49	8.81	76.99
BR-10	80.63	81.57	2.3	79.27	2.44	79.13	2.09	79.48	2.34	79.23
BR-11	82.38	83.37	3.8	79.57	3.90	79.47	3.59	79.78	1.86	81.51
BR-12	83.20	84.46	1.43	83.03	1.83	82.63	1.24	83.22	2.10	82.36
BR-13S	107.15	107.87	18.38	89.49	18.40	89.47	18.29	89.58	18.89	88.98
BR-13D	107.15	107.86	21.21	86.65	21.30	86.56	22.01	85.85	23.11	84.75
OV-2	*85.14*	*85.90*	0.78	85.12	1.04	84.86	0.77	85.13	1.11	84.79
OV-4	*108.65*	*109.22*	16.26	92.96	16.30[4]	92.92	16.21	93.01	–[5]	–[5]
OV-5	*89.73*	*90.12*	3.22	86.90	2.63[4]	87.49	2.48	87.64	–[5]	–[5]
OV-7	86.46	87.20	2.99	84.21	2.93	84.27	2.64	84.56	3.11	84.09
OV-9	87.00	87.67	1.29	86.51	1.26	86.54	1.10	86.70	1.39	86.41
OV-10	87.02	88.49	1.9	86.59	1.95	86.54	1.72	86.77	1.96	86.53
OV-13	107.15	107.75	16.29	91.46	16.24	91.51	16.06	91.69	16.28	91.47
BR 08-1S[3]	82.23	83.06	1.63	81.43	1.69	81.37	1.50	81.56	1.99	81.07
BR 08-1D[3]	82.23	83.02	1.6	81.42	1.66	81.36	1.42	81.60	1.89	81.13
BR 08-2S[3]	86.27	87.03	3.00	84.03	3.11	83.92	1.93	85.10	2.19	84.84
BR 08-2D[3]	86.27	86.99	4.09	82.90	4.32	82.67	3.86	83.13	3.99	83.00
BR 08-3S[3]	85.41	86.26	3.02	83.24	3.31	82.95	2.74	83.52	2.97	83.29
BR 08-3D[3]	85.41	86.35	4.58	81.77	5.19	81.16	4.08	82.27	4.21	82.14
BR-18S[3]	85.63	86.50					5.44	81.06	6.01	80.49
BR-18D[3]	85.64	86.45					5.61	80.84	6.12	80.33

Monitoring Well	Ground Surface Elev. (m)	Top of Pipe Elev. (m)	Ground-water Depth (mbTOP) May 05, 2020	Ground-water Elev. (m) May 05, 2020	Ground-water Depth (mbTOP) October 28, 2020	Ground-water Elev. (m) October 28, 2020	Ground-water Depth (mbTOP) April 28, 2021	Ground-water Elev. (m) April 28, 2021	Ground-water Depth (mbTOP) November 22, 2021	Ground-water Elev. (m) November 22, 2021
BR-1S	85.04	85.40	2.85	82.55	8.92	76.48	8.10	77.30	7.41	77.99
BR-1D	85.04	85.36	7.49	77.87	8.33	77.03	7.92	77.44	8.71	76.65
BR-3	89.63	89.86	4.30	85.56	5.40	84.46	5.66	84.20	5.60	84.26
BR-5S	83.95	84.39	7.30	77.09	7.80	76.59	7.53	76.86	7.75	76.64
BR-5D	83.95	84.37	7.33	77.04	8.18	76.19	7.88	76.49	8.15	76.22
BR-6S	82.06	82.79	6.89	75.90	7.50	75.29	7.38	75.41	7.58	75.21
BR-6D	82.06	82.77	6.53	76.24	7.26	75.51	7.10	75.67	7.53	75.24
BR-7S	79.69	80.76	5.06	75.70	5.72	75.04	5.58	75.18	5.52	75.24
BR-7D	79.69	80.76	4.90	75.86	5.59	75.17	5.42	75.34	5.75	75.01
BR-8S	85.17	85.62	2.33	83.29	3.25	82.37	3.04	82.58	2.97	82.66
BR-8D	85.17	85.53	2.36	83.17	2.28	83.25	3.08	82.45	2.99	82.54
BR-9S	84.80	85.61	2.09	83.52	2.80	82.81	2.52	83.09	2.84	82.77
BR-9D	84.80	85.80	8.97	76.83	9.75	76.05	9.42	76.38	8.92	76.88
BR-10	80.63	81.57	2.30	79.27	2.36	79.21	2.16	79.41	2.38	79.19
BR-11	82.38	83.37	3.33	80.04	1.56	81.81	1.38	81.99	1.40	81.97
BR-12	83.20	84.46	1.28	83.18	3.12	81.34	2.91	81.55	3.49	80.97
BR-13S	107.15	107.87	18.38	89.49	18.99	88.88	19.00	88.87	19.14	88.73
BR-13D	107.15	107.86	22.44	85.42	23.21	84.65	23.08	84.78	23.28	84.58
OV-2	*85.14*	*85.90*	1.22	84.68	1.10	84.80	0.60	85.30	1.29	84.61
OV-4	*108.65*	*109.22*	16.94	92.28	--[6]	--[6]	--[6]	--[6]	--[6]	--[6]
OV-5	*89.73*	*90.12*	3.08	87.04	4.10	86.02	3.70	86.42	4.18	85.94
OV-7	86.46	87.20	2.88	84.32	3.24	83.96	3.07	84.13	3.21	83.99
OV-9	87.00	87.67	1.20	86.60	1.60	86.20	1.49	86.31	1.85	85.95
OV-10	87.02	88.49	1.80	86.69	2.74	85.75	2.58	85.91	2.87	85.62
OV-13	107.15	107.75	15.79	91.96	16.30	91.45	16.16	91.59	16.34	91.41
BR 08-1S[3]	82.23	83.06	1.64	81.42	2.08	80.98	1.99	81.07	2.17	80.89
BR 08-1D[3]	82.23	83.02	1.60	81.42	2.04	80.98	1.91	81.11	2.13	80.89
BR 08-2S[3]	86.27	87.03	1.90	85.13	2.30	84.73	2.18	84.85	2.24	84.79
BR 08-2D[3]	86.27	86.99	3.83	83.16	4.11	82.88	4.00	82.99	4.03	82.96
BR 08-3S[3]	85.41	86.26	2.69	83.57	3.03	83.23	2.94	83.32	3.11	83.15
BR 08-3D[3]	85.41	86.35	4.20	82.15	4.28	82.07	4.14	82.21	4.31	82.04
BR-18S[3]	85.63	86.50	5.68	80.82	7.16	79.34	7.01	79.49	7.21	79.29
BR-18D[3]	85.64	86.45	5.89	80.56	7.38	79.07	7.12	79.33	7.43	79.02

Monitoring Well	Ground Surface Elev. (m)	Top of Pipe Elev. (m)	Ground-water Depth (mbTOP) April 24, 2022	Ground-water Elev. (m) April 24, 2022	Ground-water Depth (mbTOP)December 11, 2022	Ground-water Elev. (m) December 11, 2022	Ground-water Depth (mbTOP) January 20, 2023	Ground-water Elev. (m) January 20, 2023
BR-1S	85.04	85.40	2.70	82.70	2.06	83.34	2.96	82.44
BR-1D	85.04	85.36	7.70	77.66	8.23	77.13	8.11	77.25
BR-3	89.63	89.86	3.93	85.93	5.08	84.78	4.42	85.44
BR-5S	83.95	84.39	7.25	77.14	7.72	76.67	7.59	76.80
BR-5D	83.95	84.37	7.23	77.14	8.20	76.17	7.64	76.73
BR-6S	82.06	82.79	6.47	76.32	7.52	75.27	7.25	75.54
BR-6D	82.06	82.77	6.85	75.92	7.30	75.47	6.97	75.80
BR-7S	79.69	80.76	4.99	75.77	5.75	75.01	5.49	75.27
BR-7D	79.69	80.76	4.82	75.94	5.82	74.94	5.33	75.43
BR-8S	85.17	85.62	2.27	83.35	2.75	82.87	2.40	83.22
BR-8D	85.17	85.53	2.30	83.23	2.93	82.60	2.52	83.01
BR-9S	84.80	85.61	2.05	83.56	2.75	82.86	2.23	83.38
BR-9D	84.80	85.80	8.96	76.84	9.78	76.02	9.40	76.40
BR-10	80.63	81.57	2.30	79.27	2.34	79.23	2.36	79.21
BR-11	82.38	83.37	3.68	79.69	3.77	79.60	3.72	79.65
BR-12	83.20	84.46	1.28	83.18	1.65	82.81	1.38	83.08
BR-13S	107.15	107.87	18.52	89.35	18.61	89.26	18.57	89.30
BR-13D	107.15	107.86	27.89	79.97	27.95	79.91	27.89	79.98
OV-2	*85.14*	*85.90*	0.70	85.20	0.92	84.98	0.81	85.09
OV-4	*108.65*	*109.22*	–[6]	–[6]	–[6]	–[6]	–[6]	–[6]
OV-5	*89.73*	*90.12*	2.98	87.14	2.91	87.22	2.81	87.31
OV-7	86.46	87.20	2.87	84.33	2.70	84.50	2.58	84.62
OV-9	87.00	87.67	1.18	86.62	1.20	86.61	1.14	86.66
OV-10	87.02	88.49	1.68	86.81	1.69	86.80	1.57	86.92
OV-13	107.15	107.75	18.22	89.53	18.38	89.37	18.30	89.46
BR 08-1S[3]	82.23	83.06	1.58	81.48	1.66	81.40	1.57	81.49
BR 08-1D[3]	82.23	83.02	1.55	81.47	1.70	81.32	1.54	81.48
BR 08-2S[3]	86.27	87.03	1.90	85.13	2.09	84.94	1.97	85.06
BR 08-2D[3]	86.27	86.99	3.79	83.20	4.52	82.47	4.06	82.93
BR 08-3S[3]	85.41	86.26	2.76	83.50	3.52	82.74	3.17	83.09
BR 08-3D[3]	85.41	86.35	4.34	82.01	4.88	81.47	4.84	81.51
BR-18S[3]	85.63	86.50	5.83	80.67	7.15	79.35	6.19	80.31
BR-18D[3]	85.64	86.45	5.57	80.88	7.39	79.06	6.44	80.01
OV-23	85.29	86.59	—	—	—	—	0.41	86.18
BR-23S	85.29	86.16	—	—	—	—	0.51	85.65
BR-23D	85.29	86.19	—	—	—	—	7.27	78.92

Monitoring Well	Ground Surface Elev. (m)	Top of Pipe Elev. (m)	Ground-water Depth (mbTOP) May 24, 2023	Ground-water Elev. (m) May 24, 2023	Ground-water Depth (mbTOP)September 24, 2023	Ground-water Elev. (m) September 24, 2023	Ground-water Depth (mbTOP) November 25, 2023	Ground-water Elev. (m) November 25, 2023
BR-1S	85.04	85.40	2.97	82.43	3.18	82.22	3.53	81.87
BR-1D	85.04	85.36	7.07	78.29	7.49	77.87	9.03	76.33
BR-3	89.63	89.86	4.32	85.54	4.89	84.97	5.66	84.20
BR-5S	83.95	84.39	7.51	76.88	7.76	76.63	7.76	76.63
BR-5D	83.95	84.37	7.53	76.84	8.30	76.07	8.51	75.86
BR-6S	82.06	82.79	7.07	75.72	7.60	75.19	7.74	75.05
BR-6D	82.06	82.77	6.75	76.02	7.39	75.38	7.67	75.10
BR-7S	79.69	80.76	5.30	75.46	5.89	74.87	6.02	74.74
BR-7D	79.69	80.76	5.12	75.64	5.73	75.03	5.89	74.87
BR-8S	85.17	85.62	2.43	83.47	2.66	83.24	3.42	82.48
BR-8D	85.17	85.53	2.50	83.45	3.13	82.82	3.54	82.41
BR-9S	84.80	85.61	2.21	83.40	2.44	83.17	3.09	82.52
BR-9D	84.80	85.80	8.95	76.85	9.39	76.41	10.06	75.74
BR-10	80.63	81.57	2.29	79.28	2.48	79.09	2.45	79.12
BR-11	82.38	83.37	3.46	79.91	4.04	79.33	3.78	79.59
BR-12	83.20	84.46	1.36	83.10	2.06	82.40	1.94	82.52
BR-13S	107.15	107.87	17.80	90.07	17.91	89.96	18.91	88.96
BR-13D	107.15	107.86	22.05	85.81	22.33	85.53	25.75	82.11
OV-2	*85.14*	*85.90*	0.94	84.96	1.03	84.87	1.09	84.81
OV-4	*108.65*	*109.22*	--[6]	--[6]	–[6]	–[6]	–[6]	–[6]
OV-5	*89.73*	*90.12*	3.32	86.80	3.38	86.74	4.13	85.99
OV-7	86.46	87.20	2.97	84.23	3.04	84.16	3.39	83.81
OV-9	87.00	87.67	1.43	86.24	1.52	86.15	2.22	85.45
OV-10	87.02	88.49	2.11	86.38	2.18	86.31	2.82	85.67
OV-13	107.15	107.75	17.32	90.43	17.36	90.39	18.12	89.63
BR 08-1S[3]	82.23	83.06	1.67	81.39	2.10	80.96	1.92	81.14
BR 08-1D[3]	82.23	83.02	1.65	81.37	2.08	80.94	1.87	81.15
BR 08-2S[3]	86.27	87.03	1.97	85.06	2.19	84.84	2.18	84.85
BR 08-2D[3]	86.27	86.99	4.03	82.96	4.86	82.13	4.83	82.16
BR 08-3S[3]	85.41	86.26	3.08	83.18	4.04	82.22	3.84	82.42
BR 08-3D[3]	85.41	86.35	4.63	81.72	5.52	80.83	5.44	80.91
BR-18S[3]	85.63	86.50	5.95	80.55	7.20	79.30	7.50	79.00
BR-18D[3]	85.64	86.45	6.20	80.25	7.47	78.98	7.79	78.66
OV-23	85.29	86.59	-0.63	87.22	1.12	85.47	1.29	85.30
BR-23S	85.29	86.16	1.39	84.77	3.64	82.52	4.61	81.55
BR-23D	85.29	86.19	6.67	79.52	7.85	78.34	8.30	77.89

Created by: AP

Checked by:AC

Notes:

Italics Based on the 1997 Robinson Report.

mbTOP Metres below top of pipe elevation.

d.i. data incorrect

n.m. not measured

[1] Unusually high groundwater elevation reading in 2013 at groundwater monitor OV-4 is considered to be a result of a typographical error as the elevations in subsequent monitoring sessions have returned to within normal ranges

[2] OV-9 found to be damaged in fall 2016; well replaced in summer of 2017 and surveyed in 2019. GW elevations considered unreliable between fall of 2016 and fall of 2017.

[3] BR08 and BR-18 well series surveyed in January 2019.

[4] The depth to groundwater reported at OV-4 during the fall 2018 and fall 2019 monitoring session is more consistent with historical data from monitoring well OV-5 and vice versa. While it is not possible to confirm, for the purposes of this report, it is assumed that these wells were switched. Groundwater level measurement for OV-5 has not been used in determining groundwater flow direction during the fall monitoring session.

[5] During the November 2019 monitoring session, there was some confusion in the field around the association of groundwater level measurements to groundwater monitors, resulting in it not being possible to rely on the measurements recorded at OV-4 and OV-5. As such, groundwater levels at OV-4 and OV-5 in the fall of 2019 have not been included in this report.

[6] Monitoring well OV-4 is blocked.

Table 3 – Interpretation of 2023 Groundwater Quality Data

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
OVERBURDEN WELLS				
OV-7	- barium (S, F) - boron (F) - chloride (F) - DOC (S, F) - iron (S, F) - manganese (S, F) - sodium (F) - TDS (S, F)	▪ Parameter concentrations are relatively consistent. ▪ Overall decreasing trend in alkalinity and TDS since 2000, with lowest concentration of alkalinity since 1999 in spring 2023. ▪ Previously reported decreasing trend in chloride appear to be stabilizing. ▪ Overall slight decreasing trend in boron concentrations. ▪ Concentrations of sulphate returned to non-detectable values in 2023. A recent near historical high concentration in sulphate was observed in spring 2022 ▪ Concentrations of aluminum returned to historical values in 2023 after a recent elevated concentration of aluminum was observed in December 2022. ▪ Historical minimum concentration of DOC, nickel, and sodium in spring 2023.	- ammonia (S, F) - barium (S, F) - boron (S, F) - chloride (F) - DOC (S, F) - hardness (S, F) - iron (S, F) - manganese (S, F) - potassium (S, F) - sodium (S, F) - TDS (S, F)	▪ Monitoring well OV-7 is located near the northern corner of the licensed fill area and represents the landfill leachate quality. It is located approximately 55 metres east of the northern limit of the licensed fill area. ▪ Groundwater quality at monitoring well OV-7 is interpreted to be impacted by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
OV-9	- DOC (S, F) - manganese (S) - TDS (F)	▪ Parameter concentrations of most leachate indicator parameters relatively consistent over time. ▪ Variable concentrations of total phosphorus. ▪ Previously decreasing concentration of alkalinity, barium, DOC, hardness and potassium appear to be stabilizing noting the exception of slightly elevated concentrations of alkalinity, barium, hardness and potassium in fall 2023 relative to recent concentrations. ▪ Overall increasing trend in sodium concentrations since 2008. ▪ Concentrations of sulphate appears to be stabilizing after an Increasing trend in the concentration of sulphate was observed since 2017. ▪ Historical high concentration of boron in spring and fall 2021 remained elevated in 2022 and 2023.	- boron (S, F) - DOC (S, F) - sodium (S, F)	▪ Monitoring well OV-9 is located approximately 100 metres east of the eastern licensed fill corner. ▪ Groundwater quality at monitoring well OV-9 is interpreted to be potentially impacted by landfill leachate. ▪ Monitoring well OV-9 was found to be damaged in the fall of 2016 and was repaired in the summer of 2017.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
OV-10	- barium (F) - iron (S, F) - manganese (S, F) - TDS (S, F)	▪ Overall increasing trend in chloride since 2006 has been decreasing since 2018. ▪ Overall increasing trend in sodium concentrations since 2006. ▪ Previously increasing concentrations of ammonia have been stable since historic high reported in 2019. ▪ Recent increasing trend in barium since 2010. A historic high was observed in fall 2023. ▪ Previously increasing trend in iron and potassium concentrations have remained stable. ▪ Increasing trend in manganese since 2012 has remained stable since 2017. ▪ Decreasing trend in concentration of cobalt since 2017 (previously variable to increasing trend). ▪ Historic high field conductivity reported in fall 2021 remained elevated in 2022 and 2023. ▪ Historical high detectable concentration of molybdenum in spring 2023 and fall 2023.	- ammonia (S, F) - barium (S, F) - hardness (F) - iron (F) - manganese (S, F) - sodium (S, F)	▪ Monitoring well OV-10 is located approximately 150 metres east of the eastern licensed fill corner. ▪ OV-10 is interpreted to be potentially impacted by landfill leachate however increasing trends will be monitored carefully.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
OV-23	- Iron (January) - manganese (Jan.) - TDS (January, S, F)	■ ■ Concentrations of all leachate indicator parameters will be monitored for possible long-term trends.	- boron (January) - hardness (Jan., S) - sodium (Jan., S, F)	■ Monitoring well OV-23 is installed at the south corner of CAZ Area B 125 m east of OV-9 ■ Concentrations of parameters at OV-23 are slightly below concentrations observed at OV-9 ■ OV-23 is interpreted to be downgradient or cross-gradient of OV-9 and similarly interpreted to be potentially impacted by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BEDROCK WELLS				
BR-1D (*deep*)	- barium (S, F) - boron (S, F) - chloride (S, F) - DOC (S, F) - iron (S, F) - manganese (S, F) - sodium (S, F) - TDS (S, F)	▪ Previously decreasing trends in concentrations of alkalinity, ammonia, chloride, DOC, and total phosphorus appear to be stabilizing since 2014. Concentrations of total phosphorus appear to be slightly increasing since 2017 but remain within historic ranges. ▪ Decreasing trend in field-measured conductivity. ▪ Previously reported elevated concentrations of manganese and cobalt generally returning to within historic concentrations. Concentrations are generally decreasing since about 2015, with a historic low concentration of cobalt in April 2022 and November 2023 respectively. ▪ Previously variable sulphate concentrations appear to be decreasing since 2017. Concentrations of sulphate were comparable to lower concentrations observed between 2000 and 2008. ▪ Slight increasing trend in iron concentrations since 2014 appears to be stabilizing. ▪ Barium concentrations increasing since 2016 with historic high concentration of barium reported in spring 2023. ▪ Aluminum concentrations generally increasing since 2018.	- ammonia (S, F) - barium (S, F) - boron (S, F) - chloride (S, F) - DOC (S, F) - hardness (S, F) - iron (S, F) - potassium (S, F) - sodium (S, F) - TDS (S, F)	▪ Monitoring well BR-1D is located approximately 50 metres east of the northern limit of the licensed fill area. ▪ Groundwater quality at monitoring well BR-1D is interpreted to be impacted by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR-1S (*shallow*)	- barium (S, F) - boron (S, F) - chloride (S, F) - DOC (S, F) - iron (S, F) - manganese (S, F) - sodium (S, F) - TDS (S, F)	▪ Slight increasing trend in barium concentrations over time appears to be stabilizing. ▪ Slight increasing trend in boron and sodium concentrations over time. ▪ General increasing trend in concentrations of ammonia over time with historical high concentration in Spring 2023. ▪ Previously reported increasing trend in potassium appears to be stabilizing. ▪ Increasing trend in the concentration of total phosphorus, but within historical concentrations. ▪ Concentration of magnesium slightly elevated since 2014 compared to historic concentrations. ▪ Elevated field conductivity reported in 2020 remained elevated in 2021, 2022 and 2023. ▪ Other parameter concentrations generally consistent over time.	- ammonia (S, F) - barium (S, F) - boron (S, F) - chloride (S, F) - DOC (S, F) - hardness (S, F) - iron (S, F) - phosphate (ortho) (F) - potassium (S, F) - sodium (S, F) - TDS (S, F)	▪ Monitoring well BR-1S is located approximately 50 metres east of the northern limit of the licensed fill area. ▪ Groundwater quality at monitoring well BR1S is interpreted to be impacted by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR-3	- DOC (S, F) - iron (S, F) - manganese (S, F) - TDS (S, F)	▪ Previously observed decreasing trends in alkalinity and barium concentraitons since 2010 appear to be stabilizing and/or returning to concentrations reported prior to 2010. ▪ Previously observed decreasing and stabilizing trend in concentrations of manganese appear to be slightly increasing. ▪ Overall increasing trend in hardness, ammonia, potassium and TDS concentrations. ▪ Previously increasing trend in DOC appears to be stabilizing. ▪ Increasing trend in chloride and sodium since 2009. ▪ Detectable concentration of cobalt in fall 2021 and spring of 2022, previously detected in 2016. Concentrations of cobalt returned to non-detectable concentrations in 2023. ▪ Elevated concentration of iron in both spring and fall, 2023, although within historical concentrations.	- ammonia (S, F) - boron (F) - chloride ((S, F) - DOC (S, F) - hardness (S, F) - iron (S, F) - potassium (S, F) - sodium (S, F) - TDS (S, F)	▪ Monitoring well BR-3 is located approximately 120 metres south of the eastern limit of the licensed fill area. ▪ BR-3 has previously been reported as being hydraulically up-gradient of the landfill site and interpreted not to be impacted by landfill leachate. BR-3 is now interpreted as being hydraulically cross-gradient or slightly downgradient of a small portion of the landfill. Due to recent increasing trends of some leachate indicator parameters, it is possible that BR-3 may be possibly impacted by landfill leachate. This interpretation and increasing trends will continue to be monitored carefully in the future.
BR-5D (*deep*)	- barium (S) - iron (S, F) - manganese (S, F) - TDS (S, F)	▪ Parameter concentrations are generally consistent with time with the exception of some variability in ammonia and historic iron concentrations. ▪ Concentration of DOC and TDS generally decreasing.	- ammonia (S) - DOC (S) - hardness (F) - iron (S, F)	▪ Monitoring well BR-5D is located approximately 250 metres northeast of the landfill, immediately adjacent to Usborne Street. ▪ Groundwater quality at monitoring well BR-5D is interpreted to be impacted by road salt, the wood waste deposited in CAZ area B, and/or by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR-5S (*shallow*)	- iron (F) - manganese (F) - TDS (F)	▪ Parameter concentrations are generally consistent with some variability in historic concentrations of iron, ammonia and total phosphorus. Concentrations of phosphorus more variable since about 2019. ▪ Slight increasing trend in sodium and chloride with highest concentration of chloride in spring 2023. ▪ No detectable concentrations of dissolved reactive phosphorus were recorded in 2023 after adetectable concentration of dissolved reactive phosphorous in fall of 2022.	- hardness (S) - sodium (F)	▪ Monitoring well BR-5S is located approximately 250 metres northeast of the landfill, immediately adjacent to Usborne Street. ▪ Groundwater quality at monitoring well BR5S is interpreted to be impacted- by road salt, the wood waste deposited in CAZ area B, and/or by landfill leachate.
BR-6D (*deep*)	- barium (F) - DOC (F) - iron (S, F) - manganese (S, F) - TDS (S, F)	▪ Parameter concentrations are generally consistent with time. ▪ Decreasing trend in concentrations of sulphate, TDS and cobalt. Historical low concentrations of cobalt (spring 2023) ▪ DOC concentrations (previously interpreted to be decreasing) appear to be stabilizing. ▪ Historic low field conductivity reported in fall 2021, returned to within historical levels in 2022 and 2023	- ammonia (S, F) - barium (F) - DOC (F) - iron (S, F) - sodium (S, F)	▪ Monitoring well BR-6D is located approximately 270 metres northeast of the landfill, immediate adjacent to Usborne Street. ▪ Groundwater quality at monitoring well BR6D is interpreted to be impacted by the wood waste deposited in CAZ area B, road salt and/or by landfill leachate.
BR-6S (*shallow*)	- manganese (S, F) - TDS (S)	▪ Parameter concentrations are generally consistent with time. ▪ Previously reported decreasing trend in concentrations of DOC and TDS appear to be stabilizing. ▪ Slight increasing trend in concentrations of barium and potassium appears to be stabilizing.	- hardness (S, F)	▪ Monitoring well BR-6S is located approximately 270 metres northeast of the landfill, immediately adjacent to Usborne Street. ▪ Groundwater quality at monitoring well BR6S is interpreted to be impacted by the wood waste deposited in CAZ area B, road salt and/or by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR-7D (*deep*)	- iron (S, F) - manganese (S, F) - TDS (S, F)	▪ Parameter concentrations are generally consistent with time. ▪ Variable iron concentrations over time. ▪ Previously reported decreasing concentrations of magnesium since 2015 appear to be stabilizing. ▪ Slight overall decreasing trend in sulphate concentrations. ▪ Previously reported historic low measurement of field conductivity in spring and fall 2021 returned to within historic ranges in 2022 and 2023.	- chloride (S) - hardness (S) - iron (S, F) - manganese (S, F) - Sodium (S, F) - TDS (S)	▪ Monitoring well BR-7D is located approximately 400 metres north of the northern limit of the licensed fill area, immediately adjacent to Usborne Street. ▪ Groundwater quality at monitoring well BR-7D is interpreted to be impacted by road salt, wood waste or other industrial activities on the CAZ lands, but not by landfill leachate.
BR-7S (*shallow*)	- iron (F) - manganese (F) TDS (S, F)	▪ Parameter concentrations are generally consistent with time. ▪ Variable manganese and iron concentrations over time. ▪ Decreasing trend in sulphate and TDS concentrations over time. ▪ Previously reported decreasing trend in DOC shows appears to be stabilizing. ▪ Very slight increasing trend of sodium concentrations. ▪ Previously reported historic low measurement of field conductivity in spring and fall 2021 returned to within historic levels in 2022 and 2023. ▪ Detectable concentration of dissolved reactive phosphorus in spring 2022 returned to concentrations below the method detection limit in 2023.	- chloride (S) - hardness (S) - manganese (F) - sodium (S, F)	▪ Monitoring well BR-7S is located approximately 400 metres north of the northern limit of the licensed fill area, immediately adjacent to Usborne Street. ▪ Groundwater quality at monitoring well BR-7S is interpreted to be impacted by road salt, wood waste or other industrial activities on the CAZ lands, but not by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR-8D (*deep*)	- barium (S, F) - DOC (S, F) - iron (S, F) - manganese (S, F) - TDS (S, F)	▪ Some variability in ammonia, and total phosphorus concentrations. ▪ Slight increasing trend in alkalinity and hardness (magnesium), with historic high concentrations reported in 2023 (historic high concentrations also reported in 2020, 2021 and 2022). ▪ Increasing trend in concentrations of chloride appears to have resumed. ▪ Slight increasing trend in concentrations of barium, and sodium over time with historic high concentration of barium (discounting outlier in barium concentrations from 2002) in fall 2023. ▪ Previously reported increasing trend in the concentration of potassium over time appears to be stabilizing.	- barium (S, F) - boron (S, F) - DOC (S, F) - hardness (S, F) - iron (S, F) - TDS (S, F)	▪ Monitoring well BR-8D is located approximately 150 metres north of the northern limit of the licensed fill area. ▪ Groundwater quality at monitoring well BR-8D is interpreted to be impacted by the wood waste deposited in CAZ areas A and B, and/or by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR-8S (*shallow*)	- DOC (S, F) - iron (F) - manganese (S, F) - TDS (S, F)	▪ Parameter concentrations are generally consistent to slightly variable over time. ▪ Historic high concentration of alkalinity in fall 2023 with a slight increasing trend since 2011. ▪ Increasing trend in hardness (since 2014), calcium (since 2019) and magnesium (since 2019). Historical high concentration of hardness, calcium and magnesium in spring and fall 2022 and 2023, respectively. ▪ Possible increasing trend in concentrations of chloride, and field measured conductivity. ▪ Slight decreasing trend in DOC over time. ▪ Concentrations of sulphate were elevated in 2022 and 2023, with historical high concentration of sulphate reported in spring 2022. ▪ Increasing trend in sodium concentrations since 2017 with historical high reported in fall 2023. ▪ Concentrations of iron have been low or non-detect in spring monitoring sessions compared to the same year fall monitoring session since 2017. ▪ Historical high of conductivity in fall 2022 and fall 2023.	- DOC (S, F) - hardness (S, F) - iron (F) - TDS (S, F)	▪ Monitoring well BR-8S is located approximately 150 metres north of the northern limit of the licensed fill area. ▪ Groundwater quality at monitoring well BR-8S is interpreted to be impacted by the wood waste deposited in CAZ areas A and B, and/or by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR-9D (*deep*)	- boron (S, F) - DOC (S, F) - iron (F) - manganese (F) - TDS (S, F)	▪ Parameter concentrations are generally consistent to slightly variable. ▪ Generally increasing trend in concentrations of chloride and sodium. ▪ Previously reported decreasing trend in concentrations of DOC since 2009 appears to be stabilizing. ▪ Slight increasing trend in concentrations of nickel between 2014 and 2020 appears to be stabilizing. ▪ Concentrations of TDS returned to typical historical concentrations in 2023 after historical low concentration in 2022. ▪ Concentration of dissolved reactive phosphorus return to non-detectable concentrations in 2023 after detectable concentration of dissolved reactive phosphorus observed in fall 2022.	- boron (S, F) - DOC (S, F) - hardness (S, F) - potassium (S) - TDS (S, F)	▪ Monitoring well BR-9D is located approximately 150 metres northeast of the landfill. ▪ Groundwater quality at monitoring well BR-9D is interpreted to be impacted by the wood waste deposited in CAZ area B, and/or by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR-9S (*shallow*)	- DOC (S, F) - iron (S, F) - manganese (S, F) - TDS (S, F)	▪ Parameter concentrations are generally consistent to slightly variable over time. ▪ Historical high concentrations of sulphate in spring 2018, spring 2020, spring 2021 and spring 2023. Sulphate concentrations generally consistent prior to 2012; since 2012, concentrations are generally higher in the spring and low in the fall, and there is an increasing trend. ▪ Following a historical high concentration of chloride in 2020, significantly elevated historical high concentration of chloride reported in fall 2021. Chloride concentrations reported in fall 2022 and fall 2023 were below the reported concentration in fall of 2021, but remained elevated compared to historic range of chloride concentrations. ▪ Historical high concentration of hardness in fall 2023 (calcium and magnesium slightly elevated). ▪ Historical low concentration of boron in spring 2022. In 2023 concentrations remained comparable to low values observed in 2022. ▪ High field conductivity in spring 2023 relative to recent historic values.	- ammonia (F) - DOC (S, F) - hardness (S, F) - iron (S, F) - manganese (S, F) - TDS (S, F)	▪ Monitoring well BR-9S is located approximately 150 metres northeast of the landfill. ▪ Groundwater quality at monitoring well BR9S is interpreted to be impacted- by the wood waste deposited in CAZ area B, and/or by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR-10	- DOC (F) - TDS (F) - iron (S, F) - manganese (S, F)	▪ Parameter concentrations are generally consistent over time. ▪ Slight decreasing trend in concentrations of TDS. ▪ Concentrations of aluminum were detected in the spring and fall of 2020 and 2021, and the spring of 2022 which had not previously been detected since 2007.	- ammonia (S, F) - boron (S) - DOC (F) - iron (S, F) - sodium (S, F)	▪ Monitoring well BR-10 is located approximately 550 metres northwest of the northern limit of the licensed fill area, immediately adjacent to Usborne Street and near Braeside boat launch. ▪ Groundwater quality at monitoring well BR-10 is interpreted to be impacted by road salt, wood waste or other industrial activities on the CAZ lands, but not by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR-11	- None	▪ Parameter concentrations are generally consistent to variable over time, with some parameters having higher concentrations reported in the fall compared to spring in recent years. ▪ Following a historical high or elevated concentrations of cobalt, manganese, and iron in fall 2018, concentrations remained elevated in the fall compared to spring. New historical high concentrations for iron and manganese were reported in fall 2021. Concentrations for all three parameters were non-detect in 2022 and 2023. ▪ Previously reported historical high concentration of ammonia in fall 2019 returned to historical concentrations in the spring of 2020 but was elevated in the fall of 2020 and 2021. Concentrations of ammonia in 2022 and 2023 returned to within typical historic concentrations. ▪ Historical high concentration of chloride in spring 2021, returned to within historic ranges in 2022 and 2023. ▪ Historical high concentration of sulphate in fall 2021 returned to within historic concentrations in 2022 and 2023. ▪ Concentrations of TDS returned to historic values in 2023. A historical low concentration of TDS was observed in spring 2022. ▪	- DOC (S)	▪ Monitoring well BR-11 is located approximately 320 metres north of the northern limit of the licensed fill area. ▪ Groundwater quality at monitoring well BR-11 is interpreted to be impacted by road salt, wood waste or other industrial activities on the CAZ lands, but not by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR-12	- DOC (S, F) - iron (S, F) - manganese (S, F)	▪ Parameter concentrations are generally consistent over time with some variability in DOC, sulphate, ammonia and total phosphorus concentrations. ▪ Historical high concentration of ammonia reported in spring 2021 returned to within historical ranges in 2022 and 2023. ▪ Previous decreasing trends in concentrations of boron and cobalt show signs of stabilizing with higher concentrations reported in the fall compared to spring. ▪ Concentration of alkalinity elevated in fall of 2022 and 2023 compared to recent years (since 2018).	- DOC (S, F) - hardness (F) - Manganese (S, F)	▪ Monitoring well BR-12 is located approximately 230 metres northeast of the landfill. ▪ Groundwater quality at monitoring well BR-12 is interpreted to be impacted by the wood waste deposited in CAZ area B, road salt, and/or by landfill leachate.
BR 08-1D	- barium (S, F) - DOC (S, F) - iron (S, F) - manganese (F) - TDS (S, F)	▪ Variable concentrations of total phosphorous and chloride, with historical high concentration of chloride in fall 2021 and fall of 2022. Concentrations in 2023 remained elevated but within historical ranges. ▪ Historical high concentrations of alkalinity, conductivity, hardness, calcium and magnesium reported in fall 2022 and spring 2023. ▪ Previous variable iron concentrations over time have stabilized in recent years. ▪ Historical high concentration of ammonia in spring 2021 and spring 2022. Concentrations remained elevated in 2023 but within historical ranges. ▪	- ammonia (F) - barium (S, F) - boron (S, F) - DOC (S, F) - hardness (S, F) - iron (S) - potassium (S, F) - sodium (S, F) - TDS (S, F)	▪ Monitoring well BR 08-1D is located approximately 200 metres north of the landfill. ▪ Groundwater quality at monitoring well BR 08-1D is interpreted to be impacted by the wood waste deposited in CAZ area A, and/or by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR 08-1S	- barium (S, F) - DOC (S, F) - iron (S, F) - manganese (S, F) - TDS (S, F)	▪ Very slight increasing trend in alkalinity and ammonia over time with historical high concentration of alkalinity in spring 2021 and both monitoring events in 2023. Recent historic high concentration of ammonia in spring 2022. ▪ Slight increasing trend in concentrations of hardness, conductivity, and calcium with historical high conductivity and hardness in fall 2023. Historical high concentration of calcium and magnesium in fall 2022 and fall 2023. ▪ Decreasing trend in concentrations of total phosphorus since 2014 with historical low concentration in spring 2023. ▪ Concentrations of sodium appear to be slightly increasing. ▪ Historical high measurement of lab conductivity in spring 2021 and all monitoring events in 2022 and 2023. ▪ Historical high concentration of barium in fall of 2021 increased to another historical high in fall 2022 that was repeated in fall 2023. ▪ Historical high concentration of potassium in fall 2022 repeated in fall 2023. ▪ Recent historical high concentrations of DOC, iron and nickel in fall 2022. Concentrations remained elevated in 2023.	- ammonia (S, F) - barium (S, F) - boron (S, F) - DOC (S, F) - hardness (S, F) - potassium (S, F) - sodium (F) - TDS (S, F)	▪ Monitoring well BR 08-1S is located approximately 200 metres north of the landfill. ▪ Groundwater quality at monitoring well BR 08-1S is interpreted to be impacted by the wood waste deposited in CAZ area A, and/or by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR 08-2D	- DOC (S, F) - iron (S, F) - manganese (S, F) - TDS (S, F)	▪ Parameter concentrations are generally consistent over time. ▪ Overall decreasing trend in concentrations of barium since 2012 are stabilizing. ▪ Ammonia concentrations returned to values comparable to historical values after comparably low concentrations were observed in 2022. ▪ Increasing trend in concentrations of chloride since 2011. ▪ Historical high lab and field conductivity in fall 2021 returned to within historic ranges in 2022 and 2023. ▪ Historical high concentration of dissolved reactive phosphorous in spring 2021 returned to non-detectable concentrations in 2022 and 2023. ▪ Historical high concentration of calcium in fall 2021, repeated in spring 2022 and fall 2023. Concentrations have been consistently elevated since fall 2019. ▪	- boron (S, F) - DOC (S, F) - hardness (S, F)	▪ Monitoring well BR 08-2D is located approximately 50 metres northeast of the landfill. ▪ Groundwater quality at monitoring well BR 08-2D interpreted to be impacted by the wood waste deposited in CAZ area B, and/or by landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR 08-2S	- DOC (S, F) - iron (F) - manganese (F) - TDS (F)	▪ Previously observed decreasing trend in concentrations of ammonia and manganese have stabilized (all concentrations below detection limit with the exception of manganese in fall 2023). ▪ Historical low concentration of boron and potassium in spring 2022. Concentrations observed in 2023 returned to values comparable to historical values. ▪ Historical low concentration of sodium in fall 2021. Observed concentrations have increased each subsequent monitoring event between fall 2021 and fall 2023. ▪ Historic high concentration of chloride, sulphate, TDS, aluminum, calcium, lead, manganese and nickel observed in fall 2023. ▪ Detectable concentration of cobalt and iron observed in fall 2023 after several years of non-detectable vales.	- DOC (S, F) - hardness (F) - sodium (F) - TDS (F)	▪ Monitoring well BR 08-2S is located approximately 50 metres northeast of the landfill. ▪ Groundwater quality at monitoring well BR 08-2S is interpreted to be impacted by the wood waste deposited in CAZ area B, and/or by landfill leachate.
BR 08-3D	- iron (F) - manganese (F)	▪ Parameters are generally consistent over time. ▪ Historical low concentrations of total phosphorus observed in fall 2023. ▪ Decreasing trends in concentrations of DOC and TDS (historical low concentration in fall 2022) shows signs of stabilizing.	- none	▪ Monitoring well BR 08-3D is located approximately 100 metres northeast of the landfill. ▪ Groundwater quality at monitoring well BR 08-3D is interpreted to be impacted by wood waste or other industrial activities on the CAZ lands and potentially landfill leachate.

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR 08-3S	- iron (S, F) - manganese (S)	▪ Parameters are generally consistent over time. ▪ Concentrations of molybdenum generally increasing over time. Historical high concentration of molybdenum in fall of 2020 and fall 2021 returned to within historic concentrations in 2022 and 2023. ▪ Previously reported increasing trend in concentrations of manganese appears to be stabilizing. ▪ Slight decreasing trend in concentrations of DOC and TDS (historical low concentration of TDS in spring 2022). ▪ Historical low concentration of iron in fall 2021 returned to within historic concentrations in 2022 and 2023. ▪ Historical low concentration of boron in spring 2022. Concentrations of boron are typically lower during spring monitoring events compared to the fall. ▪ Detectable concentration of aluminum in spring 2022. Values returned to non-detectable concentrations in 2023.	- none	▪ Monitoring well BR 08-3S is located approximately 100 metres northeast of the landfill. ▪ Groundwater quality at monitoring well BR 08-3S is interpreted to be impacted by wood waste or other industrial activities on the CAZ lands and potentially landfill leachate.
BR-23D	- iron (S, F) - manganese (S, F) - TDS (S) - sodium (Jan., S, F)	▪ Concentrations of all leachate indicator parameters will be monitored for possible long-term trends.	-DOC (Jan., S, F) -Sodium (Jan., S, F)	▪ Monitoring well OV-23 is installed at the south corner of CAZ Area B 250 m east of BR-3

Monitoring Well	Parameters Exceeding or Outside Trigger Values in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions* in 2023	Hydrogeological Interpretation
BR-23S (no sample Jan. 2023)	- iron (S, F) - manganese (S, F)	■ Concentrations of all leachate indicator parameters will be monitored for possible long-term trends. ■	- none	■ Monitoring well OV-23 is installed at the south corner of CAZ Area B 250 m east of BR-3

Notes:
ODWQS – Ontario Drinking Water Quality Standards, Objectives and Guidelines (Ministry of the Environment, 2003).

Prepared by: AP
Checked by: JD

* Background conditions are represented by current and historical water quality at OV-13 in the overburden and at BR-13S and BR-13D in the bedrock, as presented in Sections 8.2.1 and 8.2.2, respectively. Alkalinity is not included.

S = Spring monitoring session, May, 2023
F = Fall monitoring session, November, 2023

Table 4 – Interpretation of 2023 Surface Water Quality Data

Surface Water Sampling Location	Parameters Outside PWQO Trigger Concentrations in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions[1] in 2023	Interpretation
SW-1	– boron (S) – – alkalinity (M, S[3], D[3])	■ Parameter concentrations relatively consistent over time except as noted. ■ Variable concentrations of unionized ammonia and total phosphorus over time. ■ Previously reported decreasing trend in DO since 2005 is stabilizing. ■ Previous slight decreasing trend in TDS since 2007 appears to be stabilizing. ■ Overall slight increasing trend in sodium appears to be stabilizing. ■ Historical high concentration of ammonia reported in fall of 2020 returned to within historic concentrations in 2021 but was slightly elevated in the spring of 2022. Concentrations in 2023 were below recent values. ■ TSS and dissolved aluminum were elevated compared to recent historical concentrations in the summer of 2021. Concentrations of dissolved aluminum were within typical historic ranges in 2022 and 2023. Recent historical high concentration of total phosphorus in summer 2022. Concentrations returned to values comparable to recent historical values in 2023. ■ Concentration of iron (total and dissolved) was elevated compared to recent data in summer of 2022. Concentrations returned to values comparable to historical values in 2023. ■ Concentration of potassium slightly elevated in spring 2022. Concentrations returned to values comparable to historical values in 2023.	– barium (M, S, D) – boron (M, S) – manganese (M, S, D) – potassium (M) –	■ Surface water station SW-1 is located in the wetland downstream of the landfill. ■ SW-1 is located approximately 480 metres downstream of the landfill and is interpreted to possibly be impacted by the landfill or other industrial activities. ■ SW-1 represents one of two surface water points of compliance for the site.
SW-2	– unionized ammonia (M) – alkalinity (M, S[3], D[3])	■ Parameter concentrations relatively consistent over time. ■ Decreasing trend in DO from to 2005-2016 appears to be stabilizing. ■ Variable iron, unionized ammonia, total phosphorus, sulphate and manganese concentrations. ■ Possible increasing trend in concentrations of boron and potassium (recent historical high in spring 2022). In general,	– barium (M, S, D) – boron (M) – manganese (S) – potassium (S, D) – unionized ammonia (M) –	■ Surface water station SW-2 is located in the wetland downstream of the landfill. ■ SW-2 is located approximately 250 metres downstream of the landfill and is interpreted to be impacted by the landfill and possibly by other industrial activities.

Surface Water Sampling Location	Parameters Outside PWQO Trigger Concentrations in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions[1] in 2023	Interpretation
		highest concentration of boron in recent years has occurred in the spring. ■ Historical high concentration of sulphate in fall 2022. Concentrations returned to values comparable to historical values in 2023. ■ Decreasing trend in TDS concentrations since 2010 may be stabilizing. ■ Historical high concentration of ammonia in spring 2021 returned to within historical concentrations in 2022 and 2023 (though was slightly elevated in the spring). ■ Recent historical low concentration of barium in fall 2022. Concentrations returned to values comparable to historical values in 2023. ■ First detectable concentration of mercury and first exceedance of the PWQO in spring 2021. Mercury was non-detect in 2022 and 2023.		■ SW-2 represents one of two surface water points of compliance for the site.
SW-11	– unionized ammonia (S) – alkalinity (S[3], D[3])	■ Parameter concentrations relatively consistent over time. ■ Previously reported increasing trend in chloride and sodium has stabilized. ■ Variable iron concentrations. ■ Recent elevated concentration of barium near historical high concentration level in fall 2022. Concentrations remained elevated in 2023. ■ Historical high concentration of magnesium reported in summer and fall 2021, with similar concentrations in the summer and fall of 2022 and 2023. ■ Historical high field conductivity measured in fall 2021 returned to within historic concentrations in 2022 and 2023 Historical high concentration of sulphate reported in fall 2021 and similar high concentration in fall 2023. ■ Concentrations of dissolved aluminum in 2022 and 2023 were notably low compared to recent historical concentrations. ■ Historical low concentration of DOC reported in fall 2019, fall 2020,fall 2021 and fall 2023.	– unionized ammonia (S) – barium (M, S, D)	■ Surface water station SW-11 is located in the ephemeral/intermittent stream upgradient of the landfill and downstream of River Road. ■ SW-11 is located upgradient approximately 260 metres southeast of the landfill, has similar water quality to SW-10 (which is the surface water background monitoring location) and is interpreted to not be impacted by the landfill.

Surface Water Sampling Location	Parameters Outside PWQO Trigger Concentrations in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions[1] in 2023	Interpretation
		■ First detectable concentration of mercury and first exceedance of the PWQO in spring 2021. Mercury was non-detect in 2022 and 2023.		

Surface Water Sampling Location	Parameters Outside PWQO Trigger Concentrations in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions[1] in 2023	Interpretation
SW-12	– unionized ammonia (S) – alkalinity (M, S[3], D[3])	■ Parameter concentrations relatively consistent over time. ■ Variable iron concentrations. ■ Slight decreasing trend in concentrations of DOC. ■ . ■ Nitrate slightly elevated in fall of 2022 and fall 2023. ■ Concentrations of dissolved aluminum in 2022 and 2023 were notably low (non-detect) compared to recent historical concentrations. ■ Historical high concentration of barium, calcium and magnesium in fall 2023. ■ Slightly elevated concentration of potassium in fall 2023. ■ Historical low DO in summer 2021 returned to within historical concentrations in 2022 and 2023. ■ Historical high concentration of mercury in spring 2021 (also exceeding the PWQO). Previous detectable concentration was in spring 2001. Mercury was non-detect in 2022 and 2023. ■ First detectable concentration of hexavalent chromium in summer 2021 (non-detect in fall 2021). Hexavalent chromium was non-detect in 2022 and 2023.	– unionized ammonia (S) – barium (M, S, D) –	■ Surface water station SW-12 is located in the ephemeral/intermittent stream near the landfill and adjacent to Usborne Street. ■ SW-12 is located approximately 400 metres from the landfill, has similar water quality to SW-10 (which is the surface water background monitoring location) and is interpreted to not be impacted by the landfill.
SW-18[2]	– -unionized ammonia (D) – iron (M)	■ Parameter concentrations relatively consistent over time with the exception of an inexplicable spike in concentrations in December 2003. ■ Decreasing trend in sulphate since 2015 appears to be stabilizing. ■ Historic high concentration of unionized ammonia in spring 2020 remained elevated in spring 2021 and fall 2021, but concentrations were more typical in 2022. ■ Historical high concentration of ammonia nitrogen in fall 2021. Ammonia concentrations have been significantly higher in 2020 and 2021, and were elevated in fall 2022. ■ Detectable concentration of lead and zinc in fall 2021 were detected again in spring 2022. Previously detected in spring 2018 and summer 2016, respectively. Neither parameter was detected in 2023. ■ Elevated alkalinity in fall 2022. Parameter returned to values comparable to historical values in 2023.	– alkalinity (S,D) - BOD (S) - hardness (M, D) - nitrite (M, S, D) – potassium (S)	■ Surface water station SW-18 is located in the Ottawa River downgradient of the landfill near Braeside boat launch. ■ SW-18 is interpreted to not be impacted by the landfill.

Surface Water Sampling Location	Parameters Outside PWQO Trigger Concentrations in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions[1] in 2023	Interpretation
		■ First detectable concentration of hexavalent chromium in fall 2022. Concentrations returned to non-detectable vales in 2023 ■		

Surface Water Sampling Location	Parameters Outside PWQO Trigger Concentrations in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions[1] in 2023	Interpretation
SW-19 (location was dry during September)	– unionized ammonia (M) – alkalinity (M, D[3])	■ Parameter concentrations relatively consistent over time. ■ Variable iron, manganese, and sulphate. ■ Slight decreasing trend in concentrations of TDS. ■ Lead concentrations were non-detectable in 2022 and 2023 after historical high concentration of lead in summer 2021. ■ Detectable concentration of zinc in fall 2022 and fall 2023.	– unionized ammonia (M) – barium (M, D) – boron (M) – potassium (M) – –	■ Surface water station SW-19 is located in a tributary, approximately 5 metres upstream of the Ottawa River. ■ SW-19 is interpreted to be possibly impacted by landfill leachate.
SW-21	- alkalinity (M, S[3], D[3])	■ Parameter concentrations relatively consistent over time. ■ Previously interpreted decreasing trend in DO since 2005 appears to be stabilizing. ■ Variable iron, total phosphorus, manganese, and sulphate. ■ Elevated concentration of unionized ammonia in spring 2022. Parameter returned to values comparable to historical values in 2023. ■ Elevated concentration of total phosphorous in fall 2021 returned to within historical concentrations in spring 2022 and 2023. ■ Historical low concentration of DOC in 2021 returned to within historical concentrations in spring 2022 and 2023.	– – barium (M, S, D) – -boron (S) –	■ Surface water station SW-21 is located in the wetland downstream of the landfill. ■ SW-21 is located approximately 400 metres downstream of the landfill and is interpreted to possibly be impacted by the landfill and/or industrial activities.
SW-22 (location was dry during December)	– alkalinity (M, S[3])	■ Parameter concentrations relatively consistent over time. ■ Variable unionized ammonia, iron, manganese and nitrate. ■ Previously reported decreasing trend in DO since 2005 appears to be stabilizing. ■ Recent high concentration of sulphate in spring 2022. Parameter returned to values comparable to historical values in 2023. ■ . ■ Detectable concentration of mercury in spring 2021 (also exceeding PWQO). Previous detectable concentration in June 1997. Mercury was non-detect in 2022 and 2023.	– barium (M, S) – boron (M) – potassium (M, S) – manganese (M, S)	■ Surface water station SW-22 is located in the wetland downstream of the landfill. ■ SW-22 is located approximately 280 metres downstream of the landfill and is interpreted to possibly be impacted by the landfill and/or industrial activities.

Surface Water Sampling Location	Parameters Outside PWQO Trigger Concentrations in 2023	Trend(s)	Leachate Indicator Parameters Exceeding Background Conditions[1] in 2023	Interpretation
SW-23 (location was dry during May, September, and December)	- No sample	■ Location has been dry since 2004, with the exception of spring 2016, 2020 and 2022; therefore, it is not possible to determine trends in parameter concentrations at this location. ■ Historical data suggests generally consistent concentrations with the exception of a decrease in December 2003. Parameter concentrations in spring 2016, 2020 and 2022 are generally within historical ranges or slightly lower. ■ Historical low concentration of dissolved oxygen in summer 2022.	– -No sample	■ Surface water station SW-23 is in the wetland downgradient of the landfill. ■ SW-23 represents an alternate point of compliance when flow at SW-1 is obstructed. ■ SW-23 is located approximately 650 metres downstream of the landfill and is historically interpreted to possibly be impacted by the landfill or industrial activities.
SW-26[2]	- none	■ Parameter concentrations relatively consistent over time. ■ Historical high alkalinity in fall 2022. Alkalinity remained elevated in spring of 2023 and returned to values comparable to historical values in summer and fall 2023. ■ Previously reported historical high concentrations of unionized ammonia and ammonia nitrogen in 2020 remained slightly elevated in 2021 and 2022. Parameter returned to values comparable to historical values in 2023. ■ First detectable concentration of mercury and first exceedance of the PWQO in spring 2021. Mercury was non-detect in 2022 and 2023.	– n/a	■ Surface water station SW-26 is located in the Ottawa River approximately 400 m upstream of station SW-18 (near Braeside boat launch). ■ SW-26 is interpreted to not be impacted by the landfill.

Notes:

Prepared by: AP

Checked by: PLE

PWQO – Provincial Water Quality Objectives (Ministry of the Environment, 1994b).

[1] Background conditions are represented by maximum current and historical water quality at surface water station SW-10 as presented in Section 10.3. Alkalinity is not included.

[2] Background conditions determined by current and historical water quality at surface water station SW-26 (background station for Ottawa River).

[3] While the concentration of alkalinity was outside of the trigger concentration at this location during this monitoring session, it should be noted that the concentration of alkalinity at this location could not be assessed with respect to the PWQO concentration (based on 75% of the concentration of alkalinity at the background location), as the background location (SW-10) was dry during this monitoring session.

M = May 2023

S = September 2023

D = December 2023

Table 5 – Proposed 2024 Groundwater Monitoring Program

1.0 MONITORING SESSIONS

1.1 Water Level and Quality Monitoring

Spring (April/May)

Fall (October/November)

2.0 GROUNDWATER SAMPLING LOCATIONS

2.1 Sampling Locations

OV-7, OV-9, OV-10, OV-13, OV-23

BR-1S, BR-1D, BR-3, BR-5S, BR-5D, BR-6S, BR-6D, BR-7S, BR-7D, BR-8S, BR-8D, BR-9S, BR-9D, BR-10, BR-11, BR-12, BR-13S, BR-13D, BR08-1S, BR08-1D, BR08-2S, BR08-2D, BR08-3S, BR08-3D, BR-23S, BR-23D

2.2 Field QA/QC

two duplicates per sampling event

one field blank for VOCs on years when VOCs are evaluated (next scheduled sampling date is 2024)

3.0 FIELD MEASURED PARAMETERS

groundwater levels in all accessible monitoring wells

temperature, conductivity, pH

4.0 LABORATORY MEASURED PARAMETERS

calcium, magnesium, sodium, potassium, aluminum, barium, beryllium, boron, cadmium, chromium, cobalt, iron, lead,

manganese, mercury, molybdenum, nickel, selenium, silver, vanadium, zinc

hardness (calculated from laboratory calcium and magnesium analyses)

alkalinity, TDS, chloride, sulphate

ammonia, total phosphorus, DOC

dissolved reactive phosphorus

VOCs at OV-7 and BR-1S every 5 years (next scheduled sampling date is 2024)

Special Note for Parameters with Established Ontario Drinking Water Quality Standards, Objectives and Guidelines
All laboratory analyses on groundwater samples will be performed by a private analytical laboratory and the method detection limits (MDLs) for the specific analyses should be commensurate with the standards established in the Provincial Water Quality Objectives or the Ontario Drinking Water Quality Standards, Objectives and Guideline, whichever is lower.

Table 6 – Proposed 2024 Surface Water Sampling Program

1.0 MONITORING SESSIONS

1.1 Water Quality Monitoring

Spring (April/May)

Summer (July/August)

Fall (October/November)

2.0 SURFACE WATER SAMPLING STATIONS

2.1 Sampling Stations

Ephemeral/Intermittent Stream to the South of the Site: SW-10, SW-11, SW-12

Wetland North of the Site: SW-1, SW-2, SW-21, SW-22, SW-23

Ottawa River: SW-18, SW-19, SW-26

2.2 Field QA/QC

one duplicate per sampling event

3.0 FIELD MEASURED PARAMETERS

temperature, conductivity, pH, dissolved oxygen

flow measurements or description of flow conditions

representative photographs

4.0 LABORATORY MEASURED PARAMETERS

calcium, magnesium, sodium, potassium, aluminum, barium, beryllium, boron, cadmium, chromium (hexavalent and total), cobalt, iron (total and dissolved), lead, manganese, mercury, molybdenum, nickel, selenium, silver, vanadium, zinc

hardness (calculated from laboratory calcium and magnesium analyses)

alkalinity, TDS, chloride, sulphate, BOD, nitrate, TSS

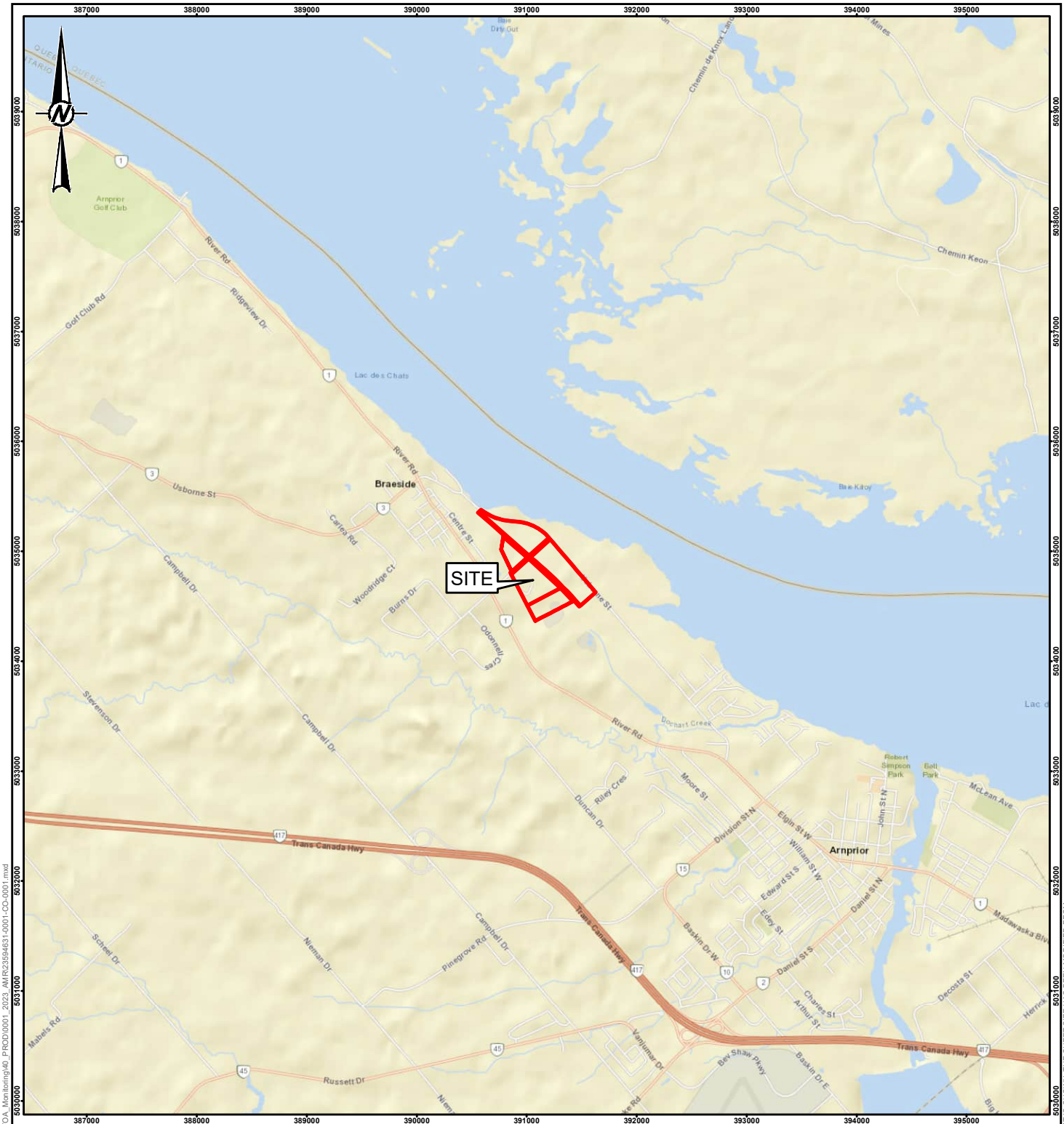
ammonia, total phosphorus, DOC

unionized ammonia (calculated from laboratory ammonia and field temperature and pH)

chromium III (calculated from laboratory total and hexavalent chromium)

Special Note for Parameters with Established Provincial Water Quality Criteria
All laboratory analyses on surface water samples will be performed by a private analytical laboratory and the method detection limits (MDLs) for the specific analyses should be commensurate with the standards established in the Provincial Water Quality Objectives or the Ontario Drinking Water Standards/Objectives, whichever is lower.

Figures



LEGEND

SITE

0 500 1,000 2,000

1:50,000 METRES

NOTE(S)

ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. IMAGERY CREDITS: SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N

CLIENT

CORPORATION OF THE TOWN OF ARNPRIOR

PROJECT

2023 SITE DEVELOPMENT, OPERATIONS AND ENVIRONMENTAL MONITORING ARNPRIOR WASTE DISPOSAL SITE

TITLE

KEY PLAN

CONSULTANT

wsp

YYYY-MM-DD	2024-03-13
DESIGNED	ETB
PREPARED	ABD/BR
REVIEWED	ALC
APPROVED	PLE

PROJECT NO.	PHASE	REV.	FIGURE
23594631	0001	A	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:

25mm

0

Path: S:\Clients\Township_of_Mcnab\Braeside\Arnprior_Waste_Disposal\99_PROJ\23594631_TOA_Monitoring\40_PROD\0001_2023_AMR\23594631-0001-CO-0001.mxd

OTTAWA RIVER

TEMBEC

ATTENUATION ZONE

COUNTY ROAD No 3 - USBORNE STREET

TEMBEC
PART 4 PLAN 49R-12219

BM #805168

SW-12

SW-19

TEMBEC

BR-11

SW-20

BR-7S, BR-7D
TBM #7

CAZ
AREA A

BR-8S, BR-8D

BR-6S, BR-6D
TBM #6

BR-12

BR-5S, BR-5D
TBM #8

BR-9S, BR-9D

CAZ
AREA B

BR08-3S, BR08-3D

BR-18S, BR-18D

TEMBEC
REMAINDER PART 1 PLAN 49R-12219

OV-23, BR-23S, BR-23D

REGISTERED PLAN No. 26

300m±

SW-18

BOAT LAUNCH

SW-1

SW-17

BR-10

SW-21

SW-22

BR08-1S, BR08-1D

WETLAND

SW-2

SW-4

BR-08-2S, BR08-2D

CANADIAN PACIFIC RAILWAY

SW-11

SW-23

SW-3

SW-5

SW-6

TBM #1

OV-11

FENCE LINE

30 m BUFFER

OV-2

OV-7

BR-1S, BR-1D

TBM #3

TBM #2

OV-9

CAZ
AREA D

OV-10

REGISTERED PLAN No. 44

CAZ
AREA C

ROAD ALLOWANCE BETWEEN LOTS 10 AND 11

30 m BUFFER

BR-2

2023 SURVEY LIMITS

LICENSED LANDFILL

OV-8

ATTENUATION ZONE

FILL AREA

30m BUFFER ZONE

OV-5

BR-3
TBM #5

30 m BUFFER

LICENSED FILL AREA BOUNDARY

30 m BUFFER

TBM #4

OV-4

BR-4

OV-13

BR-13S, BR-13D

SW-26

SW-10

		AREA (HECTARES)	
		SUBTOTAL	TOTAL
CONTAMINANT ATTENUATION ZONE (CAZ)	AREA A	8.9	30.8
	AREA B	12.8	
	AREA C	3.4	
	AREA D	5.7	
LANDFILLING SITE	BUFFER AREA	3.4	9.6
	FILL AREA	6.2	
TOTAL AREA			40.4

0 100 200
1:4,000 METRES

LEGEND

- BR-1 — BEDROCK MONITORING STATION
- SW-6 — SURFACE WATER MONITORING STATION
- OV-7 — OVERBURDEN MONITORING STATION
- MW23GS — MONITORING WELL
- TBM #6 — TEMPORARY BENCHMARK
- TOPOGRAPHICAL CONTOURS (2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022 AND 2023 COMBINED SURVEYS)

NOTE(S)

1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18, VERTICAL DATUM: CGVD28.

REFERENCE(S)

1. BASE PLAN SUPPLIED IN DIGITAL FORMAT BY J.L. RICHARDS.
2. TOPOGRAPHICAL CONTOURS BEYOND THE EXTENT OF THE 2014 TO 2023 SURVEYS SUPPLIED IN DIGITAL FORMAT BY JP2G CONSULTANTS INC.
3. LANDFILL TOPOGRAPHICAL CONTOURS GENERATED FROM WSP CANADA INC. COMBINED SURVEY FROM 2013 TO 2023.
4. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18, VERTICAL DATUM: CGVD28.

CLIENT
CORPORATION OF THE TOWN OF ARNPRIOR

CONSULTANT
wsp

YYYY-MM-DD	2024-03-13
PREPARED	ABD/FC
DESIGN	AP
REVIEW	ALC
APPROVED	ALC

PROJECT
2023 SITE DEVELOPMENT, OPERATIONS AND ENVIRONMENTAL MONITORING, ARNPRIOR WASTE DISPOSAL SITE

TITLE
SITE PLAN

PROJECT No.	CONTROL	Rev.	FIGURE
23594631	0001	A	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25 mm

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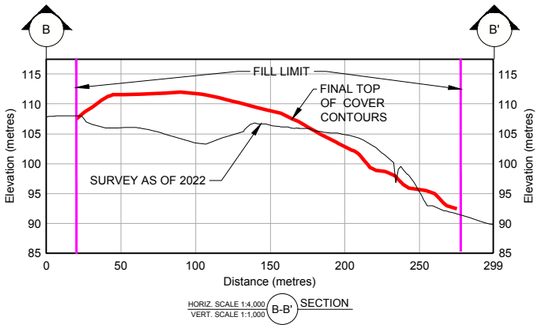

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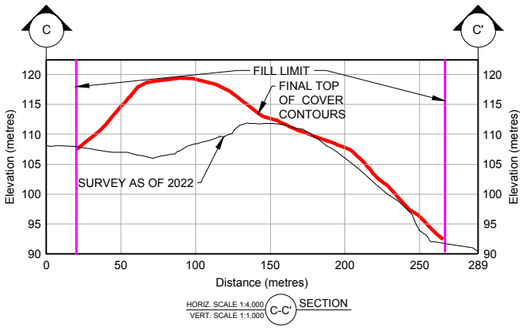
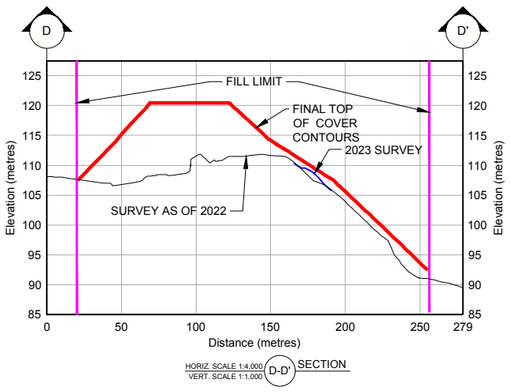
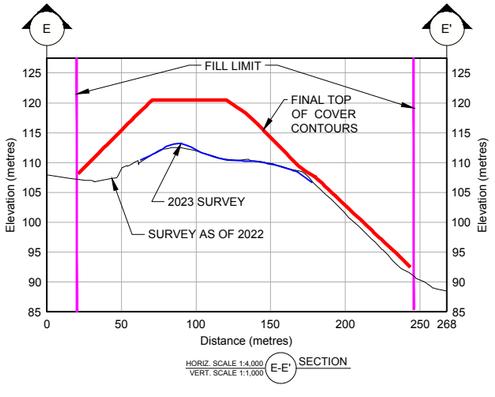
VERT. SCALE 1:1,000
B-B' SECTION



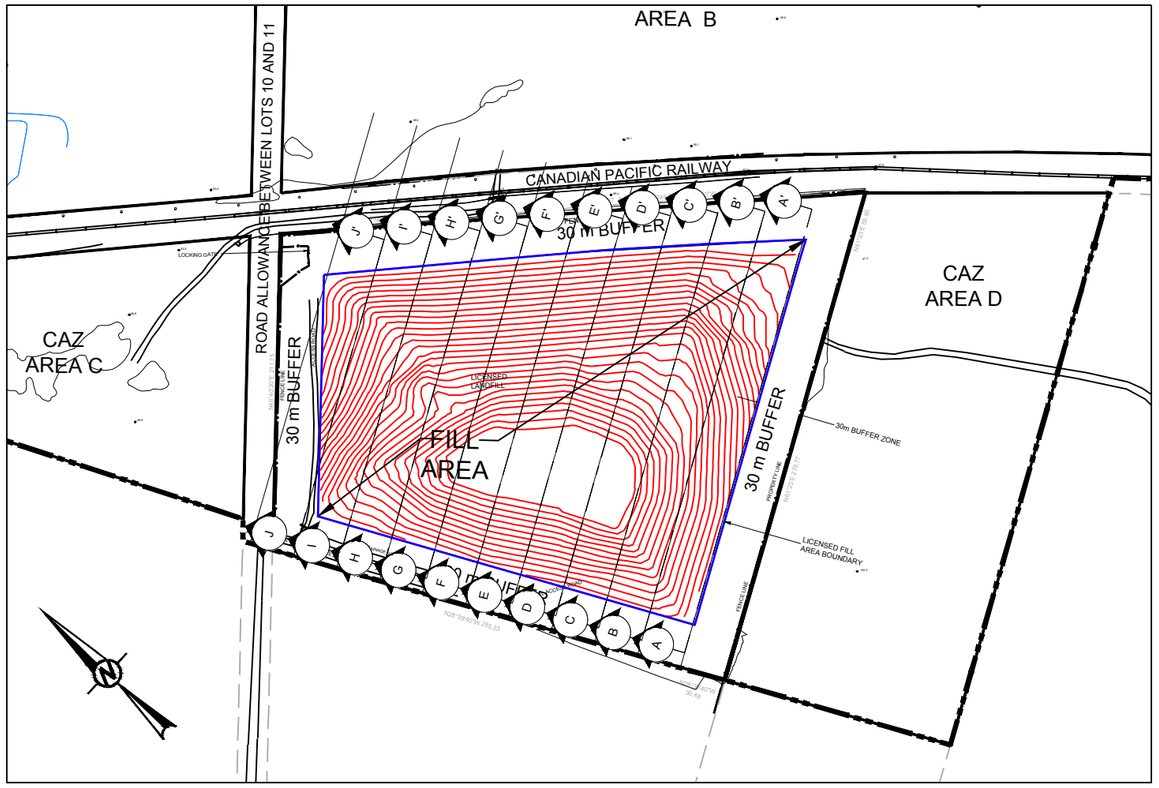
HORIZ. SCALE 1:4,000
VERT. SCALE 1:1,000
C-C' SECTION



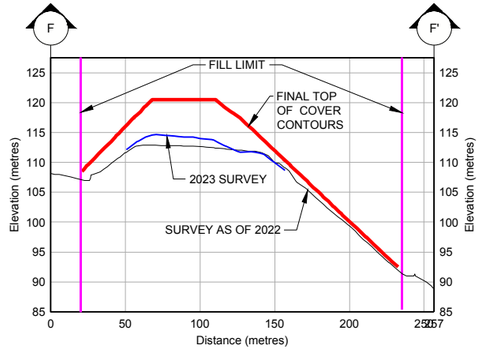
HORIZ. SCALE 1:4,000
VERT. SCALE 1:1,000
D-D' SECTION



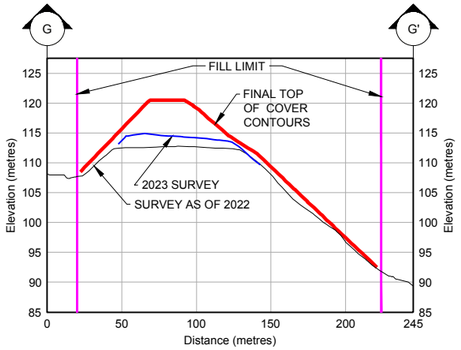
HORIZ. SCALE 1:4,000
VERT. SCALE 1:1,000
E-E' SECTION



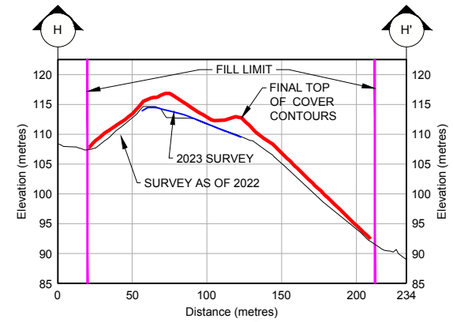
CROSS SECTION LOCATION PLAN
SCALE 1:4,000



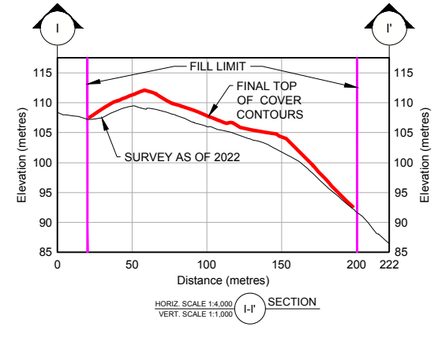
HORIZ. SCALE 1:4,000
VERT. SCALE 1:1,000
F-F' SECTION



HORIZ. SCALE 1:4,000
VERT. SCALE 1:1,000
G-G' SECTION



HORIZ. SCALE 1:4,000
VERT. SCALE 1:1,000
H-H' SECTION



HORIZ. SCALE 1:4,000
VERT. SCALE 1:1,000
I-I' SECTION

LEGEND

- PROPOSED FILL LIMITS
- SURVEY AS OF 2022
- 2023 SURVEY LIMIT
- FINAL TOP OF COVER CONTOURS
- ? ?' SECTION LINE LOCATION REFER TO FIGURE 3

NOTE(S)

1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18, VERTICAL DATUM: CGVD28.

REFERENCE(S)

1. BASE PLAN SUPPLIED IN DIGITAL FORMAT BY J.L. RICHARDS.
2. 2023 TOPOGRAPHIC SURVEY BY WSP CANADA INC. DATED DECEMBER 7, 202.
3. 2022 TOPOGRAPHIC SURVEY BY WSP CANADA INC. DATED DECEMBER 20, 2022.
4. 2014 TO 221 TOPOGRAPHIC SURVEYS BY GOLDER ASSOCIATES LTD.
5. 2013 TOPOGRAPHIC SURVEY BY JP2G CONSULTANTS INC IN 2013 SITE DEVELOPMENT, OPERATIONS AND ENVIRONMENTAL MONITORING REPORT.

0 100 200
1:4,000 METRES

0 25 50
1:1,000 METRES

CLIENT
CORPORATION OF THE TOWN OF ARNPRIOR

CONSULTANT
wsp

YYYY-MM-DD	2024-03-13
PREPARED	ABD/FC
DESIGN	AP
REVIEW	ALC
APPROVED	ALC

PROJECT
2023 SITE DEVELOPMENT, OPERATIONS AND ENVIRONMENTAL MONITORING, ARNPRIOR WASTE DISPOSAL SITE

TITLE
CROSS-SECTIONS

PROJECT No.	CONTROL	Rev.	FIGURE
23594631	0001	A	3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25 mm 0

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OTTAWA RIVER

TEMBEC

ATTENUATION ZONE

COUNTY ROAD No 3 - USBORNE STREET

TEMBEC
PART 4 PLAN 49R-12219

TEMBEC

SW-19

SW #805168

SW-12

BR-11

SW-20

BR-7S, BR-7D
TBM #7
(75.46)

CAZ AREA A

BR-8S, BR-8D
(83.47)

(75.72)
BR-6S, BR-6D
TBM #6

BR-12

(76.88)
BR-5S, BR-5D
TBM #8

BR-9S, BR-9D
(83.40)

CAZ AREA B

BR08-3S, BR08-3D
(83.18)

BR-18S, BR-18D
(80.55)

77

79

TEMBEC
REMAINDER PART 1 PLAN 49R-12219

OV-23, BR-23S, BR-23D

REGISTERED PLAN No. 26

300m±

SW-18

BOAT LAUNCH

SW-17

SW-1

BR-1D

SW-21

SW-22

BR08-1S, BR08-1D
(81.39)

(85.06)
BR-08-2S, BR-08-2D

CANADIAN PACIFIC RAILWAY

SW-4

SW-2

SW-11

WETLAND

SW-23

SW-3

SW-5

SW-6

OV-2

TBM #1

OV-11

FENCE LINE

30 m BUFFER

OV-9

REGISTERED PLAN No. 44

TBM #3

TBM #2

BR-1S, BR-1D
(82.43)

CAZ AREA C

CAZ AREA D

OV-10

ROAD ALLOWANCE BETWEEN LOTS 10 AND 11

30 m BUFFER

BR-2

OV-8

OV-5

BR-3
TBM #5
(85.54)

83

85

ATTENUATION ZONE

LICENSED LANDFILL

FILL AREA

30m BUFFER ZONE

30 m BUFFER

LICENSED FILL AREA BOUNDARY

87

30 m BUFFER

TBM #4

OV-4

BR-4

89

OV-13

BR-13S, BR-13D
(90.07)

0 100 200
1:4,000 METRES

LEGEND

BR-1	BEDROCK MONITORING STATION
SW-6	SURFACE WATER MONITORING STATION
OV-7	OVERBURDEN MONITORING STATION
TBM #6	TEMPORARY BENCHMARK
	TOPOGRAPHICAL CONTOURS (2013 TO 2023 COMBINED SURVEYS)
	INTERPRETED GROUNDWATER FLOW DIRECTION
(85.18)	GROUNDWATER ELEVATION (MAY 2023)
120	INTERPRETED GROUNDWATER ELEVATION CONTOUR

NOTE(S)

1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18, VERTICAL DATUM: CGVD28.

REFERENCE(S)

1. BASE PLAN SUPPLIED IN DIGITAL FORMAT BY J.L. RICHARDS
2. TOPOGRAPHICAL CONTOURS BEYOND THE EXTENT OF THE 2014 TO 2023 SURVEYS SUPPLIED IN DIGITAL FORMAT BY JP2G CONSULTANTS INC.
3. LANDFILL TOPOGRAPHICAL CONTOURS GENERATED FROM WSP CANADA INC. COMBINED SURVEY FROM 2013 TO 2023.

CLIENT
CORPORATION OF THE TOWN OF ARNPRIOR

CONSULTANT
wsp

YYYY-MM-DD	2024-03-13
PREPARED	ABD/FC
DESIGN	AP
REVIEW	ALC
APPROVED	ALC

PROJECT
2023 SITE DEVELOPMENT, OPERATIONS AND ENVIRONMENTAL MONITORING, ARNPRIOR WASTE DISPOSAL SITE

TITLE
SHALLOW BEDROCK GROUNDWATER FLOW DIRECTION (MAY 2023)

PROJECT No.	CONTROL	Rev.	FIGURE
23594631	0001	A	4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 25 mm

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OTTAWA RIVER

TEMBEC

ATTENUATION ZONE

COUNTY ROAD No 3 - USBORNE STREET

TEMBEC

PART 4 PLAN 49R-12219

TEMBEC

REMAINDER PART 1 PLAN 49R-12219

SW-19

SW-20

SW-1

BR-1D

BOAT AUNCH

WETLAND

TBM #3

BR-11

BR-7S, BR-7D
TBM #7
(74.74)

SW-21

SW-22

SW-2

TBM #2

SW-3

SW-4

SW-5

CAZ AREA A

CAZ AREA C

ATTENUATION ZONE

BR-8S, BR-8D
(82.48)

BR08-1S, BR08-1D
(81.14)

ROAD ALLOWANCE BETWEEN LOTS 10 AND 11

(75.05)
BR-6S, BR-6D
TBM #6

BR-12

(76.63)
BR-5S, BR-5D
TBM #8

BM #805168

SW-12

(82.52)
BR-9S, BR-9D

CAZ AREA B

BR08-3S, BR08-3D
(82.42)

BR-18S, BR-18D
(79.00)

OV-23, BR-23S, BR-23D

SW-11

(84.85)
BR-08-2S, BR08-2D

CANADIAN PACIFIC RAILWAY

TBM #1

SW-6

OV-2

OV-11

FENCE LINE

30 m BUFFER

BR-1S, BR-1D
(81.87)

OV-7

OV-9

CAZ AREA D

OV-10

BR-2

OV-8

OV-5

BR-3
TBM #5
(84.20)

30m BUFFER ZONE

30 m BUFFER

30 m BUFFER

FILL AREA

LICENSED LANDFILL

LICENSED FILL AREA BOUNDARY

TBM #4

OV-4

BR-4

OV-13

(89.96)
BR-13S, BR-13D

75 77 79 81 83 85 87 89

0 100 200
1:4,000 METRES

LEGEND

- BR-1 — BEDROCK MONITORING STATION
- SW-6 — SURFACE WATER MONITORING STATION
- OV-7 — OVERBURDEN MONITORING STATION
- TBM #6 — TEMPORARY BENCHMARK
- TOPOGRAPHICAL CONTOURS (2013 TO 2023 COMBINED SURVEYS)
- INTERPRETED GROUNDWATER FLOW DIRECTION
- (85.18) — GROUNDWATER ELEVATION (NOV. 2023)
- 120 — INTERPRETED GROUNDWATER ELEVATION CONTOUR

NOTE(S)

1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18, VERTICAL DATUM: CGVD28.

REFERENCE(S)

1. BASE PLAN SUPPLIED IN DIGITAL FORMAT BY J.L. RICHARDS
2. TOPOGRAPHICAL CONTOURS BEYOND THE EXTENT OF THE 2014 TO 2023 SURVEYS SUPPLIED IN DIGITAL FORMAT BY JP2G CONSULTANTS INC.
3. LANDFILL TOPOGRAPHICAL CONTOURS GENERATED FROM WSP CANADA INC. COMBINED SURVEY FROM 2013 TO 2023.

CLIENT
CORPORATION OF THE TOWN OF ARNPRIOR

CONSULTANT
wsp

YYYY-MM-DD	2024-03-13
PREPARED	ABD/FC
DESIGN	AP
REVIEW	ALC
APPROVED	ALC

PROJECT
2023 SITE DEVELOPMENT, OPERATIONS AND ENVIRONMENTAL MONITORING, ARNPRIOR WASTE DISPOSAL SITE

TITLE
SHALLOW BEDROCK GROUNDWATER FLOW DIRECTIONS (NOVEMBER 2023)

PROJECT No.	CONTROL	Rev.	FIGURE
23594631	0001	A	5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25 mm

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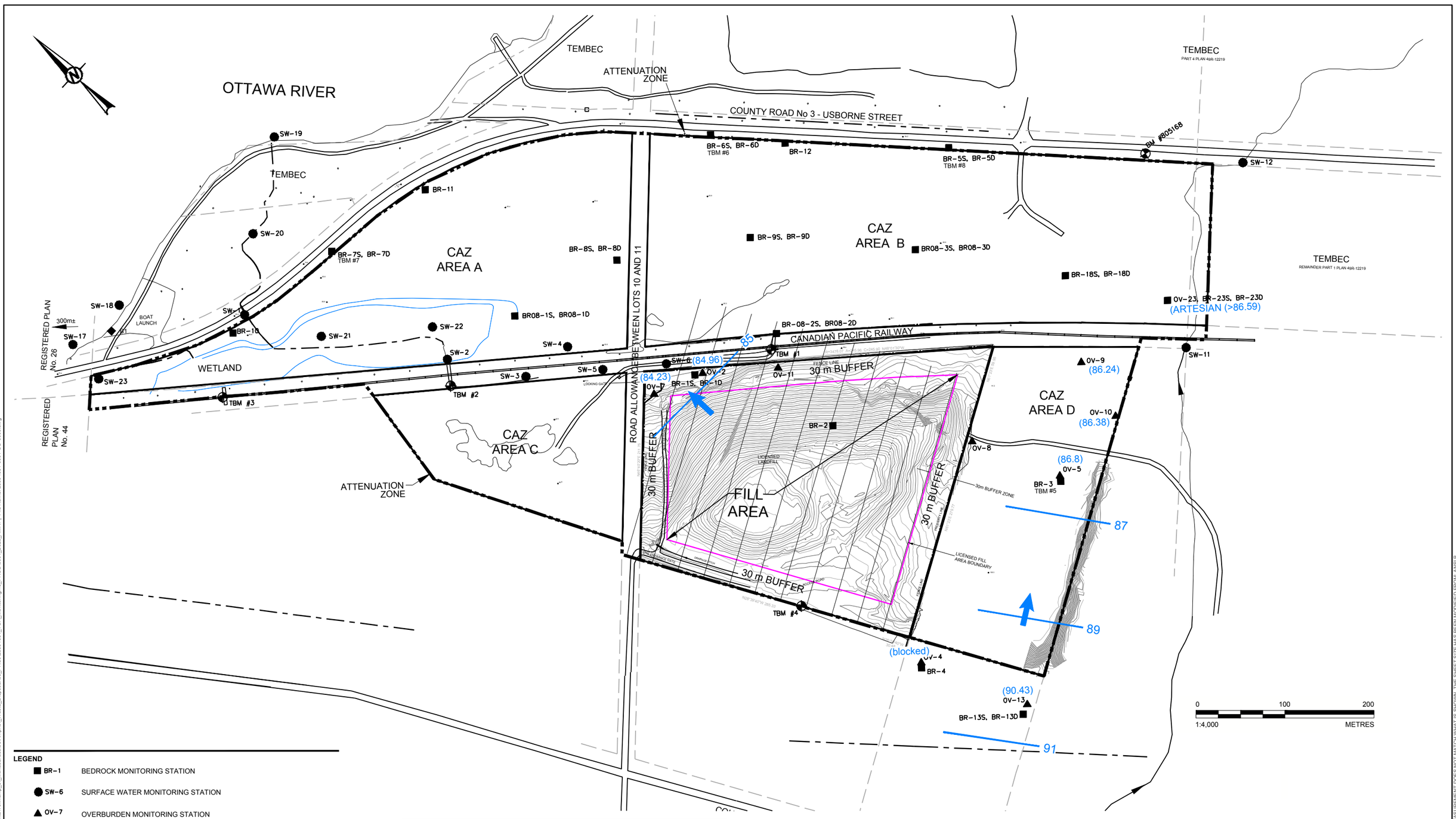

LEGEND

BR-1	BEDROCK MONITORING STATION
SW-6	SURFACE WATER MONITORING STATION
OV-7	OVERBURDEN MONITORING STATION
TBM #6	TEMPORARY BENCHMARK
	TOPOGRAPHICAL CONTOURS (2013 TO 2023 COMBINED SURVEYS)
	INTERPRETED GROUNDWATER FLOW DIRECTION
(85.18)	GROUNDWATER ELEVATION (MAY 2023)
120	INTERPRETED GROUNDWATER ELEVATION CONTOUR

NOTE(S)

1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18, VERTICAL DATUM: CGVD28.

REFERENCE(S)

1. BASE PLAN SUPPLIED IN DIGITAL FORMAT BY J.L. RICHARDS
2. TOPOGRAPHICAL CONTOURS BEYOND THE EXTENT OF THE 2014 TO 2023 SURVEYS SUPPLIED IN DIGITAL FORMAT BY JP2G CONSULTANTS INC.
3. LANDFILL TOPOGRAPHICAL CONTOURS GENERATED FROM WSP CANADA INC. COMBINED SURVEY FROM 2013 TO 2023.

CLIENT
CORPORATION OF THE TOWN OF ARNPRIOR

CONSULTANT
wsp

YYYY-MM-DD	2024-03-13
PREPARED	ABD/FC
DESIGN	AP
REVIEW	ALC
APPROVED	ALC

PROJECT
2023 SITE DEVELOPMENT, OPERATIONS AND ENVIRONMENTAL MONITORING, ARNPRIOR WASTE DISPOSAL SITE

TITLE
OVERBURDEN GROUNDWATER FLOW DIRECTION (MAY 2023)

PROJECT No.	CONTROL	Rev.	FIGURE
23594631	0001	A	6

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
25 mm
0

OTTAWA RIVER

TEMBEC

ATTENUATION ZONE

COUNTY ROAD No 3 - USBORNE STREET

TEMBEC
PART 4 PLAN 49R-12219

TEMBEC
REMAINDER PART 1 PLAN 49R-12219

TEMBEC

SW-19

SW-20

SW-18

SW-17

SW-16

SW-21

SW-22

SW-23

SW-2

SW-3

SW-4

SW-5

SW-6

SW-11

SW-12

BM #805168

BR-11

BR-7S, BR-7D
TBM #7

BR-8S, BR-8D

BR-6S, BR-6D
TBM #6

BR-12

BR-5S, BR-5D
TBM #8

BR-9S, BR-9D

BR08-3S, BR08-3D

BR-18S, BR-18D

OV-23, BR-23S, BR-23D
(85.30)

BR08-1S, BR08-1D

BR-08-2S, BR08-2D

CANADIAN PACIFIC RAILWAY

TBM #1

TBM #2

TBM #3

TBM #4

OV-2

OV-4
BR-4
(blocked)

OV-5
(85.99)
BR-3
TBM #5

OV-7
(83.81)

OV-8

OV-9
(85.45)

OV-10
(85.67)

OV-11

OV-13
(89.63)
BR-13S, BR-13D

BR-1S, BR-1D
(84.81)

BR-2

CAZ AREA A

CAZ AREA B

CAZ AREA C

CAZ AREA D

FILL AREA

ROAD ALLOWANCE BETWEEN LOTS 10 AND 11

30 m BUFFER

30m BUFFER ZONE

LICENSED LANDFILL

LICENSED FILL AREA BOUNDARY

FENCE LINE

LOCKING GATE

BOAT LAUNCH

WETLAND

300m±

REGISTERED PLAN No. 26

REGISTERED PLAN No. 44

84

85

86

88

90

0 100 200
1:4,000 METRES

LEGEND

- BR-1 — BEDROCK MONITORING STATION
- SW-6 — SURFACE WATER MONITORING STATION
- OV-7 — OVERBURDEN MONITORING STATION
- TBM #6 — TEMPORARY BENCHMARK
- TOPOGRAPHICAL CONTOURS (2013 TO 2023 COMBINED SURVEYS)
- INTERPRETED GROUNDWATER FLOW DIRECTION
- (85.18) — GROUNDWATER ELEVATION (NOVEMBER 2023)
- 120 — INTERPRETED GROUNDWATER ELEVATION CONTOUR

NOTE(S)

1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18, VERTICAL DATUM: CGVD28.

REFERENCE(S)

1. BASE PLAN SUPPLIED IN DIGITAL FORMAT BY J.L. RICHARDS
2. TOPOGRAPHICAL CONTOURS BEYOND THE EXTENT OF THE 2014 TO 2023 SURVEYS SUPPLIED IN DIGITAL FORMAT BY JP2G CONSULTANTS INC.
3. LANDFILL TOPOGRAPHICAL CONTOURS GENERATED FROM WSP CANADA INC. COMBINED SURVEY FROM 2013 TO 2023.

CLIENT
CORPORATION OF THE TOWN OF ARNPRIOR

CONSULTANT
wsp

YYYY-MM-DD	2024-03-13
PREPARED	ABD/FC
DESIGN	AP
REVIEW	ALC
APPROVED	ALC

PROJECT
2023 SITE DEVELOPMENT, OPERATIONS AND ENVIRONMENTAL MONITORING, ARNPRIOR WASTE DISPOSAL SITE

TITLE
OVERBURDEN GROUNDWATER FLOW DIRECTION (NOVEMBER 2023)

PROJECT No.	CONTROL	Rev.	FIGURE
23594631	0001	A	7

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25 mm

0

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FIGURE 8: PIPER TRILINEAR DIAGRAM – GROUNDWATER – Spring 2023

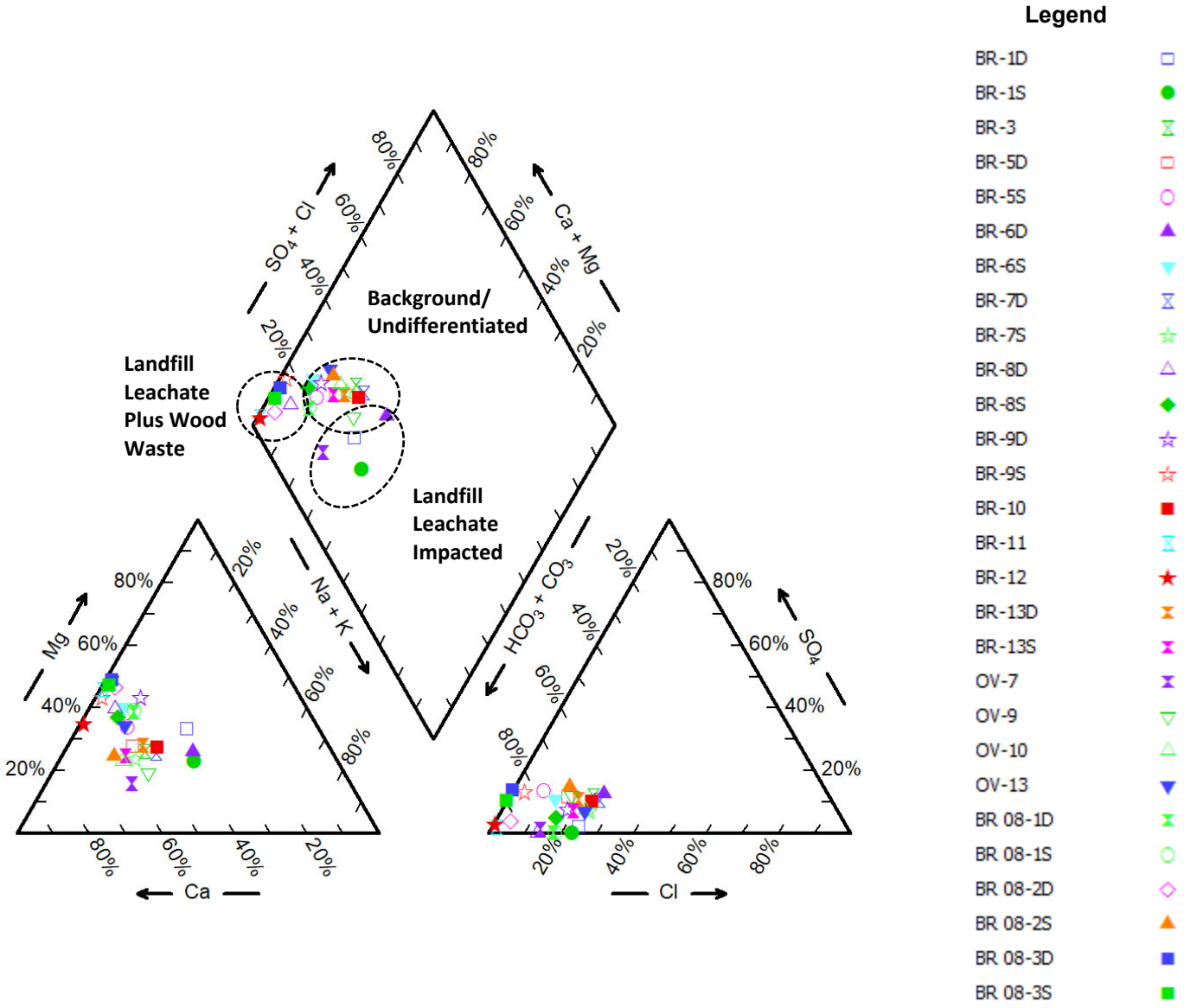
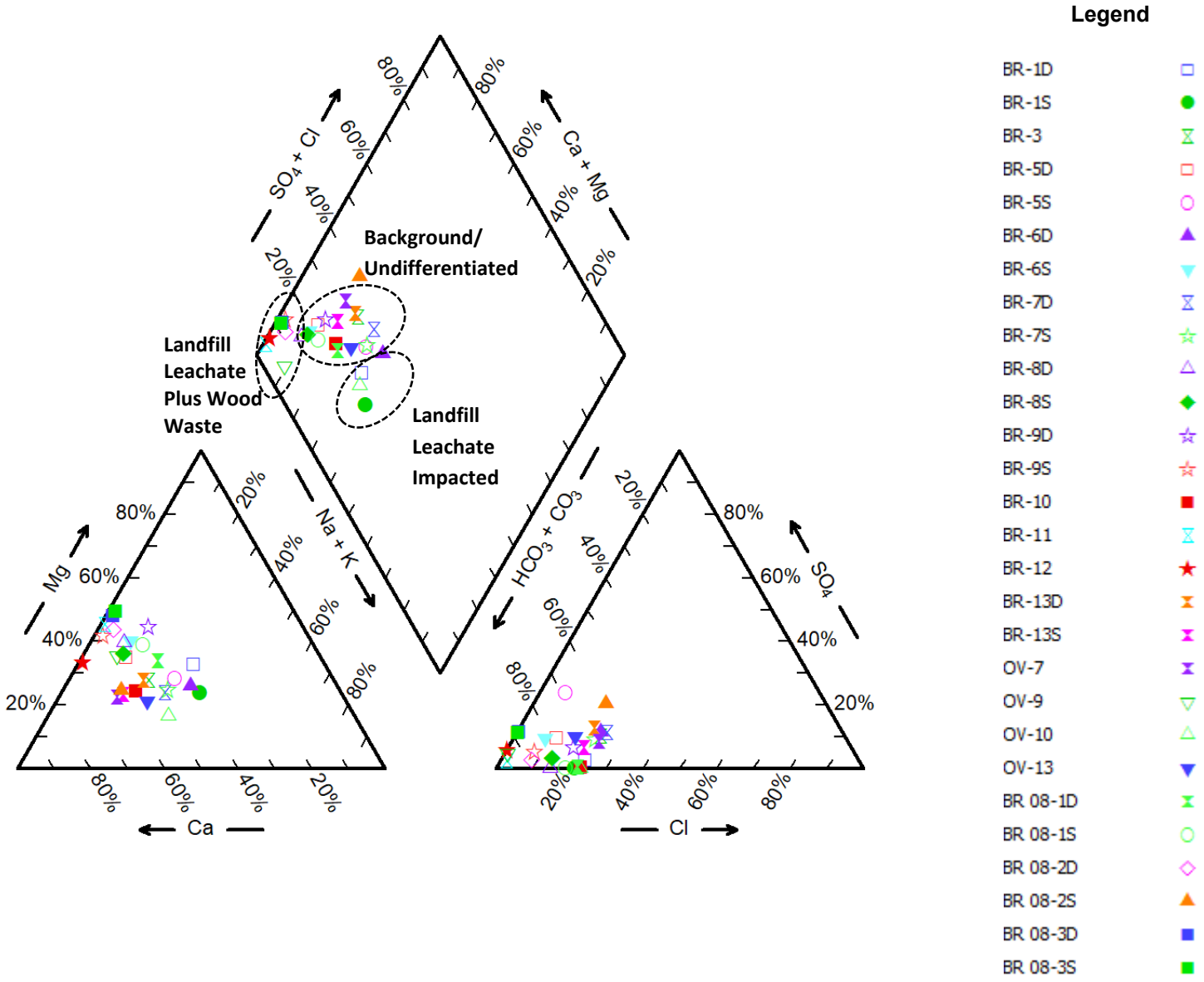
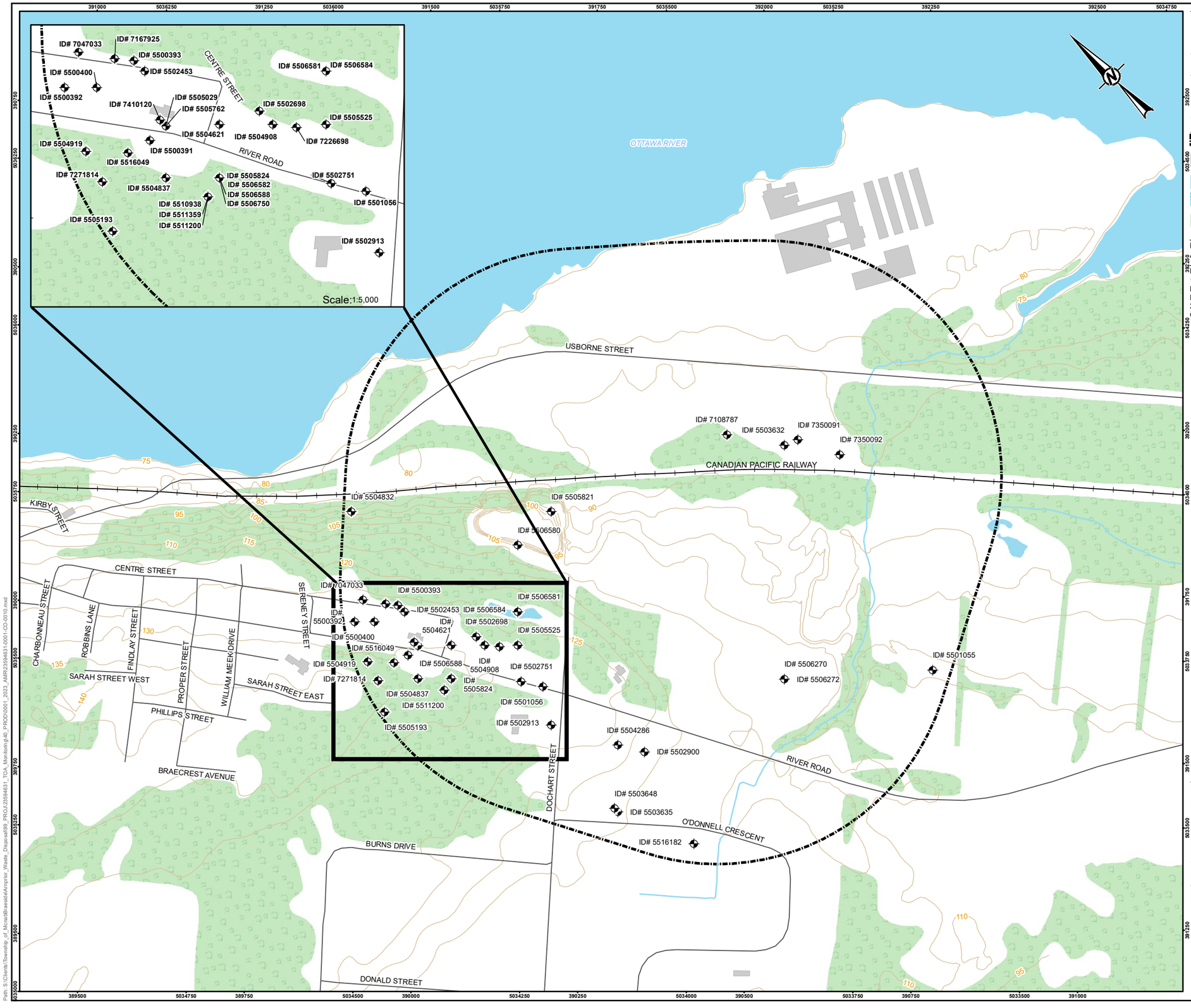


FIGURE 9: PIPER TRILINEAR DIAGRAM – GROUNDWATER – Fall 2023





LEGEND

- MECP WWIS WATER WELL LOCATION
- ROADWAY
- RAILWAY
- CONTOUR, metres
- WATERCOURSE
- 500 m BUFFER
- BUILDING
- WATERBODY
- WETLAND
- WOODED AREA

NOTE(S)

ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES AND FORESTRY, © QUEENS PRINTER 2014
2. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18 VERTICAL DATUM: CGVD28

0 80 160 320
1:8,000 METRES

CLIENT
CORPORATION OF THE TOWN OF ARNPRIOR

PROJECT
2023 SITE DEVELOPMENT, OPERATIONS AND ENVIRONMENTAL MONITORING ARNPRIOR WASTE DISPOSAL SITE

TITLE
LOCATION OF RESIDENTIAL WELLS WITHIN 500M OF LANDFILL BOUNDARY

CONSULTANT

YYYY-MM-DD	2024-03-13
DESIGNED	ETB
PREPARED	ABD/BR
REVIEWED	ALC
APPROVED	PLE

PROJECT NO.	PHASE	REV.	FIGURE
23594631	0001	A	10

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

Path: S:\Clients\Township_of_Mcnab\Braeside\Arnprior Waste Disposal\99_PROJ\23594631_TOA_Monitoring\40_PROD\0001_2023_AMR\23594631-0001-CO-0010.mxd

APPENDIX A

Report of Analyses, Bureau Veritas Laboratories (Provided on USB)

Your Project #: 23594631
Site#: Arnprior LF
Site Location: Arnprior LF

Attention: Hadia Aziz

WSP Canada Inc
1931 Robertson Rd
Ottawa, ON
CANADA K2H5B7

Your C.O.C. #: 930142-01-01, 930142-02-01, 930142-03-01

Report Date: 2023/06/05
Report #: R7658323
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3F1830
Received: 2023/05/26, 13:27

Sample Matrix: Water
Samples Received: 30

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity (1)	1	N/A	2023/05/30	CAM SOP-00448	SM 23 2320 B m
Alkalinity (1)	2	N/A	2023/05/31	CAM SOP-00448	SM 23 2320 B m
Alkalinity (1)	27	N/A	2023/06/01	CAM SOP-00448	SM 23 2320 B m
Chloride by Automated Colourimetry (1)	30	N/A	2023/05/30	CAM SOP-00463	SM 23 4500-Cl E m
Conductivity (1)	1	N/A	2023/05/30	CAM SOP-00414	SM 23 2510 m
Conductivity (1)	2	N/A	2023/05/31	CAM SOP-00414	SM 23 2510 m
Conductivity (1)	27	N/A	2023/06/01	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1, 2)	17	N/A	2023/05/29	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1, 2)	13	N/A	2023/05/30	CAM SOP-00446	SM 23 5310 B m
Hardness (calculated as CaCO3) (1)	20	N/A	2023/05/30	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3) (1)	10	N/A	2023/05/31	CAM SOP 00102/00408/00447	SM 2340 B
Mercury in Water by CVAA (1)	30	2023/05/31	2023/05/31	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS (1)	20	N/A	2023/05/30	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS (1)	10	N/A	2023/05/31	CAM SOP-00447	EPA 6020B m
Total Ammonia-N (1)	16	N/A	2023/05/31	CAM SOP-00441	USGS I-2522-90 m
Total Ammonia-N (1)	14	N/A	2023/06/01	CAM SOP-00441	USGS I-2522-90 m
Orthophosphate (1)	30	N/A	2023/05/30	CAM SOP-00461	SM 23 4500-P E m
Sulphate by Automated Turbidimetry (1)	30	N/A	2023/05/30	CAM SOP-00464	SM 23 4500-SO42- E m
Total Dissolved Solids (1)	1	2023/05/30	2023/05/31	CAM SOP-00428	SM 23 2540C m
Total Dissolved Solids (1)	29	2023/05/31	2023/06/01	CAM SOP-00428	SM 23 2540C m
Total Phosphorus (Colourimetric) (1)	30	2023/05/31	2023/06/02	CAM SOP-00407	SM 23 4500-P I

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCCFP, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in

Your Project #: 23594631
Site#: Arnprior LF
Site Location: Arnprior LF

Attention: Hadia Aziz

WSP Canada Inc
1931 Robertson Rd
Ottawa, ON
CANADA K2H5B7

Your C.O.C. #: 930142-01-01, 930142-02-01, 930142-03-01

Report Date: 2023/06/05
Report #: R7658323
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3F1830
Received: 2023/05/26, 13:27

writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
(2) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633
==========
This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VXV949			VXV950		VXV951		
Sampling Date		2023/05/26 06:00			2023/05/26 06:00		2023/05/26 06:00		
COC Number		930142-01-01			930142-01-01		930142-01-01		
	UNITS	OV-7	RDL	QC Batch	OV-9	QC Batch	OV-10	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L	660	1.0	8688672	300	8688672	420	1.0	8688672
Inorganics									
Total Ammonia-N	mg/L	40	0.25	8694708	ND	8694708	0.65	0.050	8694708
Conductivity	umho/cm	1800	1.0	8690389	750	8690355	950	1.0	8690389
Total Dissolved Solids	mg/L	870	10	8693639	385	8693617	485	10	8693617
Dissolved Organic Carbon	mg/L	18	0.40	8690360	4.4	8690360	1.2	0.40	8690360
Orthophosphate (P)	mg/L	ND	0.010	8690685	ND	8690685	ND	0.010	8690685
Total Phosphorus	mg/L	1.2	0.004	8695623	1.2	8695628	0.005	0.004	8695628
Dissolved Sulphate (SO4)	mg/L	6.9	1.0	8690698	37	8690698	29	1.0	8690698
Alkalinity (Total as CaCO3)	mg/L	840	1.0	8690378	300	8690361	370	1.0	8690378
Dissolved Chloride (Cl-)	mg/L	60	1.0	8690694	40	8690694	67	1.0	8690694

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		VXV952			VXV953		VXV954		
Sampling Date		2023/05/26 08:00			2023/05/26 08:00		2023/05/26 08:00		
COC Number		930142-01-01			930142-01-01		930142-01-01		
	UNITS	BR-1S	RDL	QC Batch	BR-1D	QC Batch	BR-3	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L	1100	1.0	8688672	940	8688672	500	1.0	8688672
Inorganics									
Total Ammonia-N	mg/L	150	2.5	8694699	22	8694708	1.6	0.050	8694708
Conductivity	umho/cm	3700	1.0	8690355	2500	8690355	1300	1.0	8690355
Total Dissolved Solids	mg/L	1530	10	8693617	1250	8693617	665	10	8693617
Dissolved Organic Carbon	mg/L	66	0.40	8690354	30	8690354	4.4	0.40	8690360
Orthophosphate (P)	mg/L	ND	0.010	8690685	ND	8689267	ND	0.010	8689267
Total Phosphorus	mg/L	0.044	0.004	8695623	0.034	8695628	0.033	0.004	8695628
Dissolved Sulphate (SO4)	mg/L	ND	1.0	8690698	19	8689265	62	1.0	8689265
Alkalinity (Total as CaCO3)	mg/L	1700	1.0	8690361	1100	8690361	470	1.0	8690361
Dissolved Chloride (Cl-)	mg/L	240	2.0	8690694	160	8689264	91	1.0	8689264

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3F1830
Report Date: 2023/06/05

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VXV955			VXV955			VXV956		
Sampling Date		2023/05/25 14:00			2023/05/25 14:00			2023/05/25 14:00		
COC Number		930142-01-01			930142-01-01			930142-01-01		
	UNITS	BR-5S	RDL	QC Batch	BR-5S Lab-Dup	RDL	QC Batch	BR-5D	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	440	1.0	8688672				410	1.0	8688672
Inorganics										
Total Ammonia-N	mg/L	ND	0.050	8694708				1.6	0.050	8694708
Conductivity	umho/cm	890	1.0	8690389				960	1.0	8690389
Total Dissolved Solids	mg/L	465	10	8693617	455	10	8693617	515	10	8693617
Dissolved Organic Carbon	mg/L	1.7	0.40	8690354				2.4	0.40	8690360
Orthophosphate (P)	mg/L	ND	0.010	8690685				ND	0.010	8690685
Total Phosphorus	mg/L	0.035	0.004	8695623				0.010	0.004	8695623
Dissolved Sulphate (SO4)	mg/L	50	1.0	8690698				44	1.0	8690698
Alkalinity (Total as CaCO3)	mg/L	400	1.0	8690378				400	1.0	8690378
Dissolved Chloride (Cl-)	mg/L	24	1.0	8690694				46	1.0	8690694

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3F1830
Report Date: 2023/06/05

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VXV957		VXV967			VXV967		
Sampling Date		2023/05/25 14:00		2023/05/25 06:00			2023/05/25 06:00		
COC Number		930142-01-01		930142-02-01			930142-02-01		
	UNITS	BR-6S	QC Batch	BR-6D	RDL	QC Batch	BR-6D Lab-Dup	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L	490	8688672	350	1.0	8688672			
Inorganics									
Total Ammonia-N	mg/L	ND	8694699	1.5	0.050	8694699			
Conductivity	umho/cm	960	8690355	1100	1.0	8690355			
Total Dissolved Solids	mg/L	525	8693639	560	10	8693131	530	10	8693131
Dissolved Organic Carbon	mg/L	2.1	8690354	1.9	0.40	8690360			
Orthophosphate (P)	mg/L	ND	8689267	ND	0.010	8690685			
Total Phosphorus	mg/L	0.015	8695623	0.050	0.004	8695628			
Dissolved Sulphate (SO4)	mg/L	43	8689265	54	1.0	8690698			
Alkalinity (Total as CaCO3)	mg/L	440	8690361	370	1.0	8690361			
Dissolved Chloride (Cl-)	mg/L	40	8689264	81	1.0	8690694			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3F1830
Report Date: 2023/06/05

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VXV968			VXV968			VXV969		
Sampling Date		2023/05/25 06:00			2023/05/25 06:00			2023/05/25 06:00		
COC Number		930142-02-01			930142-02-01			930142-02-01		
	UNITS	BR-7S	RDL	QC Batch	BR-7S Lab-Dup	RDL	QC Batch	BR-7D	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	510	1.0	8688672				460	1.0	8688672
Inorganics										
Total Ammonia-N	mg/L	ND	0.050	8694699				ND	0.050	8694699
Conductivity	umho/cm	1100	1.0	8690355				1100	1.0	8690355
Total Dissolved Solids	mg/L	615	10	8693639				570	10	8693617
Dissolved Organic Carbon	mg/L	1.4	0.40	8690354				1.4	0.40	8690354
Orthophosphate (P)	mg/L	ND	0.010	8690685				ND	0.010	8690685
Total Phosphorus	mg/L	0.017	0.004	8695623	0.014	0.004	8695623	0.012	0.004	8695623
Dissolved Sulphate (SO4)	mg/L	32	1.0	8690698				50	1.0	8690698
Alkalinity (Total as CaCO3)	mg/L	440	1.0	8690361				420	1.0	8690361
Dissolved Chloride (Cl-)	mg/L	85	1.0	8690694				92	1.0	8690694

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3F1830
Report Date: 2023/06/05

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VXV970			VXV970			VXV971		
Sampling Date		2023/05/25 06:00			2023/05/25 06:00			2023/05/25 06:00		
COC Number		930142-02-01			930142-02-01			930142-02-01		
	UNITS	BR-8S	RDL	QC Batch	BR-8S Lab-Dup	RDL	QC Batch	BR-8D	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	760	1.0	8688672				660	1.0	8688672
Inorganics										
Total Ammonia-N	mg/L	0.091	0.050	8694708				0.34	0.050	8694699
Conductivity	umho/cm	1400	1.0	8690355	1400	1.0	8690355	1200	1.0	8690389
Total Dissolved Solids	mg/L	845	10	8693639	830	10	8693639	640	10	8693617
Dissolved Organic Carbon	mg/L	19	0.40	8690354				16	0.40	8690354
Orthophosphate (P)	mg/L	ND	0.010	8690685				ND	0.010	8690685
Total Phosphorus	mg/L	0.011	0.004	8695623				0.008	0.004	8695623
Dissolved Sulphate (SO4)	mg/L	25	1.0	8690698				ND	1.0	8690698
Alkalinity (Total as CaCO3)	mg/L	670	1.0	8690361	670	1.0	8690361	630	1.0	8690378
Dissolved Chloride (Cl-)	mg/L	61	1.0	8690694				44	1.0	8690694

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3F1830
Report Date: 2023/06/05

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VXV971			VXV972		VXV973		
Sampling Date		2023/05/25 06:00			2023/05/25 06:00		2023/05/25 06:00		
COC Number		930142-02-01			930142-02-01		930142-02-01		
	UNITS	BR-8D Lab-Dup	RDL	QC Batch	BR-9S	QC Batch	BR-10	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L				630	8688672	360	1.0	8688672
Inorganics									
Total Ammonia-N	mg/L				0.47	8694708	0.57	0.050	8694699
Conductivity	umho/cm				1100	8690389	920	1.0	8690355
Total Dissolved Solids	mg/L				615	8693639	480	10	8693617
Dissolved Organic Carbon	mg/L				14	8690354	1.2	0.40	8690360
Orthophosphate (P)	mg/L	ND	0.010	8690685	ND	8690685	ND	0.010	8690685
Total Phosphorus	mg/L				0.045	8695623	0.16	0.004	8695623
Dissolved Sulphate (SO4)	mg/L	ND	1.0	8690698	51	8690698	37	1.0	8690698
Alkalinity (Total as CaCO3)	mg/L				550	8690378	350	1.0	8690361
Dissolved Chloride (Cl-)	mg/L	44	1.0	8690694	11	8690694	64	1.0	8690694

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3F1830
Report Date: 2023/06/05

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VXV973			VXV974		VXV975		
Sampling Date		2023/05/25 06:00			2023/05/25 06:00		2023/05/25 06:00		
COC Number		930142-02-01			930142-02-01		930142-02-01		
	UNITS	BR-10 Lab-Dup	RDL	QC Batch	BR-11	QC Batch	BR-12	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L				370	8688672	420	1.0	8688672
Inorganics									
Total Ammonia-N	mg/L				ND	8694699	0.22	0.050	8694699
Conductivity	umho/cm				630	8690355	680	1.0	8690389
Total Dissolved Solids	mg/L				320	8693639	360	10	8693617
Dissolved Organic Carbon	mg/L	1.2	0.40	8690360	2.3	8690354	30	0.40	8690354
Orthophosphate (P)	mg/L				ND	8689267	0.025	0.010	8690685
Total Phosphorus	mg/L				0.080	8695623	0.15	0.004	8695623
Dissolved Sulphate (SO4)	mg/L				4.6	8689265	7.1	1.0	8690698
Alkalinity (Total as CaCO3)	mg/L				340	8690361	370	1.0	8690378
Dissolved Chloride (Cl-)	mg/L				3.2	8689264	1.5	1.0	8690694

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VXV976			VXV983			VXV983		
Sampling Date		2023/05/25 06:00			2023/05/25 14:00			2023/05/25 14:00		
COC Number		930142-02-01			930142-03-01			930142-03-01		
	UNITS	OV-23	RDL	QC Batch	BR-23S	RDL	QC Batch	BR-23S Lab-Dup	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	470	1.0	8688672	360	1.0	8688672			
Inorganics										
Total Ammonia-N	mg/L	ND	0.050	8694699	0.088	0.050	8694708	ND	0.050	8694708
Conductivity	umho/cm	1000	1.0	8690355	830	1.0	8690355			
Total Dissolved Solids	mg/L	520	10	8693617	435	10	8693617			
Dissolved Organic Carbon	mg/L	1.1	0.40	8690354	1.2	0.40	8690354			
Orthophosphate (P)	mg/L	ND	0.010	8689267	ND	0.010	8689267			
Total Phosphorus	mg/L	0.009	0.004	8695628	0.032	0.004	8695628			
Dissolved Sulphate (SO4)	mg/L	31	1.0	8689265	42	1.0	8689265			
Alkalinity (Total as CaCO3)	mg/L	390	1.0	8690361	310	1.0	8690361			
Dissolved Chloride (Cl-)	mg/L	66	1.0	8689264	53	2.0	8689264			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		VXV984	VXV985		VXV986		VXV987		
Sampling Date		2023/05/25 11:00	2023/05/25 11:00		2023/05/25 11:00		2023/05/25 11:00		
COC Number		930142-03-01	930142-03-01		930142-03-01		930142-03-01		
	UNITS	BR08-1S	BR08-1D	QC Batch	BR08-2S	QC Batch	BR08-2D	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L	680	760	8688672	300	8688672	530	1.0	8688672
Inorganics									
Total Ammonia-N	mg/L	0.49	0.54	8694699	ND	8694708	0.16	0.050	8694699
Conductivity	umho/cm	1500	1500	8690355	810	8690355	920	1.0	8690389
Total Dissolved Solids	mg/L	765	735	8693617	425	8693617	500	10	8693617
Dissolved Organic Carbon	mg/L	12	14	8690354	3.8	8690354	9.3	0.40	8690360
Orthophosphate (P)	mg/L	ND	ND	8690685	ND	8690685	ND	0.010	8690685
Total Phosphorus	mg/L	0.047	0.098	8695623	0.089	8695623	0.045	0.004	8695628
Dissolved Sulphate (SO4)	mg/L	ND	ND	8690698	49	8690698	12	1.0	8690698
Alkalinity (Total as CaCO3)	mg/L	730	750	8690361	330	8690361	500	1.0	8690378
Dissolved Chloride (Cl-)	mg/L	76	76	8690694	37	8690694	11	1.0	8690694

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VXV987			VXV988			VXV988		
Sampling Date		2023/05/25 11:00			2023/05/25 11:00			2023/05/25 11:00		
COC Number		930142-03-01			930142-03-01			930142-03-01		
	UNITS	BR08-2D Lab-Dup	RDL	QC Batch	BR08-3S	RDL	QC Batch	BR08-3S Lab-Dup	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L				380	1.0	8688672			
Inorganics										
Total Ammonia-N	mg/L	0.12	0.050	8694699	0.11	0.050	8694708			
Conductivity	umho/cm				700	1.0	8690355			
Total Dissolved Solids	mg/L				360	10	8693639			
Dissolved Organic Carbon	mg/L				1.5	0.40	8690354	1.5	0.40	8690354
Orthophosphate (P)	mg/L				ND	0.010	8689267			
Total Phosphorus	mg/L				0.049	0.004	8695623			
Dissolved Sulphate (SO4)	mg/L				31	1.0	8689265			
Alkalinity (Total as CaCO3)	mg/L				360	1.0	8690361			
Dissolved Chloride (Cl-)	mg/L				ND	1.0	8689264			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		VXV989			VXV990			VXV991		
Sampling Date		2023/05/25 11:00			2023/05/25 11:00			2023/05/25 11:00		
COC Number		930142-03-01			930142-03-01			930142-03-01		
	UNITS	BR08-3D	RDL	QC Batch	DUP-1	RDL	QC Batch	DUP-2	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	340	1.0	8688672	360	1.0	8688672	470	1.0	8688672
Inorganics										
Total Ammonia-N	mg/L	0.093	0.050	8694708	0.58	0.050	8694699	ND	0.050	8694708
Conductivity	umho/cm	590	1.0	8690355	920	1.0	8690355	1000	1.0	8690389
Total Dissolved Solids	mg/L	325	10	8693639	430	10	8693617	530	10	8693617
Dissolved Organic Carbon	mg/L	1.3	0.40	8690354	1.2	0.40	8690354	1.2	0.40	8690354
Orthophosphate (P)	mg/L	ND	0.010	8689267	ND	0.010	8689267	ND	0.010	8690685
Total Phosphorus	mg/L	0.058	0.004	8695628	0.16	0.004	8695623	0.006	0.004	8695628
Dissolved Sulphate (SO4)	mg/L	34	1.0	8689265	27	1.0	8689265	32	1.0	8690698
Alkalinity (Total as CaCO3)	mg/L	290	1.0	8690361	360	1.0	8690361	400	1.0	8690378
Dissolved Chloride (Cl-)	mg/L	ND	1.0	8689264	51	2.0	8689264	69	1.0	8690694

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VXV992			VXV993		
Sampling Date		2023/05/25 11:00			2023/05/25 11:00		
COC Number		930142-03-01			930142-03-01		
	UNITS	BR-23D	RDL	QC Batch	BR-9D	RDL	QC Batch
Calculated Parameters							
Hardness (CaCO3)	mg/L	260	1.0	8688672	550	1.0	8690120
Inorganics							
Total Ammonia-N	mg/L	0.27	0.050	8694699	ND	0.050	8695371
Conductivity	umho/cm	890	1.0	8690355	1100	1.0	8690758
Total Dissolved Solids	mg/L	505	10	8693639	605	10	8693674
Dissolved Organic Carbon	mg/L	1.4	0.40	8690360	3.3	0.40	8690360
Orthophosphate (P)	mg/L	ND	0.010	8689267	ND	0.010	8690685
Total Phosphorus	mg/L	0.044	0.004	8695623	0.012	0.004	8695623
Dissolved Sulphate (SO4)	mg/L	47	1.0	8689265	32	1.0	8690698
Alkalinity (Total as CaCO3)	mg/L	340	1.0	8690361	480	1.0	8690754
Dissolved Chloride (Cl-)	mg/L	52	2.0	8689264	60	1.0	8690694

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VXV949			VXV949			VXV950		
Sampling Date		2023/05/26 06:00			2023/05/26 06:00			2023/05/26 06:00		
COC Number		930142-01-01			930142-01-01			930142-01-01		
	UNITS	OV-7	RDL	QC Batch	OV-7 Lab-Dup	RDL	QC Batch	OV-9	RDL	QC Batch
Metals										
Mercury (Hg)	mg/L	ND	0.00010	8694633	ND	0.00010	8694633	ND	0.00010	8694633
Dissolved Aluminum (Al)	ug/L	12	4.9	8690957				ND	4.9	8690961
Dissolved Barium (Ba)	ug/L	270	2.0	8690957				120	2.0	8690961
Dissolved Beryllium (Be)	ug/L	ND	0.40	8690957				ND	0.40	8690961
Dissolved Boron (B)	ug/L	750	10	8690957				250	10	8690961
Dissolved Cadmium (Cd)	ug/L	ND	0.090	8690957				ND	0.090	8690961
Dissolved Calcium (Ca)	ug/L	210000	200	8690957				89000	200	8690961
Dissolved Chromium (Cr)	ug/L	ND	5.0	8690957				ND	5.0	8690961
Dissolved Cobalt (Co)	ug/L	3.1	0.50	8690957				0.54	0.50	8690961
Dissolved Iron (Fe)	ug/L	40000	100	8690957				ND	100	8690961
Dissolved Lead (Pb)	ug/L	ND	0.50	8690957				ND	0.50	8690961
Dissolved Magnesium (Mg)	ug/L	33000	50	8690957				19000	50	8690961
Dissolved Manganese (Mn)	ug/L	970	2.0	8690957				110	2.0	8690961
Dissolved Molybdenum (Mo)	ug/L	ND	0.50	8690957				ND	0.50	8690961
Dissolved Nickel (Ni)	ug/L	4.4	1.0	8690957				3.0	1.0	8690961
Dissolved Potassium (K)	ug/L	32000	200	8690957				1400	200	8690961
Dissolved Selenium (Se)	ug/L	ND	2.0	8690957				ND	2.0	8690961
Dissolved Silver (Ag)	ug/L	ND	0.090	8690957				ND	0.090	8690961
Dissolved Sodium (Na)	ug/L	77000	100	8690957				50000	100	8690961
Dissolved Vanadium (V)	ug/L	2.4	0.50	8690957				ND	0.50	8690961
Dissolved Zinc (Zn)	ug/L	ND	5.0	8690957				ND	5.0	8690961

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VXV951		VXV952			VXV953		
Sampling Date		2023/05/26 06:00		2023/05/26 08:00			2023/05/26 08:00		
COC Number		930142-01-01		930142-01-01			930142-01-01		
	UNITS	OV-10	RDL	BR-1S	RDL	QC Batch	BR-1D	RDL	QC Batch
Metals									
Mercury (Hg)	mg/L	ND	0.00010	ND	0.00010	8694633	ND	0.00010	8694633
Dissolved Aluminum (Al)	ug/L	ND	4.9	9.0	4.9	8690961	11	4.9	8690957
Dissolved Barium (Ba)	ug/L	250	2.0	670	2.0	8690961	3300	2.0	8690957
Dissolved Beryllium (Be)	ug/L	ND	0.40	ND	0.40	8690961	ND	0.40	8690957
Dissolved Boron (B)	ug/L	49	10	4200	10	8690961	1900	10	8690957
Dissolved Cadmium (Cd)	ug/L	ND	0.090	ND	0.090	8690961	ND	0.090	8690957
Dissolved Calcium (Ca)	ug/L	120000	200	270000	400	8690961	200000	1000	8690957
Dissolved Chromium (Cr)	ug/L	ND	5.0	ND	5.0	8690961	ND	5.0	8690957
Dissolved Cobalt (Co)	ug/L	1.6	0.50	8.8	0.50	8690961	2.6	0.50	8690957
Dissolved Iron (Fe)	ug/L	1700	100	11000	100	8690961	28000	100	8690957
Dissolved Lead (Pb)	ug/L	ND	0.50	ND	0.50	8690961	ND	0.50	8690957
Dissolved Magnesium (Mg)	ug/L	28000	50	94000	50	8690961	110000	50	8690957
Dissolved Manganese (Mn)	ug/L	320	2.0	80	2.0	8690961	99	2.0	8690957
Dissolved Molybdenum (Mo)	ug/L	0.98	0.50	0.56	0.50	8690961	0.71	0.50	8690957
Dissolved Nickel (Ni)	ug/L	1.7	1.0	34	1.0	8690961	20	1.0	8690957
Dissolved Potassium (K)	ug/L	4400	200	71000	200	8690961	36000	200	8690957
Dissolved Selenium (Se)	ug/L	ND	2.0	ND	2.0	8690961	ND	2.0	8690957
Dissolved Silver (Ag)	ug/L	ND	0.090	ND	0.090	8690961	ND	0.090	8690957
Dissolved Sodium (Na)	ug/L	39000	100	250000	100	8690961	170000	100	8690957
Dissolved Vanadium (V)	ug/L	ND	0.50	2.6	0.50	8690961	3.2	0.50	8690957
Dissolved Zinc (Zn)	ug/L	ND	5.0	ND	5.0	8690961	ND	5.0	8690957

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VXV954		VXV955		VXV956		VXV957		
Sampling Date		2023/05/26 08:00		2023/05/25 14:00		2023/05/25 14:00		2023/05/25 14:00		
COC Number		930142-01-01		930142-01-01		930142-01-01		930142-01-01		
	UNITS	BR-3	QC Batch	BR-5S	RDL	BR-5D	QC Batch	BR-6S	RDL	QC Batch
Metals										
Mercury (Hg)	mg/L	ND	8694633	ND	0.00010	ND	8694969	ND	0.00010	8694969
Dissolved Aluminum (Al)	ug/L	ND	8690957	ND	4.9	ND	8690957	ND	4.9	8690961
Dissolved Barium (Ba)	ug/L	220	8690957	83	2.0	230	8690957	150	2.0	8690961
Dissolved Beryllium (Be)	ug/L	ND	8690957	ND	0.40	ND	8690957	ND	0.40	8690961
Dissolved Boron (B)	ug/L	470	8690957	170	10	160	8690957	320	10	8690961
Dissolved Cadmium (Cd)	ug/L	ND	8690957	ND	0.090	ND	8690957	ND	0.090	8690961
Dissolved Calcium (Ca)	ug/L	130000	8690957	110000	200	110000	8690957	110000	400	8690961
Dissolved Chromium (Cr)	ug/L	ND	8690957	ND	5.0	ND	8690957	ND	5.0	8690961
Dissolved Cobalt (Co)	ug/L	ND	8690957	ND	0.50	2.0	8690957	1.2	0.50	8690961
Dissolved Iron (Fe)	ug/L	6700	8690957	ND	100	500	8690957	ND	100	8690961
Dissolved Lead (Pb)	ug/L	ND	8690957	ND	0.50	ND	8690957	ND	0.50	8690961
Dissolved Magnesium (Mg)	ug/L	40000	8690957	43000	50	34000	8690957	53000	50	8690961
Dissolved Manganese (Mn)	ug/L	200	8690957	ND	2.0	60	8690957	29	2.0	8690961
Dissolved Molybdenum (Mo)	ug/L	0.58	8690957	3.0	0.50	1.2	8690957	1.0	0.50	8690961
Dissolved Nickel (Ni)	ug/L	2.4	8690957	2.9	1.0	4.2	8690957	4.7	1.0	8690961
Dissolved Potassium (K)	ug/L	11000	8690957	3400	200	4700	8690957	5500	200	8690961
Dissolved Selenium (Se)	ug/L	ND	8690957	ND	2.0	ND	8690957	ND	2.0	8690961
Dissolved Silver (Ag)	ug/L	ND	8690957	ND	0.090	ND	8690957	ND	0.090	8690961
Dissolved Sodium (Na)	ug/L	59000	8690957	31000	100	40000	8690957	21000	100	8690961
Dissolved Vanadium (V)	ug/L	ND	8690957	ND	0.50	ND	8690957	0.52	0.50	8690961
Dissolved Zinc (Zn)	ug/L	ND	8690957	ND	5.0	ND	8690957	ND	5.0	8690961

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VXV957			VXV967			VXV968		
Sampling Date		2023/05/25 14:00			2023/05/25 06:00			2023/05/25 06:00		
COC Number		930142-01-01			930142-02-01			930142-02-01		
	UNITS	BR-6S Lab-Dup	RDL	QC Batch	BR-6D	RDL	QC Batch	BR-7S	RDL	QC Batch
Metals										
Mercury (Hg)	mg/L				ND	0.00010	8694969	ND	0.00010	8694969
Dissolved Aluminum (Al)	ug/L	ND	4.9	8690961	ND	4.9	8690957	ND	4.9	8690961
Dissolved Barium (Ba)	ug/L	150	2.0	8690961	220	2.0	8690957	170	2.0	8690961
Dissolved Beryllium (Be)	ug/L	ND	0.40	8690961	ND	0.40	8690957	ND	0.40	8690961
Dissolved Boron (B)	ug/L	320	10	8690961	340	10	8690957	100	10	8690961
Dissolved Cadmium (Cd)	ug/L	ND	0.090	8690961	ND	0.090	8690957	ND	0.090	8690961
Dissolved Calcium (Ca)	ug/L	110000	400	8690961	83000	1000	8690957	140000	200	8690961
Dissolved Chromium (Cr)	ug/L	ND	5.0	8690961	ND	5.0	8690957	ND	5.0	8690961
Dissolved Cobalt (Co)	ug/L	1.3	0.50	8690961	1.9	0.50	8690957	ND	0.50	8690961
Dissolved Iron (Fe)	ug/L	ND	100	8690961	1800	100	8690957	ND	100	8690961
Dissolved Lead (Pb)	ug/L	ND	0.50	8690961	ND	0.50	8690957	ND	0.50	8690961
Dissolved Magnesium (Mg)	ug/L	52000	50	8690961	34000	50	8690957	36000	50	8690961
Dissolved Manganese (Mn)	ug/L	29	2.0	8690961	100	2.0	8690957	ND	2.0	8690961
Dissolved Molybdenum (Mo)	ug/L	1.0	0.50	8690961	1.3	0.50	8690957	ND	0.50	8690961
Dissolved Nickel (Ni)	ug/L	4.9	1.0	8690961	3.1	1.0	8690957	1.8	1.0	8690961
Dissolved Potassium (K)	ug/L	5500	200	8690961	9000	200	8690957	3300	200	8690961
Dissolved Selenium (Se)	ug/L	ND	2.0	8690961	ND	2.0	8690957	ND	2.0	8690961
Dissolved Silver (Ag)	ug/L	ND	0.090	8690961	ND	0.090	8690957	ND	0.090	8690961
Dissolved Sodium (Na)	ug/L	22000	100	8690961	84000	100	8690957	59000	100	8690961
Dissolved Vanadium (V)	ug/L	0.57	0.50	8690961	ND	0.50	8690957	ND	0.50	8690961
Dissolved Zinc (Zn)	ug/L	ND	5.0	8690961	ND	5.0	8690957	ND	5.0	8690961

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VXV969		VXV970		VXV971		
Sampling Date		2023/05/25 06:00		2023/05/25 06:00		2023/05/25 06:00		
COC Number		930142-02-01		930142-02-01		930142-02-01		
	UNITS	BR-7D	RDL	BR-8S	QC Batch	BR-8D	RDL	QC Batch
Metals								
Mercury (Hg)	mg/L	ND	0.00010	ND	8694633	ND	0.00010	8694969
Dissolved Aluminum (Al)	ug/L	ND	4.9	ND	8690957	ND	4.9	8690961
Dissolved Barium (Ba)	ug/L	130	2.0	79	8690957	760	2.0	8690961
Dissolved Beryllium (Be)	ug/L	ND	0.40	ND	8690957	ND	0.40	8690961
Dissolved Boron (B)	ug/L	230	10	300	8690957	550	10	8690961
Dissolved Cadmium (Cd)	ug/L	ND	0.090	ND	8690957	ND	0.090	8690961
Dissolved Calcium (Ca)	ug/L	120000	400	180000	8690957	150000	1000	8690961
Dissolved Chromium (Cr)	ug/L	ND	5.0	ND	8690957	ND	5.0	8690961
Dissolved Cobalt (Co)	ug/L	1.9	0.50	1.5	8690957	ND	0.50	8690961
Dissolved Iron (Fe)	ug/L	750	100	ND	8690957	3100	100	8690961
Dissolved Lead (Pb)	ug/L	0.59	0.50	ND	8690957	2.6	0.50	8690961
Dissolved Magnesium (Mg)	ug/L	38000	50	75000	8690957	68000	50	8690961
Dissolved Manganese (Mn)	ug/L	130	2.0	160	8690957	71	2.0	8690961
Dissolved Molybdenum (Mo)	ug/L	1.3	0.50	1.3	8690957	ND	0.50	8690961
Dissolved Nickel (Ni)	ug/L	2.2	1.0	18	8690957	4.2	1.0	8690961
Dissolved Potassium (K)	ug/L	6200	200	6100	8690957	6800	200	8690961
Dissolved Selenium (Se)	ug/L	ND	2.0	ND	8690957	ND	2.0	8690961
Dissolved Silver (Ag)	ug/L	ND	0.090	ND	8690957	ND	0.090	8690961
Dissolved Sodium (Na)	ug/L	70000	100	34000	8690957	20000	100	8690961
Dissolved Vanadium (V)	ug/L	ND	0.50	ND	8690957	0.56	0.50	8690961
Dissolved Zinc (Zn)	ug/L	ND	5.0	ND	8690957	ND	5.0	8690961

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VXV972		VXV973			VXV973		
Sampling Date		2023/05/25 06:00		2023/05/25 06:00			2023/05/25 06:00		
COC Number		930142-02-01		930142-02-01			930142-02-01		
	UNITS	BR-9S	RDL	BR-10	RDL	QC Batch	BR-10 Lab-Dup	RDL	QC Batch
Metals									
Mercury (Hg)	mg/L	ND	0.00010	ND	0.00010	8694633			
Dissolved Aluminum (Al)	ug/L	ND	4.9	ND	4.9	8690957	ND	4.9	8690957
Dissolved Barium (Ba)	ug/L	130	2.0	200	2.0	8690957	190	2.0	8690957
Dissolved Beryllium (Be)	ug/L	ND	0.40	ND	0.40	8690957	ND	0.40	8690957
Dissolved Boron (B)	ug/L	99	10	730	10	8690957	740	10	8690957
Dissolved Cadmium (Cd)	ug/L	ND	0.090	ND	0.090	8690957	ND	0.090	8690957
Dissolved Calcium (Ca)	ug/L	140000	200	92000	400	8690957	93000	400	8690957
Dissolved Chromium (Cr)	ug/L	ND	5.0	ND	5.0	8690957	ND	5.0	8690957
Dissolved Cobalt (Co)	ug/L	1.0	0.50	ND	0.50	8690957	ND	0.50	8690957
Dissolved Iron (Fe)	ug/L	3100	100	1100	100	8690957	1100	100	8690957
Dissolved Lead (Pb)	ug/L	ND	0.50	ND	0.50	8690957	ND	0.50	8690957
Dissolved Magnesium (Mg)	ug/L	66000	50	32000	50	8690957	32000	50	8690957
Dissolved Manganese (Mn)	ug/L	430	2.0	33	2.0	8690957	33	2.0	8690957
Dissolved Molybdenum (Mo)	ug/L	ND	0.50	0.87	0.50	8690957	0.92	0.50	8690957
Dissolved Nickel (Ni)	ug/L	4.5	1.0	ND	1.0	8690957	ND	1.0	8690957
Dissolved Potassium (K)	ug/L	2700	200	3300	200	8690957	3200	200	8690957
Dissolved Selenium (Se)	ug/L	ND	2.0	ND	2.0	8690957	ND	2.0	8690957
Dissolved Silver (Ag)	ug/L	ND	0.090	ND	0.090	8690957	ND	0.090	8690957
Dissolved Sodium (Na)	ug/L	4800	100	54000	100	8690957	52000	100	8690957
Dissolved Vanadium (V)	ug/L	ND	0.50	ND	0.50	8690957	ND	0.50	8690957
Dissolved Zinc (Zn)	ug/L	ND	5.0	ND	5.0	8690957	ND	5.0	8690957

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VXV974	VXV975		VXV976			VXV983		
Sampling Date		2023/05/25 06:00	2023/05/25 06:00		2023/05/25 06:00			2023/05/25 14:00		
COC Number		930142-02-01	930142-02-01		930142-02-01			930142-03-01		
	UNITS	BR-11	BR-12	QC Batch	OV-23	RDL	QC Batch	BR-23S	RDL	QC Batch
Metals										
Mercury (Hg)	mg/L	ND	ND	8694633	ND	0.00010	8694969	ND	0.00010	8694969
Dissolved Aluminum (Al)	ug/L	ND	29	8690957	ND	4.9	8690961	ND	4.9	8690957
Dissolved Barium (Ba)	ug/L	4.1	25	8690957	140	2.0	8690961	200	2.0	8690957
Dissolved Beryllium (Be)	ug/L	ND	ND	8690957	ND	0.40	8690961	ND	0.40	8690957
Dissolved Boron (B)	ug/L	87	31	8690957	55	10	8690961	230	10	8690957
Dissolved Cadmium (Cd)	ug/L	ND	ND	8690957	ND	0.090	8690961	ND	0.090	8690957
Dissolved Calcium (Ca)	ug/L	79000	110000	8690957	140000	200	8690961	89000	400	8690957
Dissolved Chromium (Cr)	ug/L	ND	ND	8690957	ND	5.0	8690961	ND	5.0	8690957
Dissolved Cobalt (Co)	ug/L	ND	2.6	8690957	ND	0.50	8690961	0.74	0.50	8690957
Dissolved Iron (Fe)	ug/L	ND	980	8690957	ND	100	8690961	190	100	8690957
Dissolved Lead (Pb)	ug/L	ND	ND	8690957	1.2	0.50	8690961	ND	0.50	8690957
Dissolved Magnesium (Mg)	ug/L	41000	36000	8690957	31000	50	8690961	34000	50	8690957
Dissolved Manganese (Mn)	ug/L	ND	1200	8690957	ND	2.0	8690961	43	2.0	8690957
Dissolved Molybdenum (Mo)	ug/L	0.90	ND	8690957	ND	0.50	8690961	1.3	0.50	8690957
Dissolved Nickel (Ni)	ug/L	1.1	14	8690957	ND	1.0	8690961	1.5	1.0	8690957
Dissolved Potassium (K)	ug/L	1100	2700	8690957	3600	200	8690961	6600	200	8690957
Dissolved Selenium (Se)	ug/L	ND	ND	8690957	ND	2.0	8690961	ND	2.0	8690957
Dissolved Silver (Ag)	ug/L	ND	ND	8690957	ND	0.090	8690961	ND	0.090	8690957
Dissolved Sodium (Na)	ug/L	1200	1100	8690957	41000	100	8690961	39000	100	8690957
Dissolved Vanadium (V)	ug/L	ND	1.5	8690957	ND	0.50	8690961	ND	0.50	8690957
Dissolved Zinc (Zn)	ug/L	ND	ND	8690957	ND	5.0	8690961	ND	5.0	8690957

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VXV984		VXV985			VXV986		
Sampling Date		2023/05/25 11:00		2023/05/25 11:00			2023/05/25 11:00		
COC Number		930142-03-01		930142-03-01			930142-03-01		
	UNITS	BR08-1S	QC Batch	BR08-1D	RDL	QC Batch	BR08-2S	RDL	QC Batch
Metals									
Mercury (Hg)	mg/L	ND	8694633	ND	0.00010	8694633	ND	0.00010	8694969
Dissolved Aluminum (Al)	ug/L	ND	8690957	ND	4.9	8690961	ND	4.9	8690957
Dissolved Barium (Ba)	ug/L	430	8690957	480	2.0	8690961	40	2.0	8690957
Dissolved Beryllium (Be)	ug/L	ND	8690957	ND	0.40	8690961	ND	0.40	8690957
Dissolved Boron (B)	ug/L	880	8690957	980	10	8690961	140	10	8690957
Dissolved Cadmium (Cd)	ug/L	ND	8690957	ND	0.090	8690961	ND	0.090	8690957
Dissolved Calcium (Ca)	ug/L	150000	8690957	170000	1000	8690961	85000	200	8690957
Dissolved Chromium (Cr)	ug/L	ND	8690957	ND	5.0	8690961	ND	5.0	8690957
Dissolved Cobalt (Co)	ug/L	ND	8690957	ND	0.50	8690961	ND	0.50	8690957
Dissolved Iron (Fe)	ug/L	970	8690957	1100	100	8690961	ND	100	8690957
Dissolved Lead (Pb)	ug/L	1.7	8690957	ND	0.50	8690961	ND	0.50	8690957
Dissolved Magnesium (Mg)	ug/L	74000	8690957	82000	50	8690961	21000	50	8690957
Dissolved Manganese (Mn)	ug/L	14	8690957	19	2.0	8690961	ND	2.0	8690957
Dissolved Molybdenum (Mo)	ug/L	ND	8690957	ND	0.50	8690961	0.50	0.50	8690957
Dissolved Nickel (Ni)	ug/L	5.1	8690957	5.7	1.0	8690961	2.8	1.0	8690957
Dissolved Potassium (K)	ug/L	11000	8690957	12000	200	8690961	3200	200	8690957
Dissolved Selenium (Se)	ug/L	ND	8690957	ND	2.0	8690961	ND	2.0	8690957
Dissolved Silver (Ag)	ug/L	ND	8690957	ND	0.090	8690961	ND	0.090	8690957
Dissolved Sodium (Na)	ug/L	41000	8690957	46000	100	8690961	22000	100	8690957
Dissolved Vanadium (V)	ug/L	0.60	8690957	0.66	0.50	8690961	ND	0.50	8690957
Dissolved Zinc (Zn)	ug/L	ND	8690957	ND	5.0	8690961	ND	5.0	8690957

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VXV987			VXV988		VXV989		
Sampling Date		2023/05/25 11:00			2023/05/25 11:00		2023/05/25 11:00		
COC Number		930142-03-01			930142-03-01		930142-03-01		
	UNITS	BR08-2D	RDL	QC Batch	BR08-3S	QC Batch	BR08-3D	RDL	QC Batch
Metals									
Mercury (Hg)	mg/L	ND	0.00010	8694633	ND	8694633	ND	0.00010	8694633
Dissolved Aluminum (Al)	ug/L	ND	4.9	8690957	ND	8690961	ND	4.9	8690957
Dissolved Barium (Ba)	ug/L	120	2.0	8690957	49	8690961	40	2.0	8690957
Dissolved Beryllium (Be)	ug/L	ND	0.40	8690957	ND	8690961	ND	0.40	8690957
Dissolved Boron (B)	ug/L	530	10	8690957	170	8690961	160	10	8690957
Dissolved Cadmium (Cd)	ug/L	ND	0.090	8690957	ND	8690961	ND	0.090	8690957
Dissolved Calcium (Ca)	ug/L	110000	400	8690957	80000	8690961	68000	200	8690957
Dissolved Chromium (Cr)	ug/L	ND	5.0	8690957	ND	8690961	ND	5.0	8690957
Dissolved Cobalt (Co)	ug/L	ND	0.50	8690957	ND	8690961	ND	0.50	8690957
Dissolved Iron (Fe)	ug/L	640	100	8690957	350	8690961	ND	100	8690957
Dissolved Lead (Pb)	ug/L	ND	0.50	8690957	ND	8690961	ND	0.50	8690957
Dissolved Magnesium (Mg)	ug/L	62000	50	8690957	45000	8690961	41000	50	8690957
Dissolved Manganese (Mn)	ug/L	21	2.0	8690957	21	8690961	7.0	2.0	8690957
Dissolved Molybdenum (Mo)	ug/L	ND	0.50	8690957	2.5	8690961	2.8	0.50	8690957
Dissolved Nickel (Ni)	ug/L	1.4	1.0	8690957	ND	8690961	ND	1.0	8690957
Dissolved Potassium (K)	ug/L	5700	200	8690957	3500	8690961	3400	200	8690957
Dissolved Selenium (Se)	ug/L	ND	2.0	8690957	ND	8690961	ND	2.0	8690957
Dissolved Silver (Ag)	ug/L	ND	0.090	8690957	ND	8690961	ND	0.090	8690957
Dissolved Sodium (Na)	ug/L	7500	100	8690957	1700	8690961	1100	100	8690957
Dissolved Vanadium (V)	ug/L	ND	0.50	8690957	ND	8690961	ND	0.50	8690957
Dissolved Zinc (Zn)	ug/L	ND	5.0	8690957	ND	8690961	ND	5.0	8690957

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VXV990			VXV991		VXV992		
Sampling Date		2023/05/25 11:00			2023/05/25 11:00		2023/05/25 11:00		
COC Number		930142-03-01			930142-03-01		930142-03-01		
	UNITS	DUP-1	RDL	QC Batch	DUP-2	RDL	BR-23D	RDL	QC Batch
Metals									
Mercury (Hg)	mg/L	ND	0.00010	8694969	ND	0.00010	ND	0.00010	8694633
Dissolved Aluminum (Al)	ug/L	ND	4.9	8690957	ND	4.9	ND	4.9	8690957
Dissolved Barium (Ba)	ug/L	200	2.0	8690957	130	2.0	140	2.0	8690957
Dissolved Beryllium (Be)	ug/L	ND	0.40	8690957	ND	0.40	ND	0.40	8690957
Dissolved Boron (B)	ug/L	750	10	8690957	53	10	330	10	8690957
Dissolved Cadmium (Cd)	ug/L	ND	0.090	8690957	ND	0.090	ND	0.090	8690957
Dissolved Calcium (Ca)	ug/L	93000	400	8690957	140000	200	54000	1000	8690957
Dissolved Chromium (Cr)	ug/L	ND	5.0	8690957	ND	5.0	ND	5.0	8690957
Dissolved Cobalt (Co)	ug/L	ND	0.50	8690957	ND	0.50	ND	0.50	8690957
Dissolved Iron (Fe)	ug/L	1200	100	8690957	ND	100	210	100	8690957
Dissolved Lead (Pb)	ug/L	ND	0.50	8690957	ND	0.50	ND	0.50	8690957
Dissolved Magnesium (Mg)	ug/L	32000	50	8690957	32000	50	29000	50	8690957
Dissolved Manganese (Mn)	ug/L	34	2.0	8690957	ND	2.0	26	2.0	8690957
Dissolved Molybdenum (Mo)	ug/L	0.99	0.50	8690957	ND	0.50	2.2	0.50	8690957
Dissolved Nickel (Ni)	ug/L	ND	1.0	8690957	ND	1.0	ND	1.0	8690957
Dissolved Potassium (K)	ug/L	3300	200	8690957	3600	200	9400	200	8690957
Dissolved Selenium (Se)	ug/L	ND	2.0	8690957	ND	2.0	ND	2.0	8690957
Dissolved Silver (Ag)	ug/L	ND	0.090	8690957	ND	0.090	ND	0.090	8690957
Dissolved Sodium (Na)	ug/L	54000	100	8690957	39000	100	91000	100	8690957
Dissolved Vanadium (V)	ug/L	ND	0.50	8690957	ND	0.50	ND	0.50	8690957
Dissolved Zinc (Zn)	ug/L	ND	5.0	8690957	ND	5.0	ND	5.0	8690957

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VXV993		
Sampling Date		2023/05/25 11:00		
COC Number		930142-03-01		
	UNITS	BR-9D	RDL	QC Batch
Metals				
Mercury (Hg)	mg/L	ND	0.00010	8694969
Dissolved Aluminum (Al)	ug/L	ND	4.9	8690961
Dissolved Barium (Ba)	ug/L	170	2.0	8690961
Dissolved Beryllium (Be)	ug/L	ND	0.40	8690961
Dissolved Boron (B)	ug/L	1200	10	8690961
Dissolved Cadmium (Cd)	ug/L	ND	0.090	8690961
Dissolved Calcium (Ca)	ug/L	110000	1000	8690961
Dissolved Chromium (Cr)	ug/L	ND	5.0	8690961
Dissolved Cobalt (Co)	ug/L	ND	0.50	8690961
Dissolved Iron (Fe)	ug/L	ND	100	8690961
Dissolved Lead (Pb)	ug/L	ND	0.50	8690961
Dissolved Magnesium (Mg)	ug/L	65000	50	8690961
Dissolved Manganese (Mn)	ug/L	ND	2.0	8690961
Dissolved Molybdenum (Mo)	ug/L	0.76	0.50	8690961
Dissolved Nickel (Ni)	ug/L	9.0	1.0	8690961
Dissolved Potassium (K)	ug/L	11000	200	8690961
Dissolved Selenium (Se)	ug/L	ND	2.0	8690961
Dissolved Silver (Ag)	ug/L	ND	0.090	8690961
Dissolved Sodium (Na)	ug/L	30000	100	8690961
Dissolved Vanadium (V)	ug/L	ND	0.50	8690961
Dissolved Zinc (Zn)	ug/L	ND	5.0	8690961

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

TEST SUMMARY

Bureau Veritas ID: VXV949
Sample ID: OV-7
Matrix: Water

Collected: 2023/05/26
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690378	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690389	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690360	N/A	2023/05/30	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693639	2023/05/31	2023/06/01	Razieh Tabesh
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV949 Dup
Sample ID: OV-7
Matrix: Water

Collected: 2023/05/26
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur

Bureau Veritas ID: VXV950
Sample ID: OV-9
Matrix: Water

Collected: 2023/05/26
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690360	N/A	2023/05/30	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/31	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690961	N/A	2023/05/31	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695628	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV951
Sample ID: OV-10
Matrix: Water

Collected: 2023/05/26
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690378	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan

TEST SUMMARY

Bureau Veritas ID: VXV951
Sample ID: OV-10
Matrix: Water

Collected: 2023/05/26
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	8690389	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690360	N/A	2023/05/30	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/31	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690961	N/A	2023/05/31	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695628	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV952
Sample ID: BR-1S
Matrix: Water

Collected: 2023/05/26
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/31	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690961	N/A	2023/05/31	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV953
Sample ID: BR-1D
Matrix: Water

Collected: 2023/05/26
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8689264	N/A	2023/05/30	Alina Dobreanu
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur
Orthophosphate	KONE	8689267	N/A	2023/05/30	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8689265	N/A	2023/05/30	Alina Dobreanu
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall

TEST SUMMARY

Bureau Veritas ID: VXV953 **Collected:** 2023/05/26
Sample ID: BR-1D **Shipped:**
Matrix: Water **Received:** 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	SKAL/P	8695628	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV954 **Collected:** 2023/05/26
Sample ID: BR-3 **Shipped:**
Matrix: Water **Received:** 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8689264	N/A	2023/05/30	Alina Dobreanu
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690360	N/A	2023/05/30	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur
Orthophosphate	KONE	8689267	N/A	2023/05/30	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8689265	N/A	2023/05/30	Alina Dobreanu
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695628	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV955 **Collected:** 2023/05/25
Sample ID: BR-5S **Shipped:**
Matrix: Water **Received:** 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690378	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690389	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694969	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV955 Dup **Collected:** 2023/05/25
Sample ID: BR-5S **Shipped:**
Matrix: Water **Received:** 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall

TEST SUMMARY

Bureau Veritas ID: VXV956
Sample ID: BR-5D
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690378	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690389	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690360	N/A	2023/05/30	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694969	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV957
Sample ID: BR-6S
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8689264	N/A	2023/05/30	Alina Dobreanu
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/30	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/31	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694969	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690961	N/A	2023/05/31	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8689267	N/A	2023/05/30	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8689265	N/A	2023/05/30	Alina Dobreanu
Total Dissolved Solids	BAL	8693639	2023/05/31	2023/06/01	Razieh Tabesh
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV957 Dup
Sample ID: BR-6S
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	8690961	N/A	2023/05/31	Arefa Dabhad

Bureau Veritas ID: VXV967
Sample ID: BR-6D
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan

TEST SUMMARY

Bureau Veritas ID: VXV967
Sample ID: BR-6D
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690360	N/A	2023/05/30	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694969	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693131	2023/05/30	2023/05/31	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695628	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV967 Dup
Sample ID: BR-6D
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids	BAL	8693131	2023/05/30	2023/05/31	Shaneil Hall

Bureau Veritas ID: VXV968
Sample ID: BR-7S
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/31	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694969	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690961	N/A	2023/05/31	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693639	2023/05/31	2023/06/01	Razieh Tabesh
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV968 Dup
Sample ID: BR-7S
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

TEST SUMMARY

Bureau Veritas ID: VXV969
Sample ID: BR-7D
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV970
Sample ID: BR-8S
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693639	2023/05/31	2023/06/01	Razieh Tabesh
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV970 Dup
Sample ID: BR-8S
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Total Dissolved Solids	BAL	8693639	2023/05/31	2023/06/01	Razieh Tabesh

TEST SUMMARY

Bureau Veritas ID: VXV971
Sample ID: BR-8D
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690378	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690389	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/30	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/31	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694969	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690961	N/A	2023/05/31	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV971 Dup
Sample ID: BR-8D
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan

Bureau Veritas ID: VXV972
Sample ID: BR-9S
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690378	N/A	2023/05/31	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690389	N/A	2023/05/31	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693639	2023/05/31	2023/06/01	Razieh Tabesh
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

TEST SUMMARY

Bureau Veritas ID: VXV973 **Collected:** 2023/05/25
Sample ID: BR-10 **Shipped:**
Matrix: Water **Received:** 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690360	N/A	2023/05/30	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV973 Dup **Collected:** 2023/05/25
Sample ID: BR-10 **Shipped:**
Matrix: Water **Received:** 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690360	N/A	2023/05/30	Gyulshen Idriz
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad

Bureau Veritas ID: VXV974 **Collected:** 2023/05/25
Sample ID: BR-11 **Shipped:**
Matrix: Water **Received:** 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8689264	N/A	2023/05/30	Alina Dobreanu
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8689267	N/A	2023/05/30	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8689265	N/A	2023/05/30	Alina Dobreanu
Total Dissolved Solids	BAL	8693639	2023/05/31	2023/06/01	Razieh Tabesh
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV975 **Collected:** 2023/05/25
Sample ID: BR-12 **Shipped:**
Matrix: Water **Received:** 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690378	N/A	2023/05/31	Kien Tran

TEST SUMMARY

Bureau Veritas ID: VXV975
Sample ID: BR-12
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690389	N/A	2023/05/31	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV976
Sample ID: OV-23
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8689264	N/A	2023/05/30	Alina Dobreanu
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/31	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694969	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690961	N/A	2023/05/31	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8689267	N/A	2023/05/30	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8689265	N/A	2023/05/30	Alina Dobreanu
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695628	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV983
Sample ID: BR-23S
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8689264	N/A	2023/05/30	Alina Dobreanu
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694969	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur
Orthophosphate	KONE	8689267	N/A	2023/05/30	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8689265	N/A	2023/05/30	Alina Dobreanu

Bureau Veritas Job #: C3F1830
Report Date: 2023/06/05

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

TEST SUMMARY

Bureau Veritas ID: VXV983
Sample ID: BR-23S
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695628	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV983 Dup
Sample ID: BR-23S
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur

Bureau Veritas ID: VXV984
Sample ID: BR08-1S
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV985
Sample ID: BR08-1D
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/31	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690961	N/A	2023/05/31	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

TEST SUMMARY

Bureau Veritas ID: VXV986 **Collected:** 2023/05/25
Sample ID: BR08-2S **Shipped:**
Matrix: Water **Received:** 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694969	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV987 **Collected:** 2023/05/25
Sample ID: BR08-2D **Shipped:**
Matrix: Water **Received:** 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690378	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690389	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690360	N/A	2023/05/30	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695628	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV987 Dup **Collected:** 2023/05/25
Sample ID: BR08-2D **Shipped:**
Matrix: Water **Received:** 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur

Bureau Veritas ID: VXV988 **Collected:** 2023/05/25
Sample ID: BR08-3S **Shipped:**
Matrix: Water **Received:** 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8689264	N/A	2023/05/30	Alina Dobreanu

TEST SUMMARY

Bureau Veritas ID: VXV988
Sample ID: BR08-3S
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/31	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690961	N/A	2023/05/31	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur
Orthophosphate	KONE	8689267	N/A	2023/05/30	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8689265	N/A	2023/05/30	Alina Dobreanu
Total Dissolved Solids	BAL	8693639	2023/05/31	2023/06/01	Razieh Tabesh
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV988 Dup
Sample ID: BR08-3S
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz

Bureau Veritas ID: VXV989
Sample ID: BR08-3D
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8689264	N/A	2023/05/30	Alina Dobreanu
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur
Orthophosphate	KONE	8689267	N/A	2023/05/30	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8689265	N/A	2023/05/30	Alina Dobreanu
Total Dissolved Solids	BAL	8693639	2023/05/31	2023/06/01	Razieh Tabesh
Total Phosphorus (Colourimetric)	SKAL/P	8695628	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV990
Sample ID: DUP-1
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8689264	N/A	2023/05/30	Alina Dobreanu
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/30	Gyulshen Idriz

TEST SUMMARY

Bureau Veritas ID: VXV990
Sample ID: DUP-1
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694969	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8689267	N/A	2023/05/30	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8689265	N/A	2023/05/30	Alina Dobreanu
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV991
Sample ID: DUP-2
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690378	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690389	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690354	N/A	2023/05/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694708	N/A	2023/06/01	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693617	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695628	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas ID: VXV992
Sample ID: BR-23D
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690361	N/A	2023/06/01	Kien Tran
Chloride by Automated Colourimetry	KONE	8689264	N/A	2023/05/30	Alina Dobreanu
Conductivity	AT	8690355	N/A	2023/06/01	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690360	N/A	2023/05/30	Gyulshen Idriz
Hardness (calculated as CaCO3)		8688672	N/A	2023/05/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694633	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690957	N/A	2023/05/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8694699	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8689267	N/A	2023/05/30	Alina Dobreanu
Sulphate by Automated Turbidimetry	KONE	8689265	N/A	2023/05/30	Alina Dobreanu
Total Dissolved Solids	BAL	8693639	2023/05/31	2023/06/01	Razieh Tabesh
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

Bureau Veritas Job #: C3F1830
Report Date: 2023/06/05

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

TEST SUMMARY

Bureau Veritas ID: VXV993
Sample ID: BR-9D
Matrix: Water

Collected: 2023/05/25
Shipped:
Received: 2023/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8690754	N/A	2023/05/30	Kien Tran
Chloride by Automated Colourimetry	KONE	8690694	N/A	2023/05/30	Massarat Jan
Conductivity	AT	8690758	N/A	2023/05/30	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8690360	N/A	2023/05/30	Gyulshen Idriz
Hardness (calculated as CaCO3)		8690120	N/A	2023/05/31	Automated Statchk
Mercury in Water by CVAA	CV/AA	8694969	2023/05/31	2023/05/31	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8690961	N/A	2023/05/31	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8695371	N/A	2023/05/31	Prabhjot Kaur
Orthophosphate	KONE	8690685	N/A	2023/05/30	Massarat Jan
Sulphate by Automated Turbidimetry	KONE	8690698	N/A	2023/05/30	Massarat Jan
Total Dissolved Solids	BAL	8693674	2023/05/31	2023/06/01	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8695623	2023/05/31	2023/06/02	Sachi Patel

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.7°C
Package 2	6.0°C
Package 3	5.3°C
Package 4	1.7°C

Revision: Additional analysis has been added per P98 on 2023/05/29

Results relate only to the items tested.

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8689264	Dissolved Chloride (Cl-)	2023/05/30	96	80 - 120	96	80 - 120	ND, RDL=1.0	mg/L	16	20		
8689265	Dissolved Sulphate (SO4)	2023/05/30	NC	75 - 125	97	80 - 120	ND, RDL=1.0	mg/L	0.97	20		
8689267	Orthophosphate (P)	2023/05/30	90	75 - 125	94	80 - 120	ND, RDL=0.010	mg/L	2.0	20		
8690354	Dissolved Organic Carbon	2023/05/29	99	80 - 120	100	80 - 120	ND, RDL=0.40	mg/L	1.1	20		
8690355	Conductivity	2023/06/01			101	85 - 115	1.0, RDL=1.0	umho/cm	0.66	25		
8690360	Dissolved Organic Carbon	2023/05/30	95	80 - 120	97	80 - 120	ND, RDL=0.40	mg/L	4.2	20		
8690361	Alkalinity (Total as CaCO3)	2023/06/01			96	85 - 115	ND, RDL=1.0	mg/L	0.12	20		
8690378	Alkalinity (Total as CaCO3)	2023/05/31			98	85 - 115	ND, RDL=1.0	mg/L	1.3	20		
8690389	Conductivity	2023/05/31			105	85 - 115	ND, RDL=1.0	umho/cm	0	25		
8690685	Orthophosphate (P)	2023/05/30	93	75 - 125	96	80 - 120	ND, RDL=0.010	mg/L	NC	20		
8690694	Dissolved Chloride (Cl-)	2023/05/30	NC	80 - 120	96	80 - 120	ND, RDL=1.0	mg/L	0.50	20		
8690698	Dissolved Sulphate (SO4)	2023/05/30	98	75 - 125	99	80 - 120	ND, RDL=1.0	mg/L	NC	20		
8690754	Alkalinity (Total as CaCO3)	2023/05/30			94	85 - 115	ND, RDL=1.0	mg/L	0.42	20		
8690758	Conductivity	2023/05/30			100	85 - 115	ND, RDL=1.0	umho/cm	0.84	25		
8690957	Dissolved Aluminum (Al)	2023/05/30	102	80 - 120	99	80 - 120	ND, RDL=4.9	ug/L	NC	20		
8690957	Dissolved Barium (Ba)	2023/05/30	98	80 - 120	96	80 - 120	ND, RDL=2.0	ug/L	2.8	20		
8690957	Dissolved Beryllium (Be)	2023/05/30	104	80 - 120	99	80 - 120	ND, RDL=0.40	ug/L	NC	20		
8690957	Dissolved Boron (B)	2023/05/30	NC	80 - 120	97	80 - 120	ND, RDL=10	ug/L	1.2	20		
8690957	Dissolved Cadmium (Cd)	2023/05/30	97	80 - 120	97	80 - 120	ND, RDL=0.090	ug/L	NC	20		
8690957	Dissolved Calcium (Ca)	2023/05/30	NC	80 - 120	101	80 - 120	ND, RDL=200	ug/L	1.1	20		
8690957	Dissolved Chromium (Cr)	2023/05/30	97	80 - 120	101	80 - 120	ND, RDL=5.0	ug/L	NC	20		
8690957	Dissolved Cobalt (Co)	2023/05/30	99	80 - 120	101	80 - 120	ND, RDL=0.50	ug/L	NC	20		
8690957	Dissolved Iron (Fe)	2023/05/30	100	80 - 120	103	80 - 120	ND, RDL=100	ug/L	3.4	20		
8690957	Dissolved Lead (Pb)	2023/05/30	99	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	NC	20		
8690957	Dissolved Magnesium (Mg)	2023/05/30	NC	80 - 120	105	80 - 120	ND, RDL=50	ug/L	0.039	20		
8690957	Dissolved Manganese (Mn)	2023/05/30	94	80 - 120	96	80 - 120	ND, RDL=2.0	ug/L	0.033	20		
8690957	Dissolved Molybdenum (Mo)	2023/05/30	101	80 - 120	102	80 - 120	ND, RDL=0.50	ug/L	6.3	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8690957	Dissolved Nickel (Ni)	2023/05/30	93	80 - 120	96	80 - 120	ND, RDL=1.0	ug/L	NC	20		
8690957	Dissolved Potassium (K)	2023/05/30	100	80 - 120	100	80 - 120	ND, RDL=200	ug/L	2.1	20		
8690957	Dissolved Selenium (Se)	2023/05/30	100	80 - 120	97	80 - 120	ND, RDL=2.0	ug/L	NC	20		
8690957	Dissolved Silver (Ag)	2023/05/30	96	80 - 120	96	80 - 120	ND, RDL=0.090	ug/L	NC	20		
8690957	Dissolved Sodium (Na)	2023/05/30	NC	80 - 120	98	80 - 120	ND, RDL=100	ug/L	3.7	20		
8690957	Dissolved Vanadium (V)	2023/05/30	95	80 - 120	93	80 - 120	ND, RDL=0.50	ug/L	NC	20		
8690957	Dissolved Zinc (Zn)	2023/05/30	96	80 - 120	98	80 - 120	ND, RDL=5.0	ug/L	NC	20		
8690961	Dissolved Aluminum (Al)	2023/05/31	99	80 - 120	100	80 - 120	ND, RDL=4.9	ug/L	NC	20		
8690961	Dissolved Barium (Ba)	2023/05/31	104	80 - 120	99	80 - 120	ND, RDL=2.0	ug/L	0.26	20		
8690961	Dissolved Beryllium (Be)	2023/05/31	104	80 - 120	99	80 - 120	ND, RDL=0.40	ug/L	NC	20		
8690961	Dissolved Boron (B)	2023/05/31	106	80 - 120	101	80 - 120	ND, RDL=10	ug/L	0.87	20		
8690961	Dissolved Cadmium (Cd)	2023/05/31	102	80 - 120	99	80 - 120	ND, RDL=0.090	ug/L	NC	20		
8690961	Dissolved Calcium (Ca)	2023/05/31	NC	80 - 120	106	80 - 120	ND, RDL=200	ug/L	0.46	20		
8690961	Dissolved Chromium (Cr)	2023/05/31	96	80 - 120	95	80 - 120	ND, RDL=5.0	ug/L	NC	20		
8690961	Dissolved Cobalt (Co)	2023/05/31	99	80 - 120	102	80 - 120	ND, RDL=0.50	ug/L	2.8	20		
8690961	Dissolved Iron (Fe)	2023/05/31	104	80 - 120	104	80 - 120	ND, RDL=100	ug/L	NC	20		
8690961	Dissolved Lead (Pb)	2023/05/31	101	80 - 120	100	80 - 120	ND, RDL=0.50	ug/L	NC	20		
8690961	Dissolved Magnesium (Mg)	2023/05/31	NC	80 - 120	101	80 - 120	ND, RDL=50	ug/L	2.0	20		
8690961	Dissolved Manganese (Mn)	2023/05/31	98	80 - 120	97	80 - 120	ND, RDL=2.0	ug/L	0.78	20		
8690961	Dissolved Molybdenum (Mo)	2023/05/31	108	80 - 120	103	80 - 120	ND, RDL=0.50	ug/L	0.89	20		
8690961	Dissolved Nickel (Ni)	2023/05/31	95	80 - 120	97	80 - 120	ND, RDL=1.0	ug/L	2.7	20		
8690961	Dissolved Potassium (K)	2023/05/31	103	80 - 120	102	80 - 120	ND, RDL=200	ug/L	0.83	20		
8690961	Dissolved Selenium (Se)	2023/05/31	99	80 - 120	100	80 - 120	ND, RDL=2.0	ug/L	NC	20		
8690961	Dissolved Silver (Ag)	2023/05/31	97	80 - 120	94	80 - 120	ND, RDL=0.090	ug/L	NC	20		
8690961	Dissolved Sodium (Na)	2023/05/31	106	80 - 120	103	80 - 120	ND, RDL=100	ug/L	6.1	20		
8690961	Dissolved Vanadium (V)	2023/05/31	97	80 - 120	97	80 - 120	ND, RDL=0.50	ug/L	7.9	20		
8690961	Dissolved Zinc (Zn)	2023/05/31	98	80 - 120	98	80 - 120	ND, RDL=5.0	ug/L	NC	20		
8693131	Total Dissolved Solids	2023/05/31			100	90 - 110	ND, RDL=10	mg/L	5.5	20		
8693617	Total Dissolved Solids	2023/06/01			95	90 - 110	ND, RDL=10	mg/L	2.2	20		
8693639	Total Dissolved Solids	2023/06/01			98	90 - 110	ND, RDL=10	mg/L	1.8	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8693674	Total Dissolved Solids	2023/06/01			97	90 - 110	ND, RDL=10	mg/L	18	20		
8694633	Mercury (Hg)	2023/05/31	102	75 - 125	103	80 - 120	ND, RDL=0.00010	mg/L	NC	20		
8694699	Total Ammonia-N	2023/05/31	99	75 - 125	101	80 - 120	ND, RDL=0.050	mg/L	NC	20		
8694708	Total Ammonia-N	2023/06/01	102	75 - 125	103	80 - 120	ND, RDL=0.050	mg/L	NC	20		
8694969	Mercury (Hg)	2023/05/31	104	75 - 125	105	80 - 120	ND, RDL=0.00010	mg/L	NC	20		
8695371	Total Ammonia-N	2023/05/31	99	75 - 125	101	80 - 120	ND, RDL=0.050	mg/L	5.1	20		
8695623	Total Phosphorus	2023/06/02	98	80 - 120	104	80 - 120	ND, RDL=0.004	mg/L	18	20	117	80 - 120
8695628	Total Phosphorus	2023/06/02	105	80 - 120	100	80 - 120	ND, RDL=0.004	mg/L	2.4	20	100	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

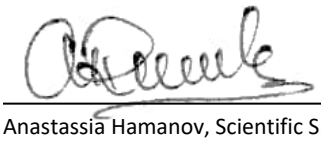
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

Bureau Veritas
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvna.com

Received in Ottawa

CHAIN OF CUSTODY RECORD

26-May-23 13:27
Katherine Szozda
C3F1830
RUK ENV-915

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#28962 The Corporation of the Town of Arnprior	Company Name:	#17006 WSP Canada Inc	Quotation #:	B41189
Attention:	Invoices- Andria & Emily	Attention:	Hadia Aziz	P.O. #:	
Address:	105 Elgin Street W Arnprior ON K7S 0A8	Address:	1931 Robertson Rd Ottawa ON K2H5B7	Project:	23594631
Tel:	(613) 623-4231 Fax:	Tel:	(613) 592-9600 Fax: (613) 592-9601	Project Name:	Arnprior LF
Email:	andria.caletti@wsp.com, emily.bacon@wsp.com	Email:	hadia.aziz@wsp.com	Site #:	Arnprior LF
				Sampled By:	C. Albert

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558. ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Reg 406 Table ___ ☐ Other ___	

Include Criteria on Certificate of Analysis (Y/N)? ___

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	# of Bottles	Comments
1	SID#618194	OV-7	May 26/23	6Am	GW	7	
2	SID#618195	OV-9	↓	↓	↓	↓	
3	SID#618196	OV-10	↓	↓	↓	↓	
4	SID#618197	~~OV-8~~					
5	SID#618198	BR-1S	May 26/23	8Am	GW	↓	
6	SID#618199	BR-1D	↓	↓	↓	↓	
7	SID#618200	BR-3	↓	↓	↓	↓	
8	SID#618201	BR-5S	May 25/23	2pm	↓	↓	
9	SID#618202	BR-5D	↓	↓	↓	↓	
10	SID#618203	BR-6S	↓	↓	↓	↓	ON ICE

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
C. Albert	May 26/23	4pm	Katie Szozda Katie Szozda	2023/05/26	13:27	
			Rupinder Rupinder	2023/05/27	8:25	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	See ACTR	Present		X
		Intact		X

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client

Bureau Veritas Canada (2019) Inc.

Bureau Veritas
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvna.com

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#28962 The Corporation of the Town of Arnprior	Company Name:	#17006 WSP Canada Inc	Quotation #:	B41189	Bureau Veritas Job #:	Bottle Order #:
Attention:	Invoices- Andria & Emily	Attention:	Hadia Aziz	P.O. #:			930142
Address:	105 Elgin Street W Arnprior ON K7S 0A8	Address:	1931 Robertson Rd Ottawa ON K2H5B7	Project:	23594631	COC #:	Project Manager:
Tel:	(613) 623-4231 Fax:	Tel:	(613) 592-9600 Fax: (613) 592-9601	Project Name:	Arnprior LF	C#930142-02-01	Katherine Szozda
Email:	andria.caletti@wsp.com, emily.bacon@wsp.com	Email:	hadia.aziz@wsp.com	Site #:	Arnprior LF		
				Sampled By:	C. Albert		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
☐ Table 1 ☐ Res/Park ☐ Medium/Fine
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other ☐ For RSC
☐ Table ___

Other Regulations
☐ CCME ☐ Sanitary Sewer Bylaw
☐ Reg 558. ☐ Storm Sewer Bylaw
☐ MISA Municipality ___
☐ PWQO ☐ Reg 406 Table ___
☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

Field Filtered (please circle): Metals, Hg, Cr VI / VOC

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	GROUNDWATER	# of Bottles	Comments
1	SID#618204	BR-6D	May25/23	6AM	GW	X	7	
2	SID#618205	BR-7S				X		
3	SID#618206	BR-7D				X		
4	SID#618207	BR-8S				X		
5	SID#618208	BR-8D				X		
6	SID#618209	BR-9S				X		
7	SID#618210	BR-10				X		
8	SID#618211	BR-11				X		
9	SID#618212	BR-12				X		
10	SID#618213	~~BR-13S~~ OW-23						

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only				
C. Albert	May26/23		See Pg 1				Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
			See Pg 1					See ACTR	Present		
									Intact		

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CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#28962 The Corporation of the Town of Arnprior	Company Name:	#17006 WSP Canada Inc	Quotation #:	B41189	Bureau Veritas Job #:	Bottle Order #: 930142
Attention:	Invoices- Andria & Emily	Attention:	Hadia Aziz	P.O. #:			
Address:	105 Elgin Street W Arnprior ON K7S 0A8	Address:	1931 Robertson Rd Ottawa ON K2H5B7	Project:	23594631	COC #:	Project Manager:
Tel:	(613) 623-4231 Fax:	Tel:	(613) 592-9600 Fax: (613) 592-9601	Project Name:	Arnprior LF	C#930142-03-01	Katherine Szozda
Email:	andria.caletti@wsp.com, emily.bacon@wsp.com	Email:	hadia.aziz@wsp.com	Site #:	Arnprior LF		
				Sampled By:	C Albert		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
☐ Table 1 ☐ Res/Park ☐ Medium/Fine
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☐ Table ___

Other Regulations
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☐ Reg 558. ☐ Storm Sewer Bylaw
☐ MISA Municipality ___
☐ PWQO ☐ Reg 406 Table ___
☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	GROUNDWATER	# of Bottles	Comments
1	SID#618214	~~BR-13D~~ BR-23S	May25/23	2pm	GW	Yes	X	7	
2	SID#618215	BR08-1S	May25/23	11am	GW	Yes	X	7	
3	SID#618216	BR08-1D	↓	↓	↓	↓	X	↓	
4	SID#618217	BR08-2S					X		
5	SID#618218	BR08-2D					X		
6	SID#618219	BR08-3S					X		
7	SID#618220	BR08-3D					X		
8	SID#618221	Dup-1					X		
9	SID#618222	Dup-2	↓	↓	↓	↓	X	↓	
10	~~SID#618223~~	~~QA-23~~ BR-23D	↓	↓	↓	↓	X		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
C. Albert	May26/23	~~1pm~~ 1pm	See Pg 1			
			See Page 1			

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	See AcTR	Present		
		Intact		

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SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your Project #: 23594631
Site Location: Arnprior LF
Your C.O.C. #: 930148-01-01

Attention: Andria Caletti

WSP Canada Inc
1931 Robertson Rd
Ottawa, ON
CANADA K2H5B7

Report Date: 2023/06/08
Report #: R7663717
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3F6771
Received: 2023/05/31, 09:03

Sample Matrix: Water
Samples Received: 11

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity (1)	11	N/A	2023/06/07	CAM SOP-00448	SM 23 2320 B m
Biochemical Oxygen Demand (BOD) (1)	11	2023/06/02	2023/06/07	CAM SOP-00427	SM 23 5210B m
Chloride by Automated Colourimetry (1)	11	N/A	2023/06/06	CAM SOP-00463	SM 23 4500-Cl E m
Conductivity (1)	11	N/A	2023/06/07	CAM SOP-00414	SM 23 2510 m
Chromium 3+ by calculation (1)	11	2023/06/01	2023/06/06		
Chromium (VI) in Water (1)	11	N/A	2023/06/02	CAM SOP-00436	EPA 7199 m
Dissolved Organic Carbon (DOC) (1, 2)	11	N/A	2023/06/02	CAM SOP-00446	SM 23 5310 B m
Hardness (calculated as CaCO3) (1)	11	N/A	2023/06/06	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Mercury in Water by CVAA (1)	11	2023/06/02	2023/06/02	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS (1)	9	N/A	2023/06/05	CAM SOP-00447	EPA 6020B m
Dissolved Metals by ICPMS (1)	2	N/A	2023/06/08	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS (1)	8	2023/06/05	2023/06/05	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS (1)	1	2023/06/05	2023/06/06	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS (1)	2	2023/06/08	2023/06/08	CAM SOP-00447	EPA 6020B m
Total Ammonia-N (1)	11	N/A	2023/06/06	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (1, 3)	6	N/A	2023/06/02	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Nitrate & Nitrite as Nitrogen in Water (1, 3)	5	N/A	2023/06/05	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Sulphate by Automated Turbidimetry (1)	11	N/A	2023/06/06	CAM SOP-00464	SM 23 4500-SO42- E m
Total Dissolved Solids (1)	11	2023/06/03	2023/06/05	CAM SOP-00428	SM 23 2540C m
Total Phosphorus (Colourimetric) (1)	11	2023/06/06	2023/06/06	CAM SOP-00407	SM 23 4500-P I
Total Suspended Solids (1)	11	2023/06/05	2023/06/06	CAM SOP-00428	SM 23 2540D m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCCFP, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Your Project #: 23594631
Site Location: Arnprior LF
Your C.O.C. #: 930148-01-01

Attention: Andria Caletti

WSP Canada Inc
1931 Robertson Rd
Ottawa, ON
CANADA K2H5B7

Report Date: 2023/06/08
Report #: R7663717
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3F6771
Received: 2023/05/31, 09:03

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Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
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Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
(2) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(3) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633

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Bureau Veritas Job #: C3F6771
Report Date: 2023/06/08

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VYX733			VYX734		VYX735		
Sampling Date		2023/05/29 07:00			2023/05/29 07:00		2023/05/29 07:00		
COC Number		930148-01-01			930148-01-01		930148-01-01		
	UNITS	SW-10	RDL	QC Batch	SW-11	QC Batch	SW-12	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L	700	1.0	8697025	300	8697025	330	1.0	8697025
Inorganics									
Total Ammonia-N	mg/L	0.33	0.050	8706535	0.056	8706535	0.14	0.050	8706535
Total BOD	mg/L	ND	2	8699660	ND	8699660	ND	2	8699660
Conductivity	umho/cm	2400	1.0	8707375	640	8707375	680	1.0	8707375
Total Dissolved Solids	mg/L	1470	10	8702904	345	8702904	390	10	8702904
Dissolved Organic Carbon	mg/L	5.0	0.40	8699475	2.5	8699475	2.6	0.40	8699475
Total Phosphorus	mg/L	0.10	0.004	8706809	0.015	8706809	0.036	0.004	8706809
Total Suspended Solids	mg/L	18	10	8702889	ND	8702889	ND	10	8702889
Dissolved Sulphate (SO4)	mg/L	6.6	1.0	8700879	16	8701447	19	1.0	8700879
Alkalinity (Total as CaCO3)	mg/L	350	1.0	8707281	270	8707281	290	1.0	8707281
Dissolved Chloride (Cl-)	mg/L	230	2.0	8700861	34	8701458	35	1.0	8700861
Nitrite (N)	mg/L	ND	0.010	8700807	ND	8700693	0.011	0.010	8700807
Nitrate (N)	mg/L	0.40	0.10	8700807	0.21	8700693	0.20	0.10	8700807
Nitrate + Nitrite (N)	mg/L	0.40	0.10	8700807	0.21	8700693	0.21	0.10	8700807

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3F6771
Report Date: 2023/06/08

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VYX735			VYX736			VYX736		
Sampling Date		2023/05/29 07:00			2023/05/29 07:00			2023/05/29 07:00		
COC Number		930148-01-01			930148-01-01			930148-01-01		
	UNITS	SW-12 Lab-Dup	RDL	QC Batch	SW-1	RDL	QC Batch	SW-1 Lab-Dup	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L				370	1.0	8697025			
Inorganics										
Total Ammonia-N	mg/L				0.63	0.050	8706535			
Total BOD	mg/L				ND	2	8699660			
Conductivity	umho/cm	680	1.0	8707375	890	1.0	8707375			
Total Dissolved Solids	mg/L				505	10	8702904			
Dissolved Organic Carbon	mg/L				6.4	0.40	8699475			
Total Phosphorus	mg/L				0.013	0.004	8706809			
Total Suspended Solids	mg/L				ND	10	8702889			
Dissolved Sulphate (SO4)	mg/L				11	1.0	8700879			
Alkalinity (Total as CaCO3)	mg/L	300	1.0	8707281	360	1.0	8707281			
Dissolved Chloride (Cl-)	mg/L				59	1.0	8700861			
Nitrite (N)	mg/L				0.018	0.010	8700807	0.018	0.010	8700807
Nitrate (N)	mg/L				ND	0.10	8700807	ND	0.10	8700807
Nitrate + Nitrite (N)	mg/L				0.11	0.10	8700807	0.11	0.10	8700807

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3F6771
Report Date: 2023/06/08

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VYX737			VYX737			VYX738		
Sampling Date		2023/05/29 07:00			2023/05/29 07:00			2023/05/29 07:00		
COC Number		930148-01-01			930148-01-01			930148-01-01		
	UNITS	SW-2	RDL	QC Batch	SW-2 Lab-Dup	RDL	QC Batch	SW-21	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	450	1.0	8697025				430	1.0	8697025
Inorganics										
Total Ammonia-N	mg/L	2.9	0.050	8706535				1.1	0.050	8706535
Total BOD	mg/L	5	2	8699660				5	2	8699660
Conductivity	umho/cm	1000	1.0	8707375				1000	1.0	8707375
Total Dissolved Solids	mg/L	570	10	8702904				600	10	8702904
Dissolved Organic Carbon	mg/L	4.2	0.40	8699475	4.2	0.40	8699475	4.2	0.40	8699475
Total Phosphorus	mg/L	0.013	0.004	8706809				0.012	0.004	8706809
Total Suspended Solids	mg/L	ND	10	8702889				ND	10	8702889
Dissolved Sulphate (SO4)	mg/L	7.5	1.0	8701447				18	1.0	8700879
Alkalinity (Total as CaCO3)	mg/L	400	1.0	8707281				400	1.0	8707281
Dissolved Chloride (Cl-)	mg/L	54	2.0	8701458				71	1.0	8700861
Nitrite (N)	mg/L	0.091	0.010	8700693				0.073	0.010	8700807
Nitrate (N)	mg/L	1.66	0.10	8700693				1.79	0.10	8700807
Nitrate + Nitrite (N)	mg/L	1.75	0.10	8700693				1.86	0.10	8700807

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3F6771
Report Date: 2023/06/08

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VYX739			VYX739			VYX740		
Sampling Date		2023/05/29 07:00			2023/05/29 07:00			2023/05/29 07:00		
COC Number		930148-01-01			930148-01-01			930148-01-01		
	UNITS	SW-22	RDL	QC Batch	SW-22 Lab-Dup	RDL	QC Batch	SW-18	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	360	1.0	8697025				66	1.0	8697025
Inorganics										
Total Ammonia-N	mg/L	0.73	0.050	8706549	0.73	0.050	8706549	1.1	0.050	8706535
Total BOD	mg/L	ND	2	8699660				ND	2	8699660
Conductivity	umho/cm	890	1.0	8707375				97	1.0	8707375
Total Dissolved Solids	mg/L	525	10	8702904				90	10	8702904
Dissolved Organic Carbon	mg/L	5.5	0.40	8699475				7.7	0.40	8699475
Total Phosphorus	mg/L	0.019	0.004	8706809				0.018	0.004	8706809
Total Suspended Solids	mg/L	ND	10	8702889				ND	10	8703790
Dissolved Sulphate (SO4)	mg/L	12	1.0	8700879				4.3	1.0	8700879
Alkalinity (Total as CaCO3)	mg/L	350	1.0	8707281				35	1.0	8707281
Dissolved Chloride (Cl-)	mg/L	59	1.0	8700861				3.4	1.0	8700861
Nitrite (N)	mg/L	0.013	0.010	8700693				ND	0.010	8700693
Nitrate (N)	mg/L	0.12	0.10	8700693				0.11	0.10	8700693
Nitrate + Nitrite (N)	mg/L	0.14	0.10	8700693				0.11	0.10	8700693

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3F6771
Report Date: 2023/06/08

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		VYX741	VYX742		VYX743		
Sampling Date		2023/05/29 07:00	2023/05/29 07:00		2023/05/29 07:00		
COC Number		930148-01-01	930148-01-01		930148-01-01		
	UNITS	SW-19	SW-26	QC Batch	DUP-3	RDL	QC Batch
Calculated Parameters							
Hardness (CaCO3)	mg/L	370	44	8697025	66	1.0	8697025
Inorganics							
Total Ammonia-N	mg/L	8.6	0.11	8706535	0.11	0.050	8706535
Total BOD	mg/L	ND	ND	8699660	ND	2	8699660
Conductivity	umho/cm	890	140	8707375	120	1.0	8707375
Total Dissolved Solids	mg/L	480	125	8702904	100	10	8702904
Dissolved Organic Carbon	mg/L	6.8	7.3	8699475	7.9	0.40	8699475
Total Phosphorus	mg/L	0.009	0.057	8706809	0.019	0.004	8706809
Total Suspended Solids	mg/L	ND	15	8702889	12	10	8702889
Dissolved Sulphate (SO4)	mg/L	10	6.6	8700879	4.6	1.0	8700879
Alkalinity (Total as CaCO3)	mg/L	360	38	8707281	42	1.0	8707281
Dissolved Chloride (Cl-)	mg/L	57	11	8700861	5.5	1.0	8700861
Nitrite (N)	mg/L	0.020	ND	8700693	ND	0.010	8700807
Nitrate (N)	mg/L	0.31	0.32	8700693	0.12	0.10	8700807
Nitrate + Nitrite (N)	mg/L	0.33	0.32	8700693	0.12	0.10	8700807

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VYX733			VYX733			VYX734		
Sampling Date		2023/05/29 07:00			2023/05/29 07:00			2023/05/29 07:00		
COC Number		930148-01-01			930148-01-01			930148-01-01		
	UNITS	SW-10	RDL	QC Batch	SW-10 Lab-Dup	RDL	QC Batch	SW-11	RDL	QC Batch
Calculated Parameters										
Chromium (+3)	ug/L	ND	5	8697786				ND	5	8697786
Metals										
Chromium (VI)	ug/L	ND	0.50	8699978	ND	0.50	8699978	ND	0.50	8699978
Dissolved Mercury (Hg)	ug/L	ND	0.10	8699857				ND	0.10	8699857
Dissolved Aluminum (Al)	ug/L	ND	4.9	8701166				ND	4.9	8701166
Total Aluminum (Al)	ug/L	100	4.9	8704895				74	4.9	8704032
Total Barium (Ba)	ug/L	77	2.0	8704895				78	2.0	8704032
Total Beryllium (Be)	ug/L	ND	0.40	8704895				ND	0.40	8704032
Total Boron (B)	ug/L	25	10	8704895				30	10	8704032
Total Cadmium (Cd)	ug/L	ND	0.090	8704895				ND	0.090	8704032
Dissolved Calcium (Ca)	ug/L	190000	200	8701166				82000	200	8701166
Total Calcium (Ca)	ug/L	180000	200	8704895				76000	200	8704032
Dissolved Chromium (Cr)	ug/L	ND	5.0	8701166				ND	5.0	8701166
Total Chromium (Cr)	ug/L	ND	5.0	8704895				ND	5.0	8704032
Total Cobalt (Co)	ug/L	ND	0.50	8704895				ND	0.50	8704032
Dissolved Iron (Fe)	ug/L	ND	100	8701166				ND	100	8701166
Total Iron (Fe)	ug/L	110	100	8704895				340	100	8704032
Total Lead (Pb)	ug/L	ND	0.50	8704895				ND	0.50	8704032
Dissolved Magnesium (Mg)	ug/L	53000	50	8701166				23000	50	8701166
Total Magnesium (Mg)	ug/L	52000	50	8704895				21000	50	8704032
Total Manganese (Mn)	ug/L	46	2.0	8704895				57	2.0	8704032
Total Molybdenum (Mo)	ug/L	0.71	0.50	8704895				0.78	0.50	8704032
Total Nickel (Ni)	ug/L	ND	1.0	8704895				ND	1.0	8704032
Total Potassium (K)	ug/L	6600	200	8704895				3500	200	8704032
Total Selenium (Se)	ug/L	ND	2.0	8704895				ND	2.0	8704032
Total Silver (Ag)	ug/L	ND	0.090	8704895				ND	0.090	8704032
Total Sodium (Na)	ug/L	240000	100	8704895				26000	100	8704032
Total Vanadium (V)	ug/L	1.8	0.50	8704895				0.78	0.50	8704032
Total Zinc (Zn)	ug/L	ND	5.0	8704895				ND	5.0	8704032

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3F6771
Report Date: 2023/06/08

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VYX734			VYX735	VYX736	VYX737	VYX738		
Sampling Date		2023/05/29 07:00			2023/05/29 07:00	2023/05/29 07:00	2023/05/29 07:00	2023/05/29 07:00		
COC Number		930148-01-01			930148-01-01	930148-01-01	930148-01-01	930148-01-01		
	UNITS	SW-11 Lab-Dup	RDL	QC Batch	SW-12	SW-1	SW-2	SW-21	RDL	QC Batch
Calculated Parameters										
Chromium (+3)	ug/L				ND	ND	ND	ND	5	8697786
Metals										
Chromium (VI)	ug/L				ND	ND	0.51	ND	0.50	8699978
Dissolved Mercury (Hg)	ug/L				ND	ND	ND	ND	0.10	8699857
Dissolved Aluminum (Al)	ug/L				ND	ND	ND	ND	4.9	8701166
Total Aluminum (Al)	ug/L	81	4.9	8704032	32	5.4	6.8	9.8	4.9	8704032
Total Barium (Ba)	ug/L	74	2.0	8704032	84	120	180	180	2.0	8704032
Total Beryllium (Be)	ug/L	ND	0.40	8704032	ND	ND	ND	ND	0.40	8704032
Total Boron (B)	ug/L	30	10	8704032	38	200	190	180	10	8704032
Total Cadmium (Cd)	ug/L	ND	0.090	8704032	ND	ND	ND	ND	0.090	8704032
Dissolved Calcium (Ca)	ug/L				92000	110000	130000	130000	200	8701166
Total Calcium (Ca)	ug/L	75000	200	8704032	82000	97000	120000	120000	200	8704032
Dissolved Chromium (Cr)	ug/L				ND	ND	ND	ND	5.0	8701166
Total Chromium (Cr)	ug/L	ND	5.0	8704032	ND	ND	ND	ND	5.0	8704032
Total Cobalt (Co)	ug/L	ND	0.50	8704032	ND	0.56	0.61	0.60	0.50	8704032
Dissolved Iron (Fe)	ug/L				ND	360	ND	ND	100	8701166
Total Iron (Fe)	ug/L	340	100	8704032	180	230	350	500	100	8704032
Total Lead (Pb)	ug/L	ND	0.50	8704032	0.85	ND	ND	ND	0.50	8704032
Dissolved Magnesium (Mg)	ug/L				24000	25000	29000	28000	50	8701166
Total Magnesium (Mg)	ug/L	21000	50	8704032	22000	24000	27000	27000	50	8704032
Total Manganese (Mn)	ug/L	56	2.0	8704032	51	200	100	110	2.0	8704032
Total Molybdenum (Mo)	ug/L	0.76	0.50	8704032	0.87	ND	ND	ND	0.50	8704032
Total Nickel (Ni)	ug/L	ND	1.0	8704032	ND	1.9	1.8	2.0	1.0	8704032
Total Potassium (K)	ug/L	3500	200	8704032	3300	9900	8000	7900	200	8704032
Total Selenium (Se)	ug/L	ND	2.0	8704032	ND	ND	ND	ND	2.0	8704032
Total Silver (Ag)	ug/L	ND	0.090	8704032	ND	ND	ND	ND	0.090	8704032
Total Sodium (Na)	ug/L	26000	100	8704032	25000	56000	60000	59000	100	8704032
Total Vanadium (V)	ug/L	0.97	0.50	8704032	0.66	ND	ND	ND	0.50	8704032
Total Zinc (Zn)	ug/L	ND	5.0	8704032	ND	ND	ND	7.5	5.0	8704032

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VYX739		VYX740		VYX741		
Sampling Date		2023/05/29 07:00		2023/05/29 07:00		2023/05/29 07:00		
COC Number		930148-01-01		930148-01-01		930148-01-01		
	UNITS	SW-22	QC Batch	SW-18	QC Batch	SW-19	RDL	QC Batch
Calculated Parameters								
Chromium (+3)	ug/L	ND	8697786	ND	8697786	ND	5	8697786
Metals								
Chromium (VI)	ug/L	ND	8699978	ND	8699978	ND	0.50	8699978
Dissolved Mercury (Hg)	ug/L	ND	8699857	ND	8699857	ND	0.10	8700015
Dissolved Aluminum (Al)	ug/L	ND	8701166	69	8709474	ND	4.9	8701166
Total Aluminum (Al)	ug/L	ND	8704032	260	8711803	ND	4.9	8704032
Total Barium (Ba)	ug/L	130	8704032	16	8711803	120	2.0	8704032
Total Beryllium (Be)	ug/L	ND	8704032	ND	8711803	ND	0.40	8704032
Total Boron (B)	ug/L	200	8704032	11	8711803	190	10	8704032
Total Cadmium (Cd)	ug/L	ND	8704032	ND	8711803	ND	0.090	8704032
Dissolved Calcium (Ca)	ug/L	100000	8701166	19000	8709474	110000	200	8701166
Total Calcium (Ca)	ug/L	97000	8704032	11000	8711803	93000	200	8704032
Dissolved Chromium (Cr)	ug/L	ND	8701166	ND	8709474	ND	5.0	8701166
Total Chromium (Cr)	ug/L	ND	8704032	ND	8711803	ND	5.0	8704032
Total Cobalt (Co)	ug/L	0.53	8704032	ND	8711803	0.55	0.50	8704032
Dissolved Iron (Fe)	ug/L	360	8701166	130	8709474	ND	100	8701166
Total Iron (Fe)	ug/L	410	8704032	420	8711803	110	100	8704032
Total Lead (Pb)	ug/L	ND	8704032	ND	8711803	ND	0.50	8704032
Dissolved Magnesium (Mg)	ug/L	24000	8701166	4800	8709474	26000	50	8701166
Total Magnesium (Mg)	ug/L	23000	8704032	2800	8711803	24000	50	8704032
Total Manganese (Mn)	ug/L	220	8704032	25	8711803	70	2.0	8704032
Total Molybdenum (Mo)	ug/L	ND	8704032	ND	8711803	ND	0.50	8704032
Total Nickel (Ni)	ug/L	1.6	8704032	ND	8711803	2.1	1.0	8704032
Total Potassium (K)	ug/L	8900	8704032	990	8711803	9300	200	8704032
Total Selenium (Se)	ug/L	ND	8704032	ND	8711803	ND	2.0	8704032
Total Silver (Ag)	ug/L	ND	8704032	ND	8711803	ND	0.090	8704032
Total Sodium (Na)	ug/L	54000	8704032	4600	8711803	53000	100	8704032
Total Vanadium (V)	ug/L	ND	8704032	0.88	8711803	0.50	0.50	8704032
Total Zinc (Zn)	ug/L	ND	8704032	ND	8711803	ND	5.0	8704032

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		VYX741			VYX742		VYX743		
Sampling Date		2023/05/29 07:00			2023/05/29 07:00		2023/05/29 07:00		
COC Number		930148-01-01			930148-01-01		930148-01-01		
	UNITS	SW-19 Lab-Dup	RDL	QC Batch	SW-26	QC Batch	DUP-3	RDL	QC Batch
Calculated Parameters									
Chromium (+3)	ug/L				ND	8697786	ND	5	8697786
Metals									
Chromium (VI)	ug/L				ND	8699978	ND	0.50	8699978
Dissolved Mercury (Hg)	ug/L	ND	0.10	8700015	ND	8699857	ND	0.10	8699857
Dissolved Aluminum (Al)	ug/L				75	8701166	68	4.9	8709474
Total Aluminum (Al)	ug/L				420	8704032	250	4.9	8711803
Total Barium (Ba)	ug/L				22	8704032	15	2.0	8711803
Total Beryllium (Be)	ug/L				ND	8704032	ND	0.40	8711803
Total Boron (B)	ug/L				15	8704032	11	10	8711803
Total Cadmium (Cd)	ug/L				ND	8704032	ND	0.090	8711803
Dissolved Calcium (Ca)	ug/L				13000	8701166	19000	200	8709474
Total Calcium (Ca)	ug/L				12000	8704032	11000	200	8711803
Dissolved Chromium (Cr)	ug/L				ND	8701166	ND	5.0	8709474
Total Chromium (Cr)	ug/L				ND	8704032	ND	5.0	8711803
Total Cobalt (Co)	ug/L				ND	8704032	ND	0.50	8711803
Dissolved Iron (Fe)	ug/L				130	8701166	120	100	8709474
Total Iron (Fe)	ug/L				610	8704032	390	100	8711803
Total Lead (Pb)	ug/L				4.5	8704032	ND	0.50	8711803
Dissolved Magnesium (Mg)	ug/L				2800	8701166	4800	50	8709474
Total Magnesium (Mg)	ug/L				3000	8704032	2600	50	8711803
Total Manganese (Mn)	ug/L				36	8704032	25	2.0	8711803
Total Molybdenum (Mo)	ug/L				ND	8704032	ND	0.50	8711803
Total Nickel (Ni)	ug/L				1.3	8704032	1.0	1.0	8711803
Total Potassium (K)	ug/L				950	8704032	960	200	8711803
Total Selenium (Se)	ug/L				ND	8704032	ND	2.0	8711803
Total Silver (Ag)	ug/L				ND	8704032	ND	0.090	8711803
Total Sodium (Na)	ug/L				8900	8704032	4500	100	8711803
Total Vanadium (V)	ug/L				1.5	8704032	0.99	0.50	8711803
Total Zinc (Zn)	ug/L				ND	8704032	ND	5.0	8711803

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

TEST SUMMARY

Bureau Veritas ID: VYX733
Sample ID: SW-10
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8707281	N/A	2023/06/07	Kien Tran
Biochemical Oxygen Demand (BOD)	DO	8699660	2023/06/02	2023/06/07	Gurjot Kaur
Chloride by Automated Colourimetry	KONE	8700861	N/A	2023/06/06	Massarat Jan
Conductivity	AT	8707375	N/A	2023/06/07	Kien Tran
Chromium 3+ by calculation		8697786	2023/06/06	2023/06/06	Automated Statchk
Chromium (VI) in Water	IC	8699978	N/A	2023/06/02	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8699475	N/A	2023/06/02	Nimarta Singh
Hardness (calculated as CaCO3)		8697025	N/A	2023/06/06	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8699857	2023/06/02	2023/06/02	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8701166	N/A	2023/06/05	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8704895	2023/06/05	2023/06/06	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8706535	N/A	2023/06/06	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8700807	N/A	2023/06/05	Viorica Rotaru
Sulphate by Automated Turbidimetry	KONE	8700879	N/A	2023/06/06	Massarat Jan
Total Dissolved Solids	BAL	8702904	2023/06/03	2023/06/05	Tina Teng
Total Phosphorus (Colourimetric)	SKAL/P	8706809	2023/06/06	2023/06/06	Shivani Shivani
Total Suspended Solids	BAL	8702889	2023/06/05	2023/06/06	Shaneil Hall

Bureau Veritas ID: VYX733 Dup
Sample ID: SW-10
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chromium (VI) in Water	IC	8699978	N/A	2023/06/02	Theodora Luck

Bureau Veritas ID: VYX734
Sample ID: SW-11
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8707281	N/A	2023/06/07	Kien Tran
Biochemical Oxygen Demand (BOD)	DO	8699660	2023/06/02	2023/06/07	Gurjot Kaur
Chloride by Automated Colourimetry	KONE	8701458	N/A	2023/06/06	Massarat Jan
Conductivity	AT	8707375	N/A	2023/06/07	Kien Tran
Chromium 3+ by calculation		8697786	2023/06/06	2023/06/06	Automated Statchk
Chromium (VI) in Water	IC	8699978	N/A	2023/06/02	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8699475	N/A	2023/06/02	Nimarta Singh
Hardness (calculated as CaCO3)		8697025	N/A	2023/06/06	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8699857	2023/06/02	2023/06/02	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8701166	N/A	2023/06/05	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8704032	2023/06/05	2023/06/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8706535	N/A	2023/06/06	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8700693	N/A	2023/06/02	Nimarta Singh
Sulphate by Automated Turbidimetry	KONE	8701447	N/A	2023/06/06	Massarat Jan
Total Dissolved Solids	BAL	8702904	2023/06/03	2023/06/05	Tina Teng

Bureau Veritas Job #: C3F6771
Report Date: 2023/06/08

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

TEST SUMMARY

Bureau Veritas ID: VYX734
Sample ID: SW-11
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	SKAL/P	8706809	2023/06/06	2023/06/06	Shivani Shivani
Total Suspended Solids	BAL	8702889	2023/06/05	2023/06/06	Shaneil Hall

Bureau Veritas ID: VYX734 Dup
Sample ID: SW-11
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals Analysis by ICPMS	ICP/MS	8704032	2023/06/05	2023/06/05	Azita Fazaeli

Bureau Veritas ID: VYX735
Sample ID: SW-12
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8707281	N/A	2023/06/07	Kien Tran
Biochemical Oxygen Demand (BOD)	DO	8699660	2023/06/02	2023/06/07	Gurjot Kaur
Chloride by Automated Colourimetry	KONE	8700861	N/A	2023/06/06	Massarat Jan
Conductivity	AT	8707375	N/A	2023/06/07	Kien Tran
Chromium 3+ by calculation		8697786	2023/06/06	2023/06/06	Automated Statchk
Chromium (VI) in Water	IC	8699978	N/A	2023/06/02	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8699475	N/A	2023/06/02	Nimarta Singh
Hardness (calculated as CaCO3)		8697025	N/A	2023/06/06	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8699857	2023/06/02	2023/06/02	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8701166	N/A	2023/06/05	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8704032	2023/06/05	2023/06/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8706535	N/A	2023/06/06	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8700807	N/A	2023/06/05	Viorica Rotaru
Sulphate by Automated Turbidimetry	KONE	8700879	N/A	2023/06/06	Massarat Jan
Total Dissolved Solids	BAL	8702904	2023/06/03	2023/06/05	Tina Teng
Total Phosphorus (Colourimetric)	SKAL/P	8706809	2023/06/06	2023/06/06	Shivani Shivani
Total Suspended Solids	BAL	8702889	2023/06/05	2023/06/06	Shaneil Hall

Bureau Veritas ID: VYX735 Dup
Sample ID: SW-12
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8707281	N/A	2023/06/07	Kien Tran
Conductivity	AT	8707375	N/A	2023/06/07	Kien Tran

Bureau Veritas Job #: C3F6771
Report Date: 2023/06/08

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

TEST SUMMARY

Bureau Veritas ID: VYX736
Sample ID: SW-1
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8707281	N/A	2023/06/07	Kien Tran
Biochemical Oxygen Demand (BOD)	DO	8699660	2023/06/02	2023/06/07	Gurjot Kaur
Chloride by Automated Colourimetry	KONE	8700861	N/A	2023/06/06	Massarat Jan
Conductivity	AT	8707375	N/A	2023/06/07	Kien Tran
Chromium 3+ by calculation		8697786	2023/06/06	2023/06/06	Automated Statchk
Chromium (VI) in Water	IC	8699978	N/A	2023/06/02	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8699475	N/A	2023/06/02	Nimarta Singh
Hardness (calculated as CaCO3)		8697025	N/A	2023/06/06	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8699857	2023/06/02	2023/06/02	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8701166	N/A	2023/06/05	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8704032	2023/06/05	2023/06/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8706535	N/A	2023/06/06	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8700807	N/A	2023/06/05	Viorica Rotaru
Sulphate by Automated Turbidimetry	KONE	8700879	N/A	2023/06/06	Massarat Jan
Total Dissolved Solids	BAL	8702904	2023/06/03	2023/06/05	Tina Teng
Total Phosphorus (Colourimetric)	SKAL/P	8706809	2023/06/06	2023/06/06	Shivani Shivani
Total Suspended Solids	BAL	8702889	2023/06/05	2023/06/06	Shaneil Hall

Bureau Veritas ID: VYX736 Dup
Sample ID: SW-1
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate & Nitrite as Nitrogen in Water	LACH	8700807	N/A	2023/06/05	Viorica Rotaru

Bureau Veritas ID: VYX737
Sample ID: SW-2
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8707281	N/A	2023/06/07	Kien Tran
Biochemical Oxygen Demand (BOD)	DO	8699660	2023/06/02	2023/06/07	Gurjot Kaur
Chloride by Automated Colourimetry	KONE	8701458	N/A	2023/06/06	Massarat Jan
Conductivity	AT	8707375	N/A	2023/06/07	Kien Tran
Chromium 3+ by calculation		8697786	2023/06/06	2023/06/06	Automated Statchk
Chromium (VI) in Water	IC	8699978	N/A	2023/06/02	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8699475	N/A	2023/06/02	Nimarta Singh
Hardness (calculated as CaCO3)		8697025	N/A	2023/06/06	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8699857	2023/06/02	2023/06/02	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8701166	N/A	2023/06/05	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8704032	2023/06/05	2023/06/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8706535	N/A	2023/06/06	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8700693	N/A	2023/06/02	Nimarta Singh
Sulphate by Automated Turbidimetry	KONE	8701447	N/A	2023/06/06	Massarat Jan
Total Dissolved Solids	BAL	8702904	2023/06/03	2023/06/05	Tina Teng

Bureau Veritas Job #: C3F6771
Report Date: 2023/06/08

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

TEST SUMMARY

Bureau Veritas ID: VYX737
Sample ID: SW-2
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	SKAL/P	8706809	2023/06/06	2023/06/06	Shivani Shivani
Total Suspended Solids	BAL	8702889	2023/06/05	2023/06/06	Shaneil Hall

Bureau Veritas ID: VYX737 Dup
Sample ID: SW-2
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8699475	N/A	2023/06/02	Nimarta Singh

Bureau Veritas ID: VYX738
Sample ID: SW-21
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8707281	N/A	2023/06/07	Kien Tran
Biochemical Oxygen Demand (BOD)	DO	8699660	2023/06/02	2023/06/07	Gurjot Kaur
Chloride by Automated Colourimetry	KONE	8700861	N/A	2023/06/06	Massarat Jan
Conductivity	AT	8707375	N/A	2023/06/07	Kien Tran
Chromium 3+ by calculation		8697786	2023/06/06	2023/06/06	Automated Statchk
Chromium (VI) in Water	IC	8699978	N/A	2023/06/02	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8699475	N/A	2023/06/02	Nimarta Singh
Hardness (calculated as CaCO3)		8697025	N/A	2023/06/06	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8699857	2023/06/02	2023/06/02	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8701166	N/A	2023/06/05	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8704032	2023/06/05	2023/06/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8706535	N/A	2023/06/06	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8700807	N/A	2023/06/05	Viorica Rotaru
Sulphate by Automated Turbidimetry	KONE	8700879	N/A	2023/06/06	Massarat Jan
Total Dissolved Solids	BAL	8702904	2023/06/03	2023/06/05	Tina Teng
Total Phosphorus (Colourimetric)	SKAL/P	8706809	2023/06/06	2023/06/06	Shivani Shivani
Total Suspended Solids	BAL	8702889	2023/06/05	2023/06/06	Shaneil Hall

Bureau Veritas ID: VYX739
Sample ID: SW-22
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8707281	N/A	2023/06/07	Kien Tran
Biochemical Oxygen Demand (BOD)	DO	8699660	2023/06/02	2023/06/07	Gurjot Kaur
Chloride by Automated Colourimetry	KONE	8700861	N/A	2023/06/06	Massarat Jan
Conductivity	AT	8707375	N/A	2023/06/07	Kien Tran
Chromium 3+ by calculation		8697786	2023/06/06	2023/06/06	Automated Statchk
Chromium (VI) in Water	IC	8699978	N/A	2023/06/02	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8699475	N/A	2023/06/02	Nimarta Singh

TEST SUMMARY

Bureau Veritas ID: VYX739
Sample ID: SW-22
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness (calculated as CaCO3)		8697025	N/A	2023/06/06	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8699857	2023/06/02	2023/06/02	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8701166	N/A	2023/06/05	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8704032	2023/06/05	2023/06/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8706549	N/A	2023/06/06	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8700693	N/A	2023/06/02	Nimarta Singh
Sulphate by Automated Turbidimetry	KONE	8700879	N/A	2023/06/06	Massarat Jan
Total Dissolved Solids	BAL	8702904	2023/06/03	2023/06/05	Tina Teng
Total Phosphorus (Colourimetric)	SKAL/P	8706809	2023/06/06	2023/06/06	Shivani Shivani
Total Suspended Solids	BAL	8702889	2023/06/05	2023/06/06	Shaneil Hall

Bureau Veritas ID: VYX739 Dup
Sample ID: SW-22
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	8706549	N/A	2023/06/06	Prabhjot Kaur

Bureau Veritas ID: VYX740
Sample ID: SW-18
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8707281	N/A	2023/06/07	Kien Tran
Biochemical Oxygen Demand (BOD)	DO	8699660	2023/06/02	2023/06/07	Gurjot Kaur
Chloride by Automated Colourimetry	KONE	8700861	N/A	2023/06/06	Massarat Jan
Conductivity	AT	8707375	N/A	2023/06/07	Kien Tran
Chromium 3+ by calculation		8697786	2023/06/06	2023/06/06	Automated Statchk
Chromium (VI) in Water	IC	8699978	N/A	2023/06/02	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8699475	N/A	2023/06/02	Nimarta Singh
Hardness (calculated as CaCO3)		8697025	N/A	2023/06/06	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8699857	2023/06/02	2023/06/02	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8709474	N/A	2023/06/08	Nan Raykha
Total Metals Analysis by ICPMS	ICP/MS	8711803	2023/06/08	2023/06/08	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8706535	N/A	2023/06/06	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8700693	N/A	2023/06/02	Nimarta Singh
Sulphate by Automated Turbidimetry	KONE	8700879	N/A	2023/06/06	Massarat Jan
Total Dissolved Solids	BAL	8702904	2023/06/03	2023/06/05	Tina Teng
Total Phosphorus (Colourimetric)	SKAL/P	8706809	2023/06/06	2023/06/06	Shivani Shivani
Total Suspended Solids	BAL	8703790	2023/06/05	2023/06/06	Shaneil Hall

TEST SUMMARY

Bureau Veritas ID: VYX741 **Collected:** 2023/05/29
Sample ID: SW-19 **Shipped:**
Matrix: Water **Received:** 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8707281	N/A	2023/06/07	Kien Tran
Biochemical Oxygen Demand (BOD)	DO	8699660	2023/06/02	2023/06/07	Gurjot Kaur
Chloride by Automated Colourimetry	KONE	8700861	N/A	2023/06/06	Massarat Jan
Conductivity	AT	8707375	N/A	2023/06/07	Kien Tran
Chromium 3+ by calculation		8697786	2023/06/06	2023/06/06	Automated Statchk
Chromium (VI) in Water	IC	8699978	N/A	2023/06/02	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8699475	N/A	2023/06/02	Nimarta Singh
Hardness (calculated as CaCO3)		8697025	N/A	2023/06/06	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8700015	2023/06/02	2023/06/02	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8701166	N/A	2023/06/05	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8704032	2023/06/05	2023/06/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8706535	N/A	2023/06/06	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8700693	N/A	2023/06/02	Nimarta Singh
Sulphate by Automated Turbidimetry	KONE	8700879	N/A	2023/06/06	Massarat Jan
Total Dissolved Solids	BAL	8702904	2023/06/03	2023/06/05	Tina Teng
Total Phosphorus (Colourimetric)	SKAL/P	8706809	2023/06/06	2023/06/06	Shivani Shivani
Total Suspended Solids	BAL	8702889	2023/06/05	2023/06/06	Shaneil Hall

Bureau Veritas ID: VYX741 Dup **Collected:** 2023/05/29
Sample ID: SW-19 **Shipped:**
Matrix: Water **Received:** 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Mercury in Water by CVAA	CV/AA	8700015	2023/06/02	2023/06/02	Jaswinder Kaur

Bureau Veritas ID: VYX742 **Collected:** 2023/05/29
Sample ID: SW-26 **Shipped:**
Matrix: Water **Received:** 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8707281	N/A	2023/06/07	Kien Tran
Biochemical Oxygen Demand (BOD)	DO	8699660	2023/06/02	2023/06/07	Gurjot Kaur
Chloride by Automated Colourimetry	KONE	8700861	N/A	2023/06/06	Massarat Jan
Conductivity	AT	8707375	N/A	2023/06/07	Kien Tran
Chromium 3+ by calculation		8697786	2023/06/06	2023/06/06	Automated Statchk
Chromium (VI) in Water	IC	8699978	N/A	2023/06/02	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8699475	N/A	2023/06/02	Nimarta Singh
Hardness (calculated as CaCO3)		8697025	N/A	2023/06/06	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8699857	2023/06/02	2023/06/02	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8701166	N/A	2023/06/05	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8704032	2023/06/05	2023/06/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8706535	N/A	2023/06/06	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8700693	N/A	2023/06/02	Nimarta Singh
Sulphate by Automated Turbidimetry	KONE	8700879	N/A	2023/06/06	Massarat Jan
Total Dissolved Solids	BAL	8702904	2023/06/03	2023/06/05	Tina Teng

Bureau Veritas Job #: C3F6771
Report Date: 2023/06/08

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

TEST SUMMARY

Bureau Veritas ID: VYX742
Sample ID: SW-26
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	SKAL/P	8706809	2023/06/06	2023/06/06	Shivani Shivani
Total Suspended Solids	BAL	8702889	2023/06/05	2023/06/06	Shaneil Hall

Bureau Veritas ID: VYX743
Sample ID: DUP-3
Matrix: Water

Collected: 2023/05/29
Shipped:
Received: 2023/05/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8707281	N/A	2023/06/07	Kien Tran
Biochemical Oxygen Demand (BOD)	DO	8699660	2023/06/02	2023/06/07	Gurjot Kaur
Chloride by Automated Colourimetry	KONE	8700861	N/A	2023/06/06	Massarat Jan
Conductivity	AT	8707375	N/A	2023/06/07	Kien Tran
Chromium 3+ by calculation		8697786	2023/06/06	2023/06/06	Automated Statchk
Chromium (VI) in Water	IC	8699978	N/A	2023/06/02	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8699475	N/A	2023/06/02	Nimarta Singh
Hardness (calculated as CaCO3)		8697025	N/A	2023/06/06	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8699857	2023/06/02	2023/06/02	Jaswinder Kaur
Dissolved Metals by ICPMS	ICP/MS	8709474	N/A	2023/06/08	Nan Raykha
Total Metals Analysis by ICPMS	ICP/MS	8711803	2023/06/08	2023/06/08	Azita Fazaeli
Total Ammonia-N	LACH/NH4	8706535	N/A	2023/06/06	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8700807	N/A	2023/06/05	Viorica Rotaru
Sulphate by Automated Turbidimetry	KONE	8700879	N/A	2023/06/06	Massarat Jan
Total Dissolved Solids	BAL	8702904	2023/06/03	2023/06/05	Tina Teng
Total Phosphorus (Colourimetric)	SKAL/P	8706809	2023/06/06	2023/06/06	Shivani Shivani
Total Suspended Solids	BAL	8702889	2023/06/05	2023/06/06	Shaneil Hall

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.0°C
Package 2	2.3°C
Package 3	5.3°C

Results relate only to the items tested.

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

Bureau Veritas Job #: C3F6771
Report Date: 2023/06/08

QUALITY ASSURANCE REPORT

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: C.A

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8699475	Dissolved Organic Carbon	2023/06/02	94	80 - 120	97	80 - 120	ND, RDL=0.40	mg/L	0.24	20		
8699660	Total BOD	2023/06/07					ND,RDL=2	mg/L	NC	30	100	80 - 120
8699857	Dissolved Mercury (Hg)	2023/06/02	102	75 - 125	107	80 - 120	ND, RDL=0.10	ug/L	NC	20		
8699978	Chromium (VI)	2023/06/02	103	80 - 120	104	80 - 120	ND, RDL=0.50	ug/L	NC	20		
8700015	Dissolved Mercury (Hg)	2023/06/02	106	75 - 125	107	80 - 120	ND, RDL=0.10	ug/L	NC	20		
8700693	Nitrate (N)	2023/06/02	103	80 - 120	102	80 - 120	ND, RDL=0.10	mg/L	NC	20		
8700693	Nitrite (N)	2023/06/02	106	80 - 120	105	80 - 120	ND, RDL=0.010	mg/L	NC	20		
8700807	Nitrate (N)	2023/06/05	104	80 - 120	106	80 - 120	ND, RDL=0.10	mg/L	NC	20		
8700807	Nitrite (N)	2023/06/05	106	80 - 120	108	80 - 120	ND, RDL=0.010	mg/L	0.55	20		
8700861	Dissolved Chloride (Cl-)	2023/06/06	NC	80 - 120	98	80 - 120	ND, RDL=1.0	mg/L	3.9	20		
8700879	Dissolved Sulphate (SO4)	2023/06/06	NC	75 - 125	94	80 - 120	ND, RDL=1.0	mg/L	0.73	20		
8701166	Dissolved Aluminum (Al)	2023/06/05	99	80 - 120	101	80 - 120	ND, RDL=4.9	ug/L				
8701166	Dissolved Calcium (Ca)	2023/06/05	102	80 - 120	105	80 - 120	ND, RDL=200	ug/L				
8701166	Dissolved Chromium (Cr)	2023/06/05	97	80 - 120	95	80 - 120	ND, RDL=5.0	ug/L				
8701166	Dissolved Iron (Fe)	2023/06/05	100	80 - 120	101	80 - 120	ND, RDL=100	ug/L				
8701166	Dissolved Magnesium (Mg)	2023/06/05	103	80 - 120	101	80 - 120	ND, RDL=50	ug/L				
8701447	Dissolved Sulphate (SO4)	2023/06/06	94	75 - 125	94	80 - 120	ND, RDL=1.0	mg/L	NC	20		
8701458	Dissolved Chloride (Cl-)	2023/06/06	NC	80 - 120	96	80 - 120	ND, RDL=1.0	mg/L	13	20		
8702889	Total Suspended Solids	2023/06/06			95	85 - 115	ND, RDL=10	mg/L	NC	20		
8702904	Total Dissolved Solids	2023/06/05			98	90 - 110	ND, RDL=10	mg/L	0	20		
8703790	Total Suspended Solids	2023/06/06			98	85 - 115	ND, RDL=10	mg/L	0	20		
8704032	Total Aluminum (Al)	2023/06/05	103	80 - 120	95	80 - 120	ND, RDL=4.9	ug/L	9.2	20		
8704032	Total Barium (Ba)	2023/06/05	98	80 - 120	95	80 - 120	ND, RDL=2.0	ug/L	5.8	20		
8704032	Total Beryllium (Be)	2023/06/05	105	80 - 120	102	80 - 120	ND, RDL=0.40	ug/L	NC	20		
8704032	Total Boron (B)	2023/06/05	100	80 - 120	97	80 - 120	ND, RDL=10	ug/L	1.4	20		
8704032	Total Cadmium (Cd)	2023/06/05	101	80 - 120	96	80 - 120	ND, RDL=0.090	ug/L	NC	20		
8704032	Total Calcium (Ca)	2023/06/05	NC	80 - 120	95	80 - 120	ND, RDL=200	ug/L	1.1	20		
8704032	Total Chromium (Cr)	2023/06/05	100	80 - 120	96	80 - 120	ND, RDL=5.0	ug/L	NC	20		
8704032	Total Cobalt (Co)	2023/06/05	99	80 - 120	95	80 - 120	ND, RDL=0.50	ug/L	NC	20		
8704032	Total Iron (Fe)	2023/06/05	97	80 - 120	94	80 - 120	ND, RDL=100	ug/L	0.66	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8704032	Total Lead (Pb)	2023/06/05	97	80 - 120	93	80 - 120	ND, RDL=0.50	ug/L	NC	20		
8704032	Total Magnesium (Mg)	2023/06/05	99	80 - 120	93	80 - 120	ND, RDL=50	ug/L	0.32	20		
8704032	Total Manganese (Mn)	2023/06/05	99	80 - 120	95	80 - 120	ND, RDL=2.0	ug/L	1.7	20		
8704032	Total Molybdenum (Mo)	2023/06/05	106	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	3.0	20		
8704032	Total Nickel (Ni)	2023/06/05	98	80 - 120	95	80 - 120	ND, RDL=1.0	ug/L	NC	20		
8704032	Total Potassium (K)	2023/06/05	100	80 - 120	94	80 - 120	ND, RDL=200	ug/L	0.44	20		
8704032	Total Selenium (Se)	2023/06/05	107	80 - 120	104	80 - 120	ND, RDL=2.0	ug/L	NC	20		
8704032	Total Silver (Ag)	2023/06/05	97	80 - 120	93	80 - 120	ND, RDL=0.090	ug/L	NC	20		
8704032	Total Sodium (Na)	2023/06/05	NC	80 - 120	94	80 - 120	ND, RDL=100	ug/L	0.10	20		
8704032	Total Vanadium (V)	2023/06/05	101	80 - 120	96	80 - 120	ND, RDL=0.50	ug/L	NC	20		
8704032	Total Zinc (Zn)	2023/06/05	106	80 - 120	102	80 - 120	ND, RDL=5.0	ug/L	NC	20		
8704895	Total Aluminum (Al)	2023/06/06	103	80 - 120	102	80 - 120	ND, RDL=4.9	ug/L				
8704895	Total Barium (Ba)	2023/06/06	97	80 - 120	98	80 - 120	ND, RDL=2.0	ug/L				
8704895	Total Beryllium (Be)	2023/06/06	100	80 - 120	97	80 - 120	ND, RDL=0.40	ug/L				
8704895	Total Boron (B)	2023/06/06	93	80 - 120	92	80 - 120	ND, RDL=10	ug/L				
8704895	Total Cadmium (Cd)	2023/06/06	96	80 - 120	97	80 - 120	ND, RDL=0.090	ug/L	NC	20		
8704895	Total Calcium (Ca)	2023/06/06	NC	80 - 120	100	80 - 120	ND, RDL=200	ug/L				
8704895	Total Chromium (Cr)	2023/06/06	92	80 - 120	95	80 - 120	ND, RDL=5.0	ug/L	NC	20		
8704895	Total Cobalt (Co)	2023/06/06	96	80 - 120	101	80 - 120	ND, RDL=0.50	ug/L				
8704895	Total Iron (Fe)	2023/06/06	96	80 - 120	99	80 - 120	ND, RDL=100	ug/L				
8704895	Total Lead (Pb)	2023/06/06	98	80 - 120	100	80 - 120	ND, RDL=0.50	ug/L	NC	20		
8704895	Total Magnesium (Mg)	2023/06/06	94	80 - 120	102	80 - 120	ND, RDL=50	ug/L				
8704895	Total Manganese (Mn)	2023/06/06	93	80 - 120	96	80 - 120	ND, RDL=2.0	ug/L	1.1	20		
8704895	Total Molybdenum (Mo)	2023/06/06	100	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L				
8704895	Total Nickel (Ni)	2023/06/06	96	80 - 120	100	80 - 120	ND, RDL=1.0	ug/L	NC	20		
8704895	Total Potassium (K)	2023/06/06	96	80 - 120	100	80 - 120	ND, RDL=200	ug/L				
8704895	Total Selenium (Se)	2023/06/06	103	80 - 120	104	80 - 120	ND, RDL=2.0	ug/L	NC	20		
8704895	Total Silver (Ag)	2023/06/06	96	80 - 120	95	80 - 120	ND, RDL=0.090	ug/L	NC	20		
8704895	Total Sodium (Na)	2023/06/06	NC	80 - 120	99	80 - 120	ND, RDL=100	ug/L				
8704895	Total Vanadium (V)	2023/06/06	93	80 - 120	96	80 - 120	ND, RDL=0.50	ug/L				

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8704895	Total Zinc (Zn)	2023/06/06	96	80 - 120	98	80 - 120	ND, RDL=5.0	ug/L	2.4	20		
8706535	Total Ammonia-N	2023/06/06	102	75 - 125	100	80 - 120	ND, RDL=0.050	mg/L	NC	20		
8706549	Total Ammonia-N	2023/06/06	99	75 - 125	102	80 - 120	ND, RDL=0.050	mg/L	0.0041	20		
8706809	Total Phosphorus	2023/06/06	126 (1)	80 - 120	100	80 - 120	ND, RDL=0.004	mg/L	2.6	20	104	80 - 120
8707281	Alkalinity (Total as CaCO3)	2023/06/07			95	85 - 115	ND, RDL=1.0	mg/L	0.81	20		
8707375	Conductivity	2023/06/07			101	85 - 115	1.0, RDL=1.0	umho/cm	0	25		
8709474	Dissolved Aluminum (Al)	2023/06/08	99	80 - 120	97	80 - 120	ND, RDL=4.9	ug/L				
8709474	Dissolved Calcium (Ca)	2023/06/08	NC	80 - 120	95	80 - 120	ND, RDL=200	ug/L				
8709474	Dissolved Chromium (Cr)	2023/06/08	99	80 - 120	98	80 - 120	ND, RDL=5.0	ug/L				
8709474	Dissolved Iron (Fe)	2023/06/08	99	80 - 120	97	80 - 120	ND, RDL=100	ug/L				
8709474	Dissolved Magnesium (Mg)	2023/06/08	99	80 - 120	97	80 - 120	ND, RDL=50	ug/L				
8711803	Total Aluminum (Al)	2023/06/08	117	80 - 120	101	80 - 120	ND, RDL=4.9	ug/L	2.2	20		
8711803	Total Barium (Ba)	2023/06/08	99	80 - 120	97	80 - 120	ND, RDL=2.0	ug/L	4.9	20		
8711803	Total Beryllium (Be)	2023/06/08	106	80 - 120	103	80 - 120	ND, RDL=0.40	ug/L	NC	20		
8711803	Total Boron (B)	2023/06/08	103	80 - 120	99	80 - 120	ND, RDL=10	ug/L	0.60	20		
8711803	Total Cadmium (Cd)	2023/06/08	102	80 - 120	100	80 - 120	ND, RDL=0.090	ug/L	NC	20		
8711803	Total Calcium (Ca)	2023/06/08	NC	80 - 120	102	80 - 120	ND, RDL=200	ug/L	2.5	20		
8711803	Total Chromium (Cr)	2023/06/08	100	80 - 120	95	80 - 120	ND, RDL=5.0	ug/L	NC	20		
8711803	Total Cobalt (Co)	2023/06/08	99	80 - 120	96	80 - 120	ND, RDL=0.50	ug/L	6.1	20		
8711803	Total Iron (Fe)	2023/06/08	100	80 - 120	97	80 - 120	ND, RDL=100	ug/L	6.9	20		
8711803	Total Lead (Pb)	2023/06/08	97	80 - 120	95	80 - 120	ND, RDL=0.50	ug/L	2.6	20		
8711803	Total Magnesium (Mg)	2023/06/08	100	80 - 120	96	80 - 120	ND, RDL=50	ug/L	4.0	20		
8711803	Total Manganese (Mn)	2023/06/08	100	80 - 120	95	80 - 120	ND, RDL=2.0	ug/L	4.7	20		
8711803	Total Molybdenum (Mo)	2023/06/08	106	80 - 120	102	80 - 120	ND, RDL=0.50	ug/L	4.7	20		
8711803	Total Nickel (Ni)	2023/06/08	98	80 - 120	95	80 - 120	ND, RDL=1.0	ug/L	1.8	20		
8711803	Total Potassium (K)	2023/06/08	100	80 - 120	97	80 - 120	ND, RDL=200	ug/L	4.6	20		
8711803	Total Selenium (Se)	2023/06/08	111	80 - 120	108	80 - 120	ND, RDL=2.0	ug/L	NC	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8711803	Total Silver (Ag)	2023/06/08	99	80 - 120	96	80 - 120	ND, RDL=0.090	ug/L	6.0	20		
8711803	Total Sodium (Na)	2023/06/08	101	80 - 120	98	80 - 120	ND, RDL=100	ug/L	4.0	20		
8711803	Total Vanadium (V)	2023/06/08	101	80 - 120	97	80 - 120	ND, RDL=0.50	ug/L	6.9	20		
8711803	Total Zinc (Zn)	2023/06/08	106	80 - 120	102	80 - 120	ND, RDL=5.0	ug/L	NC	20		

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

Bureau Veritas
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvna.com

Received in Ottawa

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#28962 The Corporation of the Town of Arnprior	Company Name:	#17006 WSP Canada Inc	Quotation #:	B41189
Attention:	Invoices- Andria & Emily	Attention:	~~Emily Bacon~~ Hadia Aziz	P.O. #:	
Address:	105 Elgin Street W Arnprior ON K7S 0A8	Address:	1931 Robertson Rd Ottawa ON K2H5B7	Project:	23594631
Tel:	(613) 623-4231 Fax:	Tel:	(613) 592-9600 Fax:	Project Name:	Arnprior LF
Email:	andria.caletti@wsp.com, emily.bacon@wsp.com	Email:	~~Andria.caletti@wsp.com~~ ~~emily.bacon@wsp.com~~ Hadia.aziz2.ows@	Site #:	
				Sampled By:	C Albert

31-May-23 09:03
Katherine Szozda
C3F6771

SWP ENV-1645
Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ____	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ____ ☒ PWQO ☐ Reg 406 Table ____ ☐ Other ____	

Include Criteria on Certificate of Analysis (Y/N)? ____

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____
Rush Confirmation Number: ____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	SURFACE WATER	# of Bottles	Comments
1	SID#618172	SW-10	May 29/23	7 AM	SW	Yes	✓		
2	SID#618173	SW-11					✓		
3	SID#618174	SW-12					✓		
4	SID#618175	SW-1					✓		
5	SID#618176	SW-2					✓		
6	SID#618177	SW-21					✓		
7	SID#618178	SW-22					✓		
8	SID#618179	~~SW-23~~					X		
9	SID#618180	SW-18					✓		
10	SID#618181	SW-19	↓	↓	↓	↓	✓		

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
C Albert	May 29/23	6pm	Rawlance Lawrence	2023/05/31	0903	
				2023/06/01	08:30	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
✓	1.2, 0/2.1, 4/6.5, 5	Present	✓	
		Intact	✓	

2/2/2
4/14/4
5/5/17

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-TERMS-AND-CONDITIONS.
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client

Bureau Veritas Canada (2019) Inc.

Bureau Veritas
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvna.com

Received in Ottawa

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#28962 The Corporation of the Town of Arnprior	Company Name:	#17006 WSP Canada Inc	Quotation #:	B41189	Bureau Veritas Job #:	Bottle Order #:
Attention:	Invoices- Andria & Emily	Attention:	~~Emily Bacon~~ Hadia Aziz	P.O. #:			930148
Address:	105 Elgin Street W	Address:	1931 Robertson Rd	Project:	23594631	COC #:	Project Manager:
	Arnprior ON K7S 0A8		Ottawa ON K2H5B7	Project Name:	Arnprior LF	C#930148-02-01	Katherine Szozda
Tel:	(613) 623-4231 Fax:	Tel:	(613) 592-9600 Fax:	Site #:			
Email:	andria.caletti@wsp.com, emily.bacon@wsp.com	Email:	~~emily.bacon@wsp.com~~ hadia.aziz@wsp.com	Sampled By:	C. Albert		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality _____	
☐ Table ___	☒ PWQO ☐ Reg 406 Table _____	
	☐ Other _____	

include Criteria on Certificate of Analysis (Y/N)? _____

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle) Metals / Hg / Cr VI	SURFACE WATER	ANALYSIS REQUESTED (PLEASE BE SPECIFIC)	# of Bottles	Comments
1	SID#: 16182	SW-26	May 29/23	12 pm	SW	Yes	✓			
2	SID#616150	DUP-3	↓	↓	SW	Yes	✓			
3										
4										
5										
6										
7										
8										
9										
10										

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____ ☐
Rush Confirmation Number: _____ *(call lab for #)*

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only				
C Albert	May 29/23	6pm	see pg 1				Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
			see pg 1					see pg 1	Present		
									Intact		

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your Project #: 23594631
Site Location: Arnprior LF
Your C.O.C. #: 949590-01-01

Attention: Hadia Aziz

WSP Canada Inc
1931 Robertson Rd
Ottawa, ON
CANADA K2H5B7

Report Date: 2023/10/02
Report #: R7842038
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3T4045
Received: 2023/09/22, 12:25

Sample Matrix: Water
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity (1)	9	N/A	2023/09/26	CAM SOP-00448	SM 23 2320 B m
Biochemical Oxygen Demand (BOD) (1)	9	2023/09/25	2023/09/30	CAM SOP-00427	SM 23 5210B m
Chloride by Automated Colourimetry (1)	6	N/A	2023/09/26	CAM SOP-00463	SM 23 4500-Cl E m
Chloride by Automated Colourimetry (1)	3	N/A	2023/09/29	CAM SOP-00463	SM 23 4500-Cl E m
Conductivity (1)	2	N/A	2023/10/02	CAM SOP-00414	SM 23 2510 m
Conductivity (1)	7	N/A	2023/09/26	CAM SOP-00414	SM 23 2510 m
Chromium 3+ by calculation (1)	9	2023/09/23	2023/09/26		
Chromium (VI) in Water (1)	9	N/A	2023/09/26	CAM SOP-00436	EPA 7199 m
Dissolved Organic Carbon (DOC) (1, 2)	9	N/A	2023/09/26	CAM SOP-00446	SM 23 5310 B m
Hardness (calculated as CaCO3) (1)	9	N/A	2023/09/26	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Mercury in Water by CVAA (1)	9	2023/09/26	2023/09/26	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS (1)	9	N/A	2023/09/26	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS (1)	1	2023/09/26	2023/09/26	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS (1)	8	2023/09/28	2023/09/28	CAM SOP-00447	EPA 6020B m
Total Ammonia-N (1)	9	N/A	2023/09/28	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (1, 3)	1	N/A	2023/09/26	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Nitrate & Nitrite as Nitrogen in Water (1, 3)	8	N/A	2023/09/27	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Sulphate by Automated Turbidimetry (1)	6	N/A	2023/09/26	CAM SOP-00464	SM 23 4500-SO42- E m
Sulphate by Automated Turbidimetry (1)	3	N/A	2023/09/27	CAM SOP-00464	SM 23 4500-SO42- E m
Total Dissolved Solids (1)	9	2023/09/27	2023/09/28	CAM SOP-00428	SM 23 2540C m
Total Phosphorus (Colourimetric) (1)	9	2023/09/26	2023/09/26	CAM SOP-00407	SM 23 4500-P I
Total Suspended Solids (1)	9	2023/09/28	2023/09/28	CAM SOP-00428	SM 23 2540D m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCCFP, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Your Project #: 23594631
Site Location: Arnprior LF
Your C.O.C. #: 949590-01-01

Attention: Hadia Aziz

WSP Canada Inc
1931 Robertson Rd
Ottawa, ON
CANADA K2H5B7

Report Date: 2023/10/02
Report #: R7842038
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3T4045
Received: 2023/09/22, 12:25

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
(2) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(3) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633
==========
This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C3T4045
Report Date: 2023/10/02

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			XBQ220		XBQ221		XBQ222	XBQ223		
Sampling Date			2023/09/21		2023/09/21		2023/09/21	2023/09/21		
COC Number			949590-01-01		949590-01-01		949590-01-01	949590-01-01		
	UNITS	Criteria	SW-11	QC Batch	SW-12	QC Batch	SW-1	SW-2	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	-	340	8937069	350	8937069	420	460	1.0	8937069
Inorganics										
Total Ammonia-N	mg/L	-	1.2	8944819	1.1	8944819	0.23	1.2	0.050	8944819
Total BOD	mg/L	-	ND	8938996	ND	8938996	ND	ND	2	8938996
Conductivity	umho/cm	-	730	8940082	700	8954804	1000	1100	1.0	8940082
Total Dissolved Solids	mg/L	-	385	8943585	375	8943585	560	635	10	8943585
Dissolved Organic Carbon	mg/L	-	2.1	8938338	2.3	8938338	7.8	3.8	0.40	8938338
Total Phosphorus	mg/L	**0.01**	0.010	8939940	0.008	8939940	**0.044**	**0.019**	0.004	8939940
Total Suspended Solids	mg/L	-	ND	8943530	ND	8943530	ND	53	10	8943530
Dissolved Sulphate (SO4)	mg/L	-	25	8940170	21	8940170	2.9	11	1.0	8940146
Alkalinity (Total as CaCO3)	mg/L	-	310	8940081	320	8940081	430	440	1.0	8940081
Dissolved Chloride (Cl-)	mg/L	-	41	8940165	39	8940165	86	110	1.0	8948712
Nitrite (N)	mg/L	-	ND	8940054	ND	8940054	ND	0.161	0.010	8940054
Nitrate (N)	mg/L	-	0.44	8940054	0.27	8940054	0.11	1.46	0.10	8940054
Nitrate + Nitrite (N)	mg/L	-	0.44	8940054	0.27	8940054	0.11	1.62	0.10	8940054

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3T4045
Report Date: 2023/10/02

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			XBQ224		XBQ225			XBQ225		
Sampling Date			2023/09/21		2023/09/21			2023/09/21		
COC Number			949590-01-01		949590-01-01			949590-01-01		
	UNITS	Criteria	SW-21	QC Batch	SW-22	RDL	QC Batch	SW-22 Lab-Dup	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	-	420	8937069	460	1.0	8937069			
Inorganics										
Total Ammonia-N	mg/L	-	1.6	8944819	1.1	0.050	8944819			
Total BOD	mg/L	-	ND	8938996	ND	2	8938996			
Conductivity	umho/cm	-	1000	8940082	1100	1.0	8954804			
Total Dissolved Solids	mg/L	-	560	8943585	620	10	8943585			
Dissolved Organic Carbon	mg/L	-	6.9	8938338	3.9	0.40	8938338			
Total Phosphorus	mg/L	**0.01**	**0.046**	8939940	**0.016**	0.004	8939940			
Total Suspended Solids	mg/L	-	ND	8943530	ND	10	8943530			
Dissolved Sulphate (SO4)	mg/L	-	7.0	8940170	12	1.0	8940146			
Alkalinity (Total as CaCO3)	mg/L	-	400	8940081	440	1.0	8940081			
Dissolved Chloride (Cl-)	mg/L	-	85	8940165	110	1.0	8948712			
Nitrite (N)	mg/L	-	ND	8940054	0.090	0.010	8940065	0.095	0.010	8940065
Nitrate (N)	mg/L	-	0.35	8940054	1.45	0.10	8940065	1.47	0.10	8940065
Nitrate + Nitrite (N)	mg/L	-	0.35	8940054	1.54	0.10	8940065	1.57	0.10	8940065

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3T4045
Report Date: 2023/10/02

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			XBQ226		XBQ228			XBQ228		
Sampling Date			2023/09/21		2023/09/21 16:00			2023/09/21 16:00		
COC Number			949590-01-01		949590-01-01			949590-01-01		
	UNITS	Criteria	SW-18	QC Batch	SW-26	RDL	QC Batch	SW-26 Lab-Dup	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	-	35	8937069	26	1.0	8937069			
Inorganics										
Total Ammonia-N	mg/L	-	0.35	8944819	0.15	0.050	8944819			
Total BOD	mg/L	-	4	8938996	ND	2	8938996			
Conductivity	umho/cm	-	150	8940082	70	1.0	8940082	69	1.0	8940082
Total Dissolved Solids	mg/L	-	70	8943585	55	10	8943585			
Dissolved Organic Carbon	mg/L	-	7.5	8938338	7.1	0.40	8938338			
Total Phosphorus	mg/L	**0.01**	0.008	8939940	**0.011**	0.004	8939940			
Total Suspended Solids	mg/L	-	ND	8947000	ND	10	8943530			
Dissolved Sulphate (SO4)	mg/L	-	4.2	8940170	4.1	1.0	8940170			
Alkalinity (Total as CaCO3)	mg/L	-	56	8940081	23	1.0	8940081	24	1.0	8940081
Dissolved Chloride (Cl-)	mg/L	-	5.8	8940165	ND	1.0	8940165			
Nitrite (N)	mg/L	-	ND	8940054	ND	0.010	8940054			
Nitrate (N)	mg/L	-	0.12	8940054	0.14	0.10	8940054			
Nitrate + Nitrite (N)	mg/L	-	0.12	8940054	0.14	0.10	8940054			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3T4045
Report Date: 2023/10/02

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			XBQ229			XBQ229		
Sampling Date			2023/09/21 16:00			2023/09/21 16:00		
COC Number			949590-01-01			949590-01-01		
	UNITS	Criteria	DUP-1	RDL	QC Batch	DUP-1 Lab-Dup	RDL	QC Batch
Calculated Parameters								
Hardness (CaCO3)	mg/L	-	25	1.0	8937069			
Inorganics								
Total Ammonia-N	mg/L	-	0.20	0.050	8944819			
Total BOD	mg/L	-	ND	2	8938996	ND	2	8938996
Conductivity	umho/cm	-	70	1.0	8940082			
Total Dissolved Solids	mg/L	-	55	10	8943585			
Dissolved Organic Carbon	mg/L	-	7.2	0.40	8938338			
Total Phosphorus	mg/L	**0.01**	**0.011**	0.004	8939940			
Total Suspended Solids	mg/L	-	ND	10	8943530			
Dissolved Sulphate (SO4)	mg/L	-	4.5	1.0	8940170			
Alkalinity (Total as CaCO3)	mg/L	-	24	1.0	8940081			
Dissolved Chloride (Cl-)	mg/L	-	ND	1.0	8940165			
Nitrite (N)	mg/L	-	ND	0.010	8940054			
Nitrate (N)	mg/L	-	0.13	0.10	8940054			
Nitrate + Nitrite (N)	mg/L	-	0.13	0.10	8940054			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID			XBQ220	XBQ221			XBQ221		
Sampling Date			2023/09/21	2023/09/21			2023/09/21		
COC Number			949590-01-01	949590-01-01			949590-01-01		
	UNITS	Criteria	SW-11	SW-12	RDL	QC Batch	SW-12 Lab-Dup	RDL	QC Batch
Calculated Parameters									
Chromium (+3)	ug/L	**8.9**	ND	ND	5	8939285			
Metals									
Chromium (VI)	ug/L	**1**	ND	ND	0.50	8940832			
Dissolved Mercury (Hg)	ug/L	**0.2**	ND	ND	0.10	8940928			
Dissolved Aluminum (Al)	ug/L	-	ND	ND	4.9	8940778	ND	4.9	8940778
Total Aluminum (Al)	ug/L	-	110	20	4.9	8947056			
Total Barium (Ba)	ug/L	-	98	100	2.0	8947056			
Total Beryllium (Be)	ug/L	**11**	ND	ND	0.40	8947056			
Total Boron (B)	ug/L	**200**	32	43	10	8947056			
Total Cadmium (Cd)	ug/L	**0.2**	ND	ND	0.090	8947056			
Dissolved Calcium (Ca)	ug/L	-	94000	99000	200	8940778	96000	200	8940778
Total Calcium (Ca)	ug/L	-	100000	99000	200	8947056			
Dissolved Chromium (Cr)	ug/L	-	ND	ND	5.0	8940778	ND	5.0	8940778
Total Chromium (Cr)	ug/L	-	ND	ND	5.0	8947056			
Total Cobalt (Co)	ug/L	**0.9**	ND	ND	0.50	8947056			
Dissolved Iron (Fe)	ug/L	**300**	ND	ND	100	8940778	ND	100	8940778
Total Iron (Fe)	ug/L	**300**	250	ND	100	8947056			
Total Lead (Pb)	ug/L	**5**	ND	ND	0.50	8947056			
Dissolved Magnesium (Mg)	ug/L	-	25000	25000	50	8940778	24000	50	8940778
Total Magnesium (Mg)	ug/L	-	25000	25000	50	8947056			
Total Manganese (Mn)	ug/L	-	34	28	2.0	8947056			
Total Molybdenum (Mo)	ug/L	**40**	0.58	0.94	0.50	8947056			
Total Nickel (Ni)	ug/L	**25**	ND	ND	1.0	8947056			
Total Potassium (K)	ug/L	-	4400	4100	200	8947056			
Total Selenium (Se)	ug/L	**100**	ND	ND	2.0	8947056			
Total Silver (Ag)	ug/L	**0.1**	ND	ND	0.090	8947056			
Total Sodium (Na)	ug/L	-	29000	27000	100	8947056			
Total Vanadium (V)	ug/L	**6**	0.83	0.68	0.50	8947056			
Total Zinc (Zn)	ug/L	**30**	ND	ND	5.0	8947056			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3T4045
Report Date: 2023/10/02

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID			XBQ222	XBQ223		XBQ224			XBQ224		
Sampling Date			2023/09/21	2023/09/21		2023/09/21			2023/09/21		
COC Number			949590-01-01	949590-01-01		949590-01-01			949590-01-01		
	UNITS	Criteria	SW-1	SW-2	QC Batch	SW-21	RDL	QC Batch	SW-21 Lab-Dup	RDL	QC Batch
Calculated Parameters											
Chromium (+3)	ug/L	**8.9**	ND	ND	8939285	ND	5	8939285			
Metals											
Chromium (VI)	ug/L	**1**	ND	ND	8940832	ND	0.50	8940832			
Dissolved Mercury (Hg)	ug/L	**0.2**	ND	ND	8940928	ND	0.10	8940928			
Dissolved Aluminum (Al)	ug/L	-	ND	ND	8940778	ND	4.9	8940778			
Total Aluminum (Al)	ug/L	-	ND	ND	8947056	8.9	4.9	8940788	11	4.9	8940788
Total Barium (Ba)	ug/L	-	180	230	8947056	180	2.0	8940788	180	2.0	8940788
Total Beryllium (Be)	ug/L	**11**	ND	ND	8947056	ND	0.40	8940788	ND	0.40	8940788
Total Boron (B)	ug/L	**200**	**280**	130	8947056	200	10	8940788	190	10	8940788
Total Cadmium (Cd)	ug/L	**0.2**	ND	ND	8947056	ND	0.090	8940788	ND	0.090	8940788
Dissolved Calcium (Ca)	ug/L	-	120000	130000	8940778	120000	200	8940778			
Total Calcium (Ca)	ug/L	-	130000	140000	8947056	120000	200	8940788	120000	200	8940788
Dissolved Chromium (Cr)	ug/L	-	ND	ND	8940778	ND	5.0	8940778			
Total Chromium (Cr)	ug/L	-	ND	ND	8947056	ND	5.0	8940788	ND	5.0	8940788
Total Cobalt (Co)	ug/L	**0.9**	ND	ND	8947056	ND	0.50	8940788	ND	0.50	8940788
Dissolved Iron (Fe)	ug/L	**300**	**390**	180	8940778	**420**	100	8940778			
Total Iron (Fe)	ug/L	**300**	**340**	180	8947056	280	100	8940788	270	100	8940788
Total Lead (Pb)	ug/L	**5**	ND	ND	8947056	ND	0.50	8940788	ND	0.50	8940788
Dissolved Magnesium (Mg)	ug/L	-	29000	31000	8940778	28000	50	8940778			
Total Magnesium (Mg)	ug/L	-	31000	32000	8947056	30000	50	8940788	28000	50	8940788
Total Manganese (Mn)	ug/L	-	200	180	8947056	150	2.0	8940788	140	2.0	8940788
Total Molybdenum (Mo)	ug/L	**40**	ND	ND	8947056	ND	0.50	8940788	ND	0.50	8940788
Total Nickel (Ni)	ug/L	**25**	1.4	1.5	8947056	1.4	1.0	8940788	1.3	1.0	8940788
Total Potassium (K)	ug/L	-	6600	10000	8947056	6600	200	8940788	6500	200	8940788
Total Selenium (Se)	ug/L	**100**	ND	ND	8947056	ND	2.0	8940788	ND	2.0	8940788
Total Silver (Ag)	ug/L	**0.1**	ND	ND	8947056	ND	0.090	8940788	ND	0.090	8940788
Total Sodium (Na)	ug/L	-	66000	73000	8947056	72000	100	8940788	74000	100	8940788
Total Vanadium (V)	ug/L	**6**	ND	ND	8947056	ND	0.50	8940788	ND	0.50	8940788
Total Zinc (Zn)	ug/L	**30**	ND	ND	8947056	ND	5.0	8940788	ND	5.0	8940788

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID			XBQ225	XBQ226	XBQ228	XBQ229		
Sampling Date			2023/09/21	2023/09/21	2023/09/21 16:00	2023/09/21 16:00		
COC Number			949590-01-01	949590-01-01	949590-01-01	949590-01-01		
	UNITS	Criteria	SW-22	SW-18	SW-26	DUP-1	RDL	QC Batch
Calculated Parameters								
Chromium (+3)	ug/L	**8.9**	ND	ND	ND	ND	5	8939285
Metals								
Chromium (VI)	ug/L	**1**	ND	ND	ND	ND	0.50	8940832
Dissolved Mercury (Hg)	ug/L	**0.2**	ND	ND	ND	ND	0.10	8940928
Dissolved Aluminum (Al)	ug/L	-	ND	59	63	58	4.9	8940778
Total Aluminum (Al)	ug/L	-	ND	59	63	68	4.9	8947056
Total Barium (Ba)	ug/L	-	220	19	12	12	2.0	8947056
Total Beryllium (Be)	ug/L	**11**	ND	ND	ND	ND	0.40	8947056
Total Boron (B)	ug/L	**200**	140	22	ND	ND	10	8947056
Total Cadmium (Cd)	ug/L	**0.2**	ND	ND	ND	ND	0.090	8947056
Dissolved Calcium (Ca)	ug/L	-	130000	10000	7500	7300	200	8940778
Total Calcium (Ca)	ug/L	-	140000	15000	7600	7700	200	8947056
Dissolved Chromium (Cr)	ug/L	-	ND	ND	ND	ND	5.0	8940778
Total Chromium (Cr)	ug/L	-	ND	ND	ND	ND	5.0	8947056
Total Cobalt (Co)	ug/L	**0.9**	ND	ND	ND	ND	0.50	8947056
Dissolved Iron (Fe)	ug/L	**300**	190	110	120	110	100	8940778
Total Iron (Fe)	ug/L	**300**	170	120	140	130	100	8947056
Total Lead (Pb)	ug/L	**5**	ND	ND	ND	ND	0.50	8947056
Dissolved Magnesium (Mg)	ug/L	-	30000	2300	1700	1700	50	8940778
Total Magnesium (Mg)	ug/L	-	33000	3700	1800	1800	50	8947056
Total Manganese (Mn)	ug/L	-	180	6.0	5.6	5.6	2.0	8947056
Total Molybdenum (Mo)	ug/L	**40**	ND	ND	ND	ND	0.50	8947056
Total Nickel (Ni)	ug/L	**25**	1.5	ND	ND	ND	1.0	8947056
Total Potassium (K)	ug/L	-	10000	1200	730	730	200	8947056
Total Selenium (Se)	ug/L	**100**	ND	ND	ND	ND	2.0	8947056
Total Silver (Ag)	ug/L	**0.1**	ND	ND	ND	ND	0.090	8947056
Total Sodium (Na)	ug/L	-	75000	6800	3500	3700	100	8947056
Total Vanadium (V)	ug/L	**6**	ND	0.68	0.56	0.71	0.50	8947056
Total Zinc (Zn)	ug/L	**30**	ND	ND	8.1	ND	5.0	8947056

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

TEST SUMMARY

Bureau Veritas ID: XBQ220
Sample ID: SW-11
Matrix: Water

Collected: 2023/09/21
Shipped:
Received: 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8940081	N/A	2023/09/26	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	8938996	2023/09/25	2023/09/30	Frank Zhang
Chloride by Automated Colourimetry	KONE	8940165	N/A	2023/09/26	Alina Dobreanu
Conductivity	AT	8940082	N/A	2023/09/26	Nachiketa Gohil
Chromium 3+ by calculation		8939285	2023/09/26	2023/09/26	Automated Statchk
Chromium (VI) in Water	IC	8940832	N/A	2023/09/26	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8938338	N/A	2023/09/26	Gyulshen Idriz
Hardness (calculated as CaCO3)		8937069	N/A	2023/09/26	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8940928	2023/09/26	2023/09/26	Indira HarryPaul
Dissolved Metals by ICPMS	ICP/MS	8940778	N/A	2023/09/26	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8947056	2023/09/28	2023/09/28	Nan Raykha
Total Ammonia-N	LACH/NH4	8944819	N/A	2023/09/28	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8940054	N/A	2023/09/27	Chandra Nandlal
Sulphate by Automated Turbidimetry	KONE	8940170	N/A	2023/09/26	Alina Dobreanu
Total Dissolved Solids	BAL	8943585	2023/09/27	2023/09/28	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8939940	2023/09/26	2023/09/26	Muskan
Total Suspended Solids	BAL	8943530	2023/09/28	2023/09/28	Shaneil Hall

Bureau Veritas ID: XBQ221
Sample ID: SW-12
Matrix: Water

Collected: 2023/09/21
Shipped:
Received: 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8940081	N/A	2023/09/26	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	8938996	2023/09/25	2023/09/30	Frank Zhang
Chloride by Automated Colourimetry	KONE	8940165	N/A	2023/09/26	Alina Dobreanu
Conductivity	AT	8954804	N/A	2023/10/02	Kien Tran
Chromium 3+ by calculation		8939285	2023/09/26	2023/09/26	Automated Statchk
Chromium (VI) in Water	IC	8940832	N/A	2023/09/26	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8938338	N/A	2023/09/26	Gyulshen Idriz
Hardness (calculated as CaCO3)		8937069	N/A	2023/09/26	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8940928	2023/09/26	2023/09/26	Indira HarryPaul
Dissolved Metals by ICPMS	ICP/MS	8940778	N/A	2023/09/26	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8947056	2023/09/28	2023/09/28	Nan Raykha
Total Ammonia-N	LACH/NH4	8944819	N/A	2023/09/28	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8940054	N/A	2023/09/27	Chandra Nandlal
Sulphate by Automated Turbidimetry	KONE	8940170	N/A	2023/09/26	Alina Dobreanu
Total Dissolved Solids	BAL	8943585	2023/09/27	2023/09/28	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8939940	2023/09/26	2023/09/26	Muskan
Total Suspended Solids	BAL	8943530	2023/09/28	2023/09/28	Shaneil Hall

TEST SUMMARY

Bureau Veritas ID: XBQ221 Dup
Sample ID: SW-12
Matrix: Water

Collected: 2023/09/21
Shipped:
Received: 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	8940778	N/A	2023/09/26	Arefa Dabhad

Bureau Veritas ID: XBQ222
Sample ID: SW-1
Matrix: Water

Collected: 2023/09/21
Shipped:
Received: 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8940081	N/A	2023/09/26	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	8938996	2023/09/25	2023/09/30	Frank Zhang
Chloride by Automated Colourimetry	KONE	8948712	N/A	2023/09/29	Alina Dobreanu
Conductivity	AT	8940082	N/A	2023/09/26	Nachiketa Gohil
Chromium 3+ by calculation		8939285	2023/09/26	2023/09/26	Automated Statchk
Chromium (VI) in Water	IC	8940832	N/A	2023/09/26	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8938338	N/A	2023/09/26	Gyulshen Idriz
Hardness (calculated as CaCO3)		8937069	N/A	2023/09/26	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8940928	2023/09/26	2023/09/26	Indira HarryPaul
Dissolved Metals by ICPMS	ICP/MS	8940778	N/A	2023/09/26	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8947056	2023/09/28	2023/09/28	Nan Raykha
Total Ammonia-N	LACH/NH4	8944819	N/A	2023/09/28	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8940054	N/A	2023/09/27	Chandra Nandlal
Sulphate by Automated Turbidimetry	KONE	8940146	N/A	2023/09/27	Samuel Law
Total Dissolved Solids	BAL	8943585	2023/09/27	2023/09/28	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8939940	2023/09/26	2023/09/26	Muskan
Total Suspended Solids	BAL	8943530	2023/09/28	2023/09/28	Shaneil Hall

Bureau Veritas ID: XBQ223
Sample ID: SW-2
Matrix: Water

Collected: 2023/09/21
Shipped:
Received: 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8940081	N/A	2023/09/26	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	8938996	2023/09/25	2023/09/30	Frank Zhang
Chloride by Automated Colourimetry	KONE	8948712	N/A	2023/09/29	Alina Dobreanu
Conductivity	AT	8940082	N/A	2023/09/26	Nachiketa Gohil
Chromium 3+ by calculation		8939285	2023/09/26	2023/09/26	Automated Statchk
Chromium (VI) in Water	IC	8940832	N/A	2023/09/26	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8938338	N/A	2023/09/26	Gyulshen Idriz
Hardness (calculated as CaCO3)		8937069	N/A	2023/09/26	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8940928	2023/09/26	2023/09/26	Indira HarryPaul
Dissolved Metals by ICPMS	ICP/MS	8940778	N/A	2023/09/26	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8947056	2023/09/28	2023/09/28	Nan Raykha
Total Ammonia-N	LACH/NH4	8944819	N/A	2023/09/28	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8940054	N/A	2023/09/27	Chandra Nandlal
Sulphate by Automated Turbidimetry	KONE	8940146	N/A	2023/09/27	Samuel Law
Total Dissolved Solids	BAL	8943585	2023/09/27	2023/09/28	Shaneil Hall

Bureau Veritas Job #: C3T4045
Report Date: 2023/10/02

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

TEST SUMMARY

Bureau Veritas ID: XBQ223
Sample ID: SW-2
Matrix: Water

Collected: 2023/09/21
Shipped:
Received: 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	SKAL/P	8939940	2023/09/26	2023/09/26	Muskan
Total Suspended Solids	BAL	8943530	2023/09/28	2023/09/28	Shaneil Hall

Bureau Veritas ID: XBQ224
Sample ID: SW-21
Matrix: Water

Collected: 2023/09/21
Shipped:
Received: 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8940081	N/A	2023/09/26	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	8938996	2023/09/25	2023/09/30	Frank Zhang
Chloride by Automated Colourimetry	KONE	8940165	N/A	2023/09/26	Alina Dobreanu
Conductivity	AT	8940082	N/A	2023/09/26	Nachiketa Gohil
Chromium 3+ by calculation		8939285	2023/09/26	2023/09/26	Automated Statchk
Chromium (VI) in Water	IC	8940832	N/A	2023/09/26	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8938338	N/A	2023/09/26	Gyulshen Idriz
Hardness (calculated as CaCO3)		8937069	N/A	2023/09/26	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8940928	2023/09/26	2023/09/26	Indira HarryPaul
Dissolved Metals by ICPMS	ICP/MS	8940778	N/A	2023/09/26	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8940788	2023/09/26	2023/09/26	Arefa Dabhad
Total Ammonia-N	LACH/NH4	8944819	N/A	2023/09/28	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8940054	N/A	2023/09/27	Chandra Nandlal
Sulphate by Automated Turbidimetry	KONE	8940170	N/A	2023/09/26	Alina Dobreanu
Total Dissolved Solids	BAL	8943585	2023/09/27	2023/09/28	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8939940	2023/09/26	2023/09/26	Muskan
Total Suspended Solids	BAL	8943530	2023/09/28	2023/09/28	Shaneil Hall

Bureau Veritas ID: XBQ224 Dup
Sample ID: SW-21
Matrix: Water

Collected: 2023/09/21
Shipped:
Received: 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals Analysis by ICPMS	ICP/MS	8940788	2023/09/26	2023/09/26	Arefa Dabhad

Bureau Veritas ID: XBQ225
Sample ID: SW-22
Matrix: Water

Collected: 2023/09/21
Shipped:
Received: 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8940081	N/A	2023/09/26	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	8938996	2023/09/25	2023/09/30	Frank Zhang
Chloride by Automated Colourimetry	KONE	8948712	N/A	2023/09/29	Alina Dobreanu
Conductivity	AT	8954804	N/A	2023/10/02	Kien Tran
Chromium 3+ by calculation		8939285	2023/09/26	2023/09/26	Automated Statchk
Chromium (VI) in Water	IC	8940832	N/A	2023/09/26	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8938338	N/A	2023/09/26	Gyulshen Idriz

TEST SUMMARY

Bureau Veritas ID: XBQ225 **Collected:** 2023/09/21
Sample ID: SW-22 **Shipped:**
Matrix: Water **Received:** 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness (calculated as CaCO3)		8937069	N/A	2023/09/26	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8940928	2023/09/26	2023/09/26	Indira HarryPaul
Dissolved Metals by ICPMS	ICP/MS	8940778	N/A	2023/09/26	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8947056	2023/09/28	2023/09/28	Nan Raykha
Total Ammonia-N	LACH/NH4	8944819	N/A	2023/09/28	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8940065	N/A	2023/09/26	Chandra Nandlal
Sulphate by Automated Turbidimetry	KONE	8940146	N/A	2023/09/27	Samuel Law
Total Dissolved Solids	BAL	8943585	2023/09/27	2023/09/28	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8939940	2023/09/26	2023/09/26	Muskan
Total Suspended Solids	BAL	8943530	2023/09/28	2023/09/28	Shaneil Hall

Bureau Veritas ID: XBQ225 Dup **Collected:** 2023/09/21
Sample ID: SW-22 **Shipped:**
Matrix: Water **Received:** 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate & Nitrite as Nitrogen in Water	LACH	8940065	N/A	2023/09/26	Chandra Nandlal

Bureau Veritas ID: XBQ226 **Collected:** 2023/09/21
Sample ID: SW-18 **Shipped:**
Matrix: Water **Received:** 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8940081	N/A	2023/09/26	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	8938996	2023/09/25	2023/09/30	Frank Zhang
Chloride by Automated Colourimetry	KONE	8940165	N/A	2023/09/26	Alina Dobreanu
Conductivity	AT	8940082	N/A	2023/09/26	Nachiketa Gohil
Chromium 3+ by calculation		8939285	2023/09/26	2023/09/26	Automated Statchk
Chromium (VI) in Water	IC	8940832	N/A	2023/09/26	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8938338	N/A	2023/09/26	Gyulshen Idriz
Hardness (calculated as CaCO3)		8937069	N/A	2023/09/26	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8940928	2023/09/26	2023/09/26	Indira HarryPaul
Dissolved Metals by ICPMS	ICP/MS	8940778	N/A	2023/09/26	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8947056	2023/09/28	2023/09/28	Nan Raykha
Total Ammonia-N	LACH/NH4	8944819	N/A	2023/09/28	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8940054	N/A	2023/09/27	Chandra Nandlal
Sulphate by Automated Turbidimetry	KONE	8940170	N/A	2023/09/26	Alina Dobreanu
Total Dissolved Solids	BAL	8943585	2023/09/27	2023/09/28	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8939940	2023/09/26	2023/09/26	Muskan
Total Suspended Solids	BAL	8947000	2023/09/28	2023/09/28	Shaneil Hall

Bureau Veritas Job #: C3T4045
Report Date: 2023/10/02

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

TEST SUMMARY

Bureau Veritas ID: XBQ228
Sample ID: SW-26
Matrix: Water

Collected: 2023/09/21
Shipped:
Received: 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8940081	N/A	2023/09/26	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	8938996	2023/09/25	2023/09/30	Frank Zhang
Chloride by Automated Colourimetry	KONE	8940165	N/A	2023/09/26	Alina Dobreanu
Conductivity	AT	8940082	N/A	2023/09/26	Nachiketa Gohil
Chromium 3+ by calculation		8939285	2023/09/26	2023/09/26	Automated Statchk
Chromium (VI) in Water	IC	8940832	N/A	2023/09/26	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8938338	N/A	2023/09/26	Gyulshen Idriz
Hardness (calculated as CaCO3)		8937069	N/A	2023/09/26	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8940928	2023/09/26	2023/09/26	Indira HarryPaul
Dissolved Metals by ICPMS	ICP/MS	8940778	N/A	2023/09/26	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8947056	2023/09/28	2023/09/28	Nan Raykha
Total Ammonia-N	LACH/NH4	8944819	N/A	2023/09/28	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8940054	N/A	2023/09/27	Chandra Nandlal
Sulphate by Automated Turbidimetry	KONE	8940170	N/A	2023/09/26	Alina Dobreanu
Total Dissolved Solids	BAL	8943585	2023/09/27	2023/09/28	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8939940	2023/09/26	2023/09/26	Muskan
Total Suspended Solids	BAL	8943530	2023/09/28	2023/09/28	Shaneil Hall

Bureau Veritas ID: XBQ228 Dup
Sample ID: SW-26
Matrix: Water

Collected: 2023/09/21
Shipped:
Received: 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8940081	N/A	2023/09/26	Nachiketa Gohil
Conductivity	AT	8940082	N/A	2023/09/26	Nachiketa Gohil

Bureau Veritas ID: XBQ229
Sample ID: DUP-1
Matrix: Water

Collected: 2023/09/21
Shipped:
Received: 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8940081	N/A	2023/09/26	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	8938996	2023/09/25	2023/09/30	Frank Zhang
Chloride by Automated Colourimetry	KONE	8940165	N/A	2023/09/26	Alina Dobreanu
Conductivity	AT	8940082	N/A	2023/09/26	Nachiketa Gohil
Chromium 3+ by calculation		8939285	2023/09/26	2023/09/26	Automated Statchk
Chromium (VI) in Water	IC	8940832	N/A	2023/09/26	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8938338	N/A	2023/09/26	Gyulshen Idriz
Hardness (calculated as CaCO3)		8937069	N/A	2023/09/26	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	8940928	2023/09/26	2023/09/26	Indira HarryPaul
Dissolved Metals by ICPMS	ICP/MS	8940778	N/A	2023/09/26	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	8947056	2023/09/28	2023/09/28	Nan Raykha
Total Ammonia-N	LACH/NH4	8944819	N/A	2023/09/28	Prabhjot Kaur
Nitrate & Nitrite as Nitrogen in Water	LACH	8940054	N/A	2023/09/27	Chandra Nandlal
Sulphate by Automated Turbidimetry	KONE	8940170	N/A	2023/09/26	Alina Dobreanu

Bureau Veritas Job #: C3T4045
Report Date: 2023/10/02

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

TEST SUMMARY

Bureau Veritas ID: XBQ229
Sample ID: DUP-1
Matrix: Water

Collected: 2023/09/21
Shipped:
Received: 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids	BAL	8943585	2023/09/27	2023/09/28	Shaneil Hall
Total Phosphorus (Colourimetric)	SKAL/P	8939940	2023/09/26	2023/09/26	Muskan
Total Suspended Solids	BAL	8943530	2023/09/28	2023/09/28	Shaneil Hall

Bureau Veritas ID: XBQ229 Dup
Sample ID: DUP-1
Matrix: Water

Collected: 2023/09/21
Shipped:
Received: 2023/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand (BOD)	DO	8938996	2023/09/25	2023/09/30	Frank Zhang

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.0°C
Package 2	2.7°C

Results relate only to the items tested.

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

Bureau Veritas Job #: C3T4045
Report Date: 2023/10/02

QUALITY ASSURANCE REPORT

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8938338	Dissolved Organic Carbon	2023/09/26	95	80 - 120	96	80 - 120	ND, RDL=0.40	mg/L	3.4	20		
8938996	Total BOD	2023/09/30					ND,RDL=2	mg/L	NC	30	95	80 - 120
8939940	Total Phosphorus	2023/09/26	98	80 - 120	101	80 - 120	ND, RDL=0.004	mg/L	3.2	20	105	80 - 120
8940054	Nitrate (N)	2023/09/27	100	80 - 120	99	80 - 120	ND, RDL=0.10	mg/L	0.21	20		
8940054	Nitrite (N)	2023/09/27	103	80 - 120	107	80 - 120	ND, RDL=0.010	mg/L	7.9	20		
8940065	Nitrate (N)	2023/09/26	104	80 - 120	102	80 - 120	ND, RDL=0.10	mg/L	1.4	20		
8940065	Nitrite (N)	2023/09/26	101	80 - 120	102	80 - 120	ND, RDL=0.010	mg/L	4.9	20		
8940081	Alkalinity (Total as CaCO3)	2023/09/26			96	85 - 115	ND, RDL=1.0	mg/L	2.1	20		
8940082	Conductivity	2023/09/26			103	85 - 115	ND, RDL=1.0	umho/cm	0.43	10		
8940146	Dissolved Sulphate (SO4)	2023/09/27	100	75 - 125	98	80 - 120	ND, RDL=1.0	mg/L	0.62	20		
8940165	Dissolved Chloride (Cl-)	2023/09/26	NC	80 - 120	104	80 - 120	ND, RDL=1.0	mg/L	0.026	20		
8940170	Dissolved Sulphate (SO4)	2023/09/26	NC	75 - 125	98	80 - 120	ND, RDL=1.0	mg/L	1.0	20		
8940778	Dissolved Aluminum (Al)	2023/09/26	100	80 - 120	102	80 - 120	ND, RDL=4.9	ug/L	NC	20		
8940778	Dissolved Calcium (Ca)	2023/09/26	NC	80 - 120	100	80 - 120	ND, RDL=200	ug/L	2.9	20		
8940778	Dissolved Chromium (Cr)	2023/09/26	94	80 - 120	94	80 - 120	ND, RDL=5.0	ug/L	NC	20		
8940778	Dissolved Iron (Fe)	2023/09/26	92	80 - 120	94	80 - 120	ND, RDL=100	ug/L	NC	20		
8940778	Dissolved Magnesium (Mg)	2023/09/26	NC	80 - 120	97	80 - 120	ND, RDL=50	ug/L	5.4	20		
8940788	Total Aluminum (Al)	2023/09/26	102	80 - 120	99	80 - 120	ND, RDL=4.9	ug/L	NC	20		
8940788	Total Barium (Ba)	2023/09/26	94	80 - 120	95	80 - 120	ND, RDL=2.0	ug/L	3.7	20		
8940788	Total Beryllium (Be)	2023/09/26	94	80 - 120	98	80 - 120	ND, RDL=0.40	ug/L	NC	20		
8940788	Total Boron (B)	2023/09/26	94	80 - 120	95	80 - 120	ND, RDL=10	ug/L	2.7	20		
8940788	Total Cadmium (Cd)	2023/09/26	99	80 - 120	97	80 - 120	ND, RDL=0.090	ug/L	NC	20		
8940788	Total Calcium (Ca)	2023/09/26	NC	80 - 120	99	80 - 120	ND, RDL=200	ug/L	0.80	20		
8940788	Total Chromium (Cr)	2023/09/26	94	80 - 120	95	80 - 120	ND, RDL=5.0	ug/L	NC	20		
8940788	Total Cobalt (Co)	2023/09/26	97	80 - 120	104	80 - 120	ND, RDL=0.50	ug/L	NC	20		
8940788	Total Iron (Fe)	2023/09/26	91	80 - 120	96	80 - 120	ND, RDL=100	ug/L	1.1	20		
8940788	Total Lead (Pb)	2023/09/26	95	80 - 120	98	80 - 120	ND, RDL=0.50	ug/L	NC	20		
8940788	Total Magnesium (Mg)	2023/09/26	NC	80 - 120	100	80 - 120	ND, RDL=50	ug/L	8.3	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8940788	Total Manganese (Mn)	2023/09/26	95	80 - 120	98	80 - 120	ND, RDL=2.0	ug/L	3.6	20		
8940788	Total Molybdenum (Mo)	2023/09/26	102	80 - 120	95	80 - 120	ND, RDL=0.50	ug/L	NC	20		
8940788	Total Nickel (Ni)	2023/09/26	97	80 - 120	101	80 - 120	ND, RDL=1.0	ug/L	6.1	20		
8940788	Total Potassium (K)	2023/09/26	100	80 - 120	100	80 - 120	ND, RDL=200	ug/L	1.2	20		
8940788	Total Selenium (Se)	2023/09/26	104	80 - 120	103	80 - 120	ND, RDL=2.0	ug/L	NC	20		
8940788	Total Silver (Ag)	2023/09/26	101	80 - 120	96	80 - 120	ND, RDL=0.090	ug/L	NC	20		
8940788	Total Sodium (Na)	2023/09/26	NC	80 - 120	103	80 - 120	ND, RDL=100	ug/L	3.2	20		
8940788	Total Vanadium (V)	2023/09/26	100	80 - 120	98	80 - 120	ND, RDL=0.50	ug/L	NC	20		
8940788	Total Zinc (Zn)	2023/09/26	99	80 - 120	101	80 - 120	ND, RDL=5.0	ug/L	NC	20		
8940832	Chromium (VI)	2023/09/26	102	80 - 120	103	80 - 120	ND, RDL=0.50	ug/L	NC	20		
8940928	Dissolved Mercury (Hg)	2023/09/26	103	75 - 125	107	80 - 120	ND, RDL=0.10	ug/L	NC	20		
8943530	Total Suspended Solids	2023/09/28			97	85 - 115	ND, RDL=10	mg/L	NC	20		
8943585	Total Dissolved Solids	2023/09/28			100	90 - 110	ND, RDL=10	mg/L	1.3	20		
8944819	Total Ammonia-N	2023/09/28	99	75 - 125	96	80 - 120	ND, RDL=0.050	mg/L	NC	20		
8947000	Total Suspended Solids	2023/09/28			95	85 - 115	ND, RDL=10	mg/L	0.97	20		
8947056	Total Aluminum (Al)	2023/09/28	101	80 - 120	105	80 - 120	ND, RDL=4.9	ug/L	3.6	20		
8947056	Total Barium (Ba)	2023/09/28	100	80 - 120	104	80 - 120	ND, RDL=2.0	ug/L				
8947056	Total Beryllium (Be)	2023/09/28	101	80 - 120	97	80 - 120	ND, RDL=0.40	ug/L				
8947056	Total Boron (B)	2023/09/28	100	80 - 120	96	80 - 120	ND, RDL=10	ug/L				
8947056	Total Cadmium (Cd)	2023/09/28	100	80 - 120	103	80 - 120	ND, RDL=0.090	ug/L				
8947056	Total Calcium (Ca)	2023/09/28	NC	80 - 120	108	80 - 120	ND, RDL=200	ug/L				
8947056	Total Chromium (Cr)	2023/09/28	101	80 - 120	101	80 - 120	ND, RDL=5.0	ug/L				
8947056	Total Cobalt (Co)	2023/09/28	95	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L				
8947056	Total Iron (Fe)	2023/09/28	97	80 - 120	103	80 - 120	ND, RDL=100	ug/L	0.12	20		
8947056	Total Lead (Pb)	2023/09/28	95	80 - 120	100	80 - 120	ND, RDL=0.50	ug/L				
8947056	Total Magnesium (Mg)	2023/09/28	NC	80 - 120	98	80 - 120	ND, RDL=50	ug/L				
8947056	Total Manganese (Mn)	2023/09/28	96	80 - 120	96	80 - 120	ND, RDL=2.0	ug/L	5.1	20		
8947056	Total Molybdenum (Mo)	2023/09/28	105	80 - 120	104	80 - 120	ND, RDL=0.50	ug/L				
8947056	Total Nickel (Ni)	2023/09/28	89	80 - 120	92	80 - 120	ND, RDL=1.0	ug/L				
8947056	Total Potassium (K)	2023/09/28	106	80 - 120	110	80 - 120	ND, RDL=200	ug/L				

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8947056	Total Selenium (Se)	2023/09/28	96	80 - 120	102	80 - 120	ND, RDL=2.0	ug/L				
8947056	Total Silver (Ag)	2023/09/28	98	80 - 120	101	80 - 120	ND, RDL=0.090	ug/L				
8947056	Total Sodium (Na)	2023/09/28	NC	80 - 120	101	80 - 120	ND, RDL=100	ug/L	2.5	20		
8947056	Total Vanadium (V)	2023/09/28	100	80 - 120	101	80 - 120	ND, RDL=0.50	ug/L				
8947056	Total Zinc (Zn)	2023/09/28	97	80 - 120	101	80 - 120	ND, RDL=5.0	ug/L				
8948712	Dissolved Chloride (Cl-)	2023/09/29	NC	80 - 120	101	80 - 120	ND, RDL=1.0	mg/L	0.65	20		
8954804	Conductivity	2023/10/02			101	85 - 115	ND, RDL=1.0	umho/cm	1.0	10		

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Anastassia Hamanov, Scientific Specialist

Cristina Carriere, Senior Scientific Specialist

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

Bureau Veritas
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvna.com

Received in Ottawa

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#28962 The Corporation of the Town of Arnprior	Company Name:	#17006 WSP Canada Inc	Quotation #:	B41189
Attention:	Invoices- Andria & ~~Emily~~	Attention:	~~Emily Bacon~~ Hadra	P.O. #:	
Address:	105 Elgin Street W	Address:	1931 Robertson Rd	Project:	23594631
	Arnprior ON K7S 0A8		Ottawa ON K2H5B7	Project Name:	Arnprior LF
Tel:	(613) 623-4231 Fax:	Tel:	(613) 592-9600 Fax:	Site #:	
Email:	andria.caletti@wsp.com, emily.bacon@wsp.com	Email:	~~emily.bacon@wsp.com~~	Sampled By:	C. Albert

22-Sep-23 12:25
Katherine Szozda
C3T4045
WP ENV-834

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
- ☐ Table 1 ☐ Res/Park ☐ Medium/Fine
- ☐ Table 2 ☐ Ind/Comm ☐ Coarse
- ☐ Table 3 ☐ Agri/Othe ☐ For RSC
- ☐ Table ___

Other Regulations
- ☐ CCME ☐ Sanitary Sewer Bylaw
- ☐ Reg 558 ☐ Storm Sewer Bylaw
- ☐ MISA Municipality ___
- ☒ PWQO ☐ Reg 406 Table ___
- ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Please provide advance notice for rush projects

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): (Hg/ Cr VI / Metals / Hg/ Cr VI)	SURFACE WATER	# of Bottles	Comments
1	SID#618172	~~SW-10~~	—	—	—				
2	SID#618173	SW-11	Sept 21/23		SW	Yes	✓		Metal bottle with "F" on it is for dissolved iron
3	SID#618174	SW-12					✓		
4	SID#618175	SW-1					✓		
5	SID#618176	SW-2					✓		
6	SID#618177	SW-21					✓		
7	SID#618178	SW-22					✓		
8	SID#618179	~~SW-23~~					✓		
9	SID#618180	SW-18					✓		
10	SID#618181	SW-19					✓		ON ICE

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
C. Albert	230922	10am	Katie Szozda Katie Szozda	2023/09/22	12:25	
			Harmanpreet Harmanpreet	2023/09/23	07:35	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	1,1,1 / 1,3,4	Present		X
		Intact		X

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client

2/2/2
515/6

Bureau Veritas Canada (2019) Inc.

Bureau Veritas
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free 800-563-6266 Fax:(905) 817-5777 www.bvna.com

Received in Ottawa

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#28962 The Corporation of the Town of Arnprior	Company Name:	#17006 WSP Canada Inc	Quotation #:	B41189	Bureau Veritas Job #:	Bottle Order #:
Attention:	Invoices- Andria & Emily	Attention:	~~Emily Bacon~~ Hadia	P.O. #:			949590
Address:	105 Elgin Street W Arnprior ON K7S 0A8	Address:	1931 Robertson Rd Ottawa ON K2H5B7	Project:	23594631	COC #:	Project Manager:
Tel:	(613) 623-4231 Fax:	Tel:	(613) 592-9600 Fax:	Project Name:	Arnprior LF	C#949590-02-01	Katherine Szozda
Email:	andria.caletti@wsp.com, emily.bacon@wsp.com	Email:	emily.bacon@wsp.com	Site #:			
				Sampled By:	C. Albert		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ____	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ____ ☐ PWQO ☐ Reg 406 Table ____ ☐ Other ____	

Include Criteria on Certificate of Analysis (Y/N)? ____

Field Filtered (please circle): Metals / Hg / Cr VI — Al

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	SURFACE WATER	# of Bottles	Comments
1	SID#616192	SW-26	Sept 20/23	4:00pm	SW	X		Metals bottles with "F" on it for dissolved Iron ✓
2	SID#616193	DUP-1	↓	↓	↓	X		
3								
4								
5								
6								
7								
8								
9								
10								

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests..
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____ ☐
Rush Confirmation Number: ____ *(call lab for #)*

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
C. Albert	230922	11am	See Pg 1 See Pg 1	2023/09/22	12:25	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	See Pg 1.	Present		X
		Intact		X

ON ICE

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your Project #: 23594631
Site Location: Arnprior LF

Attention: Hadia Aziz

WSP Canada Inc
1931 Robertson Rd
Ottawa, ON
CANADA K2H5B7

Your C.O.C. #: 963261-01-01, 963261-02-01, 963261-03-01, 963261-04-01

Report Date: 2023/12/04
Report #: R7940557
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3AM625
Received: 2023/11/27, 11:58

Sample Matrix: Water
Samples Received: 33

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity (1)	33	N/A	2023/12/01	CAM SOP-00448	SM 24 2320 B m
Chloride by Automated Colourimetry (1)	19	N/A	2023/11/30	CAM SOP-00463	SM 24 4500-Cl E m
Chloride by Automated Colourimetry (1)	14	N/A	2023/12/01	CAM SOP-00463	SM 24 4500-Cl E m
Conductivity (1)	33	N/A	2023/12/01	CAM SOP-00414	SM 24 2510 m
Dissolved Organic Carbon (DOC) (1, 2)	32	N/A	2023/11/29	CAM SOP-00446	SM 24 5310 B m
Dissolved Organic Carbon (DOC) (1, 2)	1	N/A	2023/11/30	CAM SOP-00446	SM 24 5310 B m
Hardness (calculated as CaCO3) (1)	20	N/A	2023/11/30	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3) (1)	13	N/A	2023/12/01	CAM SOP 00102/00408/00447	SM 2340 B
Mercury in Water by CVAA (1)	31	2023/11/30	2023/11/30	CAM SOP-00453	EPA 7470A m
Mercury in Water by CVAA (1)	2	2023/12/01	2023/12/01	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS (1)	33	N/A	2023/11/30	CAM SOP-00447	EPA 6020B m
Total Ammonia-N (1)	31	N/A	2023/11/29	CAM SOP-00441	USGS I-2522-90 m
Total Ammonia-N (1)	2	N/A	2023/11/30	CAM SOP-00441	USGS I-2522-90 m
Orthophosphate (1)	19	N/A	2023/11/30	CAM SOP-00461	SM 24 4500-P E
Orthophosphate (1)	14	N/A	2023/12/01	CAM SOP-00461	SM 24 4500-P E
Sulphate by Automated Turbidimetry (1)	19	N/A	2023/11/30	CAM SOP-00464	SM 24 4500-SO42- E m
Sulphate by Automated Turbidimetry (1)	14	N/A	2023/12/01	CAM SOP-00464	SM 24 4500-SO42- E m
Total Dissolved Solids (1)	19	2023/11/30	2023/12/01	CAM SOP-00428	SM 24 2540C m
Total Dissolved Solids (1)	14	2023/12/01	2023/12/02	CAM SOP-00428	SM 24 2540C m
Total Phosphorus (Colourimetric) (1)	33	2023/11/29	2023/12/01	CAM SOP-00407	SM 24 4500-P I

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCCFP, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in

Your Project #: 23594631
Site Location: Arnprior LF

Attention: Hadia Aziz

WSP Canada Inc
1931 Robertson Rd
Ottawa, ON
CANADA K2H5B7

Your C.O.C. #: 963261-01-01, 963261-02-01, 963261-03-01, 963261-04-01

Report Date: 2023/12/04
Report #: R7940557
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3AM625
Received: 2023/11/27, 11:58

writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
(2) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633
==========
This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C3AM625
Report Date: 2023/12/04

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XSL161			XSL162		XSL163		
Sampling Date		2023/11/25 07:00			2023/11/25 07:00		2023/11/25 07:00		
COC Number		963261-01-01			963261-01-01		963261-01-01		
	UNITS	OV-7	RDL	QC Batch	OV-9	QC Batch	OV-10	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L	980	1.0	9076972	390	9076972	470	1.0	9076972
Inorganics									
Total Ammonia-N	mg/L	97	1.0	9080217	ND	9080217	0.71	0.050	9080222
Conductivity	umho/cm	3100	1.0	9079847	900	9079847	1000	1.0	9079847
Total Dissolved Solids	mg/L	1540	10	9081580	505	9081603	575	10	9081580
Dissolved Organic Carbon	mg/L	56	0.40	9079785	4.3	9079785	1.4	0.40	9079788
Orthophosphate (P)	mg/L	ND	0.010	9079934	ND	9079934	ND	0.010	9079934
Total Phosphorus	mg/L	1.1	0.004	9080061	0.28	9080061	0.016	0.004	9080061
Dissolved Sulphate (SO4)	mg/L	ND	1.0	9079929	36	9079929	35	1.0	9079929
Alkalinity (Total as CaCO3)	mg/L	1400	1.0	9079846	370	9079846	390	1.0	9079846
Dissolved Chloride (Cl-)	mg/L	180	1.0	9079921	46	9079921	75	1.0	9079921

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3AM625
Report Date: 2023/12/04

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XSL164			XSL165			XSL165		
Sampling Date		2023/11/25 07:00			2023/11/25 07:00			2023/11/25 07:00		
COC Number		963261-01-01			963261-01-01			963261-01-01		
	UNITS	OV-13	RDL	QC Batch	BR-1S	RDL	QC Batch	BR-1S Lab-Dup	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	200	1.0	9076972	1000	1.0	9076972			
Inorganics										
Total Ammonia-N	mg/L	ND	0.050	9080222	130	1.0	9080217			
Conductivity	umho/cm	400	1.0	9079847	3700	1.0	9079847	3700	1.0	9079847
Total Dissolved Solids	mg/L	220	10	9081580	1710	10	9081580			
Dissolved Organic Carbon	mg/L	1.0	0.40	9079785	59	0.40	9079788			
Orthophosphate (P)	mg/L	ND	0.010	9079934	ND (1)	0.10	9079934			
Total Phosphorus	mg/L	0.081	0.004	9080072	0.044	0.004	9080061			
Dissolved Sulphate (SO4)	mg/L	7.4	1.0	9079929	ND (1)	1.0	9079929			
Alkalinity (Total as CaCO3)	mg/L	200	1.0	9079846	1700	1.0	9079846	1700	1.0	9079846
Dissolved Chloride (Cl-)	mg/L	1.3	1.0	9079921	230	2.0	9079921			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.
(1) Detection Limit was raised due to matrix interferences.

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Report Date: 2023/12/04

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XSL166		XSL167		XSL168		XSL169		
Sampling Date		2023/11/25 07:00		2023/11/25 07:00		2023/11/26 07:00		2023/11/26 07:00		
COC Number		963261-01-01		963261-01-01		963261-01-01		963261-01-01		
	UNITS	BR-1D	QC Batch	BR-3	QC Batch	BR-5S	QC Batch	BR-5D	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	930	9076972	470	9076972	420	9076972	460	1.0	9076972
Inorganics										
Total Ammonia-N	mg/L	20	9080217	1.6	9080217	ND	9080241	0.20	0.050	9080217
Conductivity	umho/cm	2500	9079847	1200	9079847	970	9079847	920	1.0	9079847
Total Dissolved Solids	mg/L	1360	9081603	775	9081603	505	9081603	505	10	9081603
Dissolved Organic Carbon	mg/L	28	9079788	4.6	9079788	1.5	9079785	2.0	0.40	9079785
Orthophosphate (P)	mg/L	ND	9079934	ND	9079934	ND	9079934	ND	0.010	9079934
Total Phosphorus	mg/L	0.081	9080061	0.037	9080072	0.044	9080061	0.013	0.004	9080072
Dissolved Sulphate (SO4)	mg/L	22	9079929	52	9079929	98	9079929	35	1.0	9079929
Alkalinity (Total as CaCO3)	mg/L	1100	9079846	460	9079846	400	9079846	410	1.0	9079846
Dissolved Chloride (Cl-)	mg/L	150	9079921	89	9079921	22	9079921	33	1.0	9079921

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		XSL170		XSL173			XSL173		
Sampling Date		2023/11/26 07:00		2023/11/25 08:00			2023/11/25 08:00		
COC Number		963261-01-01		963261-02-01			963261-02-01		
	UNITS	BR-6S	QC Batch	BR-7S	RDL	QC Batch	BR-7S Lab-Dup	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L	460	9076972	420	1.0	9076972			
Inorganics									
Total Ammonia-N	mg/L	ND	9080222	ND	0.050	9080222	ND	0.050	9080222
Conductivity	umho/cm	910	9079847	1100	1.0	9079867			
Total Dissolved Solids	mg/L	495	9081603	565	10	9081580			
Dissolved Organic Carbon	mg/L	1.8	9079785	1.1	0.40	9079788			
Orthophosphate (P)	mg/L	ND	9079934	ND	0.010	9079934			
Total Phosphorus	mg/L	0.013	9080072	0.005	0.004	9080061			
Dissolved Sulphate (SO4)	mg/L	35	9079929	39	1.0	9079929			
Alkalinity (Total as CaCO3)	mg/L	430	9079846	410	1.0	9079860			
Dissolved Chloride (Cl-)	mg/L	25	9079921	73	1.0	9079921			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3AM625
Report Date: 2023/12/04

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XSL174		XSL175		XSL176		XSL177		
Sampling Date		2023/11/26 08:00		2023/11/26 08:00		2023/11/26 08:00		2023/11/26 08:00		
COC Number		963261-02-01		963261-02-01		963261-02-01		963261-02-01		
	UNITS	BR-7D	QC Batch	BR-8S	QC Batch	BR-8D	QC Batch	BR-9S	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	410	9076972	800	9076972	740	9076972	650	1.0	9076972
Inorganics										
Total Ammonia-N	mg/L	ND	9080217	0.39	9080222	0.35	9080222	0.53	0.050	9080241
Conductivity	umho/cm	1100	9079867	1500	9079867	1400	9079847	1100	1.0	9079847
Total Dissolved Solids	mg/L	585	9081580	915	9081580	785	9081580	620	10	9081603
Dissolved Organic Carbon	mg/L	1.4	9079785	21	9079785	17	9079785	16	0.40	9079785
Orthophosphate (P)	mg/L	ND	9079934	ND	9079934	ND	9079934	ND	0.010	9079934
Total Phosphorus	mg/L	0.009	9080072	0.15	9080072	0.010	9080061	0.068	0.004	9080061
Dissolved Sulphate (SO4)	mg/L	50	9079929	17	9079929	ND	9079929	21	1.0	9079929
Alkalinity (Total as CaCO3)	mg/L	390	9079860	750	9079860	690	9079846	580	1.0	9079846
Dissolved Chloride (Cl-)	mg/L	81	9079921	57	9079921	55	9079921	25	1.0	9079921

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		XSL178			XSL178			XSL179		
Sampling Date		2023/11/26 08:00			2023/11/26 08:00			2023/11/26 08:00		
COC Number		963261-02-01			963261-02-01			963261-02-01		
	UNITS	BR-9D	RDL	QC Batch	BR-9D Lab-Dup	RDL	QC Batch	BR-10	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	520	1.0	9076972				430	1.0	9076972
Inorganics										
Total Ammonia-N	mg/L	0.11	0.050	9080222				0.88	0.050	9080217
Conductivity	umho/cm	1200	1.0	9079867				990	1.0	9079867
Total Dissolved Solids	mg/L	610	10	9081580				525	10	9081580
Dissolved Organic Carbon	mg/L	3.0	0.40	9079788				4.6	0.40	9079788
Orthophosphate (P)	mg/L	ND	0.010	9079934	ND	0.010	9079934	ND	0.010	9079888
Total Phosphorus	mg/L	0.009	0.004	9080061				0.093	0.004	9080061
Dissolved Sulphate (SO4)	mg/L	29	1.0	9079929	29	1.0	9079929	1.5	1.0	9079886
Alkalinity (Total as CaCO3)	mg/L	510	1.0	9079860				420	1.0	9079860
Dissolved Chloride (Cl-)	mg/L	60	1.0	9079921	61	1.0	9079921	66	1.0	9079879

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3AM625
Report Date: 2023/12/04

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XSL180			XSL180			XSL181		
Sampling Date		2023/11/26 08:00			2023/11/26 08:00			2023/11/26 08:00		
COC Number		963261-02-01			963261-02-01			963261-02-01		
	UNITS	BR-11	RDL	QC Batch	BR-11 Lab-Dup	RDL	QC Batch	BR-12	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	430	1.0	9076972				520	1.0	9076972
Inorganics										
Total Ammonia-N	mg/L	ND	0.050	9080217	ND	0.050	9080217	0.24	0.050	9080217
Conductivity	umho/cm	740	1.0	9079867				870	1.0	9079867
Total Dissolved Solids	mg/L	370	10	9081580				485	10	9081580
Dissolved Organic Carbon	mg/L	1.5	0.40	9079785				9.3	0.40	9079785
Orthophosphate (P)	mg/L	ND	0.010	9079934				ND	0.010	9079888
Total Phosphorus	mg/L	0.092	0.004	9080061	0.094	0.004	9080061	0.37	0.004	9080072
Dissolved Sulphate (SO4)	mg/L	7.1	1.0	9079929				21	1.0	9079886
Alkalinity (Total as CaCO3)	mg/L	400	1.0	9079860				470	1.0	9079860
Dissolved Chloride (Cl-)	mg/L	4.4	1.0	9079921				ND	1.0	9079879

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3AM625
Report Date: 2023/12/04

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XSL182			XSL239			XSL239		
Sampling Date		2023/11/25 08:00			2023/11/25 07:00			2023/11/25 07:00		
COC Number		963261-02-01			963261-03-01			963261-03-01		
	UNITS	BR-13S	RDL	QC Batch	BR-13D	RDL	QC Batch	BR-13D Lab-Dup	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	380	1.0	9076972	350	1.0	9076972			
Inorganics										
Total Ammonia-N	mg/L	ND	0.050	9080217	ND	0.050	9080217			
Conductivity	umho/cm	850	1.0	9079847	820	1.0	9079867	820	1.0	9079867
Total Dissolved Solids	mg/L	460	10	9081580	480	10	9081603			
Dissolved Organic Carbon	mg/L	1.0	0.40	9079800	1.3	0.40	9079788			
Orthophosphate (P)	mg/L	ND	0.010	9079934	ND	0.010	9079888			
Total Phosphorus	mg/L	0.021	0.004	9080072	0.012	0.004	9080061			
Dissolved Sulphate (SO4)	mg/L	22	1.0	9079929	45	1.0	9079886			
Alkalinity (Total as CaCO3)	mg/L	330	1.0	9079846	310	1.0	9079860	320	1.0	9079860
Dissolved Chloride (Cl-)	mg/L	53	1.0	9079921	54	2.0	9079879			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		XSL240		XSL241		XSL242		
Sampling Date		2023/11/24 07:00		2023/11/24 07:00		2023/11/25 07:00		
COC Number		963261-03-01		963261-03-01		963261-03-01		
	UNITS	BR08-1S	QC Batch	BR08-1D	QC Batch	BR08-2S	RDL	QC Batch
Calculated Parameters								
Hardness (CaCO3)	mg/L	750	9076972	520	9076972	560	1.0	9076972
Inorganics								
Total Ammonia-N	mg/L	0.62	9080217	0.74	9080217	ND	0.050	9080217
Conductivity	umho/cm	1500	9079867	1300	9079867	1200	1.0	9079867
Total Dissolved Solids	mg/L	845	9081580	695	9081580	720	10	9081580
Dissolved Organic Carbon	mg/L	12	9079785	10	9079785	3.5	0.40	9079785
Orthophosphate (P)	mg/L	ND	9079888	ND	9079934	ND	0.010	9079888
Total Phosphorus	mg/L	0.081	9080061	0.58	9080072	0.078	0.004	9080072
Dissolved Sulphate (SO4)	mg/L	ND	9079886	1.5	9079929	100	1.0	9079886
Alkalinity (Total as CaCO3)	mg/L	730	9079860	570	9079860	400	1.0	9079860
Dissolved Chloride (Cl-)	mg/L	75	9079879	72	9079921	72	1.0	9079879

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

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WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XSL242			XSL243	XSL244		XSL245		
Sampling Date		2023/11/25 07:00			2023/11/25 07:00	2023/11/25 07:00		2023/11/25 07:00		
COC Number		963261-03-01			963261-03-01	963261-03-01		963261-03-01		
	UNITS	BR08-2S Lab-Dup	RDL	QC Batch	BR08-2D	BR08-3S	QC Batch	BR08-3D	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L				540	370	9076972	390	1.0	9076972
Inorganics										
Total Ammonia-N	mg/L				0.11	0.073	9080217	ND	0.050	9080222
Conductivity	umho/cm				1000	660	9079867	670	1.0	9079867
Total Dissolved Solids	mg/L				520	325	9081603	325	10	9081580
Dissolved Organic Carbon	mg/L				9.4	0.91	9079788	1.9	0.40	9079788
Orthophosphate (P)	mg/L				ND	ND	9079888	ND	0.010	9079888
Total Phosphorus	mg/L	0.078	0.004	9080072	0.026	0.020	9080061	0.015	0.004	9080061
Dissolved Sulphate (SO4)	mg/L				9.7	31	9079886	32	1.0	9079886
Alkalinity (Total as CaCO3)	mg/L				540	340	9079860	330	1.0	9079860
Dissolved Chloride (Cl-)	mg/L				23	ND	9079879	ND	1.0	9079879

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3AM625
Report Date: 2023/12/04

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XSL245			XSL246			XSL246		
Sampling Date		2023/11/25 07:00			2023/11/25 07:00			2023/11/25 07:00		
COC Number		963261-03-01			963261-03-01			963261-03-01		
	UNITS	BR08-3D Lab-Dup	RDL	QC Batch	DUP-1	RDL	QC Batch	DUP-1 Lab-Dup	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L				370	1.0	9076972			
Inorganics										
Total Ammonia-N	mg/L				0.064	0.050	9080217			
Conductivity	umho/cm				660	1.0	9079867			
Total Dissolved Solids	mg/L				355	10	9081603	365	10	9081603
Dissolved Organic Carbon	mg/L	1.9	0.40	9079788	1.2	0.40	9079788			
Orthophosphate (P)	mg/L				ND	0.010	9079888			
Total Phosphorus	mg/L				0.019	0.004	9080061			
Dissolved Sulphate (SO4)	mg/L				32	1.0	9079886			
Alkalinity (Total as CaCO3)	mg/L				330	1.0	9079860			
Dissolved Chloride (Cl-)	mg/L				ND	1.0	9079879			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		XSL247			XSL249			XSL250		
Sampling Date		2023/11/25 07:00			2023/11/25 07:00			2023/11/26 07:00		
COC Number		963261-03-01			963261-04-01			963261-04-01		
	UNITS	OV-22	RDL	QC Batch	BR-22D	RDL	QC Batch	OV-70	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	410	1.0	9076972	250	1.0	9076972	980	1.0	9076972
Inorganics										
Total Ammonia-N	mg/L	ND	0.050	9080222	0.25	0.050	9080217	97	1.0	9080217
Conductivity	umho/cm	900	1.0	9079867	880	1.0	9079867	3100	1.0	9079867
Total Dissolved Solids	mg/L	520	10	9081580	495	10	9081603	1570	10	9081580
Dissolved Organic Carbon	mg/L	1.7	0.40	9079788	1.4	0.40	9079785	57	0.40	9079788
Orthophosphate (P)	mg/L	ND	0.010	9079888	ND	0.010	9079888	ND	0.010	9079888
Total Phosphorus	mg/L	0.024	0.004	9080072	0.16	0.004	9080072	1.1	0.004	9080072
Dissolved Sulphate (SO4)	mg/L	31	1.0	9079886	49	1.0	9079886	1.4	1.0	9079886
Alkalinity (Total as CaCO3)	mg/L	330	1.0	9079860	340	1.0	9079860	1400	1.0	9079860
Dissolved Chloride (Cl-)	mg/L	66	1.0	9079879	58	2.0	9079879	180	1.0	9079879

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3AM625
Report Date: 2023/12/04

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XSL251		XSL252		
Sampling Date		2023/11/25 07:00		2023/11/26 07:00		
COC Number		963261-04-01		963261-04-01		
	UNITS	BR-6D	RDL	BR-22M	RDL	QC Batch
Calculated Parameters						
Hardness (CaCO3)	mg/L	370	1.0	360	1.0	9076972
Inorganics						
Total Ammonia-N	mg/L	2.1	0.050	ND	0.050	9080222
Conductivity	umho/cm	1100	1.0	840	1.0	9079867
Total Dissolved Solids	mg/L	560	10	435	10	9081603
Dissolved Organic Carbon	mg/L	2.7	0.40	0.89	0.40	9079788
Orthophosphate (P)	mg/L	ND	0.010	ND	0.010	9079888
Total Phosphorus	mg/L	0.050	0.004	0.29	0.004	9080061
Dissolved Sulphate (SO4)	mg/L	50	1.0	38	1.0	9079886
Alkalinity (Total as CaCO3)	mg/L	390	1.0	330	1.0	9079860
Dissolved Chloride (Cl-)	mg/L	73	1.0	58	2.0	9079879

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XSL161			XSL161			XSL162		
Sampling Date		2023/11/25 07:00			2023/11/25 07:00			2023/11/25 07:00		
COC Number		963261-01-01			963261-01-01			963261-01-01		
	UNITS	OV-7	RDL	QC Batch	OV-7 Lab-Dup	RDL	QC Batch	OV-9	RDL	QC Batch
Metals										
Mercury (Hg)	mg/L	ND	0.00010	9082388				ND	0.00010	9081974
Dissolved Aluminum (Al)	ug/L	13	4.9	9079855	14	4.9	9079855	ND	4.9	9079870
Dissolved Barium (Ba)	ug/L	650	2.0	9079855	640	2.0	9079855	180	2.0	9079870
Dissolved Beryllium (Be)	ug/L	ND	0.40	9079855	ND	0.40	9079855	ND	0.40	9079870
Dissolved Boron (B)	ug/L	1400	10	9079855	1400	10	9079855	330	10	9079870
Dissolved Cadmium (Cd)	ug/L	ND	0.090	9079855	ND	0.090	9079855	ND	0.090	9079870
Dissolved Calcium (Ca)	ug/L	300000	200	9079855	290000	200	9079855	110000	200	9079870
Dissolved Chromium (Cr)	ug/L	ND	5.0	9079855	ND	5.0	9079855	ND	5.0	9079870
Dissolved Cobalt (Co)	ug/L	5.2	0.50	9079855	5.4	0.50	9079855	0.71	0.50	9079870
Dissolved Iron (Fe)	ug/L	51000	100	9079855	49000	100	9079855	ND	100	9079870
Dissolved Lead (Pb)	ug/L	ND	0.50	9079855	ND	0.50	9079855	ND	0.50	9079870
Dissolved Magnesium (Mg)	ug/L	59000	50	9079855	58000	50	9079855	26000	50	9079870
Dissolved Manganese (Mn)	ug/L	980	2.0	9079855	950	2.0	9079855	12	2.0	9079870
Dissolved Molybdenum (Mo)	ug/L	0.56	0.50	9079855	0.52	0.50	9079855	ND	0.50	9079870
Dissolved Nickel (Ni)	ug/L	19	1.0	9079855	18	1.0	9079855	3.4	1.0	9079870
Dissolved Potassium (K)	ug/L	61000	200	9079855	59000	200	9079855	1800	200	9079870
Dissolved Selenium (Se)	ug/L	ND	2.0	9079855	ND	2.0	9079855	ND	2.0	9079870
Dissolved Silver (Ag)	ug/L	ND	0.090	9079855	ND	0.090	9079855	ND	0.090	9079870
Dissolved Sodium (Na)	ug/L	190000	100	9079855	190000	100	9079855	57000	100	9079870
Dissolved Vanadium (V)	ug/L	5.0	0.50	9079855	5.1	0.50	9079855	ND	0.50	9079870
Dissolved Zinc (Zn)	ug/L	ND	5.0	9079855	ND	5.0	9079855	ND	5.0	9079870

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XSL163			XSL163			XSL164		
Sampling Date		2023/11/25 07:00			2023/11/25 07:00			2023/11/25 07:00		
COC Number		963261-01-01			963261-01-01			963261-01-01		
	UNITS	OV-10	RDL	QC Batch	OV-10 Lab-Dup	RDL	QC Batch	OV-13	RDL	QC Batch
Metals										
Mercury (Hg)	mg/L	ND	0.00010	9081974	ND	0.00010	9081974	ND	0.00010	9081974
Dissolved Aluminum (Al)	ug/L	ND	4.9	9079855				ND	4.9	9079855
Dissolved Barium (Ba)	ug/L	290	2.0	9079855				97	2.0	9079855
Dissolved Beryllium (Be)	ug/L	ND	0.40	9079855				ND	0.40	9079855
Dissolved Boron (B)	ug/L	56	10	9079855				10	10	9079855
Dissolved Cadmium (Cd)	ug/L	ND	0.090	9079855				ND	0.090	9079855
Dissolved Calcium (Ca)	ug/L	140000	200	9079855				49000	200	9079855
Dissolved Chromium (Cr)	ug/L	ND	5.0	9079855				ND	5.0	9079855
Dissolved Cobalt (Co)	ug/L	2.0	0.50	9079855				ND	0.50	9079855
Dissolved Iron (Fe)	ug/L	1900	100	9079855				ND	100	9079855
Dissolved Lead (Pb)	ug/L	ND	0.50	9079855				ND	0.50	9079855
Dissolved Magnesium (Mg)	ug/L	31000	50	9079855				19000	50	9079855
Dissolved Manganese (Mn)	ug/L	420	2.0	9079855				3.0	2.0	9079855
Dissolved Molybdenum (Mo)	ug/L	1.0	0.50	9079855				1.2	0.50	9079855
Dissolved Nickel (Ni)	ug/L	2.1	1.0	9079855				ND	1.0	9079855
Dissolved Potassium (K)	ug/L	5000	200	9079855				3700	200	9079855
Dissolved Selenium (Se)	ug/L	ND	2.0	9079855				ND	2.0	9079855
Dissolved Silver (Ag)	ug/L	ND	0.090	9079855				ND	0.090	9079855
Dissolved Sodium (Na)	ug/L	39000	100	9079855				7800	100	9079855
Dissolved Vanadium (V)	ug/L	ND	0.50	9079855				ND	0.50	9079855
Dissolved Zinc (Zn)	ug/L	ND	5.0	9079855				ND	5.0	9079855

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XSL165		XSL166			XSL167		
Sampling Date		2023/11/25 07:00		2023/11/25 07:00			2023/11/25 07:00		
COC Number		963261-01-01		963261-01-01			963261-01-01		
	UNITS	BR-1S	RDL	BR-1D	RDL	QC Batch	BR-3	RDL	QC Batch
Metals									
Mercury (Hg)	mg/L	ND	0.00010	ND	0.00010	9081974	ND	0.00010	9081974
Dissolved Aluminum (Al)	ug/L	6.3	4.9	8.4	4.9	9079870	ND	4.9	9079855
Dissolved Barium (Ba)	ug/L	840	2.0	2800	2.0	9079870	210	2.0	9079855
Dissolved Beryllium (Be)	ug/L	ND	0.40	ND	0.40	9079870	ND	0.40	9079855
Dissolved Boron (B)	ug/L	4000	10	1900	10	9079870	520	10	9079855
Dissolved Cadmium (Cd)	ug/L	ND	0.090	ND	0.090	9079870	ND	0.090	9079855
Dissolved Calcium (Ca)	ug/L	250000	400	200000	1000	9079870	120000	200	9079855
Dissolved Chromium (Cr)	ug/L	ND	5.0	ND	5.0	9079870	ND	5.0	9079855
Dissolved Cobalt (Co)	ug/L	7.3	0.50	2.3	0.50	9079870	ND	0.50	9079855
Dissolved Iron (Fe)	ug/L	11000	100	20000	100	9079870	6200	100	9079855
Dissolved Lead (Pb)	ug/L	ND	0.50	ND	0.50	9079870	ND	0.50	9079855
Dissolved Magnesium (Mg)	ug/L	94000	50	110000	50	9079870	40000	50	9079855
Dissolved Manganese (Mn)	ug/L	80	2.0	99	2.0	9079870	230	2.0	9079855
Dissolved Molybdenum (Mo)	ug/L	0.54	0.50	0.86	0.50	9079870	ND	0.50	9079855
Dissolved Nickel (Ni)	ug/L	35	1.0	25	1.0	9079870	2.6	1.0	9079855
Dissolved Potassium (K)	ug/L	69000	200	38000	200	9079870	11000	200	9079855
Dissolved Selenium (Se)	ug/L	ND	2.0	ND	2.0	9079870	ND	2.0	9079855
Dissolved Silver (Ag)	ug/L	ND	0.090	ND	0.090	9079870	ND	0.090	9079855
Dissolved Sodium (Na)	ug/L	240000	100	180000	100	9079870	54000	100	9079855
Dissolved Vanadium (V)	ug/L	2.7	0.50	2.2	0.50	9079870	ND	0.50	9079855
Dissolved Zinc (Zn)	ug/L	ND	5.0	ND	5.0	9079870	ND	5.0	9079855

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XSL168		XSL169			XSL170		
Sampling Date		2023/11/26 07:00		2023/11/26 07:00			2023/11/26 07:00		
COC Number		963261-01-01		963261-01-01			963261-01-01		
	UNITS	BR-5S	QC Batch	BR-5D	RDL	QC Batch	BR-6S	RDL	QC Batch
Metals									
Mercury (Hg)	mg/L	ND	9081974	ND	0.00010	9082388	ND	0.00010	9082388
Dissolved Aluminum (Al)	ug/L	140	9079870	ND	4.9	9079870	ND	4.9	9079855
Dissolved Barium (Ba)	ug/L	89	9079870	180	2.0	9079870	150	2.0	9079855
Dissolved Beryllium (Be)	ug/L	ND	9079870	ND	0.40	9079870	ND	0.40	9079855
Dissolved Boron (B)	ug/L	160	9079870	160	10	9079870	290	10	9079855
Dissolved Cadmium (Cd)	ug/L	ND	9079870	ND	0.090	9079870	ND	0.090	9079855
Dissolved Calcium (Ca)	ug/L	100000	9079870	110000	200	9079870	100000	400	9079855
Dissolved Chromium (Cr)	ug/L	ND	9079870	ND	5.0	9079870	ND	5.0	9079855
Dissolved Cobalt (Co)	ug/L	0.75	9079870	3.6	0.50	9079870	2.2	0.50	9079855
Dissolved Iron (Fe)	ug/L	230	9079870	230	100	9079870	ND	100	9079855
Dissolved Lead (Pb)	ug/L	ND	9079870	ND	0.50	9079870	ND	0.50	9079855
Dissolved Magnesium (Mg)	ug/L	40000	9079870	44000	50	9079870	49000	50	9079855
Dissolved Manganese (Mn)	ug/L	26	9079870	150	2.0	9079870	62	2.0	9079855
Dissolved Molybdenum (Mo)	ug/L	6.0	9079870	0.99	0.50	9079870	1.2	0.50	9079855
Dissolved Nickel (Ni)	ug/L	3.9	9079870	6.6	1.0	9079870	6.5	1.0	9079855
Dissolved Potassium (K)	ug/L	3800	9079870	4500	200	9079870	5800	200	9079855
Dissolved Selenium (Se)	ug/L	ND	9079870	ND	2.0	9079870	ND	2.0	9079855
Dissolved Silver (Ag)	ug/L	ND	9079870	ND	0.090	9079870	ND	0.090	9079855
Dissolved Sodium (Na)	ug/L	75000	9079870	27000	100	9079870	22000	100	9079855
Dissolved Vanadium (V)	ug/L	0.55	9079870	ND	0.50	9079870	0.51	0.50	9079855
Dissolved Zinc (Zn)	ug/L	ND	9079870	8.1	5.0	9079870	ND	5.0	9079855

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3AM625
Report Date: 2023/12/04

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XSL173			XSL173			XSL174		
Sampling Date		2023/11/25 08:00			2023/11/25 08:00			2023/11/26 08:00		
COC Number		963261-02-01			963261-02-01			963261-02-01		
	UNITS	BR-7S	RDL	QC Batch	BR-7S Lab-Dup	RDL	QC Batch	BR-7D	RDL	QC Batch
Metals										
Mercury (Hg)	mg/L	ND	0.00010	9081974				ND	0.00010	9082388
Dissolved Aluminum (Al)	ug/L	14	4.9	9079870	12	4.9	9079870	ND	4.9	9079855
Dissolved Barium (Ba)	ug/L	110	2.0	9079870	110	2.0	9079870	130	2.0	9079855
Dissolved Beryllium (Be)	ug/L	ND	0.40	9079870	ND	0.40	9079870	ND	0.40	9079855
Dissolved Boron (B)	ug/L	92	10	9079870	90	10	9079870	270	10	9079855
Dissolved Cadmium (Cd)	ug/L	ND	0.090	9079870	ND	0.090	9079870	ND	0.090	9079855
Dissolved Calcium (Ca)	ug/L	110000	200	9079870	110000	200	9079870	110000	400	9079855
Dissolved Chromium (Cr)	ug/L	ND	5.0	9079870	ND	5.0	9079870	ND	5.0	9079855
Dissolved Cobalt (Co)	ug/L	0.56	0.50	9079870	0.55	0.50	9079870	1.4	0.50	9079855
Dissolved Iron (Fe)	ug/L	230	100	9079870	230	100	9079870	540	100	9079855
Dissolved Lead (Pb)	ug/L	ND	0.50	9079870	ND	0.50	9079870	ND	0.50	9079855
Dissolved Magnesium (Mg)	ug/L	35000	50	9079870	37000	50	9079870	33000	50	9079855
Dissolved Manganese (Mn)	ug/L	46	2.0	9079870	48	2.0	9079870	110	2.0	9079855
Dissolved Molybdenum (Mo)	ug/L	0.51	0.50	9079870	ND	0.50	9079870	1.6	0.50	9079855
Dissolved Nickel (Ni)	ug/L	1.9	1.0	9079870	2.0	1.0	9079870	1.8	1.0	9079855
Dissolved Potassium (K)	ug/L	3500	200	9079870	3600	200	9079870	6400	200	9079855
Dissolved Selenium (Se)	ug/L	ND	2.0	9079870	ND	2.0	9079870	ND	2.0	9079855
Dissolved Silver (Ag)	ug/L	ND	0.090	9079870	ND	0.090	9079870	ND	0.090	9079855
Dissolved Sodium (Na)	ug/L	76000	100	9079870	78000	100	9079870	71000	100	9079855
Dissolved Vanadium (V)	ug/L	ND	0.50	9079870	ND	0.50	9079870	ND	0.50	9079855
Dissolved Zinc (Zn)	ug/L	ND	5.0	9079870	ND	5.0	9079870	ND	5.0	9079855

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XSL175		XSL176			XSL177		
Sampling Date		2023/11/26 08:00		2023/11/26 08:00			2023/11/26 08:00		
COC Number		963261-02-01		963261-02-01			963261-02-01		
	UNITS	BR-8S	QC Batch	BR-8D	RDL	QC Batch	BR-9S	RDL	QC Batch
Metals									
Mercury (Hg)	mg/L	ND	9082388	ND	0.00010	9081974	ND	0.00010	9084548
Dissolved Aluminum (Al)	ug/L	ND	9079870	ND	4.9	9079870	ND	4.9	9079855
Dissolved Barium (Ba)	ug/L	94	9079870	850	2.0	9079870	160	2.0	9079855
Dissolved Beryllium (Be)	ug/L	ND	9079870	ND	0.40	9079870	ND	0.40	9079855
Dissolved Boron (B)	ug/L	300	9079870	690	10	9079870	140	10	9079855
Dissolved Cadmium (Cd)	ug/L	ND	9079870	ND	0.090	9079870	ND	0.090	9079855
Dissolved Calcium (Ca)	ug/L	190000	9079870	170000	1000	9079870	150000	200	9079855
Dissolved Chromium (Cr)	ug/L	ND	9079870	ND	5.0	9079870	ND	5.0	9079855
Dissolved Cobalt (Co)	ug/L	4.3	9079870	ND	0.50	9079870	0.86	0.50	9079855
Dissolved Iron (Fe)	ug/L	1400	9079870	2900	100	9079870	3700	100	9079855
Dissolved Lead (Pb)	ug/L	ND	9079870	ND	0.50	9079870	ND	0.50	9079855
Dissolved Magnesium (Mg)	ug/L	78000	9079870	80000	50	9079870	68000	50	9079855
Dissolved Manganese (Mn)	ug/L	340	9079870	59	2.0	9079870	480	2.0	9079855
Dissolved Molybdenum (Mo)	ug/L	0.77	9079870	ND	0.50	9079870	ND	0.50	9079855
Dissolved Nickel (Ni)	ug/L	19	9079870	6.5	1.0	9079870	5.1	1.0	9079855
Dissolved Potassium (K)	ug/L	7500	9079870	7800	200	9079870	3400	200	9079855
Dissolved Selenium (Se)	ug/L	ND	9079870	ND	2.0	9079870	ND	2.0	9079855
Dissolved Silver (Ag)	ug/L	ND	9079870	ND	0.090	9079870	ND	0.090	9079855
Dissolved Sodium (Na)	ug/L	41000	9079870	32000	100	9079870	6100	100	9079855
Dissolved Vanadium (V)	ug/L	ND	9079870	0.69	0.50	9079870	ND	0.50	9079855
Dissolved Zinc (Zn)	ug/L	ND	9079870	ND	5.0	9079870	ND	5.0	9079855

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XSL178			XSL179		XSL180		
Sampling Date		2023/11/26 08:00			2023/11/26 08:00		2023/11/26 08:00		
COC Number		963261-02-01			963261-02-01		963261-02-01		
	UNITS	BR-9D	RDL	QC Batch	BR-10	QC Batch	BR-11	RDL	QC Batch
Metals									
Mercury (Hg)	mg/L	ND	0.00010	9081974	ND	9082388	ND	0.00010	9082388
Dissolved Aluminum (Al)	ug/L	ND	4.9	9079870	ND	9079855	ND	4.9	9079870
Dissolved Barium (Ba)	ug/L	180	2.0	9079870	170	9079855	7.8	2.0	9079870
Dissolved Beryllium (Be)	ug/L	ND	0.40	9079870	ND	9079855	ND	0.40	9079870
Dissolved Boron (B)	ug/L	1100	10	9079870	290	9079855	110	10	9079870
Dissolved Cadmium (Cd)	ug/L	ND	0.090	9079870	ND	9079855	ND	0.090	9079870
Dissolved Calcium (Ca)	ug/L	100000	1000	9079870	120000	9079855	94000	200	9079870
Dissolved Chromium (Cr)	ug/L	ND	5.0	9079870	ND	9079855	ND	5.0	9079870
Dissolved Cobalt (Co)	ug/L	1.6	0.50	9079870	ND	9079855	ND	0.50	9079870
Dissolved Iron (Fe)	ug/L	730	100	9079870	1600	9079855	ND	100	9079870
Dissolved Lead (Pb)	ug/L	ND	0.50	9079870	ND	9079855	ND	0.50	9079870
Dissolved Magnesium (Mg)	ug/L	64000	50	9079870	32000	9079855	48000	50	9079870
Dissolved Manganese (Mn)	ug/L	24	2.0	9079870	95	9079855	ND	2.0	9079870
Dissolved Molybdenum (Mo)	ug/L	0.54	0.50	9079870	ND	9079855	2.6	0.50	9079870
Dissolved Nickel (Ni)	ug/L	7.3	1.0	9079870	1.0	9079855	1.9	1.0	9079870
Dissolved Potassium (K)	ug/L	10000	200	9079870	4900	9079855	1700	200	9079870
Dissolved Selenium (Se)	ug/L	ND	2.0	9079870	ND	9079855	ND	2.0	9079870
Dissolved Silver (Ag)	ug/L	ND	0.090	9079870	ND	9079855	ND	0.090	9079870
Dissolved Sodium (Na)	ug/L	31000	100	9079870	47000	9079855	1800	100	9079870
Dissolved Vanadium (V)	ug/L	ND	0.50	9079870	ND	9079855	ND	0.50	9079870
Dissolved Zinc (Zn)	ug/L	ND	5.0	9079870	ND	9079855	ND	5.0	9079870

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XSL181		XSL182			XSL239		
Sampling Date		2023/11/26 08:00		2023/11/25 08:00			2023/11/25 07:00		
COC Number		963261-02-01		963261-02-01			963261-03-01		
	UNITS	BR-12	QC Batch	BR-13S	RDL	QC Batch	BR-13D	RDL	QC Batch
Metals									
Mercury (Hg)	mg/L	ND	9081974	ND	0.00010	9082388	ND	0.00010	9082388
Dissolved Aluminum (Al)	ug/L	ND	9079870	ND	4.9	9079855	ND	4.9	9079870
Dissolved Barium (Ba)	ug/L	33	9079870	82	2.0	9079855	160	2.0	9079870
Dissolved Beryllium (Be)	ug/L	ND	9079870	ND	0.40	9079855	ND	0.40	9079870
Dissolved Boron (B)	ug/L	60	9079870	41	10	9079855	200	10	9079870
Dissolved Cadmium (Cd)	ug/L	ND	9079870	ND	0.090	9079855	ND	0.090	9079870
Dissolved Calcium (Ca)	ug/L	140000	9079870	110000	200	9079855	92000	400	9079870
Dissolved Chromium (Cr)	ug/L	ND	9079870	ND	5.0	9079855	ND	5.0	9079870
Dissolved Cobalt (Co)	ug/L	3.4	9079870	ND	0.50	9079855	ND	0.50	9079870
Dissolved Iron (Fe)	ug/L	560	9079870	ND	100	9079855	ND	100	9079870
Dissolved Lead (Pb)	ug/L	ND	9079870	ND	0.50	9079855	ND	0.50	9079870
Dissolved Magnesium (Mg)	ug/L	43000	9079870	26000	50	9079855	30000	50	9079870
Dissolved Manganese (Mn)	ug/L	820	9079870	ND	2.0	9079855	ND	2.0	9079870
Dissolved Molybdenum (Mo)	ug/L	0.63	9079870	ND	0.50	9079855	2.3	0.50	9079870
Dissolved Nickel (Ni)	ug/L	7.9	9079870	ND	1.0	9079855	3.9	1.0	9079870
Dissolved Potassium (K)	ug/L	3300	9079870	2800	200	9079855	5500	200	9079870
Dissolved Selenium (Se)	ug/L	ND	9079870	ND	2.0	9079855	ND	2.0	9079870
Dissolved Silver (Ag)	ug/L	ND	9079870	ND	0.090	9079855	ND	0.090	9079870
Dissolved Sodium (Na)	ug/L	1400	9079870	35000	100	9079855	39000	100	9079870
Dissolved Vanadium (V)	ug/L	ND	9079870	ND	0.50	9079855	ND	0.50	9079870
Dissolved Zinc (Zn)	ug/L	ND	9079870	ND	5.0	9079855	ND	5.0	9079870

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XSL240			XSL240			XSL241		
Sampling Date		2023/11/24 07:00			2023/11/24 07:00			2023/11/24 07:00		
COC Number		963261-03-01			963261-03-01			963261-03-01		
	UNITS	BR08-1S	RDL	QC Batch	BR08-1S Lab-Dup	RDL	QC Batch	BR08-1D	RDL	QC Batch
Metals										
Mercury (Hg)	mg/L	ND	0.00010	9084548	ND	0.00010	9084548	ND	0.00010	9081974
Dissolved Aluminum (Al)	ug/L	ND	4.9	9079870				ND	4.9	9079870
Dissolved Barium (Ba)	ug/L	510	2.0	9079870				250	2.0	9079870
Dissolved Beryllium (Be)	ug/L	ND	0.40	9079870				ND	0.40	9079870
Dissolved Boron (B)	ug/L	1100	10	9079870				570	10	9079870
Dissolved Cadmium (Cd)	ug/L	ND	0.090	9079870				ND	0.090	9079870
Dissolved Calcium (Ca)	ug/L	160000	1000	9079870				120000	1000	9079870
Dissolved Chromium (Cr)	ug/L	ND	5.0	9079870				ND	5.0	9079870
Dissolved Cobalt (Co)	ug/L	ND	0.50	9079870				0.57	0.50	9079870
Dissolved Iron (Fe)	ug/L	1000	100	9079870				380	100	9079870
Dissolved Lead (Pb)	ug/L	ND	0.50	9079870				ND	0.50	9079870
Dissolved Magnesium (Mg)	ug/L	81000	50	9079870				55000	50	9079870
Dissolved Manganese (Mn)	ug/L	20	2.0	9079870				98	2.0	9079870
Dissolved Molybdenum (Mo)	ug/L	ND	0.50	9079870				ND	0.50	9079870
Dissolved Nickel (Ni)	ug/L	8.7	1.0	9079870				6.4	1.0	9079870
Dissolved Potassium (K)	ug/L	13000	200	9079870				11000	200	9079870
Dissolved Selenium (Se)	ug/L	ND	2.0	9079870				ND	2.0	9079870
Dissolved Silver (Ag)	ug/L	ND	0.090	9079870				ND	0.090	9079870
Dissolved Sodium (Na)	ug/L	51000	100	9079870				60000	100	9079870
Dissolved Vanadium (V)	ug/L	0.74	0.50	9079870				0.60	0.50	9079870
Dissolved Zinc (Zn)	ug/L	20	5.0	9079870				ND	5.0	9079870

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XSL242			XSL243			XSL244		
Sampling Date		2023/11/25 07:00			2023/11/25 07:00			2023/11/25 07:00		
COC Number		963261-03-01			963261-03-01			963261-03-01		
	UNITS	BR08-2S	RDL	QC Batch	BR08-2D	RDL	QC Batch	BR08-3S	RDL	QC Batch
Metals										
Mercury (Hg)	mg/L	ND	0.00010	9081974	ND	0.00010	9081974	ND	0.00010	9082388
Dissolved Aluminum (Al)	ug/L	160	4.9	9079870	ND	4.9	9079855	ND	4.9	9079870
Dissolved Barium (Ba)	ug/L	88	2.0	9079870	120	2.0	9079855	46	2.0	9079870
Dissolved Beryllium (Be)	ug/L	ND	0.40	9079870	ND	0.40	9079855	ND	0.40	9079870
Dissolved Boron (B)	ug/L	250	10	9079870	540	10	9079855	210	10	9079870
Dissolved Cadmium (Cd)	ug/L	ND	0.090	9079870	ND	0.090	9079855	ND	0.090	9079870
Dissolved Calcium (Ca)	ug/L	160000	200	9079870	120000	400	9079855	73000	200	9079870
Dissolved Chromium (Cr)	ug/L	ND	5.0	9079870	ND	5.0	9079855	ND	5.0	9079870
Dissolved Cobalt (Co)	ug/L	2.6	0.50	9079870	ND	0.50	9079855	ND	0.50	9079870
Dissolved Iron (Fe)	ug/L	280	100	9079870	540	100	9079855	300	100	9079870
Dissolved Lead (Pb)	ug/L	2.0	0.50	9079870	ND	0.50	9079855	ND	0.50	9079870
Dissolved Magnesium (Mg)	ug/L	40000	50	9079870	61000	50	9079855	45000	50	9079870
Dissolved Manganese (Mn)	ug/L	110	2.0	9079870	22	2.0	9079855	16	2.0	9079870
Dissolved Molybdenum (Mo)	ug/L	0.50	0.50	9079870	1.2	0.50	9079855	3.0	0.50	9079870
Dissolved Nickel (Ni)	ug/L	9.7	1.0	9079870	1.7	1.0	9079855	ND	1.0	9079870
Dissolved Potassium (K)	ug/L	5300	200	9079870	6100	200	9079855	3900	200	9079870
Dissolved Selenium (Se)	ug/L	ND	2.0	9079870	ND	2.0	9079855	ND	2.0	9079870
Dissolved Silver (Ag)	ug/L	ND	0.090	9079870	ND	0.090	9079855	ND	0.090	9079870
Dissolved Sodium (Na)	ug/L	47000	100	9079870	8200	100	9079855	1300	100	9079870
Dissolved Vanadium (V)	ug/L	0.76	0.50	9079870	ND	0.50	9079855	ND	0.50	9079870
Dissolved Zinc (Zn)	ug/L	ND	5.0	9079870	ND	5.0	9079855	ND	5.0	9079870

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XSL245		XSL246		XSL247		XSL249		
Sampling Date		2023/11/25 07:00		2023/11/25 07:00		2023/11/25 07:00		2023/11/25 07:00		
COC Number		963261-03-01		963261-03-01		963261-03-01		963261-04-01		
	UNITS	BR08-3D	QC Batch	DUP-1	QC Batch	OV-22	RDL	BR-22D	RDL	QC Batch
Metals										
Mercury (Hg)	mg/L	ND	9082388	ND	9081974	ND	0.00010	ND	0.00010	9082388
Dissolved Aluminum (Al)	ug/L	ND	9079870	ND	9079870	ND	4.9	ND	4.9	9079855
Dissolved Barium (Ba)	ug/L	52	9079870	45	9079870	130	2.0	150	2.0	9079855
Dissolved Beryllium (Be)	ug/L	ND	9079870	ND	9079870	ND	0.40	ND	0.40	9079855
Dissolved Boron (B)	ug/L	200	9079870	210	9079870	52	10	350	10	9079855
Dissolved Cadmium (Cd)	ug/L	ND	9079870	ND	9079870	ND	0.090	ND	0.090	9079855
Dissolved Calcium (Ca)	ug/L	79000	9079870	74000	9079870	120000	200	54000	1000	9079855
Dissolved Chromium (Cr)	ug/L	ND	9079870	ND	9079870	ND	5.0	ND	5.0	9079855
Dissolved Cobalt (Co)	ug/L	ND	9079870	ND	9079870	ND	0.50	ND	0.50	9079855
Dissolved Iron (Fe)	ug/L	320	9079870	290	9079870	ND	100	250	100	9079855
Dissolved Lead (Pb)	ug/L	ND	9079870	ND	9079870	ND	0.50	ND	0.50	9079855
Dissolved Magnesium (Mg)	ug/L	46000	9079870	44000	9079870	29000	50	28000	50	9079855
Dissolved Manganese (Mn)	ug/L	21	9079870	15	9079870	ND	2.0	20	2.0	9079855
Dissolved Molybdenum (Mo)	ug/L	2.8	9079870	3.1	9079870	ND	0.50	2.1	0.50	9079855
Dissolved Nickel (Ni)	ug/L	ND	9079870	ND	9079870	ND	1.0	ND	1.0	9079855
Dissolved Potassium (K)	ug/L	3900	9079870	3900	9079870	3700	200	9900	200	9079855
Dissolved Selenium (Se)	ug/L	ND	9079870	ND	9079870	ND	2.0	ND	2.0	9079855
Dissolved Silver (Ag)	ug/L	ND	9079870	ND	9079870	ND	0.090	ND	0.090	9079855
Dissolved Sodium (Na)	ug/L	1400	9079870	1300	9079870	39000	100	93000	100	9079855
Dissolved Vanadium (V)	ug/L	ND	9079870	ND	9079870	ND	0.50	ND	0.50	9079855
Dissolved Zinc (Zn)	ug/L	ND	9079870	ND	9079870	13	5.0	ND	5.0	9079855

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XSL250			XSL251			XSL252		
Sampling Date		2023/11/26 07:00			2023/11/25 07:00			2023/11/26 07:00		
COC Number		963261-04-01			963261-04-01			963261-04-01		
	UNITS	OV-70	RDL	QC Batch	BR-6D	RDL	QC Batch	BR-22M	RDL	QC Batch
Metals										
Mercury (Hg)	mg/L	ND	0.00010	9081974	ND	0.00010	9081974	ND	0.00010	9081974
Dissolved Aluminum (Al)	ug/L	14	4.9	9079870	ND	4.9	9079855	ND	4.9	9079870
Dissolved Barium (Ba)	ug/L	610	2.0	9079870	250	2.0	9079855	200	2.0	9079870
Dissolved Beryllium (Be)	ug/L	ND	0.40	9079870	ND	0.40	9079855	ND	0.40	9079870
Dissolved Boron (B)	ug/L	1400	10	9079870	350	10	9079855	220	10	9079870
Dissolved Cadmium (Cd)	ug/L	ND	0.090	9079870	ND	0.090	9079855	ND	0.090	9079870
Dissolved Calcium (Ca)	ug/L	300000	200	9079870	88000	1000	9079855	89000	400	9079870
Dissolved Chromium (Cr)	ug/L	ND	5.0	9079870	ND	5.0	9079855	ND	5.0	9079870
Dissolved Cobalt (Co)	ug/L	6.4	0.50	9079870	3.8	0.50	9079855	0.59	0.50	9079870
Dissolved Iron (Fe)	ug/L	49000	100	9079870	2100	100	9079855	210	100	9079870
Dissolved Lead (Pb)	ug/L	ND	0.50	9079870	ND	0.50	9079855	ND	0.50	9079870
Dissolved Magnesium (Mg)	ug/L	58000	50	9079870	35000	50	9079855	34000	50	9079870
Dissolved Manganese (Mn)	ug/L	950	2.0	9079870	200	2.0	9079855	44	2.0	9079870
Dissolved Molybdenum (Mo)	ug/L	ND	0.50	9079870	1.3	0.50	9079855	1.4	0.50	9079870
Dissolved Nickel (Ni)	ug/L	20	1.0	9079870	5.4	1.0	9079855	1.3	1.0	9079870
Dissolved Potassium (K)	ug/L	59000	200	9079870	9500	200	9079855	6800	200	9079870
Dissolved Selenium (Se)	ug/L	ND	2.0	9079870	ND	2.0	9079855	ND	2.0	9079870
Dissolved Silver (Ag)	ug/L	ND	0.090	9079870	ND	0.090	9079855	ND	0.090	9079870
Dissolved Sodium (Na)	ug/L	200000	100	9079870	82000	100	9079855	43000	100	9079870
Dissolved Vanadium (V)	ug/L	4.7	0.50	9079870	ND	0.50	9079855	ND	0.50	9079870
Dissolved Zinc (Zn)	ug/L	ND	5.0	9079870	ND	5.0	9079855	ND	5.0	9079870

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

TEST SUMMARY

Bureau Veritas ID: XSL161 **Collected:** 2023/11/25
Sample ID: OV-7 **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079846	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079847	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/12/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	9082388	2023/11/30	2023/11/30	Maninder Kaur
Dissolved Metals by ICPMS	ICP/MS	9079855	N/A	2023/11/30	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL161 Dup **Collected:** 2023/11/25
Sample ID: OV-7 **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	9079855	N/A	2023/11/30	Azita Fazaeli

Bureau Veritas ID: XSL162 **Collected:** 2023/11/25
Sample ID: OV-9 **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079846	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079847	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL163 **Collected:** 2023/11/25
Sample ID: OV-10 **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079846	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan

TEST SUMMARY

Bureau Veritas ID: XSL163 **Collected:** 2023/11/25
Sample ID: OV-10 **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	9079847	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/12/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079855	N/A	2023/11/30	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9080222	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL163 Dup **Collected:** 2023/11/25
Sample ID: OV-10 **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill

Bureau Veritas ID: XSL164 **Collected:** 2023/11/25
Sample ID: OV-13 **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079846	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079847	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/12/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079855	N/A	2023/11/30	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9080222	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080072	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL165 **Collected:** 2023/11/25
Sample ID: BR-1S **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079846	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079847	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz

TEST SUMMARY

Bureau Veritas ID: XSL165 **Collected:** 2023/11/25
Sample ID: BR-1S **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL165 Dup **Collected:** 2023/11/25
Sample ID: BR-1S **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079846	N/A	2023/12/01	Nachiketa Gohil
Conductivity	AT	9079847	N/A	2023/12/01	Nachiketa Gohil

Bureau Veritas ID: XSL166 **Collected:** 2023/11/25
Sample ID: BR-1D **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079846	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079847	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL167 **Collected:** 2023/11/25
Sample ID: BR-3 **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079846	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079847	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/12/01	Automated Statchk

Bureau Veritas Job #: C3AM625
Report Date: 2023/12/04

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

TEST SUMMARY

Bureau Veritas ID: XSL167
Sample ID: BR-3
Matrix: Water

Collected: 2023/11/25
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079855	N/A	2023/11/30	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080072	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL168
Sample ID: BR-5S
Matrix: Water

Collected: 2023/11/26
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079846	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079847	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080241	N/A	2023/11/30	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL169
Sample ID: BR-5D
Matrix: Water

Collected: 2023/11/26
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079846	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079847	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9082388	2023/11/30	2023/11/30	Maninder Kaur
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080072	2023/11/29	2023/12/01	Muskan

TEST SUMMARY

Bureau Veritas ID: XSL170 **Collected:** 2023/11/26
Sample ID: BR-6S **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079846	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079847	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/12/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	9082388	2023/11/30	2023/11/30	Maninder Kaur
Dissolved Metals by ICPMS	ICP/MS	9079855	N/A	2023/11/30	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9080222	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080072	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL173 **Collected:** 2023/11/25
Sample ID: BR-7S **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080222	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL173 Dup **Collected:** 2023/11/25
Sample ID: BR-7S **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080222	N/A	2023/11/29	Shivani Shivani

Bureau Veritas ID: XSL174 **Collected:** 2023/11/26
Sample ID: BR-7D **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil

TEST SUMMARY

Bureau Veritas ID: XSL174
Sample ID: BR-7D
Matrix: Water

Collected: 2023/11/26
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/12/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	9082388	2023/11/30	2023/11/30	Maninder Kaur
Dissolved Metals by ICPMS	ICP/MS	9079855	N/A	2023/11/30	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080072	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL175
Sample ID: BR-8S
Matrix: Water

Collected: 2023/11/26
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9082388	2023/11/30	2023/11/30	Maninder Kaur
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080222	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080072	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL176
Sample ID: BR-8D
Matrix: Water

Collected: 2023/11/26
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079846	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079847	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080222	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan

TEST SUMMARY

Bureau Veritas ID: XSL176 **Collected:** 2023/11/26
Sample ID: BR-8D **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL177 **Collected:** 2023/11/26
Sample ID: BR-9S **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079846	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079847	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/12/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	9084548	2023/12/01	2023/12/01	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079855	N/A	2023/11/30	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9080241	N/A	2023/11/30	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL178 **Collected:** 2023/11/26
Sample ID: BR-9D **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080222	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL178 Dup **Collected:** 2023/11/26
Sample ID: BR-9D **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan

TEST SUMMARY

Bureau Veritas ID: XSL178 Dup
Sample ID: BR-9D
Matrix: Water
Collected: 2023/11/26
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan

Bureau Veritas ID: XSL179
Sample ID: BR-10
Matrix: Water
Collected: 2023/11/26
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079879	N/A	2023/12/01	Alina Dobreanu
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/12/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	9082388	2023/11/30	2023/11/30	Maninder Kaur
Dissolved Metals by ICPMS	ICP/MS	9079855	N/A	2023/11/30	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079888	N/A	2023/12/01	Alina Dobreanu
Sulphate by Automated Turbidimetry	SKAL	9079886	N/A	2023/12/01	Alina Dobreanu
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL180
Sample ID: BR-11
Matrix: Water
Collected: 2023/11/26
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9082388	2023/11/30	2023/11/30	Maninder Kaur
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL180 Dup
Sample ID: BR-11
Matrix: Water
Collected: 2023/11/26
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani

TEST SUMMARY

Bureau Veritas ID: XSL180 Dup
Sample ID: BR-11
Matrix: Water
Collected: 2023/11/26
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL181
Sample ID: BR-12
Matrix: Water
Collected: 2023/11/26
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079879	N/A	2023/12/01	Alina Dobreanu
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079888	N/A	2023/12/01	Alina Dobreanu
Sulphate by Automated Turbidimetry	SKAL	9079886	N/A	2023/12/01	Alina Dobreanu
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080072	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL182
Sample ID: BR-13S
Matrix: Water
Collected: 2023/11/25
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079846	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079847	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079800	N/A	2023/11/30	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/12/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	9082388	2023/11/30	2023/11/30	Maninder Kaur
Dissolved Metals by ICPMS	ICP/MS	9079855	N/A	2023/11/30	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080072	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL239
Sample ID: BR-13D
Matrix: Water
Collected: 2023/11/25
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079879	N/A	2023/12/01	Alina Dobreanu

TEST SUMMARY

Bureau Veritas ID: XSL239
Sample ID: BR-13D
Matrix: Water

Collected: 2023/11/25
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9082388	2023/11/30	2023/11/30	Maninder Kaur
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079888	N/A	2023/12/01	Alina Dobreanu
Sulphate by Automated Turbidimetry	SKAL	9079886	N/A	2023/12/01	Alina Dobreanu
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL239 Dup
Sample ID: BR-13D
Matrix: Water

Collected: 2023/11/25
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil

Bureau Veritas ID: XSL240
Sample ID: BR08-1S
Matrix: Water

Collected: 2023/11/24
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079879	N/A	2023/12/01	Alina Dobreanu
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9084548	2023/12/01	2023/12/01	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079888	N/A	2023/12/01	Alina Dobreanu
Sulphate by Automated Turbidimetry	SKAL	9079886	N/A	2023/12/01	Alina Dobreanu
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL240 Dup
Sample ID: BR08-1S
Matrix: Water

Collected: 2023/11/24
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Water by CVAA	CV/AA	9084548	2023/12/01	2023/12/01	Japneet Gill

TEST SUMMARY

Bureau Veritas ID: XSL241 **Collected:** 2023/11/24
Sample ID: BR08-1D **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079921	N/A	2023/11/30	Massarat Jan
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079934	N/A	2023/11/30	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9079929	N/A	2023/11/30	Massarat Jan
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080072	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL242 **Collected:** 2023/11/25
Sample ID: BR08-2S **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079879	N/A	2023/12/01	Alina Dobreanu
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079888	N/A	2023/12/01	Alina Dobreanu
Sulphate by Automated Turbidimetry	SKAL	9079886	N/A	2023/12/01	Alina Dobreanu
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080072	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL242 Dup **Collected:** 2023/11/25
Sample ID: BR08-2S **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	SKAL/P	9080072	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL243 **Collected:** 2023/11/25
Sample ID: BR08-2D **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079879	N/A	2023/12/01	Alina Dobreanu

TEST SUMMARY

Bureau Veritas ID: XSL243
Sample ID: BR08-2D
Matrix: Water

Collected: 2023/11/25
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/12/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079855	N/A	2023/11/30	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079888	N/A	2023/12/01	Alina Dobreanu
Sulphate by Automated Turbidimetry	SKAL	9079886	N/A	2023/12/01	Alina Dobreanu
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL244
Sample ID: BR08-3S
Matrix: Water

Collected: 2023/11/25
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079879	N/A	2023/12/01	Alina Dobreanu
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9082388	2023/11/30	2023/11/30	Maninder Kaur
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079888	N/A	2023/12/01	Alina Dobreanu
Sulphate by Automated Turbidimetry	SKAL	9079886	N/A	2023/12/01	Alina Dobreanu
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL245
Sample ID: BR08-3D
Matrix: Water

Collected: 2023/11/25
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079879	N/A	2023/12/01	Alina Dobreanu
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9082388	2023/11/30	2023/11/30	Maninder Kaur
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080222	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079888	N/A	2023/12/01	Alina Dobreanu
Sulphate by Automated Turbidimetry	SKAL	9079886	N/A	2023/12/01	Alina Dobreanu
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel

Bureau Veritas Job #: C3AM625
Report Date: 2023/12/04

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

TEST SUMMARY

Bureau Veritas ID: XSL245 **Collected:** 2023/11/25
Sample ID: BR08-3D **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL245 Dup **Collected:** 2023/11/25
Sample ID: BR08-3D **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz

Bureau Veritas ID: XSL246 **Collected:** 2023/11/25
Sample ID: DUP-1 **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079879	N/A	2023/12/01	Alina Dobreanu
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079888	N/A	2023/12/01	Alina Dobreanu
Sulphate by Automated Turbidimetry	SKAL	9079886	N/A	2023/12/01	Alina Dobreanu
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL246 Dup **Collected:** 2023/11/25
Sample ID: DUP-1 **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel

Bureau Veritas ID: XSL247 **Collected:** 2023/11/25
Sample ID: OV-22 **Shipped:**
Matrix: Water **Received:** 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079879	N/A	2023/12/01	Alina Dobreanu
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/12/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	9082388	2023/11/30	2023/11/30	Maninder Kaur
Dissolved Metals by ICPMS	ICP/MS	9079855	N/A	2023/11/30	Azita Fazaeli

TEST SUMMARY

Bureau Veritas ID: XSL247
Sample ID: OV-22
Matrix: Water

Collected: 2023/11/25
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	9080222	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079888	N/A	2023/12/01	Alina Dobreanu
Sulphate by Automated Turbidimetry	SKAL	9079886	N/A	2023/12/01	Alina Dobreanu
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080072	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL249
Sample ID: BR-22D
Matrix: Water

Collected: 2023/11/25
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079879	N/A	2023/12/01	Alina Dobreanu
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079785	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/12/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	9082388	2023/11/30	2023/11/30	Maninder Kaur
Dissolved Metals by ICPMS	ICP/MS	9079855	N/A	2023/11/30	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079888	N/A	2023/12/01	Alina Dobreanu
Sulphate by Automated Turbidimetry	SKAL	9079886	N/A	2023/12/01	Alina Dobreanu
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080072	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL250
Sample ID: OV-70
Matrix: Water

Collected: 2023/11/26
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079879	N/A	2023/12/01	Alina Dobreanu
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080217	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079888	N/A	2023/12/01	Alina Dobreanu
Sulphate by Automated Turbidimetry	SKAL	9079886	N/A	2023/12/01	Alina Dobreanu
Total Dissolved Solids	BAL	9081580	2023/11/30	2023/12/01	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080072	2023/11/29	2023/12/01	Muskan

Bureau Veritas Job #: C3AM625
Report Date: 2023/12/04

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

TEST SUMMARY

Bureau Veritas ID: XSL251
Sample ID: BR-6D
Matrix: Water

Collected: 2023/11/25
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079879	N/A	2023/12/01	Alina Dobreanu
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/12/01	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079855	N/A	2023/11/30	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9080222	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079888	N/A	2023/12/01	Alina Dobreanu
Sulphate by Automated Turbidimetry	SKAL	9079886	N/A	2023/12/01	Alina Dobreanu
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

Bureau Veritas ID: XSL252
Sample ID: BR-22M
Matrix: Water

Collected: 2023/11/26
Shipped:
Received: 2023/11/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9079860	N/A	2023/12/01	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9079879	N/A	2023/12/01	Alina Dobreanu
Conductivity	AT	9079867	N/A	2023/12/01	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9079788	N/A	2023/11/29	Gyulshen Idriz
Hardness (calculated as CaCO3)		9076972	N/A	2023/11/30	Automated Statchk
Mercury in Water by CVAA	CV/AA	9081974	2023/11/30	2023/11/30	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9079870	N/A	2023/11/30	Arefa Dabhad
Total Ammonia-N	LACH/NH4	9080222	N/A	2023/11/29	Shivani Shivani
Orthophosphate	KONE	9079888	N/A	2023/12/01	Alina Dobreanu
Sulphate by Automated Turbidimetry	SKAL	9079886	N/A	2023/12/01	Alina Dobreanu
Total Dissolved Solids	BAL	9081603	2023/12/01	2023/12/02	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9080061	2023/11/29	2023/12/01	Muskan

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.0°C
Package 2	-0.3°C
Package 3	2.7°C
Package 4	-0.3°C
Package 5	-0.7°C

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9079785	Dissolved Organic Carbon	2023/11/29	92	80 - 120	95	80 - 120	ND, RDL=0.40	mg/L	0.024	20		
9079788	Dissolved Organic Carbon	2023/11/29	93	80 - 120	96	80 - 120	ND, RDL=0.40	mg/L	1.0	20		
9079800	Dissolved Organic Carbon	2023/11/30	91	80 - 120	95	80 - 120	ND, RDL=0.40	mg/L	3.3	20		
9079846	Alkalinity (Total as CaCO3)	2023/12/01			99	85 - 115	ND, RDL=1.0	mg/L	0.16	20		
9079847	Conductivity	2023/12/01			101	85 - 115	ND, RDL=1.0	umho/cm	0.80	10		
9079855	Dissolved Aluminum (Al)	2023/11/30	106	80 - 120	101	80 - 120	ND, RDL=4.9	ug/L	3.2	20		
9079855	Dissolved Barium (Ba)	2023/11/30	NC	80 - 120	103	80 - 120	ND, RDL=2.0	ug/L	2.0	20		
9079855	Dissolved Beryllium (Be)	2023/11/30	100	80 - 120	98	80 - 120	ND, RDL=0.40	ug/L	NC	20		
9079855	Dissolved Boron (B)	2023/11/30	NC	80 - 120	100	80 - 120	ND, RDL=10	ug/L	1.2	20		
9079855	Dissolved Cadmium (Cd)	2023/11/30	104	80 - 120	102	80 - 120	ND, RDL=0.090	ug/L	NC	20		
9079855	Dissolved Calcium (Ca)	2023/11/30	NC	80 - 120	101	80 - 120	ND, RDL=200	ug/L	0.74	20		
9079855	Dissolved Chromium (Cr)	2023/11/30	103	80 - 120	98	80 - 120	ND, RDL=5.0	ug/L	NC	20		
9079855	Dissolved Cobalt (Co)	2023/11/30	101	80 - 120	97	80 - 120	ND, RDL=0.50	ug/L	3.5	20		
9079855	Dissolved Iron (Fe)	2023/11/30	NC	80 - 120	101	80 - 120	ND, RDL=100	ug/L	3.3	20		
9079855	Dissolved Lead (Pb)	2023/11/30	97	80 - 120	98	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9079855	Dissolved Magnesium (Mg)	2023/11/30	NC	80 - 120	98	80 - 120	ND, RDL=50	ug/L	1.2	20		
9079855	Dissolved Manganese (Mn)	2023/11/30	NC	80 - 120	101	80 - 120	ND, RDL=2.0	ug/L	2.9	20		
9079855	Dissolved Molybdenum (Mo)	2023/11/30	112	80 - 120	103	80 - 120	ND, RDL=0.50	ug/L	8.7	20		
9079855	Dissolved Nickel (Ni)	2023/11/30	100	80 - 120	98	80 - 120	ND, RDL=1.0	ug/L	7.1	20		
9079855	Dissolved Potassium (K)	2023/11/30	NC	80 - 120	102	80 - 120	ND, RDL=200	ug/L	3.1	20		
9079855	Dissolved Selenium (Se)	2023/11/30	103	80 - 120	101	80 - 120	ND, RDL=2.0	ug/L	NC	20		
9079855	Dissolved Silver (Ag)	2023/11/30	85	80 - 120	99	80 - 120	ND, RDL=0.090	ug/L	NC	20		
9079855	Dissolved Sodium (Na)	2023/11/30	NC	80 - 120	98	80 - 120	ND, RDL=100	ug/L	1.2	20		
9079855	Dissolved Vanadium (V)	2023/11/30	106	80 - 120	100	80 - 120	ND, RDL=0.50	ug/L	1.8	20		
9079855	Dissolved Zinc (Zn)	2023/11/30	99	80 - 120	99	80 - 120	ND, RDL=5.0	ug/L	NC	20		
9079860	Alkalinity (Total as CaCO3)	2023/12/01			98	85 - 115	ND, RDL=1.0	mg/L	1.2	20		
9079867	Conductivity	2023/12/01			101	85 - 115	ND, RDL=1.0	umho/cm	0.24	10		
9079870	Dissolved Aluminum (Al)	2023/11/30	106	80 - 120	103	80 - 120	ND, RDL=4.9	ug/L	8.8	20		
9079870	Dissolved Barium (Ba)	2023/11/30	101	80 - 120	103	80 - 120	ND, RDL=2.0	ug/L	0.38	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9079870	Dissolved Beryllium (Be)	2023/11/30	97	80 - 120	100	80 - 120	ND, RDL=0.40	ug/L	NC	20		
9079870	Dissolved Boron (B)	2023/11/30	92	80 - 120	99	80 - 120	ND, RDL=10	ug/L	2.4	20		
9079870	Dissolved Cadmium (Cd)	2023/11/30	104	80 - 120	103	80 - 120	ND, RDL=0.090	ug/L	NC	20		
9079870	Dissolved Calcium (Ca)	2023/11/30	NC	80 - 120	105	80 - 120	ND, RDL=200	ug/L	3.0	20		
9079870	Dissolved Chromium (Cr)	2023/11/30	100	80 - 120	104	80 - 120	ND, RDL=5.0	ug/L	NC	20		
9079870	Dissolved Cobalt (Co)	2023/11/30	103	80 - 120	108	80 - 120	ND, RDL=0.50	ug/L	1.3	20		
9079870	Dissolved Iron (Fe)	2023/11/30	105	80 - 120	109	80 - 120	ND, RDL=100	ug/L	0.013	20		
9079870	Dissolved Lead (Pb)	2023/11/30	102	80 - 120	104	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9079870	Dissolved Magnesium (Mg)	2023/11/30	NC	80 - 120	106	80 - 120	ND, RDL=50	ug/L	4.7	20		
9079870	Dissolved Manganese (Mn)	2023/11/30	102	80 - 120	105	80 - 120	ND, RDL=2.0	ug/L	4.2	20		
9079870	Dissolved Molybdenum (Mo)	2023/11/30	102	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L	1.6	20		
9079870	Dissolved Nickel (Ni)	2023/11/30	101	80 - 120	107	80 - 120	ND, RDL=1.0	ug/L	6.4	20		
9079870	Dissolved Potassium (K)	2023/11/30	103	80 - 120	106	80 - 120	ND, RDL=200	ug/L	3.4	20		
9079870	Dissolved Selenium (Se)	2023/11/30	104	80 - 120	103	80 - 120	ND, RDL=2.0	ug/L	NC	20		
9079870	Dissolved Silver (Ag)	2023/11/30	102	80 - 120	101	80 - 120	ND, RDL=0.090	ug/L	NC	20		
9079870	Dissolved Sodium (Na)	2023/11/30	NC	80 - 120	107	80 - 120	ND, RDL=100	ug/L	2.5	20		
9079870	Dissolved Vanadium (V)	2023/11/30	100	80 - 120	103	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9079870	Dissolved Zinc (Zn)	2023/11/30	102	80 - 120	102	80 - 120	ND, RDL=5.0	ug/L	NC	20		
9079879	Dissolved Chloride (Cl-)	2023/12/01	94	80 - 120	99	80 - 120	ND, RDL=1.0	mg/L	2.1	20		
9079886	Dissolved Sulphate (SO4)	2023/12/01	95	75 - 125	96	80 - 120	ND, RDL=1.0	mg/L	1.4	20		
9079888	Orthophosphate (P)	2023/12/01	92	75 - 125	90	80 - 120	ND, RDL=0.010	mg/L	NC	20		
9079921	Dissolved Chloride (Cl-)	2023/11/30	NC	80 - 120	100	80 - 120	ND, RDL=1.0	mg/L	1.2	20		
9079929	Dissolved Sulphate (SO4)	2023/11/30	NC	75 - 125	104	80 - 120	ND, RDL=1.0	mg/L	0.39	20		
9079934	Orthophosphate (P)	2023/11/30	93	75 - 125	94	80 - 120	ND, RDL=1.0	mg/L	NC	20		
9080061	Total Phosphorus	2023/12/01	94	80 - 120	105	80 - 120	ND, RDL=0.004	mg/L	1.2	20	99	80 - 120
9080072	Total Phosphorus	2023/12/01	94	80 - 120	100	80 - 120	ND, RDL=0.004	mg/L	0.64	20	102	80 - 120
9080217	Total Ammonia-N	2023/11/29	100	75 - 125	101	80 - 120	ND, RDL=0.050	mg/L	NC	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9080222	Total Ammonia-N	2023/11/29	100	75 - 125	101	80 - 120	ND, RDL=0.050	mg/L	NC	20		
9080241	Total Ammonia-N	2023/11/30	103	75 - 125	103	80 - 120	ND, RDL=0.050	mg/L	1.3	20		
9081580	Total Dissolved Solids	2023/12/01			102	80 - 120	ND, RDL=10	mg/L	NC	20		
9081603	Total Dissolved Solids	2023/12/02			102	80 - 120	ND, RDL=10	mg/L	2.8	20		
9081974	Mercury (Hg)	2023/11/30	102	75 - 125	101	80 - 120	ND, RDL=0.00010	mg/L	NC	20		
9082388	Mercury (Hg)	2023/11/30	102	75 - 125	107	80 - 120	ND, RDL=0.00010	mg/L	NC	20		
9084548	Mercury (Hg)	2023/12/01	102	75 - 125	102	80 - 120	ND, RDL=0.00010	mg/L	NC	20		

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

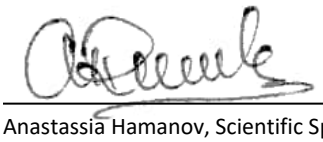
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

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Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

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27-Nov-23 11:58
Katherine Szozda
C3AM625

JDK ENV-1454

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#28962 The Corporation of the Town of Arnprior	Company Name:	#17006 WSP Canada Inc	Quotation #:	B41189
Attention:	Invoices- Andria & Emily	Attention:	Hadia Aziz	P.O. #:	
Address:	105 Elgin Street W Arnprior ON K7S 0A8	Address:	1931 Robertson Rd Ottawa ON K2H5B7	Project:	23594631
Tel:	(613) 623-4231 Fax:	Tel:	(613) 592-9600 Fax:	Project Name:	Arnprior LF
Email:	andria.caletti@wsp.com, emily.bacon@wsp.com	Email:	hadia.aziz@wsp.com	Site #:	
				Sampled By:	C. Albert

se Only:
Bottle Order #: 963261
COC #: C#963261-01-01
Project Manager: Katherine Szozda

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Reg 406 Table ___ ☐ Other ___	

Include Criteria on Certificate of Analysis (Y/N)? ___

Field Filtered (please circle): (Metals / Hg / Cr VI) (DOC)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	GROUNDWATER	# of Bottles	Comments
1		OV-7	Sept25/23	7AM	GW	✓	7	
2		OV-9				✓		
3		OV-10				✓		
4		OV-13				✓		
5		BR-1S				✓		
6		BR-1D				✓		
7		BR-3				✓		
8		BR-5S	Sept26/23			✓		
9		BR-5D				✓		
10		BR-6S				✓		

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Ice / Time Sensitive	Laboratory Use Only: Temperature (°C) on Recei	Custody Seal: Present / Intact	Yes	No
C. Albert	Nov27/23	8AM	Samuel Durand Sam Mid	2023/11/27	11:58		Ice	see ACTR.			✓
			Received THROUGH DROP	2023/11/28	08:21						

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-TERMS-AND-CONDITIONS.

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** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

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ACTR

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CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#28962 The Corporation of the Town of Arnprior	Company Name:	#17006 WSP Canada Inc	Quotation #:	B41189	Bureau Veritas Job #:	Bottle Order #:
Attention:	Invoices- Andria & Emily	Attention:	Hadia Aziz	P.O. #:			963261
Address:	105 Elgin Street W	Address:	1931 Robertson Rd	Project:	23594631	COC #:	Project Manager:
	Arnprior ON K7S 0A8		Ottawa ON K2H5B7	Project Name:	Arnprior LF	C#963261-02-01	Katherine Szozda
Tel:	(613) 623-4231 Fax:	Tel:	(613) 592-9600 Fax:	Site #:			
Email:	andria.caletti@wsp.com, emily.bacon@wsp.com	Email:	hadia.aziz@wsp.com	Sampled By:	C. Albert		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ Reg 558. ☐ Storm Sewer Bylaw	
☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality	
☐ Table ___	☐ PWQO ☐ Reg 406 Table	
	☐ Other	

Include Criteria on Certificate of Analysis (Y/N)? _____

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	GROUNDWATER	# of Bottles	Comments
1		BR-7S	Sept 26/23	8 am	GW	✓	7	
2		BR-7D				✓		
3		BR-8S				✓		
4		BR-8D				✓		
5		BR-9S				✓		
6		BR-9D				✓		
7		BR-10				✓		
8		BR-11				✓		
9		BR-12				✓		
10		BR-13S	Sept 25/23			✓		

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____ ☐
Rush Confirmation Number: _____ *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
C. Albert	Sept 27/23	8 am	See pg. 1			

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	See pg. 1	Present		
		Intact		

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CHAIN OF CUSTODY RECORD

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Address:	105 Elgin Street W	Address:	1931 Robertson Rd	Project:	23594631	COC #:	Project Manager:
	Arnprior ON K7S 0A8		Ottawa ON K2H5B7	Project Name:	Arnprior LF	C#963261-03-01	Katherine Szozda
Tel:	(613) 623-4231 Fax:	Tel:	(613) 592-9600 Fax:	Site #:			
Email:	andria.caletti@wsp.com, emily.bacon@wsp.com	Email:	hadia.aziz@wsp.com	Sampled By:	C. Albert		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
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☐ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality	
☐ Table ___	☐ PWQO ☐ Reg 406 Table	
	☐ Other	

Include Criteria on Certificate of Analysis (Y/N)? _____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

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Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____ ☐
Rush Confirmation Number: _____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	GROUNDWATER	# of Bottles	Comments
1		BR-13D	Sept 25/23	7 Am	GW	F	✓	7	
2		BR08-1S	Sept 26/23			F	✓	↓	
3		BR08-1D	↓			F	✓		
4		BR08-2S				F	✓		
5		BR08-2D	↓			F	✓		
6		BR08-3S	Sept 26/23			F	✓		
7		BR08-3D	↓			F	✓		
8		Dup-1	Sept 25/23			F	✓		
9		~~Dup-2~~				F	✓		
10		OV-22	Sept 25/23	↓	↓	F	✓	↓	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only				
C. Albert	Nov 27/23	8 Am	See pg. 1				Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
								See pg. 1	Present		
									Intact		

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Received in Ottawa

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#28962 The Corporation of the Town of Arnprior	Company Name:	#17006 WSP Canada Inc	Quotation #:	B41189	Bureau Veritas Job #:	Bottle Order #:
Attention:	Invoices- Andria & Emily	Attention:	Hadia Aziz	P.O. #:			963261
Address:	105 Elgin Street W Arnprior ON K7S 0A8	Address:	1931 Robertson Rd Ottawa ON K2H5B7	Project:	23594631	COC #:	Project Manager:
Tel:	(613) 623-4231 Fax:	Tel:	(613) 592-9600 Fax:	Project Name:	Arnprior LF	C#963261-04-01	Katherine Szozda
Email:	andria.caletti@wsp.com, emily.bacon@wsp.com	Email:	hadia.aziz@wsp.com	Site #:			
				Sampled By:	C. Albert		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Reg 406 Table ___ ☐ Other ___	

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	GROUNDWATER	# of Bottles	Comments
1		BR-22D	Sept26/23	7Am	GW	✓	✓	7	
2		BR-22S	↓			✓	✓		
3		OV-23	Sept25/23			✓	✓		
4		~~BR-23S~~ OV-70	↓			✓	✓		
5		~~BR-23D~~							
6		BR-6D	Sept26/23			✓	✓		
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only				
C. Albert	Sept 27/23	8AM	See B.				Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
			See Page 1					See page 1	Present		
									Intact		

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your Project #: 23594631
Site Location: Arnprior LF
Your C.O.C. #: 963260-02-01

Attention: Hadia Aziz

WSP Canada Inc
1931 Robertson Rd
Ottawa, ON
CANADA K2H5B7

Report Date: 2023/12/07
Report #: R7945234
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3AR450
Received: 2023/11/30, 11:43

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity (1)	1	N/A	2023/12/03	CAM SOP-00448	SM 24 2320 B m
Chloride by Automated Colourimetry (1)	1	N/A	2023/12/04	CAM SOP-00463	SM 24 4500-Cl E m
Conductivity (1)	1	N/A	2023/12/03	CAM SOP-00414	SM 24 2510 m
Dissolved Organic Carbon (DOC) (1, 2)	1	N/A	2023/12/04	CAM SOP-00446	SM 24 5310 B m
Hardness (calculated as CaCO3) (1)	1	N/A	2023/12/06	CAM SOP 00102/00408/00447	SM 2340 B
Mercury in Water by CVAA (1)	1	2023/12/06	2023/12/07	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS (1)	1	N/A	2023/12/05	CAM SOP-00447	EPA 6020B m
Total Ammonia-N (1)	1	N/A	2023/12/05	CAM SOP-00441	USGS I-2522-90 m
Orthophosphate (1)	1	N/A	2023/12/04	CAM SOP-00461	SM 24 4500-P E
Sulphate by Automated Turbidimetry (1)	1	N/A	2023/12/04	CAM SOP-00464	SM 24 4500-SO42- E m
Total Dissolved Solids (1)	1	2023/12/05	2023/12/06	CAM SOP-00428	SM 24 2540C m
Total Phosphorus (Colourimetric) (1)	1	2023/12/06	2023/12/06	CAM SOP-00407	SM 24 4500-P I

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCCFP, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Your Project #: 23594631
Site Location: Arnprior LF
Your C.O.C. #: 963260-02-01

Attention: Hadia Aziz

WSP Canada Inc
1931 Robertson Rd
Ottawa, ON
CANADA K2H5B7

Report Date: 2023/12/07
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CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3AR450

Received: 2023/11/30, 11:43

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

(2) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633

==========

This report has been generated and distributed using a secure automated process.

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C3AR450
Report Date: 2023/12/07

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XTM709		
Sampling Date		2023/11/29 17:15		
COC Number		963260-02-01		
	UNITS	BR-22D	RDL	QC Batch
Calculated Parameters				
Hardness (CaCO3)	mg/L	250	1.0	9086964
Inorganics				
Total Ammonia-N	mg/L	0.26	0.050	9090191
Conductivity	umho/cm	890	1.0	9087608
Total Dissolved Solids	mg/L	465	10	9091192
Dissolved Organic Carbon	mg/L	1.6	0.40	9088525
Orthophosphate (P)	mg/L	ND	0.010	9087629
Total Phosphorus	mg/L	0.095	0.004	9094208
Dissolved Sulphate (SO4)	mg/L	45	1.0	9087631
Alkalinity (Total as CaCO3)	mg/L	340	1.0	9087611
Dissolved Chloride (Cl-)	mg/L	49	1.0	9087624

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XTM709		
Sampling Date		2023/11/29 17:15		
COC Number		963260-02-01		
	UNITS	BR-22D	RDL	QC Batch
Metals				
Mercury (Hg)	mg/L	ND	0.00010	9093633
Dissolved Aluminum (Al)	ug/L	ND	4.9	9091302
Dissolved Barium (Ba)	ug/L	140	2.0	9091302
Dissolved Beryllium (Be)	ug/L	ND	0.40	9091302
Dissolved Boron (B)	ug/L	340	10	9091302
Dissolved Cadmium (Cd)	ug/L	ND	0.090	9091302
Dissolved Calcium (Ca)	ug/L	54000	1000	9091302
Dissolved Chromium (Cr)	ug/L	ND	5.0	9091302
Dissolved Cobalt (Co)	ug/L	ND	0.50	9091302
Dissolved Iron (Fe)	ug/L	220	100	9091302
Dissolved Lead (Pb)	ug/L	ND	0.50	9091302
Dissolved Magnesium (Mg)	ug/L	27000	50	9091302
Dissolved Manganese (Mn)	ug/L	21	2.0	9091302
Dissolved Molybdenum (Mo)	ug/L	2.2	0.50	9091302
Dissolved Nickel (Ni)	ug/L	ND	1.0	9091302
Dissolved Potassium (K)	ug/L	9400	200	9091302
Dissolved Selenium (Se)	ug/L	ND	2.0	9091302
Dissolved Silver (Ag)	ug/L	ND	0.090	9091302
Dissolved Sodium (Na)	ug/L	93000	100	9091302
Dissolved Vanadium (V)	ug/L	ND	0.50	9091302
Dissolved Zinc (Zn)	ug/L	ND	5.0	9091302

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3AR450
Report Date: 2023/12/07

WSP Canada Inc
Client Project #: 23594631
Site Location: Arnprior LF
Sampler Initials: CA

TEST SUMMARY

Bureau Veritas ID: XTM709
Sample ID: BR-22D
Matrix: Water

Collected: 2023/11/29
Shipped:
Received: 2023/11/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9087611	N/A	2023/12/03	Nachiketa Gohil
Chloride by Automated Colourimetry	SKAL	9087624	N/A	2023/12/04	Massarat Jan
Conductivity	AT	9087608	N/A	2023/12/03	Nachiketa Gohil
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9088525	N/A	2023/12/04	Gyulshen Idriz
Hardness (calculated as CaCO3)		9086964	N/A	2023/12/06	Automated Statchk
Mercury in Water by CVAA	CV/AA	9093633	2023/12/06	2023/12/07	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9091302	N/A	2023/12/05	Azita Fazaeli
Total Ammonia-N	LACH/NH4	9090191	N/A	2023/12/05	Viorica Rotaru
Orthophosphate	KONE	9087629	N/A	2023/12/04	Massarat Jan
Sulphate by Automated Turbidimetry	SKAL	9087631	N/A	2023/12/04	Massarat Jan
Total Dissolved Solids	BAL	9091192	2023/12/05	2023/12/06	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9094208	2023/12/06	2023/12/06	Muskan

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.7°C

Results relate only to the items tested.

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9087608	Conductivity	2023/12/03			101	85 - 115	ND, RDL=1.0	umho/cm	0.000025	10		
9087611	Alkalinity (Total as CaCO3)	2023/12/03			98	85 - 115	ND, RDL=1.0	mg/L	0.20	20		
9087624	Dissolved Chloride (Cl-)	2023/12/04	NC	80 - 120	97	80 - 120	ND, RDL=1.0	mg/L	0.56	20		
9087629	Orthophosphate (P)	2023/12/04	90	75 - 125	89	80 - 120	ND, RDL=0.010	mg/L	NC	20		
9087631	Dissolved Sulphate (SO4)	2023/12/04	NC	75 - 125	95	80 - 120	ND, RDL=1.0	mg/L	1.4	20		
9088525	Dissolved Organic Carbon	2023/12/04	101	80 - 120	96	80 - 120	ND, RDL=0.40	mg/L	0.93	20		
9090191	Total Ammonia-N	2023/12/05	100	75 - 125	103	80 - 120	ND, RDL=0.050	mg/L	NC	20		
9091192	Total Dissolved Solids	2023/12/06			100	80 - 120	ND, RDL=10	mg/L	1.3	20		
9091302	Dissolved Aluminum (Al)	2023/12/05	105	80 - 120	103	80 - 120	ND, RDL=4.9	ug/L	9.0	20		
9091302	Dissolved Barium (Ba)	2023/12/05	104	80 - 120	99	80 - 120	ND, RDL=2.0	ug/L	2.7	20		
9091302	Dissolved Beryllium (Be)	2023/12/05	100	80 - 120	98	80 - 120	ND, RDL=0.40	ug/L	NC	20		
9091302	Dissolved Boron (B)	2023/12/05	103	80 - 120	101	80 - 120	ND, RDL=10	ug/L	NC	20		
9091302	Dissolved Cadmium (Cd)	2023/12/05	101	80 - 120	97	80 - 120	ND, RDL=0.090	ug/L	NC	20		
9091302	Dissolved Calcium (Ca)	2023/12/05	105	80 - 120	105	80 - 120	ND, RDL=200	ug/L	0.75	20		
9091302	Dissolved Chromium (Cr)	2023/12/05	99	80 - 120	95	80 - 120	ND, RDL=5.0	ug/L	NC	20		
9091302	Dissolved Cobalt (Co)	2023/12/05	97	80 - 120	94	80 - 120	ND, RDL=0.50	ug/L	5.4	20		
9091302	Dissolved Iron (Fe)	2023/12/05	101	80 - 120	97	80 - 120	ND, RDL=100	ug/L	0.61	20		
9091302	Dissolved Lead (Pb)	2023/12/05	98	80 - 120	93	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9091302	Dissolved Magnesium (Mg)	2023/12/05	99	80 - 120	98	80 - 120	ND, RDL=50	ug/L	0.97	20		
9091302	Dissolved Manganese (Mn)	2023/12/05	97	80 - 120	94	80 - 120	ND, RDL=2.0	ug/L	0.57	20		
9091302	Dissolved Molybdenum (Mo)	2023/12/05	105	80 - 120	101	80 - 120	ND, RDL=0.50	ug/L	4.7	20		
9091302	Dissolved Nickel (Ni)	2023/12/05	97	80 - 120	94	80 - 120	ND, RDL=1.0	ug/L	9.7	20		
9091302	Dissolved Potassium (K)	2023/12/05	101	80 - 120	97	80 - 120	ND, RDL=200	ug/L	0.19	20		
9091302	Dissolved Selenium (Se)	2023/12/05	105	80 - 120	100	80 - 120	ND, RDL=2.0	ug/L	NC	20		
9091302	Dissolved Silver (Ag)	2023/12/05	100	80 - 120	97	80 - 120	ND, RDL=0.090	ug/L	NC	20		
9091302	Dissolved Sodium (Na)	2023/12/05	101	80 - 120	97	80 - 120	ND, RDL=100	ug/L	0.87	20		
9091302	Dissolved Vanadium (V)	2023/12/05	100	80 - 120	96	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9091302	Dissolved Zinc (Zn)	2023/12/05	96	80 - 120	93	80 - 120	ND, RDL=5.0	ug/L	2.6	20		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9093633	Mercury (Hg)	2023/12/07	110	75 - 125	114	80 - 120	ND, RDL=0.00010	mg/L	NC	20		
9094208	Total Phosphorus	2023/12/06	102	80 - 120	102	80 - 120	ND, RDL=0.004	mg/L	0.38	20	104	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

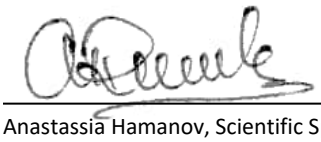
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

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Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

Bureau Veritas
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvna.com

Received in Ottav 30-Nov-23 11:43 Katherine Szozda

C3AR450

ASR ENV-2103

Bottle Order #: 963260

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:			
Company Name:	#28962 The Corporation of the Town of Arnprior	Company Name:	#17006 WSP Canada Inc	Quotation #:	B41189	COC #:	Project Manager:
Attention:	Invoices- Andria & Emily	Attention:	Hadia Aziz	P.O. #:		C#963260-02-01	Katherine Szozda
Address:	105 Elgin Street W Arnprior ON K7S 0A8	Address:	1931 Robertson Rd Ottawa ON K2H5B7	Project:	23594631		
Tel:	(613) 623-4231 Fax:	Tel:	(613) 592-9600 Fax:	Project Name:	Arnprior LF		
Email:	andria.caletti@wsp.com, emily.bacon@wsp.com	Email:	hadia.aziz@wsp.com	Site #:			
				Sampled By:	C. Albert		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
- ☐ Table 1 ☐ Res/Park ☐ Medium/Fine
- ☐ Table 2 ☐ Ind/Comm ☐ Coarse
- ☐ Table 3 ☐ Agri/Other ☐ For RSC
- ☐ Table ___

Other Regulations
- ☐ CCME ☐ Sanitary Sewer Bylaw
- ☐ Reg 558 ☐ Storm Sewer Bylaw
- ☐ MISA Municipality ____
- ☐ PWQO ☐ Reg 406 Table ____
- ☐ Other ____

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ____

ANALYSIS REQUESTED (PLEASE BE SPECIFIC):

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____
Rush Confirmation Number: ____ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	SUSPECTED HAZARDOUS (POTENTIAL)	# of Bottles	Comments
1		~~GW-23~~ BR-22D	Nov 29/23	17:15	GW	✓	X		
2		~~Dup6~~							
3									
4									
5									
6									
7									
8									
9									
10									

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only
C. Albert	23/11/30	11am	Samuel Durand	2023/11/30	11:24	1 Ice	Time Sensitive
			Ravneet RAVNEET KAUR BRAR	2023/12/01	08:52		Temperature (°C) on Rece: 4,5,2

Custody Seal Present: Yes ☐ No ☑ Intact

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-TERMS-AND-CONDITIONS.

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SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client

5|5|2

Bureau Veritas Canada (2019) Inc.

Your Project #: 23594631
Site Location: ARNPRIOR LF
Your C.O.C. #: 963260-01-01

Attention: Hadia Aziz

WSP Canada Inc
1931 Robertson Rd
Ottawa, ON
CANADA K2H5B7

Report Date: 2023/12/13
Report #: R7953335
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3AW415
Received: 2023/12/05, 11:59

Sample Matrix: Water
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity (1)	9	N/A	2023/12/08	CAM SOP-00448	SM 24 2320 B m
Biochemical Oxygen Demand (BOD) (1)	9	2023/12/07	2023/12/12	CAM SOP-00427	SM 24 5210B m
Chloride by Automated Colourimetry (1)	9	N/A	2023/12/12	CAM SOP-00463	SM 24 4500-Cl E m
Conductivity (1)	9	N/A	2023/12/08	CAM SOP-00414	SM 24 2510 m
Chromium 3+ by calculation (1)	9	2023/12/06	2023/12/11		
Chromium (VI) in Water (1)	9	N/A	2023/12/07	CAM SOP-00436	EPA 7199 m
Dissolved Organic Carbon (DOC) (1, 2)	9	N/A	2023/12/08	CAM SOP-00446	SM 24 5310 B m
Hardness (calculated as CaCO3) (1)	9	N/A	2023/12/07	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Mercury in Water by CVAA (1)	9	2023/12/11	2023/12/11	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS (1)	9	N/A	2023/12/07	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS (1)	9	2023/12/11	2023/12/12	CAM SOP-00447	EPA 6020B m
Total Ammonia-N (1)	9	N/A	2023/12/07	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (1, 3)	9	N/A	2023/12/08	CAM SOP-00440	SM 24 4500-NO3I/NO2B
Sulphate by Automated Turbidimetry (1)	9	N/A	2023/12/12	CAM SOP-00464	SM 24 4500-SO42- E m
Total Dissolved Solids (1)	8	2023/12/07	2023/12/08	CAM SOP-00428	SM 24 2540C m
Total Dissolved Solids (1)	1	2023/12/08	2023/12/09	CAM SOP-00428	SM 24 2540C m
Total Phosphorus (Colourimetric) (1)	5	2023/12/07	2023/12/08	CAM SOP-00407	SM 24 4500-P I
Total Phosphorus (Colourimetric) (1)	4	2023/12/08	2023/12/09	CAM SOP-00407	SM 24 4500-P I
Total Suspended Solids (1)	1	2023/12/07	2023/12/08	CAM SOP-00428	SM 24 2540D m
Total Suspended Solids (1)	8	2023/12/08	2023/12/11	CAM SOP-00428	SM 24 2540D m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCCFP, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or

Your Project #: 23594631
Site Location: ARNPRIOR LF
Your C.O.C. #: 963260-01-01

Attention: Hadia Aziz

WSP Canada Inc
1931 Robertson Rd
Ottawa, ON
CANADA K2H5B7

Report Date: 2023/12/13
Report #: R7953335
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3AW415
Received: 2023/12/05, 11:59

implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
(2) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(3) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633
==========
This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C3AW415
Report Date: 2023/12/13

WSP Canada Inc
Client Project #: 23594631
Site Location: ARNPRIOR LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XUQ227			XUQ227			XUQ228		
Sampling Date		2023/12/03 07:00			2023/12/03 07:00			2023/12/03 07:00		
COC Number		963260-01-01			963260-01-01			963260-01-01		
	UNITS	SW-11	RDL	QC Batch	SW-11 Lab-Dup	RDL	QC Batch	SW-12	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	340	1.0	9094302				350	1.0	9094302
Inorganics										
Total Ammonia-N	mg/L	0.25	0.050	9097426				ND	0.050	9097426
Total BOD	mg/L	ND	2	9096577	ND	2	9096577	ND	2	9096577
Conductivity	umho/cm	750	1.0	9098716				770	1.0	9098716
Total Dissolved Solids	mg/L	380	10	9097907				355	10	9097907
Dissolved Organic Carbon	mg/L	1.2	0.40	9098311				1.5	0.40	9098311
Total Phosphorus	mg/L	ND	0.004	9097977				0.004	0.004	9097977
Total Suspended Solids	mg/L	ND	10	9099521				ND	10	9099521
Dissolved Sulphate (SO4)	mg/L	21	1.0	9098718	21	1.0	9098718	21	1.0	9098718
Alkalinity (Total as CaCO3)	mg/L	320	1.0	9098713				320	1.0	9098713
Dissolved Chloride (Cl-)	mg/L	37	1.0	9098717	37	1.0	9098717	37	1.0	9098717
Nitrite (N)	mg/L	ND	0.010	9095978				ND	0.010	9095978
Nitrate (N)	mg/L	0.53	0.10	9095978				0.42	0.10	9095978
Nitrate + Nitrite (N)	mg/L	0.53	0.10	9095978				0.42	0.10	9095978

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3AW415
Report Date: 2023/12/13

WSP Canada Inc
Client Project #: 23594631
Site Location: ARNPRIOR LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XUQ228			XUQ229		XUQ230		
Sampling Date		2023/12/03 07:00			2023/12/03 07:00		2023/12/03 07:00		
COC Number		963260-01-01			963260-01-01		963260-01-01		
	UNITS	SW-12 Lab-Dup	RDL	QC Batch	SW-1	QC Batch	SW-2	RDL	QC Batch
Calculated Parameters									
Hardness (CaCO3)	mg/L				420	9094302	460	1.0	9094302
Inorganics									
Total Ammonia-N	mg/L				0.14	9097426	2.8	0.050	9097426
Total BOD	mg/L				ND	9096577	4	2	9096577
Conductivity	umho/cm	770	1.0	9098716	1100	9098716	1200	1.0	9098716
Total Dissolved Solids	mg/L				530	9097907	570	10	9097907
Dissolved Organic Carbon	mg/L				5.1	9098311	3.1	0.40	9098311
Total Phosphorus	mg/L				0.005	9097977	0.006	0.004	9097977
Total Suspended Solids	mg/L	ND	10	9099521	ND	9099845	10	10	9099521
Dissolved Sulphate (SO4)	mg/L				7.2	9098718	18	1.0	9098718
Alkalinity (Total as CaCO3)	mg/L	320	1.0	9098713	420	9098713	440	1.0	9098713
Dissolved Chloride (Cl-)	mg/L				91	9098717	100	1.0	9098717
Nitrite (N)	mg/L				ND	9098686	0.097	0.010	9095978
Nitrate (N)	mg/L				ND	9098686	2.37	0.10	9095978
Nitrate + Nitrite (N)	mg/L				ND	9098686	2.46	0.10	9095978

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3AW415
Report Date: 2023/12/13

WSP Canada Inc
Client Project #: 23594631
Site Location: ARNPRIOR LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XUQ231			XUQ231			XUQ232		
Sampling Date		2023/12/03 07:00			2023/12/03 07:00			2023/12/03 07:00		
COC Number		963260-01-01			963260-01-01			963260-01-01		
	UNITS	SW-21	RDL	QC Batch	SW-21 Lab-Dup	RDL	QC Batch	SW-260	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	420	1.0	9094302				25	1.0	9094302
Inorganics										
Total Ammonia-N	mg/L	0.39	0.050	9097426	0.37	0.050	9097426	0.24	0.050	9097426
Total BOD	mg/L	ND	2	9096577				ND	2	9096577
Conductivity	umho/cm	1100	1.0	9098716				65	1.0	9098716
Total Dissolved Solids	mg/L	615	10	9099835				55	10	9097907
Dissolved Organic Carbon	mg/L	3.9	0.40	9098311	3.5	0.40	9098311	7.8	0.40	9098311
Total Phosphorus	mg/L	0.015	0.004	9099549				0.009	0.004	9097977
Total Suspended Solids	mg/L	ND	10	9098359				ND	10	9099845
Dissolved Sulphate (SO4)	mg/L	9.3	1.0	9098718				3.9	1.0	9098718
Alkalinity (Total as CaCO3)	mg/L	410	1.0	9098713				25	1.0	9098713
Dissolved Chloride (Cl-)	mg/L	93	1.0	9098717				2.0	1.0	9098717
Nitrite (N)	mg/L	ND	0.010	9095978				ND	0.010	9095978
Nitrate (N)	mg/L	ND	0.10	9095978				0.17	0.10	9095978
Nitrate + Nitrite (N)	mg/L	ND	0.10	9095978				0.17	0.10	9095978

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3AW415
Report Date: 2023/12/13

WSP Canada Inc
Client Project #: 23594631
Site Location: ARNPRIOR LF
Sampler Initials: CA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		XUQ233	XUQ234	XUQ235		
Sampling Date		2023/12/03 07:00	2023/12/03 07:00	2023/12/03 07:00		
COC Number		963260-01-01	963260-01-01	963260-01-01		
	UNITS	**SW-26**	**SW-18**	**SW-19**	**RDL**	**QC Batch**
Calculated Parameters						
Hardness (CaCO3)	mg/L	25	48	410	1.0	9094302
Inorganics						
Total Ammonia-N	mg/L	0.46	3.0	0.43	0.050	9097426
Total BOD	mg/L	ND	ND	ND	2	9096577
Conductivity	umho/cm	64	140	1100	1.0	9098716
Total Dissolved Solids	mg/L	55	85	495	10	9097907
Dissolved Organic Carbon	mg/L	7.4	7.1	5.4	0.40	9098311
Total Phosphorus	mg/L	0.008	0.007	0.005	0.004	9099549
Total Suspended Solids	mg/L	ND	ND	ND	10	9099521
Dissolved Sulphate (SO4)	mg/L	4.4	4.0	6.1	1.0	9098718
Alkalinity (Total as CaCO3)	mg/L	25	54	400	1.0	9098713
Dissolved Chloride (Cl-)	mg/L	1.8	8.0	91	1.0	9098717
Nitrite (N)	mg/L	ND	ND	ND	0.010	9098686
Nitrate (N)	mg/L	0.18	0.16	ND	0.10	9098686
Nitrate + Nitrite (N)	mg/L	0.18	0.16	ND	0.10	9098686

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas Job #: C3AW415
Report Date: 2023/12/13

WSP Canada Inc
Client Project #: 23594631
Site Location: ARNPRIOR LF
Sampler Initials: CA

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XUQ227			XUQ227			XUQ228	XUQ229		
Sampling Date		2023/12/03 07:00			2023/12/03 07:00			2023/12/03 07:00	2023/12/03 07:00		
COC Number		963260-01-01			963260-01-01			963260-01-01	963260-01-01		
	UNITS	SW-11	RDL	QC Batch	SW-11 Lab-Dup	RDL	QC Batch	SW-12	SW-1	RDL	QC Batch
Calculated Parameters											
Chromium (+3)	ug/L	ND	5	9094915				ND	ND	5	9094915
Metals											
Chromium (VI)	ug/L	ND	0.50	9096478	ND	0.50	9096478	ND	ND	0.50	9096478
Dissolved Mercury (Hg)	ug/L	ND	0.10	9103475				ND	ND	0.10	9103475
Dissolved Aluminum (Al)	ug/L	ND	4.9	9096389				ND	ND	4.9	9096389
Total Aluminum (Al)	ug/L	28	4.9	9103934				16	8.4	4.9	9103934
Total Barium (Ba)	ug/L	97	2.0	9103934				130	150	2.0	9103934
Total Beryllium (Be)	ug/L	ND	0.40	9103934				ND	ND	0.40	9103934
Total Boron (B)	ug/L	29	10	9103934				47	150	10	9103934
Total Cadmium (Cd)	ug/L	ND	0.090	9103934				ND	ND	0.090	9103934
Dissolved Calcium (Ca)	ug/L	95000	200	9096389				97000	120000	200	9096389
Total Calcium (Ca)	ug/L	98000	200	9103934				130000	130000	200	9103934
Dissolved Chromium (Cr)	ug/L	ND	5.0	9096389				ND	ND	5.0	9096389
Total Chromium (Cr)	ug/L	ND	5.0	9103934				ND	ND	5.0	9103934
Total Cobalt (Co)	ug/L	ND	0.50	9103934				ND	ND	0.50	9103934
Dissolved Iron (Fe)	ug/L	ND	100	9096389				ND	300	100	9096389
Total Iron (Fe)	ug/L	150	100	9103934				100	340	100	9103934
Total Lead (Pb)	ug/L	ND	0.50	9103934				ND	ND	0.50	9103934
Dissolved Magnesium (Mg)	ug/L	26000	50	9096389				27000	31000	50	9096389
Total Magnesium (Mg)	ug/L	25000	50	9103934				34000	33000	50	9103934
Total Manganese (Mn)	ug/L	31	2.0	9103934				60	270	2.0	9103934
Total Molybdenum (Mo)	ug/L	0.75	0.50	9103934				1.2	ND	0.50	9103934
Total Nickel (Ni)	ug/L	ND	1.0	9103934				1.2	1.5	1.0	9103934
Total Potassium (K)	ug/L	4000	200	9103934				4800	6900	200	9103934
Total Selenium (Se)	ug/L	ND	2.0	9103934				ND	ND	2.0	9103934
Total Silver (Ag)	ug/L	ND	0.090	9103934				ND	ND	0.090	9103934
Total Sodium (Na)	ug/L	26000	100	9103934				33000	68000	100	9103934
Total Vanadium (V)	ug/L	ND	0.50	9103934				0.60	ND	0.50	9103934
Total Zinc (Zn)	ug/L	ND	5.0	9103934				ND	ND	5.0	9103934

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XUQ230	XUQ231	XUQ232	XUQ233	XUQ234		
Sampling Date		2023/12/03 07:00	2023/12/03 07:00	2023/12/03 07:00	2023/12/03 07:00	2023/12/03 07:00		
COC Number		963260-01-01	963260-01-01	963260-01-01	963260-01-01	963260-01-01		
	UNITS	**SW-2**	**SW-21**	**SW-260**	**SW-26**	**SW-18**	**RDL**	**QC Batch**
Calculated Parameters								
Chromium (+3)	ug/L	ND	ND	ND	ND	ND	5	9094915
Metals								
Chromium (VI)	ug/L	ND	ND	ND	ND	ND	0.50	9096478
Dissolved Mercury (Hg)	ug/L	ND	ND	ND	ND	ND	0.10	9103475
Dissolved Aluminum (Al)	ug/L	ND	ND	85	100	83	4.9	9096389
Total Aluminum (Al)	ug/L	7.5	23	220	230	170	4.9	9103934
Total Barium (Ba)	ug/L	190	140	12	13	19	2.0	9103934
Total Beryllium (Be)	ug/L	ND	ND	ND	ND	ND	0.40	9103934
Total Boron (B)	ug/L	99	100	ND	ND	17	10	9103934
Total Cadmium (Cd)	ug/L	ND	ND	ND	ND	ND	0.090	9103934
Dissolved Calcium (Ca)	ug/L	130000	120000	7100	6900	13000	200	9096389
Total Calcium (Ca)	ug/L	140000	120000	7400	7800	15000	200	9103934
Dissolved Chromium (Cr)	ug/L	ND	ND	ND	ND	ND	5.0	9096389
Total Chromium (Cr)	ug/L	ND	ND	ND	ND	ND	5.0	9103934
Total Cobalt (Co)	ug/L	ND	ND	ND	ND	ND	0.50	9103934
Dissolved Iron (Fe)	ug/L	ND	320	150	160	140	100	9096389
Total Iron (Fe)	ug/L	390	360	310	330	260	100	9103934
Total Lead (Pb)	ug/L	7.7	ND	ND	ND	ND	0.50	9103934
Dissolved Magnesium (Mg)	ug/L	33000	30000	1800	1700	3400	50	9096389
Total Magnesium (Mg)	ug/L	33000	30000	1800	1900	3600	50	9103934
Total Manganese (Mn)	ug/L	140	120	9.8	10	19	2.0	9103934
Total Molybdenum (Mo)	ug/L	ND	ND	ND	ND	ND	0.50	9103934
Total Nickel (Ni)	ug/L	1.6	1.2	ND	1.1	1.1	1.0	9103934
Total Potassium (K)	ug/L	10000	6500	650	660	1000	200	9103934
Total Selenium (Se)	ug/L	ND	ND	ND	ND	ND	2.0	9103934
Total Silver (Ag)	ug/L	ND	ND	ND	ND	ND	0.090	9103934
Total Sodium (Na)	ug/L	75000	66000	2500	2500	6400	100	9103934
Total Vanadium (V)	ug/L	ND	ND	0.68	0.66	0.59	0.50	9103934
Total Zinc (Zn)	ug/L	ND	ND	ND	7.9	ND	5.0	9103934

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		XUQ234			XUQ235		
Sampling Date		2023/12/03 07:00			2023/12/03 07:00		
COC Number		963260-01-01			963260-01-01		
	UNITS	SW-18 Lab-Dup	RDL	QC Batch	SW-19	RDL	QC Batch
Calculated Parameters							
Chromium (+3)	ug/L				ND	5	9094915
Metals							
Chromium (VI)	ug/L				ND	0.50	9096478
Dissolved Mercury (Hg)	ug/L	ND	0.10	9103475	ND	0.10	9103475
Dissolved Aluminum (Al)	ug/L				ND	4.9	9096389
Total Aluminum (Al)	ug/L				ND	4.9	9103934
Total Barium (Ba)	ug/L				130	2.0	9103934
Total Beryllium (Be)	ug/L				ND	0.40	9103934
Total Boron (B)	ug/L				150	10	9103934
Total Cadmium (Cd)	ug/L				ND	0.090	9103934
Dissolved Calcium (Ca)	ug/L				110000	200	9096389
Total Calcium (Ca)	ug/L				120000	200	9103934
Dissolved Chromium (Cr)	ug/L				ND	5.0	9096389
Total Chromium (Cr)	ug/L				ND	5.0	9103934
Total Cobalt (Co)	ug/L				ND	0.50	9103934
Dissolved Iron (Fe)	ug/L				ND	100	9096389
Total Iron (Fe)	ug/L				110	100	9103934
Total Lead (Pb)	ug/L				ND	0.50	9103934
Dissolved Magnesium (Mg)	ug/L				32000	50	9096389
Total Magnesium (Mg)	ug/L				33000	50	9103934
Total Manganese (Mn)	ug/L				64	2.0	9103934
Total Molybdenum (Mo)	ug/L				ND	0.50	9103934
Total Nickel (Ni)	ug/L				2.0	1.0	9103934
Total Potassium (K)	ug/L				6600	200	9103934
Total Selenium (Se)	ug/L				ND	2.0	9103934
Total Silver (Ag)	ug/L				ND	0.090	9103934
Total Sodium (Na)	ug/L				66000	100	9103934
Total Vanadium (V)	ug/L				ND	0.50	9103934
Total Zinc (Zn)	ug/L				7.2	5.0	9103934

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

TEST SUMMARY

Bureau Veritas ID: XUQ227
Sample ID: SW-11
Matrix: Water

Collected: 2023/12/03
Shipped:
Received: 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9098713	N/A	2023/12/08	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	9096577	2023/12/07	2023/12/12	Gurjot Kaur
Chloride by Automated Colourimetry	SKAL	9098717	N/A	2023/12/12	Massarat Jan
Conductivity	AT	9098716	N/A	2023/12/08	Nachiketa Gohil
Chromium 3+ by calculation		9094915	2023/12/11	2023/12/11	Automated Statchk
Chromium (VI) in Water	IC	9096478	N/A	2023/12/07	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9098311	N/A	2023/12/08	Gyulshen Idriz
Hardness (calculated as CaCO3)		9094302	N/A	2023/12/07	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	9103475	2023/12/11	2023/12/11	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9096389	N/A	2023/12/07	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	9103934	2023/12/11	2023/12/12	Nan Raykha
Total Ammonia-N	LACH/NH4	9097426	N/A	2023/12/07	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9095978	N/A	2023/12/08	Chandra Nandlal
Sulphate by Automated Turbidimetry	SKAL	9098718	N/A	2023/12/12	Massarat Jan
Total Dissolved Solids	BAL	9097907	2023/12/07	2023/12/08	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9097977	2023/12/07	2023/12/08	Muskan
Total Suspended Solids	BAL	9099521	2023/12/08	2023/12/11	Razieh Tabesh

Bureau Veritas ID: XUQ227 Dup
Sample ID: SW-11
Matrix: Water

Collected: 2023/12/03
Shipped:
Received: 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand (BOD)	DO	9096577	2023/12/07	2023/12/12	Gurjot Kaur
Chloride by Automated Colourimetry	SKAL	9098717	N/A	2023/12/12	Massarat Jan
Chromium (VI) in Water	IC	9096478	N/A	2023/12/07	Theodora Luck
Sulphate by Automated Turbidimetry	SKAL	9098718	N/A	2023/12/12	Massarat Jan

Bureau Veritas ID: XUQ228
Sample ID: SW-12
Matrix: Water

Collected: 2023/12/03
Shipped:
Received: 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9098713	N/A	2023/12/08	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	9096577	2023/12/07	2023/12/12	Gurjot Kaur
Chloride by Automated Colourimetry	SKAL	9098717	N/A	2023/12/12	Massarat Jan
Conductivity	AT	9098716	N/A	2023/12/08	Nachiketa Gohil
Chromium 3+ by calculation		9094915	2023/12/11	2023/12/11	Automated Statchk
Chromium (VI) in Water	IC	9096478	N/A	2023/12/07	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9098311	N/A	2023/12/08	Gyulshen Idriz
Hardness (calculated as CaCO3)		9094302	N/A	2023/12/07	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	9103475	2023/12/11	2023/12/11	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9096389	N/A	2023/12/07	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	9103934	2023/12/11	2023/12/12	Nan Raykha
Total Ammonia-N	LACH/NH4	9097426	N/A	2023/12/07	Shivani Shivani

TEST SUMMARY

Bureau Veritas ID: XUQ228 **Collected:** 2023/12/03
Sample ID: SW-12 **Shipped:**
Matrix: Water **Received:** 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate & Nitrite as Nitrogen in Water	LACH	9095978	N/A	2023/12/08	Chandra Nandlal
Sulphate by Automated Turbidimetry	SKAL	9098718	N/A	2023/12/12	Massarat Jan
Total Dissolved Solids	BAL	9097907	2023/12/07	2023/12/08	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9097977	2023/12/07	2023/12/08	Muskan
Total Suspended Solids	BAL	9099521	2023/12/08	2023/12/11	Razieh Tabesh

Bureau Veritas ID: XUQ228 Dup **Collected:** 2023/12/03
Sample ID: SW-12 **Shipped:**
Matrix: Water **Received:** 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9098713	N/A	2023/12/08	Nachiketa Gohil
Conductivity	AT	9098716	N/A	2023/12/08	Nachiketa Gohil
Total Suspended Solids	BAL	9099521	2023/12/08	2023/12/11	Razieh Tabesh

Bureau Veritas ID: XUQ229 **Collected:** 2023/12/03
Sample ID: SW-1 **Shipped:**
Matrix: Water **Received:** 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9098713	N/A	2023/12/08	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	9096577	2023/12/07	2023/12/12	Gurjot Kaur
Chloride by Automated Colourimetry	SKAL	9098717	N/A	2023/12/12	Massarat Jan
Conductivity	AT	9098716	N/A	2023/12/08	Nachiketa Gohil
Chromium 3+ by calculation		9094915	2023/12/11	2023/12/11	Automated Statchk
Chromium (VI) in Water	IC	9096478	N/A	2023/12/07	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9098311	N/A	2023/12/08	Gyulshen Idriz
Hardness (calculated as CaCO3)		9094302	N/A	2023/12/07	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	9103475	2023/12/11	2023/12/11	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9096389	N/A	2023/12/07	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	9103934	2023/12/11	2023/12/12	Nan Raykha
Total Ammonia-N	LACH/NH4	9097426	N/A	2023/12/07	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9098686	N/A	2023/12/08	Chandra Nandlal
Sulphate by Automated Turbidimetry	SKAL	9098718	N/A	2023/12/12	Massarat Jan
Total Dissolved Solids	BAL	9097907	2023/12/07	2023/12/08	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9097977	2023/12/07	2023/12/08	Muskan
Total Suspended Solids	BAL	9099845	2023/12/08	2023/12/11	Razieh Tabesh

Bureau Veritas ID: XUQ230 **Collected:** 2023/12/03
Sample ID: SW-2 **Shipped:**
Matrix: Water **Received:** 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9098713	N/A	2023/12/08	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	9096577	2023/12/07	2023/12/12	Gurjot Kaur

TEST SUMMARY

Bureau Veritas ID: XUQ230
Sample ID: SW-2
Matrix: Water

Collected: 2023/12/03
Shipped:
Received: 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	SKAL	9098717	N/A	2023/12/12	Massarat Jan
Conductivity	AT	9098716	N/A	2023/12/08	Nachiketa Gohil
Chromium 3+ by calculation		9094915	2023/12/11	2023/12/11	Automated Statchk
Chromium (VI) in Water	IC	9096478	N/A	2023/12/07	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9098311	N/A	2023/12/08	Gyulshen Idriz
Hardness (calculated as CaCO3)		9094302	N/A	2023/12/07	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	9103475	2023/12/11	2023/12/11	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9096389	N/A	2023/12/07	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	9103934	2023/12/11	2023/12/12	Nan Raykha
Total Ammonia-N	LACH/NH4	9097426	N/A	2023/12/07	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9095978	N/A	2023/12/08	Chandra Nandlal
Sulphate by Automated Turbidimetry	SKAL	9098718	N/A	2023/12/12	Massarat Jan
Total Dissolved Solids	BAL	9097907	2023/12/07	2023/12/08	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9097977	2023/12/07	2023/12/08	Muskan
Total Suspended Solids	BAL	9099521	2023/12/08	2023/12/11	Razieh Tabesh

Bureau Veritas ID: XUQ231
Sample ID: SW-21
Matrix: Water

Collected: 2023/12/03
Shipped:
Received: 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9098713	N/A	2023/12/08	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	9096577	2023/12/07	2023/12/12	Gurjot Kaur
Chloride by Automated Colourimetry	SKAL	9098717	N/A	2023/12/12	Massarat Jan
Conductivity	AT	9098716	N/A	2023/12/08	Nachiketa Gohil
Chromium 3+ by calculation		9094915	2023/12/11	2023/12/11	Automated Statchk
Chromium (VI) in Water	IC	9096478	N/A	2023/12/07	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9098311	N/A	2023/12/08	Gyulshen Idriz
Hardness (calculated as CaCO3)		9094302	N/A	2023/12/07	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	9103475	2023/12/11	2023/12/11	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9096389	N/A	2023/12/07	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	9103934	2023/12/11	2023/12/12	Nan Raykha
Total Ammonia-N	LACH/NH4	9097426	N/A	2023/12/07	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9095978	N/A	2023/12/08	Chandra Nandlal
Sulphate by Automated Turbidimetry	SKAL	9098718	N/A	2023/12/12	Massarat Jan
Total Dissolved Solids	BAL	9099835	2023/12/08	2023/12/09	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9099549	2023/12/08	2023/12/09	Muskan
Total Suspended Solids	BAL	9098359	2023/12/07	2023/12/08	Razieh Tabesh

Bureau Veritas ID: XUQ231 Dup
Sample ID: SW-21
Matrix: Water

Collected: 2023/12/03
Shipped:
Received: 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9098311	N/A	2023/12/08	Gyulshen Idriz

TEST SUMMARY

Bureau Veritas ID: XUQ231 Dup
Sample ID: SW-21
Matrix: Water

Collected: 2023/12/03
Shipped:
Received: 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	9097426	N/A	2023/12/07	Shivani Shivani

Bureau Veritas ID: XUQ232
Sample ID: SW-260
Matrix: Water

Collected: 2023/12/03
Shipped:
Received: 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9098713	N/A	2023/12/08	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	9096577	2023/12/07	2023/12/12	Gurjot Kaur
Chloride by Automated Colourimetry	SKAL	9098717	N/A	2023/12/12	Massarat Jan
Conductivity	AT	9098716	N/A	2023/12/08	Nachiketa Gohil
Chromium 3+ by calculation		9094915	2023/12/11	2023/12/11	Automated Statchk
Chromium (VI) in Water	IC	9096478	N/A	2023/12/07	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9098311	N/A	2023/12/08	Gyulshen Idriz
Hardness (calculated as CaCO3)		9094302	N/A	2023/12/07	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	9103475	2023/12/11	2023/12/11	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9096389	N/A	2023/12/07	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	9103934	2023/12/11	2023/12/12	Nan Raykha
Total Ammonia-N	LACH/NH4	9097426	N/A	2023/12/07	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9095978	N/A	2023/12/08	Chandra Nandlal
Sulphate by Automated Turbidimetry	SKAL	9098718	N/A	2023/12/12	Massarat Jan
Total Dissolved Solids	BAL	9097907	2023/12/07	2023/12/08	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9097977	2023/12/07	2023/12/08	Muskan
Total Suspended Solids	BAL	9099845	2023/12/08	2023/12/11	Razieh Tabesh

Bureau Veritas ID: XUQ233
Sample ID: SW-26
Matrix: Water

Collected: 2023/12/03
Shipped:
Received: 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9098713	N/A	2023/12/08	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	9096577	2023/12/07	2023/12/12	Gurjot Kaur
Chloride by Automated Colourimetry	SKAL	9098717	N/A	2023/12/12	Massarat Jan
Conductivity	AT	9098716	N/A	2023/12/08	Nachiketa Gohil
Chromium 3+ by calculation		9094915	2023/12/11	2023/12/11	Automated Statchk
Chromium (VI) in Water	IC	9096478	N/A	2023/12/07	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9098311	N/A	2023/12/08	Gyulshen Idriz
Hardness (calculated as CaCO3)		9094302	N/A	2023/12/07	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	9103475	2023/12/11	2023/12/11	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9096389	N/A	2023/12/07	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	9103934	2023/12/11	2023/12/12	Nan Raykha
Total Ammonia-N	LACH/NH4	9097426	N/A	2023/12/07	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9098686	N/A	2023/12/08	Chandra Nandlal
Sulphate by Automated Turbidimetry	SKAL	9098718	N/A	2023/12/12	Massarat Jan
Total Dissolved Solids	BAL	9097907	2023/12/07	2023/12/08	Darshan Patel

TEST SUMMARY

Bureau Veritas ID: XUQ233 **Collected:** 2023/12/03
Sample ID: SW-26 **Shipped:**
Matrix: Water **Received:** 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus (Colourimetric)	SKAL/P	9099549	2023/12/08	2023/12/09	Muskan
Total Suspended Solids	BAL	9099521	2023/12/08	2023/12/11	Razieh Tabesh

Bureau Veritas ID: XUQ234 **Collected:** 2023/12/03
Sample ID: SW-18 **Shipped:**
Matrix: Water **Received:** 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9098713	N/A	2023/12/08	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	9096577	2023/12/07	2023/12/12	Gurjot Kaur
Chloride by Automated Colourimetry	SKAL	9098717	N/A	2023/12/12	Massarat Jan
Conductivity	AT	9098716	N/A	2023/12/08	Nachiketa Gohil
Chromium 3+ by calculation		9094915	2023/12/11	2023/12/11	Automated Statchk
Chromium (VI) in Water	IC	9096478	N/A	2023/12/07	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9098311	N/A	2023/12/08	Gyulshen Idriz
Hardness (calculated as CaCO3)		9094302	N/A	2023/12/07	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	9103475	2023/12/11	2023/12/11	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9096389	N/A	2023/12/07	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	9103934	2023/12/11	2023/12/12	Nan Raykha
Total Ammonia-N	LACH/NH4	9097426	N/A	2023/12/07	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9098686	N/A	2023/12/08	Chandra Nandlal
Sulphate by Automated Turbidimetry	SKAL	9098718	N/A	2023/12/12	Massarat Jan
Total Dissolved Solids	BAL	9097907	2023/12/07	2023/12/08	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9099549	2023/12/08	2023/12/09	Muskan
Total Suspended Solids	BAL	9099521	2023/12/08	2023/12/11	Razieh Tabesh

Bureau Veritas ID: XUQ234 Dup **Collected:** 2023/12/03
Sample ID: SW-18 **Shipped:**
Matrix: Water **Received:** 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Mercury in Water by CVAA	CV/AA	9103475	2023/12/11	2023/12/11	Japneet Gill

Bureau Veritas ID: XUQ235 **Collected:** 2023/12/03
Sample ID: SW-19 **Shipped:**
Matrix: Water **Received:** 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	9098713	N/A	2023/12/08	Nachiketa Gohil
Biochemical Oxygen Demand (BOD)	DO	9096577	2023/12/07	2023/12/12	Gurjot Kaur
Chloride by Automated Colourimetry	SKAL	9098717	N/A	2023/12/12	Massarat Jan
Conductivity	AT	9098716	N/A	2023/12/08	Nachiketa Gohil
Chromium 3+ by calculation		9094915	2023/12/11	2023/12/11	Automated Statchk
Chromium (VI) in Water	IC	9096478	N/A	2023/12/07	Theodora Luck
Dissolved Organic Carbon (DOC)	TOCV/NDIR	9098311	N/A	2023/12/08	Gyulshen Idriz

Bureau Veritas Job #: C3AW415
Report Date: 2023/12/13

WSP Canada Inc
Client Project #: 23594631
Site Location: ARNPRIOR LF
Sampler Initials: CA

TEST SUMMARY

Bureau Veritas ID: XUQ235
Sample ID: SW-19
Matrix: Water

Collected: 2023/12/03
Shipped:
Received: 2023/12/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness (calculated as CaCO3)		9094302	N/A	2023/12/07	Automated Statchk
Dissolved Mercury in Water by CVAA	CV/AA	9103475	2023/12/11	2023/12/11	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	9096389	N/A	2023/12/07	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	9103934	2023/12/11	2023/12/12	Nan Raykha
Total Ammonia-N	LACH/NH4	9097426	N/A	2023/12/07	Shivani Shivani
Nitrate & Nitrite as Nitrogen in Water	LACH	9098686	N/A	2023/12/08	Chandra Nandlal
Sulphate by Automated Turbidimetry	SKAL	9098718	N/A	2023/12/12	Massarat Jan
Total Dissolved Solids	BAL	9097907	2023/12/07	2023/12/08	Darshan Patel
Total Phosphorus (Colourimetric)	SKAL/P	9099549	2023/12/08	2023/12/09	Muskan
Total Suspended Solids	BAL	9099521	2023/12/08	2023/12/11	Razieh Tabesh

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	0.7°C
Package 2	0.3°C

Results relate only to the items tested.

Bureau Veritas 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvna.com

Bureau Veritas Job #: C3AW415
Report Date: 2023/12/13

QUALITY ASSURANCE REPORT

WSP Canada Inc
Client Project #: 23594631
Site Location: ARNPRIOR LF
Sampler Initials: CA

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9095978	Nitrate (N)	2023/12/08	98	80 - 120	102	80 - 120	ND, RDL=0.10	mg/L	NC	20		
9095978	Nitrite (N)	2023/12/08	105	80 - 120	107	80 - 120	ND, RDL=0.010	mg/L	NC	20		
9096389	Dissolved Aluminum (Al)	2023/12/07	101	80 - 120	99	80 - 120	ND, RDL=4.9	ug/L				
9096389	Dissolved Calcium (Ca)	2023/12/07	NC	80 - 120	100	80 - 120	ND, RDL=200	ug/L				
9096389	Dissolved Chromium (Cr)	2023/12/07	91	80 - 120	95	80 - 120	ND, RDL=5.0	ug/L	NC	20		
9096389	Dissolved Iron (Fe)	2023/12/07	NC	80 - 120	99	80 - 120	ND, RDL=100	ug/L				
9096389	Dissolved Magnesium (Mg)	2023/12/07	93	80 - 120	98	80 - 120	ND, RDL=50	ug/L				
9096478	Chromium (VI)	2023/12/07	99	80 - 120	101	80 - 120	ND, RDL=0.50	ug/L	NC	20		
9096577	Total BOD	2023/12/12					ND,RDL=2	mg/L	NC	30	94	80 - 120
9097426	Total Ammonia-N	2023/12/07	100	75 - 125	99	80 - 120	ND, RDL=0.050	mg/L	3.1	20		
9097907	Total Dissolved Solids	2023/12/08			100	80 - 120	ND, RDL=10	mg/L	4.1	20		
9097977	Total Phosphorus	2023/12/08	105	80 - 120	103	80 - 120	ND, RDL=0.004	mg/L	0.32	20	108	80 - 120
9098311	Dissolved Organic Carbon	2023/12/08	94	80 - 120	96	80 - 120	ND, RDL=0.40	mg/L	9.2	20		
9098359	Total Suspended Solids	2023/12/08			96	80 - 120	ND, RDL=10	mg/L	NC	20		
9098686	Nitrate (N)	2023/12/08	101	80 - 120	102	80 - 120	ND, RDL=0.10	mg/L	NC	20		
9098686	Nitrite (N)	2023/12/08	108	80 - 120	107	80 - 120	ND, RDL=0.010	mg/L	NC	20		
9098713	Alkalinity (Total as CaCO3)	2023/12/08			100	85 - 115	ND, RDL=1.0	mg/L	0.097	20		
9098716	Conductivity	2023/12/08			102	85 - 115	ND, RDL=1.0	umho/cm	0	10		
9098717	Dissolved Chloride (Cl-)	2023/12/12	NC	80 - 120	100	80 - 120	ND, RDL=1.0	mg/L	0.32	20		
9098718	Dissolved Sulphate (SO4)	2023/12/12	NC	75 - 125	101	80 - 120	ND, RDL=1.0	mg/L	0	20		
9099521	Total Suspended Solids	2023/12/11			99	80 - 120	ND, RDL=10	mg/L	NC	20		
9099549	Total Phosphorus	2023/12/09	100	80 - 120	101	80 - 120	ND, RDL=0.004	mg/L	0.92	20	102	80 - 120
9099835	Total Dissolved Solids	2023/12/09			97	80 - 120	ND, RDL=10	mg/L	0	20		
9099845	Total Suspended Solids	2023/12/11			97	80 - 120	ND, RDL=10	mg/L	9.5	20		
9103475	Dissolved Mercury (Hg)	2023/12/11	106	75 - 125	104	80 - 120	ND, RDL=0.10	ug/L	NC	20		
9103934	Total Aluminum (Al)	2023/12/12	102	80 - 120	97	80 - 120	ND, RDL=4.9	ug/L	2.5	20		
9103934	Total Barium (Ba)	2023/12/12	99	80 - 120	97	80 - 120	ND, RDL=2.0	ug/L				

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9103934	Total Beryllium (Be)	2023/12/12	104	80 - 120	97	80 - 120	ND, RDL=0.40	ug/L				
9103934	Total Boron (B)	2023/12/12	101	80 - 120	95	80 - 120	ND, RDL=10	ug/L				
9103934	Total Cadmium (Cd)	2023/12/12	102	80 - 120	101	80 - 120	ND, RDL=0.090	ug/L	NC	20		
9103934	Total Calcium (Ca)	2023/12/12	NC	80 - 120	98	80 - 120	ND, RDL=200	ug/L	2.5	20		
9103934	Total Chromium (Cr)	2023/12/12	98	80 - 120	97	80 - 120	ND, RDL=5.0	ug/L				
9103934	Total Cobalt (Co)	2023/12/12	98	80 - 120	99	80 - 120	ND, RDL=0.50	ug/L				
9103934	Total Iron (Fe)	2023/12/12	100	80 - 120	98	80 - 120	ND, RDL=100	ug/L	NC	20		
9103934	Total Lead (Pb)	2023/12/12	100	80 - 120	98	80 - 120	ND, RDL=0.50	ug/L				
9103934	Total Magnesium (Mg)	2023/12/12	98	80 - 120	95	80 - 120	ND, RDL=50	ug/L	4.8	20		
9103934	Total Manganese (Mn)	2023/12/12	98	80 - 120	97	80 - 120	ND, RDL=2.0	ug/L				
9103934	Total Molybdenum (Mo)	2023/12/12	110	80 - 120	106	80 - 120	ND, RDL=0.50	ug/L				
9103934	Total Nickel (Ni)	2023/12/12	95	80 - 120	95	80 - 120	ND, RDL=1.0	ug/L	NC	20		
9103934	Total Potassium (K)	2023/12/12	102	80 - 120	101	80 - 120	ND, RDL=200	ug/L				
9103934	Total Selenium (Se)	2023/12/12	105	80 - 120	101	80 - 120	ND, RDL=2.0	ug/L				
9103934	Total Silver (Ag)	2023/12/12	102	80 - 120	100	80 - 120	ND, RDL=0.090	ug/L				
9103934	Total Sodium (Na)	2023/12/12	NC	80 - 120	93	80 - 120	ND, RDL=100	ug/L	3.9	20		
9103934	Total Vanadium (V)	2023/12/12	100	80 - 120	96	80 - 120	ND, RDL=0.50	ug/L				
9103934	Total Zinc (Zn)	2023/12/12	100	80 - 120	100	80 - 120	ND, RDL=5.0	ug/L				

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

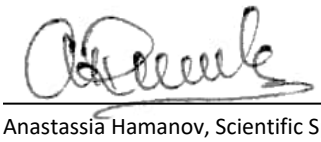
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel: (905) 817-5700 Toll free 800-563-5266 Fax: (905) 817-5777 www.bvna.com

IMMEDIATE

Received in Ottawa

BOD CHAIN OF CUSTO

IIONT-2023-12-159

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:			
Company Name:	#28962 The Corporation of the Town of Arnprior	Company Name:	#17006 WSP Canada Inc	Quotation #:	B41189	Bo	
Attention:	Invoices- Andria & Emily	Attention:	Hadia Aziz	P.O. #:			
Address:	105 Elgin Street W Arnprior ON K7S 0A8	Address:	1931 Robertson Rd Ottawa ON K2H5B7	Project:	23594631	COC #:	Project Manager:
Tel:	(613) 623-4231 Fax:	Tel:	(613) 592-9600 Fax:	Project Name:	Arnprior LF	C#063260-01-01	Katherine Szozda
Email:	andria.caletti@wsp.com, emily.bacon@wsp.com	Email:	hadia.aziz@wsp.com	Site #:			
				Sampled By:	C. Albert		

FOR REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Reg 406 Table ___ ☐ Other ___	

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Field Filtered (please circle): (Metals / Hg / Cr VI)

SUSPECT WATER

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: ☒

(will be applied if Rush TAT is not specified)

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

Date Required: ___ Time Required: ___ ☐

Rush Confirmation Number: ___ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	# of Bottles	Comments
1		~~SW-10~~					
2		SW-11	Dec 3/23	7Am	SW	9	
3		SW-12	"	"	"		
4		SW-1	"	"	"		
5		SW-2	"	"	"		
6		SW-21	"	"	"		
7		~~SW-22~~ SW260	"	"	"		
8		~~SW23~~ SW-26	"	"	"		
9		SW-18	Dec 3/23	"	"		
10		SW-19	"	"	"		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Ice	Laboratory Use Only			
C. Albert	231205	9AM	Ostmi Perera	2023/12/05	11:59		Time Sensitive	Temperature (°C) on Rece	Custody Seal Present	Yes	No
2			Rajneet RAJNEET KAUR BRAR	2023/12/06	08:44			0,1,1 , 0,0,1	Intact		✓

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client

Temp: 3/9/1,1/8/8

Bureau Veritas Canada (2019) Inc.

APPENDIX B

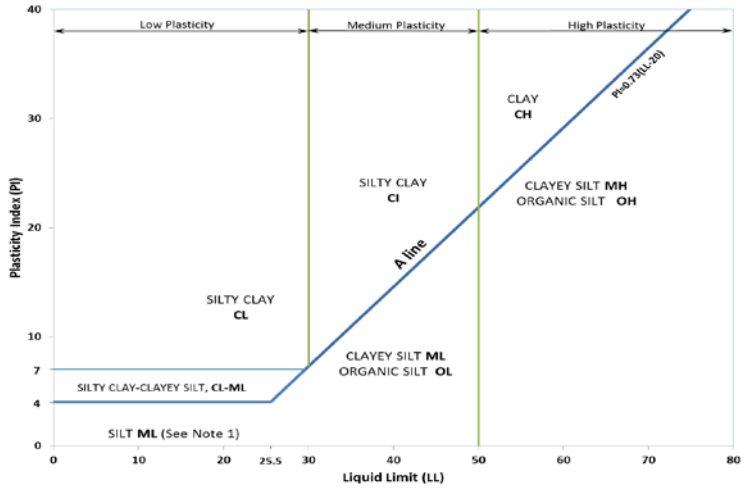
Borehole Logs

METHOD OF SOIL CLASSIFICATION

The Golder Associates Ltd. Soil Classification System is based on the Unified Soil Classification System (USCS)

Organic or Inorganic	Soil Group	Type of Soil		Gradation or Plasticity	$Cu = \frac{D_{60}}{D_{10}}$	$Cc = \frac{(D_{30})^2}{D_{10} x D_{60}}$	Organic Content	USCS Group Symbol	Group Name
INORGANIC (Organic Content ≤30% by mass)	COARSE-GRAINED SOILS (>50% by mass is larger than 0.075 mm)	GRAVELS (>50% by mass of coarse fraction is larger than 4.75 mm)	Gravels with ≤12% fines (by mass)	Poorly Graded	<4	≤1 or ≥3	≤30%	GP	GRAVEL
				Well Graded	≥4	1 to 3		GW	GRAVEL
			Gravels with >12% fines (by mass)	Below A Line	n/a			GM	SILTY GRAVEL
				Above A Line	n/a			GC	CLAYEY GRAVEL
		SANDS (≥50% by mass of coarse fraction is smaller than 4.75 mm)	Sands with ≤12% fines (by mass)	Poorly Graded	<6	≤1 or ≥3		SP	SAND
				Well Graded	≥6	1 to 3		SW	SAND
			Sands with >12% fines (by mass)	Below A Line	n/a			SM	SILTY SAND
				Above A Line	n/a			SC	CLAYEY SAND

Organic or Inorganic	Soil Group	Type of Soil	Laboratory Tests	Field Indicators					Organic Content	USCS Group Symbol	Primary Name
				Dilatancy	Dry Strength	Shine Test	Thread Diameter	Toughness (of 3 mm thread)			
INORGANIC (Organic Content ≤30% by mass)	FINE-GRAINED SOILS (≥50% by mass is smaller than 0.075 mm)	SILTS (Non-Plastic or PI and LL plot below A-Line on Plasticity Chart below)	Liquid Limit <50	Rapid	None	None	>6 mm	N/A (can't roll 3 mm thread)	<5%	ML	SILT
				Slow	None to Low	Dull	3mm to 6 mm	None to low	<5%	ML	CLAYEY SILT
				Slow to very slow	Low to medium	Dull to slight	3mm to 6 mm	Low	5% to 30%	OL	ORGANIC SILT
			Liquid Limit ≥50	Slow to very slow	Low to medium	Slight	3mm to 6 mm	Low to medium	<5%	MH	CLAYEY SILT
				None	Medium to high	Dull to slight	1 mm to 3 mm	Medium to high	5% to 30%	OH	ORGANIC SILT
		CLAYS (PI and LL plot above A-Line on Plasticity Chart below)	Liquid Limit <30	None	Low to medium	Slight to shiny	~ 3 mm	Low to medium	0% to 30% (see Note 2)	CL	SILTY CLAY
			Liquid Limit 30 to 50	None	Medium to high	Slight to shiny	1 mm to 3 mm	Medium		CI	SILTY CLAY
			Liquid Limit ≥50	None	High	Shiny	<1 mm	High		CH	CLAY
HIGHLY ORGANIC SOILS (Organic Content >30% by mass)		Peat and mineral soil mixtures							30% to 75%	PT	SILTY PEAT, SANDY PEAT
		Predominantly peat, may contain some mineral soil, fibrous or amorphous peat							75% to 100%		PEAT



Note 1 – Fine grained materials with PI and LL that plot in this area are named (ML) SILT with slight plasticity. Fine-grained materials which are non-plastic (i.e. a PL cannot be measured) are named SILT.
Note 2 – For soils with <5% organic content, include the descriptor "trace organics" for soils with between 5% and 30% organic content include the prefix "organic" before the Primary name.

Dual Symbol — A dual symbol is two symbols separated by a hyphen, for example, GP-GM, SW-SC and CL-ML.
For non-cohesive soils, the dual symbols must be used when the soil has between 5% and 12% fines (i.e. to identify transitional material between "clean" and "dirty" sand or gravel.
For cohesive soils, the dual symbol must be used when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart (see Plasticity Chart at left).

Borderline Symbol — A borderline symbol is two symbols separated by a slash, for example, CL/CI, GM/SM, CL/ML.
A borderline symbol should be used to indicate that the soil has been identified as having properties that are on the transition between similar materials. In addition, a borderline symbol may be used to indicate a range of similar soil types within a stratum.

ABBREVIATIONS AND TERMS USED ON RECORDS OF BOREHOLES AND TEST PITS

PARTICLE SIZES OF CONSTITUENTS

Soil Constituent	Particle Size Description	Millimetres	Inches (US Std. Sieve Size)
BOULDERS	Not Applicable	>300	>12
COBBLES	Not Applicable	75 to 300	3 to 12
GRAVEL	Coarse Fine	19 to 75 4.75 to 19	0.75 to 3 (4) to 0.75
SAND	Coarse Medium Fine	2.00 to 4.75 0.425 to 2.00 0.075 to 0.425	(10) to (4) (40) to (10) (200) to (40)
SILT/CLAY	Classified by plasticity	<0.075	< (200)

MODIFIERS FOR SECONDARY AND MINOR CONSTITUENTS

Percentage by Mass	Modifier
>35	Use 'and' to combine major constituents (*i.e.,* SAND and GRAVEL)
> 12 to 35	Primary soil name prefixed with "gravelly, sandy, SILTY, CLAYEY" as applicable
> 5 to 12	some
≤ 5	trace

PENETRATION RESISTANCE

Standard Penetration Resistance (SPT), N:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) split-spoon sampler for a distance of 300 mm (12 in.). Values reported are as recorded in the field and are uncorrected.

Cone Penetration Test (CPT)

An electronic cone penetrometer with a 60° conical tip and a project end area of 10 cm^2 pushed through ground at a penetration rate of 2 cm/s. Measurements of tip resistance (q_t), porewater pressure (u) and sleeve frictions are recorded electronically at 25 mm penetration intervals.

Dynamic Cone Penetration Resistance (DCPT); N_d:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive uncased a 50 mm (2 in.) diameter, 60° cone attached to "A" size drill rods for a distance of 300 mm (12 in.).

PH: Sampler advanced by hydraulic pressure
PM: Sampler advanced by manual pressure
WH: Sampler advanced by static weight of hammer
WR: Sampler advanced by weight of sampler and rod

SAMPLES

AS	Auger sample
BS	Block sample
CS	Chunk sample
DD	Diamond Drilling
DO or DP	Seamless open ended, driven or pushed tube sampler – note size
DS	Denison type sample
GS	Grab Sample
MC	Modified California Samples
MS	Modified Shelby (for frozen soil)
RC	Rock core
SC	Soil core
SS	Split spoon sampler – note size
ST	Slotted tube
TO	Thin-walled, open – note size (Shelby tube)
TP	Thin-walled, piston – note size (Shelby tube)
WS	Wash sample

SOIL TESTS

w	water content
PL , w_p	plastic limit
LL , w_L	liquid limit
C	consolidation (oedometer) test
CHEM	chemical analysis (refer to text)
CID	consolidated isotropically drained triaxial test[1]
CIU	consolidated isotropically undrained triaxial test with porewater pressure measurement[1]
D_R	relative density (specific gravity, Gs)
DS	direct shear test
GS	specific gravity
M	sieve analysis for particle size
MH	combined sieve and hydrometer (H) analysis
MPC	Modified Proctor compaction test
SPC	Standard Proctor compaction test
OC	organic content test
SO_4	concentration of water-soluble sulphates
UC	unconfined compression test
UU	unconsolidated undrained triaxial test
V (FV)	field vane (LV-laboratory vane test)
γ	unit weight

1. Tests anisotropically consolidated prior to shear are shown as CAD, CAU.

NON-COHESIVE (COHESIONLESS) SOILS

Compactness[2]

Term	SPT 'N' (blows/0.3m)[1]
Very Loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	>50

1. SPT 'N' in accordance with ASTM D1586, uncorrected for the effects of overburden pressure.
2. Definition of compactness terms are based on SPT 'N' ranges as provided in Terzaghi, Peck and Mesri (1996). Many factors affect the recorded SPT 'N' value, including hammer efficiency (which may be greater than 60% in automatic trip hammers), overburden pressure, groundwater conditions, and grainsize. As such, the recorded SPT 'N' value(s) should be considered only an approximate guide to the soil compactness. These factors need to be considered when evaluating the results, and the stated compactness terms should not be relied upon for design or construction.

Field Moisture Condition

Term	Description
Dry	Soil flows freely through fingers.
Moist	Soils are darker than in the dry condition and may feel cool.
Wet	As moist, but with free water forming on hands when handled.

COHESIVE SOILS

Consistency

Term	Undrained Shear Strength (kPa)	SPT 'N'[1,2] (blows/0.3m)
Very Soft	<12	0 to 2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 200	15 to 30
Hard	>200	>30

1. SPT 'N' in accordance with ASTM D1586, uncorrected for overburden pressure effects; approximate only.
2. SPT 'N' values should be considered ONLY an approximate guide to consistency; for sensitive clays (e.g., Champlain Sea clays), the N-value approximation for consistency terms does NOT apply. Rely on direct measurement of undrained shear strength or other manual observations.

Water Content

Term	Description
w < PL	Material is estimated to be drier than the Plastic Limit.
w ~ PL	Material is estimated to be close to the Plastic Limit.
w > PL	Material is estimated to be wetter than the Plastic Limit.

Unless otherwise stated, the symbols employed in the report are as follows:

I. GENERAL

π	3.1416
ln x	natural logarithm of x
$\log_{10}$	x or log x, logarithm of x to base 10
g	acceleration due to gravity
t	time

II. STRESS AND STRAIN

γ	shear strain
Δ	change in, e.g. in stress: $\Delta\sigma$
ε	linear strain
ε_v	volumetric strain
η	coefficient of viscosity
υ	Poisson's ratio
σ	total stress
σ'	effective stress ($\sigma' = \sigma - u$)
σ'_{vo}	initial effective overburden stress
$\sigma_1, \sigma_2, \sigma_3$	principal stress (major, intermediate, minor)
σ_{oct}	mean stress or octahedral stress $= (\sigma_1 + \sigma_2 + \sigma_3)/3$
τ	shear stress
u	porewater pressure
E	modulus of deformation
G	shear modulus of deformation
K	bulk modulus of compressibility

III. SOIL PROPERTIES

(a) Index Properties

$\rho(\gamma)$	bulk density (bulk unit weight)*
$\rho_d(\gamma_d)$	dry density (dry unit weight)
$\rho_w(\gamma_w)$	density (unit weight) of water
$\rho_s(\gamma_s)$	density (unit weight) of solid particles
γ'	unit weight of submerged soil ($\gamma' = \gamma - \gamma_w$)
D_R	relative density (specific gravity) of solid particles ($D_R = \rho_s / \rho_w$) (formerly G_s)
e	void ratio
n	porosity
S	degree of saturation

* Density symbol is ρ. Unit weight symbol is γ where $\gamma = \rho g$ (i.e. mass density multiplied by acceleration due to gravity)

(a) Index Properties (continued)

w	water content
w_l or LL	liquid limit
w_p or PL	plastic limit
I_p or PI	plasticity index = $(w_l - w_p)$
NP	non-plastic
w_s	shrinkage limit
I_L	liquidity index = $(w - w_p) / I_p$
I_C	consistency index = $(w_l - w) / I_p$
e_{max}	void ratio in loosest state
e_{min}	void ratio in densest state
I_D	density index = $(e_{max} - e) / (e_{max} - e_{min})$ (formerly relative density)

(b) Hydraulic Properties

h	hydraulic head or potential
q	rate of flow
v	velocity of flow
i	hydraulic gradient
k	hydraulic conductivity (coefficient of permeability)
j	seepage force per unit volume

(c) Consolidation (one-dimensional)

C_c	compression index (normally consolidated range)
C_r	recompression index (over-consolidated range)
C_s	swelling index
C_α	secondary compression index
m_v	coefficient of volume change
c_v	coefficient of consolidation (vertical direction)
c_h	coefficient of consolidation (horizontal direction)
T_v	time factor (vertical direction)
U	degree of consolidation
σ'_p	pre-consolidation stress
OCR	over-consolidation ratio = σ'_p / σ'_{vo}

(d) Shear Strength

τ_p, τ_r	peak and residual shear strength
ϕ'	effective angle of internal friction
δ	angle of interface friction
μ	coefficient of friction = tan δ
c′	effective cohesion
c_u, s_u	undrained shear strength ($\phi = 0$ analysis)
p	mean total stress $(\sigma_1 + \sigma_3)/2$
p′	mean effective stress $(\sigma'_1 + \sigma'_3)/2$
q	$(\sigma_1 - \sigma_3)/2$ or $(\sigma'_1 - \sigma'_3)/2$
q_u	compressive strength $(\sigma_1 - \sigma_3)$
S_t	sensitivity

Notes: 1 $\tau = c' + \sigma' \tan \phi'$

2 shear strength = (compressive strength)/2

LITHOLOGICAL AND GEOTECHNICAL ROCK DESCRIPTION TERMINOLOGY

WEATHERINGS STATE

Fresh: no visible sign of rock material weathering.

Faintly weathered: weathering limited to the surface of major discontinuities.

Slightly weathered: penetrative weathering developed on open discontinuity surfaces but only slight weathering of rock material.

Moderately weathered: weathering extends throughout the rock mass but the rock material is not friable.

Highly weathered: weathering extends throughout rock mass and the rock material is partly friable.

Completely weathered: rock is wholly decomposed and in a friable condition but the rock and structure are preserved.

BEDDING THICKNESS

Description	Bedding Plane Spacing
Very thickly bedded	Greater than 2 m
Thickly bedded	0.6 m to 2 m
Medium bedded	0.2 m to 0.6 m
Thinly bedded	60 mm to 0.2 m
Very thinly bedded	20 mm to 60 mm
Laminated	6 mm to 20 mm
Thinly laminated	Less than 6 mm

JOINT OR FOLIATION SPACING

Description	Spacing
Very wide	Greater than 3 m
Wide	1 m to 3 m
Moderately close	0.3 m to 1 m
Close	50 mm to 300 mm
Very close	Less than 50 mm

GRAIN SIZE

Term	Size*
Very Coarse Grained	Greater than 60 mm
Coarse Grained	2 mm to 60 mm
Medium Grained	60 microns to 2 mm
Fine Grained	2 microns to 60 microns
Very Fine Grained	Less than 2 microns

Note: * Grains greater than 60 microns diameter are visible to the naked eye.

CORE CONDITION

Total Core Recovery (TCR)
The percentage of solid drill core recovered regardless of quality or length, measured relative to the length of the total core run.

Solid Core Recovery (SCR)
The percentage of solid drill core, regardless of length, recovered at full diameter, measured relative to the length of the total core run.

Rock Quality Designation (RQD)
The percentage of solid drill core, greater than 100 mm length, as measured along the centerline axis of the core, relative to the length of the total core run. RQD varies from 0% for completely broken core to 100% for core in solid segments.

DISCONTINUITY DATA

Fracture Index
A count of the number of naturally occuring discontinuities (physical separations) in the rock core. Mechanically induced breaks caused by drilling are not included.

Dip with Respect to Core Axis
The angle of the discontinuity relative to the axis (length) of the core. In a vertical borehole a discontinuity with a 90^{o} angle is horizontal.

Description and Notes
An abbreviation description of the discontinuities, whether naturally occurring separations such as fractures, bedding planes and foliation planes and mechanically separated bedding or foliation surfaces. Additional information concerning the nature of fracture surfaces and infillings are also noted.

Abbreviations

JN	Joint	PL	Planar
FLT	Fault	CU	Curved
SH	Shear	UN	Undulating
VN	Vein	IR	Irregular
FR	Fracture	K	Slickensided
SY	Stylolite	PO	Polished
BD	Bedding	SM	Smooth
FO	Foliation	SR	Slightly Rough
CO	Contact	RO	Rough
AXJ	Axial Joint	VR	Very Rough
KV	Karstic Void		
MB	Mechanical Break		

PROJECT: 08-1122-0198

RECORD OF DRILLHOLE: 08-1

SHEET 1 OF 1

LOCATION: See Site Plan

DRILLING DATE: July 9 & 10, 2008

DATUM:

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 55

DRILLING CONTRACTOR: Marathon Drilling Co. Ltd.

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH COLOUR % RETURN	RECOVERY TOTAL CORE %	RECOVERY SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 0.3	DISCONTINUITY DATA DIP w.r.t. CORE AXIS	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
0	Hand Dug	Bedrock Surface														
	Rotary Drill HW Casing	Weathered, shaley LIMESTONE		0.00												Protective casing with cement seal
1		Slightly weathered, grey and grey brown LIMESTONE with siltstone layers, very thinly bedded		0.76	1		100									
2		Slightly weathered to fresh, grey and grey brown interbedded SHALE, SILTSTONE and LIMESTONE		1.60	2	71	20									Bentonite Seal
3					3	84	20									Silica Sand
4																
5					4	109	0									32mm Diam PVC #10 Slot Screen B
6	Rotary Drill HQ Core	Fresh, grey, dark grey to black and grey to green interbedded SHALE, SILTSTONE and LIMESTONE		6.12												
7					5	76	0									Bentonite Seal
8		Fresh, grey and dark grey to black, interbedded SHALE and LIMESTONE		7.65	6	84	0									
9																Silica Sand
10					7	97	0									
11		Fresh, grey and dark grey shaley LIMESTONE		10.62	8	97	0									32mm Diam PVC #10 Slot Screen A
12		End of Drillhole		12.14												
13																
14																
15																

DEPTH SCALE
1 : 75

Golder Associates

LOGGED: P.A.H.

CHECKED: A.W.

MIS-RCK 001 0811220198-2000.GPJ GAL-MISS.GDT 1/23/09 S.L.

PROJECT: 08-1122-0198

RECORD OF DRILLHOLE: 08-2

SHEET 1 OF 1

LOCATION: See Site Plan

DRILLING DATE: July 11, 2008

DATUM:

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 55

DRILLING CONTRACTOR: Marathon Drilling Co. Ltd.

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	COLOUR, % RETURN / FLUSH	RECOVERY: TOTAL CORE %	RECOVERY: SOLID CORE %	R.Q.D. %	FRACT INDEX PER 0.3	DISCONTINUITY DATA: DIP w.r.t. CORE AXIS	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
		Bedrock Surface														
0	Hand Dug	Sand and gravel (FILL)		0.00												Protective casing with cement seal
1	Rotary Drill / HW Casing	Moderately weathered SANDSTONE		0.76												
		Slightly weathered, grey brown and grey shaley LIMESTONE, some thin mud seams		1.11	1		100									
2		Fresh, dark grey, grey green and light grey brown, interbedded SHALE, SILTSTONE and LIMESTONE		1.73	2	102	0									Bentonite Seal
3																Silica Sand
4					3	104	0									
5					4	125	0									32mm Diam PVC #10 Slot Screen B
6																
7	Rotary Drill / HQ Core	Fresh, grey and dark grey, interbedded SHALE and LIMESTONE, small vugs at 6.40 to 6.58m depth		6.27	5	147	0									
8					6	104	0									Bentonite Seal
9																Silica Sand
10					7		0									
11		Fresh, grey and dark grey, shaley LIMESTONE, becoming dolomitic LIMESTONE, occasional calcite nodules		10.69	8	130	0									32mm Diam PVC #10 Slot Screen A
12		End of Drillhole		12.25												
13																
14																
15																

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: P.A.H.

CHECKED: A.W.

MIS-RCK 001 08112201198-2000.GPJ GAL-MISS.GDT 1/23/09 S.L.

PROJECT: 08-1122-0198

RECORD OF DRILLHOLE: 08-3

SHEET 1 OF 2

LOCATION: See Site Plan

DRILLING DATE: July 14, 2008

DATUM:

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: Water Well Rig

DRILLING CONTRACTOR: Stanton Drilling Inc.

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	RUN No.	PENETRATION RATE (mm/m)	FLUSH / COLOUR / % RETURN	RECOVERY: TOTAL CORE % (80 60 40 20)	RECOVERY: SOLID CORE % (80 60 40 20)	R.Q.D. % (80 60 40 20)	FRACT INDEX PER 0.3 (5 10 15 20)	DISCONTINUITY DATA: DIP w.r.t. CORE AXIS (0 30 60 90)	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K, cm/sec (10^{-6} 10^{-5} 10^{-4} 10^{-3})	DIAMETRAL POINT LOAD INDEX (MPa) (2 4 6)	NOTES WATER LEVELS INSTRUMENTATION
0		Bedrock Surface														
		Grey LIMESTONE and SHALE		0.00												Protective casing with cement seal
1																
2																Bentonite Seal
3																Silica Sand
4																
5																38mm Diam PVC #10 Slot Screen B
6																
7	Air Rotary Drill															
8																Bentonite Seal
9																
10																Silica Sand
11																
12																
13																38mm Diam PVC #10 Slot Screen A
14																
15		CONTINUED NEXT PAGE														

DEPTH SCALE
1 : 75

Golder Associates

LOGGED: P.A.H.
CHECKED: A.W.

MIS-RCK 001 08112201982000.GPJ GAL-MISS.GDT 1/23/09 S.L.

PROJECT: 08-1122-0198

RECORD OF DRILLHOLE: 08-3

SHEET 2 OF 2

LOCATION: See Site Plan

DRILLING DATE: July 14, 2008

DATUM:

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: Water Well Rig

DRILLING CONTRACTOR: Stanton Drilling Inc.

FR/FX-FRACTURE F-FAULT SM-SMOOTH FL-FLEXURED BC-BROKEN CORE
CL-CLEAVAGE J-JOINT R-ROUGH UE-UNEVEN MB-MECH. BREAK
SH-SHEAR P-POLISHED ST-STEPPED W-WAVY B-BEDDING
VN-VEIN S-SLICKENSIDED PL-PLANAR C-CURVED

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	COLOUR & RETURN FLUSH	RECOVERY TOTAL CORE % (80 60 40 20)	RECOVERY SOLID CORE % (80 60 40 20)	R.Q.D. % (80 60 40 20)	FRACT. INDEX PER 0.3 (5 10 15 20)	DISCONTINUITY DATA: DIP w.r.t. CORE AXIS (0 30 60 90)	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K, cm/sec (10^{-6} 10^{-5} 10^{-4} 10^{-3})	DIAMETRAL POINT LOAD INDEX (MPa) (2 4 6)	NOTES WATER LEVELS INSTRUMENTATION
15		--- CONTINUED FROM PREVIOUS PAGE ---														
	Air Rotary Drill	Grey LIMESTONE and SHALE														
16		End of Drillhole		15.85												
17																
18																
19																
20																
21																
22																
23																
24																
25																
26																
27																
28																
29																
30																

MIS-RCK 001 0811220198-2000.GPJ GAL-MISS.GDT 1/23/09 S.L.

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: P.A.H.

CHECKED: A.W.

Robinson Consultants

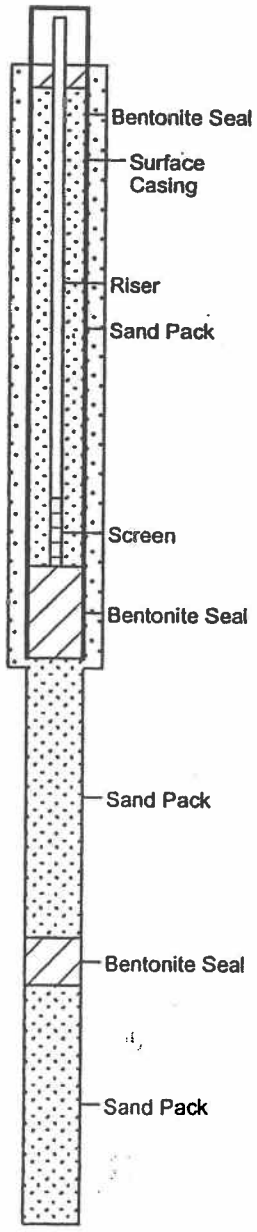
LOG OF BORING OV-13

Municipality of The Town of Arnprior
Arnprior Landfill Site
Part Lot 10 Concession 13
Township of McNab

Date Completed : Nov, 2001
Hole Diameter : 15 cm
Drilling Method : ODEX
Sampling Method : Grab
Company Rep. : A Buzza

Depth in Metres	Surf. Elev.	GRAPHIC	USCS	DESCRIPTION
0	0		ML	Top Soil
				Clayey Loam
5	-5		SC	
10	-10			
				Fine And Medium Sand Becoming Coarser With Depth.
15	-15		SW	
20	-20			
			SL	Fractured Bedrock (Shale)
25	-25		LS	Limestone (Dark Grey)
				Limestone (Light Grey)
30	-30		LC	
35	-35			
				Well Termination
40	-40		LC	
45	-45			
50	-50			
55				

Well: OV-13



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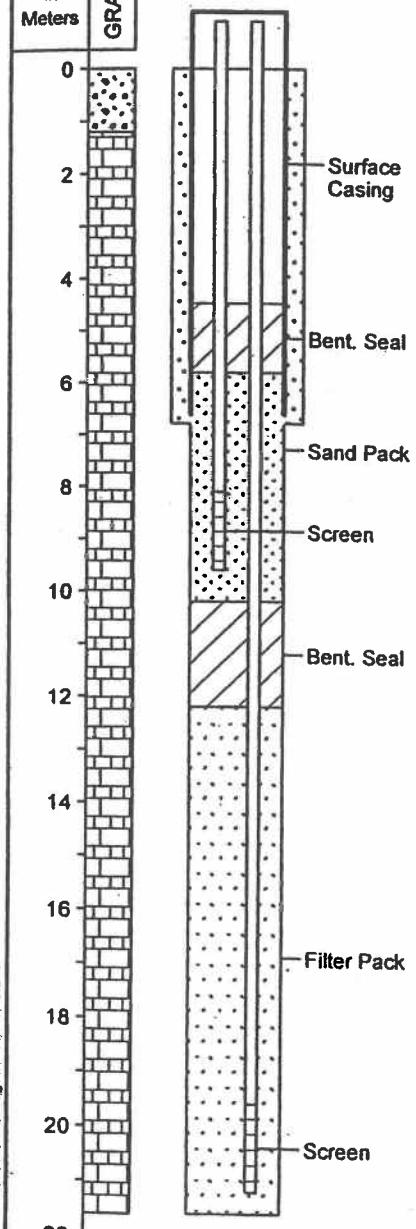
Robinson Consultants

LOG OF BORING BR-5

Town of Amprior Waste Disposal Site
Lot 10
Concession 13
McNabb Township

Date Drilled : 1994
Equipment : Rotary
Surface Elevation : 84.2
Bi level Date : July 2000

Wells: BR-5S, BR-5D
Elev.: 84.6



DESCRIPTION
Sand and Gravely topsoil
Limestone

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Robinson Consultants

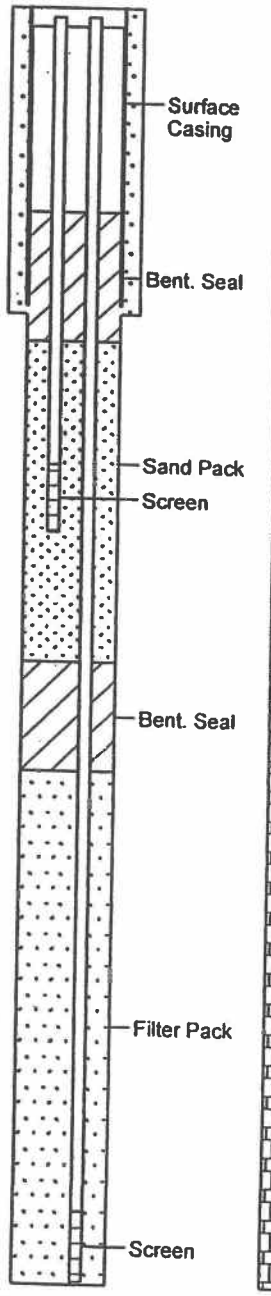
LOG OF BORING BR-7

Town of Arnprior Waste Disposal Site
Lot 10
Concession 13
McNabb Township

Date Drilled : 1994
Equipment : Rotary
Surface Elevation : 80.05
Bi level Date : July 2000

Wells: BR-7S, BR-7D
Elev.: 80.98

Depth in Meters	GRAPHIC	USCS	DESCRIPTION
0		GP	Sand and Graveert
			Limestone
2			
4			
6			
8			
10			
12			
14		LS	
16			
18			
20			
22			
24			
26			
28			



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Robinson Consultants

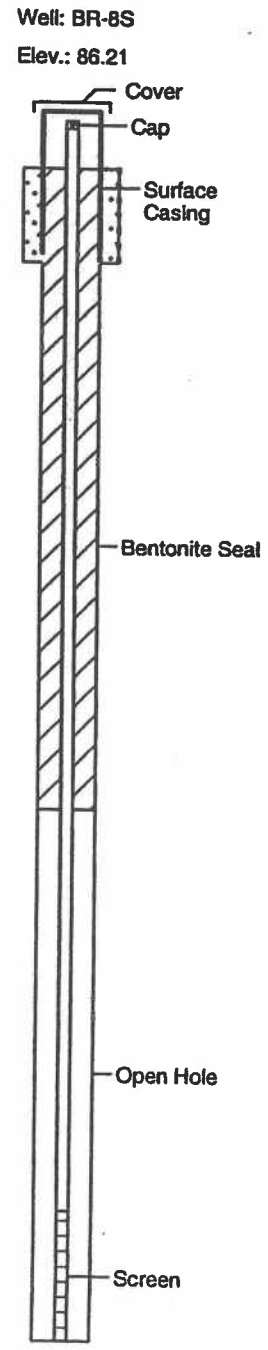
LOG OF BORING BR-8 D

Town of Amprior Waste Disposal Site
Part Lot 10
Concession 13
McNab Township

Date Drilled : November 1998
Drilling Company : OGS
Drilling Method : Diamond Drill
Hole Diameter : 228mm
Logged By : AB

Depth in Meters	DESCRIPTION
0	Sawdust
2	Weathered Bedrock
2.5	Competent Bedrock

GRAPHIC



Well Construction Information

WELL CONSTRUCTION

Date Completed	: November 1998
Hole Diameter	: 228mm
Drill Method	: Diamond Drill

WELL CASING

Material	: PVC
Diameter	: 38mm
Joints	: Flush Threaded

WELL SCREEN

Material	: PVC
Diameter	: 38mm
Joints	: Flush Thread
Opening	: 10 Slot
SAND PACK	: Washed Sand
ANNULAR SEALS	: Bentonite slurry

NOTES

11-24-1999 c:\mtech46\acel\geol\8896\br-8d.bor

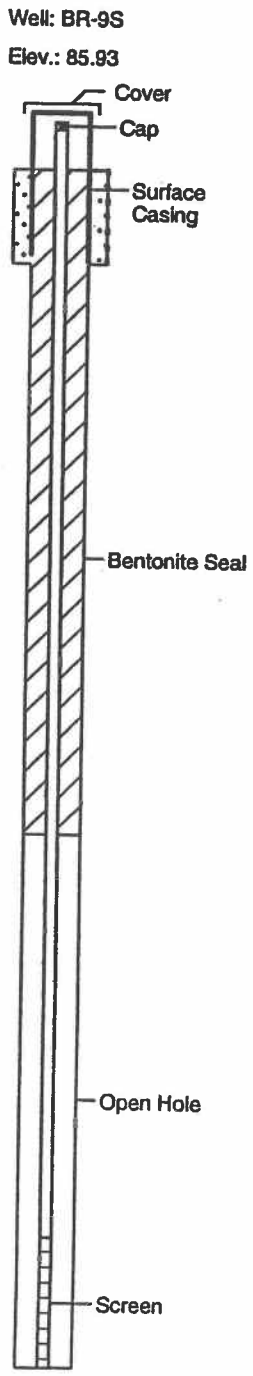
Robinson Consultants

LOG OF BORING BR-9 D

Town of Amprior Waste Disposal Site
Part Lot 10
Concession 13
McNab Township

Date Drilled : November 1998
Drilling Company : OGS
Drilling Method : Diamond Drill
Hole Diameter : 228mm
Logged By : WO

Depth in Meters	DESCRIPTION	GRAPHIC
0	Sawdust	
1	Sand and Gravel Fill	
2	Organic	
	Weathered Bedrock	
	Competent Bedrock	
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		



Well Construction Information

WELL CONSTRUCTION

Date Completed	: November 1998
Hole Diameter	: 228mm
Drill Method	: Diamond Drill

WELL CASING

Material	: PVC
Diameter	: 38mm
Joints	: Flush Threaded

WELL SCREEN

Material	: PVC
Diameter	: 38mm
Joints	: Flush Thread
Opening	: 10 Slot
SAND PACK	: Washed Sand
ANNULAR SEALS	: Bentonite slurry

NOTES

11-24-1999 c:\mtech46\acel\geo\8898\br-9d.bor

Robinson Consultants

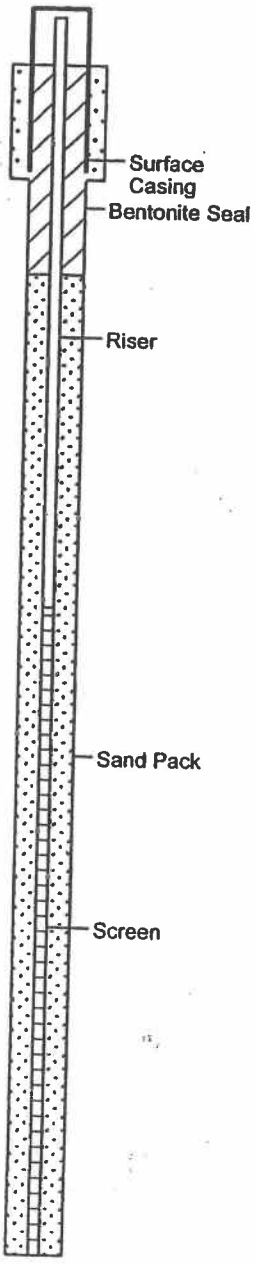
LOG OF BORING BR-11

Municipality of The Town of Arnprior
Arnprior Landfill Site
Part Lot 10 Concession 13
Township of McNab

Date Completed : Sept. 2001
Hole Diameter : 7cm
Drilling Method : Core Drilling
Sampling Method : Grab
Company Rep. : A Townsend

Depth in Metres	Surf. Elev.	GRAPHIC	USCS	DESCRIPTION
0	0.		ML	Top Soil
				Fractured Bedrock (Limestone)
1	-1			
2	-2			
3	-3		LC	
4	-4			
5	-5			
6				

Well: BR-11



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Robinson Consultants

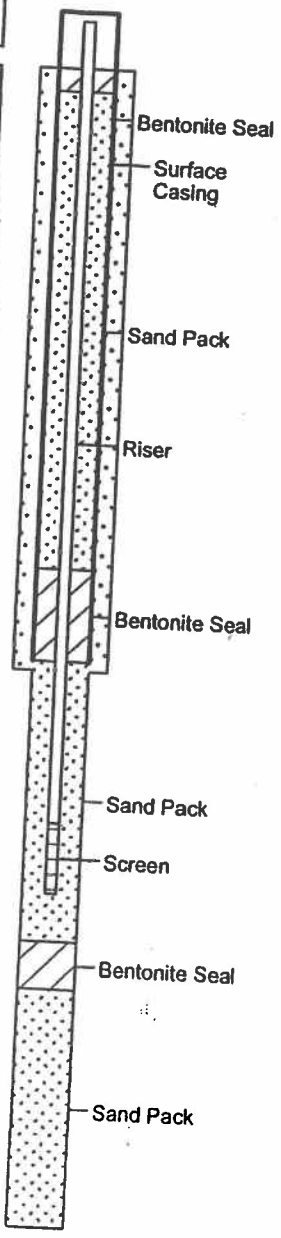
LOG OF BORING BR-13S

Municipality of The Town of Arnprior
Arnprior Landfill Site
Part Lot 10 Concession 13
Township of McNab

Date Completed : Nov, 2001
Hole Diameter : 15 cm
Drilling Method : ODEX
Sampling Method : Grab
Company Rep. : A Buzza

Depth in Metres	Surf. Elev.	GRAPHIC	USCS	DESCRIPTION
0	0		ML	Top Soil
				Clayey Loam
5	-5		SC	
10	-10			
15	-15		SW	Fine And Medium Sand Becoming Coarser With Depth.
20	-20			
			SL	Fractured Bedrock (Shale)
25	-25		LS	Limestone (Dark Grey)
				Limestone (Light Grey)
30	-30		LC	
35	-35			Well Termination
40	-40		LC	
45	-45			
50	-50			
55				

Well: BR-13S



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PROJECT: 1401322

RECORD OF BOREHOLE: BR-18D

SHEET 1 OF 3

LOCATION: N 5034656.8 ;E 391416.6

BORING DATE: October 30, 2018

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕; Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp, W, Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		85.64									
0				0.00									
1													
2													
3													
4													
5	Air Percussion												Bentonite Seal
6													
7													
8													
9													
10		*CONTINUED NEXT PAGE*											

DEPTH SCALE

1 : 50

GOLDER

LOGGED: JS

CHECKED: ALC

MIS-BHS 001 1401322.GPJ GAL-MIS.GDT 20-3-5 JM

PROJECT: 1401322

RECORD OF BOREHOLE: BR-18D

SHEET 2 OF 3

LOCATION: N 5034656.8 ;E 391416.6

BORING DATE: October 30, 2018

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10		*--- CONTINUED FROM PREVIOUS PAGE ---*									
11											
12											
13											
14											Bentonite Seal
15	Air Percussion										
16											
17											
18											
19											Silica Sand 50 mm Diam. PVC #10 Slot Screen
20		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

GOLDER

LOGGED: JS

CHECKED: ALC

MIS-BHS 001 1401322.GPJ GAL-MIS.GDT 20-3-5 JM

PROJECT: 1401322

RECORD OF BOREHOLE: BR-18D

SHEET 3 OF 3

LOCATION: N 5034656.8 ;E 391416.6

BORING DATE: October 30, 2018

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
20		*--- CONTINUED FROM PREVIOUS PAGE ---*									
20	Air Percussion										50 mm Diam. PVC #10 Slot Screen
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											

DEPTH SCALE

1 : 50

GOLDER

LOGGED: JS

CHECKED: ALC

MIS-BHS 001 1401322.GPJ GAL-MIS.GDT 20-3-5 JM

PROJECT: 1401322

RECORD OF BOREHOLE: BR-18S

SHEET 1 OF 2

LOCATION: N 5034656.1 ;E 391414.7

BORING DATE: October 5, 2018

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		GROUND SURFACE		85.63 0.00							
1	Air Percussion										
2											
3											Bentonite Seal
4											
5											
6											
7											Silica Sand
8											
9											50 mm Diam. PVC #10 Slot Screen
10		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

GOLDER

LOGGED: CA

CHECKED: ALC

MIS-BHS 001 1401322.GPJ GAL-MIS.GDT 20-3-5 JM

PROJECT: 1401322

RECORD OF BOREHOLE: BR-18S

SHEET 2 OF 2

LOCATION: N 5034656.1 ;E 391414.7

BORING DATE: October 5, 2018

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10	Air Percussion	*--- CONTINUED FROM PREVIOUS PAGE ---*									Silica Sand
11											
12											Bentonite Seal
13											
14											
15											
16											
17											
18											
19											
20											

DEPTH SCALE

1 : 50

GOLDER

LOGGED: CA

CHECKED: ALC

MIS-BHS 001 1401322.GPJ GAL-MIS.GDT 20-3-5 JM

PROJECT: 1401322

RECORD OF BOREHOLE: OV-9(R)

SHEET 1 OF 1

LOCATION: N 5034576.6 ;E 391357.9

BORING DATE: September 29, 2017

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		86.85									
0	Hand Auger	Unsampled Overburden		0.00									Bentonite Seal
1													Silica Sand
2				84.65									32 mm PVC #10 Slot Screen
		End of Borehole		2.20									
		Note:											
		1. Reinstalled in 2017.											
3													
4													
5													
6													
7													
8													
9													
10													

DEPTH SCALE

1 : 50

GOLDER

LOGGED: CA

CHECKED: ALC

MIS-BHS 001 1401322.GPJ GAL-MIS.GDT 3/26/19 JM

PROJECT: 21465820

RECORD OF BOREHOLE: BH-23D

SHEET 1 OF 5

LOCATION: N 5034554.8 ;E 391475.3

BORING DATE: January 10, 2023

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		86.19 / 0.00							
0	Air Percussion										Bentonite Seal
1											
2											
3											
4											
5											
6											
7											
8											
9											
10		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

WSP GOLDER

LOGGED: CA

CHECKED: PLE

MIS-BHS 001 21465820.GPJ GAL-MIS.GDT 3/17/23 ZS

PROJECT: 21465820

RECORD OF BOREHOLE: BH-23D

SHEET 2 OF 5

LOCATION: N 5034554.8 ;E 391475.3

BORING DATE: January 10, 2023

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10		*--- CONTINUED FROM PREVIOUS PAGE ---*									
11											
12											
13											
14											
15	Air Percussion										Bentonite Seal
16											
17											
18											
19											
20		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

WSP GOLDER

LOGGED: CA

CHECKED: PLE

MIS-BHS 001 21465820.GPJ GAL-MIS.GDT 3/17/23 ZS

PROJECT: 21465820

RECORD OF BOREHOLE: BH-23D

SHEET 3 OF 5

LOCATION: N 5034554.8 ;E 391475.3

BORING DATE: January 10, 2023

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
20		*--- CONTINUED FROM PREVIOUS PAGE ---*									
21	Air Percussion										
22											
23											
24											
25											Bentonite Seal
26											
27											
28											
29											
30		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

WSP GOLDER

LOGGED: CA

CHECKED: PLE

MIS-BHS 001 21465820.GPJ GAL-MIS.GDT 3/17/23 ZS

PROJECT: 21465820

RECORD OF BOREHOLE: BH-23D

SHEET 4 OF 5

LOCATION: N 5034554.8 ;E 391475.3

BORING DATE: January 10, 2023

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
30		*--- CONTINUED FROM PREVIOUS PAGE ---*									
31											
32											Bentonite Seal
33											
34											
35	Air Percussion										Silica Sand
36											
37											
38											50 mm Diam. PVC #10 Slot Screen
39											
40		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

LOGGED: CA

CHECKED: PLE

MIS-BHS 001 21465820.GPJ GAL-MIS.GDT 3/17/23 ZS

PROJECT: 21465820

RECORD OF BOREHOLE: BH-23D

SHEET 5 OF 5

LOCATION: N 5034554.8 ;E 391475.3

BORING DATE: January 10, 2023

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
40		*--- CONTINUED FROM PREVIOUS PAGE ---*									50 mm Diam. PVC #10 Slot Screen
41											
42											
43											
44											
45											
46											
47											
48											
49											
50											

DEPTH SCALE

1 : 50

LOGGED: CA

CHECKED: PLE

MIS-BHS 001 21465820.GPJ GAL-MIS.GDT 3/17/23 ZS

PROJECT: 21465820

RECORD OF BOREHOLE: BH-23S

SHEET 1 OF 3

LOCATION: N 5034554.6 ;E 391476.6

BORING DATE: January 6, 2023

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		86.16							
0	Air Percussion			0.00							
1											
2											
3											
4											
5											Bentonite Seal
6											
7											
8											
9											
10		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

WSP GOLDER

LOGGED: CA

CHECKED: PLE

MIS-BHS 001 21465820.GPJ GAL-MIS.GDT 3/17/23 ZS

PROJECT: 21465820

RECORD OF BOREHOLE: BH-23S

SHEET 2 OF 3

LOCATION: N 5034554.6 ;E 391476.6

BORING DATE: January 6, 2023

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕; Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp, W, Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10		*--- CONTINUED FROM PREVIOUS PAGE ---*											
11													
12													
13													
14													Bentonite Seal
15	Air Percussion												
16													
17													
18													
19													Silica Sand 50 mm Diam. PVC #10 Slot Screen
20		*CONTINUED NEXT PAGE*											

DEPTH SCALE
1 : 50

GOLDER

LOGGED: CA

CHECKED: PLE

MIS-BHS 001 21465820.GPJ GAL-MIS.GDT 3/17/23 ZS

PROJECT: 21465820

RECORD OF BOREHOLE: BH-23S

SHEET 3 OF 3

LOCATION: N 5034554.6 ;E 391476.6

BORING DATE: January 6, 2023

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
20		*--- CONTINUED FROM PREVIOUS PAGE ---*									
21	Air Percussion										50 mm Diam. PVC #10 Slot Screen
22											
23											
24											
25											
26											
27											
28											
29											
30											

DEPTH SCALE

1 : 50

GOLDER

LOGGED: CA

CHECKED: PLE

MIS-BHS 001 21465820.GPJ GAL-MIS.GDT 3/17/23 ZS

PROJECT: 21465820

RECORD OF BOREHOLE: OV-23

SHEET 1 OF 1

LOCATION: N 5034554.4 ;E 391477.6

BORING DATE: January 9, 2023

DATUM: CGVD28

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕; Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp, W, Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		86.59									
0				0.00									
1													
2													Bentonite Seal
3													
4	Air Percussion												Silica Sand
5													
6													50 mm Diam. PVC #10 Slot Screen
7													
8													Native Sand
9													
10													

DEPTH SCALE

1 : 50

LOGGED: CA

CHECKED: PLE

MIS-BHS 001 21465820.GPJ GAL-MIS.GDT 3/17/23 ZS

APPENDIX C

Results of Field and Laboratory Chemical and Physical Analyses (Provided on USB)

C-I Overburden Organic 2023

APPENDIX C-I
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN ORGANIC

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	OV-1 01-Sep-1993
VOCs				
Methylene Chloride	mg/l	0.05	--	<0.004
Vinyl Chloride	mg/l	0.001	--	<0.002

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	OV-2 01-Nov-1990	OV-2 01-Oct-1991	OV-2 01-Dec-1991	OV-2 01-Dec-1992	OV-2 14-Oct-2000	OV-2 03-May-2003	OV-2 04-May-2004
Semi-VOCs										
Styrene	mg/l	--	--	--	--	--	--	<0.0005	<0.0005	<0.0005
VOCs										
1,1,1,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	<0.0006	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	--	--	--	--	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	<0.0006	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	--	--	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	0.001	--	0.0016	--	0.0016	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	--	--	--	--	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	--	--	--	--	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	--	--	--	--	<0.001	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.002	<0.002	--	--	<0.001	<0.0007	<0.0005
1,2-Dichloropropane	mg/l	--	--	--	--	--	--	<0.0007	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	--	--	--	--	<0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	--	--	--	--	<0.001	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	--	--	--	--	<0.001	<0.0004	<0.0004
Benzene	mg/l	0.001	--	--	--	--	--	<0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	--	--	--	--	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	--	--	--	--	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	--	--	--	--	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	--	--	--	--	<0.0009	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	--	--	--	--	<0.0002	<0.0002	<0.0002
Chloroethane	mg/l	--	--	--	--	--	--	--	<0.001	<0.001
Chloroform	mg/l	--	--	--	--	--	--	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	--	--	--	--	<0.0001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	<0.0004	<0.0004	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	<0.0002	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	--	--	--	--	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	--	--	--	--	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.002	<0.002	--	--	<0.0005	<0.001	<0.001
Methylene Chloride	mg/l	0.05	--	<0.002	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004
o-Xylene	mg/l	--	--	--	--	--	--	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	--	--	--	--	<0.0003	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	0.002	--	--	--	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	<0.0005	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	--	--	--	--	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	--	--	--	--	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	--	--	--	--	<0.0005	<0.0002

APPENDIX C-I
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN ORGANIC

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	OV-3 01-Nov-1990
Semi-VOCs				
Styrene	mg/l	--	--	<0.01
VOCs				
1,1,1-Trichloroethane	mg/l	--	--	<0.01
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.02
1,1,2-Trichloroethane	mg/l	--	--	<0.01
1,1-Dichloroethane	mg/l	--	--	<0.01
1,1-Dichloroethylene	mg/l	0.014	--	<0.01
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.01
1,2-Dichloroethane	mg/l	0.005	--	<0.02
1,2-Dichloropropane	mg/l	--	--	<0.01
1,3-Dichlorobenzene	mg/l	--	--	<0.01
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.01
2-Chloroethyl Vinyl Ether	mg/l	--	--	<0.01
Benzene	mg/l	0.001	--	<0.01
Bromodichloromethane	mg/l	--	--	<0.01
Bromoform	mg/l	--	--	<0.01
Bromomethane	mg/l	--	--	<0.04
Carbon Tetrachloride	mg/l	0.002	--	<0.04
Chlorobenzene	mg/l	0.08	0.03	<0.02
Chloroethane	mg/l	--	--	<0.04
Chloroform	mg/l	--	--	0.55
Chloromethane	mg/l	--	--	<0.04
cis-1,3-Dichloropropene	mg/l	--	--	<0.01
Dibromochloromethane	mg/l	--	--	<0.01
Ethylbenzene	mg/l	0.14	0.0016	<0.01
m,p-Xylenes	mg/l	--	--	<0.02
Methylene Chloride	mg/l	0.05	--	0.025
o-Xylene	mg/l	--	--	<0.01
Tetrachloroethylene	mg/l	0.01	--	<0.01
Toluene	mg/l	0.06	0.024	<0.02
trans-1,2-Dichloroethene	mg/l	--	--	<0.01
trans-1,3-Dichloropropene	mg/l	--	--	<0.01
Trichloroethene	mg/l	0.005	--	<0.01
Trichlorofluoromethane	mg/l	--	--	<0.01
Vinyl Chloride	mg/l	0.001	--	<0.04

APPENDIX C-I
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN ORGANIC

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	OV-4 01-Nov-1990	OV-4 01-Oct-1991	OV-4 01-Dec-1991	OV-4 01-Apr-1996
VOCs							
1,2-Dichloroethane	mg/l	0.005	--	<0.002	--	--	--
Benzene	mg/l	0.001	--	--	--	--	0.0007
Chloroethane	mg/l	--	--	--	<0.004	--	--
m,p-Xylenes	mg/l	--	--	<0.002	--	--	--
Methylene Chloride	mg/l	0.05	--	<0.002	<0.005	<0.004	--
Toluene	mg/l	0.06	0.024	0.002	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	OV-5 01-Nov-1990	OV-5 01-Oct-1991	OV-5 01-Dec-1991	OV-5 14-Oct-2000	OV-5 03-May-2003	OV-5 04-May-2004
Semi-VOCs									
Styrene	mg/l	--	--	--	--	--	<0.0005	<0.0005	<0.0005
VOCs									
1,1,1,2-Tetrachloroethane	mg/l	--	--	--	--	--	<0.0006	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	--	--	--	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	--	--	--	<0.0006	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	--	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	--	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	--	--	--	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	--	--	--	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	--	--	--	<0.001	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.002	<0.002	--	<0.001	<0.0007	<0.0005
1,2-Dichloropropane	mg/l	--	--	--	--	--	<0.0007	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	--	--	--	<0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	--	--	--	<0.001	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	--	--	--	<0.001	<0.0004	<0.0004
Benzene	mg/l	0.001	--	--	--	0.001	<0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	--	--	--	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	--	--	--	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	--	--	--	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	--	--	--	<0.0009	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	--	--	--	<0.0002	<0.0002	<0.0002
Chloroethane	mg/l	--	--	--	--	--	--	<0.001	<0.001
Chloroform	mg/l	--	--	--	--	--	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	--	--	--	<0.0001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	--	--	--	<0.0004	<0.0004	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	--	--	--	<0.0002	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	--	--	--	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	--	--	--	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.002	<0.002	--	<0.0005	<0.001	<0.001
Methylene Chloride	mg/l	0.05	--	<0.002	<0.005	<0.004	<0.004	<0.004	<0.004
o-Xylene	mg/l	--	--	--	--	--	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	--	--	--	<0.0003	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	0.002	--	--	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	--	--	--	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	--	--	--	<0.0005	<0.0002	<0.00012
Trichloroethene	mg/l	0.005	--	--	--	--	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	--	--	--	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	--	--	--	<0.0005	<0.0002

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	OV-7 01-Dec-1992	OV-7 14-Oct-2000	OV-7 03-May-2003	OV-7 04-May-2004	OV-7 29-Apr-2009 A-20	OV-7 31-May-2014 [5] S-21	OV-7 18-Nov-2014 [13] A-9
Semi-VOCs										
4-Methyl-2-pentanone	mg/l	--	--	--	--	--	--	--	<0.0050	--
Styrene	mg/l	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.00020	--
VOCs										
1,1,1,2-Tetrachloroethane	mg/l	--	--	--	<0.0006	<0.0006	<0.0006	<0.0005	<0.00010	--
1,1,1-Trichloroethane	mg/l	--	--	--	<0.0004	<0.0004	<0.0004	<0.0004	<0.00010	--
1,1,2,2-Tetrachloroethane	mg/l	--	--	--	<0.0006	<0.0006	<0.0006	<0.0005	<0.00020	--
1,1,2-Trichloroethane	mg/l	--	--	--	<0.0004	<0.0004	<0.0004	<0.0004	<0.00020	--
1,1-Dichloroethane	mg/l	--	--	--	0.0004	0.0011	0.001	0.0009	0.00054	--
1,1-Dichloroethylene	mg/l	0.014	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.00010	--
1,2-Dibromoethane	mg/l	--	--	--	<0.001	<0.001	<0.001	<0.0010	<0.00020	--
1,2-Dichlorobenzene	mg/l	0.2	0.003	--	0.0017	0.0025	0.0031	0.0013	0.0026	--
1,2-Dichloroethane	mg/l	0.005	--	--	<0.001	<0.0007	<0.0005	<0.0005	<0.00020	--
1,2-Dichloropropane	mg/l	--	--	--	<0.0007	<0.0007	<0.0007	<0.0005	<0.00010	--
1,3,5-Trimethylbenzene	mg/l	--	--	--	0.0048	0.0069	0.0053	0.0015	--	--
1,3-Dichlorobenzene	mg/l	--	--	--	0.0011	<0.0004	<0.0004	<0.0004	0.00025	--
1,4-Dichlorobenzene	mg/l	0.005	0.001	--	0.0038	0.0036	0.0047	0.0012	0.0032	--
Methyl Ethyl Ketone	mg/l	--	--	--	--	--	--	--	<0.0050	--
Acetone	mg/l	--	--	--	--	--	--	--	<0.01	--
Benzene	mg/l	0.001	--	**0.0083**	**0.0226**	**0.0213**	**0.0173**	**0.0125**	**0.011**	--
Bromodichloromethane	mg/l	--	--	--	<0.0003	<0.0003	<0.0003	<0.0003	<0.00010	--
Bromoform	mg/l	--	--	--	--	<0.0004	<0.0004	<0.0004	<0.00020	--
Bromomethane	mg/l	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	--
Carbon Tetrachloride	mg/l	0.002	--	--	<0.0009	<0.0009	<0.0005	<0.0005	<0.00010	--
Chlorobenzene	mg/l	0.08	0.03	0.002	0.0306	0.0379	0.0333	0.0247	0.041	--
Chloroethane	mg/l	--	--	0.006	--	<0.001	<0.001	0.0042	--	--
Chloroform	mg/l	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.00010	--
Chloromethane	mg/l	--	--	--	<0.0001	0.0085	0.0085	<0.0010	--	--
cis-1,2-Dichloroethene	mg/l	--	--	--	<0.0004	<0.0004	<0.0004	<0.0004	<0.00010	--
cis-1,2-Dichloropropene	mg/l	--	--	--	--	--	--	<0.0002	--	--
cis-1,3-Dichloropropene	mg/l	--	--	--	<0.0002	<0.0002	<0.0002	--	<0.00020	--
Dibromochloromethane	mg/l	--	--	--	<0.0003	<0.0003	<0.0003	<0.0003	<0.00020	--
Dichlorodifluoromethane	mg/l	--	--	--	--	--	--	--	<0.00050	--
Ethylbenzene	mg/l	0.14	0.0016	0.009	0.0106	0.0065	<0.0005	<0.0005	0.00028	--
m,p-Xylenes	mg/l	--	--	0.0202	0.0657	0.0545	0.0428	0.0096	0.0099	--
Methyl tert-Butyl Ether	mg/l	--	0.015	--	--	--	--	--	0.00045	--
Methylene Chloride	mg/l	0.05	--	<0.004	<0.004	<0.004	<0.004	<0.0040	<0.00050	--
n-Hexane	mg/l	--	--	--	--	--	--	--	<0.00050	--
o-Xylene	mg/l	--	--	0.0094	0.0083	0.0043	0.0032	0.0010	0.00078	--
Tetrachloroethylene	mg/l	0.01	--	--	<0.0003	<0.0003	<0.0003	<0.0003	<0.00010	--
Toluene	mg/l	0.06	0.024	**0.0866**	0.0471	<0.0005	<0.0005	<0.0005	<0.00020	--
trans-1,2-Dichloroethene	mg/l	--	--	--	<0.0004	<0.0004	<0.0004	<0.0004	<0.00010	--
trans-1,3-Dichloropropene	mg/l	--	--	--	<0.0005	<0.0002	<0.0002	<0.0002	<0.00020	--
Trichloroethene	mg/l	0.005	--	--	<0.0003	<0.0003	<0.0003	<0.0003	<0.00010	--
Trichlorofluoromethane	mg/l	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.00020	--
Vinyl Chloride	mg/l	0.001	--	<0.001	--	<0.0005	<0.0002	<0.0002	<0.00020	--
Xylenes, Total	mg/l	0.09	0.02	--	--	--	--	--	0.011	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	OV-7 05-May-2015 S-1	OV-7 16-Nov-2015 [14] S-24	OV-7 19-Apr-2016 S-1	OV-7 31-Oct-2016 S-3	OV-7 29-May-2017 A-21	OV-7 23-Nov-2017 OV-7	OV-7 17-May-2018 OV-7
Semi-VOCs										
4-Methyl-2-pentanone	mg/l	--	--	--	--	--	--	--	--	--
Styrene	mg/l	--	--	--	--	--	--	--	--	--
VOCs										
1,1,1,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1-Dichloroethylene	mg/l	0.014	--	--	--	--	--	--	--	--
1,2-Dibromoethane	mg/l	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	mg/l	0.2	0.003	--	--	--	--	--	--	--
1,2-Dichloroethane	mg/l	0.005	--	--	--	--	--	--	--	--
1,2-Dichloropropane	mg/l	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	mg/l	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	mg/l	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	mg/l	0.005	0.001	--	--	--	--	--	--	--
Methyl Ethyl Ketone	mg/l	--	--	--	--	--	--	--	--	--
Acetone	mg/l	--	--	--	--	--	--	--	--	--
Benzene	mg/l	0.001	--	--	--	--	--	--	--	--
Bromodichloromethane	mg/l	--	--	--	--	--	--	--	--	--
Bromoform	mg/l	--	--	--	--	--	--	--	--	--
Bromomethane	mg/l	--	--	--	--	--	--	--	--	--
Carbon Tetrachloride	mg/l	0.002	--	--	--	--	--	--	--	--
Chlorobenzene	mg/l	0.08	0.03	--	--	--	--	--	--	--
Chloroethane	mg/l	--	--	--	--	--	--	--	--	--
Chloroform	mg/l	--	--	--	--	--	--	--	--	--
Chloromethane	mg/l	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloropropene	mg/l	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	--	--	--
Dibromochloromethane	mg/l	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane	mg/l	--	--	--	--	--	--	--	--	--
Ethylbenzene	mg/l	0.14	0.0016	--	--	--	--	--	--	--
m,p-Xylenes	mg/l	--	--	--	--	--	--	--	--	--
Methyl tert-Butyl Ether	mg/l	--	0.015	--	--	--	--	--	--	--
Methylene Chloride	mg/l	0.05	--	--	--	--	--	--	--	--
n-Hexane	mg/l	--	--	--	--	--	--	--	--	--
o-Xylene	mg/l	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	mg/l	0.01	--	--	--	--	--	--	--	--
Toluene	mg/l	0.06	0.024	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	--	--	--
Trichloroethene	mg/l	0.005	--	--	--	--	--	--	--	--
Trichlorofluoromethane	mg/l	--	--	--	--	--	--	--	--	--
Vinyl Chloride	mg/l	0.001	--	--	--	--	--	--	--	--
Xylenes, Total	mg/l	0.09	0.02	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	OV-7 29-Oct-2018 [4] OV-7	OV-7 04-Jun-2019 [15] OV-7
Semi-VOCs					
4-Methyl-2-pentanone	mg/l	--	--	--	<0.025
Styrene	mg/l	--	--	--	<0.0010
VOCs					
1,1,1,2-Tetrachloroethane	mg/l	--	--	--	<0.0010
1,1,1-Trichloroethane	mg/l	--	--	--	<0.00050
1,1,2,2-Tetrachloroethane	mg/l	--	--	--	<0.0010
1,1,2-Trichloroethane	mg/l	--	--	--	<0.0010
1,1-Dichloroethane	mg/l	--	--	--	<0.00050
1,1-Dichloroethylene	mg/l	0.014	--	--	<0.00050
1,2-Dibromoethane	mg/l	--	--	--	<0.0010
1,2-Dichlorobenzene	mg/l	0.2	0.003	--	0.0030
1,2-Dichloroethane	mg/l	0.005	--	--	<0.0010
1,2-Dichloropropane	mg/l	--	--	--	<0.00050
1,3,5-Trimethylbenzene	mg/l	--	--	--	--
1,3-Dichlorobenzene	mg/l	--	--	--	<0.0010
1,4-Dichlorobenzene	mg/l	0.005	0.001	--	0.0039
Methyl Ethyl Ketone	mg/l	--	--	--	<0.025
Acetone	mg/l	--	--	--	<0.05
Benzene	mg/l	0.001	--	--	**0.01**
Bromodichloromethane	mg/l	--	--	--	<0.00050
Bromoform	mg/l	--	--	--	<0.0010
Bromomethane	mg/l	--	--	--	<0.0025
Carbon Tetrachloride	mg/l	0.002	--	--	<0.00050
Chlorobenzene	mg/l	0.08	0.03	--	0.04
Chloroethane	mg/l	--	--	--	--
Chloroform	mg/l	--	--	--	<0.00050
Chloromethane	mg/l	--	--	--	--
cis-1,2-Dichloroethene	mg/l	--	--	--	<0.00050
cis-1,2-Dichloropropene	mg/l	--	--	--	--
cis-1,3-Dichloropropene	mg/l	--	--	--	<0.0010
Dibromochloromethane	mg/l	--	--	--	<0.0010
Dichlorodifluoromethane	mg/l	--	--	--	<0.0025
Ethylbenzene	mg/l	0.14	0.0016	--	<0.00050
m,p-Xylenes	mg/l	--	--	--	0.0083
Methyl tert-Butyl Ether	mg/l	--	0.015	--	<0.0010
Methylene Chloride	mg/l	0.05	--	--	<0.0025
n-Hexane	mg/l	--	--	--	<0.0025
o-Xylene	mg/l	--	--	--	0.00079
Tetrachloroethylene	mg/l	0.01	--	--	<0.00050
Toluene	mg/l	0.06	0.024	--	<0.0010
trans-1,2-Dichloroethene	mg/l	--	--	--	<0.00050
trans-1,3-Dichloropropene	mg/l	--	--	--	<0.0010
Trichloroethene	mg/l	0.005	--	--	<0.00050
Trichlorofluoromethane	mg/l	--	--	--	<0.0010
Vinyl Chloride	mg/l	0.001	--	--	<0.0010
Xylenes, Total	mg/l	0.09	0.02	--	0.0090

APPENDIX C-I
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN ORGANIC

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	OV-9 14-Oct-2000	OV-9 04-May-2004
Semi-VOCs					
Styrene	mg/l	--	--	<0.0005	<0.0005
VOCs					
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	0.0008	0.0019
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	0.0029	0.0031
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.001	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.001	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.001	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.001	<0.0004
Benzene	mg/l	0.001	--	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002	<0.0002
Chloroethane	mg/l	--	--	--	<0.001
Chloroform	mg/l	--	--	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.0001	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	0.109	0.0918
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0005	<0.001
Methylene Chloride	mg/l	0.05	--	<0.004	<0.004
o-Xylene	mg/l	--	--	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	0.0015
trans-1,3-Dichloropropene	mg/l	--	--	<0.0005	<0.0002
Trichloroethene	mg/l	0.005	--	0.0031	0.005
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	OV-10 14-Oct-2000	OV-10 03-May-2003	OV-10 04-May-2004
Semi-VOCs						
Styrene	mg/l	--	--	<0.0005	<0.0005	<0.0005
VOCs						
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.001	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.001	<0.0007	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.001	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.001	<0.0004	<0.0004
Benzene	mg/l	0.001	--	<0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002	0.0002	<0.0002
Chloroethane	mg/l	--	--	--	<0.001	<0.001
Chloroform	mg/l	--	--	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.0001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0005	<0.001	<0.001
Methylene Chloride	mg/l	0.05	--	<0.004	<0.004	<0.004
o-Xylene	mg/l	--	--	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0005	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	<0.0005	<0.0002

APPENDIX C-I
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN ORGANIC

Parameter	Unit	ODWQS(169/03)-Health (1)	ODWQS-AO (2)	OV-11 01-Dec-1992
VOCs				
1,1,1-Trichloroethane	mg/l	--	--	0.0017
1,1-Dichloroethane	mg/l	--	--	0.0021
Methylene Chloride	mg/l	0.05	--	<0.004

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	OV-13 04-May-2004	OV-13 04-Oct-2004	OV-13 14-Jun-2005	OV-13 24-Nov-2005	OV-13 08-Apr-2006	OV-13 24-Nov-2006	OV-13 25-Apr-2007
Semi-VOCs										
Styrene	mg/l	--	--	<0.0005	--	--	--	--	--	--
VOCs										
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	--	--	--	--	--	--
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	--	--	--	--	--	--
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	--	--	--	--	--	--
1,1-Dichloroethane	mg/l	--	--	<0.0004	--	--	--	--	--	--
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	--	--	--	--	--	--
1,2-Dibromoethane	mg/l	--	--	<0.001	--	--	--	--	--	--
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.0004	--	--	--	--	--	--
1,2-Dichloroethane	mg/l	0.005	--	<0.0005	--	--	--	--	--	--
1,2-Dichloropropane	mg/l	--	--	<0.0007	--	--	--	--	--	--
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003	--	--	--	--	--	--
1,3-Dichlorobenzene	mg/l	--	--	<0.0004	--	--	--	--	--	--
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.0004	--	--	--	--	--	--
Benzene	mg/l	0.001	--	<0.0005	--	--	--	--	--	--
Bromodichloromethane	mg/l	--	--	<0.0003	--	--	--	--	--	--
Bromoform	mg/l	--	--	<0.0004	--	--	--	--	--	--
Bromomethane	mg/l	--	--	<0.0005	--	--	--	--	--	--
Carbon Tetrachloride	mg/l	0.002	--	<0.0005	--	--	--	--	--	--
Chlorobenzene	mg/l	0.08	0.03	<0.0002	--	--	--	--	--	--
Chloroethane	mg/l	--	--	<0.001	--	--	--	--	--	--
Chloroform	mg/l	--	--	<0.0005	--	--	--	--	--	--
Chloromethane	mg/l	--	--	<0.001	--	--	--	--	--	--
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004	--	--	--	--	--	--
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	--	--	--	--	--	--
Dibromochloromethane	mg/l	--	--	<0.0003	--	--	--	--	--	--
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	--	--	--	--	--	--
m,p-Xylenes	mg/l	--	--	<0.001	--	--	--	--	--	--
Methylene Chloride	mg/l	0.05	--	<0.004	--	--	--	--	--	--
o-Xylene	mg/l	--	--	<0.0005	--	--	--	--	--	--
Tetrachloroethylene	mg/l	0.01	--	<0.0003	--	--	--	--	--	--
Toluene	mg/l	0.06	0.024	<0.0005	--	--	--	--	--	--
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	--	--	--	--	--	--
trans-1,3-Dichloropropene	mg/l	--	--	<0.0002	--	--	--	--	--	--
Trichloroethene	mg/l	0.005	--	<0.0003	--	--	--	--	--	--
Trichlorofluoromethane	mg/l	--	--	<0.0005	--	--	--	--	--	--
Vinyl Chloride	mg/l	0.001	--	<0.0002	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health (1)	ODWQS-AO (2)	OV-13 04-Dec-2007	OV-13 04-May-2008	OV-13 29-Nov-2008	OV-13 29-Apr-2009 A-30	OV-13 29-Nov-2009 A-21	OV-13 20-May-2010 A-27	OV-13 29-Nov-2010 A - 20
Semi-VOCs										
Styrene	mg/l	--	--	--	--	--	--	--	--	--
VOCs										
1,1,1,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1-Dichloroethylene	mg/l	0.014	--	--	--	--	--	--	--	--
1,2-Dibromoethane	mg/l	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	mg/l	0.2	0.003	--	--	--	--	--	--	--
1,2-Dichloroethane	mg/l	0.005	--	--	--	--	--	--	--	--
1,2-Dichloropropane	mg/l	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	mg/l	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	mg/l	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	mg/l	0.005	0.001	--	--	--	--	--	--	--
Benzene	mg/l	0.001	--	--	--	--	--	--	--	--
Bromodichloromethane	mg/l	--	--	--	--	--	--	--	--	--
Bromoform	mg/l	--	--	--	--	--	--	--	--	--
Bromomethane	mg/l	--	--	--	--	--	--	--	--	--
Carbon Tetrachloride	mg/l	0.002	--	--	--	--	--	--	--	--
Chlorobenzene	mg/l	0.08	0.03	--	--	--	--	--	--	--
Chloroethane	mg/l	--	--	--	--	--	--	--	--	--
Chloroform	mg/l	--	--	--	--	--	--	--	--	--
Chloromethane	mg/l	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	--	--	--
Dibromochloromethane	mg/l	--	--	--	--	--	--	--	--	--
Ethylbenzene	mg/l	0.14	0.0016	--	--	--	--	--	--	--
m,p-Xylenes	mg/l	--	--	--	--	--	--	--	--	--
Methylene Chloride	mg/l	0.05	--	--	--	--	--	--	--	--
o-Xylene	mg/l	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	mg/l	0.01	--	--	--	--	--	--	--	--
Toluene	mg/l	0.06	0.024	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	--	--	--
Trichloroethene	mg/l	0.005	--	--	--	--	--	--	--	--
Trichlorofluoromethane	mg/l	--	--	--	--	--	--	--	--	--
Vinyl Chloride	mg/l	0.001	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	OV-13 10-May-2011 S-14	OV-13 30-Nov-2011 S - 26	OV-13 20-May-2012 S-21	OV-13 14-Nov-2012 A-28	OV-13 13-Jun-2013 OV-13	OV-13 25-Oct-2013 OV-13	OV-13 31-May-2014 [5] S-29
Semi-VOCs										
Styrene	mg/l	--	--	--	--	--	--	--	--	--
VOCs										
1,1,1,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1-Dichloroethylene	mg/l	0.014	--	--	--	--	--	--	--	--
1,2-Dibromoethane	mg/l	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	mg/l	0.2	0.003	--	--	--	--	--	--	--
1,2-Dichloroethane	mg/l	0.005	--	--	--	--	--	--	--	--
1,2-Dichloropropane	mg/l	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	mg/l	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	mg/l	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	mg/l	0.005	0.001	--	--	--	--	--	--	--
Benzene	mg/l	0.001	--	--	--	--	--	--	--	--
Bromodichloromethane	mg/l	--	--	--	--	--	--	--	--	--
Bromoform	mg/l	--	--	--	--	--	--	--	--	--
Bromomethane	mg/l	--	--	--	--	--	--	--	--	--
Carbon Tetrachloride	mg/l	0.002	--	--	--	--	--	--	--	--
Chlorobenzene	mg/l	0.08	0.03	--	--	--	--	--	--	--
Chloroethane	mg/l	--	--	--	--	--	--	--	--	--
Chloroform	mg/l	--	--	--	--	--	--	--	--	--
Chloromethane	mg/l	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	--	--	--
Dibromochloromethane	mg/l	--	--	--	--	--	--	--	--	--
Ethylbenzene	mg/l	0.14	0.0016	--	--	--	--	--	--	--
m,p-Xylenes	mg/l	--	--	--	--	--	--	--	--	--
Methylene Chloride	mg/l	0.05	--	--	--	--	--	--	--	--
o-Xylene	mg/l	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	mg/l	0.01	--	--	--	--	--	--	--	--
Toluene	mg/l	0.06	0.024	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	--	--	--
Trichloroethene	mg/l	0.005	--	--	--	--	--	--	--	--
Trichlorofluoromethane	mg/l	--	--	--	--	--	--	--	--	--
Vinyl Chloride	mg/l	0.001	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health (1)	ODWQS-AO (2)	OV-13 19-Nov-2014 A-28	OV-13 07-May-2015 S-29	OV-13 30-Nov-2015 S-30	OV-13 20-Apr-2016 S-27	OV-13 01-Nov-2016 S-28	OV-13 29-May-2017 A-28	OV-13 30-Nov-2017 OU-13
Semi-VOCs										
Styrene	mg/l	--	--	--	--	--	--	--	--	--
VOCs										
1,1,1,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1-Dichloroethylene	mg/l	0.014	--	--	--	--	--	--	--	--
1,2-Dibromoethane	mg/l	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	mg/l	0.2	0.003	--	--	--	--	--	--	--
1,2-Dichloroethane	mg/l	0.005	--	--	--	--	--	--	--	--
1,2-Dichloropropane	mg/l	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	mg/l	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	mg/l	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	mg/l	0.005	0.001	--	--	--	--	--	--	--
Benzene	mg/l	0.001	--	--	--	--	--	--	--	--
Bromodichloromethane	mg/l	--	--	--	--	--	--	--	--	--
Bromoform	mg/l	--	--	--	--	--	--	--	--	--
Bromomethane	mg/l	--	--	--	--	--	--	--	--	--
Carbon Tetrachloride	mg/l	0.002	--	--	--	--	--	--	--	--
Chlorobenzene	mg/l	0.08	0.03	--	--	--	--	--	--	--
Chloroethane	mg/l	--	--	--	--	--	--	--	--	--
Chloroform	mg/l	--	--	--	--	--	--	--	--	--
Chloromethane	mg/l	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	--	--	--
Dibromochloromethane	mg/l	--	--	--	--	--	--	--	--	--
Ethylbenzene	mg/l	0.14	0.0016	--	--	--	--	--	--	--
m,p-Xylenes	mg/l	--	--	--	--	--	--	--	--	--
Methylene Chloride	mg/l	0.05	--	--	--	--	--	--	--	--
o-Xylene	mg/l	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	mg/l	0.01	--	--	--	--	--	--	--	--
Toluene	mg/l	0.06	0.024	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	--	--	--
Trichloroethene	mg/l	0.005	--	--	--	--	--	--	--	--
Trichlorofluoromethane	mg/l	--	--	--	--	--	--	--	--	--
Vinyl Chloride	mg/l	0.001	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	OV-13 23-May-2018 [6]	OV-13 30-Oct-2018 [7]	OV-13 04-Jun-2019	OV-13 15-Nov-2019	OV-13 11-May-2020	OV-13 29-Oct-2020	OV-13 02-May-2021
				OV-13	OV-13	OV-13	OV-13	OV13	OV-13	OV-13
Semi-VOCs										
Styrene	mg/l	--	--	--	--	--	--	--	--	--
VOCs										
1,1,1,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	mg/l	--	--	--	--	--	--	--	--	--
1,1-Dichloroethylene	mg/l	0.014	--	--	--	--	--	--	--	--
1,2-Dibromoethane	mg/l	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	mg/l	0.2	0.003	--	--	--	--	--	--	--
1,2-Dichloroethane	mg/l	0.005	--	--	--	--	--	--	--	--
1,2-Dichloropropane	mg/l	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	mg/l	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	mg/l	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	mg/l	0.005	0.001	--	--	--	--	--	--	--
Benzene	mg/l	0.001	--	--	--	--	--	--	--	--
Bromodichloromethane	mg/l	--	--	--	--	--	--	--	--	--
Bromoform	mg/l	--	--	--	--	--	--	--	--	--
Bromomethane	mg/l	--	--	--	--	--	--	--	--	--
Carbon Tetrachloride	mg/l	0.002	--	--	--	--	--	--	--	--
Chlorobenzene	mg/l	0.08	0.03	--	--	--	--	--	--	--
Chloroethane	mg/l	--	--	--	--	--	--	--	--	--
Chloroform	mg/l	--	--	--	--	--	--	--	--	--
Chloromethane	mg/l	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	--	--	--
Dibromochloromethane	mg/l	--	--	--	--	--	--	--	--	--
Ethylbenzene	mg/l	0.14	0.0016	--	--	--	--	--	--	--
m,p-Xylenes	mg/l	--	--	--	--	--	--	--	--	--
Methylene Chloride	mg/l	0.05	--	--	--	--	--	--	--	--
o-Xylene	mg/l	--	--	--	--	--	--	--	--	--
Tetrachloroethylene	mg/l	0.01	--	--	--	--	--	--	--	--
Toluene	mg/l	0.06	0.024	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	--	--	--
Trichloroethene	mg/l	0.005	--	--	--	--	--	--	--	--
Trichlorofluoromethane	mg/l	--	--	--	--	--	--	--	--	--
Vinyl Chloride	mg/l	0.001	--	--	--	--	--	--	--	--

APPENDIX C-I
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN ORGANIC

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	OV-13 24-Nov-2021 OV-13	OV-13 26-Apr-2022 OU-13	OV-13 19-Dec-2022 OV-13
Semi-VOCs						
Styrene	mg/l	--	--	--	--	--
VOCs						
1,1,1,2-Tetrachloroethane	mg/l	--	--	--	--	--
1,1,1-Trichloroethane	mg/l	--	--	--	--	--
1,1,2,2-Tetrachloroethane	mg/l	--	--	--	--	--
1,1,2-Trichloroethane	mg/l	--	--	--	--	--
1,1-Dichloroethane	mg/l	--	--	--	--	--
1,1-Dichloroethylene	mg/l	0.014	--	--	--	--
1,2-Dibromoethane	mg/l	--	--	--	--	--
1,2-Dichlorobenzene	mg/l	0.2	0.003	--	--	--
1,2-Dichloroethane	mg/l	0.005	--	--	--	--
1,2-Dichloropropane	mg/l	--	--	--	--	--
1,3,5-Trimethylbenzene	mg/l	--	--	--	--	--
1,3-Dichlorobenzene	mg/l	--	--	--	--	--
1,4-Dichlorobenzene	mg/l	0.005	0.001	--	--	--
Benzene	mg/l	0.001	--	--	--	--
Bromodichloromethane	mg/l	--	--	--	--	--
Bromoform	mg/l	--	--	--	--	--
Bromomethane	mg/l	--	--	--	--	--
Carbon Tetrachloride	mg/l	0.002	--	--	--	--
Chlorobenzene	mg/l	0.08	0.03	--	--	--
Chloroethane	mg/l	--	--	--	--	--
Chloroform	mg/l	--	--	--	--	--
Chloromethane	mg/l	--	--	--	--	--
cis-1,2-Dichloroethene	mg/l	--	--	--	--	--
cis-1,3-Dichloropropene	mg/l	--	--	--	--	--
Dibromochloromethane	mg/l	--	--	--	--	--
Ethylbenzene	mg/l	0.14	0.0016	--	--	--
m,p-Xylenes	mg/l	--	--	--	--	--
Methylene Chloride	mg/l	0.05	--	--	--	--
o-Xylene	mg/l	--	--	--	--	--
Tetrachloroethylene	mg/l	0.01	--	--	--	--
Toluene	mg/l	0.06	0.024	--	--	--
trans-1,2-Dichloroethene	mg/l	--	--	--	--	--
trans-1,3-Dichloropropene	mg/l	--	--	--	--	--
Trichloroethene	mg/l	0.005	--	--	--	--
Trichlorofluoromethane	mg/l	--	--	--	--	--
Vinyl Chloride	mg/l	0.001	--	--	--	--

Footnotes:

	Tables should be read in conjunction with the accompanying document.
<	Indicates parameter not detected above laboratory method detection limit.
>	Indicates parameter detected above equipment analytical range.
--	Chemical not analyzed or criteria not defined.
Value	Parameter is greater than ODWQS(169/03)-Health
Value	Parameter is greater than ODWQS-AO
(1)	Ontario Drinking Water Quality Standards - Health Based Standards (June 2003, revised January 2020).
(2)	Ontario Drinking Water Quality Standards - Aesthetic Objectives. Aesthetic Objectives are established for parameters that may impair the taste, odour or colour of water or which may interfere with good water quality control practices. For certain parameters, both aesthetic objectives and health-related MACs have been derived (June 2003, revised July 2017).
(3)	Selenium MRL elevated due to matrix interference.
(4)	clarity: clear, sediments: trace, colour: beige, odour: odd smell
(5)	Due to colour interferences, sample required dilution. Detection limit was adjusted accordingly.
(6)	Field measurements for pH, conductivity and temperature were inadvertently missed during sampling.
(7)	Clarity: clear, sediment: trace, colour: beige, odour: none
(8)	Monitoring location was damaged and could not be sampled.
(9)	Metals MRL elevated due to matrix interference.
(10)	Metals MRL elevated due to matrix interference. N-NH3 was analysed at SGS.
(11)	Sediment was not included in mercury analysis. Metals MRL elevated due to matrix interference.
(12)	Metals MRL elevated due to matrix interference (10x dilution was done).
(13)	Metal Analysis: RDL of Nickel was adjusted due to high concentration of Calcium.
(14)	Metal Analysis: RDLs of Nickel and Chromium were adjusted due to high concentrations of Calcium and carbon respectively.
(15)	VOC Analysis: Due to high concentrations of target analytes, sample required dilution. Detection limits were adjusted accordingly.
(16)	Selenium MRL elevated due to matrix interference (dilution was done).
(17)	Monitoring location was dry during this sampling event. No sample was collected.
(18)	Sample S-23 was decanted prior to running TDS analysis due to high level of sediment.
(19)	ortho-Phosphate > Total Phosphorus: Both values fall within the method uncertainty for duplicates and are likely equivalent.

C-II Overburden General Chemistry 2023

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-2 01-Apr-1988	OV-2 01-Nov-1988	OV-2 01-Nov-1990	OV-2 01-Oct-1991	OV-2 01-Dec-1991	OV-2 01-Dec-1992	OV-2 01-Feb-1993	OV-2 01-May-1995	OV-2 01-Apr-1996
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	652	--	730	730	970	1200	1131	886	724
Ammonia Nitrogen	mg/l	--	--	5.8	--	--	--	--	--	--	2.13	5.5
Biochemical Oxygen Demand, 5 Day	mg/l	--	--	45	20	<1	--	4	14	--	--	--
Chemical Oxygen Demand	mg/l	--	--	140	194	--	--	--	--	--	--	--
Chloride	mg/l	--	250	151	156	113	1113	248	330	264	111	111
Conductivity	uS/cm	--	--	1700	--	1562	3380	--	--	--	1744	1582
Nitrate	mg/l	-- [5]	--	0.6	--	--	--	--	--	--	<0.1	<0.1
Nitrite	mg/l	-- [13]	--	<0.02	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.6	7.1	--	<0.002	--	--	--	7.31	7.22
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	0.09	<0.03
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	<0.1	--	<0.1	0.05	--	<0.1	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	24	19	11	5	38
Total Dissolved Solids	mg/l	--	500	1105	1352	916	2380	1270	1720	1520	1040	952
Total Organic Carbon	mg/l	--	--	--	40	--	--	--	44	--	19.8	21.8
Metals												
Aluminum, dissolved	mg/l	--	--	--	--	<0.03	--	<0.03	<0.03	--	<0.03	<0.03
Arsenic, dissolved	mg/l	0.01	--	--	0.01	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	--	**1.58**	0.22	--	0.45	0.46	--	0.22	0.36
Beryllium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	0.1
Boron, dissolved	mg/l	5	--	--	--	0.15	--	0.42	0.33	--	0.44	0.37
Cadmium, dissolved	mg/l	0.005	--	--	0.004	<0.002	<0.002	<0.002	<0.01	--	<0.005	<0.005
Calcium, dissolved	mg/l	--	--	--	--	219	--	290	290	--	204	206
Chromium, dissolved	mg/l	0.05	--	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01
Cobalt, dissolved	mg/l	--	--	--	--	<0.02	--	<0.01	<0.01	--	<0.01	0.02
Copper, dissolved	mg/l	--	1	--	--	<0.01	<0.01	0.01	<0.01	--	<0.005	0.007
Iron, dissolved	mg/l	--	0.3	7.2	25.54	<0.01	5.69	0.04	<0.01	--	9.16	24.4
Lead, dissolved	mg/l	0.01	--	--	**0.06**	<0.002	0.006	**0.015**	<0.05	--	0.002	<0.002
Magnesium, dissolved	mg/l	--	--	--	--	40	--	75	100	--	60	42
Manganese, dissolved	mg/l	--	0.05	--	--	0.45	6.07	3.1	1.63	--	1.2	2.06
Mercury, dissolved	mg/l	0.001	--	--	<0.001	--	0.001	--	--	--	<0.0002	<0.0002
Molybdenum, dissolved	mg/l	--	--	--	--	0.02	--	<0.01	<0.01	--	<0.01	<0.01
Nickel, dissolved	mg/l	--	--	--	--	<0.01	--	--	0.02	--	0.01	0.02
Potassium, dissolved	mg/l	--	--	--	--	13	--	10	18	--	8	11
Silicon, dissolved	mg/l	--	--	--	--	4.8	--	7.5	7.3	--	6.3	6.7
Silver, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	0.01	--	<0.01	<0.01
Sodium, dissolved	mg/l	--	200 [7]	--	--	69	--	206	247	--	110	91
Strontium, dissolved	mg/l	--	--	--	--	0.59	--	0.86	0.83	--	0.707	0.762
Sulfur	mg/l	--	--	--	--	19	--	10	3	--	<3	13
Thallium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.05	<0.05	--	<0.01	<0.2
Tin, dissolved	mg/l	--	--	--	--	<0.05	--	<0.05	<0.05	--	<0.05	<0.01
Titanium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.05	<0.01
Vanadium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	0.02
Zinc, dissolved	mg/l	--	5	--	0.14	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	0.001	0.008	<0.002	--	<0.002	<0.002	--	<0.002	<0.001

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-2 01-Jun-1997	OV-2 22-Nov-1998	OV-2 16-Oct-1999	OV-2 01-Jul-2000	OV-2 14-Oct-2000	OV-2 28-May-2002	OV-2 03-May-2003	OV-2 04-May-2004	OV-2 04-Oct-2004
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	953	990	897	1350	1550	889	961	582	1400
Ammonia Nitrogen	mg/l	--	--	2.7	1.87	0.93	4.09	7.58	2.01	2.29	1.2	13.5
Biochemical Oxygen Demand, 5 Day	mg/l	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	151	250	358	220	346	166	154	55	624
Conductivity	uS/cm	--	--	1970	2266	2730	2830	2440	2130	2280	1190	4200
Nitrate	mg/l	-- [5]	--	0.11	-- [8]	3.84	<0.1	<0.1	0.16	<0.1	<0.1	<0.1
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	6.32	10.4	3.53	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	3.53	2.17	15.1
pH (Field)	-	--	--	751	7.57	7.4	6.99	7.17	7.71	7.45	6.97	7.06
Phosphate	mg/l	--	--	<0.03	-- [8]	<0.03	<0.03	<0.03	<0.03	0.59	0.15	0.37
Phosphorus	mg/l	--	--	--	--	--	0.26	--	0.07	0.2	0.08	0.19
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	12	88	431	3	5	78	154	35	198
Total Dissolved Solids	mg/l	--	500	1212	1392	1908	2040	2060	1380	1480	774	2730
Total Organic Carbon	mg/l	--	--	26.9	24	27.9	137	53.2	25.4	25.2	12.3	48.1
Metals												
Aluminum, dissolved	mg/l	--	--	0.1	0.05	0.09	<0.05	<0.05	0.05	0.01	--	--
Arsenic, dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	0.32	0.29	0.41	0.51	0.68	0.29	0.21	--	--
Beryllium, dissolved	mg/l	--	--	<0.01	-- [8]	<0.01	<0.002	<0.002	<0.002	<0.001	--	--
Boron, dissolved	mg/l	5	--	0.4	0.84	1.28	0.69	0.72	0.59	0.76	0.81	1.67
Cadmium, dissolved	mg/l	0.005	--	<0.005	-- [8]	<0.01	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	234	271	257	347	385	228	231	130	289
Chromium, dissolved	mg/l	0.05	--	<0.01	-- [8]	<0.01	<0.01	<0.01	0.002	0.031	0.002	0.012
Cobalt, dissolved	mg/l	--	--	<0.01	-- [8]	<0.01	<0.01	0.0119	0.0042	0.0053	--	--
Copper, dissolved	mg/l	--	1	<0.005	-- [8]	<0.01	0.04	0.003	0.003	0.002	0.001	0.012
Iron, dissolved	mg/l	--	0.3	10.3	6.55	8.15	30.2	33.7	14.4	6.98	4.84	23
Lead, dissolved	mg/l	0.01	--	<0.002	-- [8]	<0.002	0.002	<0.001	0.001	<0.001	<0.001	0.001
Magnesium, dissolved	mg/l	--	--	60	76	82	75	98	62	77	34	115
Manganese, dissolved	mg/l	--	0.05	2.36	2.64	2.3	4.25	2.69	3.68	2.51	1.33	1.74
Mercury, dissolved	mg/l	0.001	--	<0.0002	-- [8]	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.03	-- [8]	<0.01	<0.01	<0.01	<0.01	<0.005	--	--
Nickel, dissolved	mg/l	--	--	0.02	-- [8]	<0.01	0.01	0.03	<0.01	0.01	0.012	0.08
Potassium, dissolved	mg/l	--	--	14	7	10	13	16	27	27	32	47
Silicon, dissolved	mg/l	--	--	5	5.1	5.4	9.79	10.4	4.98	3.9	--	--
Silver, dissolved	mg/l	--	--	<0.01	-- [8]	0.01	<0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	126	213	328	272	309	171	199	81	424
Strontium, dissolved	mg/l	--	--	0.71	0.737	0.81	1.24	1.09	0.713	0.7	--	--
Sulfur	mg/l	--	--	5	29	138	5	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.2	-- [8]	<0.2	<0.2	<0.001	<0.001	<0.001	--	--
Tin, dissolved	mg/l	--	--	<0.05	-- [8]	--	--	<0.01	--	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	-- [8]	<0.01	<0.01	<0.01	<0.01	<0.01	--	--
Vanadium, dissolved	mg/l	--	--	<0.01	-- [8]	<0.01	<0.01	0.003	0.001	0.01	--	--
Zinc, dissolved	mg/l	--	5	0.01	-- [8]	0.17	0.02	<0.01	<0.01	<0.005	--	--
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.002	-- [8]	<0.001	0.006	<0.001	<0.001	<0.001	<0.001	<0.001

APPENDIX C-II
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	(169/03)-03)-Health [1]	ODWQS-AO [2]	OV-5 01-Apr-1988	OV-5 01-Nov-1988	OV-5 01-Nov-1990	OV-5 01-Oct-1991	OV-5 01-Dec-1991	OV-5 01-Dec-1992	OV-5 01-Feb-1993	OV-5 01-Sep-1996	OV-5 22-Nov-1998	OV-5 15-Jul-1999
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	333	--	270	358	314	276	290	286	422	--
Ammonia Nitrogen	mg/l	--	--	0.08	--	--	--	--	--	--	0.02	0.04	0.03
Biochemical Oxygen Demand, 5 Day	mg/l	--	--	<2	2	<1	--	5	2	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	25	12	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	22.2	27	24	39	34	52	49	47	61	--
Conductivity	uS/cm	--	--	720	--	659	670	--	--	--	730	832	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate	mg/l	-- [5]	--	2.48	--	--	--	--	--	--	3.29	2.76	--
Nitrite	mg/l	-- [13]	--	0.32	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.5	7.4	--	--	--	--	--	7.48	7.82	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	<0.03	-- [8]	--
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	<0.1	--	<0.1	<0.1	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	45	26	33	25	27	--
Total Dissolved Solids	mg/l	--	500	--	439	376	404	360	470	500	448	500	--
Total Organic Carbon	mg/l	--	--	--	<0.5	--	--	--	1.7	--	2.3	1.8	0.4
Metals													
Aluminum, dissolved	mg/l	--	--	--	--	<0.03	--	<0.03	<0.03	--	0.31	-- [8]	--
Arsenic, dissolved	mg/l	0.01	--	--	<0.01	--	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	--	0.15	0.07	--	0.1	0.09	--	0.07	0.08	--
Beryllium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	-- [8]	--
Boron, dissolved	mg/l	5	--	--	--	0.03	--	0.01	0.05	--	0.05	0.03	--
Cadmium, dissolved	mg/l	0.005	--	--	<0.002	<0.002	<0.002	<0.002	<0.002	--	<0.005	-- [8]	--
Calcium, dissolved	mg/l	--	--	--	--	115	--	125	95	--	109	116	--
Chromium, dissolved	mg/l	0.05	--	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	<0.01	-- [8]	--
Cobalt, dissolved	mg/l	--	--	--	--	<0.02	--	<0.01	<0.01	--	<0.01	-- [8]	--
Copper, dissolved	mg/l	--	1	--	--	<0.01	<0.01	<0.01	<0.01	--	0.016	-- [8]	--
Iron, dissolved	mg/l	--	0.3	0.5	4.9	<0.01	23.2	0.27	<0.01	--	0.07	0.28	--
Lead, dissolved	mg/l	0.01	--	--	<0.05	0.008	0.003	<0.002	<0.05	--	<0.002	-- [8]	--
Magnesium, dissolved	mg/l	--	--	--	--	27	--	29	35	--	28	32	--
Manganese, dissolved	mg/l	--	0.05	--	--	<0.01	0.62	0.04	<0.01	--	<0.01	-- [8]	--
Mercury, dissolved	mg/l	0.001	--	--	<0.001	--	<0.001	--	--	--	<0.0002	-- [8]	--
Molybdenum, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.03	-- [8]	--
Nickel, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	-- [8]	--
Potassium, dissolved	mg/l	--	--	--	--	3	--	2	132	--	2	2	--
Silicon, dissolved	mg/l	--	--	--	--	5.3	--	7.3	6.4	--	4.7	5.4	--
Silver, dissolved	mg/l	--	--	--	--	<0.01	--	0.01	<0.01	--	<0.0012	-- [8]	--
Sodium, dissolved	mg/l	--	200 [7]	--	--	10	--	12	13	--	13	22	--
Strontium, dissolved	mg/l	--	--	--	--	0.64	--	0.81	0.65	--	0.59	0.619	--
Sulfur	mg/l	--	--	--	--	8	--	16	9	--	7	9	--
Thallium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.05	<0.05	--	<0.2	-- [8]	--
Tin, dissolved	mg/l	--	--	--	--	<0.05	--	<0.05	<0.05	--	<0.05	-- [8]	--
Titanium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	-- [8]	--
Vanadium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	-- [8]	--
Zinc, dissolved	mg/l	--	5	--	0.03	<0.01	0.01	<0.01	<0.01	--	0.01	-- [8]	--
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	--	<0.002	0.005	<0.002	<0.002	<0.002	--	<0.002	-- [8]	0.002

APPENDIX C-II
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	(169/03)-03)-Health [1]	ODWQS-AO [2]	OV-5 01-Jul-2000	OV-5 14-Oct-2000	OV-5 06-Sep-2001	OV-5 06-Nov-2001	OV-5 28-May-2002	OV-5 02-Oct-2002	OV-5 03-May-2003	OV-5 01-Nov-2003	OV-5 04-May-2004	OV-5 04-Oct-2004
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	327	349	311	330	331	340	347	333	246	260
Ammonia Nitrogen	mg/l	--	--	0.22	0.11	0.32	0.02	0.02	0.04	<0.02	0.13	0.02	0.16
Biochemical Oxygen Demand, 5 Day	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	28	51	42	61	45	45	58	62	24	28
Conductivity	uS/cm	--	--	688	718	725	806	839	829	866	868	581	619
Hardness, Calcium Carbonate	mg/l	--	--	--	--	341	407	--	401	--	--	--	--
Nitrate	mg/l	-- [5]	--	1.65	<0.1	4.28	1.38	5.4	5.93	3.46	3.58	--	2.24
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	2.83	--
Nitrogen	mg/l	--	--	0.22	0.14	--	--	0.21	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	0.09	0.66	0.19	0.22
pH (Field)	-	--	--	6.98	7.6	7.58	7.71	7.8	7.71	7.63	7.69	7.47	7.53
Phosphate	mg/l	--	--	<0.02	<0.03	--	--	--	--	0.44	0.1	0.16	0.11
Phosphorus	mg/l	--	--	0.17	--	--	--	0.1	--	0.16	0.05	0.21	0.23
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	17	22	20	43	24	24	24	24	23	17
Total Dissolved Solids	mg/l	--	500	380	448	448	500	545	539	563	564	378	402
Total Organic Carbon	mg/l	--	--	0.4	1.3	--	--	1.5	--	1.1	1.4	1.1	2.4
Metals													
Aluminum, dissolved	mg/l	--	--	<0.05	0.08	<0.05	<0.05	0.11	<0.01	<0.01	0.06	--	--
Arsenic, dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	0.06	0.08	0.08	0.07	0.08	0.09	0.08	0.09	--	--
Beryllium, dissolved	mg/l	--	--	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0001	<0.001	<0.001	--	--
Boron, dissolved	mg/l	5	--	0.03	0.03	0.03	<0.05	<0.05	<0.05	0.05	0.03	0.06	0.05
Cadmium, dissolved	mg/l	0.005	--	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001
Calcium, dissolved	mg/l	--	--	96	123	97	115	111	116	108	123	81	82
Chromium, dissolved	mg/l	0.05	--	<0.01	<0.01	0.004	0.004	0.001	<0.001	0.009	0.037	<0.001	0.008
Cobalt, dissolved	mg/l	--	--	<0.01	0.0005	<0.0002	<0.0002	0.0014	0.0009	<0.0002	0.002	--	--
Copper, dissolved	mg/l	--	1	<0.01	0.003	<0.001	<0.001	0.003	0.002	0.002	--	0.001	0.002
Iron, dissolved	mg/l	--	0.3	0.04	0.16	<0.01	<0.01	0.5	0.5	<0.01	<0.01	0.04	0.01
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	23	29	24	29	27	27	29	27	19	19
Manganese, dissolved	mg/l	--	0.05	<0.01	<0.01	<0.01	<0.01	0.04	0.028	<0.005	<0.005	<0.01	<0.01
Mercury, dissolved	mg/l	0.001	--	<0.001	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	<0.0005	<0.005	--	--
Nickel, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	--	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	2	2	2	2	2	2	2	3	2	2
Silicon, dissolved	mg/l	--	--	5.36	6.24	5.7	5.88	4.7	5	5.1	5.7	--	--
Silver, dissolved	mg/l	--	--	<0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	20	19	17	19	21	24	24	24	9	12
Strontium, dissolved	mg/l	--	--	0.519	0.629	0.647	0.549	0.632	0.679	0.631	0.692	--	--
Sulfur	mg/l	--	--	6	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.2	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--
Tin, dissolved	mg/l	--	--	--	<0.01	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	--	--
Vanadium, dissolved	mg/l	--	--	<0.01	<0.001	0.001	0.001	0.001	<0.005	0.003	<0.001	--	--
Zinc, dissolved	mg/l	--	5	0.01	<0.01	<0.01	<0.01	<0.01	>0.005	--	<0.001	--	--
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-7 01-Dec-1992	OV-7 01-Feb-1993	OV-7 22-Nov-1998	OV-7 01-Jul-1999	OV-7 16-Oct-1999	OV-7 01-Jul-2000	OV-7 14-Oct-2000	OV-7 06-Sep-2001	OV-7 28-May-2002	OV-7 03-May-2003
General Chemistry													
Alkalinity (Total as CaCO	mg/l	--	--	2300	2520	1428	1691	336	1940	1930	1860	1560	1680
Ammonia Nitrogen	mg/l	--	--	--	--	83.5	78.4	76.5	86.4	102	117	79	85
Biochemical Oxygen Der	mg/l	--	--	150	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	379	351	221	261	275	228	363	262	211	121
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	--	--	3402	3230	3580	3810	2930	3860	--	3480
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbo	mg/l	--	5	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carb	mg/l	--	--	--	--	--	--	--	--	--	1080	--	--
Nitrate	mg/l	-- [5]	--	--	--	-- [8]	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrogen	mg/l	--	--	--	--	--	--	--	90.8	102	--	94.6	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	112
pH (Field)	-	--	--	--	--	6.9	6.58	6.63	6.54	7.05	6.88	7.09	6.69
Phosphate	mg/l	--	--	--	--	0.06	<0.03	<0.03	<0.03	<0.03	--	<0.03	1.61
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	--	--	--	1.82	--	--	2.17	1.2
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved re	mg/l	--	--	<0.1	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	27	11	22	<3	<3	<3	2	1	7	3
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	3060	2880	2044	2056	2104	2384	2256	2140	--	2260
Total Organic Carbon	mg/l	--	--	194	--	78	43.4	99.2	190	90.9	--	67.9	69.1
Turbidity	ntu	--	5 [22]	--	--	--	--	--	--	--	--	2200	--
Metals													
Aluminum, dissolved	mg/l	--	--	<0.03	--	0.13	<0.03	0.03	0.15	0.12	<0.05	<0.05	0.08
Barium, dissolved	mg/l	1	--	0.63	--	0.65	0.68	0.85	0.73	0.61	0.61	0.5	0.64
Beryllium, dissolved	mg/l	--	--	<0.01	--	-- [8]	<0.01	0.01	<0.002	<0.002	<0.002	<0.002	<0.001
Boron, dissolved	mg/l	5	--	2.38	--	1.87	1.56	0.17	1.59	1.61	2.15	1.66	1.79
Cadmium, dissolved	mg/l	0.005	--	<0.01	--	-- [8]	<0.005	**0.06**	**0.006**	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	346	--	356	354	312	435	386	297	280	258
Chromium, dissolved	mg/l	0.05	--	0.01	--	-- [8]	<0.01	<0.01	<0.01	<0.01	0.048	0.043	<0.005
Cobalt, dissolved	mg/l	--	--	0.02	--	-- [8]	<0.01	<0.01	<0.01	0.0142	0.0074	0.0054	0.011
Copper, dissolved	mg/l	--	1	<0.01	--	-- [8]	<0.005	0.055	<0.01	0.002	<0.001	0.002	<0.005
Iron, dissolved	mg/l	--	0.3	0.7	--	46.3	53.1	30.8	73.4	26.5	8.04	39	47
Lead, dissolved	mg/l	0.01	--	<0.05	--	-- [8]	<0.002	<0.002	0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	138	--	82	77	74	85	72	83	70	88
Manganese, dissolved	mg/l	--	0.05	0.36	--	0.85	1.09	0.81	2.33	1.61	1.38	1.25	0.922
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	--	--	-- [8]	<0.0002	<0.0002	<0.0001	<0.0001	--	<0.01	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	--	-- [8]	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.005
Nickel, dissolved	mg/l	--	--	0.06	--	0.03	<0.01	<0.01	0.02	0.02	0.02	<0.01	--
Potassium, dissolved	mg/l	--	--	233	--	92	82	93	86	79	93	70	91
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--	--

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-7 01-Nov-2003	OV-7 04-May-2004	OV-7 01-Oct-2004	OV-7 14-Jun-2005	OV-7 29-Oct-2005	OV-7 08-Apr-2006	OV-7 24-Nov-2006	OV-7 25-Apr-2007	OV-7 04-Dec-2007	OV-7 03-May-2008
General Chemistry													
Alkalinity (Total as CaCO	mg/l	--	--	1660	1520	1760	1680	1840	1130	1290	1460	1800	1210
Ammonia Nitrogen	mg/l	--	--	107	93	100	79	96.7	45	72.1	84.4	102	56.7
Biochemical Oxygen Der	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	221	212	235	217	303	77	120	156	257	138
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	3620	3250	3610	3600	2950	1810	1210	1770	3790	1215
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbo	mg/l	--	5	--	--	--	--	--	38.9	45.4	55.5	95.9	53.3
Hardness, Calcium Carb	mg/l	--	--	--	--	--	1038.8	--	742.9	756.6	932	961	871
Nitrate	mg/l	-- [5]	--	<0.1	<0.1	0.22	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	124	102	109	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.9	6.48	6.52	6.73	6.7	6.4	6.8	6.3	6.9	6.8
Phosphate	mg/l	--	--	0.79	0.77	0.73	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.74	1.57	1.1	1.72	0.98	2.64	1.53	1.79	1.7	2.49
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved re	mg/l	--	--	--	--	--	--	--	0.28	0.35	0.23	<0.01	<0.01
Sulphate	mg/l	--	500 [6]	4	<1	<1	4	2	23	3	1	3	11
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	6.9	--
Temperature (Field)	deg c	--	15	--	--	--	-- [12]	10	6	7	7	7	9
Total Dissolved Solids	mg/l	--	500	2350	2110	2350	2340	1918	1390	1710	2000	2460	1660
Total Organic Carbon	mg/l	--	--	78.8	79.5	80.9	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [22]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	0.09	--	--	0.02	<0.1	<0.01	0.02	0.02	<0.01	0.03
Barium, dissolved	mg/l	1	--	0.9	--	--	0.77	--	0.14	0.5	0.72	0.67	0.6
Beryllium, dissolved	mg/l	--	--	<0.001	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	1.54	1.6	1.68	1.57	2.2	1.24	1.6	1.43	3.17	1.6
Cadmium, dissolved	mg/l	0.005	--	0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	253	250	214	304	--	225	219	266	271	263
Chromium, dissolved	mg/l	0.05	--	**0.052**	0.006	**13**	0.006	--	<0.005	<0.005	<0.005	<0.005	<0.005
Cobalt, dissolved	mg/l	--	--	0.012	--	--	0.0117	--	0.0073	0.0089	0.0141	0.0113	0.0085
Copper, dissolved	mg/l	--	1	0.001	<0.001	0.001	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	56.6	67.6	57.5	69.7	62.1	<0.03	58.7	57.2	40	50.3
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	85	72	75	68	--	44	51	65	69	52
Manganese, dissolved	mg/l	--	0.05	1.01	1.14	1.07	--	--	1.31	0.98	1.22	1.11	1.27
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	--	--	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.031	0.025	0.03	0.03	<0.05	0.017	0.019	0.021	0.055	0.014
Potassium, dissolved	mg/l	--	--	104	79	80	62	--	38	58	69	80	52
Selenium, dissolved	mg/l	0.05	--	--	--	--	0.003	--	<0.001	0.002	0.003	0.007	0.002

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-7 28-Nov-2008	OV-7 29-Apr-2009 A-20	OV-7 28-Nov-2009 A-14	OV-7 20-May-2010 A-30	OV-7 29-Nov-2010 [15] A - 3	OV-7 10-May-2011 [16] S-3	OV-7 29-Nov-2011 [17] A-8	OV-7 20-May-2012 [15] S-13	OV-7 14-Nov-2012 [18] A-25	OV-7 31-May-2014 [9] S-21
General Chemistry													
Alkalinity (Total as CaCO	mg/l	--	--	1510	1290	1565	1447	1290	1250	1620	1510	1703	1100
Ammonia Nitrogen	mg/l	--	--	95.2	60.7	91.3	72.0	75.0	62.0	98.9	82.9	94.9	69
Biochemical Oxygen Der	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	188	122	168	153	136	127	198	162	203	--
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	100
Conductivity	uS/cm	--	--	1305	2600	3200	2900	2590	2330	3290	2980	3560	2200
Conductivity (Field)	uS/cm	--	--	--	2420	2360	2390	2210	2540	2490	3050	3010	2935
Dissolved Organic Carbo	mg/l	--	5	67.8	47.6	65.7	55.8	42.4	40.5	44.6	51.7	62.6	27
Hardness, Calcium Carb	mg/l	--	--	904	790	827	822	842	777	730	574	1020	840
Nitrate	mg/l	-- [5]	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.8	6.8	6.9	6.8	6.8	6.6	6.7	6.3	6.4	6.5
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	<0.010
Phosphorus	mg/l	--	--	1.35	1.72	3.13	2.23	1.74	1.37	1.40	1.89	1.49	1.7
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	1.1
Phosphorus (dissolved re	mg/l	--	--	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--
Sulphate	mg/l	--	500 [6]	1	5	<1	2	<1	7	<1	4	<3	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	2
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	3
Temperature (Field)	deg c	--	15	7	11	9	13	9	14.0	12	14	13	13
Total Dissolved Solids	mg/l	--	500	2090	1690	2080	1890	1680	1510	2140	1940	2310	1110
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [22]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	0.03	0.01	0.04	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.019
Barium, dissolved	mg/l	1	--	0.78	0.49	0.73	0.6	0.6	0.4	0.8	0.7	0.8	0.49
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.00050
Boron, dissolved	mg/l	5	--	2	1.3	1.7	1.7	1.3	1.3	2.4	1.6	1.9	1.2
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00010
Calcium, dissolved	mg/l	--	--	258	234	239	232	253	232	215	169	280	250
Chromium, dissolved	mg/l	0.05	--	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0118	0.0077	0.0116	0.010	0.008	0.007	0.011	0.011	0.012	0.0057
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	54	61.1	54.2	71.5	59.1	49.0	51.4	62.4	48.2	55
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.00050
Magnesium, dissolved	mg/l	--	--	63	50	56	59	51	48	47	37	78	52
Manganese, dissolved	mg/l	--	0.05	1.05	1.05	1.10	1.1	1.0	1.0	1.0	1.2	0.9	1.1
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.00057
Nickel, dissolved	mg/l	--	--	0.028	0.011	0.023	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0081
Potassium, dissolved	mg/l	--	--	74	49	66	59	53	45	54	40	85	53
Selenium, dissolved	mg/l	0.05	--	<0.001	0.002	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0020

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-7 18-Nov-2014 [19] A-9	OV-7 05-May-2015 S-1	OV-7 16-Nov-2015 [20] S-24	OV-7 19-Apr-2016 S-1	OV-7 31-Oct-2016 S-3	OV-7 29-May-2017 A-21	OV-7 23-Nov-2017 OV-7	OV-7 17-May-2018 OV-7	OV-7 29-Oct-2018 [4] OV-7	OV-7 04-Jun-2019 [21] OV-7
General Chemistry													
Alkalinity (Total as CaCO	mg/l	--	--	1300	1300	1600	1000	1500	950	1200	1100	1600	970
Ammonia Nitrogen	mg/l	--	--	79	87	110	49	100	39	78	63	110	51
Biochemical Oxygen Der	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	130	140	180	84	130	70	92	81	190	71
Conductivity	uS/cm	--	--	2800	2700	3200	2100	3200	2000	2300	2100	3200	1900
Conductivity (Field)	uS/cm	--	--	2740	2805	1320	1985	1925	1845	1770	2290	2240	2121
Dissolved Organic Carbo	mg/l	--	5	46	43	61	32	71	24	32	28	63	25
Hardness, Calcium Carb	mg/l	--	--	840	830	950	730	930	680	630	790	900	690
Nitrate	mg/l	-- [5]	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.7	6.8	6.8	6.67	6.69	6.7	6.8	6.6	6.8	6.67
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050 [23]	<0.020 [23]	<0.050 [9]	<0.010	<0.010
Phosphorus	mg/l	--	--	1.6	1.7	1.5	1.8	1.3	1.5	1.1	1.2	1.6	1.8
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved re	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	<1	<1	1.8	<20 [23]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	10	11	7	4.7	8	7.2	6.9	10.7	10.9	10.4
Total Dissolved Solids	mg/l	--	500	1360	1300	1640	1160	1810	926	955	1060	1600	1060
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [22]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	0.019	0.017	0.019	0.015	0.017	0.016	0.019	0.018	0.019	0.025
Barium, dissolved	mg/l	1	--	0.59	0.61	0.74	0.36	0.71	0.3	0.39	0.41	0.65	0.32
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	1.4	1.3	1.8	1.2	1.7	0.93	1.3	1.2	1.7	1
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	250	240	270	220	270	210	190	240	260	210
Chromium, dissolved	mg/l	0.05	--	<0.005	<0.0050	<0.03	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0079	0.0085	0.011	0.0054	0.0090	0.0036	0.0055	0.0053	0.0092	0.0037
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	54	55	54	50	50	43	37	48	48	44
Lead, dissolved	mg/l	0.01	--	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	54	56	66	41	63	36	38	49	58	39
Manganese, dissolved	mg/l	--	0.05	0.97	0.99	0.93	1.1	0.99	0.94	0.76	0.97	0.9	0.96
Mercury	mg/l	0.001	--	--	--	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.00010	<0.00010	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0007	0.00054	0.0007	0.0006	0.00078	<0.00050	0.00061	<0.00050	0.00068	<0.00050
Nickel, dissolved	mg/l	--	--	0.015	0.013	0.02	0.007	0.02	0.0059	0.0091	0.0080	0.019	0.0063
Potassium, dissolved	mg/l	--	--	60	58	74	38	70	39	49	48	69	42
Selenium, dissolved	mg/l	0.05	--	<0.002	<0.0020	<0.002	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-7 15-Nov-2019 OV-7	OV-7 07-May-2020 OV-7	OV-7 27-Oct-2020 OV-7	OV-7 01-May-2021 OV-7	OV-7 24-Nov-2021 OV-7	OV-7 26-Apr-2022 OU-7	OV-7 18-Dec-2022 OV-7	OV-7 26-May-2023 OV-7	OV-7 25-Nov-2023 OV-7
General Chemistry												
Alkalinity (Total as CaCO	mg/l	--	--	1100	980	1500	1000	1400	900	1500	840	1400
Ammonia Nitrogen	mg/l	--	--	68	48	100	63	96	44	98	40	97
Biochemical Oxygen Der	mg/l	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	100	73	180	80	140	77	180	60	180
Conductivity	uS/cm	--	--	2400	2000	3300	2000	2800	1900	3200	1800	3100
Conductivity (Field)	uS/cm	--	--	2080	1614	2326	2324	3110	2694	2601	2511	2484
Dissolved Organic Carbo	mg/l	--	5	36	24	64	24	51	20	56	18	56
Hardness, Calcium Carb	mg/l	--	--	770	710	1100	710	880	750	930	660	980
Nitrate	mg/l	-- [5]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.8	7.03	7.64	7.51	6.66	6.82	6.77	6.8	6.74
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	1.1	1.4	1.3	1.2	1.2	0.99	1.2	1.2	1.1
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved re	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	<1.0	<1.0	<1.0	<1.0	<1.0	20	<1.0	6.9	<1.0
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	9.1	7.8	9.52	9.8	9.2	8.1	6.1	8.1	7.8
Total Dissolved Solids	mg/l	--	500	1120	965	1500	970	1420	955	1340	870	1540
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [22]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	0.016	0.015	0.018	0.015	0.015	0.014	0.031	0.012	0.013
Barium, dissolved	mg/l	1	--	0.45	0.34	0.71	0.43	0.64	0.35	0.66	0.27	0.65
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00040	<0.00040	<0.00040	<0.00040	<0.0020	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	1.3	1	1.8	0.87	1.6	0.89	1.4	0.75	1.4
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090	<0.000090	<0.00045	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	240	220	320	220	270	240	280	210	300
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0064	0.0040	0.0091	0.0042	0.0074	0.0039	0.0076	0.0031	0.0052
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	43	42	51	44	44	40	49	40	51
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0025	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	43	39	64	42	52	37	58	33	59
Manganese, dissolved	mg/l	--	0.05	0.83	0.94	1	0.81	0.83	1	0.89	0.97	0.98
Mercury	mg/l	0.001	--	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00078	<0.00050	0.00062	<0.00050	<0.00050	<0.00050	<0.0025	<0.00050	0.00056
Nickel, dissolved	mg/l	--	--	0.011	0.0058	0.02	0.0070	0.015	0.0049	0.017	0.0044	0.019
Potassium, dissolved	mg/l	--	--	50	41	71	46	61	39	58	32	61
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.01	<0.0020	<0.0020

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-7 01-Dec-1992	OV-7 01-Feb-1993	OV-7 22-Nov-1998	OV-7 01-Jul-1999	OV-7 16-Oct-1999	OV-7 01-Jul-2000	OV-7 14-Oct-2000	OV-7 06-Sep-2001	OV-7 28-May-2002	OV-7 03-May-2003
Silicon, dissolved	mg/l	--	--	11.72	--	12.4	14.4	11.2	14.3	13.4	14.6	11.8	11
Silver, dissolved	mg/l	--	--	<0.01	--	-- [8]	<0.01	0.01	<0.01	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	484	--	250	256	271	250	257	227	180	231
Strontium, dissolved	mg/l	--	--	1.57	--	1.73	1.84	1.6	1.84	1.72	1.79	1.77	2.06
Sulfur	mg/l	--	--	4	--	9	3	3	6	--	--	--	--
Tin, dissolved	mg/l	--	--	<0.05	--	-- [8]	<0.05	--	--	<0.01	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	--	-- [8]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	<0.01	--	-- [8]	<0.01	<0.01	0.03	0.01	0.013	0.012	<0.005
Zinc, dissolved	mg/l	--	5	<0.01	--	-- [8]	<0.01	0.03	0.03	<0.01	0.02	<0.01	<0.005
Phenols													
Phenolics, Total Recove	mg/l	--	--	0.083	--	0.011	0.012	<0.001	0.3	0.007	0.004	0.008	0.002

APPENDIX C-II
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-7 01-Nov-2003	OV-7 04-May-2004	OV-7 01-Oct-2004	OV-7 14-Jun-2005	OV-7 29-Oct-2005	OV-7 08-Apr-2006	OV-7 24-Nov-2006	OV-7 25-Apr-2007	OV-7 04-Dec-2007	OV-7 03-May-2008
Silicon, dissolved	mg/l	--	--	13.3	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	254	198	205	188	--	87	124	181	214	130
Strontium, dissolved	mg/l	--	--	1.66	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.024	--	--	0.038	--	0.036	0.024	0.027	0.11	0.032
Zinc, dissolved	mg/l	--	5	0.03	--	--	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols													
Phenolics, Total Recove	mg/l	--	--	--	<0.004	0.005	--	--	--	--	--	--	--

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-7 28-Nov-2008	OV-7 29-Apr-2009 A-20	OV-7 28-Nov-2009 A-14	OV-7 20-May-2010 A-30	OV-7 29-Nov-2010 [15] A - 3	OV-7 10-May-2011 [16] S-3	OV-7 29-Nov-2011 [17] A-8	OV-7 20-May-2012 [15] S-13	OV-7 14-Nov-2012 [18] A-25	OV-7 31-May-2014 [9] S-21
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	186	124	173	164	123	103	158	110	220	110
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.061	0.039	0.048	<0.01	0.02	<0.005	0.03	<0.005	0.005	0.0041
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0050
Phenols													
Phenolics, Total Recove	mg/l	--	--	--	--	--	--	--	--	--	--	--	--

APPENDIX C-II
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-7 18-Nov-2014 [19] A-9	OV-7 05-May-2015 S-1	OV-7 16-Nov-2015 [20] S-24	OV-7 19-Apr-2016 S-1	OV-7 31-Oct-2016 S-3	OV-7 29-May-2017 A-21	OV-7 23-Nov-2017 OV-7	OV-7 17-May-2018 OV-7	OV-7 29-Oct-2018 [4] OV-7	OV-7 04-Jun-2019 [21] OV-7
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	160	150	200	100	220	88	110	110	210	89
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.0049	0.0051	0.0060	0.0033	0.0056	0.0027	0.0041	0.0036	0.0057	0.0029
Zinc, dissolved	mg/l	--	5	0.21	<0.0050	<0.005	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols													
Phenolics, Total Recove	mg/l	--	--	--	--	--	--	--	--	--	--	--	--

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-7 15-Nov-2019 OV-7	OV-7 07-May-2020 OV-7	OV-7 27-Oct-2020 OV-7	OV-7 01-May-2021 OV-7	OV-7 24-Nov-2021 OV-7	OV-7 26-Apr-2022 OU-7	OV-7 18-Dec-2022 OV-7	OV-7 26-May-2023 OV-7	OV-7 25-Nov-2023 OV-7
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090	<0.000090	<0.00045	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	130	85	230	96	180	83	180	77	190
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.0040	0.0030	0.0056	0.0034	0.0049	0.0029	0.0051	0.0024	0.0050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050
Phenols												
Phenolics, Total Recove	mg/l	--	--	--	--	--	--	--	--	--	--	--

APPENDIX C-II
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-9 01-Dec-1992	OV-9 01-May-1995	OV-9 01-Oct-1995	OV-9 01-Apr-1996	OV-9 01-Jun-1997	OV-9 01-Jul-1999	OV-9 16-Oct-1999	OV-9 01-Jul-2000	OV-9 14-Oct-2000	OV-9 28-May-2002	OV-9 04-May-2004	OV-9 09-Jun-2005
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	246	331	346	273	262	331	361	290	259	291	332	274
Ammonia Nitrogen	mg/l	--	--	--	<0.01	0.02	0.01	0.04	0.08	0.02	0.06	<0.02	0.03	0.04	0.08
Biochemical Oxygen Demand, 5 Da	mg/l	--	--	2	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	37	45	46	29	27	44	53	37	20	35	30	36
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	--	799	822	639	613	719	782	672	549	705	858	1200
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	378.4
Nitrate	mg/l	-- [5]	--	--	1.37	1.62	0.48	0.3	1.08	1.38	0.31	<0.1	0.5	4.29	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	0.52	0.31	0.07	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	0.66	--
pH (Field)	-	--	--	--	7.33	7.78	7.55	7.56	7.22	7.51	6.8	7.55	7.86	7.36	6.7
Phosphate	mg/l	--	--	--	--	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.07	<0.03	0.18	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	1.79	--	0.53	0.83	5.26
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.1	<0.1	<0.1	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	34	33	34	26	25	24	33	25	46	23	88	81
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--	--	--	16.8
Total Dissolved Solids	mg/l	--	500	390	476	492	388	388	432	476	392	348	458	558	780
Total Organic Carbon	mg/l	--	--	6.2	2.5	2.1	1.4	1.2	0.4	1.4	1.2	5.9	2	7.4	--
Metals															
Aluminum, dissolved	mg/l	--	--	<0.03	0.03	<0.03	<0.03	0.03	--	0.03	0.14	0.24	<0.05	--	<0.01
Barium, dissolved	mg/l	1	--	0.13	0.12	0.11	0.09	0.08	--	0.35	0.09	0.17	0.09	--	0.19
Beryllium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	--	0.01	<0.002	<0.002	<0.002	--	<0.001
Boron, dissolved	mg/l	5	--	0.08	0.05	0.04	0.05	0.03	--	0.26	0.04	0.12	<0.05	0.2	0.11
Cadmium, dissolved	mg/l	0.005	--	<0.01	<0.005	<0.005	<0.005	<0.005	--	<0.01	<0.005	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	81	115	107	86	77	--	116	90	91	87	128	112
Chromium, dissolved	mg/l	0.05	--	<0.01	<0.01	<0.01	0.01	<0.01	--	<0.01	<0.01	<0.01	0.003	0.001	0.001
Cobalt, dissolved	mg/l	--	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	0.0009	0.0008	--	0.0016
Copper, dissolved	mg/l	--	1	<0.01	<0.005	<0.005	0.011	0.017	--	<0.01	<0.01	0.02	<0.001	0.003	--
Iron, dissolved	mg/l	--	0.3	0.03	0.08	0.06	0.12	0.36	--	0.56	0.29	0.62	0.25	0.01	<0.03
Lead, dissolved	mg/l	0.01	--	<0.05	<0.002	<0.002	<0.002	<0.002	--	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	21	27	27	23	22	--	29	23	--	24	26	24
Manganese, dissolved	mg/l	--	0.05	0.04	0.02	0.04	0.05	0.04	--	0.03	0.03	21	0.06	0.5	--
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	--	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.03	--	<0.01	<0.01	<0.01	<0.01	--	<0.005
Nickel, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	2	3	3	3	2	--	3	3	2	3	2	2
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--	--	--	<0.001
Silicon, dissolved	mg/l	--	--	3.9	6.3	5.8	5.3	4.3	--	5.5	5.3	4.06	4.45	--	--
Silver, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.001	--	0.01	<0.01	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	14	13	14	12	11	--	18	17	15	16	20	14
Strontium, dissolved	mg/l	--	--	0.55	0.895	0.741	0.642	0.55	--	0.7	0.563	0.706	0.605	--	--
Sulfur	mg/l	--	--	12	11	11	10	8	--	9	9	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.05	<0.05	<0.05	<0.2	<0.2	--	<0.2	<0.2	<0.001	<0.001	--	--
Titanium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	--	--
Vanadium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.001	0.001	--	0.003
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	0.01	--	0.24	<0.01	<0.01	<0.01	--	<0.01
Phenols															
Phenolics, Total Recoverable	mg/l	--	--	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-9 29-Oct-2005	OV-9 08-Apr-2006	OV-9 24-Nov-2006	OV-9 25-Apr-2007	OV-9 06-Dec-2007	OV-9 03-May-2008	OV-9 28-Nov-2008	OV-9 29-Apr-2009 A-25	OV-9 28-Nov-2009 A-9	OV-9 20-May-2010 A-24	OV-9 29-Nov-2010 A - 11	OV-9 10-May-2011 S-11
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	301	236	379	341	275	337	334	374	313	380	306	340
Ammonia Nitrogen	mg/l	--	--	0.03	0.05	<0.02	0.11	0.02	0.1	0.03	0.03	<0.02	0.09	<0.02	0.04
Biochemical Oxygen Demand, 5 Da	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	15	52	61	57	31	82	73	68	32	107	82	60
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	1175	360	895	350	780	685	610	949	699	1070	853	797
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	920	965	11	890	920
Dissolved Organic Carbon	mg/l	--	5	--	7.3	8.5	8.3	7.8	1.5	1.1	8.4	6.4	8.2	5.9	6.7
Hardness, Calcium Carbonate	mg/l	--	--	--	361.8	480.5	404	277	421	399	432	330	468	376	361
Nitrate	mg/l	-- [5]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.8	7.3	6.8	7.2	7.2	7.3	7.1	7.8	7.6	7.7	7.5	7.6
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.13	2.93	1.08	0.75	1.61	0.44	0.35	3.51	0.96	1.32	0.25	1.13
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	0.07	0.12	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/l	--	500 [6]	37	106	50	35	18	30	31	35	17	36	32	19
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	10	5	5	5	6	8	6	11	7	908	9	10.0
Total Dissolved Solids	mg/l	--	500	764	498	625	558	412	598	583	617	454	696	554	518
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	--	0.17	0.25	0.16	0.16	0.15	0.14	0.21	0.16	0.25	0.13	0.17
Beryllium, dissolved	mg/l	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005
Boron, dissolved	mg/l	5	--	0.15	0.1	0.16	0.12	0.14	0.04	0.04	0.14	0.13	0.16	0.11	0.13
Cadmium, dissolved	mg/l	0.005	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	--	107	143	119	83	119	112	125	96	138	111	105
Chromium, dissolved	mg/l	0.05	--	--	0.002	0.002	0.002	0.003	0.003	0.003	0.002	0.001	<0.001	0.003	0.003
Cobalt, dissolved	mg/l	--	--	--	0.0005	0.0007	0.0121	0.0017	0.0008	0.0007	0.0012	0.0013	0.0014	0.0006	0.0008
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.03	<0.03	<0.03	0.06	<0.03	0.34	0.32	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, dissolved	mg/l	0.01	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	--	23	30	26	17	30	29	29	22	30	24	24
Manganese, dissolved	mg/l	--	0.05	--	0.31	0.55	0.41	0.28	0.09	0.07	0.50	0.17	0.51	0.03	0.44
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.006	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	--	2	2	1	2	3	3	2	2	2	1	1
Selenium, dissolved	mg/l	0.05	--	--	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	--	18	19	20	19	32	28	30	22	44	38	36
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	--	0.002	0.004	0.002	0.004	0.002	0.006	0.005	0.002	0.003	0.002	0.002
Zinc, dissolved	mg/l	--	5	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
Phenols															
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-9 30-Nov-2011 [3] S - 21	OV-9 20-May-2012 S-28	OV-9 14-Nov-2012 [24] A-18	OV-9 31-May-2014 S-25	OV-9 19-Nov-2014 [25] OV-9	OV-9 05-May-2015 S-5	OV-9 16-Nov-2015 [26] S-23	OV-9 20-Apr-2016 S-30	OV-9 31-Oct-2016 [14] OV-9	OV-9 29-May-2017 [27] A-26	OV-9 23-Nov-2017 OV-9	OV-9 17-May-2018 OV-9
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	219	309	219	280	--	220	190	240	--	270	370	280
Ammonia Nitrogen	mg/l	--	--	0.04	0.10	0.06	0.17	--	0.084	0.085	0.056	--	0.10	<0.050	0.14
Biochemical Oxygen Demand, 5 Da	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	40	88	88	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	--	24	--	33	37	44	--	46	58	71
Conductivity	uS/cm	--	--	577	885	752	610	--	540	520	650	--	720	870	760
Conductivity (Field)	uS/cm	--	--	875	940	915	900	--	980	970	670	--	680	710	800
Dissolved Organic Carbon	mg/l	--	5	4.2	5.6	5.8	5.6	--	4.7	4.5	4.4	--	4.7	4.5	3.7
Hardness, Calcium Carbonate	mg/l	--	--	271	283	325	260	--	200	190	260	--	250	360	330
Nitrate	mg/l	-- [5]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.6	7.5	7.4	7.3	--	7.2	7.2	7.5	--	7.6	7.7	7.6
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	<0.010	--	<0.010	<0.010	<0.010	--	0.011	<0.010	<0.010
Phosphorus	mg/l	--	--	0.26	1.00	1.10	5.2	--	12	1.7	3.0	--	4.0	4.6	2.8
Phosphorus, dissolved	mg/l	--	--	--	--	--	<0.1	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	26	26	35	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	13	--	19	26	24	--	36	28	32
Tannin & Lignin	mg/l	--	--	--	--	--	<0.2	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	7	11	8	9	--	10	8	8.4	--	8.5	6.5	9.0
Total Dissolved Solids	mg/l	--	500	375	575	489	358	--	260	302	360	--	360	470	395
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	0.0058	--	0.0078	0.011	<0.0050	--	0.0065	0.012	<0.0050
Barium, dissolved	mg/l	1	--	0.12	0.17	0.12	0.093	--	0.072	0.06	0.088	--	0.11	0.17	0.16
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.00050	--	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.10	0.14	0.17	0.16	--	0.13	0.13	0.12	--	0.13	0.2	0.15
Cadmium, dissolved	mg/l	0.005	--	<0.0001	0.0001	<0.0001	<0.00010	--	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	77	82	94	73	--	58	54	76	--	71	100	96
Chromium, dissolved	mg/l	0.05	--	0.004	0.003	0.003	<0.0050	--	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0003	0.0009	0.0006	<0.00050	--	<0.00050	<0.00050	<0.00050	--	0.00076	0.0037	0.0016
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.03	<0.03	<0.03	<0.1	--	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.00050	--	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	19	19	22	18	--	13	14	18	--	18	24	23
Manganese, dissolved	mg/l	--	0.05	<0.01	0.81	<0.01	0.12	--	<0.0020	0.0022	<0.0020	--	0.11	0.33	0.11
Mercury	mg/l	0.001	--	--	--	--	--	--	--	<0.00010	<0.0001	--	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.00010	--	<0.00010	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.00050	--	<0.00050	<0.00050	<0.00050	--	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	<0.005	0.005	<0.005	0.0021	--	0.0015	0.0011	0.0027	--	0.0031	0.0040	0.0037
Potassium, dissolved	mg/l	--	--	<1	1	<1	0.53	--	0.69	0.27	0.81	--	1.2	1.5	1.5
Selenium, dissolved	mg/l	0.05	--	<0.01	<0.001	<0.01	<0.0020	--	<0.0020	<0.0020	<0.0020	--	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.00010	--	<0.00010	<0.00010	<0.00010	--	<0.00010	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	29	27	39	31	--	22	23	28	--	30	36	38
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.001	0.004	0.003	<0.00050	--	0.00067	<0.00050	<0.00050	--	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.0050	--	0.017	0.0064	<0.0050	--	<0.0050	<0.0050	<0.0050
Phenols															
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-9 29-Oct-2018 OV-9	OV-9 04-Jun-2019 OV-9	OV-9 15-Nov-2019 OV-9	OV-9 07-May-2020 OV-9	OV-9 27-Oct-2020 OV-9	OV-9 25-May-2021 OV-9	OV-9 24-Nov-2021 OV-9	OV-9 26-Apr-2022 OU-9	OV-9 18-Dec-2022 OV-9	OV-9 26-May-2023 OV-9	OV-9 25-Nov-2023 OV-9
General Chemistry														
Alkalinity (Total as CaCO3)	mg/l	--	--	310	250	230	260	290	300	270	260	310	300	370
Ammonia Nitrogen	mg/l	--	--	0.062	<0.050	0.056	<0.050	0.063	6.0	<0.050	0.15	<0.050	<0.050	<0.050
Biochemical Oxygen Demand, 5 Day	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	62	62	60	72	71	57	56	52	46	40	46
Conductivity	uS/cm	--	--	760	710	710	780	870	820	770	760	790	750	900
Conductivity (Field)	uS/cm	--	--	790	780	810	571	589	606	832	864	870	859	864
Dissolved Organic Carbon	mg/l	--	5	3.4	3.8	4.4	4.4	4.6	4.3	4.3	4.4	4.3	4.4	4.3
Hardness, Calcium Carbonate	mg/l	--	--	330	300	270	300	<1.0	310	300	290	300	300	390
Nitrate	mg/l	-- [5]	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.5	7.4	7.3	7.51	7.44	7.59	7.3	7.54	7.49	7.51	7.41
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.69	2.1	2.8	3.1	5.1	9.1	2.5	6.1	2.0	1.2	0.28
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	29	31	39	40	51	54	54	45	44	37	36
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8.8	9.7	8.8	8.7	8.9	9.8	7.8	7.5	6.2	7.7	6.8
Total Dissolved Solids	mg/l	--	500	370	450	405	435	495	395	475	390	445	385	505
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals														
Aluminum, dissolved	mg/l	--	--	<0.0050	0.24	0.085	<0.0050	<0.0049	<0.0049	0.0076	0.0050	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.17	0.15	0.12	0.14	<0.0020	0.14	0.13	0.12	0.12	0.12	0.18
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.18	0.13	0.16	0.17	<0.01	0.28	0.32	0.19	0.31	0.25	0.33
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	97	86	80	88	<0.2	88	87	85	88	89	110
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.00063	0.0012	0.00061	0.00053	<0.00050	0.00070	<0.00050	0.00054	<0.00050	0.00054	0.00071
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	0.59	0.18	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	0.00058	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	22	20	18	20	<0.05	21	19	19	20	19	26
Manganese, dissolved	mg/l	--	0.05	0.0087	0.052	0.01	0.0026	<0.0020	0.045	<0.0020	<0.0020	0.0023	0.11	0.012
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	0.0037	0.0039	0.0026	0.0031	<0.0010	0.0033	0.0024	0.0032	0.0024	0.0030	0.0034
Potassium, dissolved	mg/l	--	--	1.7	1.4	1.2	1.3	<0.2	1.5	1.3	1.1	1.4	1.4	1.8
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	35	40	39	45	<0.1	57	50	51	50	50	57
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	0.00095	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols														
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--

APPENDIX C-II
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-10 01-Dec-1992	OV-10 01-Feb-1993	OV-10 01-Nov-1998	OV-10 28-Jul-2000	OV-10 14-Oct-2000	OV-10 06-Nov-2001	OV-10 03-May-2003	OV-10 01-Nov-2003	OV-10 04-May-2004	OV-10 01-Oct-2004	OV-10 09-Jun-2005	OV-10 29-Oct-2005	OV-10 08-Apr-2006
General Chemistry																
Alkalinity (Total as CaCO3)	mg/l	--	--	320	370	321	249	304	267	307	332	205	266	332	324	346
Ammonia Nitrogen	mg/l	--	--	--	--	0.03	0.26	<0.02	0.08	0.03	0.03	0.22	0.1	0.07	0.04	0.06
Biochemical Oxygen Demand, 5 Day	mg/l	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	44	38	50	23	39	18	41	56	32	17	57	55	67
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	--	--	772	620	620	606	727	831	494	613	820	770	310
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--	0.9
Fluoride	mg/l	1.5	--	--	--	--	<0.01	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	319	--	--	--	--	399.8	--	397.3
Nitrate	mg/l	-- [5]	--	--	--	1.63	<0.1	0.7	1.55	0.83	1.66	0.24	0.29	--	--	--
Nitrogen	mg/l	--	--	--	--	--	456	0.14	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	0.07	0.08	0.22	0.57	--	--	--
pH (Field)	-	--	--	--	--	7.85	7.13	7.51	7.58	7.63	7.7	7.31	7.27	6.9	6.7	7.3
Phosphate	mg/l	--	--	--	--	-- [8]	<0.03	0.04	--	0.62	0.11	0.1	0.11	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	--	3.16	--	--	0.42	0.05	0.79	2.65	0.14	0.22	0.17
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.1	--	--	--	--	--	--	--	--	--	--	--	0.05
Sulphate	mg/l	--	500 [6]	25	23	27	53	24	59	24	28	13	39	29	26	29
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--	--	11.9	10	5
Total Dissolved Solids	mg/l	--	500	470	470	464	423	428	384	473	540	321	398	512	501	563
Total Organic Carbon	mg/l	--	--	1.6	--	0.8	1.96	1.6	--	1	1.3	0.5	6.2	--	--	--
Metals																
Aluminum, dissolved	mg/l	--	--	<0.03	--	-- [8]	0.2	<0.05	<0.05	<0.01	0.04	--	--	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.1	--	0.09	0.17	0.09	0.12	0.09	0.12	--	--	0.13	--	0.12
Beryllium, dissolved	mg/l	--	--	<0.01	--	-- [8]	<0.002	<0.002	<0.002	<0.001	<0.001	--	--	<0.001	--	<0.001
Boron, dissolved	mg/l	5	--	0.05	--	0.03	0.11	0.03	<0.05	0.07	0.04	0.04	0.14	0.04	0.04	0.04
Cadmium, dissolved	mg/l	0.005	--	<0.01	--	-- [8]	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
Calcium, dissolved	mg/l	--	--	99	--	119	95	99	93	90	117	61	88	114	--	113
Chromium, dissolved	mg/l	0.05	--	<0.01	--	-- [8]	<0.01	<0.01	0.002	0.01	0.001	<0.001	0.001	0.004	--	0.003
Cobalt, dissolved	mg/l	--	--	<0.01	--	-- [8]	<0.01	0.0013	0.0004	0.0007	0.0008	--	--	0.0007	--	0.0007
Copper, dissolved	mg/l	--	1	0.02	--	-- [8]	<0.01	0.002	0.002	<0.001	0.001	<0.001	0.004	--	--	--
Iron, dissolved	mg/l	--	0.3	0.05	--	0.41	0.28	0.41	0.01	0.23	0.24	0.15	0.03	0.5	0.35	0.22
Lead, dissolved	mg/l	0.01	--	<0.05	--	-- [8]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001
Magnesium, dissolved	mg/l	--	--	31	--	31	21	26	21	26	29	16	18	28	--	28
Manganese, dissolved	mg/l	--	0.05	0.2	--	0.04	0.69	0.05	0.23	0.052	0.056	0.06	0.12	--	--	0.06
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	--	--	-- [8]	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	--	-- [8]	<0.01	<0.01	<0.01	<0.005	<0.005	--	--	<0.005	--	<0.005
Nickel, dissolved	mg/l	--	--	<0.01	--	-- [8]	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	3	--	2	2	3	2	3	4	3	2	3	--	3
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--	--	0.001	--	<0.001
Silicon, dissolved	mg/l	--	--	5.9	--	4.7	4.48	5.72	--	5.1	5.5	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.01	--	-- [8]	<0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	13	--	13	17	18	8	18	21	15	10	22	--	26
Strontium, dissolved	mg/l	--	--	0.69	--	0.667	0.746	0.589	0.506	0.621	0.744	--	--	--	--	--
Sulfur	mg/l	--	--	9	--	10	20	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	<0.05	--	-- [8]	--	<0.01	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	--	-- [8]	0.01	<0.01	<0.01	<0.01	0.08	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.01	--	-- [8]	<0.01	<0.001	<0.001	0.003	<0.001	--	--	0.004	--	0.003
Zinc, dissolved	mg/l	--	5	0.01	--	-- [8]	<0.01	<0.01	<0.01	<0.005	<0.01	--	--	<0.01	0.01	<0.01
Phenols																
Phenolics, Total Recoverable	mg/l	--	--	<0.002	--	-- [8]	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	--	--	--

APPENDIX C-II
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-10 24-Nov-2006	OV-10 25-Apr-2007	OV-10 06-Dec-2007	OV-10 03-May-2008	OV-10 28-Nov-2008	OV-10 29-Apr-2009 A-24	OV-10 28-Nov-2009 A-8	OV-10 20-May-2010 A-23	OV-10 29-Nov-2010 A - 10	OV-10 10-May-2011 S-10	OV-10 30-Nov-2011 [3] S - 20	OV-10 20-May-2012 S-29	OV-10 14-Nov-2012 A-17
General Chemistry																
Alkalinity (Total as CaCO3)	mg/l	--	--	320	321	339	381	372	334	340	333	378	360	347	353	365
Ammonia Nitrogen	mg/l	--	--	0.03	0.05	0.04	0.04	<0.02	0.04	0.05	<0.02	<0.02	0.04	0.08	0.14	0.07
Biochemical Oxygen Demand, 5 Day	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	59	51	77	99	59	60	70	77	75	71	71	73	71
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	580	325	600	610	585	854	890	903	937	873	901	910	932
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	860	825	11	822	895	880	913	900
Dissolved Organic Carbon	mg/l	--	5	<0.5	1.4	1.8	8.8	6.3	1.6	1.5	1.6	1.2	1.5	1.2	1.5	1.4
Fluoride	mg/l	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	389.8	373	407	476	404	390	388	442	443	381	417	296	412
Nitrate	mg/l	-- [5]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7	7.2	6.9	6.9	6.9	8.1	7.9	8	7.3	7.9	7.8	7.8	7.9
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.77	0.44	0.08	1.53	1.25	0.42	0.75	0.07	0.44	0.42	0.42	0.86	1.56
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	0.08	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/l	--	500 [6]	26	34	28	44	33	31	28	33	30	28	30	32	31
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	5	5	5	6	6	10	5	870	7	10.0	8	11	7
Total Dissolved Solids	mg/l	--	500	540	525	595	683	592	555	579	587	609	567	586	592	606
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.11	0.11	0.14	0.27	0.23	0.13	0.12	0.13	0.13	0.13	0.13	0.14	0.14
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.04	0.04	0.06	0.13	0.18	0.04	0.06	0.06	0.04	0.05	0.04	0.05	0.04
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	110	105	115	138	119	110	111	126	128	108	121	84	117
Chromium, dissolved	mg/l	0.05	--	<0.001	0.002	0.004	0.004	0.003	0.002	0.002	<0.001	0.003	0.003	0.005	0.004	0.003
Cobalt, dissolved	mg/l	--	--	0.0005	0.0035	0.0007	0.0015	0.0016	0.0006	0.0005	0.0005	0.0007	0.0006	0.0004	0.0006	0.0006
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.27	0.38	0.45	<0.03	<0.03	0.28	0.23	0.18	0.35	0.25	0.20	0.30	0.23
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	28	27	29	32	26	28	27	31	30	27	28	21	29
Manganese, dissolved	mg/l	--	0.05	0.06	0.07	0.08	0.56	0.35	0.07	0.05	0.05	0.08	0.06	0.05	0.06	0.05
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	3	3	3	2	2	3	3	4	3	3	3	2	3
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	24	22	26	38	32	30	28	37	37	33	36	24	36
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.003	0.002	0.005	0.004	0.006	0.004	0.003	0.002	0.002	0.002	0.002	0.005	0.005
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols																
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-10 31-May-2014 S-26	OV-10 19-Nov-2014 A-24	OV-10 05-May-2015 S-6	OV-10 16-Nov-2015 S-22	OV-10 20-Apr-2016 S-29	OV-10 31-Oct-2016 S-5	OV-10 29-May-2017 A-25	OV-10 23-Nov-2017 OV-10	OV-10 17-May-2018 OV-10	OV-10 29-Oct-2018 [4] OV-10	OV-10 04-Jun-2019 OV-10	OV-10 15-Nov-2019 OV-10	OV-10 07-May-2020 OV-10
General Chemistry																
Alkalinity (Total as CaCO3)	mg/l	--	--	360	350	370	370	380	360	400	400	370	370	390	370	370
Ammonia Nitrogen	mg/l	--	--	0.20	0.13	0.22	0.24	0.22	0.24	0.40	0.56	0.61	0.57	0.78	0.80	0.78
Biochemical Oxygen Demand, 5 Day	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	69	72	76	78	77	77	89	93	100	95	82	86	85
Conductivity	uS/cm	--	--	900	910	930	960	980	960	1000	1000	1000	950	1000	1000	990
Conductivity (Field)	uS/cm	--	--	845	785	810	770	880	--	895	840	890	910	885	865	771
Dissolved Organic Carbon	mg/l	--	5	0.91	1.0	0.93	1.0	1.5	1.7	1.1	1.2	1.1	1.1	1.5	1.7	1.7
Fluoride	mg/l	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	430	420	410	420	440	430	460	440	450	400	430	420	420
Nitrate	mg/l	-- [5]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.8	7.6	7.4	7.5	7.6	--	7.6	7.7	7.5	7.6	7.5	7.2	7.53
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.52	0.8	1.0	0.070	0.021	0.021	0.24	0.031	0.026	0.08	0.042	0.087	0.014
Phosphorus, dissolved	mg/l	--	--	<0.1	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	30	32	29	31	31	31	32	33	35	32	35	35	32
Tannin & Lignin	mg/l	--	--	<0.2	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8	7	8	6	7.2	--	7.1	6.0	9.5	9.7	10.2	9.1	7.9
Total Dissolved Solids	mg/l	--	500	512	524	552	538	554	714	582	540	530	510	625	575	545
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Barium, dissolved	mg/l	1	--	0.23	0.21	0.18	0.19	0.25	0.27	0.26	0.25	0.26	0.24	0.27	0.26	0.25
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.05	0.066	0.042	0.044	0.051	0.049	0.056	0.047	0.053	0.061	0.065	0.048	0.059
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	130	120	120	120	130	120	130	130	130	110	120	120	120
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0018	0.0012	0.0013	0.0017	0.0019	0.0030	0.0021	0.0021	0.0022	0.0019	0.0020	0.0019	0.0020
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	1.7	1	1	0.95	1.8	2.2	1.7	1.7	1.7	1.7	1.9	1.9	1.9
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	28	30	26	29	30	30	32	30	30	27	30	29	28
Manganese, dissolved	mg/l	--	0.05	0.23	0.17	0.15	0.18	0.27	0.4	0.29	0.29	0.3	0.26	0.35	0.3	0.32
Mercury	mg/l	0.001	--	--	--	--	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010
Mercury, dissolved	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	--	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00082	0.00068	0.00073	0.0006	0.00083	0.00090	0.00073	0.00061	0.00074	0.00066	0.00081	0.00081	0.00088
Nickel, dissolved	mg/l	--	--	0.0010	<0.0010	<0.0010	0.001	0.0013	0.0015	0.0015	0.0017	0.0014	0.0013	0.0019	0.0019	0.0020
Potassium, dissolved	mg/l	--	--	4.1	3.9	3.9	4	4.6	5.1	5.2	5.5	5.6	5.1	5.5	5	5.4
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	0.00010	0.0004	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	38	36	35	36	38	38	39	37	39	38	40	38	40
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols																
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

APPENDIX C-II
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-10 27-Oct-2020 OV-10	OV-10 01-May-2021 OV-10	OV-10 24-Nov-2021 OV-10	OV-10 26-Apr-2022 OU-10	OV-10 18-Dec-2022 OV-10	OV-10 26-May-2023 OV-10	OV-10 25-Nov-2023 OV-10
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	--	--	370	360	350	340	360	370	390
Ammonia Nitrogen	mg/l	--	--	0.73	0.69	0.61	0.58	0.57	0.65	0.71
Biochemical Oxygen Demand, 5 Day	mg/l	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	76	77	69	70	73	67	75
Conductivity	uS/cm	--	--	980	940	890	900	940	950	1000
Conductivity (Field)	uS/cm	--	--	755	802	940	940	898	863	838
Dissolved Organic Carbon	mg/l	--	5	1.5	1.2	1.0	1.0	1.3	1.2	1.4
Fluoride	mg/l	1.5	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	410	400	380	410	410	420	470
Nitrate	mg/l	-- [5]	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.40	7.49	7.36	7.25	7.36	7.42	7.4
Phosphate	mg/l	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.015	0.11	0.028	0.018	0.047	0.005	0.016
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	31	32	29	28	31	29	35
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8.40	9.6	8.8	9.3	6.4	8.9	6.7
Total Dissolved Solids	mg/l	--	500	520	555	480	470	475	485	575
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--
Metals										
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.25	0.24	0.24	0.22	0.22	0.25	0.29
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.051	0.047	0.051	0.042	0.047	0.049	0.056
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	120	120	110	120	120	120	140
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0018	0.0016	0.0017	0.0016	0.0016	0.0016	0.0020
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	1.8	1.7	1.5	1.5	1.3	1.7	1.9
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	27	27	25	27	27	28	31
Manganese, dissolved	mg/l	--	0.05	0.32	0.3	0.3	0.3	0.27	0.32	0.42
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00091	0.00087	0.00093	0.00095	0.00089	0.00098	0.0010
Nickel, dissolved	mg/l	--	--	0.0020	0.0020	0.0016	0.0018	0.0018	0.0017	0.0021
Potassium, dissolved	mg/l	--	--	4.9	5	4.5	4.5	4.3	4.4	5
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	39	40	35	41	37	39	39
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols										
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-11 01-Dec-1992	OV-11 01-Feb-1993
General Chemistry					
Alkalinity (Total as CaCO3)	mg/l	--	--	354	630
Biochemical Oxygen Demand, 5 Day	mg/l	--	--	2	--
Chloride	mg/l	--	250	66	102
Phosphorus (dissolved reactive)	mg/l	--	--	<0.1	--
Sulphate	mg/l	--	500 [6]	120	121
Total Dissolved Solids	mg/l	--	500	700	930
Total Organic Carbon	mg/l	--	--	8.3	--
Metals					
Aluminum, dissolved	mg/l	--	--	<0.03	--
Barium, dissolved	mg/l	1	--	<0.01	--
Beryllium, dissolved	mg/l	--	--	<0.01	--
Boron, dissolved	mg/l	5	--	0.27	--
Cadmium, dissolved	mg/l	0.005	--	<0.01	--
Calcium, dissolved	mg/l	--	--	117	--
Chromium, dissolved	mg/l	0.05	--	<0.01	--
Cobalt, dissolved	mg/l	--	--	<0.01	--
Copper, dissolved	mg/l	--	1	0.02	--
Iron, dissolved	mg/l	--	0.3	<0.01	--
Lead, dissolved	mg/l	0.01	--	<0.05	--
Magnesium, dissolved	mg/l	--	--	43	--
Manganese, dissolved	mg/l	--	0.05	0.35	--
Molybdenum, dissolved	mg/l	--	--	<0.01	--
Nickel, dissolved	mg/l	--	--	<0.01	--
Potassium, dissolved	mg/l	--	--	5	--
Silicon, dissolved	mg/l	--	--	5.2	--
Silver, dissolved	mg/l	--	--	<0.01	--
Sodium, dissolved	mg/l	--	200 [7]	38	--
Strontium, dissolved	mg/l	--	--	0.41	--
Sulfur	mg/l	--	--	40	--
Thallium, dissolved	mg/l	--	--	<0.05	--
Tin, dissolved	mg/l	--	--	<0.05	--
Titanium, dissolved	mg/l	--	--	<0.01	--
Vanadium, dissolved	mg/l	--	--	<0.01	--
Zinc, dissolved	mg/l	--	5	<0.01	--
Phenols					
Phenolics, Total Recoverable	mg/l	--	--	<0.002	--

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-13 07-Nov-2001	OV-13 30-Jan-2002	OV-13 11-Mar-2002	OV-13 28-May-2002	OV-13 02-Oct-2002	OV-13 01-May-2003	OV-13 01-Nov-2003	OV-13 04-May-2004	OV-13 04-Oct-2004	OV-13 14-Jun-2005	OV-13 24-Nov-2005
General Chemistry														
Alkalinity (Total as CaCO3)	mg/l	--	--	312	--	268	330	234	356	234	336	253	328	232
Ammonia Nitrogen	mg/l	--	--	<0.02	-- [8]	0.08	0.07	<0.02	--	0.04	0.05	0.09	0.05	0.03
Chloride	mg/l	--	250	36	25	9	31	5	37	2	56	27	53	3
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	738	736	536	769	457	788	445	834	594	840	380
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	338	362	253	--	213	--	--	--	--	423.7	--
Nitrate	mg/l	-- [5]	--	1.63	0.68	0.67	1.02	0.73	--	0.47	2.04	1.28	--	--
Nitrogen	mg/l	--	--	--	--	--	0.13	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	0.08	0.51	1.86	0.15	--	--
pH (Field)	-	--	--	7.8	7.78	7.92	7.81	7.87	7.59	7.92	7.47	7.6	7.6	7.5
Phosphate	mg/l	--	--	--	--	--	<0.03	--	0.37	0.12	0.16	0.21	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	--	0.29	--	0.12	0.09	0.26	--	0.23	0.05
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	27	32	15	29	11	29	11	24	16	22	10
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--	-- [12]	5
Total Dissolved Solids	mg/l	--	500	440	478	348	500	297	512	289	542	386	546	247
Total Organic Carbon	mg/l	--	--	--	--	--	1.2	--	0.9	1.6	<0.5	1.2	--	--
Metals														
Aluminum, dissolved	mg/l	--	--	<0.05	-- [8]	-- [8]	<0.05	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.08	0.09	0.1	0.1	0.1	0.17	0.11	--	0.12	0.16	--
Beryllium, dissolved	mg/l	--	--	<0.002	--	-- [8]	<0.002	<0.001	<0.001	<0.001	--	<0.001	<0.001	--
Boron, dissolved	mg/l	5	--	<0.05	<0.01 [8]	<0.01 [8]	<0.05	<0.05	<0.05	0.04	0.05	0.01	0.03	0.02
Cadmium, dissolved	mg/l	0.005	--	0.0002	-- [8]	-- [8]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--
Calcium, dissolved	mg/l	--	--	89	102	65	102	54	100	58	100	57	117	--
Chromium, dissolved	mg/l	0.05	--	0.001	-- [8]	**0.171**	0.001	0.002	0.018	0.003	0.002	0.003	<0.005	--
Cobalt, dissolved	mg/l	--	--	0.002	0.0008	-- [8]	0.0011	<0.0002	0.0002	<0.0002	--	<0.0002	0.0005	--
Copper, dissolved	mg/l	--	1	<0.001	-- [8]	-- [8]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--
Iron, dissolved	mg/l	--	0.3	0.01	1.83	0.07	0.24	0.02	0.07	0.05	0.12	0.04	0.1	0.07
Lead, dissolved	mg/l	0.01	--	<0.001	-- [8]	-- [8]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--
Magnesium, dissolved	mg/l	--	--	28	26	22	33	19	32	17	32	23	32	--
Manganese, dissolved	mg/l	--	0.05	0.03	0.06	0.02	0.03	<0.005	0.035	<0.005	0.17	<0.01	--	--
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	--	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--
Molybdenum, dissolved	mg/l	--	--	<0.01	-- [8]	-- [8]	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	--
Nickel, dissolved	mg/l	--	--	<0.01	-- [8]	-- [8]	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	4	3	3	3	4	3	4	4	4	3	--
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--	<0.001	--
Silicon, dissolved	mg/l	--	--	4.72	4.17	5.96	4.78	5.6	5.8	6.7	--	7.8	--	--
Silver, dissolved	mg/l	--	--	<0.0001	-- [8]	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--
Sodium, dissolved	mg/l	--	200 [7]	21	20	9	19	12	18	9	23	16	19	--
Strontium, dissolved	mg/l	--	--	0.882	0.544	0.149	0.682	0.176	0.605	0.142	--	0.174	--	--
Thallium, dissolved	mg/l	--	--	<0.001	-- [8]	-- [8]	<0.001	<0.001	<0.001	<0.001	--	<0.001	--	--
Titanium, dissolved	mg/l	--	--	<0.01	-- [8]	--	<0.01	<0.01	<0.01	<0.01	--	<0.01	--	--
Vanadium, dissolved	mg/l	--	--	<0.001	-- [8]	-- [8]	<0	<0.005	0.002	<0.001	--	<0.001	0.003	--
Phenols														
Phenolics, Total Recoverable	mg/l	--	--	<0.001	-- [8]	-- [8]	<0.001	<0.001	<0.001	--	<0.001	<0.001	--	--

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-13 08-Apr-2006	OV-13 24-Nov-2006	OV-13 25-Apr-2007	OV-13 04-Dec-2007	OV-13 04-May-2008	OV-13 29-Nov-2008	OV-13 29-Apr-2009 A-30	OV-13 29-Nov-2009 A-21	OV-13 20-May-2010 A-27	OV-13 29-Nov-2010 A - 20	OV-13 10-May-2011 S-14
General Chemistry														
Alkalinity (Total as CaCO3)	mg/l	--	--	367	349	349	226	362	231	364	233	241	237	360
Ammonia Nitrogen	mg/l	--	--	<0.02	0.09	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chloride	mg/l	--	250	30	38	45	3	33	4	35	4	11	5	44
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	880	305	385	441	1110	1080	814	461	511	463	794
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	1020	980	1050	990	1100
Dissolved Organic Carbon	mg/l	--	5	0.8	0.6	1.1	1.6	1.9	0.9	2.1	1.5	1.1	1.1	1.4
Hardness, Calcium Carbonate	mg/l	--	--	370.5	388.7	393	213	388	215	365	216	259	255	405
Nitrate	mg/l	-- [5]	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.3	7.2	7.2	7.3	6.7	6.8	6.9	7	6	6.9	6.9
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.1	0.11	0.15	0.07	0.08	0.12	0.23	0.08	0.30	0.12	0.09
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	0.07	0.09	0.09	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/l	--	500 [6]	28	28	30	10	30	11	31	11	15	12	28
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	0.1	--	<0.1	--	--	--	--	--
Temperature (Field)	deg c	--	15	5	6	5	6	8	6	10	--	12	10	11.0
Total Dissolved Solids	mg/l	--	500	495	523	545	287	523	299	529	300	332	301	516
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals														
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.24	0.14	0.16	0.13	0.21	0.14	0.16	0.14	0.14	0.14	0.18
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005
Boron, dissolved	mg/l	5	--	0.03	0.05	0.04	<0.01	0.06	0.03	0.04	0.01	0.03	0.02	0.04
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	99	103	103	54	101	53	95	52	64	66	101
Chromium, dissolved	mg/l	0.05	--	0.001	0.002	0.002	0.004	0.003	0.004	0.002	0.004	<0.001	0.004	0.003
Cobalt, dissolved	mg/l	--	--	<0.0002	<0.0002	0.0052	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.03	<0.03	0.05	0.08	<0.03	<0.03	<0.03	<0.03	0.07	0.03	<0.03
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	30	32	33	19	33	20	31	21	24	22	37
Manganese, dissolved	mg/l	--	0.05	0.02	<0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	4	4	4	4	3	4	4	4	4	4	4
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	20	21	22	9	21	10	20	10	14	10	20
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.001	<0.001	0.002	0.003	0.003	0.003	0.004	0.002	<0.001	<0.001	0.003
Phenols														
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--

APPENDIX C-II
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-13 30-Nov-2011 S - 26	OV-13 20-May-2012 S-21	OV-13 14-Nov-2012 A-28	OV-13 13-Jun-2013 OV-13	OV-13 25-Oct-2013 OV-13	OV-13 31-May-2014 [9] S-29	OV-13 19-Nov-2014 A-28	OV-13 07-May-2015 S-29	OV-13 30-Nov-2015 S-30	OV-13 20-Apr-2016 S-27	OV-13 01-Nov-2016 S-28
General Chemistry														
Alkalinity (Total as CaCO3)	mg/l	--	--	255	318	232	326	272	350	320	330	280	340	300
Ammonia Nitrogen	mg/l	--	--	<0.02	0.02	0.05	<0.02	<0.02	0.084	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	13	33	<1	54	19	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	36	33	38	22	35	33
Conductivity	uS/cm	--	--	532	713	445	797	578	810	720	790	640	780	690
Conductivity (Field)	uS/cm	--	--	1050	1085	1055	811	538	1015	890	810	820	705	680
Dissolved Organic Carbon	mg/l	--	5	1.1	1.0	1.1	0.9	0.9	0.94	1.0	0.80	0.65	0.93	0.77
Hardness, Calcium Carbonate	mg/l	--	--	275	266	221	400	291	390	330	410	310	400	280
Nitrate	mg/l	-- [5]	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	<0.1	<0.1	--	--	--	--	--	--
pH (Field)	-	--	--	6.9	7.0	7.1	7.7	7.7	7.2	7.4	7.5	7.5	7.4	7.3
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.08	0.12	0.06	0.14	0.19	0.60	0.16	0.15	0.077	0.11	0.06
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	<0.1	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	16	24	10	24	18	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	31	25	32	21	32	25
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	<1	--	--	--	--	--
Temperature (Field)	deg c	--	15	10	9	8	10.6	7.9	9	7	8	7	7.2	7.9
Total Dissolved Solids	mg/l	--	500	346	463	289	518	376	448	398	456	348	456	398
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals														
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.02	0.02	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050
Barium, dissolved	mg/l	1	--	0.15	0.14	0.14	0.14	0.13	0.13	0.12	0.12	0.11	0.12	0.097
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.02	0.04	<0.01	0.04	0.02	0.055	0.041	0.039	0.024	0.045	0.024
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	69	67	57	99	72	96	80	99	77	98	66
Chromium, dissolved	mg/l	0.05	--	0.005	0.003	0.003	0.003	0.002	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	<0.001	<0.001	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.03	0.48	<0.03	0.11	0.06	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	25	24	19	37	27	37	31	38	29	37	27
Manganese, dissolved	mg/l	--	0.05	<0.01	0.03	<0.01	0.08	0.03	0.0062	0.0087	0.022	0.024	0.012	<0.0020
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	<0.00010	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	0.00081	0.00086	0.00075	0.0008	0.00085	0.00098
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	4	3	3	4	4	4.6	4.5	4.8	4	4.8	4.2
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0020	<0.0020	<0.0020	<0.002	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	13	14	8	23	16	22	20	22	16	21	15
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.001	0.004	0.002	0.002	<0.001	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050
Phenols														
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-13 29-May-2017 A-28	OV-13 30-Nov-2017 OU-13	OV-13 23-May-2018 [10] OV-13	OV-13 30-Oct-2018 [11] OV-13	OV-13 04-Jun-2019 OV-13	OV-13 15-Nov-2019 OV-13	OV-13 11-May-2020 OV13	OV-13 29-Oct-2020 OV-13	OV-13 02-May-2021 OV-13	OV-13 24-Nov-2021 OV-13	OV-13 26-Apr-2022 OU-13
General Chemistry														
Alkalinity (Total as CaCO3)	mg/l	--	--	310	320	350	220	320	220	340	210	330	220	330
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	85	48	48	1.5	69	4.2	60	1.9	44	6.6	46
Conductivity	uS/cm	--	--	900	800	840	410	840	430	870	430	790	430	810
Conductivity (Field)	uS/cm	--	--	710	840	785	705	675	688	701	620	594	518	539
Dissolved Organic Carbon	mg/l	--	5	0.69	0.80	0.66	0.69	1.0	1.1	1.1	1.1	0.90	0.93	1.3
Hardness, Calcium Carbonate	mg/l	--	--	410	340	380	190	380	200	390	210	370	240	420
Nitrate	mg/l	-- [5]	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.5	7.5	7.4	7.5	7.43	7.4	7.2	7.4	7.49	7.51	7.61
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.019	0.18	0.12	0.19	0.14	0.29	0.21	0.16	0.13	0.12	0.22
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	25	25	30	9.6	25	10	27	10	28	10	25
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	7.8	6.0	9.7	9.4	9.9	9.0	8.9	9.1	10.4	9.2	6.7
Total Dissolved Solids	mg/l	--	500	490	375	645	275	550	240	435	200	415	235	410
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals														
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0049	0.012	0.0054	<0.0049
Barium, dissolved	mg/l	1	--	0.12	0.11	0.11	0.11	0.12	0.11	0.13	0.11	0.13	0.13	0.17
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.048	0.032	0.033	0.011	0.041	<0.01	0.041	0.012	0.033	0.014	0.039
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	100	85	96	46	95	48	100	50	94	64	110
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.24	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	40	32	34	19	35	19	34	20	32	20	38
Manganese, dissolved	mg/l	--	0.05	<0.0020	<0.0020	<0.0020	0.0020	<0.0020	<0.0020	0.0026	0.0065	<0.0020	0.021	<0.0020
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00088	0.00087	0.00082	0.0010	0.00087	0.0012	0.00085	0.0013	0.00087	<0.00050	0.00088
Nickel, dissolved	mg/l	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	5.3	4.6	4.3	3.7	4.2	3.5	4.7	3.6	4.2	2.9	4.3
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	32	24	26	7.8	29	8	25	8.2	22	10	24
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phenols														
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--

APPENDIX C-II
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-13 19-Dec-2022 OV-13	OV-13 29-May-2023 OV-13	OV-13 25-Nov-2023 OV-13
General Chemistry						
Alkalinity (Total as CaCO3)	mg/l	--	--	210	310	200
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	--	--	--
Chloride, dissolved	mg/l	--	250	3.0	58	1.3
Conductivity	uS/cm	--	--	420	840	400
Conductivity (Field)	uS/cm	--	--	545	560	588
Dissolved Organic Carbon	mg/l	--	5	0.86	0.79	1.0
Hardness, Calcium Carbonate	mg/l	--	--	210	420	200
Nitrate	mg/l	-- [5]	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--
pH (Field)	-	--	--	7.58	7.66	7.69
Phosphate	mg/l	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.18	0.064	0.081
Phosphorus, dissolved	mg/l	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	11	23	7.4
Tannin & Lignin	mg/l	--	--	--	--	--
Temperature (Field)	deg c	--	15	7.2	8.1	7.6
Total Dissolved Solids	mg/l	--	500	250	550	220
Total Organic Carbon	mg/l	--	--	--	--	--
Metals						
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.1	0.13	0.097
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.011	0.041	0.01
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	53	100	49
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	0.14	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	18	39	19
Manganese, dissolved	mg/l	--	0.05	<0.0020	0.016	0.0030
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00093	0.00082	0.0012
Nickel, dissolved	mg/l	--	--	<0.0010	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	3	5	3.7
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	8	25	7.8
Strontium, dissolved	mg/l	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050
Phenols						
Phenolics, Total Recoverable	mg/l	--	--	--	--	--

APPENDIX C-II
ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	OV-23 07-Jan-2023 OV-22	OV-23 25-May-2023 OV-23	OV-23 25-Nov-2023 OV-23
General Chemistry						
Alkalinity (Total as CaCO3)	mg/l	--	--	430	390	330
Ammonia Nitrogen	mg/l	--	--	0.065	<0.050	<0.050
Chloride, dissolved	mg/l	--	250	69	66	66
Conductivity	uS/cm	--	--	1100	1000	900
Conductivity (Field)	uS/cm	--	--	886	596	609
Dissolved Organic Carbon	mg/l	--	5	1.8	1.1	1.7
Hardness, Calcium Carbonate	mg/l	--	--	510	470	410
pH (Field)	-	--	--	7.71	7.77	7.70
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.46	0.009	0.024
Sulphate, dissolved	mg/l	--	500 [6]	41	31	31
Temperature (Field)	deg c	--	15	6	9.0	7.2
Total Dissolved Solids	mg/l	--	500	550	520	520
Metals						
Aluminum, dissolved	mg/l	--	--	0.0080	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.15	0.14	0.13
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.095	0.055	0.052
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	150	140	120
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0038	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	0.29	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	0.0012	<0.00050
Magnesium, dissolved	mg/l	--	--	33	31	29
Manganese, dissolved	mg/l	--	0.05	0.092	<0.0020	<0.0020
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010
Molybdenum, dissolved	mg/l	--	--	0.00058	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	0.0038	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	4.8	3.6	3.7
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	51	41	39
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	0.013

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GENERAL CHEMISTRY

Footnotes:

	Tables should be read in conjunction with the accompanying document.
<	Indicates parameter not detected above laboratory method detection limit.
>	Indicates parameter detected above equipment analytical range.
--	Chemical not analyzed or criteria not defined.
Value	Parameter is greater than ODWQS(169/03)-Health
Value	Parameter is greater than ODWQS-AO
(1)	Ontario Drinking Water Quality Standards - Health Based Standards (June 2003, revised January 2020).
(2)	Ontario Drinking Water Quality Standards - Aesthetic Objectives. Aesthetic Objectives are established for parameters that may impair the taste, odour or colour of water or which may interfere with good water quality control practices. For certain parameters, both aesthetic objectives and health-related MACs have been derived (June 2003, revised July 2017).
(3)	Selenium MRL elevated due to matrix interference.
(4)	clarity: clear, sediments: trace, colour: beige, odour: odd smell
(5)	Criteria exist for Nitrate as N
(6)	There may be a laxative effect in some individuals when sulphate levels exceed 500 mg/L.
(7)	The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.
(8)	Parameter was not detected above the laboratory detection limit.
(9)	Due to colour interferences, sample required dilution. Detection limit was adjusted accordingly.
(10)	Field measurements for pH, conductivity and temperature were inadvertently missed during sampling.
(11)	Clarity: clear, sediment: trace, colour: beige, odour: none
(12)	No result(s) available.
(13)	Criteria exist for Nitrite as N
(14)	Monitoring location was damaged and could not be sampled.
(15)	Metals MRL elevated due to matrix interference.
(16)	Metals MRL elevated due to matrix interference. N-NH3 was analysed at SGS.
(17)	Sediment was not included in mercury analysis. Metals MRL elevated due to matrix interference.
(18)	Metals MRL elevated due to matrix interference (10x dilution was done).
(19)	Metal Analysis: RDL of Nickel was adjusted due to high concentration of Calcium.
(20)	Metal Analysis: RDLs of Nickel and Chromium were adjusted due to high concentrations of Calcium and carbon respectively.
(21)	VOC Analysis: Due to high concentrations of target analytes, sample required dilution. Detection limits were adjusted accordingly.
(22)	Applicable for all waters at the point of consumption.
(23)	Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.
(24)	Selenium MRL elevated due to matrix interference (dilution was done).
(25)	Monitoring location was dry during this sampling event. No sample was collected.
(26)	Sample S-23 was decanted prior to running TDS analysis due to high level of sediment.
(27)	ortho-Phosphate > Total Phosphorus: Both values fall within the method uncertainty for duplicates and are likely equivalent.

C-III Bedrock Organic 2023

APPENDIX C-III
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK ORGANIC

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-1 01-Nov-1990	BR-1 01-Oct-1991	BR-1 01-Dec-1991	BR-1 01-Dec-1992	BR-1 01-Sep-1993
VOCs								
1,1-Dichloroethane	mg/l	--	--	0.014	0.007	0.011	0.0038	0.0041
1,2-Dichloroethane	mg/l	0.005	--	<0.002	<0.002	--	--	--
1,3-Dichlorobenzene	mg/l	--	--	0.001	--	--	--	--
1,4-Dichlorobenzene	mg/l	0.005	0.001	0.002	--	--	--	--
Benzene	mg/l	0.001	--	**0.004**	--	**0.003**	--	**0.002**
Chlorobenzene	mg/l	0.08	0.03	0.017	0.001	0.008	--	--
Chloroethane	mg/l	--	--	0.018	0.005	0.014	0.0041	--
Ethylbenzene	mg/l	0.14	0.0016	0.001	--	--	--	--
m,p-Xylenes	mg/l	--	--	--	<0.002	--	--	--
Methylene Chloride	mg/l	0.05	--	<0.002	0.007	<0.004	<0.004	<0.004
Tetrachloroethylene	mg/l	0.01	--	--	--	0.002	--	--
Toluene	mg/l	0.06	0.024	0.004	--	0.0023	--	0.0005
Vinyl Chloride	mg/l	0.001	--	--	--	--	--	<0.002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-1D 01-Oct-2000	BR-1D 03-May-2003	BR-1D 04-May-2004
Semi-VOCs						
Styrene	mg/l	--	--	<0.0005	<0.0005	<0.0005
VOCs						
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	0.0015	0.001	0.0006
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.001	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.0007	<0.0007	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.001	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.001	<0.0004	0.0005
Benzene	mg/l	0.001	--	**0.0043**	**0.0028**	**0.0023**
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	0.0036	0.0035	0.0052
Chloroethane	mg/l	--	--	--	<0.001	0.0027
Chloroform	mg/l	--	--	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.001	0.003	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	0.0008	<0.0004	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	0.0012	<0.001	0.001
Methylene Chloride	mg/l	0.05	--	<0.004	<0.004	<0.004
o-Xylene	mg/l	--	--	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	0.0005	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	0.002	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	<0.0005	<0.0005	<0.0002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-1S 01-Oct-2000	BR-1S 03-May-2003	BR-1S 04-May-2004	BR-1S 29-Apr-2009 A-19	BR-1S 31-May-2014 [25] S-23	BR-1S 04-Jun-2019 [28] BR-1S
Semi-VOCs									
4-Methyl-2-pentanone	mg/l	--	--	--	--	--	--	<0.0050	<0.05
Styrene	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.00020	<0.0020
VOCs									
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006	<0.0005	<0.00010	<0.0020
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004	<0.00010	<0.0010
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006	<0.0005	<0.00020	<0.0020
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004	<0.00020	<0.0020
1,1-Dichloroethane	mg/l	--	--	0.0022	0.0006	0.0005	0.0005	0.00057	<0.0010
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.00010	<0.0010
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001	<0.001	<0.0010	<0.00020	<0.0020
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.001	<0.0004	0.0005	<0.0004	0.00061	<0.0020
1,2-Dichloroethane	mg/l	0.005	--	<0.0007	<0.0007	<0.0005	<0.0005	<0.00020	<0.0020
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007	<0.0007	<0.0005	<0.00010	<0.0010
1,3,5-Trimethylbenzene	mg/l	--	--	0.0003	<0.0003	<0.0003	<0.0003	--	--
1,3-Dichlorobenzene	mg/l	--	--	<0.001	<0.0004	<0.0004	<0.0004	0.0013	<0.0020
1,4-Dichlorobenzene	mg/l	0.005	0.001	0.0012	<0.0004	0.0012	0.0005	0.0014	<0.0020
Methyl Ethyl Ketone	mg/l	--	--	--	--	--	--	<0.0050	<0.05
Acetone	mg/l	--	--	--	--	--	--	<0.01	<0.1
Benzene	mg/l	0.001	--	**0.0053**	<0.0005	<0.0005	**0.0078**	**0.0047**	**0.0045**
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003	<0.0003	<0.00010	<0.0010
Bromoform	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004	<0.00020	<0.0020
Bromomethane	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0050
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0009	<0.0005	<0.0005	<0.00010	<0.0010
Chlorobenzene	mg/l	0.08	0.03	0.0093	0.0004	0.0024	0.0099	0.015	0.016
Chloroethane	mg/l	--	--	--	<0.001	0.0022	<0.0010	--	--
Chloroform	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.00010	<0.0010
Chloromethane	mg/l	--	--	<0.001	0.0017	<0.001	<0.0010	--	--
cis-1,2-Dichloroethene	mg/l	--	--	0.0006	<0.0004	<0.0004	<0.0004	<0.00010	<0.0010
cis-1,2-Dichloropropene	mg/l	--	--	--	--	--	<0.0002	--	--
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002	--	<0.00020	<0.0020
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003	<0.0003	<0.00020	<0.0020
Dichlorodifluoromethane	mg/l	--	--	--	--	--	--	0.0013	<0.0050
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005	<0.0005	<0.0005	0.00013	<0.0010
m,p-Xylenes	mg/l	--	--	0.0016	<0.001	0.0012	<0.0010	0.00091	0.0010
Methyl tert-Butyl Ether	mg/l	--	0.015	--	--	--	--	0.0024	<0.0020
Methylene Chloride	mg/l	0.05	--	<0.004	<0.004	<0.004	<0.0040	<0.00050	<0.0050
n-Hexane	mg/l	--	--	--	--	--	--	<0.00050	<0.0050
o-Xylene	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005	0.00023	<0.0010
Tetrachloroethylene	mg/l	0.01	--	<0.0003	<0.0003	<0.0003	<0.0003	<0.00010	<0.0010
Toluene	mg/l	0.06	0.024	0.0023	<0.0005	<0.0005	<0.0005	0.00023	<0.0020
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004	<0.00010	<0.0010
trans-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.00020	<0.0020
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003	<0.0003	<0.0003	<0.00010	<0.0010
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.00020	<0.0020
Vinyl Chloride	mg/l	0.001	--	<0.0005	<0.0005	<0.0002	<0.0002	<0.00020	<0.0020
Xylenes, Total	mg/l	0.09	0.02	--	--	--	--	0.0011	0.0010

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-2 01-Nov-1990	BR-2 01-Oct-1991	BR-2 01-Dec-1991	BR-2 01-Dec-1992	BR-2 01-Sep-1993
VOCs								
1,1,2-Trichloroethane	mg/l	--	--	0.002	--	--	--	--
1,1-Dichloroethane	mg/l	--	--	--	--	0.002	--	0.002
1,2-Dichloroethane	mg/l	0.005	--	<0.002	--	--	--	--
m,p-Xylenes	mg/l	--	--	<0.002	--	--	--	--
Methylene Chloride	mg/l	0.05	--	<0.002	0.032	--	<0.004	<0.004
Toluene	mg/l	0.06	0.024	0.002	--	--	--	--
Vinyl Chloride	mg/l	0.001	--	--	--	--	--	<0.002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-3 01-Nov-1990	BR-3 01-Oct-1991	BR-3 01-Dec-1991	BR-3 01-Dec-1992	BR-3 01-Sep-1993	BR-3 01-Oct-2000	BR-3 03-May-2003	BR-3 04-May-2004
Semi-VOCs											
Styrene	mg/l	--	--	--	--	--	--	--	<0.0005	<0.0005	<0.0005
VOCs											
1,1,1,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	--	<0.0006	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	--	--	--	--	--	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	--	<0.0006	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	--	--	--	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	--	--	--	--	0.0042	<0.001	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	--	--	--	--	--	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	--	--	--	--	--	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	--	--	--	--	--	<0.001	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.002	--	--	--	--	<0.001	<0.0007	<0.0005
1,2-Dichloropropane	mg/l	--	--	--	--	--	--	--	<0.0007	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	--	--	--	--	--	0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	--	--	--	--	--	<0.001	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	--	--	--	--	--	<0.001	<0.0004	<0.0004
Benzene	mg/l	0.001	--	--	--	--	--	--	<0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	--	--	--	--	--	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	--	--	--	--	--	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	--	--	--	--	--	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	--	--	--	--	--	<0.0009	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	--	--	--	--	--	<0.0002	<0.0002	<0.0002
Chloroethane	mg/l	--	--	--	--	--	--	--	--	<0.001	<0.001
Chloroform	mg/l	--	--	--	--	--	--	--	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	--	--	--	--	--	<0.0001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	--	--	0.0047	0.0018	--	0.003	0.0022	0.0018
cis-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	--	<0.0002	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	--	--	--	--	--	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	--	--	--	--	--	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.002	--	--	--	--	<0.0005	<0.001	<0.001
Methylene Chloride	mg/l	0.05	--	<0.002	--	--	<0.004	<0.004	<0.004	<0.004	<0.004
o-Xylene	mg/l	--	--	--	--	--	--	--	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	--	--	0.004	--	--	<0.0003	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	--	--	--	--	--	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	--	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	--	<0.0005	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	--	--	--	--	--	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	0.004	--	--	--	--	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	**0.03**	--	--	<0.002	--	0.0006	0.0004

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-4 01-Nov-1990	BR-4 01-Oct-1991	BR-4 01-Dec-1991	BR-4 01-Feb-1992	BR-4 01-Sep-1993	BR-4 01-Oct-2000
Semi-VOCs									
Styrene	mg/l	--	--	--	--	--	--	--	<0.0005
VOCs									
1,1,1,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	--	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	--	--	--	--	--	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	--	--	--	--	--	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	--	--	--	--	--	<0.0004
1,1-Dichloroethane	mg/l	--	--	--	--	--	--	--	<0.001
1,1-Dichloroethylene	mg/l	0.014	--	--	--	--	--	--	<0.0005
1,2-Dibromoethane	mg/l	--	--	--	--	--	--	--	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	--	--	--	--	--	<0.001
1,2-Dichloroethane	mg/l	0.005	--	<0.002	--	--	--	--	<0.001
1,2-Dichloropropane	mg/l	--	--	--	--	--	--	--	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	--	--	--	--	--	0.0005
1,3-Dichlorobenzene	mg/l	--	--	--	--	--	--	--	<0.001
1,4-Dichlorobenzene	mg/l	0.005	0.001	--	--	--	--	--	<0.001
Benzene	mg/l	0.001	--	--	0.001	**0.002**	--	--	<0.0005
Bromodichloromethane	mg/l	--	--	--	--	--	--	--	<0.0003
Bromoform	mg/l	--	--	--	--	--	--	--	<0.0004
Bromomethane	mg/l	--	--	--	--	--	--	--	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	--	--	--	--	--	<0.0009
Chlorobenzene	mg/l	0.08	0.03	--	--	--	--	--	<0.0002
Chloroform	mg/l	--	--	0.002	--	--	--	--	<0.0005
Chloromethane	mg/l	--	--	--	--	--	--	--	<0.0001
cis-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	--	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	--	<0.0002
Dibromochloromethane	mg/l	--	--	--	--	--	--	--	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	--	--	--	--	--	<0.0005
m,p-Xylenes	mg/l	--	--	<0.002	<0.002	--	--	--	<0.0005
Methylene Chloride	mg/l	0.05	--	<0.002	<0.002	<0.004	<0.004	<0.004	<0.004
o-Xylene	mg/l	--	--	--	--	--	--	--	<0.0005
Tetrachloroethylene	mg/l	0.01	--	--	--	0.002	--	--	<0.0003
Toluene	mg/l	0.06	0.024	--	--	--	--	--	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	--	--	--	--	--	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	--	--	--	--	--	<0.0005
Trichloroethene	mg/l	0.005	--	--	--	--	--	--	<0.0003
Trichlorofluoromethane	mg/l	--	--	--	--	--	--	--	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	--	--	--	<0.002	--

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-5 01-Sep-1993	BR-5 01-Apr-1996
VOCs					
1,1-Dichloroethane	mg/l	--	--	--	0.001
cis-1,2-Dichloroethene	mg/l	--	--	--	0.0034
Methylene Chloride	mg/l	0.05	--	<0.004	--
Vinyl Chloride	mg/l	0.001	--	<0.002	--

Parameter	Unit	ODWQS (169/03)-Health (1)	ODWQS-AO (2)	BR-5D 01-Oct-2000	BR-5D 03-May-2003	BR-5D 04-May-2004
Semi-VOCs						
Styrene	mg/l	--	--	<0.0005	<0.0005	<0.0005
VOCs						
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	0.0012	0.0007	0.0007
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.001	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.001	<0.0007	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.001	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.001	<0.0004	<0.0004
Benzene	mg/l	0.001	--	<0.0005	<0.0005	0.0005
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002	0.0005	0.0006
Chloroethane	mg/l	--	--	--	<0.001	0.0012
Chloroform	mg/l	--	--	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.0001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	0.0084	0.0042	0.0043
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0005	<0.001	<0.001
Methylene Chloride	mg/l	0.05	--	<0.004	<0.004	<0.004
o-Xylene	mg/l	--	--	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0005	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	0.0006	0.0006

Parameter	Unit	ODWQS (169/03)-Health (1)	ODWQS-AO (2)	BR-5S 01-Oct-2000	BR-5S 03-May-2003	BR-5S 04-May-2004
Semi-VOCs						
Styrene	mg/l	--	--	<0.0005	<0.0005	<0.0005
VOCs						
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	0.0006	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.001	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.001	<0.0007	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.001	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.001	<0.0004	<0.0004
Benzene	mg/l	0.001	--	<0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002	<0.0002	<0.0002
Chloroethane	mg/l	--	--	--	<0.001	<0.001
Chloroform	mg/l	--	--	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.0001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	0.0119	0.0063	0.0035
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0005	<0.001	<0.001
Methylene Chloride	mg/l	0.05	--	<0.004	<0.004	<0.004
o-Xylene	mg/l	--	--	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0005	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	<0.0005	<0.0002

APPENDIX C-III
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK ORGANIC

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-6 01-Sep-1993	BR-6 01-Apr-1996
VOCs					
1,1-Dichloroethane	mg/l	--	--	--	0.0011
Methylene Chloride	mg/l	0.05	--	<0.004	--
Vinyl Chloride	mg/l	0.001	--	<0.002	--

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-6D 01-Oct-2000	BR-6D 03-May-2003	BR-6D 04-May-2004	BR-6D 28-Apr-2009 A-10
Semi-VOCs							
Styrene	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005
VOCs							
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006	<0.0005
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006	<0.0005
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	0.0008	0.0004	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001	<0.001	<0.0010
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.001	<0.0004	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.001	<0.0007	<0.0005	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007	<0.0007	<0.0005
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003	<0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.001	<0.0004	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.001	<0.0004	<0.0004	<0.0004
Benzene	mg/l	0.001	--	<0.0005	<0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0009	<0.0005	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002	0.0002	<0.0002	<0.0002
Chloroethane	mg/l	--	--	--	<0.001	<0.001	<0.0010
Chloroform	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.0001	<0.001	<0.001	<0.0010
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004
cis-1,2-Dichloropropene	mg/l	--	--	--	--	--	<0.0002
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002	--
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0005	<0.001	<0.001	<0.0010
Methylene Chloride	mg/l	0.05	--	<0.004	<0.004	<0.0004	<0.0040
o-Xylene	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003	<0.0003	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0005	<0.0002	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	<0.0005	<0.0002	<0.0002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-6S 01-Oct-2000	BR-6S 03-May-2003	BR-6S 04-May-2004
Semi-VOCs						
Styrene	mg/l	--	--	<0.0005	<0.0005	<0.0005
VOCs						
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.001	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.001	<0.0007	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.001	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.001	<0.0004	<0.0004
Benzene	mg/l	0.001	--	<0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002	<0.0002	<0.0002
Chloroethane	mg/l	--	--	--	<0.001	<0.001
Chloroform	mg/l	--	--	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.0001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	0.0016	0.0014	0.0013
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0005	<0.001	<0.001
Methylene Chloride	mg/l	0.05	--	<0.004	<0.004	<0.0004
o-Xylene	mg/l	--	--	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0005	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	<0.0005	<0.0002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-7 01-Sep-1993
VOCs				
Methylene Chloride	mg/l	0.05	--	<0.004
Vinyl Chloride	mg/l	0.001	--	<0.002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-7D 01-Oct-2000	BR-7D 03-May-2003	BR-7D 04-May-2004
Semi-VOCs						
Styrene	mg/l	--	--	<0.0005	<0.0005	<0.0005
VOCs						
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.001	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.001	<0.0007	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.001	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.001	<0.0004	<0.0004
Benzene	mg/l	0.001	--	<0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002	<0.0002	<0.0002
Chloroethane	mg/l	--	--	--	<0.001	<0.001
Chloroform	mg/l	--	--	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.0001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0005	<0.001	<0.001
Methylene Chloride	mg/l	0.05	--	<0.004	<0.004	<0.004
o-Xylene	mg/l	--	--	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	0.0005	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0005	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	<0.0005	<0.0002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-7M 03-May-2003
Semi-VOCs				
Styrene	mg/l	--	--	<0.0005
VOCs				
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.0007
1,2-Dichloropropane	mg/l	--	--	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.0004
Benzene	mg/l	0.001	--	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003
Bromoform	mg/l	--	--	<0.0004
Bromomethane	mg/l	--	--	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009
Chlorobenzene	mg/l	0.08	0.03	<0.0002
Chloroethane	mg/l	--	--	<0.001
Chloroform	mg/l	--	--	<0.0005
Chloromethane	mg/l	--	--	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005
m,p-Xylenes	mg/l	--	--	<0.001
Methylene Chloride	mg/l	0.05	--	<0.004
o-Xylene	mg/l	--	--	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005
Vinyl Chloride	mg/l	0.001	--	<0.0005

Parameter	Unit	ODWQS (169/03)-Health (1)	ODWQS-AO (2)	BR-7S 01-Oct-2000	BR-7S 03-May-2003	BR-7S 04-May-2004
Semi-VOCs						
Styrene	mg/l	--	--	<0.0005	<0.0005	<0.0005
VOCs						
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	0.0005	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.001	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.001	<0.0007	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.001	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.001	<0.0004	<0.0004
Benzene	mg/l	0.001	--	<0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002	<0.0002	<0.0002
Chloroethane	mg/l	--	--	--	<0.001	<0.001
Chloroform	mg/l	--	--	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.0001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0005	<0.001	<0.001
Methylene Chloride	mg/l	0.05	--	<0.004	<0.004	<0.004
o-Xylene	mg/l	--	--	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	0.0003	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0005	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	<0.0005	<0.0002

Parameter	Unit	ODWQS (169/03)-Health (1)	ODWQS-AO (2)	BR-8D 01-Oct-2000	BR-8D 03-May-2003	BR-8D 04-May-2004
Semi-VOCs						
Styrene	mg/l	--	--	<0.0005	<0.0005	<0.0005
VOCs						
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.001	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.001	<0.0007	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.001	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.001	<0.0004	<0.0004
Benzene	mg/l	0.001	--	<0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002	<0.0002	<0.0002
Chloroethane	mg/l	--	--	--	<0.001	<0.001
Chloroform	mg/l	--	--	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.0001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0005	<0.001	<0.001
Methylene Chloride	mg/l	0.05	--	<0.004	<0.004	<0.004
o-Xylene	mg/l	--	--	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0005	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	<0.0005	<0.0002

Parameter	Unit	ODWQS (169/03)-Health (1)	ODWQS-AO (2)	BR-8S 01-Oct-2000	BR-8S 03-May-2003	BR-8S 04-May-2004
Semi-VOCs						
Styrene	mg/l	--	--	<0.0005	<0.0005	<0.0005
VOCs						
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	0.0008	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.001	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.001	<0.0007	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.001	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.001	<0.0004	<0.0004
Benzene	mg/l	0.001	--	<0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002	<0.0002	<0.0002
Chloroethane	mg/l	--	--	--	<0.001	<0.001
Chloroform	mg/l	--	--	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.0001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0005	<0.001	<0.001
Methylene Chloride	mg/l	0.05	--	<0.004	<0.004	<0.004
o-Xylene	mg/l	--	--	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0005	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	<0.0005	<0.0002

Parameter	Unit	ODWQS (169/03)-Health (1)	ODWQS-AO (2)	BR-9D 01-Oct-2000	BR-9D 03-May-2003	BR-9D 04-May-2004
Semi-VOCs						
Styrene	mg/l	--	--	<0.0005	<0.0005	<0.0005
VOCs						
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.001	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.001	<0.0007	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.001	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.001	<0.0004	<0.0004
Benzene	mg/l	0.001	--	<0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002	<0.0002	<0.0002
Chloroethane	mg/l	--	--	--	<0.001	<0.001
Chloroform	mg/l	--	--	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.0001	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0005	<0.001	<0.001
Methylene Chloride	mg/l	0.05	--	<0.004	<0.0004	<0.004
o-Xylene	mg/l	--	--	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0005	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	<0.0005	<0.0002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-9S 01-Oct-2000	BR-9S 03-May-2003	BR-9S 04-May-2004	BR-9S 28-Apr-2009 A-14
Semi-VOCs							
Styrene	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005
VOCs							
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006	<0.0005
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0006	<0.0005
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001	<0.001	<0.0010
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.001	<0.0004	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.001	<0.0007	<0.0005	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007	<0.0007	<0.0005
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003	<0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.001	<0.0004	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.001	<0.0004	<0.0004	<0.0004
Benzene	mg/l	0.001	--	<0.0005	<0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0009	<0.0005	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002	<0.0002	<0.0002	<0.0002
Chloroethane	mg/l	--	--	--	<0.001	<0.001	<0.0010
Chloroform	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.0001	<0.001	<0.001	<0.0010
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004
cis-1,2-Dichloropropene	mg/l	--	--	--	--	--	<0.0002
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002	--
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0005	<0.001	<0.001	<0.0010
Methylene Chloride	mg/l	0.05	--	<0.004	<0.0004	<0.004	<0.0040
o-Xylene	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003	<0.0003	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0005	<0.0002	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	--	<0.0005	<0.0002	<0.0002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-10 04-May-2004
Semi-VOCs				
Styrene	mg/l	--	--	<0.0005
VOCs				
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.0004
Benzene	mg/l	0.001	--	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003
Bromoform	mg/l	--	--	<0.0004
Bromomethane	mg/l	--	--	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002
Chloroethane	mg/l	--	--	<0.001
Chloroform	mg/l	--	--	<0.0005
Chloromethane	mg/l	--	--	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005
m,p-Xylenes	mg/l	--	--	<0.001
Methylene Chloride	mg/l	0.05	--	<0.004
o-Xylene	mg/l	--	--	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005
Vinyl Chloride	mg/l	0.001	--	<0.0002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-11 04-May-2004
Semi-VOCs				
Styrene	mg/l	--	--	<0.0005
VOCs				
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.0004
Benzene	mg/l	0.001	--	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003
Bromoform	mg/l	--	--	<0.0004
Bromomethane	mg/l	--	--	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002
Chloroethane	mg/l	--	--	<0.001
Chloroform	mg/l	--	--	<0.0005
Chloromethane	mg/l	--	--	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005
m,p-Xylenes	mg/l	--	--	<0.001
Methylene Chloride	mg/l	0.05	--	<0.004
o-Xylene	mg/l	--	--	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005
Vinyl Chloride	mg/l	0.001	--	<0.0002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-12 04-May-2004
Semi-VOCs				
Styrene	mg/l	--	--	<0.0005
VOCs				
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.0004
Benzene	mg/l	0.001	--	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003
Bromoform	mg/l	--	--	<0.0004
Bromomethane	mg/l	--	--	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002
Chloroethane	mg/l	--	--	<0.001
Chloroform	mg/l	--	--	<0.0005
Chloromethane	mg/l	--	--	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005
m,p-Xylenes	mg/l	--	--	<0.001
Methylene Chloride	mg/l	0.05	--	<0.004
o-Xylene	mg/l	--	--	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005
Vinyl Chloride	mg/l	0.001	--	<0.0002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-13D 03-May-2003	BR-13D 04-May-2004	BR-13D 29-Apr-2009 A-28
Semi-VOCs						
Styrene	mg/l	--	--	<0.0005	<0.0005	<0.0005
VOCs						
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0005
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006	<0.0005
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001	<0.0010
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.0004	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.0007	<0.0005	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007	<0.0005
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.0004	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.0004	<0.0004	<0.0004
Benzene	mg/l	0.001	--	<0.0005	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0005	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002	<0.0002	<0.0002
Chloroethane	mg/l	--	--	<0.001	<0.001	<0.0010
Chloroform	mg/l	--	--	<0.0005	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.001	<0.001	<0.0010
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
cis-1,2-Dichloropropene	mg/l	--	--	--	--	<0.0002
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	--
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.001	<0.001	<0.0010
Methylene Chloride	mg/l	0.05	--	<0.0004	<0.004	<0.0040
o-Xylene	mg/l	--	--	<0.0005	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	<0.0005	<0.0002	<0.0002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR-13S 03-May-2003	BR-13S 04-May-2004
Semi-VOCs					
Styrene	mg/l	--	--	<0.0005	<0.0005
VOCs					
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006
1,1,1-Trichloroethane	mg/l	--	--	<0.0004	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0006	<0.0006
1,1,2-Trichloroethane	mg/l	--	--	<0.0004	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.001	<0.001
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.0004	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.0007	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0007	<0.0007
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.0004	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.0004	<0.0004
Benzene	mg/l	0.001	--	<0.0005	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003	<0.0003
Bromoform	mg/l	--	--	<0.0004	<0.0004
Bromomethane	mg/l	--	--	<0.0005	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0009	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002	<0.0002
Chloroethane	mg/l	--	--	<0.001	<0.001
Chloroform	mg/l	--	--	<0.0005	<0.0005
Chloromethane	mg/l	--	--	<0.001	<0.001
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004
cis-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005	<0.0005
m,p-Xylenes	mg/l	--	--	<0.001	<0.001
Methylene Chloride	mg/l	0.05	--	<0.0004	<0.004
o-Xylene	mg/l	--	--	<0.0005	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0002	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005	<0.0005
Vinyl Chloride	mg/l	0.001	--	<0.0005	<0.0002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR 08-2D 29-Apr-2009 A-22
Semi-VOCs				
Styrene	mg/l	--	--	<0.0005
VOCs				
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0005
1,1,1-Trichloroethane	mg/l	--	--	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0005
1,1,2-Trichloroethane	mg/l	--	--	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.0010
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0005
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.0004
Benzene	mg/l	0.001	--	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003
Bromoform	mg/l	--	--	<0.0004
Bromomethane	mg/l	--	--	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002
Chloroethane	mg/l	--	--	<0.0010
Chloroform	mg/l	--	--	<0.0005
Chloromethane	mg/l	--	--	<0.0010
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004
cis-1,2-Dichloropropene	mg/l	--	--	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0010
Methylene Chloride	mg/l	0.05	--	<0.0040
o-Xylene	mg/l	--	--	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005
Vinyl Chloride	mg/l	0.001	--	<0.0002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR 08-2S 29-Apr-2009 A-21
Semi-VOCs				
Styrene	mg/l	--	--	<0.0005
VOCs				
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0005
1,1,1-Trichloroethane	mg/l	--	--	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0005
1,1,2-Trichloroethane	mg/l	--	--	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.0010
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0005
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.0004
Benzene	mg/l	0.001	--	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003
Bromoform	mg/l	--	--	<0.0004
Bromomethane	mg/l	--	--	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002
Chloroethane	mg/l	--	--	<0.0010
Chloroform	mg/l	--	--	0.0005
Chloromethane	mg/l	--	--	<0.0010
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004
cis-1,2-Dichloropropene	mg/l	--	--	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0010
Methylene Chloride	mg/l	0.05	--	<0.0040
o-Xylene	mg/l	--	--	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005
Vinyl Chloride	mg/l	0.001	--	<0.0002

Parameter	Unit	ODWQS (169/03)-Health [1]	ODWQS-AO [2]	BR 08-3S 28-Apr-2009 A-16
Semi-VOCs				
Styrene	mg/l	--	--	<0.0005
VOCs				
1,1,1,2-Tetrachloroethane	mg/l	--	--	<0.0005
1,1,1-Trichloroethane	mg/l	--	--	<0.0004
1,1,2,2-Tetrachloroethane	mg/l	--	--	<0.0005
1,1,2-Trichloroethane	mg/l	--	--	<0.0004
1,1-Dichloroethane	mg/l	--	--	<0.0004
1,1-Dichloroethylene	mg/l	0.014	--	<0.0005
1,2-Dibromoethane	mg/l	--	--	<0.0010
1,2-Dichlorobenzene	mg/l	0.2	0.003	<0.0004
1,2-Dichloroethane	mg/l	0.005	--	<0.0005
1,2-Dichloropropane	mg/l	--	--	<0.0005
1,3,5-Trimethylbenzene	mg/l	--	--	<0.0003
1,3-Dichlorobenzene	mg/l	--	--	<0.0004
1,4-Dichlorobenzene	mg/l	0.005	0.001	<0.0004
Benzene	mg/l	0.001	--	<0.0005
Bromodichloromethane	mg/l	--	--	<0.0003
Bromoform	mg/l	--	--	<0.0004
Bromomethane	mg/l	--	--	<0.0005
Carbon Tetrachloride	mg/l	0.002	--	<0.0005
Chlorobenzene	mg/l	0.08	0.03	<0.0002
Chloroethane	mg/l	--	--	<0.0010
Chloroform	mg/l	--	--	<0.0005
Chloromethane	mg/l	--	--	<0.0010
cis-1,2-Dichloroethene	mg/l	--	--	<0.0004
cis-1,2-Dichloropropene	mg/l	--	--	<0.0002
Dibromochloromethane	mg/l	--	--	<0.0003
Ethylbenzene	mg/l	0.14	0.0016	<0.0005
m,p-Xylenes	mg/l	--	--	<0.0010
Methylene Chloride	mg/l	0.05	--	<0.0040
o-Xylene	mg/l	--	--	<0.0005
Tetrachloroethylene	mg/l	0.01	--	<0.0003
Toluene	mg/l	0.06	0.024	<0.0005
trans-1,2-Dichloroethene	mg/l	--	--	<0.0004
trans-1,3-Dichloropropene	mg/l	--	--	<0.0002
Trichloroethene	mg/l	0.005	--	<0.0003
Trichlorofluoromethane	mg/l	--	--	<0.0005
Vinyl Chloride	mg/l	0.001	--	<0.0002

Footnotes:

	Tables should be read in conjunction with the accompanying document.
<	Indicates parameter not detected above laboratory method detection limit.
>	Indicates parameter detected above equipment analytical range.
--	Chemical not analyzed or criteria not defined.
Value	Parameter is greater than ODWQS(169/03)-Health
Value	Parameter is greater than ODWQS-AO
(1)	Ontario Drinking Water Quality Standards - Health Based Standards (June 2003, revised January 2020).
(2)	Ontario Drinking Water Quality Standards - Aesthetic Objectives. Aesthetic Objectives are established for parameters that may impair the taste, odour or colour of water or which may interfere with good water quality control practices. For certain parameters, both aesthetic objectives and health-related MACs have been derived (June 2003, revised July 2017).
(3)	Selenium MRL elevated due to matrix interference.
(4)	Selenium MRL elevated due to matrix interference (dilution was done).
(5)	Metal Analysis:RDL of Calcium was adjusted due to high concentration of Strontium.
(6)	clarity: clear, sediments: none, colour: none, odour: slight sulphur odour
(7)	clarity: clear, sediments: none, colour: none, odour: none.
(8)	clarity: clear, sediments: trace, colour: beige tinge, odour: none
(9)	ortho-Phosphate > Total Phosphorus: Both values fall within the method uncertainty for duplicates and are likely equivalent.
(10)	clarity: clear, sediments: none, colour: faint beige, odour: none
(11)	TP MRL elevated due to matrix interference.
(12)	The reported lab and field concentrations originally assigned to BR11 were reassigned to BR12, and vice versa, for the May 2017 monitoring session. This reassignment was made based on a review of field notes and historical data.
(13)	ortho-Phosphate > Total Phosphorus: Both values fall within the method uncertainty for duplicates and are likely equivalent. The reported lab and field concentrations originally assigned to BR11 were reassigned to BR12, and vice versa, for the May 2017 monitoring session. This reassignment was made based on a review of field notes and historical data.
(14)	clarity: clear, sediments: trace, colour: beige, odour: none
(15)	Clarity: clear, sediments: trace, colour: beige tinge, odour: none
(16)	Metals MRL elevated due to matrix interference.
(17)	Selenium MRL elevated due to matrix interference. N-NH3 was analysed at SGS.
(18)	Metal Analysis:RDLs of Calcium, Nickel and Copper were adjusted was adjusted due to high concentration of Strontium, Calcium and Barium respectively.
(19)	Metal Analysis:RDLs of Nickel, Calcium and Copper were adjusted due to high concentrations of Calcium, Strontium and Barium respectively.
(20)	Metal Analysis:RDL of Copper was adjusted due to high concentration of Barium.
(21)	Reported lab concentrations originally assigned to BR-1S were assigned to BR-1D, and vice versa for the spring 2018 monitoring session. Reassignment was based on review of historical data.
(22)	clarity: none, sediments: none, colour: none, odour: odd
(23)	Metals MRL elevated due to matrix interference. N-NH3 was analysed at SGS.
(24)	Sediment was not included in mercury analysis. Selenium MRL elevated due to matrix interference.
(25)	Due to colour interferences, sample required dilution. Detection limit was adjusted accordingly.
(26)	Metal Analysis:RDLs of Calcium, Nickel and Copper were adjusted was adjusted due to high concentration of Strontium, Calcium and Barium respectively
(27)	Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.
(28)	VOC Water Analysis: Due to foaming, sample required dilution. The detection limits were adjusted accordingly.
(29)	Monitoring location was damaged and could not be sampled.
(30)	clarity: clear, sediments: none, colour: beige tinge, odour: odd smell
(31)	clarity: clear, sediments: none, colour: beige tinge, odour: odd smell
(32)	Total Phosphorus < ortho-Phosphate: Both values fall within the method uncertainty for duplicates and are likely equivalent.

C-IV Bedrock General Chemistry 2023

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-1D 27-Nov-2008	BR 08-1D 28-Apr-2009 A-6	BR 08-1D 29-Nov-2009 [3] A-25	BR 08-1D 19-May-2010 A-6	BR 08-1D 29-Nov-2010 A - 13	BR 08-1D 11-May-2011 S-16	BR 08-1D 30-Nov-2011 S - 27	BR 08-1D 20-May-2012 S-22
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	559	556	386	484	470	570	515	621
Ammonia Nitrogen	mg/l	--	--	0.23	0.25	0.32	0.26	0.31	0.18	0.23	0.31
Chloride	mg/l	--	250	38	26	17	54	35	52	16	74
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	765	1030	766	1030	919	1070	938	1270
Conductivity (Field)	uS/cm	--	--	--	840	870	1087	855	1130	1100	1110
Dissolved Organic Carbon	mg/l	--	5	8.9	12.1	5.2	9.9	6	11.1	20.7	7.9
Hardness, Calcium Carbonate	mg/l	--	--	557	520	307	523	421	541	485	441
pH (Field)	-	--	--	6.8	6.8	6.9	7.3	7.3	6.8	6.9	6.9
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	<0.05	0.2	0.15	0.06	0.06	0.14	<0.01	0.04
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/l	--	500 [6]	6	1	16	2	8	1	1	1
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	1.9	0.3	0.2	--	0.1	0.2	0.8	0.3
Temperature (Field)	deg c	--	15	6	9	8	9.8	7.1	11	10	10
Total Dissolved Solids	mg/l	--	500	708	670	498	670	597	696	610	826
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.2	0.2	0.11	0.33	0.25	0.28	0.57	0.37
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	1.08	1	1.5	0.94	1.3	0.89	0.78	1.2
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	119	111	62	109	91	116	115	96
Chromium, dissolved	mg/l	0.05	--	0.003	0.004	0.002	<0.001	<0.001	0.003	0.009	0.004
Cobalt, dissolved	mg/l	--	--	0.0005	<0.0002	<0.0002	<0.0002	0.0002	0.0002	0.0003	0.0002
Iron, dissolved	mg/l	--	0.3	0.98	0.37	2.03	0.27	1.71	0.09	2.89	0.32
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	63	59	37	61	47	61	48	49
Manganese, dissolved	mg/l	--	0.05	0.04	0.02	<0.01	0.01	0.02	0.01	0.07	0.01
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	--	8	7	9	9	9	6	7
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	19	14	33	21	29	20	7	23
Vanadium, dissolved	mg/l	--	--	0.008	0.011	0.005	0.002	0.003	0.005	0.004	<0.005
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-1D 13-Nov-2012 A - 5	BR 08-1D 30-May-2014 S-17	BR 08-1D 19-Nov-2014 A-14	BR 08-1D 26-Nov-2014 [4] A-14	BR 08-1D 06-May-2015 S-13	BR 08-1D 16-Nov-2015 [4] S-6	BR 08-1D 19-Apr-2016 S-11	BR 08-1D 31-Oct-2016 S-4
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	387	630	560	--	470	460	400	480
Ammonia Nitrogen	mg/l	--	--	0.2	0.49	0.35	--	0.23	0.2	0.11	0.35
Chloride	mg/l	--	250	24	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	71	57	--	68	78	41	37
Conductivity	uS/cm	--	--	750	1300	1200	--	1000	1100	880	1000
Conductivity (Field)	uS/cm	--	--	1105	1000	990	--	965	950	863	830
Dissolved Organic Carbon	mg/l	--	5	2.9	7	7.7	--	8.1	7.9	7.9	8.7
Hardness, Calcium Carbonate	mg/l	--	--	303	630	550	--	490	440	440	450
pH (Field)	-	--	--	6.9	7	7.2	--	7.4	7.3	7.5	7.5
Phosphate, Ortho	mg/l	--	--	--	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.04	0.36	0.088	--	1.1	0.81	0.83	1.3
Phosphorus, dissolved	mg/l	--	--	--	<0.1	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	8	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	<1	5	--	<1	2.4	2.8	1.6
Tannin & Lignin	mg/l	--	--	0.1	0.4	1	--	--	--	--	--
Temperature (Field)	deg c	--	15	9	9	6	--	8	7	8.5	7
Total Dissolved Solids	mg/l	--	500	488	738	618	--	558	578	540	662
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.0050	--	<0.005	0.011	<0.005	<0.005	<0.0050
Barium, dissolved	mg/l	1	--	0.12	0.44	--	0.22	0.23	0.17	0.17	0.16
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.00050	--	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050
Boron, dissolved	mg/l	5	--	1.8	1.2	--	1.9	0.47	0.5	0.46	0.45
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.00010	--	<0.0001	<0.00010	<0.0001	<0.0001	<0.00010
Calcium, dissolved	mg/l	--	--	62	130	--	59	100 [8]	96	89	98
Chromium, dissolved	mg/l	0.05	--	0.001	<0.0050	--	<0.005	<0.0050	<0.005	<0.005	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.0002	<0.00050	--	<0.0005	<0.00050	<0.0005	<0.0005	0.00053
Iron, dissolved	mg/l	--	0.3	0.99	0.33	--	7.7	0.4	<0.1	0.21	0.16
Lead, dissolved	mg/l	0.01	--	<0.001	<0.00050	--	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050
Magnesium, dissolved	mg/l	--	--	36	72	--	33	55	50	52	49
Manganese, dissolved	mg/l	--	0.05	<0.01	0.012	--	0.011	0.026	0.029	0.008	0.058
Mercury	mg/l	0.001	--	--	--	--	--	--	<0.00010	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.00010	--	<0.00010	<0.00010	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.00050	--	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050
Nickel, dissolved	mg/l	--	--	<0.005	0.0026	--	<0.001	0.0055	0.006	0.004	0.0063
Potassium, dissolved	mg/l	--	--	7	11	--	8.3	9.8	10	10	12
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.0020	--	<0.002	<0.0020	<0.002	<0.002	<0.0020
Silver, dissolved	mg/l	--	--	<0.0001	<0.00010	--	<0.0001	<0.00010	0.0002	<0.0001	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	45	34	--	41	45	52	41	56
Vanadium, dissolved	mg/l	--	--	0.002	<0.00050	--	<0.0005	0.00069	0.0007	<0.0005	<0.00050
Zinc, dissolved	mg/l	--	5	<0.01	<0.0050	--	<0.005	<0.0050	<0.005	<0.005	<0.0050

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-1D 25-May-2017 A-17	BR 08-1D 21-Nov-2017 08-1D	BR 08-1D 16-May-2018 BR08-1D	BR 08-1D 29-Oct-2018 [5] O8-1D	BR 08-1D 30-May-2019 08-1D	BR 08-1D 15-Nov-2019 08-1D	BR 08-1D 07-May-2020 O8-1D	BR 08-1D 28-Oct-2020 O8-1D
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	450	490	500	450	530	370	580	450
Ammonia Nitrogen	mg/l	--	--	0.27	0.15	0.95	0.25	0.27	0.12	0.17	0.17
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	41	45	46	62	43	60	26	64
Conductivity	uS/cm	--	--	940	980	1000	930	1100	890	1100	930
Conductivity (Field)	uS/cm	--	--	850	770	820	795	958	988	596	603
Dissolved Organic Carbon	mg/l	--	5	9	8.4	10	8.8	9.6	7	16	8.7
Hardness, Calcium Carbonate	mg/l	--	--	390	420	500	420	480	350	580	410
pH (Field)	-	--	--	7.6	7.6	7.5	7.6	7.32	7.3	7.35	7.3
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.89	0.7	0.4	0.9	2	1.1	0.013	0.6
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	<1.0	<1.0	<1.0	<1.0	<1.0	11	<1.0	1
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8	6.9	10.5	10.1	9.4	8.1	6.5	8.2
Total Dissolved Solids	mg/l	--	500	488	465	525	555	625	465	635	505
Metals											
Aluminum, dissolved	mg/l	--	--	0.0061	<0.0050	<0.0050	<0.0050	<0.0050	0.11	<0.0050	<0.0049
Barium, dissolved	mg/l	1	--	0.17	0.15	0.21	0.19	0.23	0.061	0.58	0.16
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040
Boron, dissolved	mg/l	5	--	0.39	0.43	0.5	0.53	0.63	0.17	0.73	0.45
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090
Calcium, dissolved	mg/l	--	--	83	91	110	92	110	77	130	91
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	0.00098	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	<0.1	0.13	0.68	0.24	0.23	0.53	2.1	0.15
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0009	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	44	47	54	46	52	38	62	45
Manganese, dissolved	mg/l	--	0.05	0.056	0.017	0.14	0.0091	0.062	0.051	0.045	0.032
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	0.0042	0.0041	0.0056	0.0044	0.0044	0.0043	0.0034	0.0051
Potassium, dissolved	mg/l	--	--	10	9.1	12	9.1	9.8	7.5	7.2	11
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	39	38	48	35	33	34	12	51
Vanadium, dissolved	mg/l	--	--	<0.00050	0.00059	<0.00050	<0.00050	0.00059	0.00087	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-1D 30-Apr-2021 BR08-1D	BR 08-1D 24-Nov-2021 BR08-1D	BR 08-1D 25-Apr-2022 BR08-1D	BR 08-1D 17-Dec-2022 BR08-1D	BR 08-1D 25-May-2023 BR08-1D	BR 08-1D 24-Nov-2023 BR08-1D
General Chemistry									
Alkalinity (Total as CaCO3)	mg/l	--	--	620	450	490	720	750	570
Ammonia Nitrogen	mg/l	--	--	1.2	0.22	1.2	0.55	0.54	0.74
Chloride	mg/l	--	250	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	77	81	68	81	76	72
Conductivity	uS/cm	--	--	1300	1000	1100	1500	1500	1300
Conductivity (Field)	uS/cm	--	--	628	1050	1070	995	979	964
Dissolved Organic Carbon	mg/l	--	5	11	9.2	9.4	14	14	10
Hardness, Calcium Carbonate	mg/l	--	--	580	430	490	730	760	520
pH (Field)	-	--	--	7.21	7.2	6.86	6.8	6.89	6.81
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	2.4	0.6	0.6	0.1	0.098	0.58
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	<1.0	6.4	<1.0	<1.0	<1.0	1.5
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	9	8.2	8.2	7.7	8.3	7.4
Total Dissolved Solids	mg/l	--	500	705	595	565	785	735	695
Metals									
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.29	0.19	0.21	0.52	0.48	0.25
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.78	0.53	0.48	1.1	0.98	0.57
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	130	98	110	160	170	120
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0014	<0.00050	0.00053	<0.00050	<0.00050	0.00057
Iron, dissolved	mg/l	--	0.3	1.2	0.17	0.34	1.1	1.1	0.38
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	64	45	52	79	82	55
Manganese, dissolved	mg/l	--	0.05	0.22	0.023	0.05	0.022	0.019	0.098
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	0.0062	0.0053	0.0048	0.0054	0.0057	0.0064
Potassium, dissolved	mg/l	--	--	12	11	12	12	12	11
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	46	52	44	44	46	60
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	0.00056	0.00065	0.00066	0.0006
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-1S 27-Nov-2008	BR 08-1S 28-Apr-2009 [3] A-7	BR 08-1S 29-Nov-2009 A-26	BR 08-1S 19-May-2010 A-7	BR 08-1S 29-Nov-2010 A - 12	BR 08-1S 11-May-2011 S-17	BR 08-1S 30-Nov-2011 S - 28	BR 08-1S 20-May-2012 [9] S-23
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	541	495 [3]	551	492	560	560	590	642
Ammonia Nitrogen	mg/l	--	--	0.18	0.18 [3]	0.23	0.28	0.25	0.24	1.88	0.4
Chloride	mg/l	--	250	29	20 [3]	35	48	45	49	24	84
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	635	921 [3]	1050	1020	1090	1050	1080	1300
Conductivity (Field)	uS/cm	--	--	--	705	720	1033	945	1090	1040	1105
Dissolved Organic Carbon	mg/l	--	5	11.1	10.7 [3]	11	11.1	9.5	9.5	25.5	8.8
Hardness, Calcium Carbonate	mg/l	--	--	507	484 [3]	532	523	520	541	587	461
pH (Field)	-	--	--	7	7.1	7.3	7.3	7.2	6.9	6.9	6.9
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.24	0.44 [3]	0.53	0.71	0.45	0.31	0.09	0.24
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01 [3]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/l	--	500 [6]	5	1 [3]	1	2	1	1	<1	<1
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	2.1	0.5 [3]	0.3	--	0.1	0.4	1.8	0.3
Temperature (Field)	deg c	--	15	6	9	7	9	7.6	10	9	11
Total Dissolved Solids	mg/l	--	500	670	599 [3]	683	663	708	682	702	845
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01 [3]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.19	0.14 [3]	0.25	0.29	0.28	0.24	0.1	0.4
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001 [3]	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.82	0.67 [3]	0.98	0.86	0.87	0.69	0.3	1.2
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001 [3]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	109	103 [3]	114	112	116	116	151	99
Chromium, dissolved	mg/l	0.05	--	0.002	0.003 [3]	0.002	<0.001	<0.001	0.002	<0.005	0.005
Cobalt, dissolved	mg/l	--	--	0.0003	0.0002 [3]	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	<0.0002
Iron, dissolved	mg/l	--	0.3	0.47	0.36 [3]	0.57	0.66	0.61	0.63	4.92	0.7
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001 [3]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	57	55 [3]	60	59	56	61	51	52
Manganese, dissolved	mg/l	--	0.05	0.02	0.01 [3]	0.01	0.01	0.02	0.01	0.48	0.01
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001 [3]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005 [3]	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005 [3]	<0.005	<0.005	<0.005	<0.005	0.007	<0.005
Potassium, dissolved	mg/l	--	--	--	8 [3]	10	9	9	9	7	8
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001 [3]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001 [3]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	15	15 [3]	19	21	19	23	12	21
Vanadium, dissolved	mg/l	--	--	0.004	0.009 [3]	0.006	0.003	0.005	0.004	0.006	<0.005
Zinc, dissolved	mg/l	--	5	<0.01	<0.01 [3]	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-1S 13-Nov-2012 A - 6	BR 08-1S 31-May-2014 S-18	BR 08-1S 19-Nov-2014 A-15	BR 08-1S 06-May-2015 S-14	BR 08-1S 16-Nov-2015 [4] S-7	BR 08-1S 19-Apr-2016 S-12	BR 08-1S 31-Oct-2016 S-6	BR 08-1S 25-May-2017 A-18
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	645	600	630	640	630	620	640	670
Ammonia Nitrogen	mg/l	--	--	0.28	0.44	0.38	0.41	0.39	0.35	0.42	0.38
Chloride	mg/l	--	250	69	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	69	73	77	75	68	65	81
Conductivity	uS/cm	--	--	1270	1300	1300	1300	1300	1300	1300	1400
Conductivity (Field)	uS/cm	--	--	1120	1105	1010	990	965	1035	1010	980
Dissolved Organic Carbon	mg/l	--	5	8.8	7.5	9.1	9.7	9.6	10	11	10
Hardness, Calcium Carbonate	mg/l	--	--	610	630	610	680	630	660	670	640
pH (Field)	-	--	--	6.8	6.9	7	7.1	7.2	7.2	7.4	7.3
Phosphate, Ortho	mg/l	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.36	0.31	0.46	0.35	0.21	0.26	0.2	0.18
Phosphorus, dissolved	mg/l	--	--	--	<0.1	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	<3	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	<1	<1	<1	<1.0	<1.0	<1.0	<1.0
Tannin & Lignin	mg/l	--	--	0.3	0.4	0.5	--	--	--	--	--
Temperature (Field)	deg c	--	15	9	10	6	7	6	8.5	6	7.5
Total Dissolved Solids	mg/l	--	500	826	744	688	798	752	810	814	716
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.0050	<0.0050	<0.0050	<0.005	0.007	<0.0050	<0.0050
Barium, dissolved	mg/l	1	--	0.38	0.43	0.41	0.44	0.41	0.4	0.44	0.42
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	1.2	1.1	1.2	1	1.2	1.1	1.2	1.1
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	134	130	130	150 [8]	140	140	140	130
Chromium, dissolved	mg/l	0.05	--	0.003	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0002	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	0.59	0.64	0.67	0.77	0.54	0.72	0.81	0.82
Lead, dissolved	mg/l	0.01	--	<0.001	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	67	72	70	77	71	78	76	74
Manganese, dissolved	mg/l	--	0.05	0.01	0.013	0.014	0.014	0.015	0.011	0.014	0.013
Mercury	mg/l	0.001	--	--	--	--	--	<0.00010	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.00010	<0.00010	<0.00010	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	<0.005	0.0028	0.0037	0.0035	0.005	0.004	0.0047	0.0047
Potassium, dissolved	mg/l	--	--	10	11	12	11	12	11	13	11
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.0020	<0.0020	<0.0020	<0.002	<0.002	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	32	32	31	33	34	32	36	35
Vanadium, dissolved	mg/l	--	--	0.006	<0.00050	<0.00050	0.00079	0.0007	<0.0005	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.01	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.0050	<0.0050

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-1S 21-Nov-2017 08-1S	BR 08-1S 16-May-2018 BR08-1S	BR 08-1S 29-Oct-2018 [10] O8-1S	BR 08-1S 30-May-2019 08-1S	BR 08-1S 15-Nov-2019 08-1S	BR 08-1S 07-May-2020 O8-1S	BR 08-1S 28-Oct-2020 O8-1S	BR 08-1S 30-Apr-2021 BR08-1S
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	620	630	650	650	650	680	700	730
Ammonia Nitrogen	mg/l	--	--	0.47	0.49	0.48	0.42	0.4	0.36	0.48	0.61
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	69	47	68	61	49	69	70	85
Conductivity	uS/cm	--	--	1300	1200	1300	1300	1300	1400	1400	1500
Conductivity (Field)	uS/cm	--	--	885	960	911	1025	1005	966	9.44	966
Dissolved Organic Carbon	mg/l	--	5	11	9.7	11	11	9.9	11	11	11
Hardness, Calcium Carbonate	mg/l	--	--	600	620	570	640	480	630	610	670
pH (Field)	-	--	--	7.7	7.4	7.5	7.4	7.4	7.15	7.42	7.3
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.14	0.28	0.17	0.22	0.098	0.19	0.13	0.19
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	6.2	9.4	9.6	9.2	7.8	7.3	7.8	8.8
Total Dissolved Solids	mg/l	--	500	580	700	755	770	710	750	790	785
Metals											
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0049	0.0055
Barium, dissolved	mg/l	1	--	0.41	0.39	0.4	0.43	0.28	0.42	0.4	0.47
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	1.1	0.95	1	1	0.79	0.94	0.98	0.89
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	130	130	120	140	100	140	130	150
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	0.71	0.76	0.71	0.78	0.52	0.74	0.65	0.83
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	66	69	64	71	54	70	66	73
Manganese, dissolved	mg/l	--	0.05	0.012	0.018	0.012	0.015	0.012	0.017	0.018	0.02
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	0.0043	0.0042	0.0045	0.0042	0.0033	0.0044	0.0047	0.0047
Potassium, dissolved	mg/l	--	--	11	11	11	11	8.5	12	11	11
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	35	35	34	34	23	39	39	41
Vanadium, dissolved	mg/l	--	--	<0.00050	0.00054	<0.00050	<0.00050	0.00058	<0.00050	0.00053	0.00058
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-1S 24-Nov-2021 BR08-1A	BR 08-1S 25-Apr-2022 BR08-1S	BR 08-1S 17-Dec-2022 BR08-1S	BR 08-1S 25-May-2023 BR08-1S	BR 08-1S 24-Nov-2023 BR08-1S
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	--	--	710	710	710	730	730
Ammonia Nitrogen	mg/l	--	--	0.51	0.76	0.56	0.49	0.62
Chloride	mg/l	--	250	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	75	76	82	76	75
Conductivity	uS/cm	--	--	1400	1500	1500	1500	1500
Conductivity (Field)	uS/cm	--	--	1410	1090	979	960	988
Dissolved Organic Carbon	mg/l	--	5	12	12	14	12	12
Hardness, Calcium Carbonate	mg/l	--	--	690	680	750	680	750
pH (Field)	-	--	--	6.82	6.94	6.9	6.88	6.81
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.062	0.22	0.052	0.047	0.081
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	<1.0	<1.0	<1.0	<1.0	<1.0
Tannin & Lignin	mg/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8.7	7.7	7	8	7
Total Dissolved Solids	mg/l	--	500	775	770	765	765	845
Metals								
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.49	0.39	0.51	0.43	0.51
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	1.1	0.88	1	0.88	1.1
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	150	150	170	150	160
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	0.86	0.86	1.1	0.97	1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	0.0017	<0.00050
Magnesium, dissolved	mg/l	--	--	74	74	82	74	81
Manganese, dissolved	mg/l	--	0.05	0.015	0.022	0.017	0.014	0.02
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	0.0045	0.005	0.0054	0.0051	0.0087
Potassium, dissolved	mg/l	--	--	12	12	13	11	13
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	37	44	46	41	51
Vanadium, dissolved	mg/l	--	--	0.00062	0.00058	0.00064	0.0006	0.00074
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	0.02

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-2D 27-Nov-2008	BR 08-2D 29-Apr-2009 A-22	BR 08-2D 29-Nov-2009 A-15	BR 08-2D 20-May-2010 A-20	BR 08-2D 29-Nov-2010 A - 5	BR 08-2D 10-May-2011 S-1	BR 08-2D 30-Nov-2011 [9] S - 15	BR 08-2D 20-May-2012 [9] S-11
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	459	412	501	363	506	360	495	525
Ammonia Nitrogen	mg/l	--	--	0.23	0.18	0.16	0.17	0.17	0.12	0.13	0.13
Chloride	mg/l	--	250	16	23	5	22	9	39	9	8
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	720	873	884	773	883	822	902	921
Conductivity (Field)	uS/cm	--	--	--	914	945	860	758	908	874	960
Dissolved Organic Carbon	mg/l	--	5	9.2	6.4	11	7.3	12.2	3.5	10.7	14.4
Hardness, Calcium Carbonate	mg/l	--	--	432	377	428	404	493	411	499	361
pH (Field)	-	--	--	6.9	7	7.2	7.6	7.8	7.4	7.2	7.2
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.17	0.17	0.07	0.06	0.04	0.14	0.09	0.06
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/l	--	500 [6]	93	47	4	33	8	53	17	6
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	1.7	0.3	0.3	0.2	0.2	<0.1	0.1	0.5
Temperature (Field)	deg c	--	15	6	10	6	9	7	10	9	9
Total Dissolved Solids	mg/l	--	500	663	567	575	502	574	534	586	599
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.05	0.06	0.16	0.21	0.21	0.03	0.41	0.34
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.7	0.73	0.57	0.54	0.7	0.78	0.51	0.65
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	94	80	99	91	110	92	114	77
Chromium, dissolved	mg/l	0.05	--	0.002	0.002	0.002	<0.001	0.001	0.009	0.005	0.004
Cobalt, dissolved	mg/l	--	--	0.0007	0.0005	0.0003	0.0003	0.0003	0.0032	0.0002	0.0002
Iron, dissolved	mg/l	--	0.3	7.42	<0.03	0.99	1.13	1.63	0.13	1.1	1.12
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	48	43	44	43	53	44	52	41
Manganese, dissolved	mg/l	--	0.05	0.05	0.03	0.06	0.06	0.04	0.03	0.09	0.06
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	0.008	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	--	6	6	5	7	5	6	4
Selenium, dissolved	mg/l	0.05	--	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	66	36	17	13	11	14	18	7
Vanadium, dissolved	mg/l	--	--	0.006	0.006	0.005	0.001	0.002	0.002	0.003	<0.005
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-2D 14-Nov-2012 [11] A-21	BR 08-2D 30-May-2014 S-13	BR 08-2D 18-Nov-2014 [4] A-7	BR 08-2D 07-May-2015 S-23	BR 08-2D 16-Nov-2015 [4] S-17	BR 08-2D 20-Apr-2016 S-21	BR 08-2D 01-Nov-2016 S-24	BR 08-2D 25-May-2017 A-11
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	535	500	470	490	450	490	500	460
Ammonia Nitrogen	mg/l	--	--	0.12	0.19	0.13	0.15	0.13	0.11	0.14	0.13
Chloride	mg/l	--	250	7	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	9	8	10	7.9	8.6	10	6.3
Conductivity	uS/cm	--	--	945	920	890	900	850	920	910	850
Conductivity (Field)	uS/cm	--	--	940	450	435	480	490	820	469	810
Dissolved Organic Carbon	mg/l	--	5	13.4	11	9.4	10	8.5	10	8.7	6.1
Hardness, Calcium Carbonate	mg/l	--	--	511	540	460	480	480	470	490	440
pH (Field)	-	--	--	7.2	7.3	7.4	7.3	7.4	7.2	7.8	7.3
Phosphate, Ortho	mg/l	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.06	0.093	0.23	0.16	0.1	0.17	0.8	0.14
Phosphorus, dissolved	mg/l	--	--	--	<0.1	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	6	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	12	13	11	19	17	13	15
Tannin & Lignin	mg/l	--	--	0.4	0.5	0.5	--	--	--	--	--
Temperature (Field)	deg c	--	15	8	9	8	8	6	7	7.1	7.5
Total Dissolved Solids	mg/l	--	500	614	510	480	498	502	532	570	478
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.0050	<0.005	<0.0050	<0.005	<0.005	1.4	<0.0050
Barium, dissolved	mg/l	1	--	0.33	0.29	0.27	0.22	0.2	0.21	0.17	0.11
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.76	0.66	0.5	0.55	0.59	0.66	0.59	0.5
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.00010	<0.0001	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	109	110	95	100 [8]	99	99	100	90
Chromium, dissolved	mg/l	0.05	--	0.004	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0002	<0.00050	<0.0005	<0.00050	0.0007	0.0009	0.00051	<0.00050
Iron, dissolved	mg/l	--	0.3	1.09	1	0.95	0.79	0.37	0.48	0.82	0.42
Lead, dissolved	mg/l	0.01	--	<0.001	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	0.0026	<0.00050
Magnesium, dissolved	mg/l	--	--	58	62	55	54	55	54	58	51
Manganese, dissolved	mg/l	--	0.05	0.06	0.041	0.044	0.036	0.045	0.038	0.05	0.02
Mercury	mg/l	0.001	--	--	--	--	--	<0.00010	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.00010	<0.00010	<0.00010	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.00050	<0.0005	<0.00050	<0.0005	0.0005	0.0013	<0.00050
Nickel, dissolved	mg/l	--	--	<0.005	0.0014	0.001	0.0012	0.002	0.002	0.0015	<0.0010
Potassium, dissolved	mg/l	--	--	6	6.3	5.6	6	6.6	6.4	6.4	5.1
Selenium, dissolved	mg/l	0.05	--	<0.01	<0.0020	<0.002	<0.0020	<0.002	<0.002	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.0001	<0.00010	<0.0001	<0.00010	0.0001	<0.0001	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	10	10	9.1	8.8	10	11	9	3.6
Vanadium, dissolved	mg/l	--	--	0.008	0.00051	<0.0005	0.0011	0.0005	0.0007	0.0013	<0.00050
Zinc, dissolved	mg/l	--	5	<0.01	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-2D 21-Nov-2017 08-2D	BR 08-2D 16-May-2018 08-2D	BR 08-2D 29-Oct-2018 [12] O8-2D	BR 08-2D 29-May-2019 08-2D	BR 08-2D 14-Nov-2019 08-2D	BR 08-2D 06-May-2020 08-2D	BR 08-2D 28-Oct-2020 O8-2D	BR 08-2D 30-Apr-2021 BR08-2D
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	490	490	500	450	510	490	530	520
Ammonia Nitrogen	mg/l	--	--	0.11	0.12	0.1	0.1	0.15	0.068	0.16	0.083
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	10	7.1	9.9	6.7	13	9.7	12	14
Conductivity	uS/cm	--	--	870	860	870	850	950	910	980	960
Conductivity (Field)	uS/cm	--	--	800	888	868	922	910	697	708	699
Dissolved Organic Carbon	mg/l	--	5	8	6.6	9	7.8	11	9.2	11	9.9
Hardness, Calcium Carbonate	mg/l	--	--	510	480	480	500	530	510	540	520
pH (Field)	-	--	--	7.4	7.5	7.5	7.24	7.3	6.87	6.82	6.91
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.012
Phosphorus	mg/l	--	--	0.12	0.09	0.22	0.04	0.042	0.058	0.046	0.044
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	5.9	11	11	16	9	11	11	8.9
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	7.8	10.8	10.3	8.9	8.1	7.5	8	9.1
Total Dissolved Solids	mg/l	--	500	425	445	515	470	520	510	520	465
Metals											
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0066	0.0066
Barium, dissolved	mg/l	1	--	0.11	0.11	0.11	0.13	0.12	0.11	0.13	0.11
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.54	0.53	0.54	0.55	0.54	0.53	0.56	0.51
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	110	98	100	100	110	110	110	110
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	0.45	0.46	0.49	0.59	0.57	0.5	0.6	0.53
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	58	56	56	60	62	59	62	60
Manganese, dissolved	mg/l	--	0.05	0.02	0.02	0.021	0.023	0.022	0.021	0.023	0.02
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	<0.0010	<0.0010	0.001	<0.0010	0.0012	<0.0010	0.0013	0.0012
Potassium, dissolved	mg/l	--	--	5.7	5.4	5.4	6.2	5.8	5.4	6.1	5.6
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	4.5	4.3	4.9	4.7	6	5.4	9.1	6.9
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-2D 24-Nov-2021 BR08-2D	BR 08-2D 25-Apr-2022 BR08-2D	BR 08-2D 18-Dec-2022 BR08-2D	BR 08-2D 25-May-2023 BR08-2D	BR 08-2D 25-Nov-2023 BR08-2D
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	--	--	560	470	510	500	540
Ammonia Nitrogen	mg/l	--	--	0.14	0.07	0.085	0.16	0.11
Chloride	mg/l	--	250	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	24	18	17	11	23
Conductivity	uS/cm	--	--	1000	920	960	920	1000
Conductivity (Field)	uS/cm	--	--	1020	952	966	887	859
Dissolved Organic Carbon	mg/l	--	5	11	8.8	9.3	9.3	9.4
Hardness, Calcium Carbonate	mg/l	--	--	540	530	520	530	540
pH (Field)	-	--	--	7.1	6.93	6.95	6.84	6.8
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.020 [13]	<0.010	<0.010
Phosphorus	mg/l	--	--	0.047	0.08	0.03	0.045	0.026
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	5.9	22	14	12	9.7
Tannin & Lignin	mg/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	9	10.2	7.7	10.4	8.6
Total Dissolved Solids	mg/l	--	500	565	490	530	500	520
Metals								
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.12	0.11	0.11	0.12	0.12
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.53	0.44	0.48	0.53	0.54
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	120	120	110	110	120
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	0.48	0.6	0.53	0.64	0.54
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	61	57	58	62	61
Manganese, dissolved	mg/l	--	0.05	0.021	0.017	0.021	0.021	0.022
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	0.0012
Nickel, dissolved	mg/l	--	--	0.0018	0.002	0.0013	0.0014	0.0017
Potassium, dissolved	mg/l	--	--	5.6	5.3	5.4	5.7	6.1
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	7.6	10	7.4	7.5	8.2
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-2S 27-Nov-2008	BR 08-2S 29-Apr-2009 A-21	BR 08-2S 29-Nov-2009 A-16	BR 08-2S 20-May-2010 A-21	BR 08-2S 29-Nov-2010 A - 4	BR 08-2S 10-May-2011 [9] S-2	BR 08-2S 30-Nov-2011 S - 16	BR 08-2S 20-May-2012 [9] S-12
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	380	374	387	338	394	510	364	356
Ammonia Nitrogen	mg/l	--	--	0.23	0.16	0.1	0.16	0.12	0.14	0.06	0.12
Chloride	mg/l	--	250	34	36	31	34	37	9	33	35
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	670	906	886	806	873	868	829	828
Conductivity (Field)	uS/cm	--	--	--	890	885	9	785	860	870	890
Dissolved Organic Carbon	mg/l	--	5	9.7	6.2	5	3.2	4.8	12.9	2.6	2.6
Hardness, Calcium Carbonate	mg/l	--	--	378	365	377	386	397	465	428	315
pH (Field)	-	--	--	7	7.8	7.3	7.9	7.4	7.7	7.6	7.6
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.61	0.27	0.12	0.07	0.12	0.08	0.09	0.08
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/l	--	500 [6]	152	82	61	59	52	7	57	54
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	3.1	0.1	0.2	0.2	<0.1	0.4	<0.1	0.1
Temperature (Field)	deg c	--	15	6	11	9	810	8	9	10	10
Total Dissolved Solids	mg/l	--	500	696	589	576	524	567	564	539	538
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.04	0.03	0.04	0.03	0.03	0.3	0.04	0.03
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	1.22	0.9	0.96	0.82	1.2	0.49	1.2	0.9
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	87	85	85	87	93	102	99	70
Chromium, dissolved	mg/l	0.05	--	0.002	0.002	0.001	<0.001	0.003	0.012	0.006	0.003
Cobalt, dissolved	mg/l	--	--	0.0009	0.001	0.0019	0.0021	0.0046	0.0004	0.0017	0.0022
Iron, dissolved	mg/l	--	0.3	1.56	0.04	0.04	0.16	0.33	0.72	<0.03	<0.03
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	39	37	40	41	40	51	44	34
Manganese, dissolved	mg/l	--	0.05	0.06	0.03	0.02	0.03	0.05	0.06	0.01	0.02
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	0.005
Potassium, dissolved	mg/l	--	--	--	6	6	5	6	5	6	4
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.1
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	70	48	31	19	24	16	13	11
Vanadium, dissolved	mg/l	--	--	0.006	0.007	0.003	<0.001	0.003	0.004	0.002	0.005
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-2S 14-Nov-2012 A-22	BR 08-2S 30-May-2014 S-14	BR 08-2S 18-Nov-2014 A-8	BR 08-2S 07-May-2015 S-24	BR 08-2S 16-Nov-2015 S-18	BR 08-2S 20-Apr-2016 S-22	BR 08-2S 01-Nov-2016 S-25	BR 08-2S 25-May-2017 A-12
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	376	360	370	310	360	220	450	280
Ammonia Nitrogen	mg/l	--	--	0.06	0.097	<0.050	0.053	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	33	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	35	23	28	13	14	32	23
Conductivity	uS/cm	--	--	867	850	830	710	740	500	1000	650
Conductivity (Field)	uS/cm	--	--	865	825	795	660	685	454	490	460
Dissolved Organic Carbon	mg/l	--	5	2.9	2.5	3.4	3.2	3	3.5	4	3.8
Hardness, Calcium Carbonate	mg/l	--	--	432	420	380	340	370	220	470	310
pH (Field)	-	--	--	7.4	7.5	7.6	7.5	7.6	8	7.6	7.8
Phosphate, Ortho	mg/l	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.05	0.13	0.061	0.05	0.16	0.16	0.087	0.07
Phosphorus, dissolved	mg/l	--	--	--	<0.1	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	58	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	55	44	39	33	23	68	31
Tannin & Lignin	mg/l	--	--	<0.1	<0.2	0.3	--	--	--	--	--
Temperature (Field)	deg c	--	15	9	10	6	8	7	7.1	7	7.6
Total Dissolved Solids	mg/l	--	500	564	508	472	380	422	280	662	364
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.0050	0.01	<0.0050	<0.005	<0.005	<0.0050	<0.0050
Barium, dissolved	mg/l	1	--	0.04	0.03	0.073	0.059	0.059	0.036	0.089	0.053
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	1.2	0.98	0.23	0.17	0.19	0.1	0.3	0.16
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.00010	<0.0001	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	97	95	100	92	100	59	130	83
Chromium, dissolved	mg/l	0.05	--	0.003	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0018	0.00052	<0.0005	<0.00050	0.0005	<0.0005	<0.00050	0.00057
Iron, dissolved	mg/l	--	0.3	<0.03	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.001	<0.00050	0.0007	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	46	44	30	26	28	17	36	25
Manganese, dissolved	mg/l	--	0.05	0.01	0.0037	0.005	<0.0020	0.004	<0.002	<0.0020	0.0039
Mercury	mg/l	0.001	--	--	--	--	--	<0.00010	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.00010	<0.00010	<0.00010	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	0.00093	0.0009	0.00071	<0.0005	0.0006	0.0009	0.00084
Nickel, dissolved	mg/l	--	--	0.006	0.0058	0.007	0.0049	0.004	0.003	0.0072	0.004
Potassium, dissolved	mg/l	--	--	7	5.1	4.8	3.9	4.3	2.8	5.5	3.6
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.0020	<0.002	<0.0020	<0.002	<0.002	0.0032	<0.0020
Silver, dissolved	mg/l	--	--	<0.0001	<0.00010	<0.0001	<0.00010	0.0005	<0.0001	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	15	15	27	21	18	14	33	22
Vanadium, dissolved	mg/l	--	--	0.005	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.01	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-2S 21-Nov-2017 08-2S	BR 08-2S 16-May-2018 08-2S	BR 08-2S 29-Oct-2018 [5] O8-2S	BR 08-2S 29-May-2019 08-2S	BR 08-2S 14-Nov-2019 08-2S	BR 08-2S 06-May-2020 08-2S	BR 08-2S 28-Oct-2020 O8-2S	BR 08-2S 30-Apr-2021 BR08-2S
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	300	340	350	320	280	280	420	310
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	32	30	25	31	22	25	32	32
Conductivity	uS/cm	--	--	710	760	740	760	680	670	920	740
Conductivity (Field)	uS/cm	--	--	805	670	688	705	685	374	380	401
Dissolved Organic Carbon	mg/l	--	5	3.7	3.8	2.8	4.2	3.8	3.7	3.4	3.6
Hardness, Calcium Carbonate	mg/l	--	--	330	320	350	330	320	320	490	350
pH (Field)	-	--	--	7.3	7.6	7.5	7.54	7.6	7.2	7.29	7.38
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.08	0.1	0.09	0.095	0.21	0.15	0.22	0.12
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	31	22	37	34	39	31	57	40
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	7	10.1	9.9	9.1	8.2	6	7.9	8.6
Total Dissolved Solids	mg/l	--	500	380	405	430	445	390	445	530	335
Metals											
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	0.0079	0.0053	<0.0050	0.0057	<0.0049
Barium, dissolved	mg/l	1	--	0.059	0.051	0.066	0.064	0.058	0.048	0.086	0.05
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.18	0.19	0.24	0.19	0.18	0.13	0.26	0.13
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	93	88	97	95	91	89	140	98
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0006	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	24	25	25	24	24	23	34	25
Manganese, dissolved	mg/l	--	0.05	0.01	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00057	0.00067	0.00079	0.00055	0.00056	0.00052	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	0.0047	0.0042	0.0042	0.0039	0.0032	0.0036	0.0056	0.0042
Potassium, dissolved	mg/l	--	--	4.1	3.8	4.9	4	4.8	3.7	6	3.7
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	22	29	21	24	18	24	27	23
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-2S 24-Nov-2021 BR08-2S	BR 08-2S 25-Apr-2022 BR08-2S	BR 08-2S 18-Dec-2022 BR08-2S	BR 08-2S 25-May-2023 BR08-2S	BR 08-2S 25-Nov-2023 BR08-2S
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	--	--	310	250	350	330	400
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	7.4	22	17	37	72
Conductivity	uS/cm	--	--	630	620	780	810	1200
Conductivity (Field)	uS/cm	--	--	665	610	614	635	620
Dissolved Organic Carbon	mg/l	--	5	4.2	4	3.4	3.8	3.5
Hardness, Calcium Carbonate	mg/l	--	--	330	310	400	300	560
pH (Field)	-	--	--	7.3	7.45	7.42	7.2	7.39
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.17	0.16	0.096	0.089	0.078
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	26	36	62	49	100
Tannin & Lignin	mg/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	9.3	7.9	6.9	10.1	7.7
Total Dissolved Solids	mg/l	--	500	375	340	420	425	720
Metals								
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049	0.16
Barium, dissolved	mg/l	1	--	0.053	0.038	0.057	0.04	0.088
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.13	0.092	0.16	0.14	0.25
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	94	86	110	85	160
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	0.0026
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	<0.1	<0.1	0.28
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	0.002
Magnesium, dissolved	mg/l	--	--	23	23	28	21	40
Manganese, dissolved	mg/l	--	0.05	<0.0020	<0.0020	0.003	<0.0020	0.11
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.00050	0.00054	<0.00050	0.0005	0.0005
Nickel, dissolved	mg/l	--	--	0.0021	0.0026	0.0032	0.0028	0.0097
Potassium, dissolved	mg/l	--	--	3.4	2.7	3.8	3.2	5.3
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	8	14	19	22	47
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	0.00076
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-3D 27-Nov-2008	BR 08-3D 28-Apr-2009 A-15	BR 08-3D 28-Nov-2009 A-10	BR 08-3D 20-May-2010 A-17	BR 08-3D 29-Nov-2010 A - 6	BR 08-3D 10-May-2011 S-6	BR 08-3D 30-Nov-2011 S - 17	BR 08-3D 20-May-2012 S-16
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	419	338	393	387	427	370	406	416
Ammonia Nitrogen	mg/l	--	--	0.08	0.07	0.09	0.05	0.08	0.06	0.1	0.11
Chloride	mg/l	--	250	2	2	2	4	3	6	3	3
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	580	657	739	741	774	676	750	771
Conductivity (Field)	uS/cm	--	--	--	610	645	780	696	716	705	770
Dissolved Organic Carbon	mg/l	--	5	2	1.8	2.6	3.6	3	2.6	2.4	3.3
Hardness, Calcium Carbonate	mg/l	--	--	417	354	389	455	454	362	436	330
pH (Field)	-	--	--	6.9	6.9	6.8	7.74	7.4	7.6	7.6	7.3
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.08	0.1	0.11	0.06	0.07	0.05	0.04	0.05
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/l	--	500 [6]	28	34	29	25	25	29	28	27
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	1.2	0.1	0.1	0.7	<0.1	0.2	<0.1	0.5
Temperature (Field)	deg c	--	15	6	9	6	10	7	9	8	10
Total Dissolved Solids	mg/l	--	500	510	427	480	482	503	439	488	501
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.06	0.04	0.05	0.05	0.05	0.04	0.06	0.06
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.24	0.17	0.26	0.16	0.25	0.18	0.23	0.18
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	86	71	80	95	96	74	92	66
Chromium, dissolved	mg/l	0.05	--	0.001	0.002	0.001	<0.001	0.002	<0.001	0.006	0.002
Cobalt, dissolved	mg/l	--	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Iron, dissolved	mg/l	--	0.3	0.41	0.24	0.41	0.57	0.38	0.35	0.36	0.5
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	49	43	46	53	52	43	50	40
Manganese, dissolved	mg/l	--	0.05	0.01	<0.01	0.01	0.02	0.02	0.02	0.02	0.03
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	--	3	4	4	4	3	4	3
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	<2	<2	2	<2	<2	<2	<2	<2
Vanadium, dissolved	mg/l	--	--	0.004	0.005	0.003	<0.001	0.003	0.001	0.002	0.005
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-3D 14-Nov-2012 A-19	BR 08-3D 30-May-2014 S-15	BR 08-3D 18-Nov-2014 A-5	BR 08-3D 07-May-2015 S-21	BR 08-3D 16-Nov-2015 S-15	BR 08-3D 20-Apr-2016 S-23	BR 08-3D 01-Nov-2016 S-22	BR 08-3D 25-May-2017 A-13
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	418	390	390	360	380	340	350	360
Ammonia Nitrogen	mg/l	--	--	0.11	0.33	0.077	0.092	0.092	<0.050	0.072	2.7
Chloride	mg/l	--	250	3	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	4	2	2	2	1.7	2	2.1
Conductivity	uS/cm	--	--	777	760	770	710	730	680	680	710
Conductivity (Field)	uS/cm	--	--	775	770	755	785	780	610	585	635
Dissolved Organic Carbon	mg/l	--	5	3	1.8	2.2	2.3	1.9	1.5	1.5	1.7
Hardness, Calcium Carbonate	mg/l	--	--	466	450	430	380	410	360	370	380
pH (Field)	-	--	--	7.4	7.3	7.4	7.5	7.5	7.7	7.6	7.6
Phosphate, Ortho	mg/l	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.07	0.054	0.043	0.026	0.011	0.029	0.02	0.037
Phosphorus, dissolved	mg/l	--	--	--	<0.1	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	29	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	33	31	32	32	34	35	35
Tannin & Lignin	mg/l	--	--	0.2	<0.2	<0.2	--	--	--	--	--
Temperature (Field)	deg c	--	15	8	9	7	8	6	10	8	8.5
Total Dissolved Solids	mg/l	--	500	505	428	398	392	398	392	428	370
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.0050	0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050
Barium, dissolved	mg/l	1	--	0.06	0.053	0.057	0.047	0.054	0.045	0.051	0.05
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.28	0.19	0.21	0.16	0.22	0.17	0.21	0.17
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.00010	<0.0001	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	96	92	86	76	86	73	74	78
Chromium, dissolved	mg/l	0.05	--	0.003	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.0002	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	0.44	0.35	0.51	0.23	0.31	0.28	0.32	0.38
Lead, dissolved	mg/l	0.01	--	<0.001	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	55	53	51	45	48	42	44	46
Manganese, dissolved	mg/l	--	0.05	0.03	0.02	0.026	0.018	0.025	0.016	0.023	0.024
Mercury	mg/l	0.001	--	--	--	--	--	<0.00010	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.00010	<0.00010	<0.00010	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	0.0019	0.0024	0.0021	0.0022	0.0026	0.0025	0.0024
Nickel, dissolved	mg/l	--	--	<0.005	<0.0010	<0.001	<0.0010	<0.001	<0.001	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	5	3.9	4.3	3.5	4.3	3.6	4.1	3.7
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.0020	<0.002	<0.0020	<0.002	<0.002	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.0001	<0.00010	<0.0001	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	<2	1.6	1.8	1.3	1.6	1.3	1.4	1.5
Vanadium, dissolved	mg/l	--	--	0.005	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.01	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-3D 21-Nov-2017 08-3D	BR 08-3D 16-May-2018 08-3D	BR 08-3D 29-Oct-2018 [5] O8-3D	BR 08-3D 29-May-2019 08-3D	BR 08-3D 14-Nov-2019 08-3D	BR 08-3D 06-May-2020 08-3D	BR 08-3D 28-Oct-2020 O8-3D	BR 08-3D 30-Apr-2021 BR08-3D
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	400	370	380	320	370	320	350	370
Ammonia Nitrogen	mg/l	--	--	0.07	0.051	0.11	0.071	0.13	0.051	0.11	0.14
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	2	2.3	2.2	1.7	2.2	1.5	1.9	2.5
Conductivity	uS/cm	--	--	750	700	710	640	720	650	690	720
Conductivity (Field)	uS/cm	--	--	605	710	691	621	629	497	487	502
Dissolved Organic Carbon	mg/l	--	5	1.8	1.6	1.8	1.2	2	1.3	1.5	2.4
Hardness, Calcium Carbonate	mg/l	--	--	400	380	380	350	400	360	370	390
pH (Field)	-	--	--	7.6	7.7	7.8	7.4	7.3	7.2	7.3	7.41
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.022	0.025	0.05	0.032	0.04	0.039	0.05	0.055
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	32	32	29	34	29	30	31	31
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	7.5	11	10.4	9.2	8.8	7.7	7.9	8.6
Total Dissolved Solids	mg/l	--	500	350	345	405	355	385	335	345	420
Metals											
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0087	<0.0049
Barium, dissolved	mg/l	1	--	0.054	0.049	0.054	0.046	0.054	0.044	0.05	0.051
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.22	0.18	0.21	0.17	0.2	0.17	0.21	0.16
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	82	77	78	72	82	72	76	81
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	0.45	0.29	0.39	0.26	0.4	0.22	0.33	0.37
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	47	46	45	42	48	44	43	46
Manganese, dissolved	mg/l	--	0.05	0.026	0.022	0.026	0.018	0.026	0.016	0.022	0.026
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0022	0.0023	0.0021	0.0027	0.0026	0.0025	0.0026	0.0019
Nickel, dissolved	mg/l	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	4.2	3.6	4	3.6	4.2	3.5	3.8	3.6
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	1.6	1.4	1.5	1.1	1.8	1.2	1.3	1.5
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-3D 24-Nov-2021 BR08-3D	BR 08-3D 25-Apr-2022 BR08-3D	BR 08-3D 18-Dec-2022 BR08-3D	BR 08-3D 25-May-2023 BR08-3D	BR 08-3D 25-Nov-2023 BR08-3D
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	--	--	360	330	360	290	330
Ammonia Nitrogen	mg/l	--	--	0.077	0.082	0.13	0.093	<0.050
Chloride	mg/l	--	250	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	2	1.8	1.5	<1.0	<1.0
Conductivity	uS/cm	--	--	670	670	700	590	670
Conductivity (Field)	uS/cm	--	--	717	630	648	628	631
Dissolved Organic Carbon	mg/l	--	5	1.8	1.7	1.7	1.3	1.9
Hardness, Calcium Carbonate	mg/l	--	--	370	380	380	340	390
pH (Field)	-	--	--	7.37	7.37	7.4	7.55	7.5
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.075	0.08	0.054	0.058	0.015
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	30	31	31	34	32
Tannin & Lignin	mg/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	10.4	9.4	8.1	9.8	8.6
Total Dissolved Solids	mg/l	--	500	345	315	375	325	325
Metals								
Aluminum, dissolved	mg/l	--	--	0.0069	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.057	0.047	0.053	0.04	0.052
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.22	0.16	0.2	0.16	0.2
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	80	78	80	68	79
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	0.29	0.32	0.41	<0.1	0.32
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	42	46	44	41	46
Manganese, dissolved	mg/l	--	0.05	0.022	0.018	0.023	0.007	0.021
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0022	0.0025	0.0027	0.0028	0.0028
Nickel, dissolved	mg/l	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	3.8	3.5	4	3.4	3.9
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	1.4	1.2	1.4	1.1	1.4
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-3S 27-Nov-2008	BR 08-3S 28-Apr-2009 A-16	BR 08-3S 28-Nov-2009 A-11	BR 08-3S 20-May-2010 A-19	BR 08-3S 29-Nov-2010 A - 7	BR 08-3S 10-May-2011 S-7	BR 08-3S 30-Nov-2011 S - 18	BR 08-3S 20-May-2012 S-17
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	412	355	397	367	426	370	397	413
Ammonia Nitrogen	mg/l	--	--	0.09	0.07	0.09	0.07	0.13	0.06	0.07	0.12
Chloride	mg/l	--	250	2	2	2	4	3	3	3	3
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	625	687	747	708	788	671	736	767
Conductivity (Field)	uS/cm	--	--	--	690	725	805	806	725	740	775
Dissolved Organic Carbon	mg/l	--	5	2	1.9	2.6	3.8	2.7	2.5	2.3	3.1
Hardness, Calcium Carbonate	mg/l	--	--	428	366	417	426	432	387	427	332
pH (Field)	-	--	--	7	7.8	7.7	7.6	7.3	7.3	7.4	7.2
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.54	0.51	0.17	0.16	0.09	0.08	0.03	0.09
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/l	--	500 [6]	29	32	29	27	25	30	29	27
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	2.1	0.2	0.3	0.2	<0.1	<0.1	<0.1	<0.1
Temperature (Field)	deg c	--	15	7	9	7	10	7.1	10	8	10
Total Dissolved Solids	mg/l	--	500	503	447	486	460	512	436	478	499
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.06	0.04	0.06	0.05	0.05	0.04	0.06	0.06
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.24	0.17	0.28	0.16	0.23	0.16	0.2	0.21
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	89	74	86	88	92	79	90	67
Chromium, dissolved	mg/l	0.05	--	0.001	0.002	0.001	<0.001	0.002	0.001	0.006	0.003
Cobalt, dissolved	mg/l	--	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Iron, dissolved	mg/l	--	0.3	0.39	0.27	0.39	0.67	0.31	0.32	0.37	0.52
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	50	44	49	50	49	46	49	40
Manganese, dissolved	mg/l	--	0.05	0.01	<0.01	0.01	0.02	0.02	0.01	0.02	0.03
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	--	4	4	4	4	3	4	3
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	<2	<2	<2	3	<2	<2	<2	2
Vanadium, dissolved	mg/l	--	--	0.004	0.004	0.003	<0.001	0.003	0.002	0.002	0.006
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-3S 14-Nov-2012 A-20	BR 08-3S 30-May-2014 S-16	BR 08-3S 18-Nov-2014 A-6	BR 08-3S 07-May-2015 S-22	BR 08-3S 16-Nov-2015 S-16	BR 08-3S 20-Apr-2016 S-24	BR 08-3S 01-Nov-2016 S-23	BR 08-3S 25-May-2017 A-14
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	416	390	390	360	340	340	350	340
Ammonia Nitrogen	mg/l	--	--	0.11	0.14	0.079	0.1	0.11	<0.050	0.075	2.2
Chloride	mg/l	--	250	3	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	2	2	2	1.7	1.3	1.9	2.3
Conductivity	uS/cm	--	--	777	710	780	700	670	680	690	690
Conductivity (Field)	uS/cm	--	--	805	820	795	810	805	628	590	620
Dissolved Organic Carbon	mg/l	--	5	2.8	2.1	1.9	1.6	1.7	1.5	1.6	1.7
Hardness, Calcium Carbonate	mg/l	--	--	445	460	430	400	400	360	370	380
pH (Field)	-	--	--	7.3	7.4	7.6	7.4	7.3	7.8	7.7	7.7
Phosphate, Ortho	mg/l	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.04	0.085	0.098	0.057	0.05	0.034	0.045	0.046
Phosphorus, dissolved	mg/l	--	--	--	<0.1	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	29	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	34	31	35	36	35	33	36
Tannin & Lignin	mg/l	--	--	<0.1	<0.2	0.4	--	--	--	--	--
Temperature (Field)	deg c	--	15	9	9	6	9	6	9.1	7	8.8
Total Dissolved Solids	mg/l	--	500	505	396	332	384	372	384	436	380
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050
Barium, dissolved	mg/l	1	--	0.06	0.056	0.058	0.049	0.054	0.049	0.052	0.048
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.27	0.19	0.21	0.16	0.22	0.17	0.21	0.17
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.00010	<0.0001	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	91	94	87	81	83	75	74	77
Chromium, dissolved	mg/l	0.05	--	0.003	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.0002	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	0.43	0.4	0.38	0.37	0.32	0.37	0.37	0.37
Lead, dissolved	mg/l	0.01	--	<0.001	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	53	54	51	48	47	43	45	46
Manganese, dissolved	mg/l	--	0.05	0.02	0.023	0.027	0.025	0.024	0.021	0.022	0.024
Mercury	mg/l	0.001	--	--	--	--	--	<0.00010	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.00010	<0.00010	<0.00010	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	0.0017	0.002	0.002	0.0022	0.0022	0.0025	0.0024
Nickel, dissolved	mg/l	--	--	<0.005	<0.0010	<0.001	<0.0010	<0.001	<0.001	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	4	4	4.4	3.8	4.3	3.5	4.1	3.7
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.0020	<0.002	<0.0020	<0.002	<0.002	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.0001	<0.00010	<0.0001	<0.00010	0.0007	<0.0001	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	<2	1.8	1.8	1.4	1.6	1.4	1.5	1.5
Vanadium, dissolved	mg/l	--	--	0.006	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.01	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-3S 21-Nov-2017 08-3S	BR 08-3S 16-May-2018 08-3S	BR 08-3S 29-Oct-2018 [10] 08-3S	BR 08-3S 29-May-2019 08-3S	BR 08-3S 14-Nov-2019 08-3S	BR 08-3S 06-May-2020 08-3S	BR 08-3S 28-Oct-2020 O8-3S
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	--	--	410	390	350	320	370	350	350
Ammonia Nitrogen	mg/l	--	--	0.12	0.1	0.1	0.086	0.093	<0.050	0.11
Chloride	mg/l	--	250	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	2.4	2.3	1.8	1.7	2	1.8	2.5
Conductivity	uS/cm	--	--	750	710	660	620	710	680	690
Conductivity (Field)	uS/cm	--	--	645	745	759	621	630	493	490
Dissolved Organic Carbon	mg/l	--	5	2.2	1.9	1.9	1.5	2	1.2	1.3
Hardness, Calcium Carbonate	mg/l	--	--	400	410	390	360	410	370	380
pH (Field)	-	--	--	7.6	7.8	7.7	7.41	7.3	7.1	7.2
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	0.019	<0.010	<0.010
Phosphorus	mg/l	--	--	0.06	0.09	0.06	0.044	0.046	0.024	0.034
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	32	31	31	35	29	30	31
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	7.4	10.7	10.1	9.2	8.4	7.9	8.6
Total Dissolved Solids	mg/l	--	500	380	365	395	340	370	355	330
Metals										
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0049
Barium, dissolved	mg/l	1	--	0.053	0.052	0.053	0.047	0.054	0.043	0.049
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040
Boron, dissolved	mg/l	5	--	0.22	0.18	0.21	0.17	0.2	0.17	0.23
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090
Calcium, dissolved	mg/l	--	--	81	85	81	74	84	74	77
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	0.39	0.41	0.4	0.33	0.39	0.32	0.34
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	47	49	46	43	48	44	45
Manganese, dissolved	mg/l	--	0.05	0.026	0.027	0.026	0.021	0.025	0.018	0.018
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0025	0.0021	0.0024	0.0026	0.0024	0.0024	0.0031
Nickel, dissolved	mg/l	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	4.3	3.7	4	3.7	4.1	3.5	4.3
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	1.6	1.7	1.5	1.3	1.7	1.3	1.4
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR 08-3S 30-Apr-2021 BR08-3S	BR 08-3S 24-Nov-2021 BR08-3S	BR 08-3S 25-Apr-2022 BR08-3S	BR 08-3S 18-Dec-2022 BR08-3S	BR 08-3S 25-May-2023 BR08-3S	BR 08-3S 25-Nov-2023 BR08-3S
General Chemistry									
Alkalinity (Total as CaCO3)	mg/l	--	--	360	360	340	350	360	340
Ammonia Nitrogen	mg/l	--	--	0.14	0.078	0.07	<0.050	0.11	0.073
Chloride	mg/l	--	250	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	2.8	1.9	1.6	1.6	<1.0	<1.0
Conductivity	uS/cm	--	--	710	670	670	680	700	660
Conductivity (Field)	uS/cm	--	--	505	696	680	700	638	608
Dissolved Organic Carbon	mg/l	--	5	1.7	1.4	1.2	1.8	1.5	0.91
Hardness, Calcium Carbonate	mg/l	--	--	370	340	380	380	380	370
pH (Field)	-	--	--	7.35	7.57	7.41	7.42	7.49	7.38
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.061	0.04	0.052	0.035	0.049	0.02
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	32	30	30	31	31	31
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	9.1	9.4	7.8	6.8	9.1	7.4
Total Dissolved Solids	mg/l	--	500	355	395	310	385	360	325
Metals									
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	0.0071	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.048	0.048	0.045	0.051	0.049	0.046
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.16	0.22	0.16	0.21	0.17	0.21
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	78	71	78	79	80	73
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	0.34	0.19	0.33	0.3	0.35	0.3
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	43	40	45	44	45	45
Manganese, dissolved	mg/l	--	0.05	0.02	0.012	0.017	0.019	0.021	0.016
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0024	0.0035	0.0024	0.0027	0.0025	0.003
Nickel, dissolved	mg/l	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	3.5	3.9	3.4	4	3.5	3.9
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	1.6	2.2	1.2	1.7	1.7	1.3
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-10 16-Nov-2001	BR-10 28-May-2002	BR-10 03-May-2003	BR-10 03-Nov-2003	BR-10 04-May-2004	BR-10 04-Oct-2004	BR-10 10-Jun-2005	BR-10 29-Oct-2005	BR-10 12-Apr-2006
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	474	477	490	523	482	538	464	491	460
Ammonia Nitrogen	mg/l	--	--	1.06	0.95	1.09	1.05	1.05	--	1.06	1.08	0.77
Chloride	mg/l	--	250	74	73	80	85	83	87	79	83	78
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	1030	1140	1110	1170	1110	1220	1300	1005	990
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	3.6
Hardness, Calcium Carbonate	mg/l	--	--	489	--	--	--	--	--	455.1	--	479.9
Nitrate	mg/l	-- [14]	--	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--
Nitrogen	mg/l	--	--	--	1.42	1.45	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	1.53	--	--	--	--
pH	-	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.47	7.74	7.22	7.5	7.21	--	6.6	6.8	6.9
Phosphate	mg/l	--	--	--	<0.03	0.43	0.09	1.2	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	0.56	<0.005	<0.01	0.48	--	0.32	0.22	0.22
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	0.07
Silica	mg/l	--	--	--	--	0.39	0.23	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	17	17	8	6	9	--	12	25	24
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	12	11	6
Total Dissolved Solids	mg/l	--	500	608	741	722	761	722	793	663	653	663
Total Organic Carbon	mg/l	--	--	--	6	6.4	7.4	5.2	7.7	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	1.63	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.05	0.44	<0.01	<0.01	--	--	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.17	0.22	0.2	0.25	--	--	0.23	--	0.22
Beryllium, dissolved	mg/l	--	--	<0.002	<0.002	<0.001	<0.001	--	--	<0.001	--	<0.001
Boron, dissolved	mg/l	5	--	0.53	0.46	0.43	0.43	0.48	0.47	0.55	0.6	0.56
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001
Calcium, dissolved	mg/l	--	--	125	127	141	150	123	--	123	--	128
Chromium, dissolved	mg/l	0.05	--	<0.001	0.005	0.011	0.004	0.003	--	0.006	--	0.002
Cobalt, dissolved	mg/l	--	--	0.018	0.119	0.0006	0.0011	--	--	0.0004	--	0.0018
Copper, dissolved	mg/l	--	1	<0.001	0.003	<0.001	<0.001	<0.001	--	--	--	--
Iron, dissolved	mg/l	--	0.3	1.6	3.51	1.98	2.01	2.04	--	1.55	1.64	1.4
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	--	<0.001
Magnesium, dissolved	mg/l	--	--	43	42	42	44	39	--	36	--	39
Manganese, dissolved	mg/l	--	0.05	0.04	0.7	0.096	0.104	0.1	--	--	--	0.06
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	<0.01	<0.005	<0.005	--	--	<0.005	--	<0.005
Nickel, dissolved	mg/l	--	--	<0.01	<0.01	<0.005	<0.005	<0.005	--	<0.005	0.013	0.006
Potassium, dissolved	mg/l	--	--	4	4	4	6	5	--	4	--	4
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	<0.001	--	<0.001
Silicon, dissolved	mg/l	--	--	4.5	4.8	4.9	5.7	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	41	46	47	48	48	--	48	--	45
Strontium, dissolved	mg/l	--	--	4.55	5.87	5.8	5.25	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	0.02	<0.01	<0.01	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.001	0.002	--	--	--	--	0.009	--	0.002
Zinc, dissolved	mg/l	--	5	<0.001	<0.01	0.004	0.002	--	--	<0.01	0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.001	<0.001	<0.001	--	<0.001	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-10 24-Nov-2006	BR-10 25-Apr-2007	BR-10 04-Dec-2007	BR-10 03-May-2008	BR-10 27-Nov-2008	BR-10 28-Apr-2009 A-1	BR-10 28-Nov-2009 A-1	BR-10 19-May-2010 A-1	BR-10 29-Nov-2010 A - 28
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	459	437	483	407	466	429	479	375	272
Ammonia Nitrogen	mg/l	--	--	0.87	0.64	0.8	0.66	0.71	0.64	0.72	0.6	0.18
Chloride	mg/l	--	250	84	77	93	74	89	74	89	78	14
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	875	710	815	780	700	1030	1140	976	542
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	720	480	990	980
Dissolved Organic Carbon	mg/l	--	5	4.2	3.5	4.5	2.6	2.6	2.7	3.5	2.4	5.6
Hardness, Calcium Carbonate	mg/l	--	--	474.9	457	508	412	479	448	496	404	289
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH	-	--	--	--	--	--	--	--	--	--	7.95	--
pH (Field)	-	--	--	6.8	7.2	6.9	7	7.1	7.4	7.4	7.3	7.4
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.24	0.78	0.16	0.1	0.1	0.16	0.16	0.1	0.13
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	0.05	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	15	21	10	25	17	23	18	25	7
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	5	5	6	7	6	9	6	8.2	6.8
Total Dissolved Solids	mg/l	--	500	715	689	741	639	741	670	741	634	352
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.22	0.2	0.25	0.2	0.25	0.2	0.22	0.2	0.09
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.66	0.64	0.57	0.7	0.75	0.75	0.84	0.66	0.15
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	126	122	134	109	126	120	131	104	81
Chromium, dissolved	mg/l	0.05	--	0.002	0.003	0.008	0.004	0.003	0.004	0.003	<0.001	<0.001
Cobalt, dissolved	mg/l	--	--	0.0101	0.0011	0.0006	0.001	0.0006	0.0002	0.0003	<0.0002	0.0004
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	1.52	1.49	2.16	1.33	1.99	1.63	1.94	1.57	0.07
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	39	37	42	34	40	36	41	35	21
Manganese, dissolved	mg/l	--	0.05	0.06	0.06	0.06	0.06	0.06	0.05	0.07	0.05	0.03
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	5	4	4	3	4	3	5	4	4
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	46	47	43	48	48	49	50	52	10
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.002	0.006	0.005	0.005	0.007	0.008	0.004	<0.001	0.003
Zinc, dissolved	mg/l	--	5	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-10 11-May-2011 S-27	BR-10 29-Nov-2011 A-1	BR-10 20-May-2012 S-1	BR-10 14-Nov-2012 A-29	BR-10 30-May-2014 S-1	BR-10 18-Nov-2014 [4] A-1	BR-10 05-May-2015 S-7	BR-10 16-Nov-2015 [4] S-1	BR-10 19-Apr-2016 S-7
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	409	455	431	479	410	460	440	440	380
Ammonia Nitrogen	mg/l	--	--	0.6	0.64	0.61	0.65	0.81	0.64	0.61	0.58	0.54
Chloride	mg/l	--	250	76	86	79	89	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	--	--	80	92	90	83	73
Conductivity	uS/cm	--	--	977	1100	1040	1160	990	1200	1100	1100	1000
Conductivity (Field)	uS/cm	--	--	1020	1035	1088	1060	1032	1010	1030	1005	760
Dissolved Organic Carbon	mg/l	--	5	3.4	2.6	1.5	2.7	1.7	1.6	1.5	2.6	1.3
Hardness, Calcium Carbonate	mg/l	--	--	405	450	325	516	470	480	460	460	390
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH	-	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.1	7.2	7.4	7.4	7.2	7.3	7.4	7.6	7.4
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.13	0.09	0.09	0.07	0.11	0.098	0.086	0.061	0.097
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	<0.1	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	28	18	26	22	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	29	23	25	12	35
Tannin & Lignin	mg/l	--	--	--	--	--	--	<0.2	--	--	--	--
Temperature (Field)	deg c	--	15	9	7	8.5	8	9.5	6	7	6	7.7
Total Dissolved Solids	mg/l	--	500	635	715	676	754	546	616	598	582	582
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.0050	<0.005	<0.0050	<0.005	<0.005
Barium, dissolved	mg/l	1	--	0.2	0.22	0.21	0.25	0.23	0.25	0.23	0.2	0.2
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.62	0.64	0.6	0.8	0.78	0.73	0.66	0.51	0.76
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	106	121	84	134	120	120	120 [8]	120	97
Chromium, dissolved	mg/l	0.05	--	0.002	0.002	0.003	0.003	<0.0050	<0.005	<0.0050	<0.005	<0.005
Cobalt, dissolved	mg/l	--	--	0.0003	0.0006	0.0003	0.0003	0.00071	<0.0005	0.0014	0.0005	<0.0005
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	1.48	1.4	1.49	1.31	1.7	1.3	1.3	0.64	1.1
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005
Magnesium, dissolved	mg/l	--	--	34	36	28	44	41	43	41	38	37
Manganese, dissolved	mg/l	--	0.05	0.05	0.07	0.05	0.05	0.043	0.048	0.046	0.049	0.037
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	<0.00010	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	0.001	0.001	0.0011	0.0006	0.0009
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	0.0015	0.006	0.0019	0.002	0.001
Potassium, dissolved	mg/l	--	--	4	4	2	5	3.7	4.3	3.6	4.6	3.7
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.0020	<0.002	<0.0020	<0.002	<0.002
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	48	45	38	50	54	52	52	40	56
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.003	0.004	0.004	0.006	<0.00050	<0.0005	0.00056	<0.0005	<0.0005
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.0050	<0.005	<0.0050	<0.005	<0.005
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-10 01-Nov-2016 S-11	BR-10 25-May-2017 [17] A-1	BR-10 21-Nov-2017 BR-10	BR-10 16-May-2018 BR-10	BR-10 26-Oct-2018 [18] BR-10	BR-10 30-May-2019 BR-10	BR-10 14-Nov-2019 BR-10	BR-10 06-May-2020 10
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	450	380	430	380	430	360	420	380
Ammonia Nitrogen	mg/l	--	--	0.71	0.59	0.64	0.59	0.74	0.56	0.62	0.51
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	68	78	80	66	89	69	77	68
Conductivity	uS/cm	--	--	1100	990	1000	940	1100	920	1000	960
Conductivity (Field)	uS/cm	--	--	748	740	705	946	1170	1140	1090	723
Dissolved Organic Carbon	mg/l	--	5	4.2	1	1.5	1.2	2	1.3	1.7	1.5
Hardness, Calcium Carbonate	mg/l	--	--	460	380	390	380	430	360	410	390
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH	-	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.6	7.3	7.4	7.4	7.8	7.74	7.6	7.46
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	0.016	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.079	0.08	0.12	0.17	0.11	0.13	0.083	0.26
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	6	37	26	26	19	38	20	32
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	7	8	7.1	10	9.4	8.9	9	7.1
Total Dissolved Solids	mg/l	--	500	672	540	485	525	485	535	530	490
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.057
Barium, dissolved	mg/l	1	--	0.23	0.21	0.22	0.21	0.24	0.2	0.23	0.2
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.52	0.79	0.85	0.83	0.76	0.75	0.75	0.77
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	120	97	100	96	110	94	110	100
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	1.7	1.1	0.87	1.4	1.8	1.2	1.3	1.3
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0005
Magnesium, dissolved	mg/l	--	--	39	33	34	33	37	31	35	34
Manganese, dissolved	mg/l	--	0.05	0.053	0.038	0.042	0.036	0.047	0.041	0.047	0.051
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00065	0.00099	0.00088	0.00076	0.0009	0.00085	0.00083	0.00081
Nickel, dissolved	mg/l	--	--	0.0018	<0.0010	<0.0010	<0.0010	0.0013	<0.0010	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	5	3.5	4	3.5	4	3.4	4	3.4
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	49	59	57	59	52	57	54	58
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-10 28-Oct-2020 BR-10	BR-10 30-Apr-2021 BR-10	BR-10 23-Nov-2021 BR-10	BR-10 25-Apr-2022 BR-10	BR-10 17-Dec-2022 BR-10	BR-10 25-May-2023 BR-10	BR-10 26-Nov-2023 BR-10
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	--	--	430	390	430	400	440	350	420
Ammonia Nitrogen	mg/l	--	--	0.67	0.57	0.61	0.7	0.68	0.57	0.88
Chloride	mg/l	--	250	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	70	73	78	74	79	64	66
Conductivity	uS/cm	--	--	1000	980	1000	980	1000	920	990
Conductivity (Field)	uS/cm	--	--	714	704	539	1005	993	950	933
Dissolved Organic Carbon	mg/l	--	5	3.2	1.6	2.8	1.8	3	1.2	4.6
Hardness, Calcium Carbonate	mg/l	--	--	420	390	420	430	430	360	430
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--
pH	-	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.52	7.62	7.38	7.1	7.14	7.19	7.29
Phosphate	mg/l	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.26	0.27	0.18	0.31	0.13	0.16	0.093
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	<1.0	32	15	21	7.7	37	1.5
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	7.8	8.8	7.9	8	7	10.8	8.4
Total Dissolved Solids	mg/l	--	500	490	505	570	490	520	480	525
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--
Metals										
Aluminum, dissolved	mg/l	--	--	0.049	0.0065	0.019	0.0082	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.21	0.22	0.22	0.22	0.22	0.2	0.17
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.56	0.69	0.59	0.63	0.57	0.73	0.29
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	110	99	110	110	110	92	120
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	0.00064	<0.00050	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	2.2	1.1	1.7	1.2	2.2	1.1	1.6
Lead, dissolved	mg/l	0.01	--	0.0009	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	34	34	34	35	36	32	32
Manganese, dissolved	mg/l	--	0.05	0.078	0.044	0.056	0.045	0.051	0.033	0.095
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.00050	0.00092	0.00057	0.00089	0.00082	0.00087	<0.00050
Nickel, dissolved	mg/l	--	--	0.0012	<0.0010	0.0013	0.0013	0.0016	<0.0010	0.001
Potassium, dissolved	mg/l	--	--	4.1	3.4	4.4	3.5	4	3.3	4.9
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	47	53	46	55	48	54	47
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.00064	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols										
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-12 16-Nov-2001	BR-12 28-May-2002	BR-12 03-Nov-2003	BR-12 04-May-2004	BR-12 04-Oct-2004	BR-12 14-Jun-2005	BR-12 29-Oct-2005
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	--	--	535	334	452	336	477	413	519
Ammonia Nitrogen	mg/l	--	--	0.93	1.1	0.96	0.9	--	1.07	1.24
Chloride	mg/l	--	250	1	2	3	4	3	8	4
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	529	--	--	--	--	462.1	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	1.05	--	0.59	--	0.19	0.12
Total Dissolved Solids	mg/l	--	500	604	413	523	400	551	488	679
Total Organic Carbon	mg/l	--	--	--	58.3	49.6	55.7	35.4	--	--
Turbidity	ntu	--	5 [19]	--	--	2.39	--	--	--	--
Metals										
Barium, dissolved	mg/l	1	--	0.06	0.06	0.08	--	--	0.07	--
Boron, dissolved	mg/l	5	--	0.13	0.09	0.11	0.08	0.11	0.1	0.15
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--
Calcium, dissolved	mg/l	--	--	139	97	136	94	--	134	--
Chromium, dissolved	mg/l	0.05	--	0.002	0.003	0.009	0.003	--	0.004	--
Cobalt, dissolved	mg/l	--	--	0.0167	0.0171	0.0138	--	--	0.0109	--
Copper, dissolved	mg/l	--	1	<0.001	0.001	0.004	0.002	--	--	--
Iron, dissolved	mg/l	--	0.3	8.88	13.1	8.74	14.1	--	10.1	5.86
Manganese, dissolved	mg/l	--	0.05	1.11	1.76	1.93	2.1	--	--	--
Potassium, dissolved	mg/l	--	--	7	8	8	6	--	6	--
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	<0.001	--
Silicon, dissolved	mg/l	--	--	6.1	5.33	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--
Sodium, dissolved	mg/l	--	200 [7]	3	<2	4	5	--	4	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-12 12-Apr-2006	BR-12 25-Nov-2006	BR-12 25-Apr-2007	BR-12 04-Dec-2007	BR-12 03-May-2008	BR-12 27-Nov-2008	BR-12 28-Apr-2009 A-12
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	--	--	272	301	264	466	302	427	295
Ammonia Nitrogen	mg/l	--	--	0.44	0.33	0.26	0.63	0.18	0.39	0.2
Chloride	mg/l	--	250	47	3	4	3	5	1	2
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	45.5	58.9	41.9	17.2	47.9	17	51
Hardness, Calcium Carbonate	mg/l	--	--	302.7	301.1	294	452	314	425	318
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.37	0.78	2.02	0.63	0.31	0.49	0.27
Total Dissolved Solids	mg/l	--	500	328	367	330	555	363	503	350
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--
Metals										
Barium, dissolved	mg/l	1	--	0.03	0.05	0.03	0.06	0.04	0.04	0.03
Boron, dissolved	mg/l	5	--	0.08	0.08	0.06	0.09	0.07	0.07	0.06
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	85	86	83	120	86	114	86
Chromium, dissolved	mg/l	0.05	--	0.001	0.002	0.002	0.007	0.002	0.002	0.002
Cobalt, dissolved	mg/l	--	--	0.0068	0.006	0.0089	0.0096	0.0069	0.008	0.0053
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.6	0.52	1.41	3.11	1.87	1.44	0.78
Manganese, dissolved	mg/l	--	0.05	1.97	1.88	1.64	0.93	2	1.47	1.48
Potassium, dissolved	mg/l	--	--	5	5	4	4	3	4	4
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	<2	2	<2	3	<2	<2	<2

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-12 28-Nov-2009 A-6	BR-12 19-May-2010 A-14	BR-12 29-Nov-2010 A - 30	BR-12 11-May-2011 S-24	BR-12 29-Nov-2011 A-13	BR-12 20-May-2012 S-8	BR-12 13-Nov-2012 A - 13
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	--	--	408	417	330	286	429	396	469
Ammonia Nitrogen	mg/l	--	--	0.43	0.45	0.18	2.64	0.31	0.38	0.48
Chloride	mg/l	--	250	1	3	2	3	3	4	3
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	22.4	26.6	40.4	47.6	14.5	28.4	22.8
Hardness, Calcium Carbonate	mg/l	--	--	394	403	368	284	430	309	449
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.68	0.43	0.23	0.15	0.14	0.24	0.2
Total Dissolved Solids	mg/l	--	500	474	479	387	331	502	462	536
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--
Metals										
Barium, dissolved	mg/l	1	--	0.03	0.04	0.03	0.03	0.04	0.04	0.04
Boron, dissolved	mg/l	5	--	0.08	0.07	0.05	0.04	0.09	0.05	0.07
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	105	107	103	76	116	81	122
Chromium, dissolved	mg/l	0.05	--	0.002	<0.001	<0.001	0.002	0.002	0.003	0.002
Cobalt, dissolved	mg/l	--	--	0.0044	0.0057	0.0034	0.0045	0.0038	0.0041	0.0055
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.94	1.45	0.12	1.96	2.29	1.03	2.17
Manganese, dissolved	mg/l	--	0.05	0.78	1.13	1.38	1.34	1.1	0.87	1.11
Potassium, dissolved	mg/l	--	--	4	4	4	3	3	3	3
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	2	<2	<2	<2	<2	2	<2

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-12 30-May-2014 S-10	BR-12 19-Nov-2014 A-19	BR-12 06-May-2015 S-17	BR-12 16-Nov-2015 S-14	BR-12 19-Apr-2016 S-18	BR-12 01-Nov-2016 S-18	BR-12 25-May-2017 [21] A-8
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	--	--	330	490	300	460	260	420	280
Ammonia Nitrogen	mg/l	--	--	0.26	0.29	0.22	0.4	0.12	0.31	0.14
Chloride	mg/l	--	250	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	3	3	4	2	3.1	5.4	<10 [23]
Dissolved Organic Carbon	mg/l	--	5	31	21	42	17	61	16	45
Hardness, Calcium Carbonate	mg/l	--	--	450	510	350	500	280	460	310
Phosphate, Ortho	mg/l	--	--	0.037	0.011	0.017	<0.010	0.014	<0.010	0.10 [23]
Phosphorus	mg/l	--	--	0.48	0.8	0.88	0.21	0.25	0.43	0.89
Total Dissolved Solids	mg/l	--	500	430	552	396	510	430	550	382
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--
Metals										
Barium, dissolved	mg/l	1	--	0.04	0.037	0.034	0.036	0.023	0.036	0.023
Boron, dissolved	mg/l	5	--	0.057	0.086	0.045	0.072	0.035	0.071	0.032
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	130	130	98	130	74	120	83
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.014	0.013	0.01	0.011	0.0053	0.0094	0.0037
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.77	1.1	0.36	1.4	0.43	0.58	1
Manganese, dissolved	mg/l	--	0.05	1.6	1.3	1.2	0.95	1.2	0.83	1.9
Potassium, dissolved	mg/l	--	--	4.2	4.1	4	3.9	2.8	4.3	3
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.002	<0.002	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	1.5	1.3	1.2	1.4	1	2.4	1.1

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-12 21-Nov-2017 [17] BR-12	BR-12 16-May-2018 BR-12	BR-12 26-Oct-2018 [22] BR-12	BR-12 30-May-2019 BR-12	BR-12 14-Nov-2019 BR-12	BR-12 06-May-2020 12	BR-12 28-Oct-2020 BR-12
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	--	--	320	340	500	300	340	280	380
Ammonia Nitrogen	mg/l	--	--	0.22	0.19	0.51	0.18	<0.050	0.1	<0.050
Chloride	mg/l	--	250	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	2.8	2.7	2.2	3.1	1.9	1.9	2.7
Dissolved Organic Carbon	mg/l	--	5	35	32	14	34	1.3	28	1.4
Hardness, Calcium Carbonate	mg/l	--	--	310	310	500	320	320	310	350
Phosphate, Ortho	mg/l	--	--	0.019	0.01	<0.010	<0.10 [13]	<0.010	0.015	<0.010
Phosphorus	mg/l	--	--	0.4	0.3	0.2	0.7	0.24	0.46	0.19
Total Dissolved Solids	mg/l	--	500	360	405	290	395	310	365	340
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--
Metals										
Barium, dissolved	mg/l	1	--	0.027	0.02	0.044	0.024	0.0053	0.019	0.0062
Boron, dissolved	mg/l	5	--	0.035	0.031	0.069	0.031	0.11	0.023	0.1
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090
Calcium, dissolved	mg/l	--	--	82	82	130	85	68	81	77
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0048	0.0043	0.0043	0.0026	<0.00050	0.0021	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	1.8	1.4	4	0.9	<0.1	0.39	<0.1
Manganese, dissolved	mg/l	--	0.05	1.6	2	1.2	1.9	0.01	1.6	0.006
Potassium, dissolved	mg/l	--	--	3.1	2.8	4	3	1.4	2.6	1.4
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	0.88	1.1	1.4	1	1.1	0.97	1.1

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-12 30-Apr-2021 BR-12	BR-12 23-Nov-2021 BR-12	BR-12 25-Apr-2022 BR-12	BR-12 17-Dec-2022 BR-12	BR-12 25-May-2023 BR-12	BR-12 26-Nov-2023 BR-12
General Chemistry									
Alkalinity (Total as CaCO3)	mg/l	--	--	340	350	270	510	370	470
Ammonia Nitrogen	mg/l	--	--	5	<0.050	0.23	0.24	0.22	0.24
Chloride	mg/l	--	250	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	2.9	2.4	2.1	1.9	1.5	<1.0
Dissolved Organic Carbon	mg/l	--	5	26	2.8	27	11	30	9.3
Hardness, Calcium Carbonate	mg/l	--	--	390	370	310	530	420	520
Phosphate, Ortho	mg/l	--	--	0.011	<0.010	<0.050 [23]	<0.010	0.025	<0.010
Phosphorus	mg/l	--	--	0.41	0.27	0.47	0.59	0.15	0.37
Total Dissolved Solids	mg/l	--	500	330	295	290	515	360	485
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--
Metals									
Barium, dissolved	mg/l	1	--	0.028	0.0091	0.021	0.032	0.025	0.033
Boron, dissolved	mg/l	5	--	0.031	0.12	0.025	0.046	0.031	0.06
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	100	82	82	140	110	140
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0037	0.0018	0.0022	0.0049	0.0026	0.0034
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.38	0.44	0.3	1.5	0.98	0.56
Manganese, dissolved	mg/l	--	0.05	1.1	0.059	1	0.74	1.2	0.82
Potassium, dissolved	mg/l	--	--	2.9	1.7	2.4	3.2	2.7	3.3
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	1.1	1.5	1	1.2	1.1	1.4

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-11 16-Nov-2001	BR-11 28-May-2002	BR-11 03-May-2003	BR-11 03-Nov-2003	BR-11 04-May-2004	BR-11 04-Oct-2004	BR-11 10-Jun-2005	BR-11 29-Oct-2005	BR-11 12-Apr-2006
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	392	346	362	411	373	512	531	399	259
Ammonia Nitrogen	mg/l	--	--	0.11	0.11	0.05	0.11	0.04	--	<0.02	0.03	0.08
Chloride	mg/l	--	250	5	4	5	7	<1	5	5	8	1
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	741	679	671	761	678	910	900	785	810
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	2
Hardness, Calcium Carbonate	mg/l	--	--	433	--	--	--	--	--	538.7	--	273
Nitrate	mg/l	-- [14]	--	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--
Nitrogen	mg/l	--	--	--	0.31	0.15	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	0.15	--	--	--	--
pH (Field)	-	--	--	7.86	7.98	7.55	7.74	7.31	--	6.7	6.8	6.7
Phosphate	mg/l	--	--	--	<0.03	0.4	0.09	0.09	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	0.36	<0.005	--	0.2	--	0.22	0.21	0.13
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	0.06
Silica	mg/l	--	--	--	--	0.24	0.1	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	32	25	15	14	11	--	6	17	13
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	18.4	12	6
Total Dissolved Solids	mg/l	--	500	456	441	436	495	441	592	570	510	303
Total Organic Carbon	mg/l	--	--	--	3.8	4.1	4.9	4.4	15.6	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	0.28	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.05	<0.05	0.06	<0.01	--	--	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.04	0.04	0.03	0.03	--	--	0.02	--	<0.01
Beryllium, dissolved	mg/l	--	--	<0.002	<0.002	<0.001	<0.001	--	--	<0.001	--	<0.001
Boron, dissolved	mg/l	5	--	0.27	0.35	0.34	0.49	0.29	0.27	0.22	0.43	0.11
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001
Calcium, dissolved	mg/l	--	--	81	71	75	89	76	--	122	--	60
Chromium, dissolved	mg/l	0.05	--	<0.001	0.001	0.008	0.003	0.002	--	0.004	--	<0.001
Cobalt, dissolved	mg/l	--	--	0.0012	0.0029	0.0028	0.0028	--	--	0.0046	--	0.0014
Copper, dissolved	mg/l	--	1	<0.001	0.001	<0.001	0.007	0.001	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.02	0.02	0.17	0.04	0.03	--	0.04	<0.03	<0.03
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	--	<0.001
Magnesium, dissolved	mg/l	--	--	56	44	46	53	42	--	57	--	30
Manganese, dissolved	mg/l	--	0.05	0.06	0.03	0.033	0.031	0.03	--	--	--	<0.01
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001
Molybdenum, dissolved	mg/l	--	--	0.01	<0.01	<0.005	<0.005	--	--	<0.005	--	<0.005
Nickel, dissolved	mg/l	--	--	<0.01	<0.01	<0.005	0.009	0.019	--	0.019	0.009	0.019
Potassium, dissolved	mg/l	--	--	5	--	4	7	2	--	2	--	2
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	<0.001	--	<0.001
Silicon, dissolved	mg/l	--	--	3.9	2.59	3	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	--	<0.0001	--	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	4	<2	3	4	4	--	5	--	<2
Strontium, dissolved	mg/l	--	--	2.39	5.34	4.27	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.002	<0.001	--	--	--	--	0.01	--	<0.001
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	0.003	--	--	--	<0.01	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.001	<0.0001	<0.001	--	<0.001	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-11 24-Nov-2006	BR-11 25-Apr-2007	BR-11 04-Dec-2007	BR-11 03-May-2008	BR-11 27-Nov-2008	BR-11 28-Apr-2009 A-5	BR-11 28-Nov-2009 [3] A-5	BR-11 19-May-2010 A-5
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	403	293	409	333	396	289	271	443
Ammonia Nitrogen	mg/l	--	--	0.11	<0.02	0.04	0.03	0.06	0.03	0.03	0.05
Chloride	mg/l	--	250	8	3	6	2	5	2	1	2
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	845	790	805	830	800	534	502	795
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	540	580	480
Dissolved Organic Carbon	mg/l	--	5	3.8	2.3	5.6	4.5	3.6	2.5	3.2	18.1
Hardness, Calcium Carbonate	mg/l	--	--	399.3	284	393	328	365	289	263	425
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.8	6.8	6.9	6.8	6.8	8.1	7.9	8.1
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.19	0.81	0.1	0.1	0.05	0.17	0.31	0.3
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	14	9	14	8	13	10	9	4
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	6	6	6	8	6	10	5	9.8
Total Dissolved Solids	mg/l	--	500	491	362	489	393	479	347	326	517
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.04	0.03	0.02	<0.01	0.04	<0.01	<0.01	0.01
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.82	0.33	0.46	0.13	0.54	0.1	0.08	0.17
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	81	61	83	72	77	63	59	91
Chromium, dissolved	mg/l	0.05	--	<0.001	0.001	0.002	0.003	0.002	0.002	<0.001	<0.001
Cobalt, dissolved	mg/l	--	--	0.0025	0.0011	0.0021	0.0002	0.0024	0.0008	0.0002	0.0016
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.13	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	48	32	45	36	42	32	28	48
Manganese, dissolved	mg/l	--	0.05	0.03	<0.01	0.06	<0.01	0.04	<0.01	<0.01	0.05
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.007	0.008	0.009	<0.005	0.011	0.011	<0.005	0.006
Potassium, dissolved	mg/l	--	--	8	2	5	1	5	2	2	2
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	4	2	4	<2	2	<2	3	3
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.001	0.004	0.003	0.005	0.004	0.004	0.001	0.002
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-11 29-Nov-2010 A - 29	BR-11 11-May-2011 S-15	BR-11 29-Nov-2011 A-5	BR-11 20-May-2012 S-5	BR-11 13-Nov-2012 A - 3	BR-11 30-May-2014 S-5	BR-11 19-Nov-2014 A-18	BR-11 05-May-2015 S-10	BR-11 16-Nov-2015 S-5
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	200	340	277	341	422	380	420	400	280
Ammonia Nitrogen	mg/l	--	--	<0.02	0.11	<0.02	0.06	0.06	0.089	<0.050	0.051	<0.050
Chloride	mg/l	--	250	1	6	<1	4	5	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	5	5	8	1.9
Conductivity	uS/cm	--	--	372	607	522	620	733	690	760	740	530
Conductivity (Field)	uS/cm	--	--	485	515	505	615	605	590	520	530	545
Dissolved Organic Carbon	mg/l	--	5	1.6	1.9	1.4	2.2	3.5	3.9	4.2	5.6	1.2
Hardness, Calcium Carbonate	mg/l	--	--	191	355	304	274	385	370	420	420	270
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	8	7.8	7.7	7.5	7.4	7.5	7.5	7.6	7.5
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.12	0.1	0.11	0.23	0.14	0.14	0.22	0.083	0.088
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	<0.1	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	6	10	12	11	9	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	10	11	9	10
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	<0.2	--	--	--
Temperature (Field)	deg c	--	15	7.4	9	7	10	8	9	5	7	6
Total Dissolved Solids	mg/l	--	500	242	395	339	403	476	344	424	398	294
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	0.01	<0.01	<0.0050	<0.0050	<0.0050	<0.005
Barium, dissolved	mg/l	1	--	<0.01	<0.01	0.01	<0.01	0.02	0.014	0.015	0.012	0.007
Beryllium, dissolved	mg/l	--	--	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.0005
Boron, dissolved	mg/l	5	--	0.04	0.08	0.13	0.07	0.3	0.2	0.23	0.15	0.11
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001
Calcium, dissolved	mg/l	--	--	42	78	69	57	80	79	90	92	58
Chromium, dissolved	mg/l	0.05	--	<0.001	0.019	<0.001	0.002	0.001	<0.0050	<0.0050	<0.0050	<0.005
Cobalt, dissolved	mg/l	--	--	<0.0002	0.0004	0.0011	<0.0002	0.0016	0.00072	0.00056	<0.00050	<0.0005
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.03	<0.03	<0.03	<0.03	0.81	0.12	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00050	<0.00050	<0.00050	<0.0005
Magnesium, dissolved	mg/l	--	--	21	39	32	32	45	43	48	47	29
Manganese, dissolved	mg/l	--	0.05	<0.01	<0.01	0.02	<0.01	0.08	0.016	0.024	<0.0020	<0.002
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	<0.00010
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	0.0018	0.0011	0.0027	0.0017
Nickel, dissolved	mg/l	--	--	<0.005	0.005	<0.005	<0.005	<0.005	0.0057	0.0048	0.008	0.002
Potassium, dissolved	mg/l	--	--	<1	3	2	2	5	2.3	2.6	2.1	1.5
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0020	<0.0020	<0.0020	<0.002
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	0.0003
Sodium, dissolved	mg/l	--	200 [7]	<2	<2	3	<2	2	1.6	1.6	1.7	0.99
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.001	<0.001	0.002	0.002	0.002	<0.00050	<0.00050	<0.00050	<0.0005
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0050	<0.0050	<0.0050	0.006
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-11 19-Apr-2016 S-10	BR-11 01-Nov-2016 S-15	BR-11 25-May-2017 [20] A-5	BR-11 21-Nov-2017 BR-11	BR-11 16-May-2018 BR-11	BR-11 26-Oct-2018 [18] BR-11	BR-11 30-May-2019 BR-11	BR-11 14-Nov-2019 BR-11
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	300	300	300	370	330	380	280	330
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	0.068	0.1	0.24
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	2.3	1.4	1.9	3.5	2.7	2.9	1	2.7
Conductivity	uS/cm	--	--	560	550	560	660	590	690	520	640
Conductivity (Field)	uS/cm	--	--	460	480	490	490	580	769	759	767
Dissolved Organic Carbon	mg/l	--	5	1	1	1.5	2.1	2.6	1.9	0.79	30
Hardness, Calcium Carbonate	mg/l	--	--	280	280	320	350	340	360	310	340
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.8	7.7	7.7	7.7	7.5	8.06	8.01	7.9
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.023
Phosphorus	mg/l	--	--	0.057	0.084	0.064	0.066	0.23	0.1	0.2	0.7
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	10	6.4	6	7.2	6.9	5.8	4.1	<1.0
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	7.5	7	7.4	7.01	10	11.1	9.6	8.9
Total Dissolved Solids	mg/l	--	500	336	286	280	330	300	305	275	390
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.005	<0.0050	<0.0050	0.042	0.0056	<0.0050	0.012	0.026
Barium, dissolved	mg/l	1	--	0.004	0.005	0.006	0.0077	0.0062	0.011	0.0045	0.025
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.063	0.052	0.13	0.14	0.12	0.16	0.061	0.035
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	57	60	67	77	71	79	66	90
Chromium, dissolved	mg/l	0.05	--	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.0005	<0.00050	0.001	<0.00050	0.00053	0.0056	<0.00050	0.0031
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	0.52	<0.1	1.6
Lead, dissolved	mg/l	0.01	--	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	33	32	36	39	39	41	35	29
Manganese, dissolved	mg/l	--	0.05	<0.002	<0.0020	0.025	0.01	0.011	0.32	0.0048	0.78
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0014	0.0013	0.0016	0.0033	0.0031	0.0054	0.002	0.00055
Nickel, dissolved	mg/l	--	--	0.001	0.0016	0.0079	0.0027	0.0061	0.013	0.006	0.011
Potassium, dissolved	mg/l	--	--	1.2	1.3	1.4	1.7	1.3	1.9	1	3
Selenium, dissolved	mg/l	0.05	--	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	0.7	0.96	1	1.2	1.1	1.4	0.61	1.2
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0014
Zinc, dissolved	mg/l	--	5	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-11 06-May-2020 11	BR-11 28-Oct-2020 BR-11	BR-11 30-Apr-2021 BR-11	BR-11 23-Nov-2021 BR-11	BR-11 25-Apr-2022 BR-11	BR-11 17-Dec-2022 BR-11	BR-11 25-May-2023 BR-11	BR-11 26-Nov-2023 BR-11
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	270	390	420	420	290	390	340	400
Ammonia Nitrogen	mg/l	--	--	<0.050	0.2	<0.050	0.22	0.12	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	1.1	2	9.4	2.4	1.6	4.2	3.2	4.4
Conductivity	uS/cm	--	--	500	730	780	770	540	710	630	740
Conductivity (Field)	uS/cm	--	--	407	563	581	590	549	555	627	639
Dissolved Organic Carbon	mg/l	--	5	1.4	11	7.9	18	1.2	2.5	2.3	1.5
Hardness, Calcium Carbonate	mg/l	--	--	290	450	450	460	300	400	370	430
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.49	7.13	7.29	7.24	7.49	7.51	7.38	7.4
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	0.013	<0.010	0.019	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.12	0.4	0.17	0.42	0.16	0.01	0.08	0.092
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	4.7	16	9.7	35	6.7	8.2	4.6	7.1
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8.2	11.4	11	9.1	8.9	7.6	9.4	7.4
Total Dissolved Solids	mg/l	--	500	255	395	460	465	235	360	320	370
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.0050	0.0098	<0.0049	0.01	<0.0049	0.0093	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.0029	0.03	0.005	0.038	0.0043	0.0058	0.0041	0.0078
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.055	0.061	0.11	0.049	0.062	0.12	0.087	0.11
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	62	120	99	120	65	88	79	94
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	0.0032	<0.00050	0.0063	<0.00050	<0.00050	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	1.5	<0.1	1.7	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	32	37	51	36	34	43	41	48
Manganese, dissolved	mg/l	--	0.05	0.0026	0.76	0.0033	0.96	<0.0020	<0.0020	<0.0020	<0.0020
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00063	0.00061	0.00068	0.00067	0.0029	0.0012	0.0009	0.0026
Nickel, dissolved	mg/l	--	--	0.0013	0.0085	0.0022	0.012	0.0013	0.0014	0.0011	0.0019
Potassium, dissolved	mg/l	--	--	0.85	3.7	1.4	3.1	1.1	1.4	1.1	1.7
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	0.68	1.4	2.7	1.4	0.82	1.7	1.2	1.8
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	0.00056	<0.00050	0.00064	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-12D 03-May-2003
General Chemistry				
Alkalinity (Total as CaCO3)	mg/l	--	--	387
Ammonia Nitrogen	mg/l	--	--	0.64
Chloride	mg/l	--	250	2
Conductivity	uS/cm	--	--	697
Nitrate	mg/l	-- [14]	--	<0.1
Nitrogen	mg/l	--	--	1.99
pH (Field)	-	--	--	6.89
Phosphate	mg/l	--	--	0.99
Phosphorus	mg/l	--	--	<0.005
Silica	mg/l	--	--	0.44
Sulphate	mg/l	--	500 [6]	3
Total Dissolved Solids	mg/l	--	500	453
Total Organic Carbon	mg/l	--	--	67.2
Metals				
Aluminum, dissolved	mg/l	--	--	0.07
Barium, dissolved	mg/l	1	--	0.06
Beryllium, dissolved	mg/l	--	--	<0.001
Boron, dissolved	mg/l	5	--	0.1
Cadmium, dissolved	mg/l	0.005	--	<0.0001
Calcium, dissolved	mg/l	--	--	115
Chromium, dissolved	mg/l	0.05	--	0.017
Cobalt, dissolved	mg/l	--	--	0.0225
Copper, dissolved	mg/l	--	1	0.004
Iron, dissolved	mg/l	--	0.3	6.74
Lead, dissolved	mg/l	0.01	--	<0.001
Magnesium, dissolved	mg/l	--	--	26
Manganese, dissolved	mg/l	--	0.05	3.34
Mercury, dissolved	mg/l	0.001	--	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005
Nickel, dissolved	mg/l	--	--	0.064
Potassium, dissolved	mg/l	--	--	7
Silicon, dissolved	mg/l	--	--	6
Silver, dissolved	mg/l	--	--	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	2
Strontium, dissolved	mg/l	--	--	0.204
Thallium, dissolved	mg/l	--	--	<0.001
Titanium, dissolved	mg/l	--	--	<0.01
Zinc, dissolved	mg/l	--	5	0.011
Phenols				
Phenolics, Total Recoverable	mg/l	--	--	<0.001

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-12S 03-May-2003
General Chemistry				
Alkalinity (Total as CaCO3)	mg/l	--	--	388
Ammonia Nitrogen	mg/l	--	--	0.98
Chloride	mg/l	--	250	2
Conductivity	uS/cm	--	--	696
Nitrate	mg/l	-- [14]	--	<0.1
Nitrogen	mg/l	--	--	1.95
pH (Field)	-	--	--	6.74
Phosphate	mg/l	--	--	0.53
Phosphorus	mg/l	--	--	<0.005
Silica	mg/l	--	--	0.49
Sulphate	mg/l	--	500 [6]	3
Total Dissolved Solids	mg/l	--	500	452
Total Organic Carbon	mg/l	--	--	65
Metals				
Aluminum, dissolved	mg/l	--	--	0.08
Barium, dissolved	mg/l	1	--	0.06
Beryllium, dissolved	mg/l	--	--	<0.001
Boron, dissolved	mg/l	5	--	0.11
Cadmium, dissolved	mg/l	0.005	--	<0.0001
Calcium, dissolved	mg/l	--	--	116
Chromium, dissolved	mg/l	0.05	--	0.015
Cobalt, dissolved	mg/l	--	--	0.0217
Copper, dissolved	mg/l	--	1	0.003
Iron, dissolved	mg/l	--	0.3	6.75
Lead, dissolved	mg/l	0.01	--	<0.001
Magnesium, dissolved	mg/l	--	--	27
Manganese, dissolved	mg/l	--	0.05	3.32
Mercury, dissolved	mg/l	0.001	--	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.006
Nickel, dissolved	mg/l	--	--	<0.005
Potassium, dissolved	mg/l	--	--	8
Silicon, dissolved	mg/l	--	--	6
Silver, dissolved	mg/l	--	--	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	2
Strontium, dissolved	mg/l	--	--	0.204
Thallium, dissolved	mg/l	--	--	<0.001
Titanium, dissolved	mg/l	--	--	<0.01
Zinc, dissolved	mg/l	--	5	0.011
Phenols				
Phenolics, Total Recoverable	mg/l	--	--	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-13D 16-Nov-2001	BR-13D 04-Mar-2002	BR-13D 28-May-2002	BR-13D 09-Oct-2002	BR-13D 03-May-2003	BR-13D 03-Nov-2003	BR-13D 04-May-2004	BR-13D 04-Oct-2004
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	316	295	332	272	303	309	312	273
Ammonia Nitrogen	mg/l	--	--	0.03	0.12	0.03	<0.02	0.09	0.39	0.11	0.38
Chloride	mg/l	--	250	52	6	39	35	20	30	58	56
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	793	601	794	670	648	701	829	769
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	350	277	--	267	--	--	--	--
Nitrate	mg/l	-- [14]	--	2.57	0.12	0.65	0.33	<0.1	<0.1	<0.1	<0.1
Nitrogen	mg/l	--	--	--	--	0.48	--	0.23	0.39	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	0.25	0.46
pH (Field)	-	--	--	7.81	7.72	7.94	7.94	7.44	7.84	7.49	7.74
Phosphate	mg/l	--	--	--	--	<0.03	--	0.09	<0.03	0.11	0.12
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	0.2	--	<0.005	0.02	0.05	--
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	0.05	--	--	--
Sulphate	mg/l	--	500 [6]	28	31	36	34	27	29	54	58
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	472	391	516	--	421	456	539	500
Total Organic Carbon	mg/l	--	--	--	--	2.2	--	1.6	1.2	<0.5	3
Metals											
Aluminum, dissolved	mg/l	--	--	<0.05	<0.05	<0.05	<0.01	<0.01	0.01	--	<0.01
Barium, dissolved	mg/l	1	--	<0.002	0.06	0.08	0.09	0.1	0.05	--	0.19
Beryllium, dissolved	mg/l	--	--	--	<0.002	<0.002	<0.001	<0.001	<0.001	--	<0.001
Boron, dissolved	mg/l	5	--	0.07	0.17	0.2	0.2	0.22	0.49	0.23	0.25
Cadmium, dissolved	mg/l	0.005	--	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	97	58	90	59	67	72	82	64
Chromium, dissolved	mg/l	0.05	--	0.001	0.002	<0.001	<0.001	0.007	0.001	0.001	0.001
Cobalt, dissolved	mg/l	--	--	0.0012	0.0002	0.0011	<0.0002	0.0005	0.0006	--	<0.0002
Copper, dissolved	mg/l	--	1	<0.001	<0.001	0.001	<0.001	<0.0001	<0.001	<0.001	0.001
Iron, dissolved	mg/l	--	0.3	0.04	0.05	--	0.01	0.4	0.17	0.3	0.01
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	26	32	34	29	39	38	30	28
Manganese, dissolved	mg/l	--	0.05	0.01	<0.01	0.02	<0.005	0.008	<0.005	0.07	<0.01
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.005	<0.005	<0.05	--	<0.005
Nickel, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	3	9	5	6	10	10	7	6
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	4.74	3.5	3.72	3.6	4.1	3.7	--	7.8
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	23	12	22	32	8	17	40	38
Strontium, dissolved	mg/l	--	--	0.7	2.3	3.19	4.54	4.83	6.75	--	0.174
Thallium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001
Titanium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	--	<0.01	<0.01	--	<0.01
Vanadium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	--	--	<0.001	--	<0.001
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	--	0.002	<0.01	--	<0.01
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	<0.001	0.002	<0.001	--	<0.001	--	<0.001	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-13D 14-Jun-2005	BR-13D 29-Oct-2005	BR-13D 12-Apr-2006	BR-13D 24-Nov-2006	BR-13D 25-Apr-2007	BR-13D 06-Dec-2007	BR-13D 04-May-2008	BR-13D 29-Nov-2008
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	323	261	305	315	322	323	324	325
Ammonia Nitrogen	mg/l	--	--	<0.02	0.18	0.23	0.02	0.24	<0.02	0.05	0.02
Chloride	mg/l	--	250	54	49	42	69	56	57	71	53
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	760	645	310	380	360	395	380	365
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	2	1.3	1.7	2.2	1.3	1.5
Hardness, Calcium Carbonate	mg/l	--	--	375.5	--	365.3	359.6	357	338	363	325
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.65	7.2	7.3	7.2	7.3	7.4	7.5	7.5
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.01	0.02	0.03	0.06	0.06	0.01	0.04	0.01
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	0.04	0.06	0.1	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	47	41	26	62	57	59	33	54
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	0.1	<0.1	<0.1	<0.1
Temperature (Field)	deg c	--	15	-- [24]	10	6	6	5	7	7	7
Total Dissolved Solids	mg/l	--	500	494	419	465	588	565	564	574	556
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.2	--	0.09	0.17	0.2	0.18	0.16	0.23
Beryllium, dissolved	mg/l	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.19	0.15	0.21	0.28	0.2	0.24	0.18	0.33
Cadmium, dissolved	mg/l	0.005	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	101	--	92	93	92	86	96	84
Chromium, dissolved	mg/l	0.05	--	0.003	--	0.002	0.002	0.001	0.004	0.003	0.003
Cobalt, dissolved	mg/l	--	--	0.0022	--	0.0002	0.0003	0.0063	0.0002	0.0017	0.002
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.03	<0.03	0.04	0.12	0.05	<0.03	1	0.1
Lead, dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	30	--	33	31	31	30	30	28
Manganese, dissolved	mg/l	--	0.05	--	--	<0.01	0.16	0.06	<0.01	0.41	0.07
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	0.006
Potassium, dissolved	mg/l	--	--	5	--	6	7	7	7	5	6
Selenium, dissolved	mg/l	0.05	--	<0.001	--	<0.001	0.002	<0.001	0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	41	--	20	43	41	40	38	40
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.004	--	<0.001	0.001	0.001	0.005	0.002	0.006
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-13D 29-Apr-2009 A-28	BR-13D 29-Nov-2009 A-29	BR-13D 20-May-2010 A-25	BR-13D 29-Nov-2010 A - 18	BR-13D 10-May-2011 S-12	BR-13D 30-Nov-2011 [9] S - 24	BR-13D 20-May-2012 [9] S-19	BR-13D 14-Nov-2012 A-26
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	328	326	311	345	350	327	327	355
Ammonia Nitrogen	mg/l	--	--	0.08	<0.02	<0.02	<0.02	0.12	0.09	0.06	0.07
Chloride	mg/l	--	250	53	50	51	55	58	53	53	54
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	857	843	814	855	839	836	832	893
Conductivity (Field)	uS/cm	--	--	390	365	10	380	370	365	400	405
Dissolved Organic Carbon	mg/l	--	5	1.9	2.2	1.8	1.6	2.0	1.6	1.5	2.2
Hardness, Calcium Carbonate	mg/l	--	--	348	318	323	389	348	358	262	371
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.7	7.8	7.6	7.5	7.5	7.4	7.6	7.4
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.02	0.07	0.01	<0.01	0.02	0.03	0.02	0.03
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	55	52	53	44	49	48	49	49
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1
Temperature (Field)	deg c	--	15	9	6	385	8	9.0	9	9	8
Total Dissolved Solids	mg/l	--	500	557	548	529	556	545	543	541	580
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.22	0.21	0.19	0.22	0.21	0.21	0.21	0.20
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.22	0.21	0.20	0.19	0.20	0.18	0.22	0.23
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	90	83	83	103	90	94	67	96
Chromium, dissolved	mg/l	0.05	--	0.002	0.001	<0.001	<0.001	0.002	0.008	0.003	0.001
Cobalt, dissolved	mg/l	--	--	0.0007	0.0004	0.0006	0.0003	0.0006	0.0004	0.0006	0.0013
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.28	0.12	<0.03	0.14	0.30	0.16	0.16	<0.03
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	30	27	28	32	30	30	23	32
Manganese, dissolved	mg/l	--	0.05	0.06	0.02	0.02	0.03	0.05	0.04	0.04	0.02
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005
Potassium, dissolved	mg/l	--	--	6	6	6	7	7	6	4	6
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	41	36	42	44	39	43	28	43
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.004	0.002	0.001	0.002	0.002	0.001	0.004	0.003
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-13D 13-Jun-2013 BR-13D	BR-13D 25-Oct-2013 BR-13D	BR-13D 31-May-2014 S-27	BR-13D 19-Nov-2014 A-22	BR-13D 07-May-2015 S-27	BR-13D 30-Nov-2015 S-28	BR-13D 20-Apr-2016 S-25	BR-13D 01-Nov-2016 S-26	BR-13D 13-Jun-2017 A-29
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	312	334	320	350	330	220	330	270	330
Ammonia Nitrogen	mg/l	--	--	<0.02	<0.02	0.069	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	57	64	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	60	60	62	9.6	60	26	88
Conductivity	uS/cm	--	--	806	865	860	870	890	480	870	590	920
Conductivity (Field)	uS/cm	--	--	819	792	440	460	480	485	465	445	485
Dissolved Organic Carbon	mg/l	--	5	1.5	1.3	0.83	2.0	1.3	2.0	1.4	1.2	0.81
Hardness, Calcium Carbonate	mg/l	--	--	351	359	370	360	380	250	360	270	390
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	<0.1	<0.1	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.7	7.3	7.4	7.5	7.6	7.5	7.6	7.7	7.5
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	<0.01	<0.01	0.006	0.041	0.014	0.011	0.007	<0.004	1.8
Phosphorus, dissolved	mg/l	--	--	--	--	<0.1	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	0.02	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	50	39	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	39	34	45	13	48	15	27
Tannin & Lignin	mg/l	--	--	<0.1	0.2	<0.2	0.5	--	--	--	--	--
Temperature (Field)	deg c	--	15	10.4	7.8	8	8	9	8	9.1	9.0	8.4
Total Dissolved Solids	mg/l	--	500	524	562	470	498	486	262	494	302	530
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050	<0.0050
Barium, dissolved	mg/l	1	--	0.17	0.15	0.16	0.19	0.2	0.098	0.2	0.11	0.084
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.22	0.12	0.15	0.21	0.2	0.032	0.22	0.039	0.04
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	91	96	96	89	98	60	92	66	110
Chromium, dissolved	mg/l	0.05	--	0.003	0.002	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0021	0.0004	<0.00050	0.0012	0.00092	<0.0005	0.00094	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	0.001	<0.001	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.03	<0.03	<0.1	0.13	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	30	29	31	32	33	23	31	26	28
Manganese, dissolved	mg/l	--	0.05	0.03	<0.01	<0.0020	0.063	0.017	0.04	0.04	0.094	<0.0020
Mercury	mg/l	0.001	--	--	--	--	--	--	<0.00010	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	0.0028	<0.00050	0.0029	0.0008	0.0026	0.0010	<0.00050
Nickel, dissolved	mg/l	--	--	0.007	<0.005	0.0038	0.0016	0.0051	<0.001	0.0062	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	6	5	5	6.1	6.6	3.8	6.3	3.8	2.7
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.01	<0.0020	<0.0020	<0.0020	<0.002	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	41	38	40	44	45	20	42	18	38
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.002	<0.001	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	0.0075	<0.0050	<0.0050	<0.005	<0.0050	<0.0050	<0.0050
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-13D 30-Nov-2017 BR-13D	BR-13D 23-May-2018 BR-13D	BR-13D 30-Oct-2018 [5] BR-13D	BR-13D 04-Jun-2019 BR-13D	BR-13D 15-Nov-2019 BR13-D	BR-13D 11-May-2020 13D	BR-13D 29-Oct-2020 BR-13D	BR-13D 01-May-2021 BR-13D
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	340	330	320	320	310	310	320	320
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050	0.057	<0.050	<0.050	2.7	<0.050
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	44	43	44	44	43	42	41	46
Conductivity	uS/cm	--	--	850	810	780	800	800	800	810	830
Conductivity (Field)	uS/cm	--	--	560	510	590	605	615	625	640	635
Dissolved Organic Carbon	mg/l	--	5	1.3	1.1	1.0	1.3	1.9	1.2	1.5	1.4
Hardness, Calcium Carbonate	mg/l	--	--	310	320	320	340	310	320	330	350
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.6	7.4	7.5	7.44	7.3	7.4	7.58	7.66
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.011	0.013	0.015	0.015	0.039	0.009	0.008	0.015
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	43	40	35	39	37	40	40	43
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	7.0	9.1	10	10.4	9.5	10	10.4	10.9
Total Dissolved Solids	mg/l	--	500	360	400	405	480	420	365	410	495
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	0.0058	<0.0050	<0.0050	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.17	0.17	0.18	0.17	0.16	0.16	0.16	0.18
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.2	0.16	0.17	0.18	0.18	0.19	0.18	0.19
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	81	82	85	87	81	83	85	91
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0011	0.00085	<0.00050	<0.00050	<0.00050	0.00099	<0.00050	0.00055
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	26	28	27	29	28	27	27	29
Manganese, dissolved	mg/l	--	0.05	0.029	0.032	0.0030	<0.0020	<0.0020	0.024	<0.0020	0.026
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0024	0.0021	0.0023	0.0022	0.0023	0.0025	0.0024	0.0023
Nickel, dissolved	mg/l	--	--	0.0058	0.0038	0.0040	0.0051	0.0040	0.0051	0.0047	0.0044
Potassium, dissolved	mg/l	--	--	5.3	5.6	5.5	5.5	5.3	5.5	5.3	5.6
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	37	39	37	39	36	35	36	37
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-13D 24-Nov-2021 BR-13D	BR-13D 26-Apr-2022 BR-13D	BR-13D 19-Dec-2022 BR-13D	BR-13D 29-May-2023 BR-13D	BR-13D 25-Nov-2023 BR-13D
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	--	--	320	320	330	340	310
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050	0.13	<0.050
Chloride	mg/l	--	250	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	45	49	49	54	54
Conductivity	uS/cm	--	--	820	840	860	840	820
Conductivity (Field)	uS/cm	--	--	595	655	717	702	700
Dissolved Organic Carbon	mg/l	--	5	1.3	1.5	1.3	1.2	1.3
Hardness, Calcium Carbonate	mg/l	--	--	340	370	360	350	350
Nitrate	mg/l	-- [14]	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.71	7.01	7.66	7.70	7.74
Phosphate	mg/l	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	0.010	<0.010	0.014	<0.010	<0.010
Phosphorus	mg/l	--	--	0.029	0.022	0.019	0.035	0.012
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	42	43	40	39	45
Tannin & Lignin	mg/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	9.6	8.9	8.1	8.6	8.7
Total Dissolved Solids	mg/l	--	500	435	415	495	465	480
Total Organic Carbon	mg/l	--	--	--	--	--	--	--
Metals								
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.18	0.17	0.18	0.18	0.16
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.18	0.19	0.19	0.19	0.2
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	91	97	94	90	92
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	0.00095	0.00064	0.0023	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	<0.1	0.21	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	28	31	30	30	30
Manganese, dissolved	mg/l	--	0.05	0.0050	0.023	0.01	0.34	<0.0020
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	--	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	<0.00010	--
Molybdenum, dissolved	mg/l	--	--	0.0020	0.0025	0.0025	0.0026	0.0023
Nickel, dissolved	mg/l	--	--	0.0031	0.0067	0.0043	0.0049	0.0039
Potassium, dissolved	mg/l	--	--	5.3	5.6	5.5	5.8	5.5
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	37	38	39	39	39
Strontium, dissolved	mg/l	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols								
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-13S 16-Nov-2001	BR-13S 18-Mar-2002	BR-13S 28-May-2002	BR-13S 09-Oct-2002	BR-13S 03-May-2003	BR-13S 03-Nov-2003	BR-13S 04-May-2004	BR-13S 04-Oct-2004
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	222	309	321	243	324	319	319	226
Ammonia Nitrogen	mg/l	--	--	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	--
Chloride	mg/l	--	250	8	56	71	68	75	78	85	75
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	506	781	896	741	870	887	905	752
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	205	323	--	--	--	--	--	--
Nitrate	mg/l	-- [14]	--	0.95	2.76	3.38	3.32	1.78	3.29	3.7	--
Nitrogen	mg/l	--	--	--	0.55	0.15	--	0.23	0.08	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	0.11	--
pH (Field)	-	--	--	7.8	7.81	7.9	7.89	7.8	7.74	7.44	--
Phosphate	mg/l	--	--	--	--	<0.03	--	0.56	0.007	0.14	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	0.21	--	<0.005	0.04	0.52	--
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	0.34	--	--	--
Sulphate	mg/l	--	500 [6]	25	25	29	27	29	28	28	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	284	508	582	--	565	577	588	489
Total Organic Carbon	mg/l	--	--	--	--	1.9	--	2.2	1.1	<0.5	1.5
Metals											
Aluminum, dissolved	mg/l	--	--	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	--	--
Barium, dissolved	mg/l	1	--	<0.002	0.08	0.08	0.08	0.12	0.1	--	--
Beryllium, dissolved	mg/l	--	--	--	<0.002	<0.002	<0.001	<0.001	<0.001	--	--
Boron, dissolved	mg/l	5	--	0.08	<0.05	<0.05	<0.05	<0.05	0.05	0.05	0.01
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--
Calcium, dissolved	mg/l	--	--	54	93	107	74	107	116	104	--
Chromium, dissolved	mg/l	0.05	--	<0.001	0.004	0.001	<0.001	0.009	0.001	0.002	--
Cobalt, dissolved	mg/l	--	--	0.0069	<0.0002	0.0002	<0.0002	0.002	0.0013	--	--
Copper, dissolved	mg/l	--	1	0.001	<0.001	0.01	<0.001	<0.0001	0.007	<0.001	--
Iron, dissolved	mg/l	--	0.3	0.42	<0.01	0.01	--	0.52	0.03	<0.01	--
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	--
Magnesium, dissolved	mg/l	--	--	17	22	28	27	27	26	26	--
Manganese, dissolved	mg/l	--	0.05	0.17	<0.01	<0.01	<0.005	0.025	0.008	<0.01	--
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	--
Molybdenum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	--	--
Nickel, dissolved	mg/l	--	--	<0.01	--	<0.01	--	<0.005	<0.005	<0.005	--
Potassium, dissolved	mg/l	--	--	3	2	3	3	3	4	3	--
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	5.91	3.88	3.68	3.5	4.4	4.6	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--
Sodium, dissolved	mg/l	--	200 [7]	15	27	32	34	37	36	38	--
Strontium, dissolved	mg/l	--	--	0.261	0.851	0.82	1.02	0.893	0.836	--	--
Thallium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--
Titanium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	--	<0.01	<0.01	--	--
Vanadium, dissolved	mg/l	--	--	<0.001	0.001	<0.001	--	--	<0.001	--	--
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	--	0.003	0.01	--	--
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-13S 14-Jun-2005	BR-13S 29-Oct-2005	BR-13S 08-Apr-2006	BR-13S 24-Nov-2006	BR-13S 25-Apr-2007	BR-13S 06-Dec-2007	BR-13S 04-May-2008	BR-13S 29-Nov-2008
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	323	319	327	319	270	322	318	322
Ammonia Nitrogen	mg/l	--	--	<0.02	0.25	0.03	<0.02	0.11	<0.02	<0.02	<0.02
Chloride	mg/l	--	250	81	83	79	75	38	76	77	64
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	830	715	680	295	590	360	380	400
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	0.7	0.6	0.9	1.7	1.1	1.4
Hardness, Calcium Carbonate	mg/l	--	--	430.7	--	379.1	383.2	305	385	383	353
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.58	7.4	7.3	7	7.1	7.2	7.3	7.4
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.27	0.05	0.11	0.05	0.12	0.29	0.09	0.07
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	0.07	0.02	0.09	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	29	31	28	27	25	28	28	28
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1
Temperature (Field)	deg c	--	15	-- [24]	9	6	6	5	6	8	6
Total Dissolved Solids	mg/l	--	500	540	465	569	579	387	578	576	560
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.09	--	0.09	0.07	0.07	0.08	0.09	0.09
Beryllium, dissolved	mg/l	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.08	0.06	0.03	0.06	0.07	0.06	0.06	0.09
Cadmium, dissolved	mg/l	0.005	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	128	--	109	109	76	113	109	100
Chromium, dissolved	mg/l	0.05	--	<0.005	--	0.002	0.002	0.002	0.005	0.004	0.003
Cobalt, dissolved	mg/l	--	--	0.0003	--	<0.0002	<0.0002	0.0033	0.0002	<0.0002	<0.0002
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.03	<0.03	<0.03	<0.03	0.04	<0.03	<0.03	<0.03
Lead, dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	27	--	26	27	28	25	27	25
Manganese, dissolved	mg/l	--	0.05	--	--	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	3	--	3	3	3	4	3	3
Selenium, dissolved	mg/l	0.05	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	35	--	33	35	16	34	36	34
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.004	--	<0.001	<0.001	0.002	0.004	0.003	0.006
Zinc, dissolved	mg/l	--	5	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-13S 29-Apr-2009 A-29	BR-13S 29-Nov-2009 A-30	BR-13S 20-May-2010 A-26	BR-13S 29-Nov-2010 A - 19	BR-13S 10-May-2011 S-13	BR-13S 30-Nov-2011 S - 25	BR-13S 20-May-2012 S-20	BR-13S 14-Nov-2012 A-27
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	320	323	310	327	320	325	327	340
Ammonia Nitrogen	mg/l	--	--	<0.02	<0.02	0.06	<0.02	0.02	0.02	<0.02	<0.02
Chloride	mg/l	--	250	64	63	61	67	66	62	64	65
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	849	868	828	850	807	840	844	876
Conductivity (Field)	uS/cm	--	--	420	435	440	395	420	405	410	390
Dissolved Organic Carbon	mg/l	--	5	1.5	1.8	1.5	1.2	1.5	1.4	1.3	1.5
Hardness, Calcium Carbonate	mg/l	--	--	362	329	353	398	376	382	282	397
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.6	7.4	7.5	7.5	7.4	7.4	7.3	7.4
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.08	0.26	0.06	0.06	0.06	0.04	0.13	0.10
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	28	27	29	25	25	28	27	26
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	<0.1	0.1	0.1	<0.1	<0.1	<0.1	0.1	<0.1
Temperature (Field)	deg c	--	15	8	7	10	8	9.0	8	10	9
Total Dissolved Solids	mg/l	--	500	552	564	538	553	525	546	549	569
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.04	0.04	0.05	0.05	0.04	0.04	0.04	0.04
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	102	94	100	115	106	110	80	113
Chromium, dissolved	mg/l	0.05	--	0.002	0.002	<0.001	0.002	0.002	0.004	0.004	0.002
Cobalt, dissolved	mg/l	--	--	0.0002	<0.0002	0.0003	<0.0002	<0.0002	0.0002	<0.0002	<0.0002
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	26	23	25	27	27	26	20	28
Manganese, dissolved	mg/l	--	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	3	2	3	3	3	3	2	3
Selenium, dissolved	mg/l	0.05	--	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	35	29	35	36	34	35	25	38
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.003	0.003	0.001	0.001	0.002	0.001	0.004	0.003
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-13S 13-Jun-2013 BR-13S	BR-13S 25-Oct-2013 BR-13S	BR-13S 31-May-2014 S-28	BR-13S 19-Nov-2014 A-26	BR-13S 07-May-2015 S-28	BR-13S 30-Nov-2015 S-29	BR-13S 20-Apr-2016 S-26	BR-13S 01-Nov-2016 S-27
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	317	322	280	330	320	250	310	310
Ammonia Nitrogen	mg/l	--	--	<0.02	<0.02	0.080	<0.050	<0.050	<0.050	<0.050	0.14
Chloride	mg/l	--	250	73	65	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	61	71	73	69	71	42
Conductivity	uS/cm	--	--	853	840	780	880	880	780	870	760
Conductivity (Field)	uS/cm	--	--	856	780	395	380	490	485	660	585
Dissolved Organic Carbon	mg/l	--	5	1	1.1	1.2	0.97	0.84	0.95	1.1	0.81
Hardness, Calcium Carbonate	mg/l	--	--	379	365	380	380	380	370	370	360
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	<0.1	<0.1	--	--	--	--	--	--
pH (Field)	-	--	--	7.8	7.4	7.3	7.5	7.6	7.5	7.5	7.6
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	<0.010	<0.010	<0.010	0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	<0.01	<0.01	<0.002	0.034	0.093	0.038	0.040	0.13
Phosphorus, dissolved	mg/l	--	--	--	--	<0.1	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	0.01	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	26	26	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	27	27	28	28	27	33
Tannin & Lignin	mg/l	--	--	<0.1	<0.1	<0.2	0.5	--	--	--	--
Temperature (Field)	deg c	--	15	10.1	7.6	9	8	9	6	8	9.1
Total Dissolved Solids	mg/l	--	500	554	546	388	488	488	478	488	528
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050
Barium, dissolved	mg/l	1	--	0.08	0.08	0.082	0.085	0.081	0.077	0.084	0.061
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.04	0.03	0.039	0.051	0.037	0.037	0.042	0.21
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	109	105	110	100	110	100	110	94
Chromium, dissolved	mg/l	0.05	--	0.003	0.002	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0007	0.0002	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	<0.001	<0.001	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.03	<0.03	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	26	25	25	28	27	28	27	31
Manganese, dissolved	mg/l	--	0.05	<0.01	<0.01	<0.0020	<0.0020	0.0057	0.005	<0.0020	0.0026
Mercury	mg/l	0.001	--	--	--	--	--	--	<0.00010	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.05	<0.005	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	0.00056
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	3	3	2.8	3	2.8	2.8	2.8	5.5
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.0020	<0.0020	<0.0020	<0.002	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	36	35	38	38	38	37	36	28
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.002	<0.001	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.1	<0.01	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-13S 13-Jun-2017 A-30	BR-13S 30-Nov-2017 BR-13S	BR-13S 23-May-2018 BR-13 MIDDLE	BR-13S 30-Oct-2018 [25] BR-13M	BR-13S 04-Jun-2019 BR-13M	BR-13S 15-Nov-2019 BR-13M	BR-13S 11-May-2020 13S	BR-13S 29-Oct-2020 BR-13M
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	310	330	320	320	320	330	320	330
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050	<0.050	0.062	<0.050	8.5	0.47
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	45	60	49	48	65	50	50	55
Conductivity	uS/cm	--	--	810	840	800	780	820	820	820	840
Conductivity (Field)	uS/cm	--	--	685	610	700	684	669	660	645	670
Dissolved Organic Carbon	mg/l	--	5	1.2	0.94	0.80	0.87	1.1	1.2	1.2	1.4
Hardness, Calcium Carbonate	mg/l	--	--	320	330	330	340	350	350	350	360
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.6	7.6	7.5	7.6	7.5	7.4	7.3	7.39
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.042	0.047	0.035	0.011	0.025	0.012	0.023	0.017
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	44	26	25	24	26	23	23	23
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8.2	6.4	9.0	9.9	10	9.2	10	10.1
Total Dissolved Solids	mg/l	--	500	324	340	435	475	515	440	370	420
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	0.0068	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0049
Barium, dissolved	mg/l	1	--	0.17	0.074	0.071	0.07	0.076	0.075	0.074	0.077
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040
Boron, dissolved	mg/l	5	--	0.2	0.039	0.03	0.039	0.039	0.05	0.037	0.042
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090
Calcium, dissolved	mg/l	--	--	81	94	92	95	99	99	98	100
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.00088	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	28	23	25	24	26	25	25	25
Manganese, dissolved	mg/l	--	0.05	0.026	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0026	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	0.0044	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0010
Potassium, dissolved	mg/l	--	--	5.7	2.4	2.4	2.5	2.6	2.6	2.7	2.5
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	40	33	34	33	35	35	33	34
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-13S 01-May-2021 BR-13S	BR-13S 24-Nov-2021 BR-13S	BR-13S 26-Apr-2022 BR-13S	BR-13S 19-Dec-2022 BR-13S	BR-13S 29-May-2023 BR-13S	BR-13S 25-Nov-2023 BR-13S
General Chemistry									
Alkalinity (Total as CaCO3)	mg/l	--	--	320	320	320	330	320	330
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	0.15	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	58	57	60	60	49	53
Conductivity	uS/cm	--	--	820	790	830	840	830	850
Conductivity (Field)	uS/cm	--	--	678	688	709	738	718	704
Dissolved Organic Carbon	mg/l	--	5	1.0	1.1	1.2	1.2	1.2	1.0
Hardness, Calcium Carbonate	mg/l	--	--	360	340	380	350	370	380
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.40	7.58	7.61	7.55	7.61	7.66
Phosphate	mg/l	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.022	0.020	0.10	0.043	0.015	0.021
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	25	23	23	24	23	22
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	11.4	9.1	8.6	7.8	8.4	8.2
Total Dissolved Solids	mg/l	--	500	440	380	395	475	495	460
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--
Metals									
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.076	0.077	0.076	0.076	0.079	0.082
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.036	0.044	0.042	0.044	0.041	0.041
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	100	96	110	100	100	110
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	26	24	27	25	26	26
Manganese, dissolved	mg/l	--	0.05	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	--	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	<0.00010	--
Molybdenum, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	2.8	2.6	2.6	2.6	2.8	2.8
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	35	32	34	33	34	35
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols									
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-1D 01-Jul-2000	BR-1D 01-Oct-2000	BR-1D 14-Oct-2000	BR-1D 06-Sep-2001	BR-1D 06-Nov-2001	BR-1D 28-May-2002	BR-1D 02-Oct-2002	BR-1D 03-May-2003
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	1340	--	1300	950	903	787	798	1090
Ammonia Nitrogen	mg/l	--	--	43.2	--	40.1	31	40.8	23	23	28
Chloride	mg/l	--	250	247	--	233	162	138	123	248	230
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	2990	--	2190	2080	1940	1830	1810	2380
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	646	760	687.7	699	--
Nitrate	mg/l	-- [14]	--	<0.1	--	<0.1	<0.1	<0.1	7.48	0.1	<0.1
Nitrogen	mg/l	--	--	43.2	--	40.1	--	--	29.4	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.67	--	7.08	7.11	7.19	--	7.22	7.02
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	<0.03	--	0.42
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.86	--	--	--	--	0.5	--	<0.005
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.2
Sulphate	mg/l	--	500 [6]	35	--	1	1	6	9	7	5
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	1960	--	1868	1280	1100	1190	1180	556
Total Organic Carbon	mg/l	--	--	103	--	184	--	--	28.6	--	37.4
Metals											
Aluminum, dissolved	mg/l	--	--	1.33	--	0.19	<0.05	0.09	<0.05	0.05	0.02
Barium, dissolved	mg/l	1	--	0.88	--	**1.02**	0.95	0.96	0.46	0.88	0.45
Beryllium, dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.84	--	0.89	0.69	0.55	0.63	0.63	--
Cadmium, dissolved	mg/l	0.005	--	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	214	--	270	143	169	157	161	98
Chromium, dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.023	0.024	0.005	0.012	<0.005
Cobalt, dissolved	mg/l	--	--	<0.01	--	0.0058	0.0043	0.0089	0.0033	0.0051	<0.005
Copper, dissolved	mg/l	--	1	<0.01	--	0.003	0.001	<0.001	0.006	0.002	<0.005
Iron, dissolved	mg/l	--	0.3	42.2	--	50.4	28.9	42.9	7.74	24.6	9.31
Lead, dissolved	mg/l	0.01	--	**0.026**	--	<0.001	<0.001	<0.001	<0.001	--	<0.001
Magnesium, dissolved	mg/l	--	--	84	--	108	70	82	72	72	95
Manganese, dissolved	mg/l	--	0.05	0.85	--	0.29	0.09	0.08	0.08	0.076	0.053
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	<0.001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	--	0.23	0.02	<0.01	<0.01	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.06	--	0.03	0.02	<0.01	0.01	<0.005	0.013
Potassium, dissolved	mg/l	--	--	40	--	40	35	34	29	35	39
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	12.9	--	9.1	8.05	8.33	5.2	5.6	6.2
Silver, dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	329	--	176	133	111	86	102	133
Strontium, dissolved	mg/l	--	--	3.55	--	8.16	7.59	4.48	5.74	7.12	8.75
Sulfur	mg/l	--	--	15	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium, dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	<0.01	--	<0.001	0.017	0.027	0.005	0.008	--
Zinc, dissolved	mg/l	--	5	0.08	--	<0.01	0.01	<0.01	0.02	<0.005	<0.005
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	0.012	--	0.005	<0.001	0.008	<0.001	0.005	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-1D 03-Nov-2003	BR-1D 04-May-2004	BR-1D 04-Oct-2004	BR-1D 14-Jun-2005	BR-1D 24-Nov-2005	BR-1D 08-Apr-2006	BR-1D 24-Nov-2006	BR-1D 25-Apr-2007
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	1340	1220	1610	1500	1620	1650	1530	1470
Ammonia Nitrogen	mg/l	--	--	52	67	67.1	73.7	79.5	82	82.2	83.1
Chloride	mg/l	--	250	186	208	222	227	235	225	229	213
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	2830	2940	3360	3500	2950	1635	1460	1690
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	64	67.8	70.9
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	875	--	924.6	874.6	978
Nitrate	mg/l	-- [14]	--	0.1	<0.1	0.19	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	70.8	86	--	--	--	--	--
pH (Field)	-	--	--	6.99	6.74	6.66	6.95	7.2	6.5	6.9	6.4
Phosphate	mg/l	--	--	0.2	0.39	0.3	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	<0.01	0.17	0.35	0.32	1.83	0.34	0.28	0.36
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	0.15	0.19	0.13
Silica	mg/l	--	--	0.09	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	6	6	<1	9	6	5	4	6
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	3.7
Temperature (Field)	deg c	--	15	--	--	--	-- [24]	6	7	6	7
Total Dissolved Solids	mg/l	--	500	1840	1910	2180	2275	1918	2180	2180	2130
Total Organic Carbon	mg/l	--	--	47.4	49.6	59.9	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	0.01	--	--	0.02	0.01	0.02	0.02	0.03
Barium, dissolved	mg/l	1	--	0.68	--	--	0.64	--	0.99	0.95	0.94
Beryllium, dissolved	mg/l	--	--	<0.001	--	--	<0.001	--	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	1.45	1.65	2.08	1.98	3.08	2.67	2.71	2.32
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	249	221	230	227	--	237	217	240
Chromium, dissolved	mg/l	0.05	--	0.044	0.01	0.012	<0.005	--	<0.005	<0.005	0.007
Cobalt, dissolved	mg/l	--	--	0.0047	--	--	0.0072	--	0.0073	0.0068	0.0102
Copper, dissolved	mg/l	--	1	<0.001	<0.001	0.001	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	13.9	11	17.2	13.4	5.15	15.7	17.3	21.4
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	97	79	80	75	--	81	81	92
Manganese, dissolved	mg/l	--	0.05	0.075	0.09	0.11	--	--	0.09	0.08	0.1
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	--	--	<0.005	--	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.032	0.048	0.046	0.051	0.045	0.043	0.036	0.042
Potassium, dissolved	mg/l	--	--	61	60	59	57	--	60	60	64
Selenium, dissolved	mg/l	0.05	--	--	--	--	0.003	--	0.002	0.004	0.003
Silicon, dissolved	mg/l	--	--	8.3	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	188	197	202	214	--	210	206	236
Strontium, dissolved	mg/l	--	--	7.73	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.001	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	--	--	--	0.033	--	0.015	0.018	0.02
Zinc, dissolved	mg/l	--	5	0.016	--	--	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	<0.001	<0.001	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-1D 04-Dec-2007	BR-1D 04-May-2008	BR-1D 28-Nov-2008	BR-1D 28-Apr-2009 A-18	BR-1D 28-Nov-2009 A-12	BR-1D 20-May-2010 [26] A-28	BR-1D 29-Nov-2010 [9] A - 1	BR-1D 10-May-2011 [27] S-5
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	1580	1620	1450	1395	1350	1240	1200	1250
Ammonia Nitrogen	mg/l	--	--	94.7	96.1	83	66.9	65.0	53.8	66.9	50.7
Chloride	mg/l	--	250	222	236	218	204	201	198	214	192
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	3430	1630	1515	3220	3210	3070	2980	2960
Conductivity (Field)	uS/cm	--	--	--	--	--	2280	2145	3375	3295	3195
Dissolved Organic Carbon	mg/l	--	5	61.5	66.9	49.4	48.8	48.9	43.6	40.3	43.4
Hardness, Calcium Carbonate	mg/l	--	--	883	918	854	862	839	979	755	887
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.8	6.7	6.8	7.2	7.4	7.4	7.2	7.5
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.33	0.17	0.14	0.13	0.11	0.13	0.08	0.13
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	4	3	84	143	178	269	82	316
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	6	6.2	5.8	6.0	5.6	9.0	3.3	1.6
Temperature (Field)	deg c	--	15	8	10	8	12.5	8	12	10	11.0
Total Dissolved Solids	mg/l	--	500	2230	2240	2150	2090	2090	2000	1940	2070
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	0.02	0.02	0.02	<0.01	0.02	0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.96	0.93	0.89	0.79	0.80	0.83	0.55	0.68
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005
Boron, dissolved	mg/l	5	--	3.36	3.3	2.99	2.2	2.4	2.2	2.6	2.2
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	225	221	202	200	196	227	159	197
Chromium, dissolved	mg/l	0.05	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	<0.005
Cobalt, dissolved	mg/l	--	--	0.0082	0.008	0.0073	0.0054	0.0075	0.0057	0.0063	0.0056
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	8.22	8.71	10.9	15.5	9.83	15.0	5.30	9.07
Lead, dissolved	mg/l	0.01	--	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	78	89	85	88	85	100	87	96
Manganese, dissolved	mg/l	--	0.05	0.07	0.06	0.09	0.11	0.11	0.13	0.06	0.12
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.044	0.045	0.039	0.027	0.036	0.029	0.031	0.030
Potassium, dissolved	mg/l	--	--	69	67	60	51	48	52	52	46
Selenium, dissolved	mg/l	0.05	--	0.006	0.003	<0.001	0.003	<0.001	<0.001	<0.01	<0.01
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	215	242	217	228	238	265	230	256
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.032	0.036	0.036	0.028	0.031	0.009	0.011	<0.005
Zinc, dissolved	mg/l	--	5	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-1D 29-Nov-2011 A-6	BR-1D 20-May-2012 [9] S-14	BR-1D 14-Nov-2012 [11] A-23	BR-1D 31-May-2014 S-24	BR-1D 18-Nov-2014 [28] A-10	BR-1D 05-May-2015 S-3	BR-1D 16-Nov-2015 [29] S-25
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	--	--	1180	1140	1160	960	1000	1000	1000
Ammonia Nitrogen	mg/l	--	--	58.2	45.4	48.6	21	21	18	21
Chloride	mg/l	--	250	209	192	186	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	--	160	160	150	150
Conductivity	uS/cm	--	--	3020	3000	3080	2400	2600	2500	2500
Conductivity (Field)	uS/cm	--	--	3205	3205	3215	3225	3110	3200	2940
Dissolved Organic Carbon	mg/l	--	5	1.4	37.3	40.0	21	21	19	19
Hardness, Calcium Carbonate	mg/l	--	--	729	677	923	910	920	890	890
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.4	7.6	7.4	7.3	7.1	7.2	6.8
Phosphate	mg/l	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.10	0.05	0.05	0.15	0.043	0.024	0.033
Phosphorus, dissolved	mg/l	--	--	--	--	--	<0.1	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	0.01	<0.01	<0.01	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	118	283	311	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	120	170	170	180
Tannin & Lignin	mg/l	--	--	5.0	3.1	5.7	2.3	2.6	--	--
Temperature (Field)	deg c	--	15	11	13	12	14	13	12	7
Total Dissolved Solids	mg/l	--	500	1960	1950	2160	1420	1490	1480	1520
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--
Metals										
Aluminum, dissolved	mg/l	--	--	0.01	<0.01	0.01	<0.0050	<0.005	<0.0050	<0.005
Barium, dissolved	mg/l	1	--	0.63	0.77	0.83	0.99	0.89	0.88	0.9
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.00050	<0.0005	<0.00050	<0.0005
Boron, dissolved	mg/l	5	--	2.2	1.8	1.8	2.1	1.8	1.8	2
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	<0.0001
Calcium, dissolved	mg/l	--	--	150	149	203	200	200	200	200
Chromium, dissolved	mg/l	0.05	--	<0.005	<0.005	<0.005	<0.0050	<0.005	<0.0050	<0.005
Cobalt, dissolved	mg/l	--	--	0.0070	0.0061	0.0055	0.0067	0.0059	0.0082	0.0098
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	7.01	9.68	12.6	<0.1	<0.1	1.3	3.9
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.00050	<0.0005	<0.00050	<0.0005
Magnesium, dissolved	mg/l	--	--	86	74	101	97	100	93	94
Manganese, dissolved	mg/l	--	0.05	0.07	0.12	0.13	0.28	0.36	0.44	0.41
Mercury	mg/l	0.001	--	--	--	--	--	--	--	<0.00010
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	0.0041	0.0036	0.0034	0.0027
Nickel, dissolved	mg/l	--	--	0.034	0.032	0.028	0.088	0.077	0.083	0.085
Potassium, dissolved	mg/l	--	--	49	39	47	38	40	36	42
Selenium, dissolved	mg/l	0.05	--	<0.005	<0.01	<0.01	<0.0020	<0.002	<0.0020	<0.002
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	232	230	341	180	210	200	210
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.018	<0.005	<0.005	0.00072	0.0011	0.00066	0.0010
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	0.0075	<0.005	0.0052	0.006
Phenols										
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-1D 19-Apr-2016 [30] S-3	BR-1D 31-Oct-2016 S-1	BR-1D 29-May-2017 A-23	BR-1D 23-Nov-2017 BR-1D	BR-1D 17-May-2018 [31] BR-1D	BR-1D 29-Oct-2018 [32] BR-1D	BR-1D 04-Jun-2019 BR-1D	BR-1D 15-Nov-2019 BR-1D
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	1000	1000	1100	1100	1600	1100	1100	1100
Ammonia Nitrogen	mg/l	--	--	20	27	18	18	95	19	17	18
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	150	170	150	160	190	160	150	150
Conductivity	uS/cm	--	--	2600	2600	2500	2500	3200	2300	2300	2500
Conductivity (Field)	uS/cm	--	--	2845	2805	2785	2525	2710	2680	2550	2490
Dissolved Organic Carbon	mg/l	--	5	20	29	21	22	48	23	24	26
Hardness, Calcium Carbonate	mg/l	--	--	940	850	870	820	1000	840	890	860
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.7	6.65	6.8	6.7	6.7	6.8	6.81	6.8
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.026	0.022	0.034	0.047	0.028	0.025	0.063	0.041
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	180	110	110	110	<1.0	88	76	62
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8	7	9.2	8.2	10.4	11	10.9	10.1
Total Dissolved Solids	mg/l	--	500	1540	1600	1440	1350	1550	1440	1490	1350
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.005	<0.0050	0.0055	<0.0050	0.0064	0.0087	0.0064	0.0087
Barium, dissolved	mg/l	1	--	0.94	0.88	**1.4**	**1.4**	0.77	**1.7**	**2.3**	**2.3**
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	1.8	2.3	1.8	1.8	3.1	1.8	1.7	1.6
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	200	180	190	170	240	180	190	180
Chromium, dissolved	mg/l	0.05	--	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.011	0.0096	0.014	0.013	0.0058	0.011	0.0078	0.0058
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	4.9	5.2	24	14	9.5	20	34	34
Lead, dissolved	mg/l	0.01	--	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	110	95	96	94	98	93	99	98
Manganese, dissolved	mg/l	--	0.05	0.41	0.24	0.26	0.25	0.068	0.18	0.15	0.13
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0028	0.0022	0.0028	0.0025	0.00053	0.0026	0.0022	0.0017
Nickel, dissolved	mg/l	--	--	0.097	0.074	0.11	0.098	0.03	0.095	0.08	0.07
Potassium, dissolved	mg/l	--	--	40	48	34	34	56	35	33	33
Selenium, dissolved	mg/l	0.05	--	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	240	210	200	190	190	180	180	170
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.0006	<0.00050	0.00080	0.00073	0.0020	0.0014	0.0015	0.0024
Zinc, dissolved	mg/l	--	5	<0.005	0.0070	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-1D 07-May-2020 1D	BR-1D 27-Oct-2020 BR-1D	BR-1D 01-May-2021 BR-1D	BR-1D 24-Nov-2021 BR-1D	BR-1D 26-Apr-2022 BR-1D	BR-1D 18-Dec-2022 BR-1D	BR-1D 26-May-2023 BR-1D	BR-1D 25-Nov-2023 BR-1D
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	1100	1100	1100	1100	1100	1100	1100	1100
Ammonia Nitrogen	mg/l	--	--	19	19	19	19	20	20	22	20
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	150	140	160	160	160	170	160	150
Conductivity	uS/cm	--	--	2500	2500	2400	2400	2500	2400	2500	2500
Conductivity (Field)	uS/cm	--	--	2008	2080	2091	2101	2049	2020	2014	1996
Dissolved Organic Carbon	mg/l	--	5	27	28	27	27	29	28	30	28
Hardness, Calcium Carbonate	mg/l	--	--	880	880	860	860	960	900	940	930
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.69	6.72	6.81	6.74	6.71	6.70	6.83	6.79
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.049	0.053	0.085	0.094	0.09	0.13	0.034	0.081
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	67	64	65	46	2.0	7.4	19	22
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8.9	11.9	11.9	11	8.4	7.9	8.2	8.9
Total Dissolved Solids	mg/l	--	500	1350	1430	1270	1330	1330	1310	1250	1360
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	0.0099	0.0087	0.011	0.01	0.012	0.014	0.011	0.0084
Barium, dissolved	mg/l	1	--	**2.2**	**2.2**	**2**	**2.4**	**3.2**	**2.6**	**3.3**	**2.8**
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	2.1	1.8	1.7	1.8	1.8	1.7	1.9	1.9
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	190	190	180	190	210	190	200	200
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0050	0.0045	0.0042	0.0031	0.0027	0.0031	0.0026	0.0023
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	32	28	21	22	29	19	28	20
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	100	99	96	93	110	100	110	110
Manganese, dissolved	mg/l	--	0.05	0.12	0.13	0.12	0.12	0.096	0.11	0.099	0.099
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0020	0.0016	0.0015	0.0013	0.0010	0.0011	0.00071	0.00086
Nickel, dissolved	mg/l	--	--	0.059	0.051	0.045	0.031	0.027	0.03	0.02	0.025
Potassium, dissolved	mg/l	--	--	35	34	36	35	37	37	36	38
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	190	180	180	170	180	180	170	180
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.0030	0.0023	0.0023	0.0021	0.0033	0.0025	0.0032	0.0022
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-1S 01-Jul-2000	BR-1S 01-Oct-2000	BR-1S 14-Oct-2000	BR-1S 06-Sep-2001	BR-1S 06-Nov-2001	BR-1S 28-May-2002	BR-1S 02-Oct-2002	BR-1S 03-May-2003	BR-1S 03-Nov-2003
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	1350	--	1250	814	774	767	918	948	1140
Ammonia Nitrogen	mg/l	--	--	51.1	--	49.2	23.6	21.5	19.3	17	21.6	33
Chloride	mg/l	--	250	237	--	231	137	127	114	169	195	182
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	2970	--	2140	1770	1700	1720	2050	2100	2460
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	645	691	636.3	840	--	--
Nitrate	mg/l	-- [14]	--	<0.1	--	<0.1	<0.1	0.1	<0.1	0.18	<0.1	0.34
Nitrogen	mg/l	--	--	51.1	--	49.2	--	--	20.4	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.58	--	6.98	6.94	7.19	7.32	7.22	7.25	7.24
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	<0.03	--	0.79	0.2
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.33	--	--	--	--	0.07	--	<0.005	<0.01
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.42	0.09
Sulphate	mg/l	--	500 [6]	3	--	2	1	5	1	5	6	3
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	1896	--	1656	1030	924	1118	1330	1370	1600
Total Organic Carbon	mg/l	--	--	138	--	149	--	--	21.9	--	23	31.1
Metals												
Aluminum, dissolved	mg/l	--	--	0.05	--	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.65	--	0.58	0.32	0.23	0.3	0.4	0.31	0.43
Beryllium, dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	1	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.9	--	0.91	0.7	0.65	0.56	0.87	0.69	1.09
Cadmium, dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	270	--	245	146	161	143	203	217	227
Chromium, dissolved	mg/l	0.05	--	0.03	--	<0.01	0.017	0.018	0.002	0.002	<0.005	0.031
Cobalt, dissolved	mg/l	--	--	<0.01	--	0.0052	0.0015	0.0024	0.0018	0.0024	<0.005	0.0028
Copper, dissolved	mg/l	--	1	<0.01	--	0.002	<0.001	0.001	0.001	0.002	<0.005	<0.001
Iron, dissolved	mg/l	--	0.3	20.9	--	15	4.95	0.94	5.59	1.59	5.27	5.26
Lead, dissolved	mg/l	0.01	--	<0.002	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	115	--	91	68	70	68	81	88	86
Manganese, dissolved	mg/l	--	0.05	0.2	--	0.11	0.07	0.07	0.1	0.055	0.131	0.06
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	--	<0.01	0.02	<0.01	<0.01	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.03	--	0.03	0.02	<0.01	<0.01	0.012	0.008	0.024
Potassium, dissolved	mg/l	--	--	52	--	42	30	29	22	33	29	48
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	8.41	--	8.76	6.3	5.62	74	5.3	5.6	7
Silver, dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	191	--	165	82	78	74	114	117	161
Strontium, dissolved	mg/l	--	--	1.01	--	5.67	8.56	4.49	5.41	9.05	7.33	5.7
Sulfur	mg/l	--	--	4	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium, dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	<0.1	--	0.002	0.005	0.005	<0.001	<0.005	--	--
Zinc, dissolved	mg/l	--	5	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	0.011
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	0.006	--	0.011	<0.001	<0.001	<0.001	<0.001	<0.001	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-1S 04-May-2004	BR-1S 04-Oct-2004	BR-1S 14-Jun-2005	BR-1S 24-Nov-2005	BR-1S 08-Apr-2006	BR-1S 24-Nov-2006	BR-1S 25-Apr-2007	BR-1S 04-Dec-2007	BR-1S 04-May-2008
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	1220	1650	1470	1500	1530	1500	1400	1570	1570
Ammonia Nitrogen	mg/l	--	--	52	75	58.9	64.9	67	84.7	71.2	85.6	80.6
Chloride	mg/l	--	250	211	244	217	267	216	246	194	246	213
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	2740	3420	3900	3120	1770	1395	1665	3470	1510
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	51.4	57.9	46.7	59.8	47.9
Hardness, Calcium Carbonate	mg/l	--	--	--	--	923	--	921.2	850	833	953	960
Nitrate	mg/l	-- [14]	--	<0.1	0.2	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	56.9	84	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.66	6.56	6.88	7	6.3	7	6.4	6.9	7
Phosphate	mg/l	--	--	0.13	0.41	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.06	0.18	0.08	0.16	0.15	0.09	0.26	0.04	0.07
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	0.16	0.06	0.15	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	3	<1	5	3	10	5	4	3	4
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	2.2	4.7	4.5
Temperature (Field)	deg c	--	15	--	--	-- [24]	4	6	6	6	8	10
Total Dissolved Solids	mg/l	--	500	1780	2220	2535	2028	2060	2250	2040	2260	2160
Total Organic Carbon	mg/l	--	--	41.3	67.1	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	--	--	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Barium, dissolved	mg/l	1	--	--	--	0.62	--	0.68	0.66	0.53	0.69	0.63
Beryllium, dissolved	mg/l	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	1.27	2.66	1.58	3.28	2.21	3.22	1.87	3.81	3.1
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	223	248	238	--	234	217	210	253	241
Chromium, dissolved	mg/l	0.05	--	0.003	0.009	<0.005	--	0.008	<0.005	0.009	<0.005	<0.005
Cobalt, dissolved	mg/l	--	--	--	--	0.0058	--	0.0068	0.0083	0.008	0.0092	0.0074
Copper, dissolved	mg/l	--	1	<0.001	0.001	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	8.14	10.2	9.05	9.38	10.8	10.2	7.58	6.6	7.65
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	78	81	80	--	82	75	75	78	87
Manganese, dissolved	mg/l	--	0.05	0.18	0.11	--	--	0.12	0.09	0.09	0.09	0.11
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	--	--	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.041	0.052	0.047	0.05	0.051	0.054	0.053	0.065	0.051
Potassium, dissolved	mg/l	--	--	50	59	45	--	53	59	51	65	58
Selenium, dissolved	mg/l	0.05	--	--	--	0.003	--	0.004	0.004	0.004	0.002	0.004
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	188	214	203	--	192	200	174	205	208
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	--	--	0.032	--	0.008	0.018	0.012	0.037	0.025
Zinc, dissolved	mg/l	--	5	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.001	0.001	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-1S 28-Nov-2008	BR-1S 29-Apr-2009 A-19	BR-1S 28-Nov-2009 A-13	BR-1S 20-May-2010 [26] A-29	BR-1S 29-Nov-2010 [26] A - 2	BR-1S 10-May-2011 [33] S-4	BR-1S 29-Nov-2011 [34] A-7
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	--	--	1580	1467	1646	1590	1611	1670	1620
Ammonia Nitrogen	mg/l	--	--	95.2	75.6	94.4	92.8	89.7	97.0	95.5
Chloride	mg/l	--	250	226	185	220	223	236	213	218
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	1390	3070	3440	3280	3240	3190	3390
Conductivity (Field)	uS/cm	--	--	--	2050	2160	2100	2115	1990	1985
Dissolved Organic Carbon	mg/l	--	5	56.2	54.6	105	53.3	50.9	54.5	40.6
Hardness, Calcium Carbonate	mg/l	--	--	939	884	883	1010	939	918	890
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.9	7.3	7.2	7.2	7.2	7.4	7.3
Phosphate	mg/l	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.02	0.03	0.02	0.02	0.01	0.03	0.01
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	2	<1	<1	3	<1	<1	<1
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	4.4	4.6	6.5	5.7	3.1	2.5	7.3
Temperature (Field)	deg c	--	15	8	13	7	14	9	13.0	11
Total Dissolved Solids	mg/l	--	500	2240	2000	2240	2130	2110	2070	2200
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--
Metals										
Aluminum, dissolved	mg/l	--	--	0.02	<0.01	0.03	<0.1	<0.1	<0.1	<0.01
Barium, dissolved	mg/l	1	--	0.7	0.53	0.65	0.6	0.7	0.5	0.70
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.01	<0.01	<0.005	<0.0005
Boron, dissolved	mg/l	5	--	3.95	2.5	2.8	2.7	2.6	2.8	3.4
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.0001
Calcium, dissolved	mg/l	--	--	239	217	225	256	239	226	226
Chromium, dissolved	mg/l	0.05	--	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005	<0.005
Cobalt, dissolved	mg/l	--	--	0.0088	0.0066	0.0083	0.006	0.006	0.006	0.0081
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	8.19	7.69	7.25	7.7	6.7	7.6	8.35
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.001
Magnesium, dissolved	mg/l	--	--	83	83	78	89	83	86	79
Manganese, dissolved	mg/l	--	0.05	0.08	0.06	0.09	<0.1	<0.1	<0.1	0.07
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.05	<0.05	<0.05	<0.005
Nickel, dissolved	mg/l	--	--	0.051	0.040	0.045	<0.05	<0.05	<0.05	0.043
Potassium, dissolved	mg/l	--	--	61	50	60	65	54	55	54
Selenium, dissolved	mg/l	0.05	--	<0.001	0.003	0.003	<0.01	<0.01	<0.01	<0.005
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	219	179	209	212	191	180	183
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.06	0.040	0.054	<0.01	0.02	<0.005	0.030
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	<0.01
Phenols										
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-1S 20-May-2012 [26] S-15	BR-1S 14-Nov-2012 [11] A-24	BR-1S 31-May-2014 [23] S-23	BR-1S 18-Nov-2014 [35] A-11	BR-1S 05-May-2015 S-4	BR-1S 16-Nov-2015 [36] S-26	BR-1S 19-Apr-2016 S-4	BR-1S 31-Oct-2016 S-2
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	1740	1714	1600	1700	1500	1600	1600	1700
Ammonia Nitrogen	mg/l	--	--	108	101	110	110	100	110	88	100
Chloride	mg/l	--	250	232	257	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	250	240	250	250	230	240
Conductivity	uS/cm	--	--	3550	3760	3600	3700	3500	3600	3500	3800
Conductivity (Field)	uS/cm	--	--	2010	2108	2200	2280	2200	2140	2110	2045
Dissolved Organic Carbon	mg/l	--	5	63.1	67.3	57	72	60	60	55	66
Hardness, Calcium Carbonate	mg/l	--	--	916	1240	1100	1000	1100	1100	1100	1000
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.4	7.3	7.2	7.2	7.0	6.9	6.8	6.87
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.02	0.03	0.034	0.039	0.035	0.037	0.034	0.04
Phosphorus, dissolved	mg/l	--	--	--	--	<0.1	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	1	<3	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	<1	<1	<1	<1.0	<1.0	<1.0
Tannin & Lignin	mg/l	--	--	5.6	7.9	6	7.2	--	--	--	--
Temperature (Field)	deg c	--	15	14	14	15	12	12	8	7	7
Total Dissolved Solids	mg/l	--	500	2310	2440	1700	1730	1790	1790	1720	1970
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.1	<0.01	0.0070	0.007	0.0055	<0.025	0.008	0.0065
Barium, dissolved	mg/l	1	--	0.8	0.79	0.78	0.79	0.79	0.88	0.69	0.87
Beryllium, dissolved	mg/l	--	--	<0.005	<0.0005	<0.00050	<0.0005	<0.00050	<0.0025	<0.0005	<0.00050
Boron, dissolved	mg/l	5	--	3.2	4.0	3.2	3.4	2.9	3.2	2.9	3.4
Cadmium, dissolved	mg/l	0.005	--	<0.001	<0.0001	<0.00010	<0.0001	<0.00010	<0.00050	<0.0001	<0.00010
Calcium, dissolved	mg/l	--	--	230	358	270	240	260	250	240	240
Chromium, dissolved	mg/l	0.05	--	<0.005	<0.005	<0.0050	<0.005	<0.0050	<0.025	<0.005	<0.0050
Cobalt, dissolved	mg/l	--	--	0.009	0.0084	0.0061	0.0078	0.0046	0.0053	0.0068	0.0065
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	10.7	6.45	9.3	8.5	8.8	8.2	8.1	8.4
Lead, dissolved	mg/l	0.01	--	<0.01	<0.001	<0.00050	<0.0005	<0.00050	<0.0025	<0.0005	<0.00050
Magnesium, dissolved	mg/l	--	--	83	85	110	100	100	110	110	100
Manganese, dissolved	mg/l	--	0.05	<0.1	0.06	0.06	0.06	0.061	0.06	0.051	0.059
Mercury	mg/l	0.001	--	--	--	--	--	--	<0.00010	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.05	<0.005	0.00056	0.0006	0.00055	<0.0025	0.0005	0.00063
Nickel, dissolved	mg/l	--	--	<0.05	0.047	0.039	0.039	0.037	0.037	0.038	0.034
Potassium, dissolved	mg/l	--	--	62	101	68	69	63	65	68	63
Selenium, dissolved	mg/l	0.05	--	<0.01	<0.01	<0.0020	<0.002	<0.0020	<0.01	<0.002	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.001	<0.0001	<0.00010	<0.0001	<0.00010	<0.00050	<0.0001	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	194	219	240	240	230	240	260	210
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.005	<0.005	0.0023	0.0029	0.0024	0.0026	0.0022	0.0022
Zinc, dissolved	mg/l	--	5	<0.1	<0.01	<0.0050	<0.005	<0.0050	<0.025	<0.005	<0.0050
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-1S 29-May-2017 A-24	BR-1S 23-Nov-2017 BR-1S	BR-1S 17-May-2018 [31] BR-1S	BR-1S 29-Oct-2018 [32] BR-1S	BR-1S 04-Jun-2019 [37] BR-1S	BR-1S 15-Nov-2019 BR-1S	BR-1S 07-May-2020 1S	BR-1S 27-Oct-2020 BR-1S
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	1700	1600	1100	1700	1600	1700	1600	1700
Ammonia Nitrogen	mg/l	--	--	100	100	17	120	100	120	96	110
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	220	210	160	250	220	240	210	230
Conductivity	uS/cm	--	--	3600	3400	2400	3500	3300	3800	3500	3800
Conductivity (Field)	uS/cm	--	--	2145	2090	2120	2210	2020	1990	3087	2966
Dissolved Organic Carbon	mg/l	--	5	56	54	24	71	49	67	49	68
Hardness, Calcium Carbonate	mg/l	--	--	1000	980	950	1000	960	1000	1000	1100
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.8	6.8	6.7	6.7	6.64	6.7	6.64	6.72
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.033	0.035	0.055	0.047	0.035	0.041	0.036	0.047
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	<1.0	<1.0	69	<1.0	<1.0	<1.0	<1.0	<1.0
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8.5	6.8	10	10.6	10.8	10.0	10.5	10.9
Total Dissolved Solids	mg/l	--	500	1630	1460	1300	1840	1780	1810	1600	1760
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	0.0094	0.0079	0.012	0.0097	0.0072	0.0066	0.0070	0.013
Barium, dissolved	mg/l	1	--	0.79	0.81	**2.2**	0.78	0.82	0.79	0.78	0.81
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040
Boron, dissolved	mg/l	5	--	3.8	3.7	1.8	4.1	3.1	4	3.5	4.8
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090
Calcium, dissolved	mg/l	--	--	240	240	210	260	230	250	250	280
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0070	0.0062	0.014	0.0087	0.0061	0.0086	0.0068	0.011
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	10	9	35	10	8.7	10	9.7	12
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	99	95	100	95	92	97	99	100
Manganese, dissolved	mg/l	--	0.05	0.072	0.065	0.2	0.072	0.066	0.079	0.073	0.093
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00050	0.00051	0.0027	0.00076	<0.00050	0.00064	<0.00050	0.00082
Nickel, dissolved	mg/l	--	--	0.034	0.031	0.11	0.035	0.031	0.036	0.032	0.038
Potassium, dissolved	mg/l	--	--	66	61	34	67	55	67	60	84
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	220	200	190	230	200	230	220	280
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.0023	0.0023	0.0017	0.0026	0.0020	0.0025	0.0023	0.0030
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	0.0053	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-1S 01-May-2021 BR-1S	BR-1S 24-Nov-2021 BR-1S	BR-1S 26-Apr-2022 BR-1S	BR-1S 18-Dec-2022 BR-1S	BR-1S 26-May-2023 BR-1S	BR-1S 25-Nov-2023 BR-1S
General Chemistry									
Alkalinity (Total as CaCO3)	mg/l	--	--	1600	1700	1700	1700	1700	1700
Ammonia Nitrogen	mg/l	--	--	100	120	120	130	150	130
Chloride	mg/l	--	250	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	230	240	<10	250	240	230
Conductivity	uS/cm	--	--	3500	3600	3700	3800	3700	3700
Conductivity (Field)	uS/cm	--	--	2980	2890	2740	2754	2688	2549
Dissolved Organic Carbon	mg/l	--	5	61	65	56	62	66	59
Hardness, Calcium Carbonate	mg/l	--	--	1000	1000	1100	1000	1100	1000
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.79	6.69	6.72	6.84	6.93	7.04
Phosphate	mg/l	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.050 [23]	<0.010	<0.010	<0.10 [8]
Phosphorus	mg/l	--	--	0.039	0.053	0.045	0.066	0.044	0.044
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 [8]
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	11.4	10.8	8.3	7.3	8.2	8.3
Total Dissolved Solids	mg/l	--	500	1690	1600	1700	1730	1530	1710
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--
Metals									
Aluminum, dissolved	mg/l	--	--	0.0074	0.0076	0.0067	0.0071	0.0090	0.0063
Barium, dissolved	mg/l	1	--	0.78	0.86	0.81	0.82	0.67	0.84
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	3.4	3.8	3.3	3.8	4.2	4
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	250	250	270	250	270	250
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0079	0.0078	0.0076	0.0082	0.0088	0.0073
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	11	8.7	9.4	9.3	11	11
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	100	90	100	92	94	94
Manganese, dissolved	mg/l	--	0.05	0.081	0.063	0.062	0.066	0.08	0.08
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00059	0.00064	0.00081	0.00075	0.00056	0.00054
Nickel, dissolved	mg/l	--	--	0.035	0.035	0.034	0.036	0.034	0.035
Potassium, dissolved	mg/l	--	--	69	67	67	68	71	69
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	240	230	240	230	250	240
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.0025	0.0025	0.0024	0.0026	0.0026	0.0027
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols									
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-2 01-Apr-1988	BR-2 01-Nov-1988	BR-2 01-Nov-1990	BR-2 01-Oct-1991	BR-2 01-Dec-1991	BR-2 01-Dec-1992	BR-2 01-Feb-1993	BR-2 01-Sep-1993	BR-2 01-Nov-1993	BR-2 01-Aug-1994	BR-2 01-Dec-1994
General Chemistry														
Alkalinity (Total as CaCO3)	mg/l	--	--	--	548	--	450	540	520	557	450	481	256	452
Ammonia Nitrogen	mg/l	--	--	0.69	--	--	--	--	--	--	5.59	6.13	<0.1	5.73
Chemical Oxygen Demand	mg/l	--	--	30	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	29.9	56	66	70	67	74	69	83	53.2	29.8	58.5
Conductivity	uS/cm	--	--	820	--	928	940	--	--	--	1086	1142	643	1172
Nitrate	mg/l	-- [14]	--	0.43	--	--	--	--	--	--	<0.1	0.62	1.02	<0.1
Nitrite	mg/l	-- [15]	--	0.048	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	5.79	6.16	43.42	6.6
pH (Field)	-	--	--	7.5	7.05	--	--	--	--	--	7.38	7.55	8.2	7.13
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	<0.1	<0.1	<0.1	--
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	<0.1
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	<0.1	--	0.1	<0.1	--	0.29	<0.1	<0.1	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	37	35	53	51.2	82.6	64.3	55.8
Total Dissolved Solids	mg/l	--	500	--	645	558	584	700	730	720	706	620	376	664
Total Organic Carbon	mg/l	--	--	--	9	--	--	--	13	--	10	10	1.5	8.9
Metals														
Aluminum, dissolved	mg/l	--	--	--	<0.03	<0.03	--	<0.03	<0.03	--	--	--	--	--
Arsenic, dissolved	mg/l	0.01	--	--	**0.02**	--	--	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	--	0.57	0.3	--	0.25	0.31	--	--	--	--	--
Beryllium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--	--
Boron, dissolved	mg/l	5	--	--	--	0.25	--	0.39	0.43	--	0.35	0.48	0.66	0.46
Cadmium, dissolved	mg/l	0.005	--	--	<0.004	<0.002	<0.002	<0.002	<0.01	--	0.002	<0.01	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	--	--	116	--	123	116	--	108	110	49	76
Chromium, dissolved	mg/l	0.05	--	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	<0.01	0.011	<0.01	<0.01
Cobalt, dissolved	mg/l	--	--	--	40	<0.02	--	<0.01	<0.01	--	--	--	--	--
Copper, dissolved	mg/l	--	1	--	--	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	0.02	<0.01
Iron, dissolved	mg/l	--	0.3	1.1	6.68	0.03	0.53	0.72	<0.01	--	5.3	3.9	0.4	3.2
Lead, dissolved	mg/l	0.01	--	--	<0.05	<0.002	0.0053	0.003	<0.05	--	0.003	**0.012**	0.0002	<0.0002
Magnesium, dissolved	mg/l	--	--	--	--	47	--	51	52	--	41.1	43.8	24.4	29.8
Manganese, dissolved	mg/l	--	0.05	--	0.34	0.31	0.07	0.42	0.27	--	0.3	0.213	0.016	0.017
Mercury, dissolved	mg/l	0.001	--	--	<0.001	--	<0.001	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	--	--	<0.01	--	0.01	<0.01	--	--	--	--	--
Nickel, dissolved	mg/l	--	--	--	--	<0.01	--	0.01	0.02	--	0.03	0.024	<0.02	<0.02
Potassium, dissolved	mg/l	--	--	--	--	12	--	12	13	--	12.4	13.5	8.3	11.9
Silicon, dissolved	mg/l	--	--	--	--	6.2	--	7.6	6.9	--	--	--	--	--
Silver, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	<0.02	<0.02	<0.01
Sodium, dissolved	mg/l	--	200 [7]	--	--	52	--	75	75	--	56.5	68.1	35.6	47.5
Strontium, dissolved	mg/l	--	--	--	--	5.91	--	3.85	6.25	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	12	--	16	12	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.05	<0.05	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	<0.05	--	<0.05	<0.05	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--	--
Zinc, dissolved	mg/l	--	5	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	--	--	--	--
Phenols														
Phenolics, Total Recoverable	mg/l	--	--	--	0.002	<0.002	0.004	<0.002	<0.002	--	<0.002	<0.002	<0.001	0.011

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-23D 21-Jan-2023 BR-22D	BR-23D 25-May-2023 BR-23D	BR-23D 25-Nov-2023 BR-23D	BR-23D 29-Nov-2023 BR-23D
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	--	--	340	340	340	340
Ammonia Nitrogen	mg/l	--	--	0.22	0.27	0.25	0.26
Chloride, dissolved	mg/l	--	250	57	52	58	49
Conductivity	uS/cm	--	--	890	890	880	890
Conductivity (Field)	uS/cm	--	--	897	684	669	669
Dissolved Organic Carbon	mg/l	--	5	57	52	58	49
Hardness, Calcium Carbonate	mg/l	--	--	240	260	250	250
pH (Field)	-	--	--	7.62	7.74	7.68	7.68
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.018	0.044	0.16	0.095
Sulphate, dissolved	mg/l	--	500 [6]	49	47	49	45
Temperature (Field)	deg c	--	15	7.5	10.2	8.6	8.6
Total Dissolved Solids	mg/l	--	500	215	505	495	465
Metals							
Aluminum, dissolved	mg/l	--	--	0.013	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.14	0.14	0.15	0.14
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.36	0.33	0.35	0.34
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	53	54	54	54
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.00055	<0.00050	<0.00050	<0.00050
Iron, dissolved	mg/l	--	0.3	<0.1	0.21	0.25	0.22
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	27	29	28	27
Manganese, dissolved	mg/l	--	0.05	0.014	0.026	0.02	0.021
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010
Molybdenum, dissolved	mg/l	--	--	0.0033	0.0022	0.0021	0.0022
Nickel, dissolved	mg/l	--	--	0.0042	<0.0010	<0.0010	<0.0010
Potassium, dissolved	mg/l	--	--	10	9.4	9.9	9.4
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	120	91	93	93
Vanadium, dissolved	mg/l	--	--	0.00071	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-23S 21-Jan-2023 [38] BR-22S	BR-23S 25-May-2023 BR-23S	BR-23S 26-Nov-2023 BR-23S
General Chemistry						
Alkalinity (Total as CaCO3)	mg/l	--	--	--	310	330
Ammonia Nitrogen	mg/l	--	--	--	0.088	<0.050
Chloride, dissolved	mg/l	--	250	--	53	58
Conductivity	uS/cm	--	--	--	830	840
Conductivity (Field)	uS/cm	--	--	--	702	684
Dissolved Organic Carbon	mg/l	--	5	--	1.2	0.89
Hardness, Calcium Carbonate	mg/l	--	--	--	360	360
pH (Field)	-	--	--	--	7.81	7.71
Phosphate, Ortho	mg/l	--	--	--	<0.010	<0.010
Phosphorus	mg/l	--	--	--	0.032	0.29
Sulphate, dissolved	mg/l	--	500 [6]	--	42	38
Temperature (Field)	deg c	--	15	--	9.1	8.0
Total Dissolved Solids	mg/l	--	500	--	435	435
Metals						
Aluminum, dissolved	mg/l	--	--	--	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	--	0.2	0.2
Beryllium, dissolved	mg/l	--	--	--	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	--	0.23	0.22
Cadmium, dissolved	mg/l	0.005	--	--	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	--	89	89
Chromium, dissolved	mg/l	0.05	--	--	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	--	0.00074	0.00059
Iron, dissolved	mg/l	--	0.3	--	0.19	0.21
Lead, dissolved	mg/l	0.01	--	--	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	--	34	34
Manganese, dissolved	mg/l	--	0.05	--	0.043	0.044
Mercury	mg/l	0.001	--	--	<0.00010	<0.00010
Molybdenum, dissolved	mg/l	--	--	--	0.0013	0.0014
Nickel, dissolved	mg/l	--	--	--	0.0015	0.0013
Potassium, dissolved	mg/l	--	--	--	6.6	6.8
Selenium, dissolved	mg/l	0.05	--	--	<0.0020	<0.0020
Silver, dissolved	mg/l	--	--	--	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	--	39	43
Vanadium, dissolved	mg/l	--	--	--	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	--	<0.0050	<0.0050

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-3 01-Apr-1988	BR-3 01-Nov-1988	BR-3 01-Nov-1990	BR-3 01-Oct-1991	BR-3 01-Dec-1991	BR-3 01-Dec-1992	BR-3 01-Feb-1993	BR-3 01-Sep-1993	BR-3 01-Nov-1993	BR-3 01-Aug-1994
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	327	--	410	484	384	457	508	470	444	448
Ammonia Nitrogen	mg/l	--	--	0.04	--	--	--	--	--	--	0.21	0.29	<0.1
Chemical Oxygen Demand	mg/l	--	--	25	14	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	23.3	33	58	59	48	55	52	62	53.1	68
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	710	--	801	860	--	--	--	961	1007	965
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate	mg/l	-- [14]	--	2.79	--	--	--	--	--	--	0.54	0.82	0.48
Nitrite	mg/l	-- [15]	--	0.016	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	0.84	1.21	1.4
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.6	7.55	--	--	--	--	--	7.73	7.77	7.6
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	<0.1	<0.1	<0.1
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	<0.1	--	0.1	<0.1	--	0.238	<0.1	<0.1
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	33	29	43	40.2	73.4	46
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	--	413	472	534	490	620	620	568	552	568
Total Organic Carbon	mg/l	--	--	--	1	--	--	--	7.2	--	4.9	6.13	4.9
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	--	--	<0.03	--	<0.03	<0.03	--	--	--	--
Arsenic, dissolved	mg/l	0.01	--	--	<0.01	--	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	--	0.17	0.07	--	0.13	0.13	--	--	--	--
Beryllium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--
Boron, dissolved	mg/l	5	--	--	--	0.3	--	0.45	0.48	--	0.43	0.43	0.43
Cadmium, dissolved	mg/l	0.005	--	--	<0.002	<0.002	<0.002	<0.002	<0.01	--	0.00015	<0.01	<0.0001
Calcium, dissolved	mg/l	--	--	--	--	111	--	127	132	--	125	130	100
Chromium, dissolved	mg/l	0.05	--	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01
Cobalt, dissolved	mg/l	--	--	--	--	<0.02	--	<0.01	<0.01	--	--	--	--
Copper, dissolved	mg/l	--	1	--	--	<0.01	<0.01	0.06	<0.01	--	<0.01	<0.01	0.03
Iron, dissolved	mg/l	--	0.3	0.1	18.36	<0.01	0.35	0.05	<0.01	--	12.3	1.32	0.4
Lead, dissolved	mg/l	0.01	--	--	<0.05	<0.002	0.004	0.003	<0.05	--	0.003	0.01	<0.0002
Magnesium, dissolved	mg/l	--	--	--	--	44	--	46	51	--	41.7	45.5	41.3
Manganese, dissolved	mg/l	--	0.05	--	--	0.05	0.11	0.11	0.1	--	0.11	0.105	0.092
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	--	<0.001	--	<0.001	--	--	--	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	--	--	0.01	--	<0.01	<0.01	--	--	--	--
Nickel, dissolved	mg/l	--	--	--	--	<0.01	--	0.01	<0.01	--	0.022	<0.02	<0.02
Potassium, dissolved	mg/l	--	--	--	--	9	--	6	8	--	6.04	8.03	9.6
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	--	--	5.1	--	6.6	6.2	--	--	--	--
Silver, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	<0.02	<0.02
Sodium, dissolved	mg/l	--	200 [7]	--	--	35	--	27	34	--	30.2	30.3	24.7
Strontium, dissolved	mg/l	--	--	--	--	3.24	--	3.76	3.18	--	--	--	--
Sulfur	mg/l	--	--	--	--	12	--	8	10	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.05	<0.05	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	0.05	--	<0.05	<0.05	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--
Vanadium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--
Zinc, dissolved	mg/l	--	5	--	0.03	<0.01	<0.01	<0.01	<0.01	--	--	--	--
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	--	<0.002	<0.002	0.002	<0.002	<0.002	--	<0.002	<0.002	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-3 01-Dec-1994	BR-3 01-May-1995	BR-3 01-Sep-1995	BR-3 04-Apr-1996	BR-3 09-Sep-1996	BR-3 01-Jun-1997	BR-3 01-Aug-1997	BR-3 22-Nov-1998	BR-3 15-Jul-1999	BR-3 16-Oct-1999
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	416	437	446	414	435	440	437	427	445	437
Ammonia Nitrogen	mg/l	--	--	0.23	0.08	0.07	0.02	0.16	0.3	0.27	0.32	0.45	0.62
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	44	46	38	47	47	46	47	47	44	44
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	1045	1001	973	957	977	962	960	922	823	907
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate	mg/l	-- [14]	--	0.53	<0.1	0.16	0.11	0.34	<0.1	0.3	-- [16]	<0.1	<0.01
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	0.45	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.32	7.34	7.8	7.45	7.32	7.51	7.14	8.05	6.78	7.32
Phosphate	mg/l	--	--	--	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-- [16]	<0.03	<0.03
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	<0.1	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	<0.1	<0.1	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	49.9	44	43	48	46	43	44	41	42	43
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	576	600	584	572	596	604	588	552	512	556
Total Organic Carbon	mg/l	--	--	5.4	6.3	5.4	5	5	5.4	4.2	4.2	4	4.5
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	--	<0.03	<0.03	<0.03	0.37	0.04	<0.03	-- [16]	<0.03	<0.03
Arsenic, dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	--	0.13	0.11	0.09	0.1	0.11	0.11	0.12	0.13	0.37
Beryllium, dissolved	mg/l	--	--	--	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-- [16]	<0.01	<0.01
Boron, dissolved	mg/l	5	--	0.48	0.53	0.59	0.51	0.47	0.46	0.42	0.45	0.47	0.5
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-- [16]	<0.005	<0.01
Calcium, dissolved	mg/l	--	--	95.9	127	129	114	121	113	114	128	126	116
Chromium, dissolved	mg/l	0.05	--	<0.01	<0.01	**0.08**	<0.01	0.02	0.02	<0.01	-- [16]	<0.01	<0.01
Cobalt, dissolved	mg/l	--	--	--	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	-- [16]	<0.01	<0.01
Copper, dissolved	mg/l	--	1	<0.01	0.006	<0.005	0.009	<0.005	<0.005	<0.005	0.005	<0.005	<0.01
Iron, dissolved	mg/l	--	0.3	1.96	0.06	0.05	0.04	0.42	0.7	0.47	1.41	1.87	3.74
Lead, dissolved	mg/l	0.01	--	<0.0002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-- [16]	<0.002	<0.002
Magnesium, dissolved	mg/l	--	--	33	42	45	42	47	42	44	46	45	42
Manganese, dissolved	mg/l	--	0.05	0.1	0.13	0.12	0.1	0.11	0.1	0.11	0.09	0.09	0.1
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-- [16]	<0.0002	<0.0002
Molybdenum, dissolved	mg/l	--	--	--	<0.01	<0.01	<0.01	<0.03	<0.03	<0.03	-- [16]	<0.01	<0.01
Nickel, dissolved	mg/l	--	--	<0.02	0.02	<0.01	0.02	<0.01	<0.01	0.01	-- [16]	<0.01	<0.01
Potassium, dissolved	mg/l	--	--	8.5	7	8	12	8	7	8	6	8	8
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	--	6	7	5.3	4.8	4.7	4.5	4.8	5.3	5.5
Silver, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-- [16]	<0.01	0.01
Sodium, dissolved	mg/l	--	200 [7]	21.3	26	27	27	28	25	28	23	27	26
Strontium, dissolved	mg/l	--	--	--	4.08	3.85	3.55	3.3	3.47	3.01	3.41	3.66	3.57
Sulfur	mg/l	--	--	--	16	17	16	14	13	14	15	13	13
Thallium, dissolved	mg/l	--	--	--	<0.05	<0.05	0.2	<0.2	<0.2	<0.2	-- [16]	<0.2	<0.2
Tin, dissolved	mg/l	--	--	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-- [16]	<0.05	--
Titanium, dissolved	mg/l	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-- [16]	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-- [16]	--	<0.01
Zinc, dissolved	mg/l	--	5	--	<0.01	<0.01	0.01	0.02	0.01	<0.01	-- [16]	--	0.04
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	0.003	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	-- [16]	<0.001	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-3 01-Jul-2000	BR-3 01-Oct-2000	BR-3 14-Oct-2000	BR-3 07-Sep-2001	BR-3 06-Nov-2001	BR-3 28-May-2002	BR-3 02-Oct-2002	BR-3 03-May-2003	BR-3 03-Nov-2003	BR-3 04-May-2004
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	443	--	444	452	433	440	440	442	430	433
Ammonia Nitrogen	mg/l	--	--	0.68	--	0.35	0.28	0.49	0.4	0.28	0.3	0.35	0.69
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	44	--	40	43	53	42	41	42	41	43
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	945	--	819	937	933	995	961	974	950	922
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	433	436	479.5	493	--	--	--
Nitrate	mg/l	-- [14]	--	<0.1	--	<0.1	<0.1	3.74	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	1.38	--	0.61	--	--	0.62	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	0.83
pH (Field)	-	--	--	6.86	--	7.41	7.38	7.57	7.61	7.6	7.46	7.53	6.96
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	<0.03	--	0.26	0.05	0.12
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.03	--	--	--	--	0.07	--	<0.005	<0.01	0.04
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.09	0.02	--
Sulphate	mg/l	--	500 [6]	39	--	40	31	24	46	38	42	44	46
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	596	--	580	576	584	647	625	689	618	599
Total Organic Carbon	mg/l	--	--	3.3	--	3.8	--	--	3.8	--	3.1	2.7	2.7
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	0.56	0.78	--
Metals													
Aluminum, dissolved	mg/l	--	--	<0.05	--	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	--
Arsenic, dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	0.17	--	0.14	0.12	0.14	0.15	0.15	0.15	0.16	--
Beryllium, dissolved	mg/l	--	--	<0.002	--	<0.0002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	--
Boron, dissolved	mg/l	5	--	0.46	--	0.48	0.51	0.44	0.47	0.43	0.49	0.5	0.53
Cadmium, dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	124	--	121	104	110	118	128	112	122	110
Chromium, dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.007	<0.001	<0.001	<0.001	0.012	0.002	<0.001
Cobalt, dissolved	mg/l	--	--	<0.01	--	0.005	0.0019	0.0005	0.0037	<0.0002	0.0031	0.003	--
Copper, dissolved	mg/l	--	1	<0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron, dissolved	mg/l	--	0.3	4.01	--	2.09	1.07	2.16	1.16	0.86	1.09	1.31	2.55
Lead, dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	42	--	45	42	39	45	42	42	44	43
Manganese, dissolved	mg/l	--	0.05	0.1	--	0.09	0.09	0.07	0.08	0.09	0.077	0.076	0.08
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	--	<0.01	0.01	<0.01	<0.01	<0.005	<0.005	<0.005	--
Nickel, dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	0.007	0.007
Potassium, dissolved	mg/l	--	--	8	--	7	7	8	8	8	8	9	8
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	5.78	--	5.99	5.66	5.59	4.61	4.5	5.3	5.5	--
Silver, dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	24	--	25	20	23	24	25	23	24	23
Strontium, dissolved	mg/l	--	--	3.31	--	3.36	5.22	3.13	4.08	4.64	4	3.69	--
Sulfur	mg/l	--	--	15	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--
Vanadium, dissolved	mg/l	--	--	<0.01	--	<0.001	0.002	<0.001	<0.001	<0.005	--	--	--
Zinc, dissolved	mg/l	--	5	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	0.004	<0.001	--
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	<0.001	--	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-3 04-Oct-2004	BR-3 09-Jun-2005	BR-3 29-Oct-2005	BR-3 08-Apr-2006	BR-3 24-Nov-2006	BR-3 25-Apr-2007	BR-3 06-Dec-2007	BR-3 03-May-2008	BR-3 28-Nov-2008
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	431	426	435	446	429	433	447	436	439
Ammonia Nitrogen	mg/l	--	--	0.58	0.45	0.46	0.57	0.64	0.61	1.9	1.14	0.61
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	41	42	42	40	42	41	39	39	41
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	960	1400	1150	520	810	710	740	700	690
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	3.2	2.8	3.7	4.5	3.3	3.1
Hardness, Calcium Carbonate	mg/l	--	--	--	455.6	--	454	464.7	466	433	477	449
Nitrate	mg/l	-- [14]	--	<0.1	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	0.76	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.12	6.9	6.8	7	7	7.3	7.1	7.2	7.3
Phosphate	mg/l	--	--	0.26	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	<0.01	0.03	0.15	0.07	0.07	0.01	0.01	<0.01
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	0.06	0.02	0.11	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	42	45	41	44	45	47	34	39	48
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	13.3	11	6	5	4	6	7	6
Total Dissolved Solids	mg/l	--	500	624	580	748	612	629	639	634	621	642
Total Organic Carbon	mg/l	--	--	3.6	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	0.23	0.21	--	0.25	0.25	0.24	0.29	0.23	0.25
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.53	0.46	0.45	0.46	0.58	0.45	0.53	0.61	0.54
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	104	115	--	116	117	119	109	120	117
Chromium, dissolved	mg/l	0.05	--	<0.001	0.002	--	0.003	0.002	0.002	0.004	0.003	0.005
Cobalt, dissolved	mg/l	--	--	0.0003	0.0028	--	0.0031	0.003	0.006	0.0017	0.0027	0.0021
Copper, dissolved	mg/l	--	1	<0.001	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	3.69	2.22	0.74	2.31	3.58	2.82	2.77	1.69	2.34
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	40	41	--	40	42	41	39	43	38
Manganese, dissolved	mg/l	--	0.05	0.08	--	--	0.08	0.09	0.09	0.08	0.09	0.09
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	0.008	0.011	0.009	0.009	0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	8	7	--	8	8	8	8	8	8
Selenium, dissolved	mg/l	0.05	--	--	<0.001	--	<0.001	<0.001	<0.001	0.004	0.002	0.002
Silicon, dissolved	mg/l	--	--	6.6	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	23	22	--	23	23	24	22	24	22
Strontium, dissolved	mg/l	--	--	3.76	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.001	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.001	0.005	--	0.004	0.001	0.002	0.008	0.004	0.009
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	0.24	<0.01	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.001	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-3 29-Apr-2009 A-23	BR-3 28-Nov-2009 A-7	BR-3 20-May-2010 A-22	BR-3 29-Nov-2010 A - 9	BR-3 10-May-2011 [9] S-9	BR-3 30-Nov-2011 [9] S - 19	BR-3 31-May-2014 [39] BR-3	BR-3 19-Nov-2014 [39] BR-3	BR-3 08-Jun-2015 S-30
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	445	475	497	446	450	460	--	--	450
Ammonia Nitrogen	mg/l	--	--	0.50	0.53	0.56	0.60	0.56	0.92	--	--	0.52
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	39	57	65	65	67	62	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	87
Conductivity	uS/cm	--	--	991	1090	1100	1090	1070	1090	--	--	1200
Conductivity (Field)	uS/cm	--	--	1000	960	12	950	980	1005	--	--	895
Dissolved Organic Carbon	mg/l	--	5	4.0	6.7	11.8	6.3	6.9	5.4	--	--	6.1
Hardness, Calcium Carbonate	mg/l	--	--	463	496	556	499	483	537	--	--	560
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.5	7.7	7.4	7.2	7.3	7.2	--	--	7.7
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	<0.010
Phosphorus	mg/l	--	--	<0.01	<0.01	0.02	0.10	0.02	0.02	--	--	0.009
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	53	47	20	84	83	65	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	80
Temperature (Field)	deg c	--	15	10.5	6	995	6.4	11.0	10	--	--	12
Total Dissolved Solids	mg/l	--	500	644	708	715	708	696	708	--	--	758
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	--	<0.005
Arsenic, dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	0.22	0.22	0.21	0.19	0.19	0.22	--	--	0.16
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	--	--	<0.0005
Boron, dissolved	mg/l	5	--	0.51	0.61	0.54	0.52	0.46	0.43	--	--	0.5
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	<0.0001
Calcium, dissolved	mg/l	--	--	118	131	147	134	126	144	--	--	140
Chromium, dissolved	mg/l	0.05	--	0.002	0.003	<0.001	0.002	0.002	0.004	--	--	<0.005
Cobalt, dissolved	mg/l	--	--	0.0022	0.0029	0.0007	0.0014	0.0007	0.0008	--	--	0.0029
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	2.06	2.55	0.11	1.72	1.79	1.05	--	--	1
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	<0.0005
Magnesium, dissolved	mg/l	--	--	41	41	46	40	41	43	--	--	48
Manganese, dissolved	mg/l	--	0.05	0.08	0.27	0.26	0.22	0.20	0.19	--	--	0.16
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	<0.00010
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	0.0020
Nickel, dissolved	mg/l	--	--	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	--	--	0.008
Potassium, dissolved	mg/l	--	--	8	9	10	9	9	9	--	--	10
Selenium, dissolved	mg/l	0.05	--	<0.001	0.002	0.003	<0.001	<0.01	<0.01	--	--	<0.002
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	24	31	40	35	35	39	--	--	46
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.006	0.007	0.003	0.001	0.002	0.001	--	--	<0.0005
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	--	<0.005
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-3 30-Nov-2015 S-27	BR-3 20-Apr-2016 S-28	BR-3 01-Nov-2016 S-29	BR-3 29-May-2017 A-27	BR-3 30-Nov-2017 BR-3	BR-3 17-May-2018 BR-3	BR-3 29-Oct-2018 [5] BR-3	BR-3 04-Jun-2019 BR-3	BR-3 15-Nov-2019 BR-3	BR-3 07-May-2020 3
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	410	420	350	380	460	460	460	480	480	470
Ammonia Nitrogen	mg/l	--	--	0.34	0.35	0.13	0.35	0.88	0.94	0.97	0.89	0.96	1.1
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	78	78	49	96	120	140	130	130	130	130
Conductivity	uS/cm	--	--	1100	1100	890	1100	1300	1300	1300	1300	1400	1400
Conductivity (Field)	uS/cm	--	--	605	1035	1005	985	912	960	895	806	880	1115
Dissolved Organic Carbon	mg/l	--	5	6.8	5.1	2.9	3.7	6.5	5.4	5.9	5.9	6.6	5.4
Hardness, Calcium Carbonate	mg/l	--	--	490	500	370	480	540	560	530	540	560	550
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.6	7.5	7.3	7.5	7.6	7.4	7.5	7.44	7.4	7.2
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	<0.004	0.006	<0.004	<0.004	0.047	0.28	0.049	0.012	0.013	0.017
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	71	62	52	55	75	60	57	67	70	72
Temperature (Field)	deg c	--	15	7	7.4	7.0	7.6	6.4	8.9	9.1	9.4	9.1	8.2
Total Dissolved Solids	mg/l	--	500	640	640	572	572	695	715	750	870	820	770
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.01
Arsenic, dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	0.09	0.089	0.068	0.068	0.22	0.18	0.18	0.2	0.25	0.23
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.56	0.63	0.45	0.63	0.48	0.57	0.54	0.53	0.45	0.55
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	120	130	95	120	140	150	140	140	150	150
Chromium, dissolved	mg/l	0.05	--	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0008	0.0010	0.00059	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.69	2.5	2.6	3.9	2.7	3.1	2.8	3	2.7	2.2
Lead, dissolved	mg/l	0.01	--	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	45	44	33	46	43	47	44	45	45	45
Manganese, dissolved	mg/l	--	0.05	0.12	0.13	0.15	0.13	0.17	0.18	0.16	0.17	0.17	0.18
Mercury	mg/l	0.001	--	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0011	0.0012	0.0015	0.00096	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	0.004	0.0041	0.0018	0.0023	0.0031	0.0030	0.0030	0.0029	0.0034	0.0029
Potassium, dissolved	mg/l	--	--	9.1	9.4	7.9	8.7	9.4	10	9.7	9.9	10	11
Selenium, dissolved	mg/l	0.05	--	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	42	43	36	37	55	59	60	64	69	71
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0084
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-3 27-Oct-2020 BR-3	BR-3 01-May-2021 BR-3	BR-3 24-Nov-2021 BR-3	BR-3 26-Apr-2022 BR-3	BR-3 18-Dec-2022 BR-3	BR-3 26-May-2023 BR-3	BR-3 25-Nov-2023 BR-3
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	--	--	390	450	440	470	420	470	460
Ammonia Nitrogen	mg/l	--	--	0.98	1.0	1.0	1.2	1.0	1.6	1.6
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	100	120	110	99	92	91	89
Conductivity	uS/cm	--	--	1000	1300	1200	1300	1100	1300	1200
Conductivity (Field)	uS/cm	--	--	1160	1091	1210	1330	1294	1239	1241
Dissolved Organic Carbon	mg/l	--	5	4.4	5.2	4.8	5.0	4.7	4.4	4.6
Hardness, Calcium Carbonate	mg/l	--	--	550	570	520	550	450	500	470
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.31	7.38	7.77	7.21	7.39	7.44	7.49
Phosphate	mg/l	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.020 [13]	<0.010	<0.010
Phosphorus	mg/l	--	--	0.015	0.019	<0.020	0.028	0.063	0.033	0.037
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	61	71	65	69	45	62	52
Temperature (Field)	deg c	--	15	8.9	9.1	7.66	9.8	7.5	8.1	7.9
Total Dissolved Solids	mg/l	--	500	665	710	660	650	610	665	775
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--
Metals										
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049
Arsenic, dissolved	mg/l	0.01	--	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	0.2	0.25	0.26	0.27	0.16	0.22	0.21
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.58	0.45	0.45	0.48	0.54	0.47	0.52
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	140	150	140	150	120	130	120
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	0.00093	0.00061	<0.00050	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	2.2	2.3	3.8	6.6	0.84	6.7	6.2
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	46	44	41	44	39	40	40
Manganese, dissolved	mg/l	--	0.05	0.2	0.19	0.19	0.2	0.21	0.2	0.23
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0016	<0.00050	0.00074	0.00082	<0.00050	0.00058	<0.00050
Nickel, dissolved	mg/l	--	--	0.0028	0.0026	0.0028	0.0025	0.0024	0.0024	0.0026
Potassium, dissolved	mg/l	--	--	10	11	10	12	9.7	11	11
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	63	75	68	71	44	59	54
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols										
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-3D 03-Nov-2003
General Chemistry				
Alkalinity (Total as CaCO3)	mg/l	--	--	428
Ammonia Nitrogen	mg/l	--	--	0.33
Chloride	mg/l	--	250	41
Conductivity	uS/cm	--	--	955
Nitrate	mg/l	-- [14]	--	<0.1
pH (Field)	-	--	--	7.56
Phosphate	mg/l	--	--	0.05
Phosphorus	mg/l	--	--	<0.01
Silica	mg/l	--	--	0.03
Sulphate	mg/l	--	500 [6]	44
Total Dissolved Solids	mg/l	--	500	621
Total Organic Carbon	mg/l	--	--	2.8
Turbidity	ntu	--	5 [19]	0.78
Metals				
Aluminum, dissolved	mg/l	--	--	0.01
Barium, dissolved	mg/l	1	--	0.16
Beryllium, dissolved	mg/l	--	--	<0.001
Boron, dissolved	mg/l	5	--	0.48
Cadmium, dissolved	mg/l	0.005	--	<0.0001
Calcium, dissolved	mg/l	--	--	122
Chromium, dissolved	mg/l	0.05	--	0.004
Cobalt, dissolved	mg/l	--	--	0.0031
Copper, dissolved	mg/l	--	1	0.002
Iron, dissolved	mg/l	--	0.3	1.31
Lead, dissolved	mg/l	0.01	--	<0.001
Magnesium, dissolved	mg/l	--	--	44
Manganese, dissolved	mg/l	--	0.05	0.079
Mercury, dissolved	mg/l	0.001	--	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005
Nickel, dissolved	mg/l	--	--	0.008
Potassium, dissolved	mg/l	--	--	9
Silicon, dissolved	mg/l	--	--	5.6
Silver, dissolved	mg/l	--	--	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	24
Strontium, dissolved	mg/l	--	--	3.63
Thallium, dissolved	mg/l	--	--	<0.001
Titanium, dissolved	mg/l	--	--	<0.01
Zinc, dissolved	mg/l	--	5	0.001

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-4 01-Apr-1988	BR-4 01-Nov-1988	BR-4 01-Dec-1988	BR-4 01-Nov-1990	BR-4 01-Oct-1991	BR-4 01-Dec-1991	BR-4 01-Feb-1992	BR-4 01-Dec-1992
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	329	366	--	336	368	344	--	770
Ammonia Nitrogen	mg/l	--	--	0.13	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	25	5	6	--	--	--	--	--
Chloride	mg/l	--	250	23.4	20	24	32	35	45	--	72
Conductivity	uS/cm	--	--	700	--	--	813	690	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrate	mg/l	-- [14]	--	0.2	--	--	--	--	--	--	--
Nitrite	mg/l	-- [15]	--	0.024	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.5	7.4	7.6	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	<0.1	--	--	--	<0.1
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	65	--	26
Total Dissolved Solids	mg/l	--	500	--	389	401	466	422	440	--	950
Total Organic Carbon	mg/l	--	--	--	<0.5	<0.5	--	--	--	--	11
Metals											
Aluminum, dissolved	mg/l	--	--	--	--	--	<0.03	--	<0.03	--	<0.03
Arsenic, dissolved	mg/l	0.01	--	--	<0.01	<0.01	--	--	--	--	--
Barium, dissolved	mg/l	1	--	--	0.17	0.21	0.27	--	0.27	--	**3.1**
Beryllium, dissolved	mg/l	--	--	--	--	--	<0.01	--	<0.01	--	<0.01
Boron, dissolved	mg/l	5	--	--	--	--	0.2	--	0.17	--	0.2
Cadmium, dissolved	mg/l	0.005	--	--	<0.004	<0.002	<0.002	<0.002	<0.002	--	<0.01
Calcium, dissolved	mg/l	--	--	--	--	--	98	--	106	--	187
Chromium, dissolved	mg/l	0.05	--	--	<0.02	<0.02	<0.01	<0.01	<0.01	--	<0.01
Cobalt, dissolved	mg/l	--	--	--	--	--	<0.02	--	<0.01	--	<0.01
Copper, dissolved	mg/l	--	1	--	--	--	<0.01	<0.01	<0.01	--	0.01
Iron, dissolved	mg/l	--	0.3	2.4	1.01	0.07	0.04	1.67	0.18	--	<0.01
Lead, dissolved	mg/l	0.01	--	--	<0.05	<0.05	<0.002	0.003	0.002	--	<0.05
Magnesium, dissolved	mg/l	--	--	--	--	--	43	--	47	--	67
Manganese, dissolved	mg/l	--	0.05	--	0.07	<0.05	<0.01	0.02	0.02	--	0.12
Mercury, dissolved	mg/l	0.001	--	--	<0.001	<0.001	--	<0.001	--	--	--
Molybdenum, dissolved	mg/l	--	--	--	--	--	<0.01	--	0.01	--	<0.01
Nickel, dissolved	mg/l	--	--	--	--	--	<0.01	--	0.01	--	<0.01
Potassium, dissolved	mg/l	--	--	--	--	--	5	--	6	--	6
Silicon, dissolved	mg/l	--	--	--	--	--	4.4	--	4.4	--	7.6
Silver, dissolved	mg/l	--	--	--	--	--	<0.01	--	0.01	--	<0.01
Sodium, dissolved	mg/l	--	200 [7]	--	--	--	12	--	9	--	33
Strontium, dissolved	mg/l	--	--	--	--	--	4.92	--	6.42	--	5.27
Sulfur	mg/l	--	--	--	--	--	15	--	21	--	7
Thallium, dissolved	mg/l	--	--	--	--	--	<0.01	--	<0.05	--	<0.05
Tin, dissolved	mg/l	--	--	--	--	--	<0.05	--	<0.05	--	<0.05
Titanium, dissolved	mg/l	--	--	--	--	--	<0.01	--	<0.01	--	<0.01
Vanadium, dissolved	mg/l	--	--	--	--	--	<0.01	--	<0.01	--	<0.01
Zinc, dissolved	mg/l	--	5	--	0.04	0.05	<0.01	0.01	<0.01	--	<0.01
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	<0.002	--	<0.002	<0.002	<0.002	--	<0.002

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-4 01-Sep-1993	BR-4 01-Nov-1993	BR-4 01-Aug-1994	BR-4 01-Dec-1994	BR-4 01-Sep-1995	BR-4 01-Jun-1997	BR-4 01-Aug-1997	BR-4 22-Nov-1998
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	640	650	701	608	496	498	510	520
Ammonia Nitrogen	mg/l	--	--	0.21	0.26	0.25	0.7	1.11	3.22	4	1.76
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	100	70.9	92	68	56	71	75	76
Conductivity	uS/cm	--	--	1361	1376	1410	1424	1062	1087	1143	1113
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrate	mg/l	-- [14]	--	<0.1	0.7	<0.1	<0.1	0.12	0.44	<0.1	-- [16]
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	0.67	1.68	0.28	2.69	--	--	--	--
pH (Field)	-	--	--	7.59	7.52	7.2	6.85	7.58	7.6	7.05	7.49
Phosphate	mg/l	--	--	<0.1	0.1	<0.1	--	<0.03	<0.03	<0.03	-- [16]
Phosphorus	mg/l	--	--	--	--	--	0.14	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	0.426	0.22	0.42	--	<0.1	--	--	--
Sulphate	mg/l	--	500 [6]	20.9	34.6	16.6	24	20	19	23	30
Total Dissolved Solids	mg/l	--	500	885	800	848	824	636	672	688	672
Total Organic Carbon	mg/l	--	--	10.3	106	13	12.4	5.8	11.5	24.5	17
Metals											
Aluminum, dissolved	mg/l	--	--	--	--	--	--	<0.03	0.05	0.06	0.05
Arsenic, dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	--	--	--	--	0.99	**3.09**	**5.9**	**4.5**
Beryllium, dissolved	mg/l	--	--	--	--	--	--	<0.01	<0.01	<0.01	-- [16]
Boron, dissolved	mg/l	5	--	0.18	0.19	0.19	0.27	0.24	0.22	0.2	0.21
Cadmium, dissolved	mg/l	0.005	--	0.00012	<0.01	<0.0001	<0.0001	<0.005	<0.005	<0.005	-- [16]
Calcium, dissolved	mg/l	--	--	180	190	160	135	139	123	122	150
Chromium, dissolved	mg/l	0.05	--	<0.01	**0.15**	<0.01	<0.01	<0.01	<0.01	<0.01	-- [16]
Cobalt, dissolved	mg/l	--	--	--	--	--	--	<0.01	<0.01	<0.01	-- [16]
Copper, dissolved	mg/l	--	1	<0.01	<0.01	<0.01	<0.01	<0.005	0.012	0.0008	-- [16]
Iron, dissolved	mg/l	--	0.3	35.4	52.3	1.1	53	5.01	10.7	17.6	16.1
Lead, dissolved	mg/l	0.01	--	0.003	**0.015**	0.0003	0.0004	<0.002	<0.002	<0.002	-- [16]
Magnesium, dissolved	mg/l	--	--	55.8	63.8	60.1	51	51	50	51	57
Manganese, dissolved	mg/l	--	0.05	0.27	0.27	147	0.21	0.08	0.1	0.06	0.01
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	0.0002	-- [16]
Molybdenum, dissolved	mg/l	--	--	--	--	--	--	<0.01	<0.03	<0.03	-- [16]
Nickel, dissolved	mg/l	--	--	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	-- [16]
Potassium, dissolved	mg/l	--	--	6.04	6.15	9	7.7	6	7	9	6
Silicon, dissolved	mg/l	--	--	--	--	--	--	7.5	6.6	6.7	6.8
Silver, dissolved	mg/l	--	--	<0.01	<0.02	<0.02	<0.01	<0.01	<0.007	<0.01	-- [16]
Sodium, dissolved	mg/l	--	200 [7]	36.3	40.5	37.8	28.5	21	27	35	28
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	5.15	5.4	6.09
Sulfur	mg/l	--	--	--	--	--	--	8	6	7	11
Thallium, dissolved	mg/l	--	--	--	--	--	--	<0.05	<0.2	<0.2	-- [16]
Tin, dissolved	mg/l	--	--	--	--	--	--	<0.05	<0.05	<0.05	-- [16]
Titanium, dissolved	mg/l	--	--	--	--	--	--	<0.01	<0.01	<0.01	-- [16]
Vanadium, dissolved	mg/l	--	--	--	--	--	--	<0.01	<0.01	<0.01	-- [16]
Zinc, dissolved	mg/l	--	5	--	--	--	--	<0.01	0.01	<0.01	-- [16]
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	<0.002	<0.002	<0.001	0.004	<0.002	<0.002	<0.002	-- [16]

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-4 15-Jul-1999	BR-4 16-Oct-1999	BR-4 01-Jul-2000	BR-4 01-Oct-2000	BR-4 14-Oct-2000	BR-4 07-Sep-2001	BR-4 07-Nov-2001
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	--	--	501	474	485	--	485	480	465
Ammonia Nitrogen	mg/l	--	--	1.81	0.72	1.36	--	1.11	0.87	0.69
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	65	70	74	--	67	71	65
Conductivity	uS/cm	--	--	943	1030	1090	--	922	1070	1060
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	496	527
Nitrate	mg/l	-- [14]	--	0.12	<0.01	<0.1	--	<0.1	<0.1	<0.1
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	1.6	--	1.54	--	--
pH (Field)	-	--	--	6.76	7.25	6.91	--	7.41	7.47	7.37
Phosphate	mg/l	--	--	<0.03	<0.03	<0.03	--	<0.03	--	--
Phosphorus	mg/l	--	--	--	--	1	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	30	36	33	--	31	37	32
Total Dissolved Solids	mg/l	--	500	656	660	680	--	600	668	688
Total Organic Carbon	mg/l	--	--	14.7	17.2	9.1	--	6.4	--	--
Metals										
Aluminum, dissolved	mg/l	--	--	<0.03	0.04	<0.05	--	<0.05	0.08	<0.05
Arsenic, dissolved	mg/l	0.01	--	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	**3.24**	**2.59**	**1.3**	--	0.82	**2.2**	0.65
Beryllium, dissolved	mg/l	--	--	<0.01	<0.01	<0.002	--	<0.002	<0.002	<0.002
Boron, dissolved	mg/l	5	--	0.24	0.26	0.23	--	0.23	0.24	0.16
Cadmium, dissolved	mg/l	0.005	--	<0.005	<0.01	<0.005	--	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	143	132	134	--	135	121	125
Chromium, dissolved	mg/l	0.05	--	<0.01	<0.01	<0.01	--	<0.01	0.012	0.006
Cobalt, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	--	0.0022	0.0004	0.0018
Copper, dissolved	mg/l	--	1	<0.005	<0.01	<0.01	--	0.001	<0.001	0.001
Iron, dissolved	mg/l	--	0.3	9.87	10.5	12.5	--	1.51	24.1	0.16
Lead, dissolved	mg/l	0.01	--	<0.002	<0.002	<0.001	--	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	53	48	--	--	49	47	52
Manganese, dissolved	mg/l	--	0.05	0.03	0.04	0.09	--	0.07	0.07	0.06
Mercury, dissolved	mg/l	0.001	--	<0.0002	<0.0002	<0.0001	--	<0.0001	--	--
Molybdenum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01
Nickel, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01
Potassium, dissolved	mg/l	--	--	7	7	7	--	6	7	7
Silicon, dissolved	mg/l	--	--	6.2	6	6.84	--	6.74	7.31	5.44
Silver, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	--	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	33	29	35	--	35	28	23
Strontium, dissolved	mg/l	--	--	6.05	5.65	7.62	--	5.36	8.76	4.62
Sulfur	mg/l	--	--	11	11	12	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.2	<0.2	<0.2	--	<0.001	<0.001	<0.001
Tin, dissolved	mg/l	--	--	<0.05	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	--	<0.001	0.022	0.002
Zinc, dissolved	mg/l	--	5	<0.01	0.06	<0.01	--	<0.01	0.01	<0.01
Phenols										
Phenolics, Total Recoverable	mg/l	--	--	<0.001	<0.001	<0.001	--	0.001	<0.001	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-5D 01-Jul-2000	BR-5D 01-Oct-2000	BR-5D 14-Oct-2000	BR-5D 07-Sep-2001	BR-5D 06-Nov-2001	BR-5D 28-May-2002	BR-5D 02-Oct-2002	BR-5D 03-May-2003	BR-5D 03-Nov-2003
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	453	--	445	450	433	466	460	458	434
Ammonia Nitrogen	mg/l	--	--	2.51	--	2.77	1.82	2.15	3.27	2.69	2.98	2.93
Chloride	mg/l	--	250	60	--	53	57	19	57	59	58	52
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	1020	--	856	1010	975	1110	1070	1060	1000
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	407	404	435.8	457	--	--
Nitrate	mg/l	-- [14]	--	<0.1	--	<0.1	<0.1	0.19	<0.1	1.13	<0.1	0.17
Nitrogen	mg/l	--	--	4.74	--	2.77	--	--	4.32	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.17	--	7.53	7.42	7.72	7.72	7.72	7.57	7.68
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	--	--	0.37	0.22
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.12	--	--	--	--	<0.001	--	<0.005	--
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.13	0.5
Sulphate	mg/l	--	500 [6]	46	--	43	46	52	46	41	41	43
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	596	--	568	656	634	722	696	633	650
Total Organic Carbon	mg/l	--	--	6.5	--	6.2	--	--	0.16	--	7	3.2
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	3.72	3.26
Metals												
Aluminum, dissolved	mg/l	--	--	<0.05	--	0.07	<0.05	<0.05	<0.05	<0.01	0.02	<0.01
Barium, dissolved	mg/l	1	--	0.39	--	0.37	0.43	0.38	**4.34**	0.44	0.38	0.38
Beryllium, dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.24	--	0.23	0.27	0.24	2.63	0.27	0.27	0.25
Cadmium, dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	109	--	120	105	104	112	117	112	111
Chromium, dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.006	<0.001	0.001	<0.001	0.014	0.001
Cobalt, dissolved	mg/l	--	--	<0.01	--	0.006	0.0028	0.0034	0.0047	0.0035	0.0044	0.0043
Copper, dissolved	mg/l	--	1	<0.01	--	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
Iron, dissolved	mg/l	--	0.3	1.77	--	1.86	4.59	5.94	15.7	7.47	3.12	1.99
Lead, dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	37	--	39	35	35	38	40	40	38
Manganese, dissolved	mg/l	--	0.05	0.14	--	0.15	0.13	0.12	1.23	0.133	0.148	0.143
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	0.02	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	0.007
Potassium, dissolved	mg/l	--	--	7	--	6	7	7	7	8	8	9
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	6.74	--	7.18	6.87	6.66	57.2	5.6	6.4	--
Silver, dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	49	--	45	52	47	53	56	54	48
Strontium, dissolved	mg/l	--	--	10.5	--	7.2	12.6	6.83	109	12.7	10.4	--
Sulfur	mg/l	--	--	16	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--
Titanium, dissolved	mg/l	--	--	0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--
Vanadium, dissolved	mg/l	--	--	<0.01	--	<0.001	0.002	<0.001	0.03	<0.005	--	--
Zinc, dissolved	mg/l	--	5	<0.01	--	<0.01	<0.01	<0.01	<0.03	<0.005	0.005	--
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-5D 04-May-2004	BR-5D 04-Oct-2004	BR-5D 10-Jun-2005	BR-5D 29-Oct-2005	BR-5D 12-Apr-2006	BR-5D 25-Nov-2006	BR-5D 25-Apr-2007	BR-5D 04-Dec-2007	BR-5D 03-May-2008
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	445	429	441	410	440	423	418	410	406
Ammonia Nitrogen	mg/l	--	--	3.32	1.09	2.73	0.05	2.81	1.41	1.4	1.62	2.56
Chloride	mg/l	--	250	58	58	57	18	53	50	51	51	52
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	995	1030	1250	1240	1095	685	915	700	605
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	6	5.7	5.7	4.6	4.8
Hardness, Calcium Carbonate	mg/l	--	--	--	--	427.6	--	438.3	421.7	449	406	410
Nitrate	mg/l	-- [14]	--	<0.1	2.46	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	4.85	1.55	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.02	7.36	6.9	7	7.1	7.4	7.2	7.3	7.2
Phosphate	mg/l	--	--	0.07	0.26	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.03	--	0.03	0.07	0.07	0.13	0.2	0.04	0.07
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	0.09	0.13	0.08	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	46	47	47	78	47	42	45	49	47
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	16.4	11	6	6	5	6	6
Total Dissolved Solids	mg/l	--	500	647	670	546	806	650	647	647	626	631
Total Organic Carbon	mg/l	--	--	5.9	7.4	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	--	0.47	0.4	--	0.43	0.3	0.31	0.33	0.4
Beryllium, dissolved	mg/l	--	--	--	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.28	0.31	0.26	0.17	0.27	0.2	0.24	0.21	0.28
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	111	94	112	--	113	108	117	105	105
Chromium, dissolved	mg/l	0.05	--	0.002	0.001	0.004	--	0.002	0.002	0.002	0.008	0.003
Cobalt, dissolved	mg/l	--	--	--	0.0026	0.0042	--	0.0036	0.0039	0.0059	0.0039	0.0034
Copper, dissolved	mg/l	--	1	<0.001	<0.001	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	2.2	5.47	1.29	0.23	2.23	2.56	4.49	1.98	3.06
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	37	34	36	--	38	37	38	35	36
Manganese, dissolved	mg/l	--	0.05	0.13	0.09	--	--	0.12	0.13	0.15	0.17	0.12
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	--	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.008	0.006	0.008	<0.005	0.008	0.006	<0.005	0.01	0.005
Potassium, dissolved	mg/l	--	--	8	8	7	--	7	7	6	6	7
Selenium, dissolved	mg/l	0.05	--	--	--	<0.001	--	<0.001	0.001	<0.001	0.001	0.001
Silicon, dissolved	mg/l	--	--	--	8	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	54	50	47	--	47	41	42	37	41
Strontium, dissolved	mg/l	--	--	--	7.97	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	<0.001	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	<0.01	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	--	0.002	0.006	--	0.001	<0.001	0.004	0.003	0.004
Zinc, dissolved	mg/l	--	5	--	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.001	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-5D 27-Nov-2008	BR-5D 29-Apr-2009 A-26	BR-5D 29-Nov-2009 A-22	BR-5D 19-May-2010 A-15	BR-5D 29-Nov-2010 A - 25	BR-5D 11-May-2011 S-25	BR-5D 29-Nov-2011 A-9	BR-5D 20-May-2012 S-9	BR-5D 13-Nov-2012 A - 14
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	412	407	438	354	465	436	426	423	443
Ammonia Nitrogen	mg/l	--	--	1.58	1.90	0.13	0.62	1.56	1.89	1.19	1.96	0.41
Chloride	mg/l	--	250	49	44	30	38	56	51	46	54	44
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	615	948	941	840	1040	954	958	982	963
Conductivity (Field)	uS/cm	--	--	--	655	680	870	890	840	830	960	950
Dissolved Organic Carbon	mg/l	--	5	3.8	4.4	3.3	3.5	4.4	5.1	3.2	4.3	3.2
Hardness, Calcium Carbonate	mg/l	--	--	430	410	435	432	502	410	401	316	438
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.3	7.4	7.5	7.8	7.6	7.6	7.4	7.3	7.4
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.02	0.02	0.02	0.03	0.01	0.03	0.01	<0.01	0.01
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	48	46	51	47	38	38	42	44	46
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	6	9	6	12	9	10.0	8	10	8
Total Dissolved Solids	mg/l	--	500	631	616	612	546	676	620	623	638	626
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.35	0.34	0.15	0.18	0.29	0.32	0.27	0.34	0.19
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.22	0.22	0.15	0.13	0.22	0.18	0.25	0.17	0.18
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	111	105	113	112	135	105	106	82	119
Chromium, dissolved	mg/l	0.05	--	0.002	0.002	0.002	<0.001	<0.001	0.002	0.001	0.003	0.002
Cobalt, dissolved	mg/l	--	--	0.0036	0.0028	0.0014	0.0016	0.0034	0.0034	0.0031	0.0035	0.0018
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	2.75	2.55	0.54	1.22	0.58	1.08	1.49	1.19	1.07
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	37	36	37	37	40	36	33	27	39
Manganese, dissolved	mg/l	--	0.05	0.15	0.10	0.05	0.07	0.10	0.09	0.10	0.10	0.05
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.008	<0.005	0.008	0.005	0.007	0.006	0.006	0.005	0.006
Potassium, dissolved	mg/l	--	--	6	6	3	4	6	6	5	4	4
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	40	37	19	27	45	39	35	30	27
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.005	0.005	0.006	<0.001	0.002	0.003	0.003	0.003	0.003
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-5D 30-May-2014 S-11	BR-5D 18-Nov-2014 [4] A-12	BR-5D 06-May-2015 S-19	BR-5D 16-Nov-2015 S-19	BR-5D 19-Apr-2016 S-5	BR-5D 01-Nov-2016 S-19	BR-5D 25-May-2017 A-9	BR-5D 21-Nov-2017 BR-5D	BR-5D 16-May-2018 BR-5D
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	410	420	400	390	410	410	410	420	410
Ammonia Nitrogen	mg/l	--	--	2.5	2.3	2.5	0.20	2.3	0.91	2.3	2.5	2.6
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	45	58	48	31	48	36	49	60	46
Conductivity	uS/cm	--	--	960	1000	980	890	1000	920	1000	1000	940
Conductivity (Field)	uS/cm	--	--	965	930	945	920	880	395	900	870	810
Dissolved Organic Carbon	mg/l	--	5	3.3	3.8	3.4	2.2	3.5	2.3	3.2	3.1	2.9
Hardness, Calcium Carbonate	mg/l	--	--	450	430	420	440	430	450	440	400	400
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.4	7.5	7.5	7.5	7.4	7.5	7.4	7.5	7.6
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.026	0.028	0.017	0.014	0.011	0.015	0.008	0.037	0.026
Phosphorus, dissolved	mg/l	--	--	<0.1	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	34	44	42	46	44	40	42	44	39
Tannin & Lignin	mg/l	--	--	0.2	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	9	6	7	7	7	6	7.5	7.1	9.2
Total Dissolved Solids	mg/l	--	500	516	550	508	504	588	558	554	435	475
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.005	<0.0050	<0.005	0.01	<0.0050	<0.0050	<0.0050	<0.0050
Barium, dissolved	mg/l	1	--	0.37	0.39	0.33	0.16	0.37	0.23	0.37	0.36	0.35
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.23	0.23	0.23	0.18	0.23	0.18	0.22	0.21	0.22
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.0001	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	120	110	110	110	110	110	110	100	100
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0030	0.0043	0.0034	0.0009	0.0034	0.0040	0.0039	0.0035	0.0036
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	1.1	1.1	0.85	0.11	1.5	0.65	1.1	1.2	1.2
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	39	39	37	38	40	44	39	34	35
Manganese, dissolved	mg/l	--	0.05	0.093	0.15	0.093	0.024	0.095	0.17	0.12	0.12	0.093
Mercury	mg/l	0.001	--	--	--	--	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00072	0.0007	0.00072	0.0007	0.0008	0.00097	0.00072	0.00069	0.00065
Nickel, dissolved	mg/l	--	--	0.0049	0.006	0.0051	0.005	0.005	0.0049	0.0053	0.0041	0.0048
Potassium, dissolved	mg/l	--	--	6.6	7.1	6.5	4	7.3	6.2	7.1	6.5	6.3
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.002	<0.0020	<0.002	<0.002	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.0001	<0.00010	0.0004	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	44	50	42	25	47	25	47	42	42
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	0.0007	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.005	<0.0050	<0.005	0.013	<0.0050	<0.0050	0.0055	<0.0050
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-5D 26-Oct-2018 [5] BR-5D	BR-5D 29-May-2019 BR-5D	BR-5D 14-Nov-2019 BR-5D	BR-5D 06-May-2020 5D	BR-5D 28-Oct-2020 BR-5D	BR-5D 30-Apr-2021 BR-5D	BR-5D 23-Nov-2021 BR-5D
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	--	--	400	390	400	400	420	400	410
Ammonia Nitrogen	mg/l	--	--	1.8	2.3	1.7	2.3	1.0	1.2	0.79
Chloride	mg/l	--	250	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	50	59	57	58	45	48	42
Conductivity	uS/cm	--	--	970	960	990	990	990	960	910
Conductivity (Field)	uS/cm	--	--	1050	908	929	826	717	705	711
Dissolved Organic Carbon	mg/l	--	5	2.7	2.9	3.4	3.5	2.4	2.4	2.3
Hardness, Calcium Carbonate	mg/l	--	--	410	410	400	410	460	430	440
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.71	7.24	7.3	7.1	7.29	7.32	7.35
Phosphate	mg/l	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.040	0.066	0.023	0.020	0.018	0.016	0.022
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	38	45	38	39	39	41	39
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	9.06	10.4	9.2	10	9.27	10.3	9.8
Total Dissolved Solids	mg/l	--	500	490	545	530	490	485	555	490
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--
Metals										
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.25	0.35	0.3	0.34	0.24	0.22	0.22
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.2	0.21	0.2	0.22	0.18	0.15	0.18
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	110	110	100	100	110	110	110
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0032	0.0034	0.0032	0.0029	0.0023	0.0024	0.0024
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.82	0.79	0.87	0.95	0.84	0.42	0.39
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	36	35	34	36	43	37	39
Manganese, dissolved	mg/l	--	0.05	0.11	0.1	0.13	0.088	0.18	0.094	0.1
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00067	0.00070	0.00064	0.00066	0.0010	0.00073	0.00096
Nickel, dissolved	mg/l	--	--	0.0055	0.0048	0.0051	0.0049	0.0049	0.0047	0.0047
Potassium, dissolved	mg/l	--	--	5.6	6.3	5.7	6.2	5.7	4.3	5.1
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	40	41	41	45	31	30	29
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols										
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-5D 25-Apr-2022 BR-5D	BR-5D 17-Dec-2022 BR-5D	BR-5D 25-May-2023 BR-5D	BR-5D 26-Nov-2023 BR-5D
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	--	--	400	420	400	410
Ammonia Nitrogen	mg/l	--	--	1.7	0.74	1.6	0.20
Chloride	mg/l	--	250	--	--	--	--
Chloride, dissolved	mg/l	--	250	55	37	46	33
Conductivity	uS/cm	--	--	1000	930	960	920
Conductivity (Field)	uS/cm	--	--	990	928	880	899
Dissolved Organic Carbon	mg/l	--	5	2.9	2.0	2.4	2.0
Hardness, Calcium Carbonate	mg/l	--	--	430	450	410	460
Nitrate	mg/l	-- [14]	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--
pH (Field)	-	--	--	7.18	7.20	7.16	7.28
Phosphate	mg/l	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.008	0.014	0.010	0.013
Phosphorus, dissolved	mg/l	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	46	37	44	35
Tannin & Lignin	mg/l	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8.6	7.9	9.6	8.9
Total Dissolved Solids	mg/l	--	500	500	505	515	505
Total Organic Carbon	mg/l	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--
Metals							
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.29	0.18	0.23	0.18
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.21	0.16	0.16	0.16
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	110	110	110	110
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0028	0.0025	0.0020	0.0036
Copper, dissolved	mg/l	--	1	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.72	0.4	0.5	0.23
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	36	41	34	44
Manganese, dissolved	mg/l	--	0.05	0.094	0.11	0.06	0.15
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00075	0.00095	0.0012	0.00099
Nickel, dissolved	mg/l	--	--	0.0051	0.0047	0.0042	0.0066
Potassium, dissolved	mg/l	--	--	5.7	4.8	4.7	4.5
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	44	24	40	27
Strontium, dissolved	mg/l	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	0.0081
Phenols							
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-5S 01-Jul-2000	BR-5S 01-Oct-2000	BR-5S 14-Oct-2000	BR-5S 07-Sep-2001	BR-5S 06-Nov-2001	BR-5S 28-May-2002	BR-5S 02-Oct-2002	BR-5S 03-May-2003
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	368	--	440	445	445	386	409	--
Ammonia Nitrogen	mg/l	--	--	0.11	--	0.03	0.08	0.02	0.02	<0.02	--
Chloride	mg/l	--	250	14	--	13	20	20	13	14	--
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	772	--	748	884	889	844	853	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	447	464	407.9	460	--
Nitrate	mg/l	-- [14]	--	0.7	--	0.44	0.12	<0.1	0.18	0.74	--
Nitrogen	mg/l	--	--	2.72	--	0.16	--	--	0.31	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.35	--	7.6	7.59	7.61	7.93	7.8	--
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	<0.03	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	2.47	--	--	--	--	0.09	--	--
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	62	--	48	60	6	75	57	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	460	--	492	572	564	549	554	--
Total Organic Carbon	mg/l	--	--	4.7	--	3.2	--	--	2.5	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	0.2	--	<0.05	<0.05	<0.05	<0.05	<0.01	--
Barium, dissolved	mg/l	1	--	0.11	--	0.12	0.11	0.1	0.09	0.09	--
Beryllium, dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	--
Boron, dissolved	mg/l	5	--	0.14	--	0.19	0.2	0.17	0.19	0.15	--
Cadmium, dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--
Calcium, dissolved	mg/l	--	--	90	--	118	107	110	91	105	--
Chromium, dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.005	<0.001	<0.001	<0.001	--
Cobalt, dissolved	mg/l	--	--	<0.01	--	0.0009	0.0004	0.0005	0.0002	0.0002	--
Copper, dissolved	mg/l	--	1	<0.01	--	0.002	<0.001	<0.001	0.001	0.001	--
Iron, dissolved	mg/l	--	0.3	0.55	--	0.07	0.05	0.01	0.01	0.01	--
Lead, dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	--
Magnesium, dissolved	mg/l	--	--	41	--	52	51	46	44	48	--
Manganese, dissolved	mg/l	--	0.05	0.12	--	0.03	0.06	0.06	<0.01	0.013	--
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	--	--
Molybdenum, dissolved	mg/l	--	--	<0.01	--	<0.01	0.02	<0.01	<0.01	<0.005	--
Nickel, dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	0.02	<0.01	<0.005	--
Potassium, dissolved	mg/l	--	--	3	--	4	4	4	4	4	--
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	3.86	--	4.85	4.45	4.52	3.31	3.2	--
Silver, dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--
Sodium, dissolved	mg/l	--	200 [7]	17	--	9	11	12	25	17	--
Strontium, dissolved	mg/l	--	--	2.32	--	1.87	1.98	1.68	1.88	2.5	--
Sulfur	mg/l	--	--	23	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	--
Titanium, dissolved	mg/l	--	--	0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	--
Vanadium, dissolved	mg/l	--	--	<0.01	--	<0.001	0.002	<0.001	<0.001	<0.005	--
Zinc, dissolved	mg/l	--	5	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	--
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-5S 04-May-2004	BR-5S 04-Oct-2004	BR-5S 10-Jun-2005	BR-5S 29-Oct-2005	BR-5S 12-Apr-2006	BR-5S 25-Nov-2006	BR-5S 25-Apr-2007	BR-5S 04-Dec-2007
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	400	403	405	422	404	381	397	399
Ammonia Nitrogen	mg/l	--	--	0.09	--	0.1	1.78	<0.02	<0.02	0.05	0.05
Chloride	mg/l	--	250	18	18	17	42	18	18	19	21
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	834	886	840	885	890	520	880	500
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	2.8	2.5	2.5	2.8
Hardness, Calcium Carbonate	mg/l	--	--	--	--	444.5	--	467.7	452	448	419
Nitrate	mg/l	-- [14]	--	1.6	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	0.22	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.22	--	6.9	7	7	7.3	7.2	7.4
Phosphate	mg/l	--	--	0.14	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.18	--	0.1	0.08	0.07	0.13	0.82	0.05
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	0.1	0.08	0.04	0.03
Sulphate	mg/l	--	500 [6]	67	--	85	46	67	84	79	70
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	15.4	11	6	6	5	5
Total Dissolved Solids	mg/l	--	500	542	576	597	575	549	575	585	577
Total Organic Carbon	mg/l	--	--	2.1	2.5	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	--	--	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
Barium, dissolved	mg/l	1	--	--	--	0.11	--	0.1	0.1	0.1	0.11
Beryllium, dissolved	mg/l	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.19	0.14	0.18	0.31	0.17	0.15	0.18	0.14
Cadmium, dissolved	mg/l	0.005	--	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	98	--	104	--	110	107	107	100
Chromium, dissolved	mg/l	0.05	--	0.001	--	0.002	--	<0.001	<0.001	0.002	0.007
Cobalt, dissolved	mg/l	--	--	--	--	0.001	--	0.0004	0.0004	0.0041	0.0004
Copper, dissolved	mg/l	--	1	<0.001	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.01	--	0.26	7.15	0.04	0.05	0.04	0.04
Lead, dissolved	mg/l	0.01	--	<0.001	--	<0.001	--	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	48	--	45	--	47	45	44	41
Manganese, dissolved	mg/l	--	0.05	<0.01	--	--	--	<0.01	<0.01	0.02	<0.01
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	--	--	<0.005	--	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	--	<0.005	0.007	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	5	--	4	--	4	4	4	4
Selenium, dissolved	mg/l	0.05	--	--	--	0.002	--	<0.001	0.002	0.001	0.002
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	18	--	34	--	19	25	20	21
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	--	--	0.005	--	<0.001	0.001	0.004	0.003
Zinc, dissolved	mg/l	--	5	--	--	<0.01	0.02	<0.01	<0.01	<0.01	<0.01
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	<0.001	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-5S 03-May-2008	BR-5S 27-Nov-2008	BR-5S 29-Apr-2009 A-27	BR-5S 29-Nov-2009 A-23	BR-5S 19-May-2010 A-16	BR-5S 29-Nov-2010 A - 26	BR-5S 11-May-2011 S-26	BR-5S 29-Nov-2011 [9] A-10
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	397	397	395	429	399	423	419	403
Ammonia Nitrogen	mg/l	--	--	<0.02	<0.02	<0.02	1.20	0.06	<0.02	<0.02	<0.02
Chloride	mg/l	--	250	21	21	21	23	26	26	23	18
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	520	485	903	976	880	911	906	850
Conductivity (Field)	uS/cm	--	--	--	--	515	560	940	935	910	900
Dissolved Organic Carbon	mg/l	--	5	2.5	2.1	2.8	3.1	2.8	2.1	2.5	1.9
Hardness, Calcium Carbonate	mg/l	--	--	416	447	432	436	449	514	453	429
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.5	7.4	7.5	7.4	7.7	7.6	7.5	7.5
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.04	0.03	0.06	0.28	0.06	0.02	0.03	0.02
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01
Sulphate	mg/l	--	500 [6]	76	63	83	87	99	62	80	54
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	7	6	9	7	12	8	9.0	8
Total Dissolved Solids	mg/l	--	500	592	567	587	634	572	592	589	552
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.1	0.11	0.09	0.09	0.09	0.10	0.09	0.10
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.18	0.18	0.17	0.16	0.13	0.16	0.14	0.19
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	99	108	102	107	109	130	109	106
Chromium, dissolved	mg/l	0.05	--	0.002	0.001	0.002	0.002	<0.001	0.001	0.001	0.001
Cobalt, dissolved	mg/l	--	--	0.0003	0.0003	0.0003	0.0008	0.0004	0.0004	0.0006	0.0004
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.03	<0.03	<0.03	0.03	0.05	0.07	0.48	<0.03
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	41	43	43	41	43	46	44	40
Manganese, dissolved	mg/l	--	0.05	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	0.02	<0.01
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	4	4	4	4	4	4	4	3
Selenium, dissolved	mg/l	0.05	--	0.002	0.002	0.001	0.007	<0.001	<0.001	<0.001	<0.005
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	20	21	31	37	41	22	43	21
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.003	0.004	0.005	0.005	<0.001	0.002	0.002	0.004
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-5S 20-May-2012 S-10	BR-5S 13-Nov-2012 [11] A - 15	BR-5S 30-May-2014 S-12	BR-5S 18-Nov-2014 A-13	BR-5S 06-May-2015 S-20	BR-5S 16-Nov-2015 S-20	BR-5S 19-Apr-2016 S-6	BR-5S 01-Nov-2016 S-21
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	411	435	390	390	380	380	360	390
Ammonia Nitrogen	mg/l	--	--	0.06	0.04	0.051	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	23	23	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	21	21	23	25	18	22
Conductivity	uS/cm	--	--	896	902	790	850	840	840	800	850
Conductivity (Field)	uS/cm	--	--	880	865	850	840	830	795	805	795
Dissolved Organic Carbon	mg/l	--	5	2.3	2.1	1.3	1.7	1.5	1.6	1.8	1.7
Hardness, Calcium Carbonate	mg/l	--	--	327	443	460	420	420	440	430	430
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.4	7.5	7.6	7.5	7.4	7.5	7.5	7.6
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.03	0.02	0.026	0.037	0.031	0.030	0.023	0.028
Phosphorus, dissolved	mg/l	--	--	--	--	<0.1	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	66	63	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	33	39	46	47	40	48
Tannin & Lignin	mg/l	--	--	--	--	<0.2	--	--	--	--	--
Temperature (Field)	deg c	--	15	10	8	9	7	8	7	7.1	7
Total Dissolved Solids	mg/l	--	500	582	586	434	450	486	490	512	536
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050
Barium, dissolved	mg/l	1	--	<0.01	0.09	0.09	0.089	0.085	0.088	0.083	0.09
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.0005	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050
Boron, dissolved	mg/l	5	--	<0.01	0.16	0.15	0.15	0.16	0.17	0.17	0.16
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	<0.0001	<0.0001	<0.00010
Calcium, dissolved	mg/l	--	--	78	108	110	100	100	110	100	110
Chromium, dissolved	mg/l	0.05	--	<0.001	0.001	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.0002	0.0003	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.38	<0.03	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050
Magnesium, dissolved	mg/l	--	--	32	42	43	41	40	42	44	40
Manganese, dissolved	mg/l	--	0.05	<0.01	<0.01	<0.0020	<0.002	<0.0020	<0.002	<0.002	<0.0020
Mercury	mg/l	0.001	--	--	--	--	--	--	<0.00010	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	0.0028	0.0027	0.0028	0.0025	0.0027	0.0026
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	0.0025	0.003	0.0023	0.003	0.003	0.0030
Potassium, dissolved	mg/l	--	--	2	3	3.2	3.3	3.3	3.5	3.6	3.3
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.01	<0.0020	<0.002	<0.0020	<0.002	<0.002	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	0.0004	<0.0001	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	21	27	16	14	17	18	20	18
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.001	0.002	<0.00050	0.0006	<0.00050	<0.0005	<0.0005	<0.00050
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-5S 25-May-2017 A-10	BR-5S 21-Nov-2017 [17] BR-5S	BR-5S 16-May-2018 BR-5S	BR-5S 26-Oct-2018 [5] BR-5S	BR-5S 29-May-2019 BR-5S	BR-5S 14-Nov-2019 BR-5S	BR-5S 06-May-2020 5S	BR-5S 28-Oct-2020 BR-5S
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	390	420	420	390	400	410	400	390
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050	<0.050	0.060	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	21	24	26	26	28	28	29	28
Conductivity	uS/cm	--	--	860	880	830	840	860	880	890	880
Conductivity (Field)	uS/cm	--	--	815	880	465	976	852	880	606	650
Dissolved Organic Carbon	mg/l	--	5	1.6	1.8	1.7	1.8	1.9	2.3	2.2	1.7
Hardness, Calcium Carbonate	mg/l	--	--	430	390	430	430	430	420	440	430
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.4	7.4	7.4	7.98	7.86	7.7	7.27	7.23
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	0.022	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.039	0.046	0.025	0.015	0.018	0.078	0.046	0.017
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	46	37	42	40	44	37	38	37
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	7.5	7.1	9.1	9	10.4	9.0	9.2	10.3
Total Dissolved Solids	mg/l	--	500	484	470	410	435	480	470	475	450
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.0050	0.0056	<0.0050	<0.0050	<0.0050	<0.0050	0.0052	0.011
Barium, dissolved	mg/l	1	--	0.089	0.075	0.09	0.087	0.087	0.082	0.088	0.087
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040
Boron, dissolved	mg/l	5	--	0.16	0.12	0.16	0.13	0.15	0.12	0.15	0.15
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090
Calcium, dissolved	mg/l	--	--	100	97	100	100	110	100	110	100
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	41	36	41	41	41	40	43	41
Manganese, dissolved	mg/l	--	0.05	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0031	0.0021	0.0030	0.0025	0.0031	0.0025	0.0035	0.0029
Nickel, dissolved	mg/l	--	--	0.0028	0.0025	0.0029	0.0031	0.0033	0.0029	0.0031	0.0032
Potassium, dissolved	mg/l	--	--	3.4	2.9	3.2	3	3.3	2.9	3.3	3.1
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	20	13	21	19	21	18	27	21
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-5S 30-Apr-2021 BR5S	BR-5S 23-Nov-2021 BR-5S	BR-5S 25-Apr-2022 BR-5S	BR-5S 17-Dec-2022 BR-5S	BR-5S 25-May-2023 BR-5S	BR-5S 26-Nov-2023 BR-5S
General Chemistry									
Alkalinity (Total as CaCO3)	mg/l	--	--	400	420	400	410	400	400
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	30	33	32	29	24	22
Conductivity	uS/cm	--	--	960	890	900	890	890	970
Conductivity (Field)	uS/cm	--	--	662	649	898	906	851	877
Dissolved Organic Carbon	mg/l	--	5	1.9	1.7	1.7	1.9	1.7	1.5
Hardness, Calcium Carbonate	mg/l	--	--	450	450	470	440	440	420
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.3	7.28	7.46	7.44	7.39	7.32
Phosphate	mg/l	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	0.065	<0.010	<0.010
Phosphorus	mg/l	--	--	0.10	0.031	0.016	0.082	0.035	0.044
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	87	40	45	40	50	98
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	10.5	8.9	8.9	7.6	8.8	7.6
Total Dissolved Solids	mg/l	--	500	455	445	460	445	465	505
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--
Metals									
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	0.14
Barium, dissolved	mg/l	1	--	0.091	0.091	0.091	0.087	0.083	0.089
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.16	0.16	0.17	0.16	0.17	0.16
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	110	110	120	110	110	100
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00075
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	0.23
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	43	42	45	42	43	40
Manganese, dissolved	mg/l	--	0.05	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.026
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0029	0.0024	0.0031	0.0029	0.0030	0.0060
Nickel, dissolved	mg/l	--	--	0.0031	0.0036	0.0032	0.0031	0.0029	0.0039
Potassium, dissolved	mg/l	--	--	3.4	3.2	3.4	3.5	3.4	3.8
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	24	19	25	21	31	75
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00055
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols									
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-6 01-Feb-1993	BR-6 01-Sep-1993	BR-6 01-Nov-1993	BR-6 01-Aug-1994	BR-6 01-Dec-1994	BR-6 01-May-1995	BR-6 01-Sep-1995	BR-6 01-Apr-1996
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	464	476	462	391	439	452	455	404
Ammonia Nitrogen	mg/l	--	--	--	<0.1	4.53	<0.1	0.5	6	6.03	4.7
Chloride	mg/l	--	250	26	46	56.7	37	35	73	71	75
Conductivity	uS/cm	--	--	--	904	1115	771	943	1130	1124	1060
Nitrate	mg/l	-- [14]	--	--	<0.1	0.46	<0.1	<0.1	<0.1	<0.01	<0.1
Nitrogen	mg/l	--	--	--	<0.1	4.95	<0.1	0.67	--	--	--
pH (Field)	-	--	--	--	7.71	8.17	8.1	7.24	7.51	7.35	7.37
Phosphate	mg/l	--	--	--	<0.1	<0.1	<0.1	--	0.3	0.03	<0.03
Phosphorus	mg/l	--	--	--	--	--	--	<0.1	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	0.279	0.11	<0.1	--	<0.1	<0.1	--
Sulphate	mg/l	--	500 [6]	34	16.7	81	25.3	26.3	51	53	60
Total Dissolved Solids	mg/l	--	500	540	588	600	440	564	656	668	636
Total Organic Carbon	mg/l	--	--	--	8.8	8.9	5.6	7.3	9.3	9	6.9
Metals											
Aluminum, dissolved	mg/l	--	--	--	--	--	--	--	<0.03	<0.03	<0.03
Barium, dissolved	mg/l	1	--	--	--	--	--	--	0.44	0.4	0.36
Beryllium, dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	0.02
Boron, dissolved	mg/l	5	--	--	0.26	0.33	0.37	0.21	0.48	0.41	0.44
Cadmium, dissolved	mg/l	0.005	--	--	0.00009	<0.01	<0.0001	<0.0001	<0.005	<0.005	<0.005
Calcium, dissolved	mg/l	--	--	--	110	107	72	90.5	98	88	84
Chromium, dissolved	mg/l	0.05	--	--	<0.01	0.012	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt, dissolved	mg/l	--	--	--	--	--	--	--	0.01	0.02	0.02
Copper, dissolved	mg/l	--	1	--	<0.01	<0.01	0.026	<0.01	<0.005	<0.005	0.008
Iron, dissolved	mg/l	--	0.3	--	1.446	4.9	0.6	1.6	5.03	4.1	4.03
Lead, dissolved	mg/l	0.01	--	--	0.0023	0.009	0.0002	0.0003	<0.002	<0.002	<0.002
Magnesium, dissolved	mg/l	--	--	--	53.9	42.2	46.2	41.8	37	35	36
Manganese, dissolved	mg/l	--	0.05	--	0.378	0.317	132	0.225	0.28	0.24	0.23
Mercury, dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002
Molybdenum, dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	<0.01
Nickel, dissolved	mg/l	--	--	--	0.031	0.028	<0.02	<0.02	0.02	<0.01	<0.01
Potassium, dissolved	mg/l	--	--	--	3.89	10.8	6.8	6.8	12	11	14
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	7.3	6.7	6.1
Silver, dissolved	mg/l	--	--	--	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
Sodium, dissolved	mg/l	--	200 [7]	--	19.5	75.6	12.9	25	75	77	83
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	9.45	8.32	8.49
Sulfur	mg/l	--	--	--	--	--	--	--	19	17	20
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	<0.2
Tin, dissolved	mg/l	--	--	--	--	--	--	--	0.07	<0.05	<0.05
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	<0.01
Zinc, dissolved	mg/l	--	5	--	--	--	--	--	<0.01	<0.01	0.01
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	<0.002	<0.002	<0.001	0.004	<0.002	<0.002	<0.001

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-6 01-Sep-1996	BR-6 01-Jun-1997	BR-6 01-Aug-1997	BR-6 22-Nov-1998	BR-6 15-Jul-1999	BR-6 16-Oct-1999
General Chemistry									
Alkalinity (Total as CaCO3)	mg/l	--	--	437	405	409	452	453	476
Ammonia Nitrogen	mg/l	--	--	4.91	3.89	4	5.38	4.8	5.26
Chloride	mg/l	--	250	73	75	75	78	73	75
Conductivity	uS/cm	--	--	1090	1066	1074	1090	979	1129
Nitrate	mg/l	-- [14]	--	<0.1	<0.1	<0.1	-- [16]	0.1	<0.01
Nitrogen	mg/l	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.36	7.33	7.3	7.62	6.87	7.38
Phosphate	mg/l	--	--	<0.03	<0.03	<0.03	0.03	<0.03	<0.03
Phosphorus	mg/l	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	54	57	5	48	51	50
Total Dissolved Solids	mg/l	--	500	660	644	644	640	596	680
Total Organic Carbon	mg/l	--	--	8.2	5.7	5.9	8.2	5.4	9.1
Metals									
Aluminum, dissolved	mg/l	--	--	0.25	0.04	<0.03	-- [16]	<0.03	<0.03
Barium, dissolved	mg/l	1	--	0.36	0.33	0.31	0.37	0.35	0.73
Beryllium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	-- [16]	<0.01	<0.01
Boron, dissolved	mg/l	5	--	0.41	0.4	0.38	0.38	0.39	0.5
Cadmium, dissolved	mg/l	0.005	--	<0.005	<0.005	<0.005	-- [16]	<0.005	<0.01
Calcium, dissolved	mg/l	--	--	91	81	89	101	101	99
Chromium, dissolved	mg/l	0.05	--	<0.01	0.02	<0.01	-- [16]	<0.01	<0.01
Cobalt, dissolved	mg/l	--	--	0.03	0.01	<0.01	0.01	<0.01	<0.01
Copper, dissolved	mg/l	--	1	0.005	0.017	0.01	-- [16]	<0.005	<0.01
Iron, dissolved	mg/l	--	0.3	4.14	3.18	2.67	4.13	3.72	4.37
Lead, dissolved	mg/l	0.01	--	<0.002	<0.002	<0.002	-- [16]	<0.002	<0.002
Magnesium, dissolved	mg/l	--	--	40	34	37	42	41	39
Manganese, dissolved	mg/l	--	0.05	0.21	0.2	0.21	0.2	0.22	0.19
Mercury, dissolved	mg/l	0.001	--	<0.0002	<0.0002	<0.0002	-- [16]	<0.0002	<0.0002
Molybdenum, dissolved	mg/l	--	--	<0.03	<0.03	<0.03	-- [16]	<0.01	<0.01
Nickel, dissolved	mg/l	--	--	0.02	0.02	0.02	-- [16]	<0.01	<0.01
Potassium, dissolved	mg/l	--	--	11	10	12	10	11	11
Silicon, dissolved	mg/l	--	--	5.7	5.2	5	6	6.4	6.7
Silver, dissolved	mg/l	--	--	<0.0012	<0.001	<0.01	-- [16]	<0.01	0.01
Sodium, dissolved	mg/l	--	200 [7]	86	79	92	88	91	87
Strontium, dissolved	mg/l	--	--	8.06	7.44	6.41	10.6	9.13	10.1
Sulfur	mg/l	--	--	16	18	19	17	17	16
Thallium, dissolved	mg/l	--	--	<0.2	<0.2	<0.2	-- [16]	<0.2	<0.2
Tin, dissolved	mg/l	--	--	<0.05	<0.05	<0.05	-- [16]	<0.05	--
Titanium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	-- [16]	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	-- [16]	<0.01	<0.01
Zinc, dissolved	mg/l	--	5	0.02	0.01	<0.01	-- [16]	<0.01	0.23
Phenols									
Phenolics, Total Recoverable	mg/l	--	--	<0.002	<0.002	<0.002	-- [16]	<0.001	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-6D 01-Jul-2000	BR-6D 01-Oct-2000	BR-6D 14-Oct-2000	BR-6D 07-Sep-2001	BR-6D 06-Nov-2001	BR-6D 28-May-2002	BR-6D 02-Oct-2002	BR-6D 03-May-2003	BR-6D 03-Nov-2003	BR-6D 04-May-2004
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	424	--	435	431	445	383	408	439	434	394
Ammonia Nitrogen	mg/l	--	--	4.52	--	5.24	0.51	1.9	3	3.68	4.18	3.75	3.02
Chloride	mg/l	--	250	98	--	84	20	72	90	93	93	85	99
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	1100	--	940	852	1120	1150	1130	1170	1140	1130
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	447	359	354.2	366	--	--	--
Nitrate	mg/l	-- [14]	--	<0.1	--	<0.1	<0.1	<0.1	0.36	<0.1	<0.1	<0.1	<0.1
Nitrogen	mg/l	--	--	5.49	--	5.25	--	--	3.84	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	3.53
pH (Field)	-	--	--	7.19	--	7.54	7.47	7.47	7.62	7.66	7.68	7.63	7.43
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	<0.03	--	0.16	0.1	0.18
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.24	--	--	--	--	0.22	--	<0.005	--	0.1
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.2	0.1	--
Sulphate	mg/l	--	500 [6]	61	--	56	66	49	70	57	56	53	62
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	620	--	576	564	644	748	735	761	741	735
Total Organic Carbon	mg/l	--	--	4.8	--	5.6	--	--	5	--	5.2	5	2.4
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	4.88	26.5	--
Metals													
Aluminum, dissolved	mg/l	--	--	<0.05	--	0.06	<0.05	<0.05	0.07	<0.01	<0.01	0.01	--
Barium, dissolved	mg/l	1	--	0.32	--	0.35	0.09	0.31	**3.03**	0.32	0.3	0.37	--
Beryllium, dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	--
Boron, dissolved	mg/l	5	--	0.39	--	0.4	0.24	0.37	4.09	0.37	0.41	0.38	0.41
Cadmium, dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	86	--	94	98	86	81	84	91	94	78
Chromium, dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.005	0.001	<0.001	<0.001	0.013	0.002	0.002
Cobalt, dissolved	mg/l	--	--	0.01	--	0.018	0.0032	0.0117	0.0077	0.0076	0.0074	0.0103	--
Copper, dissolved	mg/l	--	1	<0.01	--	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron, dissolved	mg/l	--	0.3	3.85	--	3.72	0.37	3.96	33.5	3.75	4.05	3.39	3.33
Lead, dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	38	--	38	49	35	37	38	41	39	35
Manganese, dissolved	mg/l	--	0.05	0.24	--	0.23	0.15	0.21	1.48	0.174	0.177	0.203	0.16
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	--	<0.01	0.02	<0.01	0.02	<0.005	<0.005	<0.005	--
Nickel, dissolved	mg/l	--	--	<0.01	--	0.02	<0.01	<0.01	<0.01	<0.005	<0.005	0.013	0.009
Potassium, dissolved	mg/l	--	--	11	--	12	3	11	10	11	11	14	11
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	6.46	--	6.98	3.38	6.73	50.7	5.1	6	--	--
Silver, dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	90	--	76	16	77	91	99	94	86	94
Strontium, dissolved	mg/l	--	--	10.4	--	7.68	2.86	6.65	128	14.3	12.7	--	--
Sulfur	mg/l	--	--	20	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--
Titanium, dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	--	<0.01	<0.01	--	--
Vanadium, dissolved	mg/l	--	--	<0.01	--	<0.001	0.002	<0.001	<0.001	<0.005	--	--	--
Zinc, dissolved	mg/l	--	5	<0.01	--	<0.01	<0.01	<0.01	0.06	<0.005	0.004	--	--
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	<0.001	--	<0.001	0.013	<0.001	<0.001	<0.001	--	--	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-6D 04-Oct-2004	BR-6D 12-Apr-2006	BR-6D 25-Nov-2006	BR-6D 25-Apr-2007	BR-6D 04-Dec-2007	BR-6D 03-May-2008	BR-6D 27-Nov-2008	BR-6D 28-Apr-2009 A-10	BR-6D 29-Nov-2009 A-19	BR-6D 19-May-2010 A-10
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	399	411	394	383	402	385	386	385	406	367
Ammonia Nitrogen	mg/l	--	--	3.4	2.94	2.44	2.18	2.82	2.23	2.32	1.91	2.38	1.59
Chloride	mg/l	--	250	89	96	93	91	91	95	90	89	84	92
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	1100	1020	895	895	930	900	805	1080	1100	1090
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	1090	1010	1070
Dissolved Organic Carbon	mg/l	--	5	--	4.1	3.1	3.3	4.7	3.2	2.8	3.0	3.7	3.3
Hardness, Calcium Carbonate	mg/l	--	--	--	379.2	358.5	359	351	351	336	345	338	322
Nitrate	mg/l	-- [14]	--	<0.1	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	4.08	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.18	7	7.2	7.2	7.3	7.2	7.3	7.9	8	7.7
Phosphate	mg/l	--	--	0.22	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.17	0.16	0.13	0.28	0.08	0.09	0.07	0.09	0.07	0.07
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	0.1	0.07	0.07	<0.01	<0.01	<0.01	0.02	0.02	0.02
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	53	59	58	60	55	59	57	59	54	61
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	6	8	6	8	8	6	10	7	9.4
Total Dissolved Solids	mg/l	--	500	715	715	728	722	722	708	715	702	715	708
Total Organic Carbon	mg/l	--	--	5.2	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	--	0.31	0.29	0.27	0.32	0.29	0.3	0.24	0.30	0.27
Beryllium, dissolved	mg/l	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.42	0.41	0.38	0.4	0.43	0.45	0.41	0.41	0.43	0.36
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	80	91	86	86	83	83	80	82	81	76
Chromium, dissolved	mg/l	0.05	--	0.002	0.003	0.003	0.002	0.006	0.004	0.003	0.003	0.002	<0.001
Cobalt, dissolved	mg/l	--	--	--	0.0056	0.0041	0.0058	0.0077	0.0055	0.0039	0.0027	0.0045	0.0038
Copper, dissolved	mg/l	--	1	<0.001	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	4.25	3.52	3.64	3.77	3.69	3.01	3.21	2.64	3.22	2.50
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	34	37	35	35	35	35	33	34	33	32
Manganese, dissolved	mg/l	--	0.05	0.22	0.16	0.15	0.18	0.21	0.23	0.15	0.12	0.14	0.15
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.013	0.009	0.006	0.007	0.01	0.006	0.008	<0.005	0.007	<0.005
Potassium, dissolved	mg/l	--	--	9	11	11	10	10	10	9	9	9	9
Selenium, dissolved	mg/l	0.05	--	--	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	84	92	86	89	86	89	85	90	81	95
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	--	0.002	0.001	0.003	0.008	0.005	0.005	0.005	0.003	<0.001
Zinc, dissolved	mg/l	--	5	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	<0.001	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-6D 29-Nov-2010 A - 23	BR-6D 11-May-2011 S-22	BR-6D 29-Nov-2011 A-11	BR-6D 20-May-2012 S-6	BR-6D 13-Nov-2012 A - 9	BR-6D 30-May-2014 S-6	BR-6D 19-Nov-2014 A-20	BR-6D 06-May-2015 S-15	BR-6D 16-Nov-2015 [4] S-10	BR-6D 19-Apr-2016 S-15
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	417	402	401	404	435	420	410	400	410	390
Ammonia Nitrogen	mg/l	--	--	2.28	2.00	2.38	2.51	2.27	3.1	3.0	3.3	3.0	2.6
Chloride	mg/l	--	250	90	90	95	92	91	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	89	95	91	93	98
Conductivity	uS/cm	--	--	1100	1040	1120	1100	1140	1100	1100	1100	1100	1100
Conductivity (Field)	uS/cm	--	--	1010	1020	1005	1125	1090	1080	995	1005	1080	990
Dissolved Organic Carbon	mg/l	--	5	3.5	3.6	2.9	2.9	3.8	2.9	3.5	3.2	3.3	2.5
Hardness, Calcium Carbonate	mg/l	--	--	374	347	341	267	365	380	370	380	370	330
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.6	7.8	7.6	7.2	7.3	7.4	7.3	7.4	7.5	7.3
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.07	0.06	0.03	0.06	0.06	0.11	0.090	0.071	0.081	0.057
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	<0.1	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	0.01	<0.01	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	52	54	59	55	53	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	42	47	42	48	53
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	0.3	--	--	--	--
Temperature (Field)	deg c	--	15	6.8	9.0	8	9	8	9	6	8	7	8.6
Total Dissolved Solids	mg/l	--	500	715	676	728	715	741	584	640	616	614	652
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0050	<0.0050	<0.0050	<0.005	<0.005
Barium, dissolved	mg/l	1	--	0.26	0.25	0.30	0.26	0.29	0.3	0.31	0.29	0.3	0.27
Beryllium, dissolved	mg/l	--	--	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.35	0.32	0.40	0.30	0.38	0.39	0.42	0.36	0.38	0.37
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	92	83	82	64	87	92	86	90 [8]	88	79
Chromium, dissolved	mg/l	0.05	--	0.002	0.002	0.002	0.003	0.002	<0.0050	<0.0050	<0.0050	<0.005	<0.005
Cobalt, dissolved	mg/l	--	--	0.0041	0.0034	0.0064	0.0040	0.0058	0.0026	0.0037	0.0041	0.0053	0.0032
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	2.71	2.65	2.81	2.36	2.87	3.3	3.1	3.3	3.3	2.6
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005
Magnesium, dissolved	mg/l	--	--	35	34	33	26	36	38	37	37	37	34
Manganese, dissolved	mg/l	--	0.05	0.15	0.16	0.21	0.16	0.22	0.14	0.16	0.17	0.17	0.15
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	<0.00010	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	0.0011	0.0011	0.0012	0.0011	0.0012
Nickel, dissolved	mg/l	--	--	0.005	<0.005	0.006	<0.005	0.006	0.0045	0.0053	0.0052	0.007	0.004
Potassium, dissolved	mg/l	--	--	11	10	9	7	9	11	11	11	11	9.6
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0020	<0.0020	<0.0020	<0.002	<0.002
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	0.0002
Sodium, dissolved	mg/l	--	200 [7]	94	82	95	72	98	96	94	88	93	92
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.002	0.003	0.003	0.003	0.002	<0.00050	<0.00050	0.00056	<0.0005	0.0005
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0050	<0.0050	<0.0050	<0.005	<0.005
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-6D 01-Nov-2016 S-16	BR-6D 25-May-2017 [17] A-6	BR-6D 21-Nov-2017 BR-6D	BR-6D 16-May-2018 BR-6D	BR-6D 26-Oct-2018 [5] BR-6D	BR-6D 30-May-2019 BR-6D	BR-6D 14-Nov-2019 BR-6D	BR-6D 06-May-2020 6D	BR-6D 28-Oct-2020 BR-6D
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	410	390	410	380	390	370	400	370	400
Ammonia Nitrogen	mg/l	--	--	3.1	2.1	2.5	2.2	2.4	1.7	2.2	1.7	2.4
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	94	110	95	93	97	91	90	86	78
Conductivity	uS/cm	--	--	1100	1100	1100	1000	1100	1100	1100	1100	1100
Conductivity (Field)	uS/cm	--	--	895	965	940	1010	1210	1085	1090	921	816
Dissolved Organic Carbon	mg/l	--	5	3.3	2.1	2.5	2.1	2.7	1.9	2.4	2.1	2.9
Hardness, Calcium Carbonate	mg/l	--	--	370	350	330	340	330	340	350	340	380
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.4	7.3	7.4	7.6	7.55	7.39	7.3	7.18	7.55
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	0.013	<0.010	<0.010	<0.010	<0.010	0.076	<0.010	<0.010
Phosphorus	mg/l	--	--	0.074	0.061	0.060	0.059	0.059	0.057	0.058	0.047	0.060
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	50	55	49	50	56	52	47	49	45
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8	8.8	7.6	10	10.1	9.6	10.1	10.8	10.93
Total Dissolved Solids	mg/l	--	500	658	612	565	530	550	585	580	485	560
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0049
Barium, dissolved	mg/l	1	--	0.3	0.25	0.25	0.25	0.26	0.25	0.25	0.23	0.26
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040
Boron, dissolved	mg/l	5	--	0.35	0.38	0.36	0.37	0.36	0.37	0.35	0.35	0.37
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090
Calcium, dissolved	mg/l	--	--	89	81	78	80	78	80	81	79	90
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0062	0.0030	0.0030	0.0031	0.0040	0.0024	0.0026	0.0024	0.0027
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	3	2.5	2.6	2.2	2.5	2	2.5	2.1	2.5
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	37	35	33	34	34	33	35	34	37
Manganese, dissolved	mg/l	--	0.05	0.2	0.14	0.15	0.16	0.2	0.12	0.13	0.14	0.17
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0012	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013
Nickel, dissolved	mg/l	--	--	0.011	0.0036	0.0044	0.0040	0.0051	0.0033	0.0044	0.0035	0.0045
Potassium, dissolved	mg/l	--	--	11	9.9	9.5	9.6	9	9.5	10	9	10
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	93	100	85	90	92	92	89	89	87
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-6D 30-Apr-2021 BR-6D	BR-6D 23-Nov-2021 BR-6D	BR-6D 25-Apr-2022 BR-6D	BR-6D 17-Dec-2022 BR-6D	BR-6D 25-May-2023 BR-6D	BR-6D 25-Nov-2023 BR-6D
General Chemistry									
Alkalinity (Total as CaCO3)	mg/l	--	--	380	400	380	410	370	390
Ammonia Nitrogen	mg/l	--	--	1.9	2.5	1.9	2.3	1.5	2.1
Chloride	mg/l	--	250	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	87	75	79	83	81	73
Conductivity	uS/cm	--	--	1100	1000	1100	1100	1100	1100
Conductivity (Field)	uS/cm	--	--	783	768	1060	1074	1048	1074
Dissolved Organic Carbon	mg/l	--	5	2.4	3.0	2.3	3.0	1.9	2.7
Hardness, Calcium Carbonate	mg/l	--	--	350	350	360	360	350	370
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.59	7.62	7.22	7.18	7.28	7.39
Phosphate	mg/l	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.053	0.063	0.057	0.061	0.050	0.050
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	52	44	52	38	54	50
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	10.1	8.6	10.1	8.8	9.6	8.8
Total Dissolved Solids	mg/l	--	500	585	520	535	555	560	560
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--
Metals									
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.24	0.25	0.24	0.25	0.22	0.25
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.33	0.35	0.33	0.34	0.34	0.35
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	82	85	87	86	83	88
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0025	0.0025	0.0022	0.0022	0.0019	0.0038
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	2	2.6	2.5	2.7	1.8	2.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	34	34	35	36	34	35
Manganese, dissolved	mg/l	--	0.05	0.15	0.15	0.13	0.13	0.1	0.2
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0012	0.0011	0.0013	0.0013	0.0013	0.0013
Nickel, dissolved	mg/l	--	--	0.0038	0.0045	0.0037	0.0045	0.0031	0.0054
Potassium, dissolved	mg/l	--	--	9.1	8.9	9.6	9	9	9.5
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	89	73	87	82	84	82
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols									
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-6S 01-Jul-2000	BR-6S 01-Oct-2000	BR-6S 14-Oct-2000	BR-6S 07-Sep-2001	BR-6S 06-Nov-2001	BR-6S 28-May-2002	BR-6S 02-Oct-2002	BR-6S 03-May-2003	BR-6S 03-Nov-2003
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	436	--	448	445	427	409	413	407	413
Ammonia Nitrogen	mg/l	--	--	0.05	--	0.02	5.03	0.04	<0.02	<0.02	<0.02	<0.02
Chloride	mg/l	--	250	31	--	26	31	36	29	22	25	32
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	878	--	780	1080	899	902	852	855	875
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	369	503	449.1	455	--	--
Nitrate	mg/l	-- [14]	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrogen	mg/l	--	--	0.59	--	0.12	--	--	0.21	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.16	--	7.6	7.36	7.59	7.74	7.72	7.63	7.68
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	0.03	--	0.34	0.08
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.26	--	--	--	--	0.06	--	<0.005	--
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.09	0.03
Sulphate	mg/l	--	500 [6]	33	--	28	38	32	44	38	39	36
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	560	--	492	632	540	586	554	556	569
Total Organic Carbon	mg/l	--	--	5.6	--	4.5	--	--	3.2	--	5.3	3
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	0.09	0.24
Metals												
Aluminum, dissolved	mg/l	--	--	<0.05	--	<0.05	<0.05	<0.05	0.08	<0.01	0.02	<0.01
Barium, dissolved	mg/l	1	--	0.09	--	0.09	0.37	0.08	0.87	0.09	0.08	0.1
Beryllium, dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.21	--	0.2	0.41	0.19	2.47	0.23	0.25	0.23
Cadmium, dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	99	--	104	85	104	96	98	213	104
Chromium, dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.006	0.001	0.001	<0.001	0.011	0.008
Cobalt, dissolved	mg/l	--	--	<0.01	--	0.0064	0.0114	0.0036	0.0042	0.003	0.0034	0.0042
Copper, dissolved	mg/l	--	1	<0.01	--	0.002	<0.001	0.001	0.001	0.001	0.001	0.002
Iron, dissolved	mg/l	--	0.3	0.06	--	0.12	4.09	0.09	0.47	0.14	0.14	<0.01
Lead, dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	52	--	53	38	59	51	51	50	52
Manganese, dissolved	mg/l	--	0.05	0.18	--	0.15	0.25	0.12	1.1	0.102	0.108	0.121
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	0.02	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.01	--	<0.01	0.01	<0.01	0.02	<0.005	<0.005	0.008
Potassium, dissolved	mg/l	--	--	3	--	3	12	3	3	3	3	4
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	3.34	--	3.65	6.95	3.29	26.9	2.6	3.1	--
Silver, dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	22	--	25	85	18	20	18	18	19
Strontium, dissolved	mg/l	--	--	2.46	--	2.51	13.3	2.43	31.1	3.7	3.4	--
Sulfur	mg/l	--	--	12	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--
Titanium, dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	--	<0.01	<0.01	--
Vanadium, dissolved	mg/l	--	--	<0.01	--	<0.001	0.002	<0.001	<0.001	<0.005	--	--
Zinc, dissolved	mg/l	--	5	<0.01	--	<0.01	<0.01	<0.01	0.02	<0.005	<0.005	--
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-6S 04-May-2004	BR-6S 04-Oct-2004	BR-6S 10-Jun-2005	BR-6S 29-Oct-2005	BR-6S 12-Apr-2006	BR-6S 25-Nov-2006	BR-6S 25-Apr-2007	BR-6S 04-Dec-2007	BR-6S 03-May-2008
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	393	401	398	409	394	398	375	398	399
Ammonia Nitrogen	mg/l	--	--	0.03	0.04	<0.02	0.14	0.05	<0.02	0.02	0.05	<0.02
Chloride	mg/l	--	250	31	24	25	24	24	24	28	25	28
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	856	833	1200	1110	1100	1010	1010	990	815
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	2.6	2.4	2.7	3.8	2.6
Hardness, Calcium Carbonate	mg/l	--	--	--	--	431.1	--	436.1	422	430	411	438
Nitrate	mg/l	-- [14]	--	<0.1	<0.1	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	0.17	0.16	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.34	7.22	6.5	6.7	6.8	6.7	6.7	6.8	6.8
Phosphate	mg/l	--	--	0.12	0.1	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.06	0.06	0.01	0.03	0.04	0.05	0.05	0.05	0.03
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	0.03	0.02	0.04	0.02	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	42	41	46	43	41	42	40	41	49
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	15.2	12	6	5	5	5	8
Total Dissolved Solids	mg/l	--	500	556	541	525	722	526	554	533	550	565
Total Organic Carbon	mg/l	--	--	2.4	3.7	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	--	--	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	--	--	0.11	--	0.1	0.1	0.1	0.1	0.11
Beryllium, dissolved	mg/l	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.29	0.27	0.3	0.28	0.29	0.29	0.3	0.3	0.35
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	92	92	97	--	99	95	98	92	98
Chromium, dissolved	mg/l	0.05	--	0.002	0.001	0.003	--	0.001	<0.001	0.002	0.003	0.002
Cobalt, dissolved	mg/l	--	--	--	--	0.0027	--	0.0017	0.0021	0.006	0.0228	0.0017
Copper, dissolved	mg/l	--	1	<0.001	0.001	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.03	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.07	<0.03
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	47	46	46	--	46	45	45	44	47
Manganese, dissolved	mg/l	--	0.05	0.1	0.12	--	--	0.06	0.07	0.08	0.42	0.07
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	--	--	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.007	0.008	0.007	0.009	0.007	0.005	0.006	0.011	0.006
Potassium, dissolved	mg/l	--	--	4	3	3	--	3	4	4	3	4
Selenium, dissolved	mg/l	0.05	--	--	--	<0.001	--	<0.001	<0.001	<0.001	0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	19	17	16	--	18	18	17	16	18
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	--	--	0.005	--	0.002	0.001	0.005	0.007	0.004
Zinc, dissolved	mg/l	--	5	--	--	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.001	<0.001	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-6S 27-Nov-2008	BR-6S 28-Apr-2009 A-11	BR-6S 29-Nov-2009 A-20	BR-6S 19-May-2010 A-11	BR-6S 29-Nov-2010 A - 24	BR-6S 11-May-2011 S-23	BR-6S 29-Nov-2011 A-12	BR-6S 20-May-2012 S-7	BR-6S 13-Nov-2012 A - 10
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	396	414	413	351	421	441	410	411	432
Ammonia Nitrogen	mg/l	--	--	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	0.04	0.07	0.06
Chloride	mg/l	--	250	28	42	30	38	31	45	24	28	30
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	710	933	903	846	902	951	858	866	892
Conductivity (Field)	uS/cm	--	--	--	930	900	960	965	860	810	860	825
Dissolved Organic Carbon	mg/l	--	5	2.2	3.0	2.7	2.7	2.4	3.4	2.1	2.2	2.3
Hardness, Calcium Carbonate	mg/l	--	--	432	468	458	446	489	509	437	338	427
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.9	7.7	7.5	7.7	7.6	7.7	7.6	7.2	7.2
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.01	0.02	<0.01	0.02	0.03	<0.01	<0.01	<0.01	0.02
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	50	49	48	53	48	45	42	45	44
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	6	10	3	9.6	7.4	11.0	9	10	7
Total Dissolved Solids	mg/l	--	500	564	606	587	550	586	618	558	563	580
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.11	0.09	0.11	0.11	0.12	0.12	0.13	0.12	0.13
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.34	0.41	0.37	0.31	0.32	0.38	0.34	0.28	0.32
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	97	105	101	98	110	110	96	71	98
Chromium, dissolved	mg/l	0.05	--	0.002	0.004	0.001	<0.001	<0.001	0.002	0.001	0.003	0.001
Cobalt, dissolved	mg/l	--	--	0.0048	0.0028	0.0026	0.0018	0.0018	0.0029	0.0024	0.0020	0.0026
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.04	<0.03	0.15
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	46	50	50	49	52	57	48	39	51
Manganese, dissolved	mg/l	--	0.05	0.14	0.09	0.09	0.06	0.06	0.08	0.07	0.07	0.07
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.007	0.007	0.007	0.005	0.005	0.008	0.005	0.005	0.006
Potassium, dissolved	mg/l	--	--	3	4	4	4	5	5	5	4	5
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	16	19	16	16	17	19	18	12	17
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.005	0.006	0.002	<0.001	0.003	0.003	0.004	0.003	0.002
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-6S 30-May-2014 S-7	BR-6S 19-Nov-2014 A-21	BR-6S 06-May-2015 S-16	BR-6S 16-Nov-2015 [4] S-11	BR-6S 19-Apr-2016 S-16	BR-6S 01-Nov-2016 S-17	BR-6S 25-May-2017 A-7	BR-6S 21-Nov-2017 BR-6S	BR-6S 16-May-2018 BR-6S
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	440	400	410	400	430	400	450	430	430
Ammonia Nitrogen	mg/l	--	--	0.080	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	49	23	32	26	39	28	62	29	38
Conductivity	uS/cm	--	--	1000	850	910	860	920	880	1000	900	920
Conductivity (Field)	uS/cm	--	--	900	885	910	885	840	830	845	795	915
Dissolved Organic Carbon	mg/l	--	5	2.3	2.0	2.0	1.7	2.4	1.8	2.5	1.9	2.2
Hardness, Calcium Carbonate	mg/l	--	--	540	430	480	440	480	440	510	440	500
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.2	7.4	7.3	7.4	7.2	7.3	7.3	7.3	7.5
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.005	0.010	0.016	0.021	0.007	0.019	0.010	0.017	0.011
Phosphorus, dissolved	mg/l	--	--	<0.1	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	37	37	39	40	41	38	41	37	38
Tannin & Lignin	mg/l	--	--	<0.2	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8	7	9	7	6	7	7.5	7.0	9.5
Total Dissolved Solids	mg/l	--	500	534	474	524	480	590	522	572	435	460
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.0050	<0.0050	<0.0050	<0.0050
Barium, dissolved	mg/l	1	--	0.14	0.12	0.13	0.13	0.14	0.13	0.14	0.13	0.14
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.39	0.34	0.33	0.3	0.37	0.28	0.37	0.32	0.36
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	120	91	100 [8]	93	100	94	110	94	110
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0033	0.0025	0.0023	0.0032	0.0028	0.0027	0.0030	0.0052	0.0024
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	<0.1	0.22	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	60	50	56	50	54	49	58	49	57
Manganese, dissolved	mg/l	--	0.05	0.094	0.071	0.074	0.088	0.074	0.07	0.08	0.12	0.061
Mercury	mg/l	0.001	--	--	--	--	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00099	0.0012	0.0012	0.0012	0.0010	0.0012	0.00099	0.0012	0.0011
Nickel, dissolved	mg/l	--	--	0.0080	0.0054	0.0062	0.006	0.007	0.0053	0.0079	0.0065	0.0069
Potassium, dissolved	mg/l	--	--	4.7	5	5.3	5.2	5.2	5.3	5.2	5.3	5.7
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.002	<0.002	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.0001	0.0002	<0.00010	<0.00010	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	23	16	17	15	20	16	25	16	17
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	0.0006	0.0006	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.0050	<0.0050	<0.0050	<0.0050
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-6S 26-Oct-2018 [5] BR-6S	BR-6S 30-May-2019 BR-6S	BR-6S 14-Nov-2019 BR-6S	BR-6S 06-May-2020 6S	BR-6S 28-Oct-2020 BR-6S	BR-6S 30-Apr-2021 BR-6S
General Chemistry									
Alkalinity (Total as CaCO3)	mg/l	--	--	410	440	430	450	440	430
Ammonia Nitrogen	mg/l	--	--	<0.050	0.071	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	30	46	33	40	31	35
Conductivity	uS/cm	--	--	890	1000	940	1000	880	940
Conductivity (Field)	uS/cm	--	--	960	954	930	790	699	704
Dissolved Organic Carbon	mg/l	--	5	1.8	2.3	2.3	2.7	2.2	2.9
Hardness, Calcium Carbonate	mg/l	--	--	440	510	480	510	710	470
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.77	7.62	7.51	7.26	7.19	7.20
Phosphate	mg/l	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.007	0.010	0.012	0.010	0.005	0.011
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	35	38	35	39	37	38
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	9.6	9.4	9.0	10	11.02	10.2
Total Dissolved Solids	mg/l	--	500	370	565	515	550	505	475
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--
Metals									
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.14	0.16	0.15	0.17	0.26	0.15
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.3	0.35	0.28	0.35	0.53	0.27
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	94	110	100	110	180	100
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0023	0.0019	0.0024	0.0025	0.0035	0.0011
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	51	57	56	59	64	52
Manganese, dissolved	mg/l	--	0.05	0.065	0.067	0.064	0.066	0.068	0.024
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0010	0.0012	0.0012	0.0011	0.0012	0.0012
Nickel, dissolved	mg/l	--	--	0.0058	0.0079	0.0066	0.0074	0.0084	0.0043
Potassium, dissolved	mg/l	--	--	5.1	5.8	5.9	6	6	5.6
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	16	18	18	20	69	20
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	0.00051	0.00069	0.00072
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols									
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-6S 23-Nov-2021 BR-6S	BR-6S 25-Apr-2022 BR-6S	BR-6S 17-Dec-2022 BR-6S	BR-6S 25-May-2023 BR-6S	BR-6S 26-Nov-2023 BR-6S
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	--	--	420	430	430	440	430
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	37	39	35	40	25
Conductivity	uS/cm	--	--	920	960	950	960	910
Conductivity (Field)	uS/cm	--	--	704	957	938	903	911
Dissolved Organic Carbon	mg/l	--	5	2.1	2.2	2.0	2.1	1.8
Hardness, Calcium Carbonate	mg/l	--	--	460	510	470	490	460
Nitrate	mg/l	-- [14]	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.30	7.2	7.26	7.22	7.36
Phosphate	mg/l	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	<0.020	0.030	0.009	0.015	0.013
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	41	42	39	43	35
Tannin & Lignin	mg/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	9.4	10.6	8.4	10.1	7.7
Total Dissolved Solids	mg/l	--	500	445	475	520	525	495
Total Organic Carbon	mg/l	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--
Metals								
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.15	0.15	0.15	0.15	0.15
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.28	0.28	0.28	0.32	0.29
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	100	110	110	110	100
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0013	0.0013	0.0086	0.0012	0.0022
Copper, dissolved	mg/l	--	1	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	49	54	51	53	49
Manganese, dissolved	mg/l	--	0.05	0.032	0.029	0.14	0.029	0.062
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0011	0.0012	0.0012	0.0010	0.0012
Nickel, dissolved	mg/l	--	--	0.0047	0.0047	0.0076	0.0047	0.0065
Potassium, dissolved	mg/l	--	--	5.1	5.4	5.8	5.5	5.8
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	18	21	21	21	22
Strontium, dissolved	mg/l	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.00063	0.00056	<0.00050	0.00052	0.00051
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols								
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-7 01-Sep-1993	BR-7 01-Nov-1993	BR-7 01-Aug-1994	BR-7 01-Dec-1994	BR-7 01-Apr-1996	BR-7 01-Sep-1996	BR-7 01-Jun-1997	BR-7 01-Aug-1997	BR-7 22-Nov-1998	BR-7 15-Jul-1999	BR-7 16-Oct-1999
General Chemistry														
Alkalinity (Total as CaCO3)	mg/l	--	--	350	347	320	325	379	360	374	365	393	418	392
Ammonia Nitrogen	mg/l	--	--	<0.1	<0.1	0.34	0.22	0.08	0.06	0.06	0.06	0.11	0.12	0.07
Chloride	mg/l	--	250	54	92.2	75	50	80	66	89	82	96	106	89
Conductivity	uS/cm	--	--	827	881	808	902	992	939	1034	983	1035	983	10113
Nitrate	mg/l	-- [14]	--	<0.1	0.23	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-- [16]	<0.1	<0.01
Nitrogen	mg/l	--	--	<0.1	0.28	<0.1	1.3	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.39	8.24	7.8	7.39	7.31	7.7	7.27	7.18	7.61	6.8	7.41
Phosphate	mg/l	--	--	<0.1	<0.1	<0.1	--	<0.03	<0.03	<0.03	<0.03	-- [16]	<0.03	<0.03
Phosphorus	mg/l	--	--	--	--	--	<0.1	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	0.232	<0.1	0.19	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	58.2	78.3	42.8	56.6	56	53	53	53	62	54	55
Total Dissolved Solids	mg/l	--	500	538	504	460	516	584	564	636	600	620	740	628
Total Organic Carbon	mg/l	--	--	1.2	1.47	1.2	1.7	2.1	1.7	1.8	1.9	1.3	1.2	1.7
Metals														
Aluminum, dissolved	mg/l	--	--	--	--	--	--	0.15	0.27	0.04	0.04	0.12	0.15	<0.03
Barium, dissolved	mg/l	1	--	--	--	--	--	0.17	0.15	0.16	0.15	0.16	0.17	0.72
Beryllium, dissolved	mg/l	--	--	--	--	--	--	<0.01	<0.01	<0.01	<0.01	-- [16]	<0.01	<0.01
Boron, dissolved	mg/l	5	--	0.32	0.33	0.3	0.4	0.26	0.3	0.26	0.27	0.27	0.25	0.37
Cadmium, dissolved	mg/l	0.005	--	**0.1**	<0.01	<0.0001	<0.0001	<0.005	<0.005	<0.005	<0.005	-- [16]	<0.005	<0.01
Calcium, dissolved	mg/l	--	--	93	98	68	59.5	112	106	109	104	130	138	119
Chromium, dissolved	mg/l	0.05	--	<0.01	**0.11**	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	-- [16]	<0.01	<0.01
Cobalt, dissolved	mg/l	--	--	--	--	--	--	<0.01	<0.01	<0.01	<0.01	-- [16]	<0.01	<0.01
Copper, dissolved	mg/l	--	1	<0.01	<0.01	<0.01	<0.01	0.01	0.007	0.017	0.008	-- [16]	<0.005	<0.01
Iron, dissolved	mg/l	--	0.3	2.25	35.29	0.6	2.4	0.33	0.07	0.26	0.6	1.02	0.81	0.43
Lead, dissolved	mg/l	0.01	--	0.002	0.005	**0.016**	0.0007	<0.01	<0.002	<0.002	<0.002	-- [16]	<0.002	<0.002
Magnesium, dissolved	mg/l	--	--	33.6	36	32	25.2	36	38	35	37	42	42	36
Manganese, dissolved	mg/l	--	0.05	0.135	0.116	115	0.121	0.18	0.14	0.17	0.15	0.16	0.16	0.15
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	-- [16]	<0.0002	<0.0002
Molybdenum, dissolved	mg/l	--	--	--	--	--	--	<0.01	0.04	<0.03	<0.03	-- [16]	<0.01	<0.01
Nickel, dissolved	mg/l	--	--	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	-- [16]	<0.01	<0.01
Potassium, dissolved	mg/l	--	--	6.56	6.58	8.8	6.7	6	6	5	7	5	6	5
Silicon, dissolved	mg/l	--	--	--	--	--	--	4.6	3.8	3.8	3.7	4.2	4.7	4.3
Silver, dissolved	mg/l	--	--	<0.01	<0.02	<0.02	<0.01	<0.01	<0.0012	<0.001	<0.01	-- [16]	<0.01	<0.01
Sodium, dissolved	mg/l	--	200 [7]	42.6	43.1	41.5	36	44	47	44	52	50	56	55
Strontium, dissolved	mg/l	--	--	--	--	--	--	6.63	7.21	6.49	6.21	8.7	7.46	7.34
Sulfur	mg/l	--	--	--	--	--	--	19	17	17	17	18	17	17
Thallium, dissolved	mg/l	--	--	--	--	--	--	<0.2	<0.2	<0.2	<0.2	-- [16]	<0.2	<0.2
Tin, dissolved	mg/l	--	--	--	--	--	--	<0.05	<0.05	<0.05	<0.05	-- [16]	<0.05	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	<0.01	0.01	<0.01	<0.01	-- [16]	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	--	--	--	--	<0.01	<0.01	<0.01	<0.01	-- [16]	<0.01	<0.01
Zinc, dissolved	mg/l	--	5	--	--	--	--	<0.01	0.02	0.01	<0.01	-- [16]	<0.01	0.12
Phenols														
Phenolics, Total Recoverable	mg/l	--	--	<0.002	<0.002	<0.001	0.003	<0.001	--	<0.002	<0.002	-- [16]	<0.001	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-7D 01-Jul-2000	BR-7D 01-Oct-2000	BR-7D 14-Oct-2000	BR-7D 07-Sep-2001	BR-7D 06-Nov-2001	BR-7D 28-May-2002	BR-7D 02-Oct-2002	BR-7D 03-May-2003	BR-7D 03-Nov-2003
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	376	--	354	362	358	399	413	418	351
Ammonia Nitrogen	mg/l	--	--	0.11	--	0.15	0.14	0.04	0.04	0.02	0.08	0.07
Chloride	mg/l	--	250	105	--	92	85	93	105	115	131	96
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	--	--	846	995	1010	1190	1150	1210	1030
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	368	397	476.5	499	--	--
Nitrate	mg/l	-- [14]	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrogen	mg/l	--	--	0.72	--	0.27	--	--	0.13	--	0.13	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.06	--	7.53	7.38	7.81	7.66	7.74	7.51	7.73
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	<0.03	--	0.34	0.11
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	1	--	--	--	--	0.13	--	<0.005	--
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.12	0.05
Sulphate	mg/l	--	500 [6]	65	--	71	63	57	58	43	54	60
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	668	--	516	640	616	774	748	787	670
Total Organic Carbon	mg/l	--	--	1.9	--	2.7	--	--	1.6	--	1.4	1
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	0.2
Metals												
Aluminum, dissolved	mg/l	--	--	0.39	--	0.63	<0.05	<0.05	<0.05	<0.01	0.08	<0.01
Barium, dissolved	mg/l	1	--	0.15	--	0.15	0.15	0.12	0.16	0.15	0.16	0.16
Beryllium, dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.25	--	0.31	0.34	0.29	0.24	0.3	0.28	0.33
Cadmium, dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	109	--	104	88	101	125	134	126	106
Chromium, dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.003	0.001	<0.001	<0.001	0.012	0.002
Cobalt, dissolved	mg/l	--	--	<0.01	--	0.0027	<0.0002	0.0003	0.0008	0.0004	0.0012	0.0004
Copper, dissolved	mg/l	--	1	<0.01	--	0.006	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Iron, dissolved	mg/l	--	0.3	2.52	--	7.15	4.89	2.98	1.87	5.06	1.84	3.37
Lead, dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	35	--	36	36	35	40	40	44	36
Manganese, dissolved	mg/l	--	0.05	0.2	--	0.15	0.1	0.09	0.12	0.118	0.12	0.083
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	--	<0.01	0.02	<0.01	<0.01	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	5	--	7	6	6	6	6	6	8
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	4.62	--	5.4	4.43	4.27	3.78	3.6	4.6	--
Silver, dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	68	--	56	62	51	51	57	58	59
Strontium, dissolved	mg/l	--	--	8.9	--	8.75	16	8.37	3.78	13.7	4.03	--
Sulfur	mg/l	--	--	21	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--
Titanium, dissolved	mg/l	--	--	0.02	--	0.04	<0.01	<0.01	--	<0.01	<0.01	--
Vanadium, dissolved	mg/l	--	--	<0.01	--	<0.001	<0.001	<0.001	<0.001	<0.005	--	--
Zinc, dissolved	mg/l	--	5	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	0.003	--
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-7D 04-May-2004	BR-7D 04-Oct-2004	BR-7D 10-Jun-2005	BR-7D 29-Oct-2005	BR-7D 12-Apr-2006	BR-7D 24-Nov-2006	BR-7D 25-Apr-2007	BR-7D 04-Dec-2007	BR-7D 03-May-2008
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	351	490	397	373	381	362	467	359	356
Ammonia Nitrogen	mg/l	--	--	0.05	<0.02	0.03	0.04	0.07	0.03	<0.02	0.04	<0.02
Chloride	mg/l	--	250	101	113	107	89	115	96	111	78	102
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	1050	1240	1400	960	925	855	905	880	825
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	1.8	1.5	1.9	1.9	1.9
Hardness, Calcium Carbonate	mg/l	--	--	--	--	440.3	--	443.3	411	552	362	401
Nitrate	mg/l	-- [14]	--	<0.1	0.23	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	0.18	0.06	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.34	7.19	6.7	6.8	6.9	6.9	6.8	6.8	6.9
Phosphate	mg/l	--	--	0.14	0.27	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.05	--	0.04	0.04	0.04	0.05	0.12	0.06	0.04
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	0.06	0.06	0.06	<0.01	0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	58	36	49	52	62	57	44	58	58
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	17.8	10	5	7	6	8	9
Total Dissolved Solids	mg/l	--	500	683	806	709	624	722	689	825	647	689
Total Organic Carbon	mg/l	--	--	0.6	0.9	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01
Barium, dissolved	mg/l	1	--	--	0.19	0.17	--	0.16	0.13	0.18	0.14	0.16
Beryllium, dissolved	mg/l	--	--	--	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.31	0.12	0.24	0.32	0.32	0.42	0.12	0.28	0.37
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	99	142	122	--	115	107	155	92	103
Chromium, dissolved	mg/l	0.05	--	0.002	--	0.004	--	0.003	0.002	0.003	0.007	0.004
Cobalt, dissolved	mg/l	--	--	--	0.0011	0.0019	--	0.0003	0.0004	0.0007	0.0005	0.0006
Copper, dissolved	mg/l	--	1	<0.001	0.001	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	1.64	<0.01	0.17	2.08	2.35	2.13	<0.03	1.1	1.11
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	34	40	33	--	38	35	40	32	35
Manganese, dissolved	mg/l	--	0.05	0.08	0.09	--	--	0.09	0.09	0.03	0.08	0.09
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	--	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	7	4	5	--	7	7	4	6	6
Selenium, dissolved	mg/l	0.05	--	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	5.4	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	60	46	52	--	65	59	60	55	59
Strontium, dissolved	mg/l	--	--	--	2.34	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	<0.001	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	<0.01	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	--	0.002	0.007	--	<0.001	<0.001	0.004	0.003	0.004
Zinc, dissolved	mg/l	--	5	--	<0.01	<0.01	0.01	<0.01	<0.01	0.02	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.001	<0.001	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-7D 27-Nov-2008	BR-7D 28-Apr-2009 A-3	BR-7D 28-Nov-2009 A-3	BR-7D 19-May-2010 A-3	BR-7D 29-Nov-2010 A - 21	BR-7D 11-May-2011 S-29	BR-7D 29-Nov-2011 A-3	BR-7D 20-May-2012 S-3	BR-7D 13-Nov-2012 A - 1	BR-7D 30-May-2014 S-3
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	363	370	377	335	395	393	371	368	484	400
Ammonia Nitrogen	mg/l	--	--	<0.02	0.02	<0.02	0.03	<0.02	0.05	0.03	0.06	<0.02	0.10
Chloride	mg/l	--	250	86	92	83	88	89	89	81	93	96	--
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	110
Conductivity	uS/cm	--	--	800	1050	1030	1000	1060	1040	1010	1030	1200	1100
Conductivity (Field)	uS/cm	--	--	--	1125	1100	990	965	905	910	1067	1060	1120
Dissolved Organic Carbon	mg/l	--	5	1.4	1.8	1.9	1.7	1.6	2.0	1.4	1.0	1.8	1.1
Hardness, Calcium Carbonate	mg/l	--	--	378	378	400	409	438	423	381	308	501	460
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7	7.8	7.6	7.6	7.7	7.4	7.5	7.5	7.6	7.3
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	<0.010
Phosphorus	mg/l	--	--	0.02	0.02	0.02	0.03	0.01	0.02	<0.01	0.01	0.04	0.024
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	<0.1
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	55	55	53	56	48	46	54	51	39	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	47
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	<0.2
Temperature (Field)	deg c	--	15	7	10	5	10	7	10.0	7	10	9	9
Total Dissolved Solids	mg/l	--	500	663	683	670	650	689	676	656	670	780	598
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0050
Barium, dissolved	mg/l	1	--	0.15	0.14	0.13	0.15	0.13	0.14	0.14	0.13	0.17	0.16
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050
Boron, dissolved	mg/l	5	--	0.34	0.37	0.38	0.33	0.28	0.26	0.34	0.26	0.27	0.3
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010
Calcium, dissolved	mg/l	--	--	97	97	104	106	116	110	100	79	133	120
Chromium, dissolved	mg/l	0.05	--	0.002	0.003	0.002	<0.001	0.002	0.002	0.002	0.003	0.003	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0007	0.0008	0.0011	0.0009	0.0008	0.0010	0.0007	0.0009	0.0018	0.0018
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.95	1.11	1.02	1.60	2.64	1.88	1.94	0.42	0.28	1.3
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00050
Magnesium, dissolved	mg/l	--	--	33	33	34	35	36	36	32	27	41	40
Manganese, dissolved	mg/l	--	0.05	0.08	0.07	0.08	0.08	0.08	0.10	0.09	0.07	0.10	0.095
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0013
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0010
Potassium, dissolved	mg/l	--	--	6	6	7	7	7	6	6	5	6	6.9
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	54	56	63	64	62	57	61	45	61	70
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.004	0.005	0.002	<0.001	0.002	0.002	0.004	0.002	0.004	<0.00050
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0050
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-7D 18-Nov-2014 [4] A-3	BR-7D 05-May-2015 S-8	BR-7D 16-Nov-2015 [4] S-3	BR-7D 19-Apr-2016 S-8	BR-7D 01-Nov-2016 S-13	BR-7D 25-May-2017 A-3	BR-7D 21-Nov-2017 BR-7D	BR-7D 16-May-2018 BR-7D	BR-7D 26-Oct-2018 [5] BR-7D	BR-7D 30-May-2019 BR-7D
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	370	400	460	380	470	370	380	380	370	560
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.066	0.13
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	110	100	110	110	110	120	110	97	91	97
Conductivity	uS/cm	--	--	1100	1100	1300	1200	1300	1100	1100	1000	1000	1400
Conductivity (Field)	uS/cm	--	--	1085	1120	1080	1040	1065	985	960	1050	1150	1110
Dissolved Organic Carbon	mg/l	--	5	1.2	1.3	1.4	1.3	1.5	1.3	1.3	1.3	1.2	1.9
Hardness, Calcium Carbonate	mg/l	--	--	420	450	520	430	500	490	380	390	390	180
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.4	7.3	7.4	7.4	7.6	7.5	7.6	7.5	7.8	7.73
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011
Phosphorus	mg/l	--	--	0.018	0.008	0.014	0.010	0.009	0.013	0.010	0.008	0.026	0.024
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	47	47	41	53	39	55	52	50	49	49
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	7	8	7	7	6	7.5	7.0	9.7	8.1	8.8
Total Dissolved Solids	mg/l	--	500	596	604	706	692	764	624	555	540	535	855
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050	0.016	<0.0050	<0.0050	<0.0050
Barium, dissolved	mg/l	1	--	0.14	0.15	0.17	0.14	0.18	0.17	0.13	0.13	0.12	0.057
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.27	0.29	0.3	0.32	0.27	0.27	0.29	0.3	0.28	0.28
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	110	110 [8]	130	110	130	130	100	100	100	26
Chromium, dissolved	mg/l	0.05	--	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0013	0.0016	0.0019	0.0013	0.0034	0.0016	0.0017	0.0013	0.0014	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.72	0.27	0.8	0.17	0.43	3.1	0.57	1.2	0.68	<0.1
Lead, dissolved	mg/l	0.01	--	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	37	40	46	40	44	41	32	34	34	28
Manganese, dissolved	mg/l	--	0.05	0.083	0.079	0.1	0.068	0.1	0.11	0.098	0.1	0.094	0.0040
Mercury	mg/l	0.001	--	--	--	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.00010	<0.00010	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0012	0.0013	0.0013	0.0014	0.00095	0.0011	0.0015	0.0016	0.0015	0.012
Nickel, dissolved	mg/l	--	--	0.002	0.0013	0.002	0.004	0.0035	0.0015	0.0016	0.0014	0.0020	0.0019
Potassium, dissolved	mg/l	--	--	6.7	7	7.7	7	7.8	7.2	6.2	6.4	5.9	7.4
Selenium, dissolved	mg/l	0.05	--	<0.002	<0.0020	<0.002	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.00010	0.0004	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	68	67	70	75	68	71	69	70	64	250
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.005	0.0050	<0.005	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-7D 14-Nov-2019 BR-7D	BR-7D 06-May-2020 7D	BR-7D 28-Oct-2020 BR-7	BR-7D 30-Apr-2021 BR-7D	BR-7D 23-Nov-2021 BR-7D	BR-7D 25-Apr-2022 BR-7D	BR-7D 17-Dec-2022 BR-7D	BR-7D 25-May-2023 BR-7D	BR-7D 26-Nov-2023 BR-7D
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	480	400	470	400	440	410	420	420	390
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	0.064	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	98	89	93	93	90	89	95	92	81
Conductivity	uS/cm	--	--	1300	1100	1200	1100	1100	1100	1100	1100	1100
Conductivity (Field)	uS/cm	--	--	1095	877	839	828	798	1090	1048	1101	1109
Dissolved Organic Carbon	mg/l	--	5	1.6	1.4	1.6	1.6	1.6	1.4	1.5	1.4	1.4
Hardness, Calcium Carbonate	mg/l	--	--	280	380	500	430	440	450	440	460	410
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.7	7.3	6.90	7.04	7.11	7.1	7.16	7.51	7.4
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.017	0.013	0.034	0.013	0.026	0.033	0.013	0.012	0.009
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	45	44	35	48	39	47	37	50	50
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8.8	8.9	8.61	9.01	9.2	8.9	7.9	9.5	8.9
Total Dissolved Solids	mg/l	--	500	705	615	605	665	595	565	605	570	585
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.0050	0.0062	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.082	0.11	0.16	0.14	0.14	0.14	0.14	0.13	0.13
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.27	0.28	0.26	0.25	0.26	0.24	0.26	0.23	0.27
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	60	95	130	110	110	120	120	120	110
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.00078	0.00062	0.0025	0.0018	0.0016	0.0021	0.0016	0.0019	0.0014
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	0.12	0.51	0.14	0.62	0.45	0.75	0.54
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00059	<0.00050
Magnesium, dissolved	mg/l	--	--	31	34	42	35	37	36	36	38	33
Manganese, dissolved	mg/l	--	0.05	0.0069	0.0077	0.16	0.13	0.1	0.13	0.11	0.13	0.11
Mercury	mg/l	0.001	--	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0061	0.0025	0.0011	0.0014	0.0013	0.0013	0.0015	0.0013	0.0016
Nickel, dissolved	mg/l	--	--	0.0019	0.0019	0.0029	0.0020	0.0021	0.0024	0.0021	0.0022	0.0018
Potassium, dissolved	mg/l	--	--	6.7	6.3	7.2	6.5	6.3	6.3	6.2	6.2	6.4
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	160	92	69	73	66	72	67	70	71
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-7M 01-Jul-2000	BR-7M 03-May-2003
General Chemistry					
Alkalinity (Total as CaCO3)	mg/l	--	--	415	487
Ammonia Nitrogen	mg/l	--	--	0.12	0.09
Chloride	mg/l	--	250	95	150
Conductivity	uS/cm	--	--	1110	1330
Nitrate	mg/l	-- [14]	--	0.12	<0.1
Nitrogen	mg/l	--	--	0.66	0.09
pH (Field)	-	--	--	7.06	7.51
Phosphate	mg/l	--	--	<0.03	0.74
Phosphorus	mg/l	--	--	0.47	<0.005
Silica	mg/l	--	--	--	0.34
Sulphate	mg/l	--	500 [6]	60	51
Total Dissolved Solids	mg/l	--	500	696	865
Total Organic Carbon	mg/l	--	--	1.8	1.4
Metals					
Aluminum, dissolved	mg/l	--	--	<0.05	<0.01
Barium, dissolved	mg/l	1	--	0.15	0.18
Beryllium, dissolved	mg/l	--	--	<0.002	<0.001
Boron, dissolved	mg/l	5	--	0.19	0.14
Cadmium, dissolved	mg/l	0.005	--	<0.005	<0.0001
Calcium, dissolved	mg/l	--	--	128	174
Chromium, dissolved	mg/l	0.05	--	<0.01	0.014
Cobalt, dissolved	mg/l	--	--	<0.01	0.0034
Copper, dissolved	mg/l	--	1	<0.01	0.001
Iron, dissolved	mg/l	--	0.3	0.26	0.05
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	37	46
Manganese, dissolved	mg/l	--	0.05	0.36	0.254
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	<0.005
Nickel, dissolved	mg/l	--	--	<0.01	<0.005
Potassium, dissolved	mg/l	--	--	5	4
Silicon, dissolved	mg/l	--	--	4.43	4.6
Silver, dissolved	mg/l	--	--	<0.01	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	66	56
Strontium, dissolved	mg/l	--	--	4.12	4.03
Sulfur	mg/l	--	--	21	--
Thallium, dissolved	mg/l	--	--	<0.2	<0.001
Titanium, dissolved	mg/l	--	--	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	<0.01	--
Zinc, dissolved	mg/l	--	5	<0.01	0.004
Phenols					
Phenolics, Total Recoverable	mg/l	--	--	<0.001	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-7S 01-Jul-2000	BR-7S 01-Oct-2000	BR-7S 14-Oct-2000	BR-7S 07-Sep-2001	BR-7S 06-Nov-2001	BR-7S 28-May-2002	BR-7S 02-Oct-2002	BR-7S 03-May-2003
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	374	--	442	467	531	455	487	503
Ammonia Nitrogen	mg/l	--	--	0.11	--	0.13	<0.02	0.02	0.05	<0.02	0.07
Chloride	mg/l	--	250	88	--	106	109	115	113	102	139
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	1070	--	973	1130	1270	1270	1210	1330
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	544	582	544	572	--
Nitrate	mg/l	-- [14]	--	0.36	--	<0.1	<0.1	<0.1	0.13	0.19	<0.1
Nitrogen	mg/l	--	--	0.59	--	0.23	--	--	0.31	--	1.3
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.05	--	7.46	7.29	7.37	7.65	7.52	7.55
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	<0.03	--	0.42
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.29	--	--	--	--	0.06	--	<0.005
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.15
Sulphate	mg/l	--	500 [6]	75	--	59	47	36	58	36	52
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	628	--	648	756	812	826	787	865
Total Organic Carbon	mg/l	--	--	1.7	--	2.1	--	--	1.7	--	1.3
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.05	--	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.15	--	0.17	0.19	0.15	0.19	0.16	0.18
Beryllium, dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.2	--	0.2	0.13	0.09	0.14	0.1	0.13
Cadmium, dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	101	--	130	147	162	152	160	179
Chromium, dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.004	<0.001	<0.001	<0.001	0.011
Cobalt, dissolved	mg/l	--	--	<0.01	--	0.0075	0.0003	0.0005	0.0037	0.0017	0.0033
Copper, dissolved	mg/l	--	1	<0.01	--	0.004	<0.001	0.005	0.001	0.002	0.001
Iron, dissolved	mg/l	--	0.3	0.3	--	3.15	2.22	1.26	0.16	0.01	0.05
Lead, dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	32	--	41	43	43	40	42	49
Manganese, dissolved	mg/l	--	0.05	0.36	--	0.38	0.11	0.1	0.25	0.098	0.249
Nickel, dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	5	--	5	4	4	4	4	4
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	4.35	--	4.92	4.89	4.65	3.88	3.7	4.6
Silver, dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	85	--	55	47	42	48	47	59

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-7S 03-Nov-2003	BR-7S 04-May-2004	BR-7S 04-Oct-2004	BR-7S 09-Jun-2005	BR-7S 29-Oct-2005	BR-7S 12-Apr-2006	BR-7S 24-Nov-2006	BR-7S 25-Apr-2007
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	492	458	363	458	480	493	475	359
Ammonia Nitrogen	mg/l	--	--	0.16	0.1	--	<0.02	0.05	0.1	0.04	<0.02
Chloride	mg/l	--	250	109	108	105	103	112	118	116	83
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	1250	1200	1060	1600	1500	1410	1295	1300
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	1.2	2.1	2
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	605.6	--	588.8	577.2	388
Nitrate	mg/l	-- [14]	--	0.19	<0.1	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	0.38	--	--	--	--	--	--
pH (Field)	-	--	--	7.6	7.25	--	6.8	7	7.1	7	7.2
Phosphate	mg/l	--	--	0.09	0.13	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	<0.01	0.06	--	0.06	0.16	0.04	0.06	0.05
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	0.04	0.07	0.05
Silica	mg/l	--	--	0.05	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	38	40	--	45	61	61	40	57
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	20	11	6	5	6
Total Dissolved Solids	mg/l	--	500	813	780	689	741	975	825	839	663
Total Organic Carbon	mg/l	--	--	1.2	<0.5	1.6	--	--	--	--	--
Turbidity	ntu	--	5 [19]	0.4	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.01	--	--	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.21	--	--	0.21	--	0.21	0.17	0.13
Beryllium, dissolved	mg/l	--	--	<0.001	--	--	<0.001	--	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.14	0.13	0.3	0.19	0.18	0.17	0.12	0.34
Cadmium, dissolved	mg/l	0.005	--	**0.14**	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	168	141	--	175	--	165	162	101
Chromium, dissolved	mg/l	0.05	--	0.004	0.002	--	0.004	--	0.003	0.002	0.003
Cobalt, dissolved	mg/l	--	--	0.0037	--	--	0.0033	--	0.001	0.0009	0.0004
Copper, dissolved	mg/l	--	1	0.001	0.001	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.03	<0.01	--	<0.03	<0.03	<0.03	<0.03	1.46
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	--	<0.001	--	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	44	39	--	41	--	43	42	33
Manganese, dissolved	mg/l	--	0.05	0.244	0.14	--	--	--	0.06	0.12	0.09
Nickel, dissolved	mg/l	--	--	0.007	0.005	--	0.007	0.006	0.006	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	5	4	--	4	--	4	4	7
Selenium, dissolved	mg/l	0.05	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	4.8	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	52	51	--	57	--	65	54	56

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-7S 04-Dec-2007	BR-7S 03-May-2008	BR-7S 27-Nov-2008	BR-7S 28-Apr-2009 A-4	BR-7S 28-Nov-2009 A-4	BR-7S 19-May-2010 A-4	BR-7S 29-Nov-2010 A - 22	BR-7S 11-May-2011 S-30	BR-7S 29-Nov-2011 A-4
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	510	490	476	477	478	443	480	453	455
Ammonia Nitrogen	mg/l	--	--	0.08	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chloride	mg/l	--	250	120	113	107	111	102	103	102	98	94
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	1310	1240	1075	1250	1220	1070	1200	1130	1150
Conductivity (Field)	uS/cm	--	--	--	--	--	7.4	1125	1090	1045	1060	1040
Dissolved Organic Carbon	mg/l	--	5	2	1.6	1.3	1.8	1.7	1.6	1.5	1.9	1.5
Hardness, Calcium Carbonate	mg/l	--	--	573	554	509	502	531	517	547	488	518
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7	7.2	7.3	1200	7.3	7.5	7.4	7.4	7.3
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.03	0.05	0.03	0.04	0.02	0.02	0.02	0.01	0.02
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	39	41	39	41	35	41	39	39	36
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8	8	6	10	6	9.8	7.2	11	8
Total Dissolved Solids	mg/l	--	500	858	825	806	813	793	696	780	734	748
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.2	0.21	0.2	0.19	0.19	0.17	0.19	0.17	0.18
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.15	0.14	0.11	0.15	0.15	0.12	0.11	0.1	0.12
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	162	156	143	140	150	146	158	136	148
Chromium, dissolved	mg/l	0.05	--	0.005	0.005	0.003	0.004	0.003	<0.001	<0.001	0.003	0.003
Cobalt, dissolved	mg/l	--	--	0.0073	0.0007	0.0007	0.001	0.0011	0.0004	0.0022	0.0003	0.0008
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.77	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	41	40	37	37	38	37	37	36	36
Manganese, dissolved	mg/l	--	0.05	0.3	0.03	0.06	0.07	0.09	0.02	0.15	<0.01	0.05
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	4	3	3	3	4	3	3	3	3
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	55	59	54	55	59	60	61	56	56

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-7S 20-May-2012 S-4	BR-7S 13-Nov-2012 A - 2	BR-7S 30-May-2014 S-4	BR-7S 18-Nov-2014 A-4	BR-7S 05-May-2015 S-9	BR-7S 16-Nov-2015 S-4	BR-7S 19-Apr-2016 S-9	BR-7S 01-Nov-2016 S-14	BR-7S 25-May-2017 A-4
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	447	477	470	460	450	460	460	460	470
Ammonia Nitrogen	mg/l	--	--	0.04	0.24	0.057	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	95	100	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	110	110	110	110	120	120	120
Conductivity	uS/cm	--	--	1140	1200	1200	1200	1200	1300	1300	1300	1300
Conductivity (Field)	uS/cm	--	--	1180	1120	1250	1080	1055	1030	985	960	940
Dissolved Organic Carbon	mg/l	--	5	1.3	1.4	0.88	1.2	1.1	1.1	1.1	1.2	0.97
Hardness, Calcium Carbonate	mg/l	--	--	352	491	590	520	540	530	530	530	530
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.15	7.2	7.1	7.2	7.3	7.4	7.4	7.6	7.4
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.01	0.02	0.034	0.016	0.017	0.037	0.015	0.014	0.013
Phosphorus, dissolved	mg/l	--	--	--	--	<0.1	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	34	48	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	34	34	35	48	37	44	38
Tannin & Lignin	mg/l	--	--	--	--	<0.2	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	9	7	8	6	7	7	6	5	7.2
Total Dissolved Solids	mg/l	--	500	741	780	658	666	694	706	742	792	698
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050
Barium, dissolved	mg/l	1	--	0.17	0.18	0.21	0.19	0.19	0.19	0.19	0.2	0.19
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.0005	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.1	0.11	0.13	0.12	0.12	0.12	0.13	0.12	0.11
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	98	139	160	140	150	150	140	150	150
Chromium, dissolved	mg/l	0.05	--	0.004	0.003	<0.0050	<0.005	<0.0050	<0.005	<0.005	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0004	0.0006	<0.00050	0.0009	<0.00050	0.0007	<0.0005	0.00093	0.004
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.03	<0.03	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.46
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.00050	<0.0005	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	26	35	43	38	41	39	41	40	39
Manganese, dissolved	mg/l	--	0.05	0.02	0.05	0.0099	0.1	0.0062	0.033	0.016	0.06	0.2
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	0.0021	0.004	0.0011	0.002	0.002	0.003	0.0045
Potassium, dissolved	mg/l	--	--	2	3	3.9	3.9	3.7	3.8	3.9	3.9	3.5
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.0020	<0.002	<0.0020	<0.002	<0.002	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.00010	<0.0001	<0.00010	0.0004	<0.0001	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	42	50	66	60	64	65	67	66	62

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-7S 21-Nov-2017 BR-7S	BR-7S 16-May-2018 BR-7S	BR-7S 26-Oct-2018 [5] BR-7S	BR-7S 30-May-2019 BR-7S	BR-7S 14-Nov-2019 BR-7S	BR-7S 06-May-2020 7S	BR-7S 28-Oct-2020 BR-7S	BR-7S 30-Apr-2021 BR-7S	BR-7S 23-Nov-2021 BR-7S
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	400	440	430	430	360	420	390	450	440
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	110	100	100	100	92	94	87	95	90
Conductivity	uS/cm	--	--	1100	1100	1100	1100	1000	1100	1100	1100	1100
Conductivity (Field)	uS/cm	--	--	950	1100	1250	1090	1080	865	769	749	728
Dissolved Organic Carbon	mg/l	--	5	1.1	1.1	1	1	0.93	1.3	1.2	1.3	1.4
Hardness, Calcium Carbonate	mg/l	--	--	460	450	470	470	330	430	430	450	470
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.3	7.7	7.8	7.81	7.7	7.3	6.78	6.81	7.04
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.009	0.02	0.009	0.013	0.009	0.006	0.039	0.033	0.034
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	36	34	37	32	35	32	39	31	36
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	7.2	9	8.4	8.6	8.4	9	9.31	8.9	8.1
Total Dissolved Solids	mg/l	--	500	480	590	630	615	540	585	530	565	595
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.16	0.16	0.17	0.17	0.093	0.15	0.15	0.15	0.17
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.13	0.13	0.12	0.1	0.078	0.12	0.096	0.1	0.11
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	130	120	130	130	80	120	120	120	130
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0011	0.00075	0.00078	0.00055	<0.00050	0.00064	<0.00050	<0.00050	0.00071
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	34	35	36	34	32	34	34	36	33
Manganese, dissolved	mg/l	--	0.05	0.1	0.049	0.056	0.05	0.022	0.044	0.016	0.0041	0.041
Nickel, dissolved	mg/l	--	--	0.0027	0.0025	0.0026	0.0017	0.001	0.0022	0.0019	0.0013	0.0023
Potassium, dissolved	mg/l	--	--	3.6	3.5	3.5	3.3	3.5	3.4	3.3	3.5	3.4
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	59	59	61	59	82	65	66	66	58

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-7S 25-Apr-2022 BR-7S	BR-7S 17-Dec-2022 BR-7S	BR-7S 25-May-2023 BR-7S	BR-7S 25-Nov-2023 BR-7S
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	--	--	460	400	440	410
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	--	--	--	--
Chloride, dissolved	mg/l	--	250	86	88	85	73
Conductivity	uS/cm	--	--	1200	1100	1100	1100
Conductivity (Field)	uS/cm	--	--	1139	1109	1066	1039
Dissolved Organic Carbon	mg/l	--	5	1.4	1.3	1.4	1.1
Hardness, Calcium Carbonate	mg/l	--	--	470	430	510	420
Nitrate	mg/l	-- [14]	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--
pH (Field)	-	--	--	7.04	7.09	7.44	7.44
Phosphate	mg/l	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	0.03	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.022	0.01	0.017	0.005
Phosphorus, dissolved	mg/l	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	33	47	32	39
Tannin & Lignin	mg/l	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	8	6.5	7.9	7.2
Total Dissolved Solids	mg/l	--	500	555	580	615	565
Total Organic Carbon	mg/l	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--
Metals							
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	0.014
Barium, dissolved	mg/l	1	--	0.15	0.15	0.17	0.11
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.11	0.11	0.1	0.092
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	130	120	140	110
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	0.00056
Copper, dissolved	mg/l	--	1	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	<0.1	<0.1	0.23
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	35	33	36	35
Manganese, dissolved	mg/l	--	0.05	0.01	0.011	<0.0020	0.046
Nickel, dissolved	mg/l	--	--	0.0018	0.0014	0.0018	0.0019
Potassium, dissolved	mg/l	--	--	3.5	3.4	3.3	3.5
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	70	70	59	76

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-8D 22-Nov-1998	BR-8D 15-Jul-1999	BR-8D 16-Oct-1999	BR-8D 01-Jul-2000	BR-8D 01-Oct-2000	BR-8D 14-Oct-2000	BR-8D 06-Sep-2001	BR-8D 06-Nov-2001	BR-8D 28-May-2002	BR-8D 02-Oct-2002
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	531	545	555	552	--	563	551	564	538	543
Ammonia Nitrogen	mg/l	--	--	0.14	0.15	0.13	0.16	--	0.15	0.19	0.15	0.26	0.19
Chloride	mg/l	--	250	11	7	8	8	--	11	9	7	8	8
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	906	811	914	971	--	852	936	959	975	950
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	521	496	511.4	557
Nitrate	mg/l	-- [14]	--	-- [16]	<0.1	<0.01	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrogen	mg/l	--	--	--	--	--	0.95	--	0.42	--	--	0.56	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.52	6.73	6.98	7	--	7.19	7.08	7.06	7.54	7.39
Phosphate	mg/l	--	--	-- [16]	<0.03	<0.03	<0.03	--	<0.03	--	--	<0.03	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	--	0.26	--	--	--	--	0.07	--
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	3	<3	<3	3	--	2	<1	2	3	2
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	548	512	604	584	--	588	572	584	634	618
Total Organic Carbon	mg/l	--	--	20	11.5	23.3	20.8	--	19.6	--	--	20.3	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	0.07	0.1	0.04	<0.05	--	<0.05	<0.05	<0.05	0.08	<0.01
Barium, dissolved	mg/l	1	--	0.17	0.21	0.47	0.3	--	0.28	0.34	0.3	**3.15**	0.34
Beryllium, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001
Boron, dissolved	mg/l	5	--	0.3	0.41	0.34	0.41	--	0.52	0.41	0.32	**5.69**	0.42
Cadmium, dissolved	mg/l	0.005	--	-- [16]	<0.005	<0.01	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	123	124	131	124	--	124	118	116	116	129
Chromium, dissolved	mg/l	0.05	--	-- [16]	<0.01	<0.01	<0.01	--	<0.01	0.01	0.003	0.001	0.002
Cobalt, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.01	--	0.0009	<0.0002	0.0003	0.0002	0.0002
Copper, dissolved	mg/l	--	1	-- [16]	<0.005	<0.01	<0.01	--	0.002	<0.001	<0.001	<0.001	0.001
Iron, dissolved	mg/l	--	0.3	5.93	6.11	7.12	5.88	--	4.86	6.52	6.32	46.1	5.13
Lead, dissolved	mg/l	0.01	--	-- [16]	<0.002	<0.002	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	59	59	55	58	--	59	55	50	54	57
Manganese, dissolved	mg/l	--	0.05	0.13	0.16	0.2	0.15	--	0.1	0.16	0.16	0.99	0.12
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	-- [16]	<0.0002	<0.0002	<0.0001	--	<0.0001	--	--	<0.0001	--
Molybdenum, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.01	--	<0.01	0.01	<0.01	<0.01	<0.005
Nickel, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005
Potassium, dissolved	mg/l	--	--	3	5	4	4	--	5	5	5	5	5
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	4.3	5.1	5.1	5.47	--	5.64	5.67	5.48	44.7	4.4
Silver, dissolved	mg/l	--	--	-- [16]	<0.01	0.01	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	4	8	8	8	--	8	7	7	7	6
Strontium, dissolved	mg/l	--	--	7.05	8.93	7.71	11.4	--	11.8	13	7.57	134	14
Sulfur	mg/l	--	--	-- [16]	<3	<3	1	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	-- [16]	<0.2	<0.2	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001
Tin, dissolved	mg/l	--	--	-- [16]	<0.05	--	--	--	<0.01	--	--	--	--
Titanium, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.01	--	<0.001	0.003	0.001	<0.001	<0.005
Zinc, dissolved	mg/l	--	5	-- [16]	<0.01	0.04	<0.01	--	<0.01	<0.01	<0.01	0.01	<0.005
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	-- [16]	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-8D 03-May-2003	BR-8D 03-Nov-2003	BR-8D 04-May-2004	BR-8D 04-Oct-2004	BR-8D 14-Jun-2005	BR-8D 29-Oct-2005	BR-8D 12-Apr-2006	BR-8D 24-Nov-2006	BR-8D 25-Apr-2007
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	550	546	525	544	540	539	536	603	510
Ammonia Nitrogen	mg/l	--	--	0.14	0.26	0.27	0.28	0.17	0.26	0.2	1.83	0.15
Chloride	mg/l	--	250	12	11	9	9	11	13	7	16	10
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	979	963	933	948	1400	1320	1410	995	1320
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	19	48.4	19.2
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	523.2	--	524.8	561.6	505
Nitrate	mg/l	-- [14]	--	<0.1	<0.1	<0.1	<0.1	--	--	--	--	--
Nitrogen	mg/l	--	--	0.48	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	0.85	0.63	--	--	--	--	--
pH (Field)	-	--	--	7.43	7.36	7.13	6.89	7.03	6.8	7.1	7	7.2
Phosphate	mg/l	--	--	0.24	0.09	0.14	0.14	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	<0.005	<0.01	0.42	0.37	0.02	0.03	0.03	0.18	0.04
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	0.06	0.19	0.06
Silica	mg/l	--	--	0.11	0.05	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	3	4	4	3	2	2	3	3	<1
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	0.7
Temperature (Field)	deg c	--	15	--	--	--	--	-- [24]	9	6	5	5
Total Dissolved Solids	mg/l	--	500	636	626	606	616	910	858	587	708	601
Total Organic Carbon	mg/l	--	--	17.8	22.2	21	30.2	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	0.58	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	0.01	--	--	<0.01	<0.01	<0.01	<0.01	0.02
Barium, dissolved	mg/l	1	--	0.3	0.38	--	--	0.42	--	0.37	0.1	0.4
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	--	--	<0.001	--	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.63	0.57	0.66	0.52	0.6	0.61	0.76	0.37	0.73
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	125	128	107	120	124	--	123	141	118
Chromium, dissolved	mg/l	0.05	--	0.014	0.006	0.002	0.001	0.003	--	0.001	0.003	0.002
Cobalt, dissolved	mg/l	--	--	<0.0002	0.0003	--	--	0.0002	--	0.0002	0.0009	0.0019
Copper, dissolved	mg/l	--	1	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	4.43	5.3	4.06	4.9	4.45	4.02	3.45	7.33	3.81
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	60	60	53	51	52	--	53	51	51
Manganese, dissolved	mg/l	--	0.05	0.09	0.11	0.1	0.12	--	--	0.07	0.7	0.1
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	--	--	<0.005	--	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	0.009	<0.005
Potassium, dissolved	mg/l	--	--	6	7	7	5	6	--	7	8	6
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	5.1	5.8	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	7	8	8	7	8	--	8	19	8
Strontium, dissolved	mg/l	--	--	13.9	12.3	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.001	<0.001	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	<0.01	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	--	--	--	--	0.01	--	0.002	0.005	0.005
Zinc, dissolved	mg/l	--	5	<0.005	0.002	--	--	<0.01	0.02	<0.01	0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.001	--	<0.001	<0.001	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-8D 04-Dec-2007	BR-8D 03-May-2008	BR-8D 27-Nov-2008	BR-8D 28-Apr-2009 A-9	BR-8D 29-Nov-2009 A-27	BR-8D 19-May-2010 A-8	BR-8D 29-Nov-2010 A - 14	BR-8D 11-May-2011 S-18	BR-8D 30-Nov-2011 S - 29
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	521	505	520	514	529	581	518	510	528
Ammonia Nitrogen	mg/l	--	--	0.23	0.19	0.21	0.23	0.23	1.57	0.23	0.21	0.08
Chloride	mg/l	--	250	10	9	9	7	6	13	13	13	56
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	990	965	945	905	929	1040	920	870	1090
Conductivity (Field)	uS/cm	--	--	--	--	--	940	965	940	760	1010	995
Dissolved Organic Carbon	mg/l	--	5	24.8	18.9	24.7	22.9	30.4	41.1	20.1	17.6	5.8
Hardness, Calcium Carbonate	mg/l	--	--	481	483	515	498	467	548	524	483	572
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.1	7.2	7.3	7.4	7.5	6.93	6.8	6.8	6.8
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.01	0.02	0.22	0.02	0.27	0.04	<0.01	0.34	0.1
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	2	<1	<1	<1	<1	<1	3	1	4
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	0.8	0.9	2.4	1	1.2	1.8	0.5	0.4	0.3
Temperature (Field)	deg c	--	15	7	8	6	11	7	22	20.1	18	11
Total Dissolved Solids	mg/l	--	500	605	581	610	588	604	676	598	566	708
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.44	0.46	0.57	0.47	0.53	0.08	0.56	0.52	0.32
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.86	0.9	0.67	0.72	0.52	0.23	0.75	0.74	1.4
Cadmium, dissolved	mg/l	0.005	--	0.0001	<0.0001	0.0008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	110	111	122	117	113	137	124	111	127
Chromium, dissolved	mg/l	0.05	--	0.004	0.004	0.003	0.004	0.004	<0.001	<0.001	0.002	0.009
Cobalt, dissolved	mg/l	--	--	0.0004	0.0003	0.0003	0.0003	0.0003	0.0008	0.0002	0.0003	0.0002
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	3.42	3.34	4.27	4	4.29	6.26	3.52	3.12	0.17
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	50	50	51	50	45	50	52	50	62
Manganese, dissolved	mg/l	--	0.05	0.1	0.08	0.11	0.09	0.1	0.6	0.08	0.07	0.01
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	6	7	6	7	6	7	8	7	10
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	7	9	7	7	6	12	6	8	32
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.011	0.009	0.008	0.01	0.011	0.005	0.003	0.005	0.003
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-8D 20-May-2012 [9] S-24	BR-8D 13-Nov-2012 A - 7	BR-8D 31-May-2014 S-19	BR-8D 19-Nov-2014 A-16	BR-8D 06-May-2015 S-11	BR-8D 16-Nov-2015 [4] S-8	BR-8D 19-Apr-2016 S-13	BR-8D 31-Oct-2016 S-7	BR-8D 26-May-2017 A-19
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	516	557	530	560	610	570	570	600	580
Ammonia Nitrogen	mg/l	--	--	0.3	0.24	0.33	0.24	1.6	0.25	0.25	0.25	0.28
Chloride	mg/l	--	250	15	20	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	32	35	48	31	30	40	28
Conductivity	uS/cm	--	--	929	985	1000	1100	1200	1100	1100	1200	1100
Conductivity (Field)	uS/cm	--	--	1035	1050	1120	1140	1105	1140	920	890	930
Dissolved Organic Carbon	mg/l	--	5	22.7	21	14	17	28	18	18	17	17
Hardness, Calcium Carbonate	mg/l	--	--	369	501	590	570	630	590	590	590	560
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.8	6.7	6.8	6.7	6.9	6.8	6.8	6.9	6.8
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.02	0.02	0.084	0.036	0.057	0.048	0.01	0.024	0.009
Phosphorus, dissolved	mg/l	--	--	--	--	<0.1	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	<1	<3	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	<1	<1	<1	<1.0	<1.0	<1.0	<1.0
Tannin & Lignin	mg/l	--	--	1	0.8	0.7	1.5	--	--	--	--	--
Temperature (Field)	deg c	--	15	17	15	12	13	12	10	19	8	15
Total Dissolved Solids	mg/l	--	500	604	640	624	588	744	648	662	794	626
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.0050	<0.0050
Barium, dissolved	mg/l	1	--	0.6	0.61	0.65	0.65	0.093	0.64	0.71	0.63	0.75
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.92	0.93	0.98	1.1	0.57	0.9	0.81	0.96	0.73
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	85	126	130	120	150 [8]	130	130	120	120
Chromium, dissolved	mg/l	0.05	--	0.004	0.002	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0002	0.0003	<0.00050	<0.00050	0.0011	<0.0005	<0.0005	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	3.38	3.04	2.8	2.7	3.1	2.6	3.1	2.3	1.8
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	38	56	64	65	63	64	66	68	63
Manganese, dissolved	mg/l	--	0.05	0.08	0.07	0.061	0.064	0.28	0.058	0.06	0.043	0.065
Mercury	mg/l	0.001	--	--	--	--	--	--	<0.00010	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.00050	<0.00050	0.001	<0.0005	<0.0005	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	0.0027	0.0032	0.0086	0.003	0.003	0.0038	0.0028
Potassium, dissolved	mg/l	--	--	5	7	8.4	8.5	9.3	8.2	7.9	8.6	7.3
Selenium, dissolved	mg/l	0.05	--	<0.01	<0.001	<0.0020	<0.0020	<0.0020	<0.002	<0.002	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	5	6	8.9	10	23	11	12	14	12
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.005	0.005	<0.00050	<0.00050	0.0011	0.0008	<0.0005	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.0050	<0.0050
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-8D 23-Nov-2017 BR-8D	BR-8D 16-May-2018 BR-8D	BR-8D 29-Oct-2018 [40] BR-8D	BR-8D 30-May-2019 BR-8D	BR-8D 15-Nov-2019 BR-8D	BR-8D 07-May-2020 8D	BR-8D 29-Oct-2020 BR-8D	BR-8D 30-Apr-2021 BR-8D	BR-8D 24-Nov-2021 BR-8D
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	610	580	610	570	580	380	630	630	620
Ammonia Nitrogen	mg/l	--	--	0.29	0.3	0.26	0.25	0.28	0.094	0.33	0.25	0.26
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	27	24	34	25	19	37	35	40	37
Conductivity	uS/cm	--	--	1100	1000	1100	1100	1100	810	1200	1200	1100
Conductivity (Field)	uS/cm	--	--	920	960	977	1024	1035	1024	9.85	960	1220
Dissolved Organic Carbon	mg/l	--	5	20	17	17	16	19	7.6	17	17	17
Hardness, Calcium Carbonate	mg/l	--	--	560	570	580	580	590	330	620	650	610
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.7	6.8	6.8	6.94	6.9	6.97	6.91	7.01	6.99
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.01	0.012	0.013	0.011	0.017	0.28	0.012	0.012	<0.020
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	12	14	13.5	16	14	15.9	12	13	13.1
Total Dissolved Solids	mg/l	--	500	570	575	685	615	625	425	635	630	625
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.76	0.7	0.65	0.74	0.72	0.054	0.73	0.72	0.72
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.64	0.67	0.79	0.67	0.48	0.25	0.65	0.54	0.59
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	130	130	130	130	130	76	140	150	140
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00056	<0.00050	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	3.1	2.8	2.4	2.6	3.1	<0.1	2.7	2.9	2.8
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	58	62	64	62	62	35	67	70	64
Manganese, dissolved	mg/l	--	0.05	0.063	0.054	0.047	0.055	0.062	0.042	0.056	0.061	0.063
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	0.0031	0.0031	0.0037	0.0026	0.0023	0.0053	0.0038	0.0041	0.0035
Potassium, dissolved	mg/l	--	--	7	7.1	7.1	6.9	6.6	9.9	6.9	7.2	6.9
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	12	12	13	11	11	41	17	17	16
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.00054	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00054	0.00057	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-8D 25-Apr-2022 BR8-D	BR-8D 17-Dec-2022 BR-8D	BR-8D 25-May-2023 BR-8D	BR-8D 26-Nov-2023 BR-8D
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	--	--	600	670	630	690
Ammonia Nitrogen	mg/l	--	--	0.2	0.31	0.34	0.35
Chloride	mg/l	--	250	--	--	--	--
Chloride, dissolved	mg/l	--	250	28	58	44	55
Conductivity	uS/cm	--	--	1200	1300	1200	1400
Conductivity (Field)	uS/cm	--	--	1179	11.55	1164	1098
Dissolved Organic Carbon	mg/l	--	5	15	17	16	17
Hardness, Calcium Carbonate	mg/l	--	--	670	680	660	740
Nitrate	mg/l	-- [14]	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--
pH (Field)	-	--	--	6.88	6.79	6.8	6.89
Phosphate	mg/l	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.020 [13]	<0.010	<0.010
Phosphorus	mg/l	--	--	0.013	0.011	0.008	0.01
Phosphorus, dissolved	mg/l	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	<1.0	<5.0 [13]	<1.0	<1.0
Tannin & Lignin	mg/l	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	15.9	13.9	12.8	11.6
Total Dissolved Solids	mg/l	--	500	615	715	640	785
Total Organic Carbon	mg/l	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--
Metals							
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.64	0.78	0.76	0.85
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.66	0.66	0.55	0.69
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	150	150	150	170
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--
Iron, dissolved	mg/l	--	0.3	2.6	2.6	3.1	2.9
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	0.0026	<0.00050
Magnesium, dissolved	mg/l	--	--	71	74	68	80
Manganese, dissolved	mg/l	--	0.05	0.051	0.057	0.071	0.059
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	0.0043	0.0051	0.0042	0.0065
Potassium, dissolved	mg/l	--	--	7.2	7.7	6.8	7.8
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	16	24	20	32
Strontium, dissolved	mg/l	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	0.00058	0.00056	0.00069
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050
Phenols							
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-8S 22-Nov-1998	BR-8S 15-Jul-1999	BR-8S 16-Oct-1999	BR-8S 01-Jul-2000	BR-8S 01-Oct-2000	BR-8S 14-Oct-2000	BR-8S 06-Sep-2001	BR-8S 06-Nov-2001	BR-8S 28-May-2002
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	680	638	634	570	--	569	608	612	595
Ammonia Nitrogen	mg/l	--	--	0.78	0.8	0.98	1.87	--	0.87	0.98	1.07	2.22
Chloride	mg/l	--	250	5	5	6	5	--	3	11	9	9
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	1063	907	1027	979	--	930	1030	1060	1080
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	556	562	601
Nitrate	mg/l	-- [14]	--	-- [16]	0.13	<0.01	<0.1	--	<0.1	<0.1	<0.1	<0.1
Nitrogen	mg/l	--	--	--	--	--	2.29	--	1.41	--	--	2.46
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	8	6.55	6.84	7.18	--	7.03	6.85	6.93	--
Phosphate	mg/l	--	--	-- [16]	<0.03	<0.03	<0.03	--	0.06	--	--	<0.03
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	--	0.29	--	--	--	--	0.21
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	13	<3	10	3	--	2	2	7	6
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	656	712	704	672	--	624	676	748	702
Total Organic Carbon	mg/l	--	--	36	26.4	48.1	33.9	--	51.4	--	--	44.4
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	0.12	0.03	0.03	<0.05	--	0.14	<0.05	<0.05	0.14
Barium, dissolved	mg/l	1	--	0.05	0.06	0.4	0.06	--	0.06	0.07	0.06	0.72
Beryllium, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.002	--	<0.002	<0.002	<0.002	<0.002
Boron, dissolved	mg/l	5	--	0.35	0.29	0.31	0.2	--	0.3	0.4	0.27	2
Cadmium, dissolved	mg/l	0.005	--	-- [16]	<0.005	<0.01	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	159	153	149	140	--	146	127	136	142
Chromium, dissolved	mg/l	0.05	--	-- [16]	<0.01	<0.01	<0.01	--	<0.01	0.015	0.011	0.022
Cobalt, dissolved	mg/l	--	--	0.02	0.02	<0.01	<0.01	--	0.0078	0.0023	0.0043	0.0035
Copper, dissolved	mg/l	--	1	-- [16]	<0.005	<0.01	<0.01	--	0.001	<0.001	<0.001	0.001
Iron, dissolved	mg/l	--	0.3	5.67	4.57	4.66	6.41	--	5.7	4.62	5.25	51.8
Lead, dissolved	mg/l	0.01	--	-- [16]	<0.002	<0.002	<0.001	--	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	68	66	59	56	--	57	58	54	60
Manganese, dissolved	mg/l	--	0.05	0.76	0.86	1.04	1.2	--	0.81	0.76	0.83	9.46
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	-- [16]	<0.0002	<0.0002	<0.0001	--	<0.0001	--	--	<0.0001
Molybdenum, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.01	--	<0.01	0.01	<0.01	0.01
Nickel, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	0.03	--	0.02	0.02	0.01	0.07
Potassium, dissolved	mg/l	--	--	4	7	5	4	--	6	7	8	5
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	7.9	7.2	7.2	6.57	--	7.57	7.61	7.72	61.2
Silver, dissolved	mg/l	--	--	-- [16]	<0.01	0.01	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	18	14	12	6	--	10	9	13	9
Strontium, dissolved	mg/l	--	--	8.56	8.44	5.21	1.96	--	7.14	20.3	5.91	33
Sulfur	mg/l	--	--	5	<3	<3	2	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	-- [16]	<0.2	<0.2	<0.2	--	<0.001	<0.001	<0.001	<0.001
Tin, dissolved	mg/l	--	--	-- [16]	<0.05	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.01	--	<0.001	0.006	0.005	0.002
Zinc, dissolved	mg/l	--	5	-- [16]	<0.01	0.07	<0.01	--	<0.01	<0.01	<0.01	0.02
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	-- [16]	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-8S 02-Oct-2002	BR-8S 03-May-2003	BR-8S 03-Nov-2003	BR-8S 04-May-2004	BR-8S 04-Oct-2004	BR-8S 14-Jun-2005	BR-8S 29-Oct-2005	BR-8S 12-Apr-2006	BR-8S 24-Nov-2006
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	430	631	615	583	600	591	624	601	522
Ammonia Nitrogen	mg/l	--	--	0.08	1.75	2.24	1.87	2.11	1.7	1.76	2.06	0.18
Chloride	mg/l	--	250	13	59	28	15	13	14	26	21	10
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	812	1270	1150	1050	1050	900	920	1005	945
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	41.3	21.9
Hardness, Calcium Carbonate	mg/l	--	--	421	--	--	--	--	565	--	612.3	499.1
Nitrate	mg/l	-- [14]	--	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--
Nitrogen	mg/l	--	--	--	2.72	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	3.78	2.46	--	--	--	--
pH (Field)	-	--	--	7.7	7.03	7.29	7.25	6.65	7.1	6.9	7.1	7.1
Phosphate	mg/l	--	--	--	0.76	0.11	0.18	0.2	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	<0.005	<0.01	0.6	0.08	0.09	0.04	0.24	0.06
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	0.11	0.02
Silica	mg/l	--	--	--	0.26	0.06	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	12	3	4	3	5	3	3	9	2
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	-- [24]	9	6	5
Total Dissolved Solids	mg/l	--	500	528	825	748	683	683	585	598	689	606
Total Organic Carbon	mg/l	--	--	--	43.7	42.9	48.6	50.7	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	2.78	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	0.02	<0.01	--	--	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.11	0.08	0.11	--	--	0.1	--	0.11	0.41
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	--	--	<0.001	--	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.82	0.22	0.3	0.23	0.38	0.33	0.32	0.24	0.88
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	83	169	164	135	131	144	--	158	116
Chromium, dissolved	mg/l	0.05	--	<0.001	<0.005	0.006	0.003	0.004	0.005	--	0.003	0.001
Cobalt, dissolved	mg/l	--	--	0.0003	<0.005	0.0053	--	--	0.0034	--	0.001	0.0003
Copper, dissolved	mg/l	--	1	0.002	<0.005	0.003	<0.001	<0.001	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.09	7.84	7.96	4.06	6.37	4.79	7.31	8.24	3.67
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	52	67	60	54	52	50	--	53	51
Manganese, dissolved	mg/l	--	0.05	<0.005	0.937	0.946	0.97	0.56	--	--	0.77	0.09
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	--	--	<0.005	--	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	0.007	0.026	0.025	0.013	0.017	0.017	0.011	<0.005
Potassium, dissolved	mg/l	--	--	8	7	8	6	7	6	--	6	7
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	<0.001	--	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	3.5	7.3	7.8	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	11	22	21	18	22	18	--	19	8
Strontium, dissolved	mg/l	--	--	11.2	5.14	3.02	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.005	--	--	--	--	0.013	--	0.006	0.002
Zinc, dissolved	mg/l	--	5	<0.005	<0.005	0.004	--	--	<0.01	0.02	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.001	<0.001	--	<0.001	<0.001	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-8S 25-Apr-2007	BR-8S 04-Dec-2007	BR-8S 03-May-2008	BR-8S 27-Nov-2008	BR-8S 28-Apr-2009 A-8	BR-8S 29-Nov-2009 A-28	BR-8S 19-May-2010 A-9	BR-8S 29-Nov-2010 A - 15	BR-8S 11-May-2011 S-19
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	572	634	573	581	506	582	492	580	590
Ammonia Nitrogen	mg/l	--	--	1.79	2.47	1.3	2.15	1.58	1.56	0.25	1.5	1.51
Chloride	mg/l	--	250	15	1	27	21	4	9	9	15	19
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	900	1005	1100	--	884	1020	878	1030	1010
Conductivity (Field)	uS/cm	--	--	--	--	--	--	745	685	670	580	760
Dissolved Organic Carbon	mg/l	--	5	45.7	45.2	44.4	46.1	59.7	47.2	23.4	35.5	42.4
Hardness, Calcium Carbonate	mg/l	--	--	578	624	564	538	497	543	430	611	562
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.3	7	7.1	--	7.6	7.5	7.33	6.6	7.1
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.27	0.02	0.05	0.03	0.04	0.03	<0.01	0.04	0.02
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	0.1	<0.01	0.01	<0.01	0.02	0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	1	2	<1	<1	<1	<1	1	<1	<1
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	2.2	2.7	2.8	3.1	5.3	3.1	0.7	1.6	1.7
Temperature (Field)	deg c	--	15	5	7	9	--	10	6	23	22	17
Total Dissolved Solids	mg/l	--	500	689	800	702	696	575	663	571	670	656
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.1	0.12	0.1	0.11	0.07	0.09	0.53	0.09	0.08
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005
Boron, dissolved	mg/l	5	--	0.24	0.32	0.28	0.26	0.25	0.32	0.56	0.28	0.26
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	149	161	145	138	125	135	120	159	141
Chromium, dissolved	mg/l	0.05	--	0.005	0.008	0.007	0.006	0.006	0.006	<0.001	<0.001	0.003
Cobalt, dissolved	mg/l	--	--	0.001	0.0014	0.0008	0.0009	0.0009	0.0007	0.0002	0.0007	0.0008
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	8.53	8.58	7.55	7.52	6.13	5.15	3.67	5.89	5.9
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	50	54	49	47	45	50	45	52	51
Manganese, dissolved	mg/l	--	0.05	0.77	0.78	0.72	0.64	0.59	0.47	0.08	0.54	0.54
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.006	0.01	0.006	0.006	0.006	<0.005	<0.005	0.005	0.005
Potassium, dissolved	mg/l	--	--	7	8	5	7	5	7	6	8	7
Selenium, dissolved	mg/l	0.05	--	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	16	17	16	17	7	13	6	10	12
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.013	0.015	0.015	0.014	0.015	0.014	0.002	0.007	0.008
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-8S 30-Nov-2011 S - 30	BR-8S 20-May-2012 [9] S-25	BR-8S 13-Nov-2012 A - 8	BR-8S 31-May-2014 S-20	BR-8S 19-Nov-2014 A-17	BR-8S 06-May-2015 S-12	BR-8S 16-Nov-2015 [4] S-9	BR-8S 19-Apr-2016 S-14	BR-8S 31-Oct-2016 S-8
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	477	563	591	630	620	550	610	580	630
Ammonia Nitrogen	mg/l	--	--	0.2	1.67	1.46	1.7	1.6	0.29	1.2	0.42	0.97
Chloride	mg/l	--	250	48	16	24	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	--	70	43	30	38	42	39
Conductivity	uS/cm	--	--	979	1010	1060	1300	1200	1000	1200	1200	1200
Conductivity (Field)	uS/cm	--	--	770	805	870	840	870	885	925	830	790
Dissolved Organic Carbon	mg/l	--	5	7	35.3	30.6	25	32	16	28	24	28
Hardness, Calcium Carbonate	mg/l	--	--	485	397	527	720	640	570	610	580	620
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.2	7.1	7	7.2	7	7.1	7	7	7.2
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.43	0.03	0.09	0.027	0.12	0.03	0.12	0.021	0.021
Phosphorus, dissolved	mg/l	--	--	--	--	--	<0.1	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	2	<1	<3	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	<1	<1	<1	<1.0	<1.0	<1.0
Tannin & Lignin	mg/l	--	--	0.2	2.2	1.5	1.8	2.2	--	--	--	--
Temperature (Field)	deg c	--	15	11	15	14	12	12	10	11	20	16
Total Dissolved Solids	mg/l	--	500	636	656	689	850	708	634	730	738	820
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.0050
Barium, dissolved	mg/l	1	--	0.22	0.08	0.1	0.11	0.099	0.63	0.088	0.075	0.09
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.00050
Boron, dissolved	mg/l	5	--	0.78	0.28	0.37	0.43	0.63	0.81	0.47	0.57	0.49
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.0001	<0.00010
Calcium, dissolved	mg/l	--	--	107	98	132	180	150	130 [8]	150	140	150
Chromium, dissolved	mg/l	0.05	--	0.006	0.006	0.003	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.0050
Cobalt, dissolved	mg/l	--	--	<0.0002	0.0006	0.0006	0.00054	0.0005	<0.00050	0.0016	0.0008	0.0011
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.15	5.38	4.36	4.9	4.4	2.7	3.8	1.1	3.6
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.00050
Magnesium, dissolved	mg/l	--	--	53	37	48	69	63	62	60	58	63
Manganese, dissolved	mg/l	--	0.05	0.01	0.52	0.39	0.38	0.37	0.058	0.34	0.13	0.29
Mercury	mg/l	0.001	--	--	--	--	--	--	--	<0.00010	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	0.00084	0.00075	<0.00050	0.001	0.0009	0.00084
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	0.0069	0.005	0.0022	0.011	0.012	0.0096
Potassium, dissolved	mg/l	--	--	8	5	7	10	9.4	8	8.7	7.6	9.3
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.01	<0.001	<0.0020	<0.0020	<0.0020	<0.002	<0.002	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	0.0003	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	22	7	13	24	20	9.4	23	22	24
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.003	<0.005	0.006	0.001	0.001	0.00075	0.0011	0.0006	0.00077
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.0050
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-8S 26-May-2017 A-20	BR-8S 23-Nov-2017 BR-8S	BR-8S 16-May-2018 BR-8S	BR-8S 29-Oct-2018 [40] BR-8S	BR-8S 30-May-2019 BR-8S	BR-8S 15-Nov-2019 BR-8S	BR-8S 07-May-2020 8S	BR-8S 29-Oct-2020 BR-8S	BR-8S 30-Apr-2021 BR-8S
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	580	680	620	650	610	670	640	690	700
Ammonia Nitrogen	mg/l	--	--	0.11	1	<0.050	0.76	0.088	0.73	<0.050	0.62	0.28
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	44	37	31	30	35	39	35	42	64
Conductivity	uS/cm	--	--	1200	1300	1100	1200	1200	1300	1200	1400	1400
Conductivity (Field)	uS/cm	--	--	840	825	870	885	945	955	1151	110	980
Dissolved Organic Carbon	mg/l	--	5	24	30	27	28	23	26	23	23	23
Hardness, Calcium Carbonate	mg/l	--	--	610	630	630	600	630	650	660	690	720
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.1	7	7	7.1	7.3	7.2	7.13	7.03	7.01
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.018	0.1	0.08	0.042	0.13	0.081	0.038	0.034	0.018
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	14	<1.0	<1.0	<1.0	1.6	<1.0	19	<1.0	1.1
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	16	11	14	13	15	13	15	12.8	13.2
Total Dissolved Solids	mg/l	--	500	660	665	650	740	730	785	745	780	780
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.014	<0.0050	<0.0049	0.018
Barium, dissolved	mg/l	1	--	0.093	0.092	0.07	0.082	0.072	0.085	0.07	0.09	0.081
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.43	0.37	0.32	0.3	0.29	0.27	0.3	0.29	0.23
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	140	150	150	150	150	160	160	170	170
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0011	0.00058	0.0017	0.00087	0.0011	0.0018	0.00074	0.0027	0.0019
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	<0.1	4.6	<0.1	4.2	<0.1	3.8	<0.1	3.6	<0.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	62	61	61	57	60	62	63	67	68
Manganese, dissolved	mg/l	--	0.05	0.16	0.31	0.16	0.27	0.071	0.29	0.022	0.31	0.23
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00095	0.00057	0.0014	0.00074	0.0016	0.00082	0.0013	0.00074	0.00062
Nickel, dissolved	mg/l	--	--	0.016	0.0061	0.014	0.0084	0.015	0.011	0.014	0.014	0.013
Potassium, dissolved	mg/l	--	--	7.4	8.7	6.9	7.9	6.8	7.5	6.7	7.6	6.9
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	26	28	28	25	25	26	26	28	32
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	0.0014	<0.00050	0.00078	<0.00050	0.00067	<0.00050	0.00055	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-8S 24-Nov-2021 BR-8S	BR-8S 25-Apr-2022 BR8-S	BR-8S 17-Dec-2022 BR-8S	BR-8S 25-May-2023 BR-8S	BR-8S 26-Nov-2023 BR-8S
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	--	--	730	670	740	670	750
Ammonia Nitrogen	mg/l	--	--	0.89	0.14	0.59	0.091	0.39
Chloride	mg/l	--	250	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	68	63	65	61	57
Conductivity	uS/cm	--	--	1400	1400	1500	1400	1500
Conductivity (Field)	uS/cm	--	--	1480	1080	1086	1095	1039
Dissolved Organic Carbon	mg/l	--	5	24	19	22	19	21
Hardness, Calcium Carbonate	mg/l	--	--	730	770	770	760	800
Nitrate	mg/l	-- [14]	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.92	6.8	6.86	6.81	6.86
Phosphate	mg/l	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.033	0.22	0.042	0.011	0.15
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	<1.0	28	20	25	17
Tannin & Lignin	mg/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	15	13.8	11.1	12.2	10.1
Total Dissolved Solids	mg/l	--	500	745	780	835	845	915
Total Organic Carbon	mg/l	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--
Metals								
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.1	0.083	0.1	0.079	0.094
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.26	0.27	0.35	0.3	0.3
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	180	190	190	180	190
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.002	0.00097	0.0024	0.0015	0.0043
Copper, dissolved	mg/l	--	1	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	5.1	0.13	4	<0.1	1.4
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	69	74	73	75	78
Manganese, dissolved	mg/l	--	0.05	0.3	0.026	0.33	0.16	0.34
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.00068	0.0011	0.00075	0.0013	0.00077
Nickel, dissolved	mg/l	--	--	0.012	0.014	0.014	0.018	0.019
Potassium, dissolved	mg/l	--	--	7.8	6.5	8.2	6.1	7.5
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	32	34	33	34	41
Strontium, dissolved	mg/l	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.00072	<0.00050	0.00054	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols								
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-9D 22-Nov-1998	BR-9D 15-Jul-1999	BR-9D 16-Oct-1999	BR-9D 01-Jul-2000	BR-9D 01-Oct-2000	BR-9D 14-Oct-2000	BR-9D 06-Sep-2001	BR-9D 06-Nov-2001
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	398	410	414	448	--	490	524	527
Ammonia Nitrogen	mg/l	--	--	0.16	0.06	0.04	0.15	--	0.15	0.1	0.09
Chloride	mg/l	--	250	13	16	20	13	--	7	5	3
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	736	674	817	831	--	754	907	921
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	497	498
Nitrate	mg/l	-- [14]	--	-- [16]	<0.1	<0.01	<0.1	--	--	<0.1	<0.1
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	<0.1	--	--
Nitrogen	mg/l	--	--	--	--	--	0.59	--	0.38	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	8.11	7.13	7.55	7.21	--	7.4	7.41	7.53
Phosphate	mg/l	--	--	-- [16]	<0.03	<0.03	<0.03	--	<0.03	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	--	0.04	--	--	--	--
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	30	17	38	16	--	10	8	11
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	464	408	500	540	--	476	552	654
Total Organic Carbon	mg/l	--	--	7.3	19.5	5.2	9.2	--	19.7	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	-- [16]	<0.03	<0.03	<0.05	--	<0.05	<0.05	<0.05
Barium, dissolved	mg/l	1	--	0.12	0.11	0.97	0.24	--	0.38	0.1	0.1
Beryllium, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.002	--	<0.002	<0.002	<0.002
Boron, dissolved	mg/l	5	--	0.78	0.9	0.99	0.73	--	0.78	0.63	0.61
Cadmium, dissolved	mg/l	0.005	--	-- [16]	<0.005	<0.01	<0.005	--	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	70	72	85	89	--	105	105	107
Chromium, dissolved	mg/l	0.05	--	-- [16]	<0.01	<0.01	<0.01	--	<0.01	0.007	<0.001
Cobalt, dissolved	mg/l	--	--	-- [16]	0.01	<0.01	<0.01	--	0.0014	0.0008	0.0081
Copper, dissolved	mg/l	--	1	-- [16]	<0.005	<0.01	<0.01	--	0.002	0.002	0.001
Iron, dissolved	mg/l	--	0.3	2.51	5.31	0.11	1.57	--	0.72	0.12	0.5
Lead, dissolved	mg/l	0.01	--	-- [16]	<0.002	<0.002	<0.001	--	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	64	60	51	58	--	60	57	56
Manganese, dissolved	mg/l	--	0.05	0.07	0.09	0.02	0.03	--	0.03	0.02	0.1
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	-- [16]	<0.0002	<0.0002	<0.0001	--	<0.0001	--	--
Molybdenum, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.1
Nickel, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.01	--	<0.01	0.01	<0.01
Potassium, dissolved	mg/l	--	--	10	9	9	8	--	7	7	7
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	3.1	4	4	4.32	--	4.68	5.12	5
Silver, dissolved	mg/l	--	--	-- [16]	<0.01	0.01	<0.01	--	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	7	12	15	9	--	5	2	-- [24]
Strontium, dissolved	mg/l	--	--	12.3	10.2	10.4	12.1	--	8.59	10.4	6.24
Sulfur	mg/l	--	--	10	6	12	7	--	--	--	--
Thallium, dissolved	mg/l	--	--	-- [16]	<0.2	<0.2	<0.2	--	<0.001	<0.001	<0.001
Tin, dissolved	mg/l	--	--	-- [16]	<0.05	--	--	--	<0.01	--	--
Titanium, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.01	--	<0.001	0.002	<0.001
Zinc, dissolved	mg/l	--	5	-- [16]	<0.01	0.17	<0.01	--	0.1	<0.01	<0.01
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	-- [16]	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-9D 28-May-2002	BR-9D 02-Oct-2002	BR-9D 03-May-2003	BR-9D 03-Nov-2003	BR-9D 04-May-2004	BR-9D 04-Oct-2004	BR-9D 14-Jun-2005	BR-9D 29-Oct-2005	BR-9D 12-Apr-2006
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	396	606	374	387	471	446	405	472	499
Ammonia Nitrogen	mg/l	--	--	0.19	1.03	0.29	0.17	0.21	0.18	0.09	0.1	0.13
Chloride	mg/l	--	250	25	8	15	19	10	7	50	15	8
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	868	1060	727	768	842	784	920	885	915
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	14.9
Hardness, Calcium Carbonate	mg/l	--	--	411.4	637	--	--	--	--	420	--	501.2
Nitrate	mg/l	-- [14]	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	0.37	--	0.5	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	0.7	0.55	--	--	--
pH (Field)	-	--	--	7.8	6.99	7.52	7.77	6.99	7.26	7.56	6.8	6.9
Phosphate	mg/l	--	--	<0.03	--	0.36	0.08	0.19	0.15	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.02	--	<0.005	<0.01	0.06	0.16	0.03	0.04	0.03
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	0.05
Silica	mg/l	--	--	--	--	0.12	0.04	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	40	5	14	21	13	8	52	21	13
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	-- [24]	12	6
Total Dissolved Solids	mg/l	--	500	564	689	473	499	547	510	598	575	567
Total Organic Carbon	mg/l	--	--	4.7	--	4.1	5.2	11.4	14.3	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	0.25	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.05	<0.01	<0.01	<0.01	--	--	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.18	0.07	0.12	0.15	--	--	0.17	--	0.13
Beryllium, dissolved	mg/l	--	--	<0.002	0.001	<0.001	<0.001	--	--	<0.001	--	<0.001
Boron, dissolved	mg/l	5	--	0.94	0.34	0.96	1	0.84	0.9	0.79	0.81	0.88
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
Calcium, dissolved	mg/l	--	--	76	153	71	77	91	84	86	--	107
Chromium, dissolved	mg/l	0.05	--	<0.001	0.002	0.009	<0.001	0.001	0.001	0.008	--	0.001
Cobalt, dissolved	mg/l	--	--	0.0006	0.0014	0.0006	0.0007	--	--	0.0016	--	0.0123
Copper, dissolved	mg/l	--	1	<0.001	0.002	<0.001	<0.001	<0.001	0.001	--	--	--
Iron, dissolved	mg/l	--	0.3	0.67	4.7	0.59	0.27	0.79	0.13	0.4	<0.03	0.33
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001
Magnesium, dissolved	mg/l	--	--	54	62	48	50	55	49	50	--	57
Manganese, dissolved	mg/l	--	0.05	<0.0001	0.63	0.018	0.02	0.03	<0.01	--	--	0.12
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.01	<0.005	<0.005	<0.005	--	--	<0.005	--	<0.005
Nickel, dissolved	mg/l	--	--	--	<0.005	<0.005	<0.005	<0.005	0.007	<0.005	0.01	0.011
Potassium, dissolved	mg/l	--	--	9	8	8	10	9	8	9	--	9
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	<0.001	--	<0.001
Silicon, dissolved	mg/l	--	--	3.51	5.7	4	4.3	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	16	10	11	14	9	5	22	--	8
Strontium, dissolved	mg/l	--	--	12.2	13.1	11	10.5	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.001	<0.005	--	--	--	--	0.006	--	0.002
Zinc, dissolved	mg/l	--	5	<0.01	<0.005	0.003	<0.001	--	--	<0.01	0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.001	<0.001	<0.001	--	<0.001	<0.001	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-9D 25-Nov-2006	BR-9D 25-Apr-2007	BR-9D 04-Dec-2007	BR-9D 03-May-2008	BR-9D 28-Nov-2008	BR-9D 28-Apr-2009 A-13	BR-9D 29-Nov-2009 A-17	BR-9D 19-May-2010 A-12	BR-9D 29-Nov-2010 A - 16
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	391	408	453	515	475	478	497	434	489
Ammonia Nitrogen	mg/l	--	--	0.14	0.13	<0.02	0.38	0.14	0.14	0.15	0.14	0.06
Chloride	mg/l	--	250	15	28	14	5	23	26	17	54	24
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	840	900	920	840	785	946	928	1010	938
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	800	825	970	960
Dissolved Organic Carbon	mg/l	--	5	4.9	8.4	13.8	21.2	8.2	11.4	15.1	6	11.3
Hardness, Calcium Carbonate	mg/l	--	--	372	431	428	530	440	478	458	490	524
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.8	6.8	6.8	6.7	6.8	6.9	6.7	7.4	7.3
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.06	0.04	<0.01	0.39	0.05	0.01	0.01	0.02	0.02
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	0.06	0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	7	10	9	6	21	24	12	45	20
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	0.4	0.2	3.2	0.6	0.5	0.6	0.3	0.2
Temperature (Field)	deg c	--	15	7	5	8	9	7	9	6	16	20
Total Dissolved Solids	mg/l	--	500	489	538	549	593	610	615	603	657	610
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	0.12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.13	0.12	0.12	0.18	0.16	0.14	0.14	0.18	0.12
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	1.22	1.09	1.11	0.22	1.06	1.02	0.87	0.88	0.73
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	75	90	89	120	92	99	96	99	114
Chromium, dissolved	mg/l	0.05	--	0.001	0.002	0.003	0.004	0.003	0.003	0.002	<0.001	0.002
Cobalt, dissolved	mg/l	--	--	0.001	0.0031	0.0003	0.0042	0.001	0.0015	0.001	0.0004	0.0023
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.61	1.36	<0.03	3.54	1.64	1.03	0.64	0.75	0.09
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	45	50	50	56	51	56	53	59	58
Manganese, dissolved	mg/l	--	0.05	0.02	0.03	<0.01	0.64	0.02	0.03	0.02	0.02	0.03
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	0.014	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, dissolved	mg/l	--	--	10	10	10	4	9	9	9	11	11
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	8	9	6	6	13	15	8	29	13
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.001	0.005	0.006	0.009	0.007	0.008	0.005	<0.001	0.002
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-9D 11-May-2011 S-20	BR-9D 30-Nov-2011 S - 22	BR-9D 20-May-2012 S-26	BR-9D 13-Nov-2012 A - 11	BR-9D 30-May-2014 S-8	BR-9D 19-Nov-2014 A-23	BR-9D 07-May-2015 S-25	BR-9D 16-Nov-2015 [4] S-12	BR-9D 20-Apr-2016 S-19	BR-9D 31-Oct-2016 S-9
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	480	472	486	491	460	410	420	410	450	410
Ammonia Nitrogen	mg/l	--	--	0.12	0.1	0.08	0.07	0.16	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/l	--	250	43	41	13	44	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	--	--	57	24	33	30	37	35
Conductivity	uS/cm	--	--	975	994	885	1020	1100	820	880	870	980	890
Conductivity (Field)	uS/cm	--	--	950	965	955	950	1010	1025	1080	1105	1065	1135
Dissolved Organic Carbon	mg/l	--	5	6.7	5.8	12.7	6.1	2.8	3	2.6	2.6	4.6	3.5
Hardness, Calcium Carbonate	mg/l	--	--	479	506	344	491	530	420	420	400	470	440
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.3	7.3	7.4	7.3	7.4	7.3	7.2	7.3	7.1	7
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.02	<0.01	<0.01	0.02	<0.004 [13]	0.008	0.009	0.007	0.005	0.007
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	<0.1	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	33	34	11	36	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	37	17	25	22	31	25
Tannin & Lignin	mg/l	--	--	<0.1	0.1	<0.1	<0.1	<0.2	0.5	--	--	--	--
Temperature (Field)	deg c	--	15	15	12	16	16	16	13	14	13	14	11
Total Dissolved Solids	mg/l	--	500	634	646	575	663	562	452	474	474	546	640
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	0.0068	<0.0050	<0.0050	<0.005	<0.005	<0.0050
Barium, dissolved	mg/l	1	--	0.15	0.15	0.12	0.15	0.17	0.13	0.13	0.13	0.14	0.13
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.00050
Boron, dissolved	mg/l	5	--	0.84	0.76	0.73	0.91	1.1	1.3	1.1	1.2	1	1.2
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.0001	<0.00010
Calcium, dissolved	mg/l	--	--	98	107	70	101	110	82	85	80	93	85
Chromium, dissolved	mg/l	0.05	--	0.002	0.007	0.003	0.002	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0006	0.0005	0.0005	0.0006	<0.00050	<0.00050	0.0012	0.0023	0.0005	0.00086
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.83	0.2	0.4	0.72	1.8	<0.1	0.49	<0.1	0.24	<0.1
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.00050
Magnesium, dissolved	mg/l	--	--	57	58	41	58	65	52	51	49	57	54
Manganese, dissolved	mg/l	--	0.05	0.02	<0.01	<0.01	0.01	0.021	0.0034	0.017	0.029	0.008	0.013
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	<0.00010	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	0.0011	0.0013	0.0012	0.0008	0.0015	0.0014
Nickel, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	0.0046	0.0054	0.0047	0.004	0.006	0.0047
Potassium, dissolved	mg/l	--	--	10	10	7	9	12	11	10	10	10	11
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	<0.001	<0.0020	<0.0020	<0.0020	<0.002	<0.002	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.0001	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	21	20	6	25	35	15	21	18	21	17
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.003	0.002	0.007	0.003	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.00050
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.0050	<0.0050	0.0085	<0.005	<0.005	<0.0050
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-9D 25-May-2017 A-15	BR-9D 23-Nov-2017 BR-9D	BR-9D 16-May-2018 BR-9D	BR-9D 26-Oct-2018 [41] BR-9D	BR-9D 30-May-2019 BR-9D	BR-9D 15-Nov-2019 BR-9D	BR-9D 07-May-2020 9D	BR-9D 28-Oct-2020 BR-9D	BR-9D 30-Apr-2021 BR-9D	BR-9D 23-Nov-2021 BR-9D
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	480	480	480	450	440	470	470	490	490	480
Ammonia Nitrogen	mg/l	--	--	0.074	0.059	0.16	0.088	<0.050	<0.050	<0.050	0.063	0.056	0.061
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	69	56	69	58	44	60	48	62	72	17
Conductivity	uS/cm	--	--	1100	1100	1100	1000	1000	1100	1000	1100	1200	1100
Conductivity (Field)	uS/cm	--	--	1040	990	1080	998	978	1005	908	868	849	860
Dissolved Organic Carbon	mg/l	--	5	3.4	3.4	3.3	2.9	2.7	3.2	4	7.2	4.1	3.1
Hardness, Calcium Carbonate	mg/l	--	--	460	470	530	470	480	520	510	520	540	490
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.1	7	7.5	7.4	7.35	7.3	7.1	7.13	7.3	7.19
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.009	0.008	0.005	0.009	0.008	0.013	0.009	0.009	0.006	<0.020
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	41	38	40	35	38	34	30	37	39	39
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	13	12	11	12	14.2	13	11.2	11.95	12.4	11.9
Total Dissolved Solids	mg/l	--	500	588	490	545	555	550	590	605	570	640	540
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.14	0.14	0.17	0.15	0.14	0.16	0.15	0.17	0.17	0.16
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	1.1	0.86	0.93	0.97	1	1	1.1	0.99	0.79	0.8
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	91	93	110	94	97	100	100	110	110	100
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.00066	0.0013	<0.00050	<0.00050	<0.00050	0.00097	0.0006	0.0021	0.00092	<0.00050
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.51	<0.1	0.66	0.68	<0.1	<0.1	<0.1	<0.1	0.7	0.66
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	58	58	64	57	57	64	62	62	64	58
Manganese, dissolved	mg/l	--	0.05	0.013	0.026	0.018	0.015	<0.0020	0.019	0.0068	0.044	0.021	0.018
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	--	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0016	0.0012	0.00089	0.0015	0.0016	0.0013	0.001	0.0014	0.00061	0.00073
Nickel, dissolved	mg/l	--	--	0.0056	0.0067	0.0052	0.0069	0.0081	0.01	0.0081	0.011	0.0067	0.005
Potassium, dissolved	mg/l	--	--	10	9.5	11	9.4	10	11	11	10	10	9.4
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	25	27	39	27	24	29	27	30	42	35
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-9D 26-Apr-2022 BR-9D	BR-9D 17-Dec-2022 [42] BR-9D	BR-9D 25-May-2023 BR-9D	BR-9D 26-Nov-2023 BR-9D
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	--	--	420	450	480	510
Ammonia Nitrogen	mg/l	--	--	<0.050	<0.050	<0.050	0.11
Chloride	mg/l	--	250	--	--	--	--
Chloride, dissolved	mg/l	--	250	40	41	60	60
Conductivity	uS/cm	--	--	890	970	1100	1200
Conductivity (Field)	uS/cm	--	--	879	882	1065	1060
Dissolved Organic Carbon	mg/l	--	5	3	2.9	3.3	3
Hardness, Calcium Carbonate	mg/l	--	--	450	480	550	520
Nitrate	mg/l	-- [14]	--	--	--	--	--
Nitrite	mg/l	-- [15]	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--
pH (Field)	-	--	--	7.28	7.26	7.15	7.08
Phosphate	mg/l	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	0.016	<0.010	<0.010
Phosphorus	mg/l	--	--	0.012	0.013	0.012	0.009
Phosphorus, dissolved	mg/l	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	27	28	32	29
Tannin & Lignin	mg/l	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	13.1	10.8	12.5	11.2
Total Dissolved Solids	mg/l	--	500	355	495	605	610
Total Organic Carbon	mg/l	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--
Metals							
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.13	0.17	0.17	0.18
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	1	1.1	1.2	1.1
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	90	96	110	100
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.00075	0.0029	<0.00050	0.0016
Copper, dissolved	mg/l	--	1	--	--	--	--
Iron, dissolved	mg/l	--	0.3	0.19	0.47	<0.1	0.73
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	55	58	65	64
Manganese, dissolved	mg/l	--	0.05	0.0074	0.04	<0.0020	0.024
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	0.0012	0.0011	0.00076	0.00054
Nickel, dissolved	mg/l	--	--	0.0061	0.0076	0.009	0.0073
Potassium, dissolved	mg/l	--	--	10	9.9	11	10
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	24	28	30	31
Strontium, dissolved	mg/l	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050
Phenols							
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-9S 22-Nov-1998	BR-9S 15-Jul-1999	BR-9S 16-Oct-1999	BR-9S 01-Jul-2000	BR-9S 01-Oct-2000	BR-9S 14-Oct-2000	BR-9S 23-Sep-2001	BR-9S 16-Nov-2001	BR-9S 28-May-2002	BR-9S 02-Oct-2002
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	604	590	598	563	--	576	583	579	557	543
Ammonia Nitrogen	mg/l	--	--	0.3	0.27	0.17	0.38	--	0.37	0.33	0.32	0.46	0.44
Chloride	mg/l	--	250	3	2	4	2	--	4	3	2	2	3
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	968	840	964	964	--	827	982	984	996	969
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	536	553.5	619
Nitrate	mg/l	-- [14]	--	-- [16]	<0.1	<0.01	<0.1	--	--	<0.1	<0.1	<0.1	<0.1
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	<0.1	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	1.53	--	0.8	--	--	0.81	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	8.1	6.64	6.98	6.84	--	7.03	7.09	7.12	7.54	7.26
Phosphate	mg/l	--	--	0.36	<0.03	<0.03	<0.03	--	<0.03	--	--	<0.03	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	--	0.38	--	--	--	--	0.34	--
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	3	3	9	4	--	4	2	6	9	13
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	592	520	588	644	--	556	640	592	647	630
Total Organic Carbon	mg/l	--	--	30	16.6	24.9	23.5	--	28.4	--	--	20.7	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	0.07	<0.03	<0.03	<0.05	--	0.13	<0.05	<0.05	0.15	<0.01
Barium, dissolved	mg/l	1	--	0.14	0.15	0.74	0.15	--	0.16	0.17	0.15	**1.68**	0.17
Beryllium, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001
Boron, dissolved	mg/l	5	--	0.2	0.19	0.41	0.2	--	0.2	0.22	0.2	1.7	0.18
Cadmium, dissolved	mg/l	0.005	--	-- [16]	<0.005	<0.01	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	143	140	136	131	--	129	117	119	123	139
Chromium, dissolved	mg/l	0.05	--	-- [16]	**0.76**	<0.01	<0.01	--	<0.01	0.01	0.003	0.002	0.002
Cobalt, dissolved	mg/l	--	--	0.03	0.01	<0.01	<0.01	--	0.0187	0.0087	0.0103	0.0093	0.0091
Copper, dissolved	mg/l	--	1	-- [16]	<0.005	<0.01	<0.01	--	0.002	<0.001	<0.001	0.001	0.002
Iron, dissolved	mg/l	--	0.3	2.18	2.59	1.95	3.26	--	4.09	--	2.68	40	2.68
Lead, dissolved	mg/l	0.01	--	-- [16]	<0.002	<0.002	<0.001	--	<0.001	--	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	70	67	65	62	--	61	--	58	60	66
Manganese, dissolved	mg/l	--	0.05	0.89	0.84	0.8	0.64	--	0.92	0.86	0.78	6.84	0.721
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	-- [16]	<0.0002	<0.0002	<0.0001	--	<0.0001	--	--	<0.0001	--
Molybdenum, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.01	--	<0.01	0.01	<0.01	0.01	<0.005
Nickel, dissolved	mg/l	--	--	0.06	0.02	<0.01	0.02	--	0.04	0.03	0.03	0.14	0.012
Potassium, dissolved	mg/l	--	--	2	3	2	3	--	3	3	3	3	3
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	--	--	--	--	--	--
Silicon, dissolved	mg/l	--	--	5	5.5	5.5	4.9	--	6.36	6.05	6.06	45.7	4.7
Silver, dissolved	mg/l	--	--	-- [16]	<0.01	0.01	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	3	7	7	6	--	6	3	4	5	5
Strontium, dissolved	mg/l	--	--	1.24	1.91	1.35	1.7	--	1.17	1.37	1.08	17.9	1.9
Sulfur	mg/l	--	--	-- [16]	<3	<3	2	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	-- [16]	<0.2	<0.2	0.3	--	<0.001	<0.001	<0.001	<0.001	<0.001
Tin, dissolved	mg/l	--	--	-- [16]	<0.05	--	--	--	<0.01	--	--	--	--
Titanium, dissolved	mg/l	--	--	-- [16]	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	0.01	<0.01	<0.01	<0.01	--	<0.001	0.003	0.001	<0.001	<0.005
Zinc, dissolved	mg/l	--	5	-- [16]	<0.01	34	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	-- [16]	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-9S 03-May-2003	BR-9S 03-Nov-2003	BR-9S 04-May-2004	BR-9S 04-Oct-2004	BR-9S 14-Jun-2005	BR-9S 29-Oct-2005	BR-9S 12-Apr-2006	BR-9S 25-Nov-2006	BR-9S 25-Apr-2007
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	564	572	540	550	532	557	559	545	517
Ammonia Nitrogen	mg/l	--	--	0.83	0.52	0.45	0.74	0.44	0.44	0.28	0.45	0.33
Chloride	mg/l	--	250	7	5	3	4	5	6	3	4	5
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	994	977	898	924	900	875	830	890	805
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	18.9	20	21.8
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	533.7	--	549.4	530.5	525
Nitrate	mg/l	-- [14]	--	<0.1	<0.1	<0.1	<0.1	--	--	--	--	--
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	1	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	1.21	0.84	--	--	--	--	--
pH (Field)	-	--	--	7.08	7.27	6.71	6.75	7.07	7	7.2	7.1	7.1
Phosphate	mg/l	--	--	0.74	0.23	0.17	0.18	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	<0.005	<0.01	1.04	0.09	0.42	0.06	0.62	0.24	0.8
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	0.1	0.11	0.09
Silica	mg/l	--	--	1.32	0.12	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	5	4	6	4	5	4	8	5	4
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	0.9
Temperature (Field)	deg c	--	15	--	--	--	--	-- [24]	11	6	8	6
Total Dissolved Solids	mg/l	--	500	646	635	584	601	585	569	610	624	600
Total Organic Carbon	mg/l	--	--	22.6	29.4	20.1	25.5	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	0.97	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	0.02	--	--	<0.01	<0.01	<0.01	<0.01	0.06
Barium, dissolved	mg/l	1	--	0.15	0.19	--	--	0.19	--	0.21	0.16	0.15
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	--	--	<0.001	--	<0.001	<0.001	<0.001
Boron, dissolved	mg/l	5	--	0.19	0.22	0.19	0.23	0.18	0.23	0.25	0.21	0.19
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	126	137	112	116	120	--	123	122	121
Chromium, dissolved	mg/l	0.05	--	0.015	0.009	0.003	0.002	0.004	--	0.002	0.002	0.003
Cobalt, dissolved	mg/l	--	--	0.0062	0.0075	--	--	0.0058	--	0.004	0.005	0.0086
Copper, dissolved	mg/l	--	1	<0.001	0.005	<0.001	<0.001	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	4.43	3.33	4.52	3.02	3.34	2.99	3.73	3.09	3.69
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	68	66	59	57	57	--	59	55	54
Manganese, dissolved	mg/l	--	0.05	0.665	0.754	0.73	0.63	--	--	0.55	0.7	0.7
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	--	--	<0.005	--	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	<0.005	0.024	0.018	0.02	0.02	0.02	0.018	0.015	0.012
Potassium, dissolved	mg/l	--	--	3	5	4	4	4	--	4	5	4
Selenium, dissolved	mg/l	0.05	--	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	5.3	6.1	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	5	7	6	6	5	--	5	6	5
Strontium, dissolved	mg/l	--	--	1.84	1.36	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	<0.001	<0.001	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	<0.01	<0.01	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	--	--	--	--	0.01	--	0.003	0.003	0.008
Zinc, dissolved	mg/l	--	5	0.005	0.003	--	--	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	<0.002	--	<0.001	<0.001	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-9S 04-Dec-2007	BR-9S 03-May-2008	BR-9S 28-Nov-2008	BR-9S 28-Apr-2009 A-14	BR-9S 29-Nov-2009 A-18	BR-9S 19-May-2010 A-13	BR-9S 29-Nov-2010 A - 17	BR-9S 11-May-2011 S-21	BR-9S 30-Nov-2011 S - 23
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	537	492	526	525	537	479	534	521	524
Ammonia Nitrogen	mg/l	--	--	0.43	0.13	0.44	0.35	0.48	0.38	0.44	0.33	0.4
Chloride	mg/l	--	250	10	11	4	4	3	4	3	5	6
Chloride, dissolved	mg/l	--	250	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	895	780	740	909	930	852	919	886	923
Conductivity (Field)	uS/cm	--	--	--	--	--	752	735	828	840	770	735
Dissolved Organic Carbon	mg/l	--	5	30.5	14.2	16.8	21.8	19.7	18.4	19.6	20.6	5.5
Hardness, Calcium Carbonate	mg/l	--	--	496	479	473	520	477	529	550	495	541
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7	7.1	7.2	7.3	7.4	7.14	7	7.2	7.2
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.65	0.02	0.7	0.51	0.25	0.44	0.48	0.03	0.2
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	5	8	5	5	5	7	7	6	2
Sulphate, dissolved	mg/l	--	500 [6]	--	--	--	--	--	--	--	--	--
Tannin & Lignin	mg/l	--	--	1.3	0.3	4.2	0.9	1.1	0.4	0.4	0.5	0.9
Temperature (Field)	deg c	--	15	7	8	6	8	6	16	19	16	11
Total Dissolved Solids	mg/l	--	500	616	584	603	591	605	554	597	576	600
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--
Metals												
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium, dissolved	mg/l	1	--	0.18	0.14	0.18	0.16	0.17	0.16	0.18	0.14	0.16
Beryllium, dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
Boron, dissolved	mg/l	5	--	0.23	1.1	0.22	0.18	0.22	0.14	0.16	0.14	0.14
Cadmium, dissolved	mg/l	0.005	--	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, dissolved	mg/l	--	--	113	101	107	116	107	116	128	111	126
Chromium, dissolved	mg/l	0.05	--	0.004	0.003	0.006	0.004	0.002	<0.001	<0.001	0.002	<0.005
Cobalt, dissolved	mg/l	--	--	0.0045	0.0038	0.004	0.0031	0.0029	0.0022	0.0025	0.0024	0.002
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	6.94	0.85	4	2.77	3.17	2.99	5.91	3.2	3.65
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, dissolved	mg/l	--	--	52	55	50	56	51	58	56	53	55
Manganese, dissolved	mg/l	--	0.05	0.64	0.04	0.67	0.52	0.54	0.49	0.61	0.55	0.55
Mercury	mg/l	0.001	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, dissolved	mg/l	--	--	0.017	0.005	0.013	0.01	0.009	0.008	0.008	0.007	0.007
Potassium, dissolved	mg/l	--	--	4	9	4	4	4	4	4	3	4
Selenium, dissolved	mg/l	0.05	--	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, dissolved	mg/l	--	200 [7]	5	7	4	4	3	4	3	5	5
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.009	0.007	0.015	0.010	0.005	0.002	0.005	0.005	0.005
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols												
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-9S 20-May-2012 S-27	BR-9S 13-Nov-2012 A - 12	BR-9S 30-May-2014 S-9	BR-9S 19-Nov-2014 A-27	BR-9S 07-May-2015 S-26	BR-9S 16-Nov-2015 S-13	BR-9S 19-Apr-2016 S-20	BR-9S 31-Oct-2016 S-10	BR-9S 13-Jun-2017 A-16	BR-9S 23-Nov-2017 BR-9S
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	--	--	516	550	520	540	540	550	530	590	540	580
Ammonia Nitrogen	mg/l	--	--	0.35	0.37	0.45	0.42	0.41	0.45	0.4	0.53	0.41	0.48
Chloride	mg/l	--	250	4	5	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	--	--	12	9	6	9.2	5.5	14	5.8	5
Conductivity	uS/cm	--	--	900	937	970	980	1000	1000	1000	1100	1000	1000
Conductivity (Field)	uS/cm	--	--	785	800	825	835	900	920	880	730	855	870
Dissolved Organic Carbon	mg/l	--	5	19.3	16.6	16	17	20	19	17	28	19	19
Hardness, Calcium Carbonate	mg/l	--	--	369	504	590	550	550	570	560	600	560	560
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.4	7.3	7.4	7.3	7.4	7.3	7	7.3	7	7
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.08	0.2	0.06	0.16	0.066	0.033	0.16	0.06	0.024	0.026
Phosphorus, dissolved	mg/l	--	--	--	--	<0.1	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	11	7	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	--	--	15	16	28	16	29	<1.0	33	28
Tannin & Lignin	mg/l	--	--	1	0.6	0.9	1.8	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	16	15	14	12	13	13	15.6	7	14	10.5
Total Dissolved Solids	mg/l	--	500	585	609	528	580	572	588	604	706	608	520
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum, dissolved	mg/l	--	--	<0.01	<0.01	<0.0050	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050	<0.0050
Barium, dissolved	mg/l	1	--	0.14	0.16	0.16	0.16	0.15	0.17	0.15	0.16	0.14	0.15
Beryllium, dissolved	mg/l	--	--	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050	<0.00050
Boron, dissolved	mg/l	5	--	0.15	0.18	0.14	0.18	0.13	0.15	0.12	0.14	0.12	0.14
Cadmium, dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Calcium, dissolved	mg/l	--	--	80	116	130	120	120	130	120	130	120	120
Chromium, dissolved	mg/l	0.05	--	0.004	0.002	<0.0050	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.002	0.0016	0.0017	0.0016	0.0017	0.0016	0.0017	0.0016	0.0014	0.0013
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	3.01	5.82	3.2	3.3	3.3	3.3	3.4	4.8	3.3	3.3
Lead, dissolved	mg/l	0.01	--	<0.001	<0.001	<0.00050	<0.00050	<0.00050	<0.00050	<0.0005	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	41	52	64	61	59	63	61	65	62	61
Manganese, dissolved	mg/l	--	0.05	0.54	0.5	0.52	0.54	0.53	0.54	0.52	0.62	0.51	0.52
Mercury	mg/l	0.001	--	--	--	--	--	--	<0.00010	<0.0001	<0.0001	<0.0001	<0.0001
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.005	<0.005	<0.00050	0.0005	<0.00050	0.00053	<0.0005	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	0.006	0.005	0.0066	0.0058	0.006	0.0043	0.006	0.0061	0.0052	0.0043
Potassium, dissolved	mg/l	--	--	2	3	3.6	4	3.3	3.7	3.3	3.8	3.2	3.5
Selenium, dissolved	mg/l	0.05	--	<0.001	<0.001	<0.0020	<0.0020	<0.0020	<0.0020	<0.002	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Sodium, dissolved	mg/l	--	200 [7]	3	3	5.1	5	4.3	5.4	4.4	7.4	4.9	4.5
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.005	0.005	0.00058	0.00063	0.00059	0.00055	0.0008	0.00075	0.00051	<0.00050
Zinc, dissolved	mg/l	--	5	<0.01	<0.01	<0.0050	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050	<0.0050
Phenols													
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-9S 16-May-2018 BR-9S	BR-9S 26-Oct-2018 [41] BR-9S	BR-9S 30-May-2019 BR-9S	BR-9S 15-Nov-2019 BR-9S	BR-9S 07-May-2020 9S	BR-9S 28-Oct-2020 BR-9S	BR-9S 30-Apr-2021 BR-9S	BR-9S 23-Nov-2021 BR-9S
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	590	580	540	560	540	570	560	560
Ammonia Nitrogen	mg/l	--	--	0.44	0.54	0.49	0.47	0.44	0.48	0.45	0.49
Chloride	mg/l	--	250	--	--	--	--	--	--	--	--
Chloride, dissolved	mg/l	--	250	4.2	7.7	5.6	8.7	4.4	16	13	62
Conductivity	uS/cm	--	--	1000	1000	1000	1000	1000	1100	1100	1000
Conductivity (Field)	uS/cm	--	--	1050	944	972	991	832	839	820	840
Dissolved Organic Carbon	mg/l	--	5	19	21	17	18	16	19	18	15
Hardness, Calcium Carbonate	mg/l	--	--	600	580	580	550	580	590	620	590
Nitrate	mg/l	-- [14]	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.2	7.3	6.9	6.77	6.98	7.17	7.21	7.21
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.02	0.024	0.26	0.037	0.18	0.09	0.033	0.091
Phosphorus, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	39	1.4	36	21	39	19	42	29
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	10	11	12.5	12.8	10.5	11.88	13.1	11
Total Dissolved Solids	mg/l	--	500	605	605	595	615	580	590	585	595
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--	--	--	--	--
Metals											
Aluminum, dissolved	mg/l	--	--	<0.0050	0.0092	<0.0050	<0.0050	<0.0050	<0.0049	<0.0049	0.008
Barium, dissolved	mg/l	1	--	0.14	0.15	0.14	0.14	0.14	0.14	0.14	0.15
Beryllium, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.11	0.13	0.11	0.12	0.11	0.11	0.1	0.12
Cadmium, dissolved	mg/l	0.005	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	130	130	130	120	130	130	140	140
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0015	0.0011	0.0013	0.001	0.0012	0.0012	0.0011	0.00095
Copper, dissolved	mg/l	--	1	--	--	--	--	--	--	--	--
Iron, dissolved	mg/l	--	0.3	3.5	3.7	3.7	3.4	3.8	4.5	3.5	4.1
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	67	64	62	60	62	63	68	60
Manganese, dissolved	mg/l	--	0.05	0.5	0.55	0.51	0.47	0.5	0.54	0.52	0.48
Mercury	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	0.0053	0.0049	0.0047	0.0038	0.0045	0.0066	0.0049	0.0045
Potassium, dissolved	mg/l	--	--	3.1	3.4	3.1	3	2.9	3.2	2.9	3.1
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	4.5	5.2	4	4.3	4.2	4.8	4.7	5.1
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	<0.00050	0.00076	0.0012	0.00055	<0.00050	0.0011	0.00051	0.00069
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-9S 26-Apr-2022 BR9-S	BR-9S 17-Dec-2022 BR-9S	BR-9S 25-May-2023 BR-9S	BR-9S 26-Nov-2023 BR-9S
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	--	--	550	580	550	580
Ammonia Nitrogen	mg/l	--	--	0.44	0.51	0.47	0.53
Chloride	mg/l	--	250	--	--	--	--
Chloride, dissolved	mg/l	--	250	11	32	11	25
Conductivity	uS/cm	--	--	1100	1100	1100	1100
Conductivity (Field)	uS/cm	--	--	1008	966	1022	998
Dissolved Organic Carbon	mg/l	--	5	14	15	14	16
Hardness, Calcium Carbonate	mg/l	--	--	640	620	630	650
Nitrate	mg/l	-- [14]	--	--	--	--	--
Nitrite	mg/l	-- [15]	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--
pH (Field)	-	--	--	6.76	6.84	6.84	6.88
Phosphate	mg/l	--	--	--	--	--	--
Phosphate, Ortho	mg/l	--	--	<0.010	<0.010	<0.010	<0.010
Phosphorus	mg/l	--	--	0.16	0.048	0.045	0.068
Phosphorus, dissolved	mg/l	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	--	--	--	--
Sulphate, dissolved	mg/l	--	500 [6]	40	25	51	21
Tannin & Lignin	mg/l	--	--	--	--	--	--
Temperature (Field)	deg c	--	15	11.9	9.6	10.2	8.4
Total Dissolved Solids	mg/l	--	500	555	620	615	620
Total Organic Carbon	mg/l	--	--	--	--	--	--
Turbidity	ntu	--	5 [19]	--	--	--	--
Metals							
Aluminum, dissolved	mg/l	--	--	<0.0049	<0.0049	<0.0049	<0.0049
Barium, dissolved	mg/l	1	--	0.14	0.14	0.13	0.16
Beryllium, dissolved	mg/l	--	--	<0.00040	<0.00040	<0.00040	<0.00040
Boron, dissolved	mg/l	5	--	0.089	0.12	0.099	0.14
Cadmium, dissolved	mg/l	0.005	--	<0.000090	<0.000090	<0.000090	<0.000090
Calcium, dissolved	mg/l	--	--	140	140	140	150
Chromium, dissolved	mg/l	0.05	--	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, dissolved	mg/l	--	--	0.0011	0.0011	0.001	0.00086
Copper, dissolved	mg/l	--	1	--	--	--	--
Iron, dissolved	mg/l	--	0.3	4	3.5	3.1	3.7
Lead, dissolved	mg/l	0.01	--	<0.00050	<0.00050	<0.00050	<0.00050
Magnesium, dissolved	mg/l	--	--	68	65	66	68
Manganese, dissolved	mg/l	--	0.05	0.45	0.51	0.43	0.48
Mercury	mg/l	0.001	--	<0.00010	<0.00010	<0.00010	<0.00010
Mercury, dissolved	mg/l	0.001	--	--	--	--	--
Molybdenum, dissolved	mg/l	--	--	<0.00050	<0.00050	<0.00050	<0.00050
Nickel, dissolved	mg/l	--	--	0.0046	0.0059	0.0045	0.0051
Potassium, dissolved	mg/l	--	--	2.7	3	2.7	3.4
Selenium, dissolved	mg/l	0.05	--	<0.0020	<0.0020	<0.0020	<0.0020
Silicon, dissolved	mg/l	--	--	--	--	--	--
Silver, dissolved	mg/l	--	--	<0.000090	<0.000090	<0.000090	<0.000090
Sodium, dissolved	mg/l	--	200 [7]	4.9	6.2	4.8	6.1
Strontium, dissolved	mg/l	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--
Thallium, dissolved	mg/l	--	--	--	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	--
Titanium, dissolved	mg/l	--	--	--	--	--	--
Vanadium, dissolved	mg/l	--	--	0.0012	0.00053	<0.00050	<0.00050
Zinc, dissolved	mg/l	--	5	<0.0050	<0.0050	<0.0050	<0.0050
Phenols							
Phenolics, Total Recoverable	mg/l	--	--	--	--	--	--

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-1 01-Apr-1988	BR-1 01-Nov-1988	BR-1 01-Nov-1990	BR-1 01-Oct-1991	BR-1 01-Dec-1991	BR-1 01-Dec-1992	BR-1 01-Feb-1993	BR-1 01-Sep-1993
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	805	900	1010	900	1110	1180	842	1034
Ammonia Nitrogen	mg/l	--	--	18.2	--	--	--	--	--	--	28.3
Chemical Oxygen Demand	mg/l	--	--	70	90	--	--	--	--	--	--
Chloride	mg/l	--	250	157	139	148	170	220	240	177	335
Conductivity	uS/cm	--	--	2050	--	2180	1780	--	--	--	2521
Nitrate	mg/l	-- [14]	--	0.02	--	--	--	--	--	--	<0.1
Nitrite	mg/l	-- [15]	--	0.004	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	31.5
pH (Field)	-	--	--	7.2	6.9	--	--	--	--	--	7.46
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	<0.1
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	<0.1	--	<0.1	<0.1	--	0.6
Sulphate	mg/l	--	500 [6]	--	--	--	--	110	21	5	33.8
Total Dissolved Solids	mg/l	--	500	--	1142	1282	1080	1520	1640	1120	1760
Total Organic Carbon	mg/l	--	--	--	24	--	--	--	64	--	63.9
Metals											
Aluminum, dissolved	mg/l	--	--	--	--	<0.03	--	<0.03	<0.03	--	--
Arsenic, dissolved	mg/l	0.01	--	--	0.01	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	--	**1.58**	**2.27**	--	**2.86**	**2.16**	--	--
Beryllium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--
Boron, dissolved	mg/l	5	--	--	--	0.35	--	0.58	0.57	--	0.47
Cadmium, dissolved	mg/l	0.005	--	--	<0.004	0.003	<0.002	0.003	<0.01	--	0.001
Calcium, dissolved	mg/l	--	--	--	--	277	--	329	319	--	290
Chromium, dissolved	mg/l	0.05	--	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	0.015
Cobalt, dissolved	mg/l	--	--	--	--	<0.02	--	<0.01	<0.01	--	--
Copper, dissolved	mg/l	--	1	--	--	<0.01	<0.01	<0.01	<0.01	--	<0.01
Iron, dissolved	mg/l	--	0.3	0.3	4.57	0.47	33.6	0.23	<0.01	--	67.7
Lead, dissolved	mg/l	0.01	--	--	<0.05	<0.002	**0.011**	**0.014**	<0.05	--	0.0067
Magnesium, dissolved	mg/l	--	--	--	--	54	--	79	84	--	75.7
Manganese, dissolved	mg/l	--	0.05	--	0.55	0.24	0.65	0.49	0.38	--	0.429
Mercury, dissolved	mg/l	0.001	--	--	<0.001	--	<0.001	--	--	--	<0.0001
Molybdenum, dissolved	mg/l	--	--	--	--	0.03	--	<0.01	<0.01	--	--
Nickel, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	0.02	--	0.03
Potassium, dissolved	mg/l	--	--	--	--	47	--	48	60	--	36.7
Silicon, dissolved	mg/l	--	--	--	--	6.4	--	8.4	8	--	--
Silver, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01
Sodium, dissolved	mg/l	--	200 [7]	--	--	86	--	142	183	--	142
Strontium, dissolved	mg/l	--	--	--	--	3.82	--	4.93	4.4	--	--
Sulfur	mg/l	--	--	--	--	44	--	28	7	--	--
Thallium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.05	<0.05	--	--
Tin, dissolved	mg/l	--	--	--	--	<0.05	--	<0.05	<0.05	--	--
Titanium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--
Vanadium, dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--
Zinc, dissolved	mg/l	--	5	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	--
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	0.002	<0.002	0.003	0.003	<0.002	<0.002	--	0.005

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-1 01-Nov-1993	BR-1 01-Aug-1994	BR-1 01-Dec-1994	BR-1 01-Jun-1997	BR-1 22-Nov-1998	BR-1 15-Jul-1999	BR-1 16-Oct-1999
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	--	--	1042	1128	800	1385	1380	1417	1382
Ammonia Nitrogen	mg/l	--	--	43.2	34.16	33.7	43	80.2	93.9	60
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	340	384	368	198	263	204	261
Conductivity	uS/cm	--	--	2891	2910	2803	2966	2980	2720	2930
Nitrate	mg/l	-- [14]	--	2.29	<0.1	<0.1	<0.1	-- [16]	<0.1	<0.01
Nitrite	mg/l	-- [15]	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	45.1	52.1	38.53	--	--	--	--
pH (Field)	-	--	--	7.13	7.1	7.16	7	6.98	6.46	6.67
Phosphate	mg/l	--	--	<0.1	0.12	--	0.18	0.06	<0.03	<0.03
Phosphorus	mg/l	--	--	--	--	<0.1	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.1	2.11	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	167.4	68.5	71.2	23	-- [16]	<3	42
Total Dissolved Solids	mg/l	--	500	1612	1796	1640	1776	1788	1772	1740
Total Organic Carbon	mg/l	--	--	68.1	52.6	52.3	64	125	103.4	120.6
Metals										
Aluminum, dissolved	mg/l	--	--	--	--	--	0.12	0.15	0.07	0.04
Arsenic, dissolved	mg/l	0.01	--	--	--	--	--	--	--	--
Barium, dissolved	mg/l	1	--	--	--	--	**3.25**	**4.08**	**3.03**	**2.09**
Beryllium, dissolved	mg/l	--	--	--	--	--	<0.01	-- [16]	<0.01	<0.01
Boron, dissolved	mg/l	5	--	0.56	0.51	0.46	0.55	0.93	0.85	0.94
Cadmium, dissolved	mg/l	0.005	--	<0.01	<0.0001	<0.0001	<0.005	-- [16]	<0.005	<0.01
Calcium, dissolved	mg/l	--	--	289	265	206	277	284	272	243
Chromium, dissolved	mg/l	0.05	--	0.018	<0.01	<0.01	<0.01	-- [16]	**0.08**	<0.01
Cobalt, dissolved	mg/l	--	--	--	--	--	<0.01	-- [16]	<0.01	<0.01
Copper, dissolved	mg/l	--	1	<0.01	0.022	<0.01	0.01	-- [16]	<0.005	<0.01
Iron, dissolved	mg/l	--	0.3	67.05	54	20	67	64.7	47.4	29.3
Lead, dissolved	mg/l	0.01	--	**0.023**	0.001	0.0006	<0.002	-- [16]	<0.002	<0.002
Magnesium, dissolved	mg/l	--	--	83.3	83.6	57.9	66	98	93	81
Manganese, dissolved	mg/l	--	0.05	0.478	0.27	0.258	0.2	0.08	0.09	0.19
Mercury, dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	**0.0023**	-- [16]	<0.0002	<0.0002
Molybdenum, dissolved	mg/l	--	--	--	--	--	<0.03	-- [16]	<0.01	<0.01
Nickel, dissolved	mg/l	--	--	0.026	<0.02	<0.02	0.02	0.02	0.01	<0.01
Potassium, dissolved	mg/l	--	--	44.6	45.5	32.6	53	60	58	51
Silicon, dissolved	mg/l	--	--	--	--	--	7.7	9.6	8.7	8.5
Silver, dissolved	mg/l	--	--	<0.02	<0.02	<0.01	<0.01	0.02	<0.01	0.01
Sodium, dissolved	mg/l	--	200 [7]	186	153	116	157	192	195	188
Strontium, dissolved	mg/l	--	--	--	--	--	5.25	5.64	4.84	3.89
Sulfur	mg/l	--	--	--	--	--	8	3	<3	13
Thallium, dissolved	mg/l	--	--	--	--	--	<0.2	--	--	--
Tin, dissolved	mg/l	--	--	--	--	--	<0.05	-- [16]	<0.05	--
Titanium, dissolved	mg/l	--	--	--	--	--	<0.01	--	--	--
Vanadium, dissolved	mg/l	--	--	--	--	--	<0.01	-- [16]	--	<0.01
Zinc, dissolved	mg/l	--	5	--	--	--	0.01	-- [16]	--	0.02
Phenols										
Phenolics, Total Recoverable	mg/l	--	--	0.008	<0.001	0.013	0.002	0.004	0.004	0.011

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-5 01-Feb-1993	BR-5 01-Sep-1993	BR-5 01-Nov-1993	BR-5 01-Aug-1994	BR-5 01-Dec-1994	BR-5 01-May-1995	BR-5 01-Sep-1995	BR-5 01-Apr-1996
General Chemistry											
Alkalinity (Total as CaCO3)	mg/l	--	--	240	302	289	282	312	400	483	454
Ammonia Nitrogen	mg/l	--	--	--	0.24	<0.1	<0.1	<0.1	0.63	2.19	2.2
Chemical Oxygen Demand	mg/l	--	--	--	--	706	--	730	--	--	--
Chloride	mg/l	--	250	28	34	26.6	39.5	47	43	56	58
Conductivity	uS/cm	--	--	--	645	--	653	--	898	1074	1040
Nitrate	mg/l	-- [14]	--	--	0.4	0.95	0.6	0.36	<0.1	<0.01	<0.1
Nitrogen	mg/l	--	--	--	0.93	0.37	<0.1	0.75	--	--	--
pH (Field)	-	--	--	--	7.66	8.22	8.1	7.42	7.52	7.54	7.4
Phosphate	mg/l	--	--	--	<0.1	<0.1	<0.1	--	<0.03	<0.03	<0.03
Phosphorus	mg/l	--	--	--	--	--	--	<0.1	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	0.207	<0.1	<0.1	--	<0.1	<0.1	--
Sulphate	mg/l	--	500 [6]	38	36.9	76.7	47.5	36.9	32	35	43
Total Dissolved Solids	mg/l	--	500	360	432	408	400	464	536	644	628
Total Organic Carbon	mg/l	--	--	--	2.2	2.07	1.9	3.2	6.5	10.4	9.8
Metals											
Aluminum, dissolved	mg/l	--	--	--	--	--	--	--	<0.03	0.04	0.06
Barium, dissolved	mg/l	1	--	--	--	--	--	--	0.39	0.55	0.49
Beryllium, dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	0.01
Boron, dissolved	mg/l	5	--	--	0.2	0.26	0.23	0.26	0.26	0.29	0.29
Cadmium, dissolved	mg/l	0.005	--	--	**0.11**	<0.01	<0.0001	<0.0001	<0.005	<0.005	<0.005
Calcium, dissolved	mg/l	--	--	--	59	70	58	52.8	100	116	108
Chromium, dissolved	mg/l	0.05	--	--	0.01	0.012	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt, dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	0.01
Copper, dissolved	mg/l	--	1	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	0.008
Iron, dissolved	mg/l	--	0.3	--	1.82	1.1	0.39	2.86	0.89	3.72	1.44
Lead, dissolved	mg/l	0.01	--	--	0.003	0.003	0.0009	0.0002	<0.002	<0.002	<0.002
Magnesium, dissolved	mg/l	--	--	--	40.8	46.8	37.7	32	45	35	38
Manganese, dissolved	mg/l	--	0.05	--	0.026	<0.01	<0.01	0.022	0.09	0.09	0.12
Mercury, dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.001	<0.0002
Molybdenum, dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	<0.01
Nickel, dissolved	mg/l	--	--	--	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
Potassium, dissolved	mg/l	--	--	--	7.6	6.79	7.4	3.7	6	7	7
Silicon, dissolved	mg/l	--	--	--	--	--	--	--	6.7	<0.01	6.8
Silver, dissolved	mg/l	--	--	--	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01
Sodium, dissolved	mg/l	--	200 [7]	--	11.5	0.01	10.4	8.9	23	64	61
Strontium, dissolved	mg/l	--	--	--	--	--	--	--	8.04	9.54	9.04
Sulfur	mg/l	--	--	--	--	--	--	--	13	11	14
Thallium, dissolved	mg/l	--	--	--	--	--	--	--	<0.05	<0.05	<0.2
Tin, dissolved	mg/l	--	--	--	--	--	--	--	<0.05	--	<0.05
Titanium, dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	<0.01
Zinc, dissolved	mg/l	--	5	--	--	--	--	--	<0.01	<0.01	0.01
Phenols											
Phenolics, Total Recoverable	mg/l	--	--	--	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001

APPENDIX C-IV
ARNPRIOR WASTE DISPOSAL SITE
BEDROCK GENERAL CHEMISTRY

Parameter	Unit	ODWQS(169/03)-Health [1]	ODWQS-AO [2]	BR-5 01-Sep-1996	BR-5 01-Jun-1997	BR-5 01-Aug-1997	BR-5 15-Jul-1999	BR-5 16-Oct-1999
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	--	--	464	464	442	444	438
Ammonia Nitrogen	mg/l	--	--	2.74	2.37	1.4	2.73	2.32
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--
Chloride	mg/l	--	250	58	56	51	51	51
Conductivity	uS/cm	--	--	1025	1053	961	866	956
Nitrate	mg/l	-- [14]	--	<0.1	<0.01	<0.1	<0.1	<0.01
Nitrogen	mg/l	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.44	7.61	7.24	6.87	7.4
Phosphate	mg/l	--	--	<0.03	<0.03	<0.03	<0.03	<0.03
Phosphorus	mg/l	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--
Sulphate	mg/l	--	500 [6]	34	42	44	43	44
Total Dissolved Solids	mg/l	--	500	624	660	584	524	576
Total Organic Carbon	mg/l	--	--	10	9.6	5.7	7.3	9
Metals								
Aluminum, dissolved	mg/l	--	--	0.29	0.03	<0.03	<0.03	<0.03
Barium, dissolved	mg/l	1	--	0.39	0.47	0.37	0.4	0.44
Beryllium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01
Boron, dissolved	mg/l	5	--	0.24	0.27	0.17	0.24	0.34
Cadmium, dissolved	mg/l	0.005	--	<0.005	<0.005	<0.005	<0.005	<0.01
Calcium, dissolved	mg/l	--	--	107	105	107	118	111
Chromium, dissolved	mg/l	0.05	--	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01
Copper, dissolved	mg/l	--	1	0.015	0.012	<0.005	<0.005	<0.01
Iron, dissolved	mg/l	--	0.3	2.59	1.87	1.59	3.17	2.91
Lead, dissolved	mg/l	0.01	--	<0.002	<0.01	<0.002	<0.002	<0.002
Magnesium, dissolved	mg/l	--	--	44	36	37	39	37
Manganese, dissolved	mg/l	--	0.05	0.07	0.11	0.11	0.12	0.08
Mercury, dissolved	mg/l	0.001	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum, dissolved	mg/l	--	--	<0.03	<0.03	<0.03	<0.01	<0.01
Nickel, dissolved	mg/l	--	--	<0.01	0.01	<0.01	<0.01	<0.01
Potassium, dissolved	mg/l	--	--	8	7	6	7	6
Silicon, dissolved	mg/l	--	--	5.4	5.9	5.4	6.4	6
Silver, dissolved	mg/l	--	--	<0.0012	<0.01	<0.01	<0.01	0.01
Sodium, dissolved	mg/l	--	200 [7]	59	56	44	54	48
Strontium, dissolved	mg/l	--	--	7.27	7.55	5.73	8	7.75
Sulfur	mg/l	--	--	11	13	14	13	13
Thallium, dissolved	mg/l	--	--	<0.2	<0.2	<0.2	<0.2	<0.2
Tin, dissolved	mg/l	--	--	0.05	<0.05	<0.05	<0.05	--
Titanium, dissolved	mg/l	--	--	0.01	<0.01	<0.01	<0.01	<0.01
Vanadium, dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc, dissolved	mg/l	--	5	0.02	0.01	<0.01	<0.01	0.23
Phenols								
Phenolics, Total Recoverable	mg/l	--	--	0.004	<0.002	<0.002	<0.001	<0.001

Footnotes:

	Tables should be read in conjunction with the accompanying document.
<	Indicates parameter not detected above laboratory method detection limit.
>	Indicates parameter detected above equipment analytical range.
--	Chemical not analyzed or criteria not defined.
Value	Parameter is greater than ODWQS(169/03)-Health
Value	Parameter is greater than ODWQS-AO
(1)	Ontario Drinking Water Quality Standards - Health Based Standards (June 2003, revised January 2020).
(2)	Ontario Drinking Water Quality Standards - Aesthetic Objectives. Aesthetic Objectives are established for parameters that may impair the taste, odour or colour of water or which may interfere with good water quality control practices. For certain parameters, both aesthetic objectives and health-related MACs have been derived (June 2003, revised July 2017).
(3)	TP MRL elevated due to matrix interference.
(4)	Metal Analysis:RDL of Calcium was adjusted due to high concentration of Strontium.
(5)	clarity: clear, sediments: none, colour: none, odour: none.
(6)	There may be a laxative effect in some individuals when sulphate levels exceed 500 mg/L.
(7)	The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.
(8)	Detection Limit was raised due to matrix interferences.
(9)	Selenium MRL elevated due to matrix interference.
(10)	clarity: clear, sediments: trace, colour: beige tinge, odour: none
(11)	Selenium MRL elevated due to matrix interference (dilution was done).
(12)	clarity: clear, sediments: none, colour: none, odour: slight sulphur odour
(13)	Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.
(14)	Criteria exist for Nitrate as N
(15)	Criteria exist for Nitrite as N
(16)	Parameter was not detected above the laboratory detection limit.
(17)	ortho-Phosphate > Total Phosphorus: Both values fall within the method uncertainty for duplicates and are likely equivalent.
(18)	clarity: clear, sediments: none, colour: faint beige, odour: none
(19)	Applicable for all waters at the point of consumption.
(20)	The reported lab and field concentrations originally assigned to BR11 were reassigned to BR12, and vice versa, for the May 2017 monitoring session. This reassignment was made based on a review of field notes and historical data.
(21)	ortho-Phosphate > Total Phosphorus: Both values fall within the method uncertainty for duplicates and are likely equivalent. The reported lab and field concentrations originally assigned to BR11 were reassigned to BR12, and vice versa, for the May 2017 monitoring session. This reassignment was made based on a review of field notes and historical data.
(22)	clarity: clear, sediments: trace, colour: beige, odour: none
(23)	Due to colour interferences, sample required dilution. Detection limit was adjusted accordingly.
(24)	No result(s) available.
(25)	Clarity: clear, sediments: trace, colour: beige tinge, odour: none
(26)	Metals MRL elevated due to matrix interference.
(27)	Selenium MRL elevated due to matrix interference. N-NH3 was analysed at SGS.
(28)	Metal Analysis:RDLs of Calcium, Nickel and Copper were adjusted was adjusted due to high concentration of Strontium, Calcium and Barium respectively.
(29)	Metal Analysis:RDLs of Nickel, Calcium and Copper were adjusted due to high concentrations of Calcium, Strontium and Barium respectively.
(30)	Metal Analysis:RDL of Copper was adjusted due to high concentration of Barium.
(31)	Reported lab concentrations originally assigned to BR-1S were assigned to BR-1D, and vice versa for the spring 2018 monitoring session. Reassignment was based on review of historical data.
(32)	clarity: none, sediments: none, colour: none, odour: odd
(33)	Metals MRL elevated due to matrix interference. N-NH3 was analysed at SGS.
(34)	Sediment was not included in mercury analysis. Selenium MRL elevated due to matrix interference.
(35)	Metal Analysis:RDLs of Calcium, Nickel and Copper were adjusted was adjusted due to high concentration of Strontium, Calcium and Barium respectively
(36)	Metals Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.
(37)	VOC Water Analysis: Due to foaming, sample required dilution. The detection limits were adjusted accordingly.
(38)	Monitoring location was frozen during this sampling event. No sample was collected.
(39)	Monitoring location was damaged and could not be sampled.
(40)	clarity: clear, sediments: none, colour: beige tinge, odour: odd smell
(41)	clarity: clear, sediments: none, colour: beige tinge, odour: odd smell
(42)	Total Phosphorus < ortho-Phosphate: Both values fall within the method uncertainty for duplicates and are likely equivalent.

C-V Surface Water General Chemistry 2023

Parameter	Unit	PWQO [1]	SW-1 01-Dec-1988	SW-1 01-Nov-1990	SW-1 01-Oct-1991	SW-1 01-Dec-1991	SW-1 01-Dec-1992	SW-1 01-Feb-1993	SW-1 01-Aug-1993	SW-1 01-Sep-1993	SW-1 01-Nov-1993	SW-1 01-Jun-1994	SW-1 01-Aug-1994
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	424	480	462	520	617	484	--	370	436	494
Ammonia, unionized	ug/l	20	--	--	--	--	<20	<20	<100	--	<100	<100	<100
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	20	3000	790	--	1130	150	1960
Biochemical Oxygen Demand, 5 Day	ug/l	--	2000	2000	<1000	<1000	2000	3000	1300	--	3100	4200	25000
Chemical Oxygen Demand	ug/l	--	29000	--	--	--	35000	23000	28000	26900	18700	47000	1040000
Chloride	ug/l	--	68000	82000	106000	96000	121000	123000	98500	--	136000	125000	90000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	13	--	29	--	16	14	23
Conductivity	uS/cm	--	--	1116	970	--	1364	1410	1093	--	1020	1003	1130
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	8.8	6.7	3.5	--	1.4	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	465000	613000	549000	--	429000	458000	478000
Nitrate	ug/l	--	--	--	--	--	<100	130	>100	--	<100	<100	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	<100	<100	<100	--	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	1600	3000	3080	--	2050	1960	43120
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	--	--	--	7.71	7.11	7.01	--	7.91	7.67	7.34
Phosphorus	ug/l	-- [9]	--	**<100**	--	**<100**	**50**	--	**50**	--	**<100**	**190**	**1660**
Sulphate	ug/l	--	--	--	--	23000	--	--	17400	--	--	13500	14300
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	1610	910	1050	3460
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	538000	725000	631000	580000	818000	917000	710000	--	663000	652000	735000
Total Organic Carbon	ug/l	--	9000	--	--	--	12000	12000	11040	9090	11400	11100	14000
Total Suspended Solids	ug/l	--	--	--	--	--	39000	114000	5000	--	1000	130000	6150000
Turbidity	ntu	-- [11]	--	<0.01	--	<0.01	36	37	1	--	1.9	>40	231
Metals													
Aluminum	ug/l	-- [12]	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	--	<30	--	<30	<30	<30	**187**	--	70	**800**	**100**
Antimony	ug/l	20	--	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	<10	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	190	110	--	170	--	170	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	<10	--	<10	--	<10	--	--	--	--	--
Bismuth	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	80	--	60	--	90	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	<2	<0.2	<0.2	<0.2	<0.15	**0.25**	0.2	--	**0.3**	<10	<0.1
Calcium	ug/l	--	--	135000	--	153000	99000	158000	151000	--	114000	124000	122000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<20	<10	<10	<10	<10	<10	20	--	<10	13	<10
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	<20	--	**30**	--	<10	--	--	--	--	--
Copper	ug/l	5	--	<5	<10	<5	<5	<5	3	--	2.9	**6**	0.8
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	<50	<10	110	30	<100	**3730**	**793**	--	**560**	**5600**	**650**
Iron, dissolved	ug/l	300	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [17]	<50	--	--	<2	--	<2	118	--	0.7	1	<0.2
Lithium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	41000	--	46000	53000	53000	41800	--	35100	36000	42000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	<50	90	340	290	<2	2040	358	--	--	700	1800
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<1	--	<1	--	<0.2	**0.4**	<0.1	--	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	<10	--	<10	--	<10	--	--	--	--	--
Nickel	ug/l	25	--	<10	--	<10	<10	<10	<20	--	<20	<20	<20
Potassium	ug/l	--	--	12000	--	11000	11000	10000	11900	--	10400	10200	11200
Selenium	ug/l	100	--	--	--	--	--	--	3	--	3	<1	1
Silicon	ug/l	--	--	6200	--	8000	5500	5600	--	--	--	--	--
Silver	ug/l	0.1	--	<1	--	<1	<0.1	0.1	**0.8**	--	**3**	**0.3**	**1**
Sodium	ug/l	--	--	42000	--	53000	63000	55000	60500	--	46900	44700	47400
Strontium	ug/l	--	--	850	--	1090	--	990	--	--	--	--	--
Sulfur	ug/l	--	--	14000	--	12000	--	4000	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	<10	--	<50	--	<50	--	--	--	--	--
Tin	ug/l	--	--	<50	--	--	--	<50	--	--	--	--	--
Titanium	ug/l	--	--	<10	--	<10	--	<10	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	<20	<10	<10	<50	--	<10	--	--	--	--	--
Zinc	ug/l	30 [13]	--	--	--	--	<10	<10	**893**	--	<10	23	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--	--	--	--	--	--
Phenols													
Phenolics, Total Recoverable	ug/l	1 [21]	**3**	<2	**9**	<2	<1	<1	<2	<2	<2	<2	**19**

Parameter	Unit	PWQO [1]	SW-1 01-Oct-1994	SW-1 01-Dec-1994	SW-1 01-May-1995	SW-1 01-Jul-1995	SW-1 01-Sep-1995	SW-1 01-May-1996	SW-1 01-Sep-1996	SW-1 01-Jun-1997	SW-1 01-Aug-1997	SW-1 01-Sep-1998	SW-1 01-Nov-1998
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	426	405	438	515	350	487	413	480	568	481
Ammonia, unionized	ug/l	20	--	--	**30**	**40**	<20	<20	--	<20	20	<20	**60**
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	1330	2200	1010	1110	370	640	440	640	1670	1650
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	4900	2000	2000	9000	1000	1000	2000	3000	12000	1000
Chemical Oxygen Demand	ug/l	--	--	34700	25000	42000	44000	24000	43000	37000	37000	43000	36000
Chloride	ug/l	--	--	88000	83000	83000	94000	44000	109000	84000	109000	114000	115000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	16.8	22	19	36	9	20	12	18	12	8
Conductivity	uS/cm	--	--	--	1042	1157	1200	784	1148	939	1104	1238	1197
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	6.4	5.6	4.4	6.2	--	3.4	2.4	1.2	<1
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	401000	433000	468000	571000	371000	530000	392000	487000	605000	580000
Nitrate	ug/l	--	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	1920	2630	1430	2000	940	--	1000	1330	2670	2250
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	7.22	7.63	7.95	7.33	7.67	7.79	8.13	7.71	6.98	8.05
Phosphorus	ug/l	-- [9]	--	<10	**70**	**90**	**150**	**50**	30	**90**	**210**	--	**230**
Sulphate	ug/l	--	--	16700	31000	11000	4000	18000	<3000	<3000	<3000	<3000	<3000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	810	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	677000	752000	780000	510000	746000	610000	718000	805000	778000
Total Organic Carbon	ug/l	--	12000	10800	11300	13300	16000	9900	16400	12000	13700	16000	12000
Total Suspended Solids	ug/l	--	--	7000	4000	10000	8000	4000	503000	15000	26000	400000	61000
Turbidity	ntu	-- [11]	--	2	5	9.7	6.5	8.8	32	51	45	>100	>100
Metals													
Aluminum	ug/l	-- [12]	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	--	**300**	<30	<30	**170**	<30	**460**	<30	<30	**80**	30
Antimony	ug/l	20	--	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	--	--	--	--	130
Beryllium	ug/l	-- [14]	--	--	--	--	--	--	--	--	--	--	<10
Bismuth	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--	--	--	--	--	--	100
Cadmium	ug/l	0.2 [13]	--	<0.1	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Calcium	ug/l	--	--	104000	119000	128000	156000	99000	128000	101000	124000	163000	153000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	--	<10	<10	<10	<10	<10	<10	20	<10	<10	<10
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	<0.4
Copper	ug/l	5	--	1.6	<5	<5	--	**10**	**12**	<5	**8**	<5	<5
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	**1700**	**1020**	**2010**	**1910**	**1300**	**980**	**6900**	**5380**	**25900**	**12800**
Iron, dissolved	ug/l	300	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [17]	--	1.3	<2	<2	<2	<2	<2	<2	<2	<2	<2
Lithium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	33900	33000	36000	44000	30000	51000	34000	43000	48000	48000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	--	560	--	--	--	--	--	--	--	--	2040
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	<10
Nickel	ug/l	25	--	<20	<10	<10	<10	20	<10	<10	<10	--	<10
Potassium	ug/l	--	--	13800	11000	1000	10000	7000	11000	9000	13000	12000	10000
Selenium	ug/l	100	--	5	<10	<10	<10	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	5700
Silver	ug/l	0.1	--	**0.4**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.2**
Sodium	ug/l	--	--	42400	43000	49000	54000	27000	60000	43000	61000	61000	58000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	900
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	3000
Tellurium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--	--	--	--	--	<10
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	<50
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	<10
Tungsten	ug/l	30 [20]	--	--	--	--	--	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	<10
Zinc	ug/l	30 [13]	--	<10	<10	<10	<10	10	20	10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--	--	--	--	--	--
Phenols													
Phenolics, Total Recoverable	ug/l	1 [21]	--	<1	<1	<1	**2**	<2	<10	<1	1	<1	<1

Parameter	Unit	PWQO [1]	SW-1 15-Jul-1999	SW-1 16-Oct-1999	SW-1 01-Jul-2000	SW-1 22-Oct-2000	SW-1 16-Dec-2000	SW-1 28-Apr-2001	SW-1 07-Sep-2001	SW-1 06-Nov-2001	SW-1 17-Apr-2002	SW-1 02-Oct-2002	SW-1 01-Apr-2003
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	-- [6]	397	376	435	466	539	368	388	439	327	460	272
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	**21** [22]	<20	<20	<20	<20	20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	1600	470	670	40	1160	1030	700	140	420	810	1660
Biochemical Oxygen Demand, 5 Day	ug/l	--	1000	6000	6000	2000	10000	3000	2000	1000	<1000	10000	3000
Chemical Oxygen Demand	ug/l	--	55000	75000	36000	24000	57000	22000	41000	30000	27000	--	25000
Chloride	ug/l	--	90000	95000	93000	128000	111000	7000	98000	107000	43000	98000	51000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	23	28	18	20	11	12	37	36	15	24	13
Conductivity	uS/cm	--	960	1010	1010	1120	1290	897	951	1240	743	1130	705
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	5.7	2.9	1.7	11.5	14.1	8.8	--	10.4	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	500	--	--
Hardness, Calcium Carbonate	ug/l	--	400000	440000	415000	461000	596000	349000	376000	474000	286000	439000	291000
Nitrate	ug/l	--	100	<100	<100	<100	<100	180	<100	<100	<100	<100	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	1270	760	2120	1620	1290	810	840	8130	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	2050
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.44	7.72	7.2	7.98	7.43	7.93	8.22	8.1	8.15	7.89	7.44
Phosphorus	ug/l	-- [9]	**50**	**190**	**120**	**40**	**500**	30	**40**	20	**120**	**2320**	**130**
Sulphate	ug/l	--	<3000	7000	--	--	--	--	2000	--	12000	8000	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	1100	900	400	500	--	700	100	--	300
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	624000	657000	657000	728000	839000	583000	618000	806000	483000	735000	458000
Total Organic Carbon	ug/l	--	14800	14900	13300	11100	16300	9400	14100	11500	9200	20000	9100
Total Suspended Solids	ug/l	--	--	23000	32000	12000	339000	8000	3000	<2000	4000	1300000	41000
Turbidity	ntu	-- [11]	4.2	8.7	36.6	2.9	31	10.2	1.7	2.7	5	>100	17
Metals													
Aluminum	ug/l	-- [12]	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<30	60	<50	<50	<50	<50	<50	<50	<50	**540**	20
Antimony	ug/l	20	--	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	110	--	--	110	60	60	50	420	100
Beryllium	ug/l	-- [14]	--	--	<2	--	--	<2	<2	<2	<2	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	200	--	--	140	160	120	<50	190	200
Cadmium	ug/l	0.2 [13]	<0.15	<0.15	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	0.1
Calcium	ug/l	--	99000	120000	105000	120000	156000	95000	91000	119000	75000	108000	82000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	10	<10	<10	<10	<10	33	2	1	1	<1	<5
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	0.5	--	--	**10.7**	0.4	**1.1**	**1.1**	**8.4**	**1.3**
Copper	ug/l	5	<5	<5	<1	<1	3	3	1	<1	**6**	4	<5
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	**550**	**1080**	**4450**	**610**	**20900**	**2460**	**340**	260	**1220**	**38200**	**5160**
Iron, dissolved	ug/l	300	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [17]	<2	<2	<1	--	--	<1	<1	<1	<1	5	4
Lithium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	37000	34000	37000	39000	50000	27000	36000	43000	24000	41000	21000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	1190	--	--	530	90	700	790	3760	596
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	--	<0.1
Molybdenum	ug/l	40	--	--	<10	--	--	<10	20	<10	<10	<5	<5
Nickel	ug/l	25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5	<5
Potassium	ug/l	--	14000	13000	11000	--	--	10000	12000	10000	7000	11000	10000
Selenium	ug/l	100	<0.1	<1	<1	<1	<1	4	--	<1	<1	--	<1
Silicon	ug/l	--	--	--	4740	--	--	3520	840	4360	2550	5700	2900
Silver	ug/l	0.1	0.1	<0.1	**0.2**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	57000	53000	56000	57000	60000	41000	52000	61000	30000	75000	37000
Strontium	ug/l	--	--	--	679	--	--	612	673	653	431	1010	505
Sulfur	ug/l	--	--	--	2000	--	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	<1	--	--	<1	<1	<1	<1	<1	<1
Tin	ug/l	--	--	--	--	--	--	--	--	--	10	--	--
Titanium	ug/l	--	--	--	<10	--	--	10	<10	<10	<10	<10	<10
Tungsten	ug/l	30 [20]	--	--	--	--	--	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	3	--	--	**9**	<1	<1	<1	4	<5
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10	<10	<10	20	25	<5
Zirconium	ug/l	4 [15]	--	--	--	--	--	--	--	--	--	--	--
Phenols													
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	**2**	--	--	<1	<1	<1	<1	<1	<1

Parameter	Unit	PWQO [1]	SW-1 01-Oct-2003	SW-1 01-Dec-2003	SW-1 04-Jun-2004 [2]	SW-1 04-Jul-2004	SW-1 04-Oct-2004	SW-1 13-Jun-2005	SW-1 31-Aug-2005	SW-1 30-Oct-2005	SW-1 31-Dec-2005 [3]	SW-1 08-Apr-2006	SW-1 15-Aug-2006
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	-- [6]	426	342	--	436	456	440	499	462	--	373	505
Ammonia, unionized	ug/l	20	<20	<20	--	<20	<20	<20	<20	<20	--	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	30	30	--	240	1540	1570	1040	700	--	2840	820
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	--	12000	<1000	5000	13000	<1000	--	1000	2000
Chemical Oxygen Demand	ug/l	--	54000	106000	--	83000	27000	--	--	--	--	--	--
Chloride	ug/l	--	4000	<1000	--	<1000	109000	96000	213000	152000	--	79000	114000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	30	74	--	34	22	--	--	--	--	--	--
Conductivity	uS/cm	--	750	600	--	769	1130	1200	1200	380	--	510	1260
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	7000	13700
Dissolved Oxygen (Field)	mg/l	-- [8]	6.9	--	--	--	--	**1.9**	**2.65**	10.11	--	12.77	8.92
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	478000	362000	--	438000	439000	--	--	--	--	383200	488500
Nitrate	ug/l	--	<100	<100	--	160	<100	<100	<100	<100	--	340	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	--	<100	<100	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	560	1040	--	8710	1640	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.9	7.81	--	7.49	7.63	6.8	**6**	7.1	--	7.5	7.2
Phosphorus	ug/l	-- [9]	20	20	--	**3100**	**170**	**80**	**1130**	**40**	--	30	30
Sulphate	ug/l	--	--	--	--	--	--	12000	22000	67000	--	45000	5000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	500	1600	--	500	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	11.3	18	7	--	5	20
Total Dissolved Solids	ug/l	--	488000	390000	--	450000	614000	780000	780000	247000	--	646000	819000
Total Organic Carbon	ug/l	--	21700	39800	--	38000	13400	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	3000	<2000	--	3700000	83000	5000	1340000	4000	--	3000	5000
Turbidity	ntu	-- [11]	0.8	1.6	--	>100	33	--	--	--	--	--	--
Metals													
Aluminum	ug/l	-- [12]	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	20	--	**450**	<10	<10	3430	<10	--	<10	<10
Antimony	ug/l	20	--	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	20	20	--	--	--	160	--	200	--	120	220
Beryllium	ug/l	-- [14]	<1	<1	--	--	--	<1	--	<1	--	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	100	70	--	--	--	180	**480**	200	--	200	**320**
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	--	0.2	<0.1	<0.1	--	<0.1	--	<0.1	<0.1
Calcium	ug/l	--	119000	94000	--	103000	113000	--	--	--	--	109000	138000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	11	3	--	8	2	9	--	5	--	4	4
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.3	0.7	--	--	--	0.8	--	0.7	--	0.5	**1**
Copper	ug/l	5	1	3	--	**12**	<1	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	60	280	--	**34100**	**5660**	**650**	**5350**	290	--	200	**440**
Iron, dissolved	ug/l	300	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	--	11	<1	<1	--	<1	--	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	44000	31000	--	44000	38000	--	--	--	--	27000	35000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	34	130	--	--	--	--	--	--	--	160	440
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	--	<0.1	<0.14	<0.1	--	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	--	--	--	<5	--	<5	--	<5	<5
Nickel	ug/l	25	<5	10	--	**29**	<5	<5	<5	6	--	6	6
Potassium	ug/l	--	6000	5000	--	<1000	10000	--	--	--	--	9000	10000
Selenium	ug/l	100	<1	<1	--	<1	<1	1	--	8	--	<1	<1
Silicon	ug/l	--	3800	4800	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	--	<0.1	--	<0.1	<0.1
Sodium	ug/l	--	4000	3000	--	4000	62000	--	--	--	--	49000	63000
Strontium	ug/l	--	195	152	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	<10	<10	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	<1	<1	--	--	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	3	1	--	--	--	6	--	6	--	5	5
Zinc	ug/l	30 [13]	<10	<10	--	10	<10	<10	**50**	<10	--	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--	--	--	--	--	--
Phenols													
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	--	<1	<1	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-1 25-Nov-2006	SW-1 22-Apr-2007	SW-1 31-Aug-2007	SW-1 26-Nov-2007	SW-1 04-May-2008	SW-1 14-Aug-2008	SW-1 28-Nov-2008	SW-1 24-Apr-2009 W-3	SW-1 25-Aug-2009 A-3	SW-1 30-Nov-2009 W-8	SW-1 17-May-2010 W-5
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	-- [6]	428	375	488	425	345	423	449	381	476	415	393
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	<20	<20	1.33	0.65	0.57	2.95
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	<20	--	--	<20
Ammonia Nitrogen	ug/l	--	770	1790	500	100	450	140	550	170	190	100	320
Biochemical Oxygen Demand, 5 Day	ug/l	--	2000	2000	5000	<1000	1000	5000	<1000	1000	5000	<1000	1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	103000	82000	138000	118000	73000	98000	114000	80000	102000	101000	91000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	580	395	510	470	600	680	605	969	1160	1090	1010
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	905	640	890	944
Dissolved Organic Carbon	ug/l	--	8000	7600	10300	13200	7000	10600	6100	7100	9700	7200	6400
Dissolved Oxygen (Field)	mg/l	-- [8]	11.17	10.2	10.09	10.7	**5.48**	**4.99**	**7.14**	7.91	6.21	**6.95**	**5.8**
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	438700	402300	538300	431200	358000	429000	456000	359000	448000	404000	361000
Nitrate	ug/l	--	390	760	<100	<100	330	<100	<100	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	960	<100	<100	<100
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.3	7.3	7.3	7.1	7.2	7	7.1	7.8	7	7.7	7.7
Phosphorus	ug/l	-- [9]	**100**	**50**	**50**	30	10	10	<10	<10	20	<10	<10
Sulphate	ug/l	--	27000	27000	4000	15000	23000	1000	19000	20000	2000	17000	19000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	2	2	18	2	7	19	2	5	18	4	10
Total Dissolved Solids	ug/l	--	741000	644000	825000	754000	588000	696000	780000	630000	754000	708000	657000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	<2000	<2000	<2000	<2000	3000	<2000	<2000	<2000	<2000	6000
Turbidity	ntu	-- [11]	--	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum	ug/l	-- [12]	--	--	--	--	--	--	--	<10	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	<10	10	10	<10	<10	<10	--	<10	<10	<10
Antimony	ug/l	20	--	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	130	120	230	120	130	170	150	130	190	130	140
Beryllium	ug/l	-- [14]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	**230**	170	**310**	130	**220**	**220**	130	200	**300**	180	**240**
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	123000	115000	153000	120000	102000	124000	128000	104000	130000	114000	105000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	2	3	5	2	3	3	5	3	5	5	4
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.6	0.6	0.7	**1**	0.6	0.8	0.5	0.6	0.6	0.5	0.7
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	220	160	210	**430**	130	**510**	290	100	**560**	260	300
Iron, dissolved	ug/l	300	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	32000	28000	38000	32000	25000	29000	33000	24000	30000	29000	24000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	250	150	280	460	120	350	310	100	270	230	120
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	12000	10000	9000	8000	9000	7000	11000	9000	6000	10000	10000
Selenium	ug/l	100	<1	<1	1	<1	<1	<1	1	<1	4	1	<1
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	58000	52000	72000	55000	47000	57000	64000	50000	63000	58000	57000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	<1	6	**8**	2	3	<1	**9**	4	**8**	**8**	6
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--	--	--	--	--	--
Phenols													
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-1 21-Aug-2010 [4] A-4	SW-1 27-Nov-2010 W-4	SW-1 09-May-2011 W-5	SW-1 08-Sep-2011 W-4	SW-1 29-Nov-2011 [4] W-4	SW-1 06-May-2012 W-6	SW-1 22-Aug-2012 [2] SW-1	SW-1 12-Nov-2012 W - 5	SW-1 29-May-2014 W-5	SW-1 26-Aug-2014 S-4	SW-1 17-Nov-2014 W-5
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	-- [6]	467	410	380	476	401	370	--	422	360	440	410
Ammonia, unionized	ug/l	20	2.36	0.47	12.49	5.37	0.5	1.56	--	12.27	7	5	0
Ammonia, unionized (Field)	ug/l	20	<20	<20	10	<20	<20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	180	140	740	170	120	200	--	850	710	330	100
Biochemical Oxygen Demand, 5 Day	ug/l	--	4000	1000	<1000	6000	1000	1000	--	5000	<2000	2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	95000	95000	75000	104000	114000	91000	--	115000	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--	--	--	--	94000	90000	110000
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--	--	--	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1130	1030	908	1140	1060	971	--	1170	990	1100	1100
Conductivity (Field)	uS/cm	--	968	960	694	705	1070	945	--	704	880	945	1080
Dissolved Organic Carbon	ug/l	--	11000	7600	7200	10000	5800	6700	--	8300	6700	10000	8400
Dissolved Oxygen (Field)	mg/l	-- [8]	**3.88**	**7.29**	6.96	**4.79**	**6.82**	-- [23]	--	**5.99**	**1.76**	**1.88**	**2.24**
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	475000	404000	349000	443000	417000	334000	--	447000	390000	390000	440000
Nitrate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	<100	1080	<100	<100	<100	--	<100	<100	<100	<100
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	7.5	8.0	7.9	7.53	7.8	--	8.0	7.8	7.6	7.6
Phosphorus	ug/l	-- [9]	**40**	<10	10	10	10	<10	--	<10	13	15	9
Sulphate	ug/l	--	3000	16000	19000	1000	14000	22000	--	50000	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--	--	--	21000	<1000	<1000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	24	3	9.0	20.5	5	5	--	7	8.0	19	2
Total Dissolved Solids	ug/l	--	735000	670000	590000	741000	689000	631000	--	760000	548000	606000	584000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	<2000	<2000	<2000	2000	<2000	--	<2000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum	ug/l	-- [12]	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	10	<10	<10	<10	<10	--	<10	<5.0	6.5	9.1
Antimony	ug/l	20	--	--	--	--	--	--	--	--	<0.50	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--	--	--	<1.0	--	--
Barium	ug/l	--	190	130	120	180	150	140	--	160	130	170	160
Beryllium	ug/l	-- [14]	<1	<1	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--	--	--	--	<1.0	--	--
Boron	ug/l	200 [15]	**290**	150	180	**230**	130	140	--	150	170	**260**	190
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.10	<0.10	<0.10
Calcium	ug/l	--	139000	114000	100000	128000	119000	94000	--	128000	110000	120000	130000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	110000	110000	120000
Chromium	ug/l	-- [16]	3	2	3	4	3	5	--	3	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--	--	--	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	0.8	0.5	0.5	0.5	0.3	0.5	--	0.4	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--	--	--	--	<1.0	--	--
Hexavalent Chromium	ug/l	1 [7]	<50	<50	<50	<50	<50	<50	--	<50	<0.50	<0.50	<0.50
Iron	ug/l	300	**630**	210	140	**430**	**410**	130	--	240	**350**	170	240
Iron, dissolved	ug/l	300	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1	--	<1	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--	--	--	<5.0	--	--
Magnesium	ug/l	--	31000	29000	24000	30000	29000	24000	--	31000	27000	31000	34000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	28000	31000	33000
Manganese	ug/l	--	200	180	80	270	240	130	--	210	170	210	210
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5	--	<5	<0.50	<0.50	<0.50
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5	--	<5	2.4	1.9	3.6
Potassium	ug/l	--	6000	9000	10000	6000	8000	9000	--	7000	11000	8500	9000
Selenium	ug/l	100	<10	<1	<1	<1	<5	<1	--	<10	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--	--	--	5700	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.10	<0.10	<0.10
Sodium	ug/l	--	59000	57000	47000	58000	60000	52000	--	60000	61000	65000	68000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	620	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--	--	--	<1.0	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--	--	--	<0.050	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	<1.0	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	<5.0	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--	--	--	<1.0	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--	--	--	0.16	--	--
Vanadium	ug/l	6	4	4	4	5	5	4	--	4	<0.50	<0.50	<0.50
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10	--	<10	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--	--	--	<1.0	<1.0	--
Phenols													
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-1 28-Apr-2015 W-3	SW-1 25-Aug-2015 W-5	SW-1 11-Nov-2015 W-9	SW-1 18-Apr-2016 W-6	SW-1 07-Jul-2016 W-5	SW-1 31-Oct-2016 W-4	SW-1 23-May-2017 SW-1	SW-1 26-Jul-2017 SW-1	SW-1 22-Nov-2017 SW-1	SW-1 15-May-2018 SW-1	SW-1 29-Aug-2018 SW-1
General Chemistry													
Alkalinity (Total as CaCO3)	mg/l	-- [6]	360	460	430	360	440	440	360	420	440	390	450
Ammonia, unionized	ug/l	20	6.09	3.74	0.53	**20.1**	3.44	0.56	0.97	0.73	2.06	2.28	2.53
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	1800	690	170	1700	190	140	410	140	930	400	250
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	3000	<2000	<2000	6000	<2000	4000	<2000	<2000	4000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	91000	96000	110000	80000	93000	130000	70000	92000	110000	86000	120000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	990	1100	1100	970	1100	1200	920	980	1100	960	1200
Conductivity (Field)	uS/cm	--	905	1040	1050	405	625	860	0.86	836	880	940	905
Dissolved Organic Carbon	ug/l	--	6500	11000	9800	6200	9200	8200	7000	8200	5900	5200	8200
Dissolved Oxygen (Field)	mg/l	-- [8]	**5.99**	**3.99**	**3.91**	**3.86**	**1.66**	**2.04**	**1.30**	**2.07**	**4.51**	**4.11**	**3.77**
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	360000	440000	450000	370000	370000	440000	360000	400000	420000	370000	440000
Nitrate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	460	<100	<100	1590	<100	<100	720	<100	300	330	<100
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	7.3	7.4	8.0	7.7	7.4	7.36	7.24	7.3	7.5	7.4
Phosphorus	ug/l	-- [9]	11	21	18	7	15	10	8	16	4	6	**31**
Sulphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	25000	<1000	<1000	27000	<1000	<1000	14000	<1000	17000	15000	<1000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	6	15	5	4.5	19	8	2.76	16.4	3.6	9.7	20.4
Total Dissolved Solids	ug/l	--	538000	682000	624000	532000	590000	674000	502000	598000	620000	630000	665000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	<10000	<10000	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum	ug/l	-- [12]	--	12	15	<5	13	<5.0	<5.0	11	<5.0	6.7	8.3
Aluminum, dissolved	ug/l	-- [12]	5.9	--	--	--	--	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	120	180	150	130	180	160	150	160	140	140	190
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	150	**300**	200	**230**	**280**	190	**220**	**220**	120	200	**230**
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Calcium	ug/l	--	110000	130000	110000	110000	120000	130000	110000	110000	120000	110000	130000
Calcium, dissolved	ug/l	--	100000	120000	120000	100000	99000	120000	100000	110000	120000	110000	120000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	0.6	0.8	<0.50	0.53	<0.50	<0.50	0.51	<0.50
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	120	180	220	<100	**530**	280	170	**370**	170	140	**420**
Iron, dissolved	ug/l	300	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.5	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	27000	33000	33000	26000	33000	34000	27000	29000	31000	27000	33000
Magnesium, dissolved	ug/l	--	27000	33000	33000	26000	29000	35000	25000	29000	31000	25000	32000
Manganese	ug/l	--	98	210	220	41	170	180	53	130	150	86	230
Mercury	ug/l	0.2 [18]	--	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mercury, dissolved	ug/l	0.2 [18]	<0.10	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	2.4	3.0	2.2	3	4	1.7	2.2	2.0	2.3	2.1	1.5
Potassium	ug/l	--	9500	9000	8300	10000	13000	8100	9600	6600	7600	9200	6300
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	54000	74000	65000	55000	66000	66000	54000	56000	58000	57000	70000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	<0.50	<0.50	<0.50	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	11	7	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--	--	--	--	--	--
Phenols													
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-1 02-Nov-2018 SW-1	SW-1 04-Jun-2019 SW-1	SW-1 07-Aug-2019 SW1	SW-1 17-Nov-2019 SW-1	SW-1 05-May-2020 SW-1	SW-1 26-Aug-2020 SW-1	SW-1 29-Oct-2020 SW-1	SW-1 28-Apr-2021 SW1	SW-1 14-Jul-2021 SW-1	SW-1 22-Nov-2021 SW-1
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	-- [6]	370	360	420	390	370	430	390	360	430	390
Ammonia, unionized	ug/l	20	0.35	1.38	1.9	0.4	1.51	2.39	19.03	1.35	2.6	1.51
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	100	240	200	230	730	370	5700	720	380	640
Biochemical Oxygen Demand, 5 Day	ug/l	--	5000	<2000	3000	<2000	<2000	7000	3000	<2000	3000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	97000	74000	95000	97000	70000	88000	100000	86000	87000	93000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	950	900	1100	1000	920	1000	970	930	1000	1000
Conductivity (Field)	uS/cm	--	820	920	735	825	610	616	560	604	639	1048
Dissolved Organic Carbon	ug/l	--	8300	5900	8700	5700	5900	9800	6600	5900	8500	6700
Dissolved Oxygen (Field)	mg/l	-- [8]	**5.10**	**3.98**	**3.77**	**2.99**	**4.44**	**4.93**	**3.88**	**5.11**	**2.99**	**3.06**
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	380000	350000	430000	400000	340000	420000	370000	350000	400000	350000
Nitrate	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	640	<100	<100	1250	<100	<100	400	<100	<100
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	<10	19	--	--	11	<10	<10
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	<100	1270	--	--	410	<100	<100
pH (Field)	-	6.5 - 8.5	7.4	7.39	7.4	7.22	7.11	7.39	7.28	7.20	7.18	7.2
Phosphorus	ug/l	-- [9]	12	15	25	7	9	23	10	13	**53**	7
Sulphate	ug/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	<1000	13000	<1000	10000	16000	<1000	<1000	19000	<1000	9800
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	6.6	13.1	19.5	3.0	8.2	14.6	9.3	4.4	21.9	7.2
Total Dissolved Solids	ug/l	--	560000	475000	615000	535000	520000	555000	515000	495000	485000	530000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	<10000	<10000	<10000	<10000	36000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--	--	--	--	--
Metals												
Aluminum	ug/l	-- [12]	9.7	12	--	9.7	8.2	9.3	6.5	5.1	54	10
Aluminum, dissolved	ug/l	-- [12]	--	--	10	--	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	130	130	170	140	120	160	140	120	170	140
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.40	<0.40	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	140	150	200	120	200	**220**	150	140	**260**	140
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.090	<0.090	<0.090	<0.090	<0.090
Calcium	ug/l	--	110000	100000	120000	110000	100000	110000	100000	98000	110000	110000
Calcium, dissolved	ug/l	--	110000	99000	120000	110000	97000	--	--	98000	110000	100000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	0.56	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.57	<0.50	<0.50	<0.50
Iron	ug/l	300	**410**	190	**390**	**440**	300	**410**	**420**	220	**620**	**510**
Iron, dissolved	ug/l	300	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	29000	24000	30000	28000	26000	27000	28000	25000	30000	28000
Magnesium, dissolved	ug/l	--	30000	25000	29000	30000	24000	--	--	25000	30000	25000
Manganese	ug/l	--	170	57	150	220	98	180	190	99	200	230
Mercury	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--	--	--	--	<0.10
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	2.1	1.7	1.6	2.0	2.3	1.5	1.4	2.4	2.2	1.9
Potassium	ug/l	--	8800	8700	6000	7200	9400	5600	6000	9300	9300	6800
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.090	<0.090	<0.090	<0.090	<0.090
Sodium	ug/l	--	60000	50000	61000	62000	52000	59000	60000	56000	68000	61000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--	--	--	--	--
Phenols												
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-1 27-Apr-2022 SW-1	SW-1 17-Aug-2022 [5] SW-1	SW-1 11-Dec-2022 SW-1	SW-1 29-May-2023 SW-1	SW-1 21-Sep-2023 SW-1	SW-1 03-Dec-2023 SW-1
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	340	430	410	360	430	420
Ammonia, unionized	ug/l	20	5.6	12.7	4.07	3.73	2.04	0.58
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	2100	750	1100	630	230	140
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	67000	83000	96000	59000	86000	91000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	890	1000	1000	890	1000	1100
Conductivity (Field)	uS/cm	--	860	871	844	799	786	740
Dissolved Organic Carbon	ug/l	--	7800	9600	6700	6400	7800	5100
Dissolved Oxygen (Field)	mg/l	-- [8]	**5.01**	5.11	**6.06**	**3.11**	**3.24**	**3.84**
Fluoride	ug/l	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	340000	390000	410000	370000	420000	420000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	790	<100	<100	<100	110	<100
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	16	<10	<10	18	<10	<10
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	800	<100	<100	110	110	<100
pH (Field)	-	6.5 - 8.5	7.3	7.51	7.56	7.51	7.48	7.55
Phosphorus	ug/l	-- [9]	11	**74**	5	13	**44**	5
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	20000	<1000	3000	11000	2900	7200
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	5.9	24.1	2.6	9.9	16.1	4.2
Total Dissolved Solids	ug/l	--	465000	540000	475000	505000	560000	530000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	26000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	5.0	93	7.9	5.4	<4.9	8.4
Aluminum, dissolved	ug/l	-- [12]	<4.9	5.1	5.7	<4.9	<4.9	<4.9
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	120	190	140	120	180	150
Beryllium	ug/l	-- [14]	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	190	**300**	160	200	**280**	150
Cadmium	ug/l	0.2 [13]	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090
Calcium	ug/l	--	99000	130000	120000	97000	130000	130000
Calcium, dissolved	ug/l	--	94000	110000	110000	110000	120000	120000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	0.50	<0.50	0.56	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	110	**2200**	280	230	**340**	**340**
Iron, dissolved	ug/l	300	<100	**1300**	260	**360**	**390**	300
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	25000	32000	31000	24000	31000	33000
Magnesium, dissolved	ug/l	--	26000	29000	30000	25000	29000	31000
Manganese	ug/l	--	48	250	210	200	200	270
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	2.4	2.3	2.1	1.9	1.4	1.5
Potassium	ug/l	--	9900	9300	8200	9900	6600	6900
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090
Sodium	ug/l	--	55000	70000	68000	56000	66000	68000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-10 01-Mar-1988	SW-10 01-Sep-1993	SW-10 01-Nov-1993	SW-10 01-Oct-1994	SW-10 01-May-1995	SW-10 01-May-1996	SW-10 28-Apr-2001	SW-10 17-Apr-2002
General Chemistry										
Alkalinity (Total as CaCO3)	mg/l	_ [6]	--	--	129	--	256	118	280	170
Ammonia, unionized	ug/l	20	--	--	**2000**	--	<20	<20	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	220	--	280	--	40	50	<20	100
Bicarbonate	ug/l	--	34000	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	1600	--	1300	--	1000	2000	7000	<1000
Chemical Oxygen Demand	ug/l	--	40000	46100	48900	58900	15000	11000	14000	14000
Chloride	ug/l	--	10700	--	67000	--	254000	54000	191000	81000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	33	--	8	27	17	39
Conductivity	uS/cm	--	250	--	428	--	1296	422	1090	614
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--
Dissolved Oxygen	mg/l	_ [8]	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	_ [8]	--	--	20	--	9.1	10.8	10.5	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	570
Hardness, Calcium Carbonate	ug/l	--	--	--	155000	--	432000	143000	338000	184000
Nitrate	ug/l	--	6	--	1440	--	420	170	260	140
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<20	--	<100	--	<100	<10	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	3450	--	600	1080	510	1050
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.7	--	8.2	--	7.78	**8.98**	8	8.29
Phosphorus	ug/l	_ [9]	--	--	**190**	--	**1010**	**70**	**60**	**90**
Silica	ug/l	--	--	--	10100	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	28000	16000	--	18000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	490	1250	1830	--	--	300	1700
Temperature	deg c	_ [10]	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	_ [10]	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	163000	--	278000	--	842000	274000	709000	399000
Total Organic Carbon	ug/l	--	--	9890	7900	10700	7200	10900	6300	8500
Total Suspended Solids	ug/l	--	--	--	15800000	--	237000	12000	181000	<2000
Turbidity	ntu	_ [11]	--	--	38.6	--	125	20	77	16.3
Metals										
Aluminum	ug/l	_ [12]	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	_ [12]	--	--	135	--	600	1330	240	900
Antimony	ug/l	20	--	--	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	30	40
Beryllium	ug/l	_ [14]	--	--	--	--	--	--	<2	<2
Bismuth	ug/l	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--	--	<10	<50
Cadmium	ug/l	0.2 [13]	--	--	**0.3**	--	<0.15	<0.15	**0.3**	0.1
Calcium	ug/l	--	--	--	40000	--	125000	34000	89000	49000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--	--	--
Chromium	ug/l	_ [16]	--	--	<10	--	<10	<10	3	1
Chromium, dissolved	ug/l	_ [16]	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	0.8	0.2
Copper	ug/l	5	--	--	**11**	--	<5	0.9	3	4
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--	--	--
Iron	ug/l	300	**900**	--	**1900**	--	**760**	**730**	130	**390**
Iron, dissolved	ug/l	300	--	--	--	--	--	--	--	--
Lead	ug/l	_ [17]	--	--	34	--	<2	<2	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	13100	--	125000	14000	28000	<0.1
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	--	30	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	<0.1	--	<0.2	<0.2	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	<10	<10
Nickel	ug/l	25	--	--	<20	--	<10	<10	<10	<10
Potassium	ug/l	--	--	--	5600	--	6000	4000	3000	4000
Selenium	ug/l	100	--	--	2	--	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--	3360	4110
Silver	ug/l	0.1	--	--	**1.9**	--	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	--	24100	--	87000	28000	468	40000
Strontium	ug/l	--	--	--	--	--	--	--	--	212
Tellurium	ug/l	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--	<1	<1
Tin	ug/l	--	--	--	--	--	--	--	--	<10
Titanium	ug/l	--	--	--	--	--	--	--	<10	30
Tungsten	ug/l	30 [20]	--	--	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	<1	2
Zinc	ug/l	30 [13]	--	--	<10	--	30	30	**160**	**60**
Zirconium	ug/l	4 [15]	--	--	--	--	--	--	--	--
Phenols										
Phenolics, Total Recoverable	ug/l	1 [21]	--	<2	<2	**3**	<1	<1	<1	<1

Parameter	Unit	PWQO [1]	SW-10 01-Apr-2003	SW-10 01-Oct-2003	SW-10 01-Dec-2003	SW-10 04-Jun-2004	SW-10 04-Jul-2004	SW-10 04-Oct-2004 [2]	SW-10 13-Jun-2005 [2]	SW-10 31-Aug-2005 [2]	SW-10 30-Oct-2005 [2]	SW-10 31-Dec-2005 [3]
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	_ [6]	175	235	236	224	211	--	--	--	--	--
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	--	--	--	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	90	40	40	70	190	--	--	--	--	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	20	10	<1000	<1000	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	22000	14000	18000	<5000	21000	--	--	--	--	--
Chloride	ug/l	--	174000	96000	54000	36000	35000	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	23	24	13	25	28	--	--	--	--	--
Conductivity	uS/cm	--	983	786	649	528	512	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen	mg/l	_ [8]	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	_ [8]	--	8.9	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	298000	309000	270000	215000	199000	--	--	--	--	--
Nitrate	ug/l	--	310	<100	<100	<100	<100	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<10	<100	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	620	600	370	470	770	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.77	8.01	8.04	7.74	7.67	--	--	--	--	--
Phosphorus	ug/l	_ [9]	**80**	**190**	**80**	**260**	**280**	--	--	--	--	--
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	300	500	300	400	400	--	--	--	--	--
Temperature	deg c	_ [10]	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	_ [10]	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	639000	511000	422000	343000	333000	--	--	--	--	--
Total Organic Carbon	ug/l	--	6100	5500	4700	7200	8500	--	--	--	--	--
Total Suspended Solids	ug/l	--	3000	19000	13000	47000	43000	--	--	--	--	--
Turbidity	ntu	_ [11]	5	32.5	15.5	53.6	81.7	--	--	--	--	--
Metals												
Aluminum	ug/l	_ [12]	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	_ [12]	210	420	280	560	860	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	30	60	40	--	--	--	--	--	--	--
Beryllium	ug/l	_ [14]	<1	<1	<1	--	--	--	--	--	--	--
Bismuth	ug/l	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	<50	20	10	--	--	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--	--
Calcium	ug/l	--	83000	84000	75000	58000	55000	--	--	--	--	--
Calcium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	_ [16]	<5	4	3	4	6	--	--	--	--	--
Chromium, dissolved	ug/l	_ [16]	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	<0.2	0.4	0.4	--	--	--	--	--	--	--
Copper	ug/l	5	<5	2	2	3	2	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	70	**540**	**320**	**740**	**760**	--	--	--	--	--
Iron, dissolved	ug/l	300	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	_ [17]	<1	<1	<1	<1	<1	--	--	--	--	--
Lithium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	22000	24000	20000	17000	15000	--	--	--	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	<5	24	20	--	--	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--	--
Molybdenum	ug/l	40	<5	<5	<5	--	--	--	--	--	--	--
Nickel	ug/l	25	<5	<5	<5	<5	<5	--	--	--	--	--
Potassium	ug/l	--	6000	7000	4000	3000	3000	--	--	--	--	--
Selenium	ug/l	100	<1	<1	<1	<1	<1	--	--	--	--	--
Silicon	ug/l	--	5400	6000	6700	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--	--
Sodium	ug/l	--	75000	50000	31000	24000	23000	--	--	--	--	--
Strontium	ug/l	--	349	711	521	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	<1	<1	<1	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	<10	30	20	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	<5	4	3	--	--	--	--	--	--	--
Zinc	ug/l	30 [13]	**42**	<10	<10	<10	<10	--	--	--	--	--
Zirconium	ug/l	4 [15]	--	--	--	--	--	--	--	--	--	--
Phenols												
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	<1	<1	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-10 08-Apr-2006	SW-10 15-Aug-2006 [2]	SW-10 25-Nov-2006	SW-10 22-Apr-2007	SW-10 31-Aug-2007 [2]	SW-10 26-Nov-2007 [3]	SW-10 04-May-2008	SW-10 14-Aug-2008	SW-10 28-Nov-2008	SW-10 24-Apr-2009 W-10
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	-- [6]	127	--	222	253	--	--	261	335	270	255
Ammonia, unionized	ug/l	20	<20	--	<20	<20	--	--	<20	<20	<20	0.94
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	<20
Ammonia Nitrogen	ug/l	--	50	--	20	<20	--	--	40	40	20	50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	--	<1000	1000	--	--	<1000	3000	1000	2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	74000	--	63000	120000	--	--	194000	124000	147000	148000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	610	--	410	510	--	--	505	320	380	978
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	930
Dissolved Organic Carbon	ug/l	--	7000	--	4000	5600	--	--	5900	10200	4900	7000
Dissolved Oxygen	mg/l	-- [8]	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	11.02	--	8.11	9.82	--	--	**4.04**	8.41	**5.12**	**5.39**
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	160800	--	252700	307500	--	--	359000	348000	303000	286000
Nitrate	ug/l	--	870	--	1020	<100	--	--	200	<100	980	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	460
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	--	7.3	7.4	--	--	7.2	7.3	7.4	8.1
Phosphorus	ug/l	-- [9]	**60**	--	**80**	**60**	--	--	**80**	**110**	**420**	**120**
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	ug/l	--	15000	--	18000	21000	--	--	18000	6000	22000	21000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--
Temperature	deg c	-- [10]	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	6	--	2	3	--	--	8	17	2	7.5
Total Dissolved Solids	ug/l	--	341000	--	426000	549000	--	--	741000	663000	663000	636000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	2000	--	4000	<2000	--	--	28000	8000	92000	18000
Turbidity	ntu	-- [11]	--	--	--	--	--	--	--	--	--	--
Metals												
Aluminum	ug/l	-- [12]	--	--	--	--	--	--	--	--	--	<10
Aluminum, dissolved	ug/l	-- [12]	40	--	30	40	--	--	10	110	10	--
Antimony	ug/l	20	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	30	--	30	30	--	--	40	20	50	30
Beryllium	ug/l	-- [14]	<1	--	<1	<1	--	--	<1	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	10	--	20	10	--	--	20	20	30	20
Cadmium	ug/l	0.2 [13]	<0.1	--	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	43000	--	65000	82000	--	--	96000	93000	77000	75000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	4	--	2	3	--	--	7	2	6	4
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.2	--	0.2	0.2	--	--	0.4	0.4	**1**	0.3
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	290	--	190	90	--	--	270	200	**940**	270
Iron, dissolved	ug/l	300	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	--	<1	<1	--	--	<1	<1	2	<1
Lithium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	13000	--	22000	25000	--	--	29000	28000	27000	24000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	<10	--	20	<10	--	--	20	80	160	40
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	--	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	--	<5	<5	--	--	<5	<5	<5	<5
Nickel	ug/l	25	<5	--	<5	<5	--	--	<5	<5	<5	<5
Potassium	ug/l	--	3000	--	3000	4000	--	--	5000	5000	5000	3000
Selenium	ug/l	100	<1	--	<1	<1	--	--	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	--	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	38000	--	38000	55000	--	--	85000	84000	77000	75000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	4	--	2	**7**	--	--	3	2	**8**	3
Zinc	ug/l	30 [13]	20	--	20	10	--	--	10	<10	20	10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--	--	--	--	--
Phenols												
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-10 25-Aug-2009 [2] SW-10	SW-10 30-Nov-2009 W-10	SW-10 21-Aug-2010 [2] SW-10	SW-10 27-Nov-2010 [2] SW-10	SW-10 09-May-2011 W-11	SW-10 08-Sep-2011 [2] SW-10	SW-10 29-Nov-2011 [2] SW-10	SW-10 06-May-2012 W-11	SW-10 22-Aug-2012 [2] SW-10	SW-10 12-Nov-2012 W - 8
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	_ [6]	--	182	--	--	280	--	--	302	--	315
Ammonia, unionized	ug/l	20	--	0.29	--	--	0.32	--	--	<0.2	--	0.24
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	<20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	30	--	--	30	--	--	<20	--	30
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<1000	--	--	1000	--	--	1000	--	1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	--	64000	--	--	119000	--	--	207000	--	422000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	589	--	--	934	--	--	1230	--	1990
Conductivity (Field)	uS/cm	--	--	885	--	--	590	--	--	1180	--	565
Dissolved Organic Carbon	ug/l	--	--	9500	--	--	7500	--	--	7500	--	6100
Dissolved Oxygen	mg/l	_ [8]	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	_ [8]	--	**5.99**	--	--	7.81	--	--	7.44	--	**4.01**
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	185000	--	--	307000	--	--	361000	--	448000
Nitrate	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	600	--	--	140	--	--	200	--	890
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	7.9	--	--	7.8	--	--	7.8	--	7.7
Phosphorus	ug/l	_ [9]	--	**320**	--	--	**160**	--	--	**150**	--	**100**
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	17000	--	--	13000	--	--	26000	--	47000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--
Temperature	deg c	_ [10]	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	_ [10]	--	5	--	--	9.0	--	--	8	--	8
Total Dissolved Solids	ug/l	--	--	383000	--	--	607000	--	--	800000	--	1290000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	19000	--	--	<2000	--	--	9000	--	9000
Turbidity	ntu	_ [11]	--	--	--	--	--	--	--	--	--	--
Metals												
Aluminum	ug/l	_ [12]	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	_ [12]	--	80	--	--	<10	--	--	--	--	<10
Antimony	ug/l	20	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	40	--	--	30	--	--	60	--	50
Beryllium	ug/l	_ [14]	--	<1	--	--	<0.5	--	--	<0.5	--	<0.5
Bismuth	ug/l	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	40	--	--	20	--	--	40	--	10
Cadmium	ug/l	0.2 [13]	--	<0.1	--	--	<0.1	--	--	<0.1	--	<0.1
Calcium	ug/l	--	--	46000	--	--	80000	--	--	95000	--	130000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	_ [16]	--	5	--	--	4	--	--	10	--	6
Chromium, dissolved	ug/l	_ [16]	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	0.8	--	--	0.3	--	--	0.5	--	0.3
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	<50	--	--	<50	--	<50
Iron	ug/l	300	--	**1130**	--	--	60	--	--	200	--	60
Iron, dissolved	ug/l	300	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	_ [17]	--	1	--	--	<1	--	--	<1	--	<1
Lithium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	17000	--	--	26000	--	--	30000	--	30000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	--	70	--	--	20	--	--	30	--	50
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	<0.1	--	--	<0.1	--	--	<0.1	--	<0.1
Molybdenum	ug/l	40	--	<5	--	--	<5	--	--	<5	--	<5
Nickel	ug/l	25	--	<5	--	--	<5	--	--	<5	--	<5
Potassium	ug/l	--	--	5000	--	--	4000	--	--	5000	--	5000
Selenium	ug/l	100	--	<1	--	--	<1	--	--	<1	--	<1
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	<0.1	--	--	<0.1	--	--	<0.1	--	<0.1
Sodium	ug/l	--	--	47000	--	--	70000	--	--	101000	--	206000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	**8**	--	--	3	--	--	6	--	4
Zinc	ug/l	30 [13]	--	**40**	--	--	<10	--	--	10	--	10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--	--	--	--	--
Phenols												
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-10 10-Jun-2013 SW-10	SW-10 20-Aug-2013 [2] SW-10	SW-10 24-Oct-2013 [2] SW-10	SW-10 29-May-2014 W-9	SW-10 26-Aug-2014 [2] SW-10	SW-10 17-Nov-2014 [2] SW-10	SW-10 28-Apr-2015 W-8	SW-10 25-Aug-2015 [2] SW-10	SW-10 11-Nov-2015 [2] SW-10	SW-10 18-Apr-2016 W-10
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	_ [6]	298	--	--	310	--	--	220	--	--	200
Ammonia, unionized	ug/l	20	<20	--	--	2	--	--	0.72	--	--	<0.93
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	30	--	--	340	--	--	99	--	--	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	--	--	2000	--	--	<2000	--	--	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	176000	--	--	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	270000	--	--	160000	--	--	110000
Chromium (III)	ug/l	8.9 [7]	--	--	--	<5	--	--	<5	--	--	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1130	--	--	1500	--	--	1000	--	--	760
Conductivity (Field)	uS/cm	--	1114	--	--	605	--	--	295	--	--	650
Dissolved Organic Carbon	ug/l	--	1280	--	--	7100	--	--	6800	--	--	6200
Dissolved Oxygen	mg/l	_ [8]	2.47	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	_ [8]	--	--	--	**3.89**	--	--	**3.34**	--	--	**3.04**
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	337000	--	--	420000	--	--	310000	--	--	250000
Nitrate	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	--	--	270	--	--	<100	--	--	130
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	8.15	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.2	--	--	7.5	--	--	7.7	--	--	8.1
Phosphorus	ug/l	_ [9]	**310**	--	--	**180**	--	--	**89**	--	--	**90**
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	ug/l	--	14000	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	20000	--	--	24000	--	--	21000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--
Temperature	deg c	_ [10]	18	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	_ [10]	--	--	--	11	--	--	7	--	--	7.4
Total Dissolved Solids	ug/l	--	734000	--	--	842000	--	--	550000	--	--	200000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	4000	--	--	10000	--	--	<10000	--	--	<10000
Turbidity	ntu	_ [11]	--	--	--	--	--	--	--	--	--	--
Metals												
Aluminum	ug/l	_ [12]	260	--	--	--	--	--	--	--	--	790
Aluminum, dissolved	ug/l	_ [12]	30	--	--	280	--	--	220	--	--	--
Antimony	ug/l	20	--	--	--	<0.50	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	<1.0	--	--	--	--	--	--
Barium	ug/l	--	40	--	--	51	--	--	45	--	--	42
Beryllium	ug/l	_ [14]	<0.5	--	--	<0.50	--	--	<0.50	--	--	<0.5
Bismuth	ug/l	--	--	--	--	<1.0	--	--	--	--	--	--
Boron	ug/l	200 [15]	30	--	--	37	--	--	110	--	--	35
Cadmium	ug/l	0.2 [13]	<0.1	--	--	<0.10	--	--	<0.10	--	--	<0.1
Calcium	ug/l	--	92000	--	--	120000	--	--	85000	--	--	65000
Calcium, dissolved	ug/l	--	--	--	--	120000	--	--	82000	--	--	63000
Chromium	ug/l	_ [16]	5	--	--	<5.0	--	--	<5.0	--	--	<5
Chromium, dissolved	ug/l	_ [16]	--	--	--	<5.0	--	--	<5.0	--	--	<5.0
Cobalt	ug/l	0.9	0.2	--	--	<0.50	--	--	<0.50	--	--	<0.5
Copper	ug/l	5	--	--	--	2.4	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.5	--	--	<0.50	--	--	<0.50	--	--	<0.50
Iron	ug/l	300	240	--	--	280	--	--	110	--	--	**310**
Iron, dissolved	ug/l	300	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	_ [17]	<1	--	--	<0.50	--	--	<0.50	--	--	<0.5
Lithium	ug/l	--	--	--	--	<5.0	--	--	--	--	--	--
Magnesium	ug/l	--	26000	--	--	34000	--	--	26000	--	--	22000
Magnesium, dissolved	ug/l	--	--	--	--	33000	--	--	26000	--	--	22000
Manganese	ug/l	--	20	--	--	25	--	--	4.6	--	--	5
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--	--	--	--	<0.1
Mercury, dissolved	ug/l	0.2 [18]	<0.1	--	--	<0.10	--	--	<0.10	--	--	--
Molybdenum	ug/l	40	<5	--	--	1.0	--	--	<0.50	--	--	0.5
Nickel	ug/l	25	<5	--	--	1.2	--	--	1.3	--	--	<1
Potassium	ug/l	--	5000	--	--	6800	--	--	6600	--	--	4300
Selenium	ug/l	100	<1	--	--	<2.0	--	--	<2.0	--	--	<2
Silicon	ug/l	--	--	--	--	7400	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	--	--	<0.10	--	--	<0.10	--	--	<0.1
Sodium	ug/l	--	103000	--	--	150000	--	--	91000	--	--	56000
Strontium	ug/l	--	--	--	--	800	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	<1.0	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	<0.050	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	<1.0	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	22	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	<1.0	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	1.5	--	--	--	--	--	--
Vanadium	ug/l	6	4	--	--	2.2	--	--	2.7	--	--	1.8
Zinc	ug/l	30 [13]	<10	--	--	13	--	--	6.8	--	--	17
Zirconium	ug/l	4 [15]	--	--	--	<1.0	--	--	--	--	--	--
Phenols												
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-10 07-Jul-2016 [2] SW-10	SW-10 31-Oct-2016 [2] SW-10	SW-10 23-May-2017 [24] SW-10	SW-10 26-Jul-2017 SW-10	SW-10 22-Nov-2017 [2] SW-10	SW-10 15-May-2018 [24] SW-10	SW-10 29-Aug-2018 [24] SW-10	SW-10 02-Nov-2018 SW-10	SW-10 04-Jun-2019 SW-10	SW-10 07-Aug-2019 [2] SW-10
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	_ [6]	--	--	--	310	--	--	--	140	290	--
Ammonia, unionized	ug/l	20	--	--	--	<0.2	--	--	--	<0.21	0.84	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	<50	--	--	--	<50	140	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	<2000	--	--	--	4000	<2000	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	48000	--	--	--	65000	140000	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	<5	--	--	--	<5	<5	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	--	--	830	--	--	--	550	1000	--
Conductivity (Field)	uS/cm	--	--	--	--	401	--	--	--	310	430	--
Dissolved Organic Carbon	ug/l	--	--	--	--	9900	--	--	--	12000	8100	--
Dissolved Oxygen	mg/l	_ [8]	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	_ [8]	--	--	--	**1.11**	--	--	--	**6.11**	**1.88**	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	270000	--	--	--	130000	320000	--
Nitrate	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	110	--	--	--	1100	<100	--
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	7.11	--	--	--	7.5	7.38	--
Phosphorus	ug/l	_ [9]	--	--	--	**160**	--	--	--	**230**	**170**	--
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	2600	--	--	--	37000	16000	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--
Temperature	deg c	_ [10]	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	_ [10]	--	--	--	16.6	--	--	--	6.1	14	--
Total Dissolved Solids	ug/l	--	--	--	--	472000	--	--	--	375000	525000	--
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	30000	--	--	--	10000	<10000	--
Turbidity	ntu	_ [11]	--	--	--	--	--	--	--	--	--	--
Metals												
Aluminum	ug/l	_ [12]	--	--	--	220	--	--	--	3400	150	--
Aluminum, dissolved	ug/l	_ [12]	--	--	--	--	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	23	--	--	--	54	31	--
Beryllium	ug/l	_ [14]	--	--	--	<0.50	--	--	--	<0.50	<0.50	--
Bismuth	ug/l	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	50	--	--	--	51	37	--
Cadmium	ug/l	0.2 [13]	--	--	--	<0.10	--	--	--	<0.10	<0.10	--
Calcium	ug/l	--	--	--	--	72000	--	--	--	34000	89000	--
Calcium, dissolved	ug/l	--	--	--	--	70000	--	--	--	35000	85000	--
Chromium	ug/l	_ [16]	--	--	--	<5.0	--	--	--	<5.0	<5.0	--
Chromium, dissolved	ug/l	_ [16]	--	--	--	<5.0	--	--	--	<5.0	<5.0	--
Cobalt	ug/l	0.9	--	--	--	<0.50	--	--	--	**0.92**	<0.50	--
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	<0.50	--	--	--	<0.50	<0.50	--
Iron	ug/l	300	--	--	--	**310**	--	--	--	**2500**	160	--
Iron, dissolved	ug/l	300	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	_ [17]	--	--	--	<0.50	--	--	--	1.1	<0.50	--
Lithium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	22000	--	--	--	9700	26000	--
Magnesium, dissolved	ug/l	--	--	--	--	22000	--	--	--	9300	25000	--
Manganese	ug/l	--	--	--	--	36	--	--	--	26	14	--
Mercury	ug/l	0.2 [18]	--	--	--	<0.1	--	--	--	<0.1	<0.1	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	0.60	--	--	--	0.72	0.69	--
Nickel	ug/l	25	--	--	--	1.5	--	--	--	3.5	1.8	--
Potassium	ug/l	--	--	--	--	4000	--	--	--	5900	4200	--
Selenium	ug/l	100	--	--	--	<2.0	--	--	--	<2.0	<2.0	--
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	<0.10	--	--	--	<0.10	<0.10	--
Sodium	ug/l	--	--	--	--	71000	--	--	--	62000	85000	--
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	2.3	--	--	--	**6.3**	1.8	--
Zinc	ug/l	30 [13]	--	--	--	6.2	--	--	--	20	6.3	--
Zirconium	ug/l	4 [15]	--	--	--	--	--	--	--	--	--	--
Phenols												
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-10 17-Nov-2019 [3] SW-10	SW-10 05-May-2020 SW-10	SW-10 26-Aug-2020 [2] SW-10	SW-10 29-Oct-2020 [2] SW-10
General Chemistry						
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	220	--	--
Ammonia, unionized	ug/l	20	--	15.61	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	2800	--	--
Bicarbonate	ug/l	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<2000	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	120000	--	--
Chromium (III)	ug/l	8.9 [7]	--	<5	--	--
Color	color unit	--	--	--	--	--
Conductivity	uS/cm	--	--	830	--	--
Conductivity (Field)	uS/cm	--	--	628	--	--
Dissolved Organic Carbon	ug/l	--	--	6500	--	--
Dissolved Oxygen	mg/l	-- [8]	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	10.30	--	--
Fluoride	ug/l	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	260000	--	--
Nitrate	ug/l	--	--	--	--	--
Nitrate as N	ug/l	--	--	360	--	--
Nitrite	ug/l	--	--	--	--	--
Nitrite as N	ug/l	--	--	<10	--	--
Nitrogen	ug/l	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	360	--	--
pH	-	6.5 - 8.5	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	7.59	--	--
Phosphorus	ug/l	-- [9]	--	**82**	--	--
Silica	ug/l	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	20000	--	--
Tannin & Lignin	ug/l	--	--	--	--	--
Temperature	deg c	-- [10]	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	6.8	--	--
Total Dissolved Solids	ug/l	--	--	445000	--	--
Total Organic Carbon	ug/l	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	13000	--	--
Turbidity	ntu	-- [11]	--	--	--	--
Metals						
Aluminum	ug/l	-- [12]	--	150	--	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--
Antimony	ug/l	20	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--
Barium	ug/l	--	--	30	--	--
Beryllium	ug/l	-- [14]	--	<0.50	--	--
Bismuth	ug/l	--	--	--	--	--
Boron	ug/l	200 [15]	--	38	--	--
Cadmium	ug/l	0.2 [13]	--	<0.10	--	--
Calcium	ug/l	--	--	73000	--	--
Calcium, dissolved	ug/l	--	--	68000	--	--
Chromium	ug/l	-- [16]	--	<5.0	--	--
Chromium, dissolved	ug/l	-- [16]	--	<5.0	--	--
Cobalt	ug/l	0.9	--	<0.50	--	--
Copper	ug/l	5	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	0.59	--	--
Iron	ug/l	300	--	120	--	--
Iron, dissolved	ug/l	300	--	--	--	--
Lead	ug/l	-- [17]	--	<0.50	--	--
Lithium	ug/l	--	--	--	--	--
Magnesium	ug/l	--	--	22000	--	--
Magnesium, dissolved	ug/l	--	--	22000	--	--
Manganese	ug/l	--	--	5.4	--	--
Mercury	ug/l	0.2 [18]	--	<0.10	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--
Molybdenum	ug/l	40	--	<0.50	--	--
Nickel	ug/l	25	--	1.2	--	--
Potassium	ug/l	--	--	4400	--	--
Selenium	ug/l	100	--	<2.0	--	--
Silicon	ug/l	--	--	--	--	--
Silver	ug/l	0.1	--	<0.10	--	--
Sodium	ug/l	--	--	63000	--	--
Strontium	ug/l	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--
Tin	ug/l	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--
Vanadium	ug/l	6	--	1.8	--	--
Zinc	ug/l	30 [13]	--	7.6	--	--
Zirconium	ug/l	4 [15]	--	--	--	--
Phenols						
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--

Parameter	Unit	PWQO [1]	SW-10 28-Apr-2021 SW10	SW-10 14-Jul-2021 SW-10	SW-10 22-Nov-2021 [2] SW-10	SW-10 27-Apr-2022 SW-10	SW-10 07-Aug-2022 [2] SW-10
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	280	370	--	140	--
Ammonia, unionized	ug/l	20	<0.34	1.16	--	<0.42	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	95	--	<50	--
Bicarbonate	ug/l	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	--	<2000	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	160000	75000	--	88000	--
Chromium (III)	ug/l	8.9 [7]	<5	<5	--	<5	--
Color	color unit	--	--	--	--	--	--
Conductivity	uS/cm	--	1100	910	--	570	--
Conductivity (Field)	uS/cm	--	661	639	--	513	--
Dissolved Organic Carbon	ug/l	--	7400	5700	--	13000	--
Dissolved Oxygen	mg/l	-- [8]	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	**3.88**	**1.66**	--	6.63	--
Fluoride	ug/l	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	350000	310000	--	160000	--
Nitrate	ug/l	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	130	--	310	--
Nitrite	ug/l	--	--	--	--	--	--
Nitrite as N	ug/l	--	<10	<10	--	<10	--
Nitrogen	ug/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	<100	130	--	310	--
pH	-	6.5 - 8.5	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.49	7.50	--	7.7	--
Phosphorus	ug/l	-- [9]	**98**	**240**	--	**170**	--
Silica	ug/l	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	23000	28000	--	15000	--
Tannin & Lignin	ug/l	--	--	--	--	--	--
Temperature	deg c	-- [10]	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	12.2	19.8	--	8.9	--
Total Dissolved Solids	ug/l	--	530000	485000	--	340000	--
Total Organic Carbon	ug/l	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	--	15000	--
Turbidity	ntu	-- [11]	--	--	--	--	--
Metals							
Aluminum	ug/l	-- [12]	83	200	--	2200	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	98	--
Antimony	ug/l	20	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--
Barium	ug/l	--	36	47	--	47	--
Beryllium	ug/l	-- [14]	<0.40	<0.40	--	<0.40	--
Bismuth	ug/l	--	--	--	--	--	--
Boron	ug/l	200 [15]	31	180	--	26	--
Cadmium	ug/l	0.2 [13]	<0.090	<0.090	--	<0.090	--
Calcium	ug/l	--	95000	70000	--	46000	--
Calcium, dissolved	ug/l	--	92000	70000	--	44000	--
Chromium	ug/l	-- [16]	<5.0	<5.0	--	<5.0	--
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	--	<5.0	--
Cobalt	ug/l	0.9	<0.50	<0.50	--	0.64	--
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	--	<0.50	--
Iron	ug/l	300	<100	200	--	**1600**	--
Iron, dissolved	ug/l	300	--	--	--	<100	--
Lead	ug/l	-- [17]	<0.50	<0.50	--	0.66	--
Lithium	ug/l	--	--	--	--	--	--
Magnesium	ug/l	--	27000	31000	--	13000	--
Magnesium, dissolved	ug/l	--	28000	33000	--	12000	--
Manganese	ug/l	--	4.6	28	--	18	--
Mercury	ug/l	0.2 [18]	**0.24**	<0.10	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	<0.10	--
Molybdenum	ug/l	40	0.59	1.1	--	<0.50	--
Nickel	ug/l	25	1.5	1.1	--	2.4	--
Potassium	ug/l	--	5900	8400	--	4700	--
Selenium	ug/l	100	<2.0	<2.0	--	<2.0	--
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	<0.090	<0.090	--	<0.090	--
Sodium	ug/l	--	85000	83000	--	50000	--
Strontium	ug/l	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--
Vanadium	ug/l	6	2.3	2.3	--	4.2	--
Zinc	ug/l	30 [13]	6.2	<5.0	--	26	--
Zirconium	ug/l	4 [15]	--	--	--	--	--
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-10 11-Dec-2022 [2] SW-10	SW-10 29-May-2023 SW-10	SW-10 21-Sep-2023 [25] SW-10	SW-10 03-Dec-2023 [24] SW-10
General Chemistry						
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	350	--	--
Ammonia, unionized	ug/l	20	--	4.13	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	330	--	--
Bicarbonate	ug/l	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<2000	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	230000	--	--
Chromium (III)	ug/l	8.9 [7]	--	<5	--	--
Color	color unit	--	--	--	--	--
Conductivity	uS/cm	--	--	2400	--	--
Conductivity (Field)	uS/cm	--	--	438	--	--
Dissolved Organic Carbon	ug/l	--	--	5000	--	--
Dissolved Oxygen	mg/l	-- [8]	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	**2.96**	--	--
Fluoride	ug/l	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	700000	--	--
Nitrate	ug/l	--	--	--	--	--
Nitrate as N	ug/l	--	--	400	--	--
Nitrite	ug/l	--	--	--	--	--
Nitrite as N	ug/l	--	--	<10	--	--
Nitrogen	ug/l	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	400	--	--
pH	-	6.5 - 8.5	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	7.77	--	--
Phosphorus	ug/l	-- [9]	--	**100**	--	--
Silica	ug/l	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	6600	--	--
Tannin & Lignin	ug/l	--	--	--	--	--
Temperature	deg c	-- [10]	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	11.9	--	--
Total Dissolved Solids	ug/l	--	--	1470000	--	--
Total Organic Carbon	ug/l	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	18000	--	--
Turbidity	ntu	-- [11]	--	--	--	--
Metals						
Aluminum	ug/l	-- [12]	--	100	--	--
Aluminum, dissolved	ug/l	-- [12]	--	<4.9	--	--
Antimony	ug/l	20	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--
Barium	ug/l	--	--	77	--	--
Beryllium	ug/l	-- [14]	--	<0.40	--	--
Bismuth	ug/l	--	--	--	--	--
Boron	ug/l	200 [15]	--	25	--	--
Cadmium	ug/l	0.2 [13]	--	<0.090	--	--
Calcium	ug/l	--	--	180000	--	--
Calcium, dissolved	ug/l	--	--	190000	--	--
Chromium	ug/l	-- [16]	--	<5.0	--	--
Chromium, dissolved	ug/l	-- [16]	--	<5.0	--	--
Cobalt	ug/l	0.9	--	<0.50	--	--
Copper	ug/l	5	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	<0.50	--	--
Iron	ug/l	300	--	110	--	--
Iron, dissolved	ug/l	300	--	<100	--	--
Lead	ug/l	-- [17]	--	<0.50	--	--
Lithium	ug/l	--	--	--	--	--
Magnesium	ug/l	--	--	52000	--	--
Magnesium, dissolved	ug/l	--	--	53000	--	--
Manganese	ug/l	--	--	46	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	<0.10	--	--
Molybdenum	ug/l	40	--	0.71	--	--
Nickel	ug/l	25	--	<1.0	--	--
Potassium	ug/l	--	--	6600	--	--
Selenium	ug/l	100	--	<2.0	--	--
Silicon	ug/l	--	--	--	--	--
Silver	ug/l	0.1	--	<0.090	--	--
Sodium	ug/l	--	--	240000	--	--
Strontium	ug/l	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--
Tin	ug/l	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--
Vanadium	ug/l	6	--	1.8	--	--
Zinc	ug/l	30 [13]	--	<5.0	--	--
Zirconium	ug/l	4 [15]	--	--	--	--
Phenols						
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--

Parameter	Unit	PWQO [1]	SW-11 01-Aug-1993	SW-11 01-Sep-1993	SW-11 01-Nov-1993	SW-11 01-Aug-1994	SW-11 01-Oct-1994	SW-11 01-Dec-1994
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	244	--	221	246	--	239
Ammonia, unionized	ug/l	20	<100	--	<100	**100**	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<100	--	100	<100	--	32290
Biochemical Oxygen Demand, 5 Day	ug/l	--	3400	--	<1000	<1000	--	<1000
Chemical Oxygen Demand	ug/l	--	18000	60500	2100	4900	2800	7800
Chloride	ug/l	--	19000	--	44000	37000	--	23300
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	7	--	8	5	--	2.9
Conductivity	uS/cm	--	520	--	526	591	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	13.9	--	8.2	--	--	--
Hardness, Calcium Carbonate	ug/l	--	275000	--	247000	261000	--	204000
Nitrate	ug/l	--	320	--	720	1440	--	1300
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	--	<100	<100	--	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	560	--	190	560	--	670
Nitrogen, Total Kjeldahl	ug/l	--	710	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.61	--	**8.55**	7.99	--	8.12
Phosphorus	ug/l	-- [9]	**60**	--	**100**	**70**	--	<10
Sulphate	ug/l	--	11700	--	--	16300	--	19000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	200	840	450	320	--
Temperature (Field)	deg c	-- [10]	--	--	1	--	--	--
Total Dissolved Solids	ug/l	--	--	338000	341900	384150	--	--
Total Organic Carbon	ug/l	--	1500	1770	4500	3300	1800	1500
Total Suspended Solids	ug/l	--	214000	--	6000	2000	--	<1000
Turbidity	ntu	-- [11]	40.5	--	5.7	5	--	0.7
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	416	--	6060	60	--	420
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	0.1	--	0.2	<0.1	--	0.1
Calcium	ug/l	--	79400	--	70000	73	--	57000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	12	--	12	<10	--	<10
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--
Copper	ug/l	5	**6**	--	3	1	--	5
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**1628**	--	**5960**	**359**	--	**350**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	114	--	1	<0.2	--	<0.2
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	18600	--	--	18900	--	14800
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	116	--	--	30	--	<10
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	--	<0.1	<0.1	--	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--
Nickel	ug/l	25	<20	--	--	<20	--	<20
Potassium	ug/l	--	2810	--	--	4900	--	3500
Selenium	ug/l	100	2	--	3	1	--	6
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	**0.5**	--	**1.8**	**0.6**	--	**0.2**
Sodium	ug/l	--	11400	--	--	11800	--	11000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--
Zinc	ug/l	30 [13]	**237**	--	--	<10	--	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<2	<2	<2	**18**	<1	<1

Parameter	Unit	PWQO [1]	SW-11 01-May-1995	SW-11 01-Sep-1995	SW-11 01-Jun-1996	SW-11 01-Sep-1996	SW-11 01-Jun-1997	SW-11 01-Aug-1997
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	229	237	224	231	235	231
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	10	30	20	<20	20	40
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	<1000	<1000	<1000	2000
Chemical Oxygen Demand	ug/l	--	7000	8000	<3000	5000	--	5000
Chloride	ug/l	--	23000	22000	23000	20000	24000	24000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	5	14	5	<2	3	4
Conductivity	uS/cm	--	528	527	509	501	507	520
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	10.4	8.8	9.2	--	9.3	8.7
Hardness, Calcium Carbonate	ug/l	--	245000	277000	254000	253000	232000	247000
Nitrate	ug/l	--	680	300	620	150	130	130
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<10	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	160	330	--	150	370	180
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.24	8.08	8.09	8.06	8.27	8.02
Phosphorus	ug/l	-- [9]	10	**40**	**40**	30	**40**	30
Sulphate	ug/l	--	14000	14000	13000	10000	11000	10000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	343200	342550	330850	325650	329550	338000
Total Organic Carbon	ug/l	--	2800	4000	3500	2300	2700	2500
Total Suspended Solids	ug/l	--	2000	15000	5000	21000	32000	112000
Turbidity	ntu	-- [11]	0.7	2.3	1.6	1.9	4.4	10
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<30	580	70	190	140	70
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Calcium	ug/l	--	70000	78000	72000	70000	63000	69000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<10	<10	<10	30	<10	<10
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--
Copper	ug/l	5	<5	5	**8**	<5	**16**	<5
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	120	**4470**	110	180	**450**	**330**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<2	<2	<2	<2	<2	<2
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	17000	20000	18000	19000	18000	18000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Molybdenum	ug/l	40	--	--	--	--	--	--
Nickel	ug/l	25	<10	<10	20	<10	<10	<10
Potassium	ug/l	--	4000	6000	3000	3000	2000	3000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	15000	14000	13000	14000	12000	13000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--
Zinc	ug/l	30 [13]	<10	<10	<10	20	10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	<1	<1	<1

Parameter	Unit	PWQO [1]	SW-11 01-Sep-1998	SW-11 01-Nov-1998	SW-11 15-Jul-1999	SW-11 16-Oct-1999	SW-11 01-Jul-2000	SW-11 22-Oct-2000
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	250	258	259	255	251	242
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<20	<100	40	<20	60	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	4000	2000	2000	<1000
Chemical Oxygen Demand	ug/l	--	<3000	<3000	10000	8000	10000	21000
Chloride	ug/l	--	25000	24000	26000	24000	39000	36000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	2	2	3	5	5	4
Conductivity	uS/cm	--	548	576	539	546	574	556
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	9.2	12.9	8.3	8.2	8.6	12.5
Hardness, Calcium Carbonate	ug/l	--	242000	306000	273000	269000	262000	251000
Nitrate	ug/l	--	180	280	270	260	140	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	170	130	--	--	680	210
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	8.21	7.26	7.94	7.04	7.87
Phosphorus	ug/l	-- [9]	20	**<100**	30	**90**	**80**	10
Sulphate	ug/l	--	12000	18000	11000	16000	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	<100	<100
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	356200	374400	350350	354900	373100	361400
Total Organic Carbon	ug/l	--	2500	1500	1600	2700	2500	2100
Total Suspended Solids	ug/l	--	3000	<2000	--	<2000	27000	3000
Turbidity	ntu	-- [11]	0.9	0.6	46	1.4	8	0.3
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<30	<30	60	80	590	<50
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	70	--	--	80	--
Beryllium	ug/l	-- [14]	--	<10	--	--	<2	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	<10	--	--	20	--
Cadmium	ug/l	0.2 [13]	<0.15	<0.15	<0.15	<0.15	<0.1	<0.1
Calcium	ug/l	--	69000	86000	78000	78000	75000	74000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<10	<10	10	<10	2	<10
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	<0.4	--	--	0.6	--
Copper	ug/l	5	<5	<5	<5	<5	--	<1
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**320**	**320**	300	280	**1620**	80
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<2	<2	<2	<2	<1	--
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	17000	22000	19000	18000	18000	16000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	<10	--	--	160	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1
Molybdenum	ug/l	40	--	<10	--	--	<10	--
Nickel	ug/l	25	<10	<10	<10	<10	<10	<10
Potassium	ug/l	--	2000	2000	4000	3000	3000	--
Selenium	ug/l	100	<1	<1	<0.1	<1	<1	<1
Silicon	ug/l	--	--	4500	--	--	5650	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	12000	13000	18000	15000	15000	15000
Strontium	ug/l	--	--	397	--	--	365	--
Sulfur	ug/l	--	--	6000	--	--	4000	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	<10	--	--	<1	--
Tin	ug/l	--	--	<50	--	--	--	--
Titanium	ug/l	--	--	<10	--	--	20	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	<10	--	--	1	--
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	<1	<1	--

Parameter	Unit	PWQO [1]	SW-11 01-Dec-2000	SW-11 28-Apr-2001	SW-11 09-Nov-2001	SW-11 17-Apr-2002	SW-11 01-Apr-2003	SW-11 01-Dec-2003
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	254	248	249	248	243	245
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<20	<20	30	40	<20	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	2000	<1000	<1000	<1000
Chemical Oxygen Demand	ug/l	--	5000	<5000	15000	<5000	<5000	19000
Chloride	ug/l	--	26000	28000	32000	29000	35000	62000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	5	6	4	9	9	18
Conductivity	uS/cm	--	562	545	565	553	574	683
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	14.3	11.2	11.5	--	--	--
Hardness, Calcium Carbonate	ug/l	--	259000	242000	272000	242000	266000	279000
Nitrate	ug/l	--	150	170	170	230	190	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	190	120	360	270	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	250	400
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.01	8.15	8.05	**8.55**	7.98	8.12
Phosphorus	ug/l	-- [9]	10	10	**90**	**50**	30	**560**
Sulphate	ug/l	--	--	--	--	20000	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	200	<100	200	400	100	400
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	365300	354250	367250	359450	373100	443950
Total Organic Carbon	ug/l	--	2100	2700	3600	2800	--	6800
Total Suspended Solids	ug/l	--	25000	4000	282000	3000	2000	219000
Turbidity	ntu	-- [11]	1.8	1.2	30	0.4	0.4	>100
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<50	<50	290	<50	<10	1380
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	60	70	50	60	60
Beryllium	ug/l	-- [14]	--	<2	<2	<2	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	10	<50	<50	<50	20
Cadmium	ug/l	0.2 [13]	<0.1	**0.3**	<0.1	<0.1	<0.1	0.2
Calcium	ug/l	--	74000	69000	79000	69000	77000	77000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<10	8	2	<1	<5	4
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	**3**	0.8	<0.2	<0.2	**1.9**
Copper	ug/l	5	1	**11**	3	2	<5	5
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	270	60	**2160**	90	40	**1920**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	--	<1	<1	<1	<1	2
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	18000	17000	18000	17000	18000	21000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	10	110	10	13	100
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	<10	<10	<10	<5	<5
Nickel	ug/l	25	<10	<10	<10	<10	<5	<5
Potassium	ug/l	--	--	3000	3000	3000	4000	5000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	3050	5080	3150	3900	8600
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	19000	17000	15000	17000	25000	36000
Strontium	ug/l	--	--	320	290	300	331	469
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	<1	<1	<1	<1	<1
Tin	ug/l	--	--	--	--	<10	--	--
Titanium	ug/l	--	--	<10	10	--	<10	30
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	1	3	<1	<5	**7**
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<5	10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	<1	<1	<1	<1	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-11 04-Jun-2004	SW-11 04-Jul-2004	SW-11 04-Oct-2004	SW-11 13-Jun-2005 [2]	SW-11 31-Aug-2005 [2]	SW-11 30-Oct-2005
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	227	216	227	--	--	256
Ammonia, unionized	ug/l	20	<20	<20	<20	--	--	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	60	150	30	--	--	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	<1000	--	--	<1000
Chemical Oxygen Demand	ug/l	--	<5000	19000	<5000	--	--	--
Chloride	ug/l	--	39000	36000	35000	--	--	46000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	24	27	6	--	--	--
Conductivity	uS/cm	--	550	526	527	--	--	295
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	--	10.02
Hardness, Calcium Carbonate	ug/l	--	221000	206000	229000	--	--	--
Nitrate	ug/l	--	<100	<100	<100	--	--	170
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	710	730	130	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.85	7.8	7.86	--	--	7.1
Phosphorus	ug/l	-- [9]	**130**	**230**	**40**	--	--	30
Sulphate	ug/l	--	--	--	--	--	--	14000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	400	400	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	8
Total Dissolved Solids	ug/l	--	357500	341900	--	--	--	192000
Total Organic Carbon	ug/l	--	6900	8100	2000	--	--	--
Total Suspended Solids	ug/l	--	37000	31000	2000	--	--	2000
Turbidity	ntu	-- [11]	33.1	62.8	0.4	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	490	650	<10	--	--	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	80
Beryllium	ug/l	-- [14]	--	--	--	--	--	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--	20
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	--	--	**0.7**
Calcium	ug/l	--	59000	56000	67000	--	--	--
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	1	6	<1	--	--	1
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	<0.2
Copper	ug/l	5	2	2	<1	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**580**	**570**	60	--	--	140
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	--	--	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	18000	16000	15000	--	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	--	--	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	<5
Nickel	ug/l	25	<5	<5	<5	--	--	<5
Potassium	ug/l	--	3000	3000	3000	--	--	--
Selenium	ug/l	100	<1	<1	<1	--	--	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	--	--	<0.1
Sodium	ug/l	--	26000	24000	17000	--	--	--
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	2
Zinc	ug/l	30 [13]	<10	<10	<10	--	--	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	--	--	--

Parameter	Unit	PWQO [1]	SW-11 31-Dec-2005 [3]	SW-11 08-Apr-2006	SW-11 15-Aug-2006 [2]	SW-11 25-Nov-2006	SW-11 22-Apr-2007	SW-11 31-Aug-2007
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	258	--	266	272	285
Ammonia, unionized	ug/l	20	--	<20	--	<20	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	30	--	<20	<20	40
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<1000	--	<1000	1000	<1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	32000	--	41000	38000	39000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	310	--	620	400	465
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	3900	--	1700	3600	2700
Dissolved Oxygen (Field)	mg/l	-- [8]	--	12.91	--	11.21	11.38	11.91
Hardness, Calcium Carbonate	ug/l	--	--	272900	--	301100	288600	328400
Nitrate	ug/l	--	--	520	--	980	470	570
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	7.5	--	7.3	7.4	7.3
Phosphorus	ug/l	-- [9]	--	30	--	**50**	**60**	**40**
Sulphate	ug/l	--	--	20000	--	16000	19000	23000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	4	--	2	3	17
Total Dissolved Solids	ug/l	--	--	389000	--	424000	414000	447000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	5000	--	3000	7000	5000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	--	<10	--	<10	<10	10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	70	--	70	70	110
Beryllium	ug/l	-- [14]	--	<1	--	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	30	--	40	30	40
Cadmium	ug/l	0.2 [13]	--	<0.1	--	<0.1	<0.1	<0.1
Calcium	ug/l	--	--	78000	--	86000	81000	92000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	--	2	--	1	2	2
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	0.2	--	0.2	0.2	0.2
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	--	130	--	70	90	100
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	--	<1	--	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	19000	--	21000	21000	24000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	20	--	30	40	40
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	<0.1	--	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	<5	--	<5	<5	<5
Nickel	ug/l	25	--	<5	--	<5	<5	<5
Potassium	ug/l	--	--	3000	--	4000	3000	4000
Selenium	ug/l	100	--	<1	--	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	<0.1	--	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	18000	--	20000	19000	22000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	4	--	1	5	4
Zinc	ug/l	30 [13]	--	<10	--	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-11 26-Nov-2007	SW-11 04-May-2008	SW-11 14-Aug-2008	SW-11 28-Nov-2008	SW-11 24-Apr-2009 W-5	SW-11 25-Aug-2009 A-5
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	260	240	239	282	262	277
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<0.57	<0.14
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	<20	--
Ammonia Nitrogen	ug/l	--	<20	60	<20	20	<20	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	1000	2000	2000	<1000	2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	35000	31000	37000	39000	38000	42000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	265	405	310	380	616	667
Conductivity (Field)	uS/cm	--	--	--	--	--	560	400
Dissolved Organic Carbon	ug/l	--	2400	2400	2400	1700	2500	2700
Dissolved Oxygen (Field)	mg/l	-- [8]	11.22	11.11	11.01	13.01	10.28	12.03
Hardness, Calcium Carbonate	ug/l	--	269500	273000	277000	284000	274000	285000
Nitrate	ug/l	--	950	910	560	680	--	--
Nitrate as N	ug/l	--	--	--	--	--	630	440
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.6	7.4	7.3	7.4	8.3	7.3
Phosphorus	ug/l	-- [9]	<10	**90**	<10	<10	<10	**60**
Sulphate	ug/l	--	21000	18000	18000	18000	18000	18000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	3	6	14	2	7	18
Total Dissolved Solids	ug/l	--	410000	376000	391000	431000	400000	434000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	7000	<2000	<2000	<2000	34000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	<10	--
Aluminum, dissolved	ug/l	-- [12]	<10	10	20	<10	--	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	80	80	80	90	80	90
Beryllium	ug/l	-- [14]	<1	<1	<1	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	30	20	20	20	30	30
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	75000	73000	78000	79000	75000	81000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<1	2	1	2	2	3
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	<0.2	0.3	0.2	<0.2	0.2	0.3
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	<30	100	60	<30	30	200
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	20000	22000	20000	21000	21000	20000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	10	20	30	10	20	50
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	3000	4000	5000	4000	3000	4000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
Sodium	ug/l	--	20000	21000	21000	22000	20000	22000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	1	3	<1	6	2	5
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-11 30-Nov-2009 W-1	SW-11 17-May-2010 W-6	SW-11 21-Aug-2010 [4] A-7	SW-11 27-Nov-2010 W-5	SW-11 09-May-2011 W-9	SW-11 08-Sep-2011 W-9
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	289	251	290	292	240	295
Ammonia, unionized	ug/l	20	<0.39	<0.62	<0.94	<0.21	<0.16	<0.49
Ammonia, unionized (Field)	ug/l	20	--	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<20	<20	<20	<20	<20	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	2000	<1000	<1000	1000	<1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	37000	47000	41000	111000	68000	84000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	677	633	687	940	662	819
Conductivity (Field)	uS/cm	--	485	605	580	560	655	630
Dissolved Organic Carbon	ug/l	--	2400	2500	1900	2000	2900	2200
Dissolved Oxygen (Field)	mg/l	-- [8]	10.89	8.33	7.21	10.78	11.01	9.82
Hardness, Calcium Carbonate	ug/l	--	307000	261000	309000	363000	270000	351000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	620	380	310	820	440	270
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.2	8.2	8.0	8	7.7	7.8
Phosphorus	ug/l	-- [9]	10	<10	10	<10	20	<10
Sulphate	ug/l	--	21000	17000	18000	26000	17000	20000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	5	11	23	3	8.0	20
Total Dissolved Solids	ug/l	--	440000	411000	447000	611000	430000	532000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	4000	5000	6000	3000	<2000	<2000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	<10	<10	<10	<10	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	90	40	40	60	50	60
Beryllium	ug/l	-- [14]	<1	<1	<1	<1	<0.5	<0.5
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	30	30	30	30	20	30
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	85000	73000	89000	104000	75000	101000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	2	2	2	2	3	3
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.2	<0.2	0.2	0.2	0.2	<0.2
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	<50	<50	<50	<50
Iron	ug/l	300	40	<30	<30	<30	30	<30
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	23000	19000	21000	25000	20000	24000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	20	<10	20	<10	20	10
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	4000	4000	4000	5000	4000	5000
Selenium	ug/l	100	<1	<1	<10	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	23000	26000	23000	56000	36000	46000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	3	4	4	2	2	3
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-11 29-Nov-2011 W-8	SW-11 06-May-2012 W-9	SW-11 22-Aug-2012 W-7	SW-11 12-Nov-2012 [26] W - 9	SW-11 29-May-2014 W-6	SW-11 26-Aug-2014 S-7
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	290	308	299	318	250	280
Ammonia, unionized	ug/l	20	0.25	<0.21	<0.36	<0.18	1	3
Ammonia, unionized (Field)	ug/l	20	<20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	30	<20	<20	<20	53	130
Biochemical Oxygen Demand, 5 Day	ug/l	--	1000	2000	<1000	4000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	60000	47000	51000	87000	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	44000	35000
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	751	724	722	863	640	670
Conductivity (Field)	uS/cm	--	660	620	720	600	590	545
Dissolved Organic Carbon	ug/l	--	2600	2900	1900	1500	2200	2100
Dissolved Oxygen (Field)	mg/l	-- [8]	10.88	10.62	**4.10**	10.88	10.85	7.39
Hardness, Calcium Carbonate	ug/l	--	323000	303000	301000	339000	280000	270000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	370	410	270	450	290	270
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.8	7.8	7.6	7.8	7.90	7.8
Phosphorus	ug/l	-- [9]	20	<10	<10	<10	11	9
Sulphate	ug/l	--	21000	23000	22000	25000	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	21000	21000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	6	9	22	7	15	19
Total Dissolved Solids	ug/l	--	488000	471000	469000	561000	366000	362000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	11000	<2000	4000	<2000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	<10	10	<10	96	120
Antimony	ug/l	20	--	--	--	--	<0.50	--
Arsenic	ug/l	100 [13]	--	--	--	--	<1.0	--
Barium	ug/l	--	80	90	60	90	70	84
Beryllium	ug/l	-- [14]	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	<1.0	--
Boron	ug/l	200 [15]	40	30	30	30	27	28
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Calcium	ug/l	--	93000	85000	86000	96000	81000	83000
Calcium, dissolved	ug/l	--	--	--	--	--	78000	72000
Chromium	ug/l	-- [16]	2	4	2	4	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	<5.0	<5.0
Cobalt	ug/l	0.9	0.4	0.3	<0.2	<0.2	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	1.7	--
Hexavalent Chromium	ug/l	1 [7]	<50	<50	<50	<50	<0.50	<0.50
Iron	ug/l	300	**320**	70	60	<30	300	**380**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	<5.0	--
Magnesium	ug/l	--	22000	22000	21000	24000	23000	24000
Magnesium, dissolved	ug/l	--	--	--	--	--	21000	22000
Manganese	ug/l	--	80	60	<10	<10	48	34
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Molybdenum	ug/l	40	<5	<5	<5	<5	0.81	1.1
Nickel	ug/l	25	<5	<5	<5	<5	<1.0	<1.0
Potassium	ug/l	--	4000	3000	4000	4000	3900	4300
Selenium	ug/l	100	<1	<1	<1	<10	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	5400	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Sodium	ug/l	--	36000	26000	33000	41000	32000	29000
Strontium	ug/l	--	--	--	--	--	390	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	<1.0	--
Thallium	ug/l	0.3 [19]	--	--	--	--	<0.050	--
Tin	ug/l	--	--	--	--	--	<1.0	--
Titanium	ug/l	--	--	--	--	--	6.9	--
Tungsten	ug/l	30 [20]	--	--	--	--	<1.0	--
Uranium	ug/l	5 [15]	--	--	--	--	1.2	--
Vanadium	ug/l	6	4	3	3	3	0.79	0.74
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	<1.0	<1.0
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-11 17-Nov-2014 W-8	SW-11 28-Apr-2015 W-5	SW-11 25-Aug-2015 W-6	SW-11 11-Nov-2015 W-1	SW-11 18-Apr-2016 W-8	SW-11 07-Jul-2016 W-6
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	300	240	300	280	230	280
Ammonia, unionized	ug/l	20	0	0.77	1.32	<0.45	<0.53	2.54
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	84	54	<50	<50	140
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	36000	39000	38000	36000	39000	40000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	710	610	690	670	610	690
Conductivity (Field)	uS/cm	--	500	390	395	740	520	510
Dissolved Organic Carbon	ug/l	--	1600	2300	1900	1500	2300	2300
Dissolved Oxygen (Field)	mg/l	-- [8]	10.40	12.04	7.01	9.94	9.01	5.89
Hardness, Calcium Carbonate	ug/l	--	320000	260000	300000	330000	250000	290000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	560	360	200	390	380	250
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.8	7.8	7.8	7.90	7.8	7.7
Phosphorus	ug/l	-- [9]	6	10	13	10	13	18
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	23000	19000	20000	23000	18000	19000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	1	7	20	4	8.8	19
Total Dissolved Solids	ug/l	--	370000	328000	414000	382000	334000	370000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	30	12	77	83
Aluminum, dissolved	ug/l	-- [12]	21	85	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	84	63	62	77	55	81
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.50	<0.5	<0.5
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	52	31	38	30	26	38
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1
Calcium	ug/l	--	95000	78000	91000	79000	73000	78000
Calcium, dissolved	ug/l	--	91000	71000	83000	90000	69000	78000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5	<5
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.5	<0.5
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	<100	220	160	<100	110	**520**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	<0.5	<0.5
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	25000	21000	24000	23000	20000	23000
Magnesium, dissolved	ug/l	--	24000	21000	23000	25000	19000	23000
Manganese	ug/l	--	15	36	38	17	23	55
Mercury	ug/l	0.2 [18]	--	--	<0.10	<0.10	<0.1	<0.1
Mercury, dissolved	ug/l	0.2 [18]	<0.10	<0.10	--	--	--	--
Molybdenum	ug/l	40	0.76	0.90	0.97	0.71	0.9	1.1
Nickel	ug/l	25	<1.0	<1.0	<1.0	<1.0	<1	1
Potassium	ug/l	--	4600	3500	4100	4100	3500	4000
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2	<2
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1
Sodium	ug/l	--	28000	26000	30000	26000	24000	30000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<0.50	1.3	0.69	<0.50	0.7	0.9
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	5	<5
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-11 31-Oct-2016 W-6	SW-11 23-May-2017 SW-11	SW-11 26-Jul-2017 SW-11	SW-11 22-Nov-2017 SW-11	SW-11 15-May-2018 SW-11	SW-11 29-Aug-2018 SW-11
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	300	240	290	300	270	300
Ammonia, unionized	ug/l	20	<0.54	3.01	<1.19	<0.21	<0.76	2.19
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	260	<50	<50	<50	89
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	37000	37000	32000	38000	39000	43000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	710	590	630	690	640	710
Conductivity (Field)	uS/cm	--	400	0.54	555	488	650	414
Dissolved Organic Carbon	ug/l	--	1600	2700	2500	2000	2200	1800
Dissolved Oxygen (Field)	mg/l	-- [8]	6.96	7.44	11.46	9.81	12.30	7.92
Hardness, Calcium Carbonate	ug/l	--	330000	240000	300000	300000	280000	310000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	370	280	230	700	590	310
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.8	7.6	7.91	7.6	7.9	7.8
Phosphorus	ug/l	-- [9]	<4	12	16	6	**41**	21
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	24000	16000	11000	19000	17000	21000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	9	16	16.28	3.2	10.5	20.1
Total Dissolved Solids	ug/l	--	392000	322000	378000	370000	380000	345000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	12000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	12	82	160	48	960	210
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	73	47	59	65	77	80
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	31	26	35	24	30	32
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Calcium	ug/l	--	83000	69000	83000	84000	78000	88000
Calcium, dissolved	ug/l	--	89000	67000	84000	84000	77000	84000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	**1.0**	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	<100	250	**450**	120	**1400**	**360**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	0.57	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	22000	19000	21000	21000	23000	25000
Magnesium, dissolved	ug/l	--	26000	19000	21000	21000	22000	24000
Manganese	ug/l	--	31	73	100	46	87	47
Mercury	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	0.66	0.76	0.68	0.52	0.89	0.93
Nickel	ug/l	25	<1.0	<1.0	1.1	<1.0	2.2	1.1
Potassium	ug/l	--	3600	3100	3800	3300	3900	4600
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	26000	25000	25000	21000	24000	29000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<0.50	0.88	1.0	0.53	3.5	1.5
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	5.1	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-11 02-Nov-2018 SW-11	SW-11 04-Jun-2019 SW-11	SW-11 07-Aug-2019 SW11	SW-11 17-Nov-2019 SW-11	SW-11 05-May-2020 SW-11	SW-11 26-Aug-2020 SW-11
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	280	270	300	310	260	300
Ammonia, unionized	ug/l	20	<0.29	1.91	1.28	0.3	6.28	<0.65
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	170	66	78	6100	<50
Biochemical Oxygen Demand, 5 Day	ug/l	--	3000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	40000	42000	46000	43000	40000	42000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	670	670	750	750	650	730
Conductivity (Field)	uS/cm	--	380	429	430	452	454	570
Dissolved Organic Carbon	ug/l	--	1700	1900	2000	1400	1700	1900
Dissolved Oxygen (Field)	mg/l	-- [8]	10.77	8.33	6.1	10.10	12.54	11.61
Hardness, Calcium Carbonate	ug/l	--	300000	290000	330000	350000	280000	310000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	550	410	270	510	360	290
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	<10	<10	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	510	360	--
pH (Field)	-	6.5 - 8.5	7.6	7.72	7.7	7.6	6.9	7.69
Phosphorus	ug/l	-- [9]	27	10	12	6	7	14
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	22000	20000	22000	22000	18000	20000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	7	12	20	1.8	5.5	14.9
Total Dissolved Solids	ug/l	--	405000	425000	435000	415000	390000	340000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	18000	<10000	<10000	<10000	<10000	10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	580	110	--	26	84	95
Aluminum, dissolved	ug/l	-- [12]	--	--	<5.0	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	76	63	77	80	59	75
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.40
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	32	27	31	36	23	29
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.090
Calcium	ug/l	--	86000	82000	93000	96000	77000	86000
Calcium, dissolved	ug/l	--	83000	82000	93000	99000	77000	--
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	7.8	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	--
Cobalt	ug/l	0.9	0.88	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**850**	180	290	<100	220	240
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	23000	21000	25000	24000	20000	24000
Magnesium, dissolved	ug/l	--	22000	22000	24000	24000	21000	--
Manganese	ug/l	--	76	39	65	38	32	35
Mercury	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	0.78	0.71	0.71	<0.50	0.74	0.84
Nickel	ug/l	25	1.9	<1.0	<1.0	<1.0	<1.0	<1.0
Potassium	ug/l	--	4000	3200	4200	3600	2900	3800
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.090
Sodium	ug/l	--	23000	27000	34000	27000	24000	28000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	2.1	1.2	1.9	0.73	0.74	1.4
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-11 29-Oct-2020 SW-11	SW-11 28-Apr-2021 SW11	SW-11 14-Jul-2021 SW-11	SW-11 22-Nov-2021 SW-11
General Chemistry						
Alkalinity (Total as CaCO3)	mg/l	-- [6]	330	260	300	300
Ammonia, unionized	ug/l	20	1.16	10.24	0.95	3.36
Ammonia, unionized (Field)	ug/l	20	--	--	--	--
Ammonia Nitrogen	ug/l	--	170	1200	53	610
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	4000
Chemical Oxygen Demand	ug/l	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--
Chloride, dissolved	ug/l	--	41000	39000	39000	40000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5
Color	color unit	--	--	--	--	--
Conductivity	uS/cm	--	760	640	710	730
Conductivity (Field)	uS/cm	--	560	555	530	885
Dissolved Organic Carbon	ug/l	--	1400	1900	2000	1400
Dissolved Oxygen (Field)	mg/l	-- [8]	10.02	10.44	6.92	9.82
Hardness, Calcium Carbonate	ug/l	--	340000	280000	310000	320000
Nitrate	ug/l	--	--	--	--	--
Nitrate as N	ug/l	--	360	330	270	540
Nitrite	ug/l	--	--	--	--	--
Nitrite as N	ug/l	--	--	<10	<10	<10
Nitrogen	ug/l	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	330	270	540
pH (Field)	-	6.5 - 8.5	7.61	7.69	7.70	7.62
Phosphorus	ug/l	-- [9]	5	11	14	5
Sulphate	ug/l	--	--	--	--	--
Sulphate, dissolved	ug/l	--	23000	21000	22000	27000
Tannin & Lignin	ug/l	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	8.8	9.3	18.9	5.8
Total Dissolved Solids	ug/l	--	405000	320000	365000	420000
Total Organic Carbon	ug/l	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--
Metals						
Aluminum	ug/l	-- [12]	49	85	130	22
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--
Antimony	ug/l	20	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--
Barium	ug/l	--	84	73	92	89
Beryllium	ug/l	-- [14]	<0.40	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--	--
Boron	ug/l	200 [15]	34	28	34	32
Cadmium	ug/l	0.2 [13]	<0.090	<0.090	<0.090	<0.090
Calcium	ug/l	--	94000	78000	84000	88000
Calcium, dissolved	ug/l	--	--	75000	83000	87000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	--	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	140	190	**320**	130
Iron, dissolved	ug/l	300	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--
Magnesium	ug/l	--	25000	22000	26000	26000
Magnesium, dissolved	ug/l	--	--	24000	26000	25000
Manganese	ug/l	--	79	42	52	14
Mercury	ug/l	0.2 [18]	<0.10	**0.27**	<0.10	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	<0.10
Molybdenum	ug/l	40	0.79	0.98	1.0	0.78
Nickel	ug/l	25	<1.0	<1.0	<1.0	<1.0
Potassium	ug/l	--	3900	3700	4500	3600
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--
Silver	ug/l	0.1	<0.090	<0.090	<0.090	<0.090
Sodium	ug/l	--	28000	23000	27000	26000
Strontium	ug/l	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--
Tin	ug/l	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--
Vanadium	ug/l	6	0.58	0.73	1.1	0.56
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--
Phenols						
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-11 27-Apr-2022 SW-11	SW-11 17-Aug-2022 [5] SW-11	SW-11 11-Dec-2022 SW-11	SW-11 29-May-2023 SW-11	SW-11 21-Sep-2023 SW-11	SW-11 03-Dec-2023 SW-11
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	220	260	320	270	310	320
Ammonia, unionized	ug/l	20	<1.22	**30**	4.43	0.77	19.57	1.67
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	780	710	56	1200	250
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	38000	43000	39000	34000	41000	37000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	570	650	740	640	730	750
Conductivity (Field)	uS/cm	--	570	620	666	505	459	396
Dissolved Organic Carbon	ug/l	--	2100	2300	1700	2500	2100	1200
Dissolved Oxygen (Field)	mg/l	-- [8]	10.74	8.66	9.98	9.39	8.84	9.02
Hardness, Calcium Carbonate	ug/l	--	260000	280000	340000	300000	340000	340000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	450	240	540	210	440	530
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	<10	<10	13	<10	<10	<10
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	450	240	560	210	440	530
pH (Field)	-	6.5 - 8.5	8.22	7.96	7.77	7.82	7.79	7.77
Phosphorus	ug/l	-- [9]	19	27	7	15	10	<4
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	18000	22000	22000	16000	25000	21000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	7.4	21.4	3.1	11.6	14.8	3.9
Total Dissolved Solids	ug/l	--	295000	415000	350000	345000	385000	380000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	400	200	110	74	110	28
Aluminum, dissolved	ug/l	-- [12]	<4.9	5.7	<4.9	<4.9	<4.9	<4.9
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	51	90	100	78	98	97
Beryllium	ug/l	-- [14]	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	21	36	40	30	32	29
Cadmium	ug/l	0.2 [13]	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090
Calcium	ug/l	--	70000	77000	97000	76000	100000	98000
Calcium, dissolved	ug/l	--	72000	70000	94000	82000	94000	95000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**430**	**440**	**310**	**340**	250	150
Iron, dissolved	ug/l	300	<100	<100	<100	<100	<100	<100
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	19000	26000	25000	21000	25000	25000
Magnesium, dissolved	ug/l	--	20000	24000	25000	23000	25000	26000
Manganese	ug/l	--	29	38	99	57	34	31
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	0.66	0.90	0.90	0.78	0.58	0.75
Nickel	ug/l	25	1.1	1.2	1.4	<1.0	<1.0	<1.0
Potassium	ug/l	--	3000	4500	3500	3500	4400	4000
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090
Sodium	ug/l	--	20000	32000	27000	26000	29000	26000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	1.3	1.5	0.82	0.78	0.83	<0.50
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-12 01-Aug-1993	SW-12 01-Sep-1993	SW-12 01-Nov-1993	SW-12 01-Jun-1994	SW-12 01-Aug-1994	SW-12 01-Oct-1994
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	280	267	249	282	285	--
Ammonia, unionized	ug/l	20	<100	<20	<100	<100	<100	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<100	200	<100	<100	<100	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	<1000	<1000	<1000	--
Chemical Oxygen Demand	ug/l	--	24000	<5000	18700	6700	4900	3700
Chloride	ug/l	--	23000	31000	31000	39000	47000	--
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	4	6	6	3	4	--
Conductivity	uS/cm	--	585	595	580	651	636	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	12.2	--	10.3	--	--	--
Hardness, Calcium Carbonate	ug/l	--	317000	271000	288000	333000	297000	--
Nitrate	ug/l	--	480	200	600	800	780	--
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	180	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	840	--	<100	370	280	--
Nitrogen, Total Kjeldahl	ug/l	--	--	570	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.66	8.02	8.28	8.22	8.04	--
Phosphorus	ug/l	-- [9]	**40**	**60**	**<100**	<10	**60**	--
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	1600	--	--	24300	23500	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	220	600	180	510	120
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	380250	386750	377000	423150	413400	--
Total Organic Carbon	ug/l	--	1800	2200	3800	2300	2800	2100
Total Suspended Solids	ug/l	--	13000	2000	6000	7000	57000	--
Turbidity	ntu	-- [11]	1	0.4	3.9	4	32	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	357	--	100	220	300	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	0.1	<10	**0.27**	<10	<0.1	--
Calcium	ug/l	--	89900	77000	80000	94000	81000	--
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	15	<0.1	<10	<10	<10	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--
Copper	ug/l	5	**8**	<1	3	1.9	1.5	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**983**	50	**830**	**900**	**802**	--
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	124	<1	1	0.7	<0.2	--
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	22500	19000	21100	23900	23000	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	100	--	--	77000	102	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	--
Molybdenum	ug/l	40	--	--	--	--	--	--
Nickel	ug/l	25	<20	<5	<20	<20	<20	--
Potassium	ug/l	--	3110	3000	3800	3300	3800	--
Selenium	ug/l	100	2	<1	3	<1	<1	--
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	**0.4**	<0.1	**3**	**0.2**	**0.6**	--
Sodium	ug/l	--	11300	17000	12000	13600	11600	--
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--
Zinc	ug/l	30 [13]	**279**	<10	<10	22	<10	--
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<2	<1	<2	<2	<1	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-12 01-Dec-1994	SW-12 01-May-1995	SW-12 01-Sep-1995	SW-12 01-May-1996	SW-12 01-Sep-1996	SW-12 01-Jun-1997
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	285	277	282	258	273	279
Ammonia, unionized	ug/l	20	--	<20	<20	<2	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<100	<10	20	60	20	<100
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	<1000	<1000	<1000	<1000
Chemical Oxygen Demand	ug/l	--	14000	5000	5000	21000	5000	9000
Chloride	ug/l	--	25100	24000	25000	26000	24000	31000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	6.2	5	4	7	2	3
Conductivity	uS/cm	--	--	611	627	585	615	621
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	9.7	8.9	9.6	--	9.5
Hardness, Calcium Carbonate	ug/l	--	264000	304000	330000	316000	318000	290000
Nitrate	ug/l	--	840	510	460	450	390	270
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<10	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	930	300	200	300	230	250
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.2	8.14	8.28	7.99	8.11	8.23
Phosphorus	ug/l	-- [9]	<10	<10	10	20	**50**	20
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	27500	23000	22000	24000	19000	21000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	397150	407550	380250	399750	403650
Total Organic Carbon	ug/l	--	1900	2900	2600	4600	2900	3000
Total Suspended Solids	ug/l	--	6000	<2000	5000	8000	13000	3000
Turbidity	ntu	-- [11]	0.5	0.7	1.3	2	1.7	4.7
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	500	<30	<30	100	240	50
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	0.2	<0.15	<0.15	<0.15	<0.15	<0.15
Calcium	ug/l	--	73000	86000	91000	90000	86000	78000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<10	<10	<10	<10	20	10
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--
Copper	ug/l	5	5	<5	<5	**8**	**18**	<5
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**950**	80	180	140	270	140
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.2	<2	<2	<2	<2	<2
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	19700	21000	25000	22000	25000	23000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	102000	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2
Molybdenum	ug/l	40	--	--	--	--	--	--
Nickel	ug/l	25	<20	<10	<10	**30**	<10	10
Potassium	ug/l	--	3360	4000	3000	3000	3000	3000
Selenium	ug/l	100	6	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	10500	12000	13000	13000	14000	13000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--
Zinc	ug/l	30 [13]	<10	<10	<10	<10	20	10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	<1	<1	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-12 01-Aug-1997	SW-12 01-Sep-1998	SW-12 01-Nov-1998	SW-12 16-Oct-1999	SW-12 01-Jul-2000	SW-12 22-Oct-2000
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	270	383	280	288	297	287
Ammonia, unionized	ug/l	20	<20	<20	**30**	<20	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	130	<20	<100	<20	110	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	<1000	<1000	1000	<1000
Chemical Oxygen Demand	ug/l	--	11000	<3000	5000	11000	10000	24000
Chloride	ug/l	--	53000	31000	28000	29000	37000	40000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	4	2	2	6	4	3
Conductivity	uS/cm	--	608	624	638	624	651	637
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	8.3	10	14	8.7	9.3	12.8
Hardness, Calcium Carbonate	ug/l	--	297000	340000	340000	341000	316000	315000
Nitrate	ug/l	--	340	<330	410	340	250	160
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	270	200	250	--	480	160
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.07	8.06	8.31	7.99	7.23	8.01
Phosphorus	ug/l	-- [9]	**50**	20	30	**40**	**50**	10
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	19000	20000	25000	20000	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	<100	<100
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	395200	405600	414700	405600	423150	414050
Total Organic Carbon	ug/l	--	2700	2600	1800	3300	3000	2200
Total Suspended Solids	ug/l	--	31000	4000	<2000	13000	9000	7000
Turbidity	ntu	-- [11]	4.3	1	0.5	1.6	6.5	0.3
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	100	<30	<30	<30	170	<50
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	--	80	--	90	--
Beryllium	ug/l	-- [14]	--	--	<10	--	<2	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	20	--	40	--
Cadmium	ug/l	0.2 [13]	<0.15	<0.15	<0.15	<0.15	<0.1	<0.1
Calcium	ug/l	--	81000	95000	95000	97000	87000	88000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<10	<10	<10	<10	<10	<10
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	<0.4	--	<0.4	--
Copper	ug/l	5	<5	<5	<5	<5	1	<1
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**360**	200	160	110	**530**	100
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<2	<2	<2	<2	<10	--
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	23000	25000	25000	24000	24000	23000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	40	--	80	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1
Molybdenum	ug/l	40	--	--	<10	--	<10	--
Nickel	ug/l	25	<10	<10	<10	<10	<10	<10
Potassium	ug/l	--	3000	2000	2000	4000	3000	--
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	5200	--	5950	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	14000	15000	13000	18000	17000	13000
Strontium	ug/l	--	--	--	465	--	454	--
Sulfur	ug/l	--	--	--	8000	--	7000	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	<10	--	<1	--
Tin	ug/l	--	--	--	<50	--	--	--
Titanium	ug/l	--	--	--	<10	--	<10	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	<10	--	<1	--
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	<1	<1	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-12 01-Dec-2000	SW-12 28-Apr-2001	SW-12 07-Sep-2001	SW-12 06-Nov-2001	SW-12 17-Apr-2002	SW-12 02-Oct-2002
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	280	283	281	277	274	277
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	<0.322482461342588
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<20	<20	<20	<20	<20	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	<1000	2000	<1000	3000
Chemical Oxygen Demand	ug/l	--	<4000	<5000	5000	5000	17000	<5000
Chloride	ug/l	--	31000	30000	--	29000	31000	--
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	5	8	--	19	16	6
Conductivity	uS/cm	--	630	619	--	632	618	628
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	14.2	10.8	--	11.2	--	--
Hardness, Calcium Carbonate	ug/l	--	281000	281000	284000	284000	283000	285000
Nitrate	ug/l	--	270	240	220	190	330	140
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	190	200	180	1030	390	150
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	400
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.07	8.17	8.17	8.1	**8.58**	8.19
Phosphorus	ug/l	-- [9]	10	<10	**40**	**180**	**50**	--
Silica	ug/l	--	--	--	--	--	--	<20
Sulphate	ug/l	--	--	--	19000	--	29000	18000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	<100	100	--	200	100	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	3
Total Dissolved Solids	ug/l	--	409500	402350	--	410800	401700	408200
Total Organic Carbon	ug/l	--	2200	3200	2500	3200	4800	3000
Total Suspended Solids	ug/l	--	4000	2000	20000	147000	15000	--
Turbidity	ntu	-- [11]	1.7	0.4	1.1	50	1.2	<0.001
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<50	<50	<50	590	<50	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	80	90	120	70	80
Beryllium	ug/l	-- [14]	--	<2	<2	<2	<2	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	30	30	<50	<50	<50
Cadmium	ug/l	0.2 [13]	<0.1	**0.3**	--	0.1	0.1	<0.1
Calcium	ug/l	--	76000	81000	79000	79000	82000	78000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<10	7	2	2	<1	<1
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	**2.2**	--	**1.7**	0.2	<0.2
Copper	ug/l	5	1	**10**	1	**10**	2	<1
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	300	60	**540**	**5620**	30	60
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	--	2	<1	2	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	22000	19000	21000	21000	19000	22000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	30	110	270	20	28
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	0.1	**10**	--	<0.1	<0.1	--
Molybdenum	ug/l	40	--	--	20	<10	<10	<5
Nickel	ug/l	25	<10	<10	<10	<10	<10	<5
Potassium	ug/l	--	--	3000	3000	3000	3000	3000
Selenium	ug/l	100	<1	<1	--	<1	<1	--
Silicon	ug/l	--	--	3980	6110	6300	4210	4600
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	16000	15000	17000	18000	14000	15000
Strontium	ug/l	--	--	428	442	396	405	423
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	<1	<1	<1	<1	<1
Tin	ug/l	--	--	--	--	--	<10	--
Titanium	ug/l	--	--	<10	<10	20	--	<10
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	3	1	5	<1	<5
Zinc	ug/l	30 [13]	<10	<10	<10	10	<10	**30060**
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	<1	<1	<1	<1	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-12 01-Apr-2003	SW-12 01-Oct-2003	SW-12 01-Dec-2003	SW-12 04-Jun-2004	SW-12 04-Jul-2004	SW-12 04-Oct-2004
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	273	208	217	226	220	267
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<20	20	<20	60	180	200
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	2000	<1000	<1000	<1000	<1000
Chemical Oxygen Demand	ug/l	--	<5000	15000	9000	7000	16000	<5000
Chloride	ug/l	--	32000	78000	52000	40000	37000	31000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	9	26	15	26	26	6
Conductivity	uS/cm	--	630	707	602	545	534	595
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	9	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	313000	270000	246000	219000	208000	271000
Nitrate	ug/l	--	310	<100	<100	<100	100	200
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	310	620	370	660	940	570
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.05	8.09	8.06	7.79	7.74	8.02
Phosphorus	ug/l	-- [9]	**36**	**220**	**200**	**170**	**290**	**60**
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	<100	500	300	400	300	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	409500	459550	391300	354250	347100	386750
Total Organic Carbon	ug/l	--	3100	6400	5000	6600	7600	2200
Total Suspended Solids	ug/l	--	6000	29000	54000	36000	48000	2000
Turbidity	ntu	-- [11]	0.6	50	43	32.9	63.2	0.4
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	10	560	530	410	710	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	80	50	40	--	--	--
Beryllium	ug/l	-- [14]	<1	<1	<1	--	--	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	<50	20	10	--	--	--
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	89000	75000	69000	58000	57000	77000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<5	5	35	2	6	<1
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	<0.2	0.5	0.7	--	--	--
Copper	ug/l	5	<5	3	2	2	2	<1
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	90	**680**	**700**	**530**	**630**	50
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	22000	20000	18000	18000	16000	19000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	30	27	40	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	--	--	--
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	4000	7000	4000	4000	3000	3000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	4500	5700	7000	--	--	--
Silver	ug/l	0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	23000	47000	31000	28000	24000	17000
Strontium	ug/l	--	428	506	421	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	<1	<1	<1	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	<10	40	30	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<5	5	3	--	--	--
Zinc	ug/l	30 [13]	<5	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	<1	<1	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-12 13-Jun-2005	SW-12 31-Aug-2005	SW-12 30-Oct-2005	SW-12 31-Dec-2005 [3]	SW-12 08-Apr-2006	SW-12 15-Aug-2006
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	298	272	289	--	246	294
Ammonia, unionized	ug/l	20	<20	<20	<20	--	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	20	50	90	--	30	30
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	<1000	--	2000	<1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	38000	37000	39000	--	35000	42000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	700	600	285	--	365	695
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	2600	2700
Dissolved Oxygen (Field)	mg/l	-- [8]	8.15	7.3	11.62	--	12.12	10.89
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	261300	294500
Nitrate	ug/l	--	400	290	330	--	730	470
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	6.6	**6.3**	7.3	--	7.5	7.3
Phosphorus	ug/l	-- [9]	**60**	**200**	**40**	--	30	20
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	19000	19000	20000	--	16000	21000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	12.4	16.7	6	--	4	14
Total Dissolved Solids	ug/l	--	455000	390000	185000	--	380000	452000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	8000	127000	<2000	--	2000	3000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	1080	<10	--	<10	30
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	90	--	90	--	50	110
Beryllium	ug/l	-- [14]	<1	--	<1	--	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	40	70	30	--	20	40
Cadmium	ug/l	0.2 [13]	<0.1	--	<0.1	--	<0.1	<0.1
Calcium	ug/l	--	--	--	--	--	75000	85000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	2	--	1	--	3	2
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.2	--	<0.2	--	<0.2	<0.2
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	<30	**1210**	40	--	<30	<30
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	--	<1	--	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	18000	20000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	10	30
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	--	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	<5	--	<5	--	<5	<5
Nickel	ug/l	25	<5	<5	<5	--	<5	<5
Potassium	ug/l	--	--	--	--	--	3000	3000
Selenium	ug/l	100	<1	--	<1	--	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	--	<0.1	--	<0.1	<0.1
Sodium	ug/l	--	--	--	--	--	20000	19000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	5	--	2	--	5	2
Zinc	ug/l	30 [13]	<10	**50**	<10	--	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-12 25-Nov-2006	SW-12 22-Apr-2007	SW-12 31-Aug-2007	SW-12 26-Nov-2007	SW-12 04-May-2008	SW-12 14-Aug-2008
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	289	271	285	281	263	270
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<20	<20	20	<20	<20	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	1000	<1000	<1000	1000	2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	36000	37000	40000	36000	30000	35000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	340	280	480	380	400	340
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	2400	4300	2700	3300	3600	3100
Dissolved Oxygen (Field)	mg/l	-- [8]	11.01	12.88	12.02	11.8	10.78	12.03
Hardness, Calcium Carbonate	ug/l	--	328400	293600	330900	291100	288000	305000
Nitrate	ug/l	--	590	510	570	610	490	470
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.3	7.5	7.4	7.3	7.3	7.4
Phosphorus	ug/l	-- [9]	**60**	**40**	30	20	<10	20
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	21000	19000	23000	21000	20000	19000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	2	2	16	2	7	16
Total Dissolved Solids	ug/l	--	442000	413000	446000	430000	398000	416000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	24000	36000	11000	<2000	3000	5000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	30	<10	10	<10	10	50
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	80	70	110	90	80	80
Beryllium	ug/l	-- [14]	<1	<1	<1	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	40	30	40	30	30	30
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	92000	83000	93000	82000	79000	86000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	1	2	3	<1	2	1
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.3	0.2	0.2	<0.2	0.2	0.3
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	180	110	100	50	80	150
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	24000	21000	24000	21000	22000	22000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	40	40	40	30	40	60
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	3000	3000	4000	3000	3000	4000
Selenium	ug/l	100	<1	<1	1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	20000	20000	22000	18000	20000	20000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	2	6	4	1	4	<1
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-12 28-Nov-2008	SW-12 24-Apr-2009 W-8	SW-12 25-Aug-2009 A-6	SW-12 30-Nov-2009 W-9	SW-12 17-May-2010 W-7	SW-12 21-Aug-2010 A-8
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	295	275	302	294	277	299
Ammonia, unionized	ug/l	20	<20	<0.66	<0.16	<0.31	<0.96	<0.94
Ammonia, unionized (Field)	ug/l	20	--	<20	--	--	<20	<20
Ammonia Nitrogen	ug/l	--	<20	<20	<20	<20	<20	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	2000	1000	<1000	1000	<1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	35000	33000	37000	34000	42000	40000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	445	622	681	672	653	694
Conductivity (Field)	uS/cm	--	--	570	405	555	6.11	550
Dissolved Organic Carbon	ug/l	--	2200	3500	3000	3100	2900	2500
Dissolved Oxygen (Field)	mg/l	-- [8]	13.71	10.42	12.61	11.09	10.01	7.44
Hardness, Calcium Carbonate	ug/l	--	295000	267000	296000	299000	285000	323000
Nitrate	ug/l	--	460	--	--	--	--	--
Nitrate as N	ug/l	--	--	370	370	410	310	310
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.3	8.3	7.4	8.1	8.3	8.0
Phosphorus	ug/l	-- [9]	10	<10	20	<10	10	20
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	19000	18000	19000	20000	18000	17000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	3	9	17	5	14	23
Total Dissolved Solids	ug/l	--	439000	404000	443000	437000	424000	451000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	2000	4000	2000	3000	6000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	<10	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	--	<10	<10	<10	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	90	80	90	80	70	70
Beryllium	ug/l	-- [14]	<1	<1	<1	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	40	30	40	40	40	30
Cadmium	ug/l	0.2 [13]	0.2	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	82000	74000	84000	82000	81000	93000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	3	2	2	1	2	<1
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.3	0.2	0.2	0.2	0.2	0.3
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	<50
Iron	ug/l	300	180	80	140	80	80	140
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	22000	20000	21000	23000	20000	22000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	70	40	60	30	40	60
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	3000	3000	3000	3000	4000	4000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	20000	18000	20000	19000	23000	21000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	7	2	4	2	4	2
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-12 27-Nov-2010 W-9	SW-12 09-May-2011 W-10	SW-12 08-Sep-2011 W-10	SW-12 29-Nov-2011 W-6	SW-12 06-May-2012 W-10	SW-12 22-Aug-2012 W-6
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	308	290	322	291	308	324
Ammonia, unionized	ug/l	20	<0.26	<0.34	<0.61	0.2	<0.31	1.25
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	--	--
Ammonia Nitrogen	ug/l	--	<20	<20	<20	20	<20	60
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	<1000	1000	1000	<1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	78000	52000	64000	61000	47000	44000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	828	687	790	753	719	741
Conductivity (Field)	uS/cm	--	605	530	580	505	711	700
Dissolved Organic Carbon	ug/l	--	2600	3400	2400	2400	2800	2200
Dissolved Oxygen (Field)	mg/l	-- [8]	13.05	12.04	9.93	10.02	10.80	6.10
Hardness, Calcium Carbonate	ug/l	--	341000	296000	329000	325000	329000	327000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	730	310	290	360	470	280
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.1	8.0	7.9	7.9	8.0	7.7
Phosphorus	ug/l	-- [9]	<10	20	<10	10	<10	<10
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	24000	22000	23000	22000	23000	24000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	3	9.0	20	5	8.0	21
Total Dissolved Solids	ug/l	--	538000	447000	514000	489000	467000	482000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	3000	4000	<2000	12000	<2000	<2000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	<10	<10	<10	<10	20
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	80	60	70	80	90	80
Beryllium	ug/l	-- [14]	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	30	30	30	40	30	50
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	97000	84000	92000	94000	92000	93000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	3	2	3	2	4	2
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.3	0.3	0.2	0.3	0.4	0.3
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<50	<50	<50	<50	<50	<50
Iron	ug/l	300	100	60	60	180	70	100
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	24000	21000	24000	22000	24000	23000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	40	40	30	60	50	50
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	4000	3000	4000	4000	3000	4000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	37000	28000	33000	36000	27000	28000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	3	2	3	3	4	3
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-12 12-Nov-2012 W - 7	SW-12 29-May-2014 W-7	SW-12 26-Aug-2014 S-6	SW-12 17-Nov-2014 W-7	SW-12 28-Apr-2015 W-6	SW-12 25-Aug-2015 W-8
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	334	280	310	310	280	320
Ammonia, unionized	ug/l	20	<0.36	1	2	0	0.94	4.88
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<20	55	110	<50	82	160
Biochemical Oxygen Demand, 5 Day	ug/l	--	1000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	66000	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	41000	37000	38000	39000	39000
Chromium (III)	ug/l	8.9 [7]	--	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	824	690	730	750	660	720
Conductivity (Field)	uS/cm	--	510	580	570	530	405	380
Dissolved Organic Carbon	ug/l	--	2100	2600	2200	2000	2600	2100
Dissolved Oxygen (Field)	mg/l	-- [8]	11.11	10.88	8.61	11.11	11.95	7.29
Hardness, Calcium Carbonate	ug/l	--	353000	310000	340000	360000	320000	310000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	430	280	260	430	300	220
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.1	7.9	7.8	7.8	7.9	7.9
Phosphorus	ug/l	-- [9]	<10	8	17	12	8	26
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	27000	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	25000	25000	26000	25000	25000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	7	13	18	1	7	20
Total Dissolved Solids	ug/l	--	536000	398000	422000	408000	372000	476000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	400
Aluminum, dissolved	ug/l	-- [12]	<10	29	67	44	28	--
Antimony	ug/l	20	--	<0.50	--	--	--	--
Arsenic	ug/l	100 [13]	--	<1.0	--	--	--	--
Barium	ug/l	--	100	87	97	99	81	92
Beryllium	ug/l	-- [14]	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	<1.0	--	--	--	--
Boron	ug/l	200 [15]	30	36	35	45	35	43
Cadmium	ug/l	0.2 [13]	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Calcium	ug/l	--	100000	93000	93000	110000	89000	99000
Calcium, dissolved	ug/l	--	--	85000	93000	98000	87000	84000
Chromium	ug/l	-- [16]	2	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	--	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.2	<0.50	<0.50	<0.50	<0.50	0.57
Copper	ug/l	5	--	1.2	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	<30	140	240	160	100	**830**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	<5.0	--	--	--	--
Magnesium	ug/l	--	25000	25000	26000	28000	24000	26000
Magnesium, dissolved	ug/l	--	--	23000	25000	27000	25000	24000
Manganese	ug/l	--	30	40	68	58	34	120
Mercury	ug/l	0.2 [18]	--	--	--	--	--	<0.10
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.10	<0.10	<0.10	<0.10	--
Molybdenum	ug/l	40	<5	1.1	1.4	0.89	0.98	1.1
Nickel	ug/l	25	<5	<1.0	1.2	<1.0	<1.0	1.6
Potassium	ug/l	--	4000	3600	4000	4200	3500	3900
Selenium	ug/l	100	<1	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	5700	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	32000	28000	26000	26000	24000	27000
Strontium	ug/l	--	--	450	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	<1.0	--	--	--	--
Thallium	ug/l	0.3 [19]	--	<0.050	--	--	--	--
Tin	ug/l	--	--	<1.0	--	--	--	--
Titanium	ug/l	--	--	<5.0	--	--	--	--
Tungsten	ug/l	30 [20]	--	<1.0	--	--	--	--
Uranium	ug/l	5 [15]	--	1.7	--	--	--	--
Vanadium	ug/l	6	2	<0.50	0.57	<0.50	0.78	1.6
Zinc	ug/l	30 [13]	<10	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	<1.0	<1.0	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-12 11-Nov-2015 W-2	SW-12 18-Apr-2016 W-9	SW-12 07-Jul-2016 W-7	SW-12 31-Oct-2016 W-7	SW-12 23-May-2017 SW-12	SW-12 26-Jul-2017 SW-12
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	300	270	310	320	270	310
Ammonia, unionized	ug/l	20	<0.36	<0.54	<0.97	<0.5	12.13	<0.84
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	<50	<50	<50	940	<50
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	38000	37000	41000	40000	37000	39000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	730	670	750	750	660	680
Conductivity (Field)	uS/cm	--	712	556	525	445	0.6	571
Dissolved Organic Carbon	ug/l	--	1900	3000	2400	2100	3300	2900
Dissolved Oxygen (Field)	mg/l	-- [8]	10.72	10.10	6.01	8.04	9.22	9.93
Hardness, Calcium Carbonate	ug/l	--	360000	300000	330000	340000	290000	320000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	280	270	240	310	200	230
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.8	7.8	7.7	7.8	7.7	7.81
Phosphorus	ug/l	-- [9]	7	9	22	7	9	17
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	27000	24000	26000	28000	23000	22000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	4	9.0	20	8	14.4	14.61
Total Dissolved Solids	ug/l	--	408000	366000	438000	420000	374000	412000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	12000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	6.8	82	240	7.9	52	140
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	90	73	110	87	73	74
Beryllium	ug/l	-- [14]	<0.50	<0.5	<0.5	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	43	31	48	36	39	41
Cadmium	ug/l	0.2 [13]	<0.10	<0.1	<0.1	<0.10	<0.10	<0.10
Calcium	ug/l	--	88000	81000	92000	89000	87000	86000
Calcium, dissolved	ug/l	--	99000	84000	89000	92000	79000	91000
Chromium	ug/l	-- [16]	<5.0	<5	<5	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.5	0.5	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	<100	140	**800**	<100	160	**350**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.5	<0.5	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	25000	22000	26000	25000	23000	23000
Magnesium, dissolved	ug/l	--	28000	23000	26000	25000	21000	24000
Manganese	ug/l	--	26	29	95	28	46	72
Mercury	ug/l	0.2 [18]	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	0.95	1.0	1.0	0.88	1.0	0.75
Nickel	ug/l	25	<1.0	1	3	<1.0	<1.0	1.2
Potassium	ug/l	--	3700	3100	3900	3500	3200	3500
Selenium	ug/l	100	<2.0	<2	<2	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.1	<0.1	<0.10	<0.10	<0.10
Sodium	ug/l	--	24000	22000	27000	25000	26000	24000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<0.50	0.8	1.4	<0.50	0.85	1.0
Zinc	ug/l	30 [13]	<5.0	<5	12	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-12 22-Nov-2017 SW-12	SW-12 15-May-2018 SW-12	SW-12 29-Aug-2018 SW-12	SW-12 02-Nov-2018 SW-12	SW-12 04-Jun-2019 SW-12	SW-12 07-Aug-2019 SW12
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	320	290	310	290	300	310
Ammonia, unionized	ug/l	20	<0.18	2.36	1.45	<0.36	2.57	<0.7
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	160	59	<50	210	<50
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	40000	39000	42000	40000	41000	45000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	740	680	740	680	710	770
Conductivity (Field)	uS/cm	--	477	660	440	410	466	445
Dissolved Organic Carbon	ug/l	--	2500	2900	2200	2700	2500	2400
Dissolved Oxygen (Field)	mg/l	-- [8]	10.04	12.44	9.20	10.84	8.38	6.01
Hardness, Calcium Carbonate	ug/l	--	310000	300000	340000	310000	310000	350000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	500	370	250	340	280	210
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.5	7.9	7.8	7.7	7.76	7.6
Phosphorus	ug/l	-- [9]	11	25	24	17	10	16
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	23000	21000	22000	24000	22000	23000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	3.8	10.2	20.1	6.9	11.9	18.5
Total Dissolved Solids	ug/l	--	415000	385000	475000	405000	385000	455000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	14000	<10000	10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	83	470	150	220	59	180
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	81	83	92	76	76	87
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	33	38	42	41	36	42
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Calcium	ug/l	--	92000	86000	89000	90000	88000	97000
Calcium, dissolved	ug/l	--	87000	83000	91000	86000	85000	--
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	--
Cobalt	ug/l	0.9	<0.50	0.63	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	210	**710**	**330**	**360**	160	**310**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	24000	25000	26000	24000	23000	27000
Magnesium, dissolved	ug/l	--	23000	23000	27000	24000	23000	--
Manganese	ug/l	--	61	83	62	64	57	72
Mercury	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	0.78	1.1	0.94	0.94	0.86	0.99
Nickel	ug/l	25	1.0	1.8	1.1	1.4	1.1	1.3
Potassium	ug/l	--	3200	3600	4000	3900	3100	4100
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	23000	24000	26000	23000	27000	31000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	0.77	2.1	1.0	0.98	1.1	2.0
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-12 17-Nov-2019 SW-12	SW-12 05-May-2020 SW-12	SW-12 26-Aug-2020 SW-12	SW-12 29-Oct-2020 SW-12	SW-12 28-Apr-2021 SW12	SW-12 14-Jul-2021 SW-12
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	320	290	320	330	290	310
Ammonia, unionized	ug/l	20	4.28	**47.39**	1.66	2.87	4.71	1.3
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	1100	12000	150	460	560	70
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	43000	40000	43000	42000	40000	40000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	780	700	760	780	690	710
Conductivity (Field)	uS/cm	--	440	537	584	590	498	508
Dissolved Organic Carbon	ug/l	--	1800	2200	2300	2200	2300	2100
Dissolved Oxygen (Field)	mg/l	-- [8]	9.88	11.47	11.17	10.11	12.04	5.99
Hardness, Calcium Carbonate	ug/l	--	360000	320000	340000	360000	320000	330000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	390	250	240	260	230	220
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	<10	<10	--	--	<10	<10
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	390	250	--	--	230	220
pH (Field)	-	6.5 - 8.5	7.6	7.45	7.62	7.59	7.69	7.70
Phosphorus	ug/l	-- [9]	6	6	16	6	8	16
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	25000	22000	23000	26000	24000	25000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	2.1	6.5	14.8	8.2	9.1	19.3
Total Dissolved Solids	ug/l	--	445000	400000	385000	415000	405000	355000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	41	57	83	24	39	92
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	93	76	91	90	83	97
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.40	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	42	36	45	39	35	43
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.090	<0.090	<0.090	<0.090
Calcium	ug/l	--	98000	87000	93000	96000	86000	89000
Calcium, dissolved	ug/l	--	100000	88000	--	--	86000	88000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	--	--	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	0.57
Iron	ug/l	300	120	120	200	<100	110	240
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	25000	23000	25000	27000	24000	26000
Magnesium, dissolved	ug/l	--	27000	23000	--	--	26000	27000
Manganese	ug/l	--	58	48	53	44	44	62
Mercury	ug/l	0.2 [18]	<0.1	<0.10	<0.10	<0.10	**0.25**	<0.10
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	0.89	0.96	1.1	0.91	1.1	1.2
Nickel	ug/l	25	1.0	1.0	<1.0	<1.0	<1.0	1.0
Potassium	ug/l	--	3500	3200	3900	3700	3500	3900
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.090	<0.090	<0.090	<0.090
Sodium	ug/l	--	25000	25000	28000	27000	24000	27000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	0.89	0.57	1.4	<0.50	0.64	0.93
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-12 22-Nov-2021 SW-12
General Chemistry			
Alkalinity (Total as CaCO3)	mg/l	-- [6]	320
Ammonia, unionized	ug/l	20	2.75
Ammonia, unionized (Field)	ug/l	20	--
Ammonia Nitrogen	ug/l	--	380
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000
Chemical Oxygen Demand	ug/l	--	--
Chloride	ug/l	--	--
Chloride, dissolved	ug/l	--	40000
Chromium (III)	ug/l	8.9 [7]	<5
Color	color unit	--	--
Conductivity	uS/cm	--	750
Conductivity (Field)	uS/cm	--	499
Dissolved Organic Carbon	ug/l	--	1800
Dissolved Oxygen (Field)	mg/l	-- [8]	9.22
Hardness, Calcium Carbonate	ug/l	--	330000
Nitrate	ug/l	--	--
Nitrate as N	ug/l	--	390
Nitrite	ug/l	--	--
Nitrite as N	ug/l	--	<10
Nitrogen	ug/l	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	390
pH (Field)	-	6.5 - 8.5	7.69
Phosphorus	ug/l	-- [9]	9
Silica	ug/l	--	--
Sulphate	ug/l	--	--
Sulphate, dissolved	ug/l	--	27000
Tannin & Lignin	ug/l	--	--
Temperature (Field)	deg c	-- [10]	7.2
Total Dissolved Solids	ug/l	--	410000
Total Organic Carbon	ug/l	--	--
Total Suspended Solids	ug/l	--	<10000
Turbidity	ntu	-- [11]	--
Metals			
Aluminum	ug/l	-- [12]	37
Aluminum, dissolved	ug/l	-- [12]	--
Antimony	ug/l	20	--
Arsenic	ug/l	100 [13]	--
Barium	ug/l	--	96
Beryllium	ug/l	-- [14]	<0.40
Bismuth	ug/l	--	--
Boron	ug/l	200 [15]	39
Cadmium	ug/l	0.2 [13]	<0.090
Calcium	ug/l	--	95000
Calcium, dissolved	ug/l	--	89000
Chromium	ug/l	-- [16]	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0
Cobalt	ug/l	0.9	<0.50
Copper	ug/l	5	--
Hexavalent Chromium	ug/l	1 [7]	<0.50
Iron	ug/l	300	110
Iron, dissolved	ug/l	300	--
Lead	ug/l	-- [17]	<0.50
Lithium	ug/l	--	--
Magnesium	ug/l	--	27000
Magnesium, dissolved	ug/l	--	26000
Manganese	ug/l	--	40
Mercury	ug/l	0.2 [18]	--
Mercury, dissolved	ug/l	0.2 [18]	<0.10
Molybdenum	ug/l	40	1.0
Nickel	ug/l	25	<1.0
Potassium	ug/l	--	3600
Selenium	ug/l	100	<2.0
Silicon	ug/l	--	--
Silver	ug/l	0.1	<0.090
Sodium	ug/l	--	27000
Strontium	ug/l	--	--
Sulfur	ug/l	--	--
Tellurium	ug/l	--	--
Thallium	ug/l	0.3 [19]	--
Tin	ug/l	--	--
Titanium	ug/l	--	--
Tungsten	ug/l	30 [20]	--
Uranium	ug/l	5 [15]	--
Vanadium	ug/l	6	0.59
Zinc	ug/l	30 [13]	<5.0
Zirconium	ug/l	4 [15]	--
Phenols			
Phenolics, Total Recoverable	ug/l	1 [21]	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-12 27-Apr-2022 SW-12	SW-12 17-Aug-2022 [5] SW-12	SW-12 11-Dec-2022 SW-12	SW-12 29-May-2023 SW-12	SW-12 21-Sep-2023 SW-12	SW-12 03-Dec-2023 SW-12
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	260	290	330	290	320	320
Ammonia, unionized	ug/l	20	<0.87	**28.64**	4.41	1.7	18.49	<0.38
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	840	680	140	1100	<50
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	37000	40000	38000	35000	39000	37000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	620	690	740	680	700	770
Conductivity (Field)	uS/cm	--	611	644	679	519	466	418
Dissolved Organic Carbon	ug/l	--	2700	2200	1800	2600	2300	1500
Dissolved Oxygen (Field)	mg/l	-- [8]	10.84	8.99	9.94	8.60	8.83	9.11
Hardness, Calcium Carbonate	ug/l	--	300000	310000	350000	330000	350000	350000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	340	200	510	200	270	420
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	<10	<10	<10	11	<10	<10
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	340	200	510	210	270	420
pH (Field)	-	6.5 - 8.5	8.06	7.89	7.79	7.81	7.80	7.83
Phosphorus	ug/l	-- [9]	12	21	9	**36**	8	4
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	21000	23000	24000	19000	21000	21000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	7.6	21.9	3.0	10.3	14.9	3.9
Total Dissolved Solids	ug/l	--	335000	365000	330000	390000	375000	355000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	200	140	44	32	20	16
Aluminum, dissolved	ug/l	-- [12]	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	64	110	100	84	100	130
Beryllium	ug/l	-- [14]	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	29	48	39	38	43	47
Cadmium	ug/l	0.2 [13]	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090
Calcium	ug/l	--	81000	96000	100000	82000	99000	130000
Calcium, dissolved	ug/l	--	84000	82000	97000	92000	99000	97000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	260	**330**	160	180	<100	100
Iron, dissolved	ug/l	300	<100	<100	<100	<100	<100	<100
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	0.85	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	22000	29000	28000	22000	25000	34000
Magnesium, dissolved	ug/l	--	23000	26000	26000	24000	25000	27000
Manganese	ug/l	--	42	55	130	51	28	60
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	0.83	1.1	0.97	0.87	0.94	1.2
Nickel	ug/l	25	1.2	1.2	1.3	<1.0	<1.0	1.2
Potassium	ug/l	--	3000	4600	3900	3300	4100	4800
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090
Sodium	ug/l	--	22000	32000	29000	25000	27000	33000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	0.93	1.3	0.71	0.66	0.68	0.60
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-13 01-Nov-1982	SW-13 01-Oct-1983	SW-13 01-Dec-2000
General Chemistry					
Alkalinity (Total as CaCO3)	mg/l	-- [6]	288	153	278
Ammonia, unionized	ug/l	20	--	--	<20
Ammonia Nitrogen	ug/l	--	17400	--	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	53000	--	<1000
Chemical Oxygen Demand	ug/l	--	352000	82000	5000
Chloride	ug/l	--	22000	14000	29000
Color	color unit	--	159	--	5
Conductivity	uS/cm	--	272	385	599
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	14.2
Hardness, Calcium Carbonate	ug/l	--	161000	140000	307000
Nitrate	ug/l	--	<100	--	270
Nitrite	ug/l	--	--	--	<100
Nitrogen	ug/l	--	43500	--	260
pH (Field)	-	6.5 - 8.5	7.5	7.5	8.01
Phosphate	ug/l	--	100	--	--
Phosphorus	ug/l	-- [9]	**13300**	--	20
Silica	ug/l	--	2000	--	--
Sulphate	ug/l	--	23000	--	--
Tannin & Lignin	ug/l	--	--	--	<100
Total Dissolved Solids	ug/l	--	176800	250250	389350
Total Organic Carbon	ug/l	--	--	--	2000
Total Suspended Solids	ug/l	--	--	--	2000
Turbidity	ntu	-- [11]	--	--	1.8
Metals					
Aluminum, dissolved	ug/l	-- [12]	13000	--	<50
Cadmium	ug/l	0.2 [13]	<10	--	<0.1
Calcium	ug/l	--	51000	--	85000
Chromium	ug/l	-- [16]	18	--	<10
Cobalt	ug/l	0.9	**30**	--	--
Copper	ug/l	5	**20**	--	1
Iron	ug/l	300	**6100**	--	110
Lead	ug/l	-- [17]	27	--	--
Magnesium	ug/l	--	9000	--	23000
Manganese	ug/l	--	2700	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	<0.1
Nickel	ug/l	25	6	--	<10
Potassium	ug/l	--	80000	--	--
Selenium	ug/l	100	--	--	<1
Silver	ug/l	0.1	--	--	<0.1
Sodium	ug/l	--	7000	--	16000
Zinc	ug/l	30 [13]	**61**	--	<10

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-14 01-Nov-1982	SW-14 01-Oct-1983	SW-14 01-Mar-1988
General Chemistry					
Alkalinity (Total as CaCO3)	mg/l	-- [6]	20.2	14	--
Ammonia, unionized	ug/l	20	**39400**	--	--
Ammonia Nitrogen	ug/l	--	<100	--	4700
Biochemical Oxygen Demand, 5 Day	ug/l	--	29000	--	800
Chemical Oxygen Demand	ug/l	--	350000	459000	100000
Chloride	ug/l	--	75000	133000	323000
Color	color unit	--	108	--	--
Conductivity	uS/cm	--	342	520	1900
Dissolved Oxygen (Field)	mg/l	-- [8]	0.6	--	--
Hardness, Calcium Carbonate	ug/l	--	182000	215000	--
Nitrate	ug/l	--	<100	--	200
Nitrite	ug/l	--	--	--	46300
Nitrogen	ug/l	--	3500	--	--
pH (Field)	-	6.5 - 8.5	**6.1**	**5.7**	7.2
Phosphate	ug/l	--	180	--	--
Phosphorus	ug/l	-- [9]	**660**	--	--
Silica	ug/l	--	404000	--	--
Sulphate	ug/l	--	13000	--	--
Total Dissolved Solids	ug/l	--	222300	--	338000
Turbidity	ntu	-- [11]	19	--	--
Metals					
Aluminum, dissolved	ug/l	-- [12]	270	--	--
Cadmium	ug/l	0.2 [13]	<2	--	--
Calcium	ug/l	--	54000	--	--
Chromium	ug/l	-- [16]	8	--	--
Cobalt	ug/l	0.9	**3**	--	--
Copper	ug/l	5	**68**	--	--
Iron	ug/l	300	**700**	--	250
Lead	ug/l	-- [17]	23	--	--
Magnesium	ug/l	--	12000	--	--
Manganese	ug/l	--	250	--	--
Nickel	ug/l	25	**93**	--	--
Potassium	ug/l	--	5000	--	--
Sodium	ug/l	--	3000	--	--
Zinc	ug/l	30 [13]	**95**	--	--
Phenols					
Phenolics, Total Recoverable	ug/l	1 [21]	**44**	**55**	--

Parameter	Unit	PWQO [1]	SW-16 01-Nov-1982
General Chemistry			
Alkalinity (Total as CaCO3)	mg/l	-- [6]	291.8
Ammonia Nitrogen	ug/l	--	<100
Biochemical Oxygen Demand, 5 Day	ug/l	--	7200
Chemical Oxygen Demand	ug/l	--	64000
Chloride	ug/l	--	22000
Color	color unit	--	46.2
Conductivity	uS/cm	--	652
Hardness, Calcium Carbonate	ug/l	--	304000
Nitrate	ug/l	--	100
Nitrogen	ug/l	--	2400
pH (Field)	-	6.5 - 8.5	8
Phosphate	ug/l	--	<20
Phosphorus	ug/l	-- [9]	**460**
Sulphate	ug/l	--	40500
Total Dissolved Solids	ug/l	--	423800
Turbidity	ntu	-- [11]	160
Metals			
Aluminum, dissolved	ug/l	-- [12]	2700
Cadmium	ug/l	0.2 [13]	<10
Calcium	ug/l	--	91000
Chromium	ug/l	-- [16]	<50
Cobalt	ug/l	0.9	**13**
Copper	ug/l	5	**48**
Iron	ug/l	300	**2600**
Lead	ug/l	-- [17]	91
Magnesium	ug/l	--	19000
Manganese	ug/l	--	480
Nickel	ug/l	25	<10
Potassium	ug/l	--	5000
Silicon	ug/l	--	3000
Sodium	ug/l	--	22000
Zinc	ug/l	30 [13]	**61**
Phenols			
Phenolics, Total Recoverable	ug/l	1 [21]	0.4

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-17 01-Jun-1994	SW-17 01-Oct-1994
General Chemistry				
Alkalinity (Total as CaCO3)	mg/l	-- [6]	396	--
Ammonia, unionized	ug/l	20	<100	--
Ammonia Nitrogen	ug/l	--	<100	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	2800	--
Chemical Oxygen Demand	ug/l	--	37000	19800
Chloride	ug/l	--	115000	--
Color	color unit	--	19	--
Conductivity	uS/cm	--	893	--
Hardness, Calcium Carbonate	ug/l	--	369000	--
Nitrate	ug/l	--	<100	--
Nitrite	ug/l	--	<100	--
Nitrogen	ug/l	--	700	--
pH (Field)	-	6.5 - 8.5	8.19	--
Phosphorus	ug/l	-- [9]	<10	--
Sulphate	ug/l	--	11100	--
Tannin & Lignin	ug/l	--	1040	440
Total Dissolved Solids	ug/l	--	580450	--
Total Organic Carbon	ug/l	--	10800	9700
Total Suspended Solids	ug/l	--	6000	--
Turbidity	ntu	-- [11]	3	--
Metals				
Aluminum, dissolved	ug/l	-- [12]	164	--
Cadmium	ug/l	0.2 [13]	<10	--
Calcium	ug/l	--	102000	--
Chromium	ug/l	-- [16]	<10	--
Copper	ug/l	5	2	--
Iron	ug/l	300	**800**	--
Lead	ug/l	-- [17]	0.2	--
Magnesium	ug/l	--	27800	--
Manganese	ug/l	--	260	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	--
Nickel	ug/l	25	<20	--
Potassium	ug/l	--	11100	--
Selenium	ug/l	100	<1	--
Silver	ug/l	0.1	**0.5**	--
Sodium	ug/l	--	41800	--
Zinc	ug/l	30 [13]	23	--
Phenols				
Phenolics, Total Recoverable	ug/l	1 [21]	<2	<1

Parameter	Unit	PWQO [1]	SW-18 01-Jun-1994	SW-18 01-Aug-1994	SW-18 01-Oct-1994	SW-18 01-Dec-1994	SW-18 01-May-1995	SW-18 01-Sep-1995
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	6	8	--	76	--	--
Ammonia, unionized	ug/l	20	<100	<100	--	--	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<100	<100	--	<100	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	1700	<1000	--	<1000	--	--
Chemical Oxygen Demand	ug/l	--	20200	13200	10600	21200	--	--
Chloride	ug/l	--	4000	3000	--	2300	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	20	17	--	21.6	25	17
Conductivity	uS/cm	--	67	66	--	--	92	70
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	24000	23000	--	25000	--	--
Nitrate	ug/l	--	300	160	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	--	360	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	470	1400	--	750	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	6.86	6.95	--	7.18	7.47	6.56
Phosphorus	ug/l	-- [9]	10	20	--	<10	--	--
Sulphate	ug/l	--	8700	8100	--	9800	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	830	960	770	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	43550	42900	--	--	59800	45500
Total Organic Carbon	ug/l	--	6800	7300	6700	6700	--	--
Total Suspended Solids	ug/l	--	5000	<1000	--	3000	6000	2000
Turbidity	ntu	-- [11]	4	3	--	2.3	4.5	0.7
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	280	83	--	400	100	50
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	<10	<0.1	--	**0.3**	<0.15	<0.15
Calcium	ug/l	--	7000	6000	--	7000	--	--
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	14	<10	--	<10	<10	<10
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--
Copper	ug/l	5	2	1.9	--	3	<5	<5
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**600**	120	--	300	250	80
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	0.4	0.2	--	<0.2	<2	<2
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	1800	1800	--	1750	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	10	13	--	16	20	10
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	--	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--
Nickel	ug/l	25	20	<20	--	<20	<10	<10
Potassium	ug/l	--	1000	800	--	950	--	--
Selenium	ug/l	100	<1	<1	--	5	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	**0.4**	**0.5**	--	0.1	<0.1	<0.1
Sodium	ug/l	--	2500	2100	--	2580	--	--
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--
Zinc	ug/l	30 [13]	18	<10	--	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<2	**9**	<1	<1	--	--

Parameter	Unit	PWQO [1]	SW-18 28-Apr-2001	SW-18 07-Sep-2001	SW-18 06-Nov-2001	SW-18 17-Apr-2002	SW-18 01-Apr-2003	SW-18 01-Oct-2003
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	42	20	29	26	27	45
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<20	20	<20	70	30	140
Biochemical Oxygen Demand, 5 Day	ug/l	--	2000	<1000	<1000	<1000	<1000	<1000
Chemical Oxygen Demand	ug/l	--	11000	19000	20000	22000	18000	17000
Chloride	ug/l	--	11000	--	2000	3000	3000	8000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	25	28	34	36	34	37
Conductivity	uS/cm	--	138	62	78	81	78	121
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	11.7	--	12.3	--	--	6.1
Hardness, Calcium Carbonate	ug/l	--	54000	19000	30000	33000	28000	45000
Nitrate	ug/l	--	290	<100	180	220	220	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	360	280	280	350	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	390	300
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.28	6.86	7.34	7.59	6.71	7.02
Phosphorus	ug/l	-- [9]	30	<10	20	20	30	**50**
Sulphate	ug/l	--	--	7000	--	45	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	1300	--	1300	1600	1000	1200
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	89700	40300	50700	52650	50700	78650
Total Organic Carbon	ug/l	--	7200	6100	6900	7000	6900	7000
Total Suspended Solids	ug/l	--	17000	2000	9000	2000	4000	9000
Turbidity	ntu	-- [11]	4.2	1.2	3.9	5	6.5	5.3
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	260	<50	90	240	170	110
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	20	20	10	20	20	20
Beryllium	ug/l	-- [14]	<2	<2	<2	<2	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	<10	<10	<50	20	<50	<10
Cadmium	ug/l	0.2 [13]	**0.3**	<0.1	<0.1	0.1	<0.1	<0.1
Calcium	ug/l	--	15000	6000	7000	10000	8000	13000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	6	3	3	<1	<5	2
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	**2.6**	<0.2	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	**8**	1	1	2	<5	1
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	250	170	190	--	240	240
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	2	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	4000	1000	3000	2000	2000	3000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	30	20	10	10	19	23
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	--	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<10	20	<10	<10	<5	<5
Nickel	ug/l	25	<10	<10	<10	<10	<5	<5
Potassium	ug/l	--	1000	<1000	<1000	<1000	<1000	1000
Selenium	ug/l	100	<1	--	<1	<1	<1	<1
Silicon	ug/l	--	2170	1570	2040	2360	2300	1900
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	6000	<2000	3000	<2000	2000	5000
Strontium	ug/l	--	191	37	38	45	41	66
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	<1	<1	<1	<1	<1	<1
Tin	ug/l	--	--	--	--	<10	--	--
Titanium	ug/l	--	<10	<10	<10	<10	<10	<10
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	5	1	<1	<1	<5	<1
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<5	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	<1	<1	<1

Parameter	Unit	PWQO [1]	SW-18 01-Dec-2003	SW-18 04-Jun-2004	SW-18 04-Jul-2004	SW-18 04-Oct-2004	SW-18 13-Jun-2005	SW-18 31-Aug-2005
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	459	17	21	22	19	33
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	740	<20	80	280	30	20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	<1000	<1000	<1000	<1000
Chemical Oxygen Demand	ug/l	--	61000	5000	14000	10000	--	--
Chloride	ug/l	--	96000	2000	4000	2000	4000	5000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	14	39	39	36	--	--
Conductivity	uS/cm	--	1100	56	61	68	82	80
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	8.05	6.4
Hardness, Calcium Carbonate	ug/l	--	453000	17000	17000	21000	--	--
Nitrate	ug/l	--	<100	130	170	150	130	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	1760	310	370	290	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.62	6.86	6.94	7.22	**5.7**	6.6
Phosphorus	ug/l	-- [9]	**5720**	20	**250**	10	20	**40**
Sulphate	ug/l	--	--	--	--	--	7000	8000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	600	900	900	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	23.8	20.3
Total Dissolved Solids	ug/l	--	715000	36400	39650	44200	53000	52000
Total Organic Carbon	ug/l	--	20100	6700	7300	7700	--	--
Total Suspended Solids	ug/l	--	2720000	4000	7000	<2000	4000	19000
Turbidity	ntu	-- [11]	>100	2.7	3.6	2.5	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	640	130	170	80	50	190
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	1810	--	--	--	10	--
Beryllium	ug/l	-- [14]	<1	--	--	--	<1	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	140	--	--	--	10	20
Cadmium	ug/l	0.2 [13]	**3**	<0.1	<0.1	<0.1	<0.1	--
Calcium	ug/l	--	112000	5000	5000	5000	--	--
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	40	<1	2	<1	<1	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	**14.3**	--	--	--	<0.2	--
Copper	ug/l	5	**6**	1	<1	1	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**61600**	180	180	160	100	170
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	5	<1	<1	<1	<1	--
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	42000	1000	1000	2000	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	6300	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	--
Molybdenum	ug/l	40	<5	--	--	--	<5	--
Nickel	ug/l	25	**39**	<5	<5	<5	<5	<5
Potassium	ug/l	--	12000	<1000	<1000	<1000	--	--
Selenium	ug/l	100	<1	<1	<1	<1	<1	--
Silicon	ug/l	--	9900	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<1	<0.1	--
Sodium	ug/l	--	66000	2000	3000	2000	--	--
Strontium	ug/l	--	1370	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	<1	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	<10	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	**34**	--	--	--	<1	--
Zinc	ug/l	30 [13]	**50**	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	<1	--	--

Parameter	Unit	PWQO [1]	SW-18 30-Oct-2005	SW-18 31-Dec-2005 [3]	SW-18 08-Apr-2006	SW-18 15-Aug-2006	SW-18 25-Nov-2006	SW-18 22-Apr-2007
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	33	--	36	27	51	53
Ammonia, unionized	ug/l	20	<20	--	<20	<20	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	190	--	60	<20	40	30
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	--	<1000	<1000	<1000	2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	5000	--	6000	5000	10000	8000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	195	--	235	80	315	195
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	6700	7000	7300	7600
Dissolved Oxygen (Field)	mg/l	-- [8]	11.4	--	12.91	11.62	11.44	11.88
Hardness, Calcium Carbonate	ug/l	--	--	--	39800	28200	60500	68000
Nitrate	ug/l	--	<100	--	230	<100	160	130
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	--	7.6	7.5	7.5	7.4
Phosphorus	ug/l	-- [9]	30	--	30	**40**	**60**	20
Sulphate	ug/l	--	8000	--	8000	7000	8000	5000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	5	--	2	19	1	4
Total Dissolved Solids	ug/l	--	127000	--	70000	52000	96000	92000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	4000	--	3000	42000	2000	<2000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	20	--	40	60	80	50
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	20	--	20	20	20	20
Beryllium	ug/l	-- [14]	<1	--	<1	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	10	--	20	<10	30	<10
Cadmium	ug/l	0.2 [13]	<0.1	--	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	--	--	11000	8000	16000	19000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<1	--	1	<1	1	<1
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	<0.2	--	<0.2	0.2	<0.2	<0.2
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	140	--	**310**	**440**	290	230
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	--	<1	2	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	3000	2000	5000	5000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	20	110	60	10
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	--	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	--	<5	<5	<5	<5
Nickel	ug/l	25	<5	--	<5	<5	<5	<5
Potassium	ug/l	--	--	--	<1000	<1000	1000	1000
Selenium	ug/l	100	<1	--	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	--	4000	3000	8000	7000
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<1	--	<1	1	<1	1
Zinc	ug/l	30 [13]	<10	--	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-18 31-Aug-2007	SW-18 26-Nov-2007	SW-18 04-May-2008	SW-18 14-Aug-2008	SW-18 28-Nov-2008	SW-18 24-Apr-2009 W-2
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	25	33	29	28	52	25
Ammonia, unionized	ug/l	20	<20	0.2	<20	<20	<20	<0.42
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	<20
Ammonia Nitrogen	ug/l	--	30	60	50	<20	<20	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	2000	<1000	1000	1000	<1000	<1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	2000	4000	4000	5000	9000	3000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	67	295	480	400	410	75
Conductivity (Field)	uS/cm	--	--	--	--	--	--	270
Dissolved Organic Carbon	ug/l	--	7500	8200	6500	8100	6800	7400
Dissolved Oxygen (Field)	mg/l	-- [8]	12.66	13.19	13.1	13.81	14.2	12.11
Hardness, Calcium Carbonate	ug/l	--	25700	37300	33000	28000	61000	28000
Nitrate	ug/l	--	<100	160	150	110	170	--
Nitrate as N	ug/l	--	--	--	--	--	--	180
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	7.5	7.5	7.4	7.6	8.2
Phosphorus	ug/l	-- [9]	<20	10	30	**40**	10	<10
Sulphate	ug/l	--	7000	8000	6000	6000	7000	6000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	20	3	7	19	3	6
Total Dissolved Solids	ug/l	--	44000	64000	56000	51000	96000	49000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	8000	4000	34000	<2000	<2000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	50
Aluminum, dissolved	ug/l	-- [12]	50	40	90	160	90	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	20	20	20	20	20	20
Beryllium	ug/l	-- [14]	<1	<1	<1	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	<10	10	<10	<10	10	10
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	7000	10000	10000	8000	16000	8000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<1	<1	1	<1	3	1
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	120	200	240	**330**	170	200
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	2000	3000	2000	2000	5000	2000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	10	30	20	50	10	20
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	<1000	<1000	<1000	<1000	1000	<1000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	2000	4000	4000	<2000	7000	<2000
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<1	<1	<1	<1	1	<1
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-18 25-Aug-2009 A-2	SW-18 30-Nov-2009 W-5	SW-18 17-May-2010 W-3	SW-18 17-May-2010 W-2	SW-18 17-May-2010 W-2	SW-18 21-Aug-2010 A-2
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	30	96	--	41	--	23
Ammonia, unionized	ug/l	20	1.35	0.67	--	<2.74	--	<2.53
Ammonia, unionized (Field)	ug/l	20	--	--	<20	--	<20	<20
Ammonia Nitrogen	ug/l	--	20	30	--	<20	--	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	--	3000	--	<1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	3000	20000	--	7000	--	2000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	78	268	--	111	--	65
Conductivity (Field)	uS/cm	--	71	280	--	150	--	143
Dissolved Organic Carbon	ug/l	--	7200	7900	--	6800	--	6700
Dissolved Oxygen (Field)	mg/l	-- [8]	12.4	13.8	--	13.72	--	13.8
Hardness, Calcium Carbonate	ug/l	--	28000	94000	--	42000	--	26000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	120	130	--	<100	--	<100
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.2	8.3	--	**8.7**	--	8.5
Phosphorus	ug/l	-- [9]	30	20	--	30	--	30
Sulphate	ug/l	--	5000	6000	--	6000	--	6000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	22	4	--	17	--	22
Total Dissolved Solids	ug/l	--	51000	174000	--	72000	--	42000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	3000	4000	--	5000	--	<2000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	50	30	--	40	--	40
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	10	20	--	20	--	10
Beryllium	ug/l	-- [14]	<1	<1	--	<1	--	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	<10	30	--	20	--	10
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	--	<0.1	--	<0.1
Calcium	ug/l	--	8000	26000	--	12000	--	7000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<1	<1	--	1	--	<1
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	<0.2	<0.2	--	<0.2	--	<0.2
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	<50
Iron	ug/l	300	170	200	--	190	--	150
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	--	<1	--	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	2000	7000	--	3000	--	2000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	10	10	--	10	--	10
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	--	<0.1	--	<0.2
Molybdenum	ug/l	40	<5	<5	--	<5	--	<5
Nickel	ug/l	25	<5	<5	--	<5	--	<5
Potassium	ug/l	--	<1000	2000	--	1000	--	<1000
Selenium	ug/l	100	<1	<1	--	<1	--	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	--	<0.1	--	<0.1
Sodium	ug/l	--	<2000	13000	--	4000	--	3000
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<1	<1	--	1	--	<1
Zinc	ug/l	30 [13]	<10	<10	--	<10	--	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-18 27-Nov-2010 W-2	SW-18 09-May-2011 W-3	SW-18 08-Sep-2011 W-1	SW-18 29-Nov-2011 W-2	SW-18 06-May-2012 W-3	SW-18 22-Aug-2012 [27] W-1
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	37	30	68	41	32	24
Ammonia, unionized	ug/l	20	<0.56	<0.53	<0.91	<0.49	<0.53	4.56
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	--	--	--
Ammonia Nitrogen	ug/l	--	<20	<20	<20	<20	<20	130
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	1000	1000	1000	2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	4000	4000	11000	8000	5000	2000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	99	86	170	115	91	64
Conductivity (Field)	uS/cm	--	154	90	105	94	95	140
Dissolved Organic Carbon	ug/l	--	7400	8200	7500	5700	7900	6200
Dissolved Oxygen (Field)	mg/l	-- [8]	14.41	13.91	10.04	13.99	13.80	8.99
Hardness, Calcium Carbonate	ug/l	--	42000	33000	68000	47000	28000	26000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	180	160	<100	170	170	<100
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	6.95
pH (Field)	-	6.5 - 8.5	8.4	8.2	8.0	8.3	8.2	7.9
Phosphorus	ug/l	-- [9]	<10	<10	10	20	<10	10
Sulphate	ug/l	--	6000	6000	5000	6000	6000	6000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	4	9.0	22.5	5	9	22
Total Dissolved Solids	ug/l	--	64000	56000	110000	75000	59000	42000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	3000	<2000	<2000	2000	<2000	2000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	30	80	30	30	110	100
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	20	20	30	20	20	10
Beryllium	ug/l	-- [14]	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	<10	10	20	10	<10	<10
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	12000	10000	19000	14000	8000	7000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<1	1	1	<1	1	<1
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<50	<50	<50	<50	<50	<50
Iron	ug/l	300	170	200	140	210	190	140
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	3000	2000	5000	3000	2000	2000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	10	30	20	20	10	10
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	<1000	<1000	1000	<1000	<1000	<1000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	4000	4000	8000	6000	6000	3000
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<1	<1	<1	<1	<1	<1
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-18 12-Nov-2012 W - 2	SW-18 29-May-2014 [28] W-2	SW-18 26-Aug-2014 S-3	SW-18 17-Nov-2014 W-4	SW-18 28-Apr-2015 W-2	SW-18 25-Aug-2015 W-1
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	28	38	69	56	120	24
Ammonia, unionized	ug/l	20	<0.39	1	3	0	2.99	2.96
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<20	<50	86	<50	260	110
Biochemical Oxygen Demand, 5 Day	ug/l	--	1000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	3000	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	7000	11000	10000	28000	2600
Chromium (III)	ug/l	8.9 [7]	--	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	76	110	180	150	350	66
Conductivity (Field)	uS/cm	--	115	125	149	135	205	75
Dissolved Organic Carbon	ug/l	--	7600	7300	6900	8100	7700	6300
Dissolved Oxygen (Field)	mg/l	-- [8]	12.64	12.77	11.82	13.04	13.10	10.99
Hardness, Calcium Carbonate	ug/l	--	28000	38000	66000	61000	130000	25000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	140	<100	<100	120	210	<100
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.1	8.1	8.0	7.8	7.9	7.75
Phosphorus	ug/l	-- [9]	<10	15	11	**54**	19	14
Sulphate	ug/l	--	7000	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	6000	5000	2000	10000	5500
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	8	9	19	3	7	23
Total Dissolved Solids	ug/l	--	49000	76000	102000	76000	188000	50000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	95
Aluminum, dissolved	ug/l	-- [12]	60	230	130	250	210	--
Antimony	ug/l	20	--	<0.50	--	--	--	--
Arsenic	ug/l	100 [13]	--	<1.0	--	--	--	--
Barium	ug/l	--	10	14	27	24	41	13
Beryllium	ug/l	-- [14]	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	<1.0	--	--	--	--
Boron	ug/l	200 [15]	<10	<10	22	20	45	10
Cadmium	ug/l	0.2 [13]	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Calcium	ug/l	--	8000	6600	20000	17000	39000	7800
Calcium, dissolved	ug/l	--	--	11000	18000	17000	36000	6900
Chromium	ug/l	-- [16]	<1	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	--	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.2	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	1.4	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	170	**310**	210	**1200**	**400**	140
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	<5.0	--	--	--	--
Magnesium	ug/l	--	2000	1800	5500	4200	10000	2000
Magnesium, dissolved	ug/l	--	--	2700	5100	4500	10000	1900
Manganese	ug/l	--	<10	19	38	44	57	7.8
Mercury	ug/l	0.2 [18]	--	--	--	--	--	<0.10
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.10	<0.10	<0.10	<0.10	--
Molybdenum	ug/l	40	<5	0.51	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	<5	1.1	<1.0	1.6	1.5	<1.0
Potassium	ug/l	--	<1000	690	1500	1200	3100	720
Selenium	ug/l	100	<1	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	2500	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	3000	2800	8900	6300	19000	3000
Strontium	ug/l	--	--	38	--	--	--	--
Tellurium	ug/l	--	--	<1.0	--	--	--	--
Thallium	ug/l	0.3 [19]	--	0.25	--	--	--	--
Tin	ug/l	--	--	<1.0	--	--	--	--
Titanium	ug/l	--	--	7.2	--	--	--	--
Tungsten	ug/l	30 [20]	--	<1.0	--	--	--	--
Uranium	ug/l	5 [15]	--	0.19	--	--	--	--
Vanadium	ug/l	6	<1	0.57	<0.50	0.52	0.86	0.51
Zinc	ug/l	30 [13]	<10	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	<1.0	<1.0	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-18 11-Nov-2015 [29] W-7	SW-18 18-Apr-2016 W-5	SW-18 07-Jul-2016 W-3	SW-18 31-Oct-2016 W-3	SW-18 23-May-2017 SW-18	SW-18 26-Jul-2017 SW-18
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	37	51	22	30	99	40
Ammonia, unionized	ug/l	20	<0.16	<0.96	<1.13	<0.46	2.62	<2.27
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	<50	<50	<50	320	<50
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	4700	9300	2400	3200	20000	7300
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	100	140	63	83	260	120
Conductivity (Field)	uS/cm	--	990	110	390	360	0.43	144
Dissolved Organic Carbon	ug/l	--	6800	7100	6000	6300	7900	6900
Dissolved Oxygen (Field)	mg/l	-- [8]	**5.81**	13.86	10.20	12.24	7.5	9.98
Hardness, Calcium Carbonate	ug/l	--	40000	53000	24000	31000	130000	41000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	110	150	<100	110	<100	260
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	8.1	7.8	7.8	7.53	8.01
Phosphorus	ug/l	-- [9]	17	13	**41**	15	22	**35**
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	5300	4700	4100	6100	<1000	4300
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	5	7.7	19	7	13.5	22.2
Total Dissolved Solids	ug/l	--	86000	50000	58000	64000	158000	88000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	11000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	96	350	350	130	180	190
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	15	21	17	13	38	21
Beryllium	ug/l	-- [14]	<0.50	<0.5	<0.5	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	11	10	<10	13	45	13
Cadmium	ug/l	0.2 [13]	<0.10	<0.1	<0.1	<0.10	<0.10	<0.10
Calcium	ug/l	--	11000	13000	7500	8700	30000	11000
Calcium, dissolved	ug/l	--	11000	15000	6800	8500	35000	12000
Chromium	ug/l	-- [16]	<5.0	<5	<5	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.5	<0.5	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	200	**360**	**580**	**1000**	**370**	**360**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.5	1.1	<0.50	<0.50	3.0
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	2800	3400	2100	2300	7900	2700
Magnesium, dissolved	ug/l	--	2800	3800	1700	2300	9100	2700
Manganese	ug/l	--	10	32	54	25	120	23
Mercury	ug/l	0.2 [18]	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	<0.50	<0.5	<0.5	<0.50	<0.50	<0.50
Nickel	ug/l	25	<1.0	<1	2	1.7	1.5	<1.0
Potassium	ug/l	--	830	1100	770	680	2800	920
Selenium	ug/l	100	<2.0	<2	<2	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.1	<0.1	<0.10	<0.10	<0.10
Sodium	ug/l	--	4600	5700	2500	3700	14000	7300
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	0.63	0.7	1.1	0.88	0.68	0.71
Zinc	ug/l	30 [13]	<5.0	6	7	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-18 22-Nov-2017 SW-18	SW-18 15-May-2018 SW-18	SW-18 29-Aug-2018 SW-18	SW-18 02-Nov-2018 SW-18	SW-18 04-Jun-2019 SW-18	SW-18 07-Aug-2019 SW18
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	40	24	25	36	27	190
Ammonia, unionized	ug/l	20	<0.23	<0.84	1.49	<0.37	1.9	1.93
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	<50	69	<50	260	80
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	6800	2600	2900	4500	3300	33000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	110	65	70	94	73	470
Conductivity (Field)	uS/cm	--	415	99	420	405	418	420
Dissolved Organic Carbon	ug/l	--	7000	7400	6700	7000	7600	8600
Dissolved Oxygen (Field)	mg/l	-- [8]	11.82	14.94	11.59	11.9	12.8	10.81
Hardness, Calcium Carbonate	ug/l	--	47000	25000	28000	38000	32000	200000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	170	140	<100	150	160	<100
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH	-	6.5 - 8.5	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.6	8.0	7.7	7.7	7.51	7.7
Phosphorus	ug/l	-- [9]	14	20	17	24	17	17
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	3700	1000	3200	2700	<1000	<1000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	4.3	8.9	21.5	7.1	12.6	23
Total Dissolved Solids	ug/l	--	95000	20000	25000	65000	95000	265000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	140	300	120	260	350	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--	37
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	18	15	12	16	15	66
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	<10	<10	<10	11	<10	93
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Calcium	ug/l	--	14000	7900	7100	11000	8400	58000
Calcium, dissolved	ug/l	--	13000	7200	8100	11000	9500	57000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	260	**480**	240	**400**	**520**	290
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	0.56	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	3400	1900	1800	2700	2100	14000
Magnesium, dissolved	ug/l	--	3400	1700	2000	2600	2100	14000
Manganese	ug/l	--	12	31	15	28	60	72
Mercury	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	1.0	1.0	<1.0	1.1	1.3	1.6
Potassium	ug/l	--	820	720	600	820	660	3800
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	5700	3000	2500	4000	2800	26000
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	0.54	0.88	0.64	0.75	1.3	0.69
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-18 17-Nov-2019 SW-18	SW-18 05-May-2020 SW-18	SW-18 26-Aug-2020 SW-18	SW-18 29-Oct-2020 SW-18	SW-18 28-Apr-2021 SW18	SW-18 14-Jul-2021 SW-18
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	85	25	25	30	30	31
Ammonia, unionized	ug/l	20	1.29	**52.67**	3.19	2.48	**20.84**	16.64
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	340	3400	81	160	1100	650
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	18000	3900	1700	3800	4700	4700
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	230	75	69	79	83	86
Conductivity (Field)	uS/cm	--	420	69	82	81	89	99
Dissolved Organic Carbon	ug/l	--	7000	6900	6900	7600	7100	6600
Dissolved Oxygen (Field)	mg/l	-- [8]	12.93	11.88	12.56	13.77	13.82	11.44
Hardness, Calcium Carbonate	ug/l	--	79000	26000	29000	29000	31000	29000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	150	110	130	160	120	<100
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	<10	<10	--	--	<10	<10
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	150	110	--	--	120	<100
pH	-	6.5 - 8.5	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.6	8.0	8.17	7.88	8.01	7.79
Phosphorus	ug/l	-- [9]	12	12	15	20	15	11
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	1800	1400	2600	4500	3400	3400
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	1.8	7.9	15.2	11.4	10.2	21
Total Dissolved Solids	ug/l	--	135000	80000	35000	50000	65000	45000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	160	240	170	170	230	99
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	22	13	12	13	14	13
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.40	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	18	<10	<10	<10	<10	<10
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.090	<0.090	<0.090	<0.090
Calcium	ug/l	--	17000	7600	7600	8600	9400	7500
Calcium, dissolved	ug/l	--	22000	7400	--	--	9100	8000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	--	--	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	260	**360**	280	300	**320**	160
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	4100	1800	1800	2200	2200	2200
Magnesium, dissolved	ug/l	--	5600	1800	--	--	2100	2300
Manganese	ug/l	--	24	15	18	13	12	7.3
Mercury	ug/l	0.2 [18]	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Potassium	ug/l	--	1200	690	570	730	710	740
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.090	<0.090	<0.090	<0.090
Sodium	ug/l	--	7100	3100	2600	3500	3300	3900
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	0.97	0.73	0.77	0.61	0.67	<0.50
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-18 22-Nov-2021 SW-18
General Chemistry			
Alkalinity (Total as CaCO3)	mg/l	-- [6]	33
Ammonia, unionized	ug/l	20	**26.5**
Ammonia, unionized (Field)	ug/l	20	--
Ammonia Nitrogen	ug/l	--	4100
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000
Chemical Oxygen Demand	ug/l	--	--
Chloride	ug/l	--	--
Chloride, dissolved	ug/l	--	3800
Chromium (III)	ug/l	8.9 [7]	<5
Color	color unit	--	--
Conductivity	uS/cm	--	93
Conductivity (Field)	uS/cm	--	120
Dissolved Organic Carbon	ug/l	--	7500
Dissolved Oxygen (Field)	mg/l	-- [8]	13.11
Hardness, Calcium Carbonate	ug/l	--	35000
Nitrate	ug/l	--	--
Nitrate as N	ug/l	--	200
Nitrite	ug/l	--	--
Nitrite as N	ug/l	--	17
Nitrogen	ug/l	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	210
pH	-	6.5 - 8.5	--
pH (Field)	-	6.5 - 8.5	7.7
Phosphorus	ug/l	-- [9]	27
Sulphate	ug/l	--	--
Sulphate, dissolved	ug/l	--	5400
Tannin & Lignin	ug/l	--	--
Temperature (Field)	deg c	-- [10]	5.5
Total Dissolved Solids	ug/l	--	45000
Total Organic Carbon	ug/l	--	--
Total Suspended Solids	ug/l	--	12000
Turbidity	ntu	-- [11]	--
Metals			
Aluminum	ug/l	-- [12]	320
Aluminum, dissolved	ug/l	-- [12]	--
Antimony	ug/l	20	--
Arsenic	ug/l	100 [13]	--
Barium	ug/l	--	17
Beryllium	ug/l	-- [14]	<0.40
Bismuth	ug/l	--	--
Boron	ug/l	200 [15]	<10
Cadmium	ug/l	0.2 [13]	<0.090
Calcium	ug/l	--	12000
Calcium, dissolved	ug/l	--	10000
Chromium	ug/l	-- [16]	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0
Cobalt	ug/l	0.9	<0.50
Copper	ug/l	5	--
Hexavalent Chromium	ug/l	1 [7]	<0.50
Iron	ug/l	300	**640**
Iron, dissolved	ug/l	300	--
Lead	ug/l	-- [17]	1.0
Lithium	ug/l	--	--
Magnesium	ug/l	--	2700
Magnesium, dissolved	ug/l	--	2400
Manganese	ug/l	--	34
Mercury	ug/l	0.2 [18]	--
Mercury, dissolved	ug/l	0.2 [18]	<0.10
Molybdenum	ug/l	40	<0.50
Nickel	ug/l	25	1.2
Potassium	ug/l	--	780
Selenium	ug/l	100	<2.0
Silicon	ug/l	--	--
Silver	ug/l	0.1	<0.090
Sodium	ug/l	--	4100
Strontium	ug/l	--	--
Tellurium	ug/l	--	--
Thallium	ug/l	0.3 [19]	--
Tin	ug/l	--	--
Titanium	ug/l	--	--
Tungsten	ug/l	30 [20]	--
Uranium	ug/l	5 [15]	--
Vanadium	ug/l	6	0.99
Zinc	ug/l	30 [13]	9.8
Zirconium	ug/l	4 [15]	--
Phenols			
Phenolics, Total Recoverable	ug/l	1 [21]	--

Parameter	Unit	PWQO [1]	SW-18 27-Apr-2022 SW-18	SW-18 17-Aug-2022 [5] SW-18	SW-18 11-Dec-2022 SW-18	SW-18 29-May-2023 SW-18	SW-18 21-Sep-2023 SW-18	SW-18 03-Dec-2023 SW-18
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	33	26	140	35	56	54
Ammonia, unionized	ug/l	20	0.96	6.93	12.54	16.03	5.89	**22.51**
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	68	180	1300	1100	350	3000
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	4000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	5500	2500	30000	3400	5800	8000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	92	69	360	97	150	140
Conductivity (Field)	uS/cm	--	101	119	150	136	133	146
Dissolved Organic Carbon	ug/l	--	7200	6700	7400	7700	7500	7100
Dissolved Oxygen (Field)	mg/l	-- [8]	14.14	14.04	14.89	15.12	14.61	14.49
Hardness, Calcium Carbonate	ug/l	--	34000	28000	47000	66000	35000	48000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	200	130	150	110	120	160
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	<10
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	200	130	150	110	120	160
pH	-	6.5 - 8.5	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.02	7.92	7.90	7.81	7.83	7.79
Phosphorus	ug/l	-- [9]	**33**	9	10	18	8	7
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	2300	2500	1100	4300	4200	4000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	6.1	22.7	4.8	12.7	14.0	4.8
Total Dissolved Solids	ug/l	--	70000	60000	210000	90000	70000	85000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	460	140	120	260	59	170
Aluminum, dissolved	ug/l	-- [12]	87	60	81	69	59	83
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	15	13	42	16	19	19
Beryllium	ug/l	-- [14]	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	<10	<10	55	11	22	17
Cadmium	ug/l	0.2 [13]	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090
Calcium	ug/l	--	11000	8600	43000	11000	15000	15000
Calcium, dissolved	ug/l	--	10000	7900	13000	19000	10000	13000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	0.51	<0.50	<0.50	<0.50
Iron	ug/l	300	**630**	240	**340**	**420**	120	260
Iron, dissolved	ug/l	300	150	120	160	130	110	140
Lead	ug/l	-- [17]	1.0	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	2300	2000	11000	2800	3700	3600
Magnesium, dissolved	ug/l	--	2200	1900	3400	4800	2300	3400
Manganese	ug/l	--	27	14	39	25	6.0	19
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	<1.0	<1.0	2.1	<1.0	<1.0	1.1
Potassium	ug/l	--	900	680	2800	990	1200	1000
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090
Sodium	ug/l	--	5100	2500	22000	4600	6800	6400
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	1.3	0.64	0.50	0.88	0.68	0.59
Zinc	ug/l	30 [13]	5.8	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-19 01-Aug-1994	SW-19 01-Oct-1994	SW-19 01-Dec-1994	SW-19 28-Apr-2001	SW-19 01-Apr-2003	SW-19 01-Oct-2003
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	24	31	59	354	320	41
Ammonia, unionized	ug/l	20	<100	<20	--	<20	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<100	<20	<100	230	60	50
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	<1000	1000	<1000	<1000
Chemical Oxygen Demand	ug/l	--	14200	14000	20500	17000	23000	18000
Chloride	ug/l	--	4000	4000	9500	68000	60000	4000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	19	37	20	16	21	40
Conductivity	uS/cm	--	82	81	--	843	765	101
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	10.7	--	6.2
Hardness, Calcium Carbonate	ug/l	--	30000	26000	81000	329000	325000	37000
Nitrate	ug/l	--	<100	130	360	540	<100	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	2800	--	360	570	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	260	--	--	310	390
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.02	7.42	7.67	8.15	7.8	6.85
Phosphorus	ug/l	-- [9]	**40**	12	<10	30	**60**	30
Sulphate	ug/l	--	7900	--	9700	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	950	930	--	545	300	1200
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	53300	52650	--	547950	497250	65650
Total Organic Carbon	ug/l	--	7300	7500	7100	9600	8200	7300
Total Suspended Solids	ug/l	--	--	<2000	2000	<2000	<2000	5000
Turbidity	ntu	-- [11]	5	2	9.8	1.4	0.3	2.4
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	95	80	300	<50	<10	170
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	60	40	20
Beryllium	ug/l	-- [14]	--	--	--	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	110	60	<10
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	**0.3**	**0.3**	<0.1	<0.1
Calcium	ug/l	--	8000	7000	21000	87000	84000	10000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<10	<1	<10	4	<5	<1
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	**1**	<0.2	<0.2
Copper	ug/l	5	1.7	2	2	3	<5	3
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**360**	140	**320**	190	130	150
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	0.2	<1	<0.2	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	2400	2000	6850	27000	28000	3000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	49	--	320	100	35	14
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	10	<5	<5
Nickel	ug/l	25	<200	<5	<20	<10	<5	<5
Potassium	ug/l	--	900	<1000	2590	9000	8000	<1000
Selenium	ug/l	100	<1	<1	5	<1	<1	<1
Silicon	ug/l	--	--	--	--	3740	3600	2000
Silver	ug/l	0.1	**0.6**	<0.1	**1**	<0.1	<0.1	<0.1
Sodium	ug/l	--	2600	3000	9830	38000	43000	4000
Strontium	ug/l	--	--	--	--	--	409	46
Tellurium	ug/l	--	--	--	--	--	--	--
Tellurium, dissolved	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	**400**	<1	<1
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	<1	<10	<10
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	<1	<5	<1
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<5	**60**
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	<1	<1	<1

Parameter	Unit	PWQO [1]	SW-19 01-Dec-2003	SW-19 04-Jun-2004	SW-19 04-Jul-2004	SW-19 04-Oct-2004	SW-19 13-Jun-2005	SW-19 31-Aug-2005
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	61	19	24	31	42	26
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	50	<20	60	<20	<20	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	<1000	<1000	2000	<1000
Chemical Oxygen Demand	ug/l	--	28000	6000	14000	14000	--	--
Chloride	ug/l	--	3000	5000	4000	4000	8000	5000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	50	39	40	37	--	--
Conductivity	uS/cm	--	137	60	68	18	180	80
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	8.4	6.71
Hardness, Calcium Carbonate	ug/l	--	56000	17000	23000	26000	--	--
Nitrate	ug/l	--	180	170	170	130	<100	130
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	370	430	440	260	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	6.92	6.92	7.12	7.42	6.8	6.7
Phosphorus	ug/l	-- [9]	**40**	20	**40**	20	**50**	**70**
Sulphate	ug/l	--	--	--	--	--	7000	7000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	1300	1100	1100	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	23.5	20.9
Total Dissolved Solids	ug/l	--	89050	39000	44200	11700	117000	52000
Total Organic Carbon	ug/l	--	10700	7000	7900	7500	--	--
Total Suspended Solids	ug/l	--	5000	5000	22000	<2000	45000	60000
Turbidity	ntu	-- [11]	4.2	3.6	5.3	2	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	140	130	190	<80	30	900
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	20	--	--	--	20	--
Beryllium	ug/l	-- [14]	<1	--	--	--	<1	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	20	--	--	--	20	20
Cadmium	ug/l	0.2 [13]	**0.3**	<0.1	<0.1	<0.1	<0.1	--
Calcium	ug/l	--	14000	5000	6000	7000	--	--
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	2	<1	1	<1	3	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	<0.2	--	--	--	<0.2	--
Copper	ug/l	5	2	2	<1	2	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**1050**	190	210	140	80	**1020**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	--
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	5000	1000	2000	2000	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	70	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	--
Molybdenum	ug/l	40	<5	--	--	--	<5	--
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	1000	<1000	<1000	<1000	--	--
Selenium	ug/l	100	<1	<1	<1	<1	<1	--
Silicon	ug/l	--	3300	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Sodium	ug/l	--	3000	2000	3000	3000	--	--
Strontium	ug/l	--	66	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Tellurium, dissolved	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	<1	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	<10	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	1	--	--	--	<1	--
Zinc	ug/l	30 [13]	<10	<10	<10	<10	10	**140**
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	<1	--	--

Parameter	Unit	PWQO [1]	SW-19 30-Oct-2005	SW-19 31-Dec-2005 [3]	SW-19 08-Apr-2006	SW-19 15-Aug-2006 [2]	SW-19 25-Nov-2006	SW-19 22-Apr-2007
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	375	--	367	--	415	371
Ammonia, unionized	ug/l	20	<20	--	<20	--	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	50	--	2530	--	450	1030
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	--	<1000	--	<1000	1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	113000	--	78000	--	101000	80000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	300	--	480	--	530	410
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	8300	--	8700	7900
Dissolved Oxygen (Field)	mg/l	-- [8]	11.5	--	12.88	--	10.14	10.04
Hardness, Calcium Carbonate	ug/l	--	--	--	380700	--	424600	359100
Nitrate	ug/l	--	<100	--	520	--	370	1040
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.5	--	7.4	--	7.4	7.3
Phosphorus	ug/l	-- [9]	**40**	--	20	--	**70**	**360**
Sulphate	ug/l	--	49000	--	46000	--	26000	26000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	6	--	4	--	1	3
Total Dissolved Solids	ug/l	--	195000	--	632000	--	708000	633000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	--	2000	--	<2000	<2000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	--	<10	--	<10	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	90	--	100	--	120	100
Beryllium	ug/l	-- [14]	<1	--	<1	--	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	200	--	180	--	**220**	170
Cadmium	ug/l	0.2 [13]	<0.1	--	<0.1	--	<0.1	<0.1
Calcium	ug/l	--	--	--	108000	--	119000	101000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	4	--	4	--	3	2
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.3	--	0.5	--	0.7	0.6
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	<30	--	100	--	**360**	150
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	--	<1	--	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	27000	--	31000	26000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	100	--	360	110
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	--	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	<5	--	<5	--	<5	<5
Nickel	ug/l	25	6	--	6	--	<5	<5
Potassium	ug/l	--	--	--	9000	--	11000	9000
Selenium	ug/l	100	<1	--	<1	--	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	--	<0.1	--	<0.1	<0.1
Sodium	ug/l	--	--	--	48000	--	57000	49000
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Tellurium, dissolved	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	6	--	5	--	1	3
Zinc	ug/l	30 [13]	<10	--	<10	--	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-19 26-Nov-2007	SW-19 04-May-2008	SW-19 14-Aug-2008	SW-19 28-Nov-2008	SW-19 24-Apr-2009 W-1	SW-19 25-Aug-2009 A-1
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	428	346	410	438	378	482
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	3.08	0.4
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	<20	--
Ammonia Nitrogen	ug/l	--	60	110	20	260	250	30
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	1000	4000	<1000	2000	1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	128000	72000	93000	117000	80000	100000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	480	566	1030	505	955	1140
Conductivity (Field)	uS/cm	--	--	--	--	--	920	1075
Dissolved Organic Carbon	ug/l	--	8200	7400	11500	6200	7300	10100
Dissolved Oxygen (Field)	mg/l	-- [8]	11.04	12.21	12.11	12.91	9.88	**4.28**
Hardness, Calcium Carbonate	ug/l	--	455300	348000	452000	420000	354000	429000
Nitrate	ug/l	--	<100	390	<100	<100	--	--
Nitrate as N	ug/l	--	--	--	--	--	1100	<100
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.3	7.3	7.1	7.4	8	7.6
Phosphorus	ug/l	-- [9]	**100**	<10	20	**60**	<10	**40**
Sulphate	ug/l	--	13000	22000	1000	18000	20000	1000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	2	6	18	2	5	18
Total Dissolved Solids	ug/l	--	767000	582000	670000	754000	621000	741000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	2000	3000	6000	<2000	5000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	<10	--
Aluminum, dissolved	ug/l	-- [12]	20	20	<10	<10	--	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	130	120	170	170	120	180
Beryllium	ug/l	-- [14]	<1	<1	<1	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	150	**220**	**230**	130	190	**260**
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	128000	98000	130000	117000	102000	124000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	2	3	2	5	3	4
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.6	0.6	**1**	0.7	0.5	0.9
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**410**	130	**570**	**2290**	90	**450**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	33000	25000	31000	31000	24000	29000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	350	80	690	750	80	400
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	8000	9000	7000	10000	9000	6000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	62000	47000	57000	58000	49000	58000
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Tellurium, dissolved	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	2	3	<1	**8**	3	**8**
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-19 30-Nov-2009 W-4	SW-19 17-May-2010 W-1	SW-19 21-Aug-2010 [30] A-1	SW-19 27-Nov-2010 W-1	SW-19 09-May-2011 W-1	SW-19 08-Sep-2011 W-3
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	415	385	456	410	370	473
Ammonia, unionized	ug/l	20	0.23	<0.63	<0.82	0.2	1.57	<0.21
Ammonia, unionized (Field)	ug/l	20	--	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	30	<20	<20	30	340	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	2000	<1000	<1000	<1000	1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	103000	89000	88000	92000	<1000	105000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1090	979	1090	1020	888	1110
Conductivity (Field)	uS/cm	--	915	922	903	930	870	900
Dissolved Organic Carbon	ug/l	--	7700	6800	11500	8000	7800	12100
Dissolved Oxygen (Field)	mg/l	-- [8]	10.83	9.62	8.43	11.04	9.81	**5.4**
Hardness, Calcium Carbonate	ug/l	--	437000	365000	456000	425000	250000	476000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	180	<100	<100	1170	<100
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.8	8.1	8.0	7.8	7.5	7.5
Phosphorus	ug/l	-- [9]	30	<10	**40**	10	<10	20
Sulphate	ug/l	--	16000	17000	3000	14000	<1000	1000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	5	14.2	21	2.8	7.0	17.8
Total Dissolved Solids	ug/l	--	708000	636000	708000	663000	577000	722000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	5000	5000	36000	<2000	2000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	30	<10	<10	<10	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	130	130	180	120	110	180
Beryllium	ug/l	-- [14]	<1	<1	<1	<1	<0.5	<0.5
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	160	**230**	**290**	130	180	**230**
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	124000	105000	133000	119000	54000	138000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	3	3	2	2	2	4
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.4	0.7	**1.4**	0.5	0.5	0.7
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	<50	<50	<50	<50
Iron	ug/l	300	270	100	**950**	170	100	**380**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	31000	25000	30000	31000	28000	32000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	250	60	1030	150	70	470
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	11000	10000	7000	9000	10000	6000
Selenium	ug/l	100	<1	<1	<10	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	64000	56000	54000	58000	53000	62000
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Tellurium, dissolved	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	4	6	3	3	2	4
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-19 29-Nov-2011 W-3	SW-19 06-May-2012 W-4	SW-19 22-Aug-2012 [2] SW-19	SW-19 12-Nov-2012 W - 1	SW-19 29-May-2014 W-1	SW-19 26-Aug-2014 [2] SW-19
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	397	370	--	377	370	--
Ammonia, unionized	ug/l	20	<0.06	0.32	--	<0.06	0	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<20	30	--	<20	61	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	1000	--	1000	<2000	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	106000	87000	--	117000	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	93000	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	<5	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1040	954	--	1130	980	--
Conductivity (Field)	uS/cm	--	880	930	--	1000	880	--
Dissolved Organic Carbon	ug/l	--	6300	7200	--	10900	8000	--
Dissolved Oxygen (Field)	mg/l	-- [8]	9.97	9.79	--	10.09	7.00	--
Hardness, Calcium Carbonate	ug/l	--	421000	343000	--	421000	410000	--
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	180	--	<100	<100	--
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	7.9	--	7.3	6.9	--
Phosphorus	ug/l	-- [9]	10	<10	--	10	13	--
Sulphate	ug/l	--	11000	21000	--	70000	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	19000	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	4	6	--	7	11	--
Total Dissolved Solids	ug/l	--	676000	620000	--	734000	566000	--
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	<2000	--	<2000	<10000	--
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	<10	--	<10	6.4	--
Antimony	ug/l	20	--	--	--	--	<0.50	--
Arsenic	ug/l	100 [13]	--	--	--	--	<1.0	--
Barium	ug/l	--	140	130	--	100	130	--
Beryllium	ug/l	-- [14]	<0.5	<0.5	--	<0.5	<0.50	--
Bismuth	ug/l	--	--	--	--	--	<1.0	--
Boron	ug/l	200 [15]	140	130	--	**210**	170	--
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	--	<0.1	<0.10	--
Calcium	ug/l	--	119000	96000	--	119000	120000	--
Calcium, dissolved	ug/l	--	--	--	--	--	120000	--
Chromium	ug/l	-- [16]	2	5	--	3	<5.0	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	<5.0	--
Cobalt	ug/l	0.9	0.4	0.4	--	0.4	0.71	--
Copper	ug/l	5	--	--	--	--	<1.0	--
Hexavalent Chromium	ug/l	1 [7]	<50	<50	--	<50	<0.50	--
Iron	ug/l	300	260	80	--	60	240	--
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	--	<1	<0.50	--
Lithium	ug/l	--	--	--	--	--	<5.0	--
Magnesium	ug/l	--	30000	25000	--	30000	29000	--
Magnesium, dissolved	ug/l	--	--	--	--	--	30000	--
Manganese	ug/l	--	250	70	--	40	670	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	--	<0.1	<0.10	--
Molybdenum	ug/l	40	<5	<5	--	<5	<0.50	--
Nickel	ug/l	25	<5	<5	--	<5	2.8	--
Potassium	ug/l	--	8000	9000	--	7000	11000	--
Selenium	ug/l	100	<1	<1	--	<1	<2.0	--
Silicon	ug/l	--	--	--	--	--	5000	--
Silver	ug/l	0.1	<0.1	<0.1	--	<0.1	<0.10	--
Sodium	ug/l	--	61000	53000	--	57000	62000	--
Strontium	ug/l	--	--	--	--	--	610	--
Tellurium	ug/l	--	--	--	--	--	<1.0	--
Tellurium, dissolved	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	<0.050	--
Tin	ug/l	--	--	--	--	--	<1.0	--
Titanium	ug/l	--	--	--	--	--	<5.0	--
Tungsten	ug/l	30 [20]	--	--	--	--	<1.0	--
Uranium	ug/l	5 [15]	--	--	--	--	0.33	--
Vanadium	ug/l	6	3	4	--	4	<0.50	--
Zinc	ug/l	30 [13]	<10	<10	--	<10	<5.0	--
Zirconium	ug/l	4 [15]	--	--	--	--	<1.0	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-19 17-Nov-2014 W-3	SW-19 28-Apr-2015 W-1	SW-19 25-Aug-2015 W-3	SW-19 11-Nov-2015 [31] W-6	SW-19 18-Apr-2016 W-4	SW-19 07-Jul-2016 [2] SW-19
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	410	360	500	440	350	--
Ammonia, unionized	ug/l	20	0	8.68	3.67	<0.53	10.1	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	1100	520	<50	1000	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	100000	86000	93000	120000	74000	--
Chromium (III)	ug/l	8.9 [7]	<5	<5	--	<5	<5	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1100	970	1200	1200	940	--
Conductivity (Field)	uS/cm	--	960	680	1080	395	815	--
Dissolved Organic Carbon	ug/l	--	8700	7000	13000	11000	6700	--
Dissolved Oxygen (Field)	mg/l	-- [8]	**6.84**	6.70	6.44	13.11	7.82	--
Hardness, Calcium Carbonate	ug/l	--	440000	380000	480000	500000	370000	--
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	960	<100	<100	1840	--
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.0	7.7	7.35	7.9	7.85	--
Phosphorus	ug/l	-- [9]	16	6	**41**	**40**	6	--
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	<1000	23000	<1000	<1000	26000	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	2	8	17	6	6.8	--
Total Dissolved Solids	ug/l	--	570000	538000	710000	656000	520000	--
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	11000	<10000	--
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	10	5.1	6	--
Aluminum, dissolved	ug/l	-- [12]	9.8	7.8	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	120	120	190	130	120	--
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.50	<0.5	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	130	160	**320**	150	**220**	--
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.10	<0.1	--
Calcium	ug/l	--	120000	110000	150000	120000	100000	--
Calcium, dissolved	ug/l	--	120000	110000	130000	140000	100000	--
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5	--
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	--
Cobalt	ug/l	0.9	0.69	<0.50	**2.0**	0.90	0.5	--
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	--	<0.50	<0.50	--
Iron	ug/l	300	**520**	<100	**1800**	**490**	<100	--
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	<0.5	--
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	35000	29000	36000	35000	27000	--
Magnesium, dissolved	ug/l	--	33000	28000	35000	38000	26000	--
Manganese	ug/l	--	330	53	1400	460	18	--
Mercury	ug/l	0.2 [18]	--	--	<0.10	<0.10	<0.1	--
Mercury, dissolved	ug/l	0.2 [18]	<0.10	<0.10	--	--	--	--
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.5	--
Nickel	ug/l	25	2.5	2.8	3.4	2.6	3	--
Potassium	ug/l	--	7600	9900	10000	7700	10000	--
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2	--
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.1	--
Sodium	ug/l	--	67000	56000	69000	65000	53000	--
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Tellurium, dissolved	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<0.50	<0.50	<0.50	<0.50	<0.5	--
Zinc	ug/l	30 [13]	8.1	<5.0	10	5.1	6	--
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-19 31-Oct-2016 W-2	SW-19 23-May-2017 SW-19	SW-19 26-Jul-2017 SW-19	SW-19 22-Nov-2017 SW-19	SW-19 15-May-2018 SW-19	SW-19 29-Aug-2018 SW-19
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	410	360	440	450	390	450
Ammonia, unionized	ug/l	20	<0.39	<0.33	<0.95	2.2	0.74	0.99
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	<50	<50	580	54	87
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	120000	70000	69000	100000	83000	120000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1100	910	980	1100	940	1100
Conductivity (Field)	uS/cm	--	405	0.83	856	760	696	730
Dissolved Organic Carbon	ug/l	--	9700	7200	8900	6300	5800	7900
Dissolved Oxygen (Field)	mg/l	-- [8]	**4.99**	6.70	6.57	8.88	12.08	5.11
Hardness, Calcium Carbonate	ug/l	--	430000	360000	400000	420000	370000	470000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	560	<100	290	480	330
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.7	7.43	7.84	7.52	7.9	7.4
Phosphorus	ug/l	-- [9]	7	8	18	7	8	24
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	<1000	15000	<1000	16000	15000	<1000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	8	13.5	15.4	4	9.2	22
Total Dissolved Solids	ug/l	--	630000	500000	598000	585000	565000	670000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	<5.0	6.6	9.9	<5.0	10	14
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	120	140	160	130	130	180
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	190	**220**	200	120	200	**230**
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Calcium	ug/l	--	120000	110000	120000	120000	110000	130000
Calcium, dissolved	ug/l	--	120000	100000	110000	120000	110000	130000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	0.66	0.54	0.52	<0.50	<0.50	0.85
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	160	110	**330**	270	150	**930**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	32000	28000	29000	30000	27000	32000
Magnesium, dissolved	ug/l	--	33000	25000	29000	32000	27000	35000
Manganese	ug/l	--	130	43	250	270	63	400
Mercury	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	2.1	2.3	2.0	2.3	2.2	1.8
Potassium	ug/l	--	7700	10000	6500	7200	9300	6200
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	66000	55000	54000	57000	56000	68000
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Tellurium, dissolved	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Zinc	ug/l	30 [13]	5.8	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-19 02-Nov-2018 SW-19	SW-19 04-Jun-2019 SW-19	SW-19 07-Aug-2019 SW19	SW-19 17-Nov-2019 SW-19	SW-19 05-May-2020 SW-19	SW-19 26-Aug-2020 SW-19
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	380	370	420	380	360	440
Ammonia, unionized	ug/l	20	<0.22	1.69	<0.58	0.39	15.11	1.24
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	300	<50	240	2300	100
Biochemical Oxygen Demand, 5 Day	ug/l	--	2000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	100000	72000	92000	94000	69000	88000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	970	890	1000	1000	890	1000
Conductivity (Field)	uS/cm	--	680	748	590	730	5.95	636
Dissolved Organic Carbon	ug/l	--	8300	6100	9000	6100	5800	10000
Dissolved Oxygen (Field)	mg/l	-- [8]	9.98	**5.39**	**4.45**	**7.22**	8.95	8.88
Hardness, Calcium Carbonate	ug/l	--	400000	360000	420000	400000	350000	420000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	540	<100	<100	1100	<100
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	<10	22	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	<100	1130	--
pH (Field)	-	6.5 - 8.5	7.5	7.32	7.5	7.22	7.62	7.54
Phosphorus	ug/l	-- [9]	14	10	**46**	12	6	15
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	<1000	11000	<1000	10000	15000	<1000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	6.4	14.9	19	2.1	8.0	18.8
Total Dissolved Solids	ug/l	--	545000	580000	610000	540000	470000	505000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	13	8.0	--	5.3	5.4	7.0
Aluminum, dissolved	ug/l	-- [12]	--	--	5.1	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	130	130	170	130	110	170
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.40
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	140	160	**210**	120	170	**240**
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.090
Calcium	ug/l	--	110000	100000	130000	110000	96000	120000
Calcium, dissolved	ug/l	--	110000	100000	120000	110000	99000	--
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	--
Cobalt	ug/l	0.9	<0.50	<0.50	0.62	<0.50	<0.50	0.67
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**570**	230	**570**	190	<100	**410**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	29000	25000	31000	28000	24000	30000
Magnesium, dissolved	ug/l	--	30000	24000	29000	30000	26000	--
Manganese	ug/l	--	260	83	200	180	53	270
Mercury	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	1.5	1.8	1.9	1.9	2.0	2.0
Potassium	ug/l	--	7800	8700	6600	6900	8600	6400
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.090
Sodium	ug/l	--	59000	51000	64000	59000	49000	63000
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Tellurium, dissolved	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-19 29-Oct-2020 SW-19	SW-19 28-Apr-2021 SW19	SW-19 14-Jul-2021 SW-19	SW-19 22-Nov-2021 SW-19	SW-19 27-Apr-2022 SW-19	SW-19 11-Dec-2022 SW-19
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	410	360	440	390	350	400
Ammonia, unionized	ug/l	20	**27.69**	14.51	<0.91	1.21	11.44	5.7
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	6500	3600	<50	710	1300	1100
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	2000	2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	96000	83000	85000	89000	67000	96000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1000	930	1000	970	870	1000
Conductivity (Field)	uS/cm	--	690	680	590	1.020	850	704
Dissolved Organic Carbon	ug/l	--	7800	6200	8800	8100	8200	7400
Dissolved Oxygen (Field)	mg/l	-- [8]	9.11	10.22	**4.66**	**3.19**	10.99	8.01
Hardness, Calcium Carbonate	ug/l	--	400000	360000	410000	380000	350000	410000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	560	140	<100	880	<100
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	18	<10	<10	18	<10
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	570	140	<100	890	<100
pH (Field)	-	6.5 - 8.5	7.49	7.48	7.67	7.11	7.8	7.71
Phosphorus	ug/l	-- [9]	9	**96**	13	8	10	30
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	<1000	18000	<1000	8900	21000	1500
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	6.3	5.9	20	5.8	6.5	2.5
Total Dissolved Solids	ug/l	--	575000	475000	545000	545000	505000	460000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	17000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	5.9	36	140	<4.9	5.6	11
Aluminum, dissolved	ug/l	-- [12]	<4.9	--	--	--	<4.9	<4.9
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	140	130	180	130	110	110
Beryllium	ug/l	-- [14]	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	150	140	**230**	150	170	130
Cadmium	ug/l	0.2 [13]	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090
Calcium	ug/l	--	110000	100000	120000	110000	97000	120000
Calcium, dissolved	ug/l	--	--	100000	110000	110000	96000	120000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	--	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	**0.91**	0.58	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	220	**650**	**1700**	**480**	160	**430**
Iron, dissolved	ug/l	300	160	--	--	--	100	<100
Lead	ug/l	-- [17]	<0.50	<0.50	0.73	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	30000	27000	29000	29000	26000	32000
Magnesium, dissolved	ug/l	--	--	27000	30000	28000	26000	31000
Manganese	ug/l	--	170	160	440	340	67	130
Mercury	ug/l	0.2 [18]	<0.10	<0.10	<0.10	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	1.6	2.5	2.7	2.0	2.7	2.1
Potassium	ug/l	--	5900	9500	9300	6200	9800	6800
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090
Sodium	ug/l	--	61000	58000	66000	60000	53000	63000
Strontium	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Tellurium, dissolved	ug/l	--	<1.0	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<0.50	<0.50	0.75	<0.50	<0.50	<0.50
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	<5.0	7.2
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-19 29-May-2023 SW-19	SW-19 21-Sep-2023 [25] SW-19	SW-19 03-Dec-2023 SW-19
General Chemistry					
Alkalinity (Total as CaCO3)	mg/l	-- [6]	360	--	400
Ammonia, unionized	ug/l	20	**63.62**	--	2.05
Ammonia, unionized (Field)	ug/l	20	--	--	--
Ammonia Nitrogen	ug/l	--	8600	--	430
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	--	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--
Chloride	ug/l	--	--	--	--
Chloride, dissolved	ug/l	--	57000	--	91000
Chromium (III)	ug/l	8.9 [7]	<5	--	<5
Color	color unit	--	--	--	--
Conductivity	uS/cm	--	890	--	1100
Conductivity (Field)	uS/cm	--	719	--	688
Dissolved Organic Carbon	ug/l	--	6800	--	5400
Dissolved Oxygen (Field)	mg/l	-- [8]	6.61	--	**6.49**
Hardness, Calcium Carbonate	ug/l	--	370000	--	410000
Nitrate	ug/l	--	--	--	--
Nitrate as N	ug/l	--	310	--	<100
Nitrite	ug/l	--	--	--	--
Nitrite as N	ug/l	--	20	--	<10
Nitrogen	ug/l	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	330	--	<100
pH (Field)	-	6.5 - 8.5	7.60	--	7.61
Phosphorus	ug/l	-- [9]	9	--	5
Sulphate	ug/l	--	--	--	--
Sulphate, dissolved	ug/l	--	10000	--	6100
Tannin & Lignin	ug/l	--	--	--	--
Temperature (Field)	deg c	-- [10]	10.1	--	4.3
Total Dissolved Solids	ug/l	--	480000	--	495000
Total Organic Carbon	ug/l	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	--	<10000
Turbidity	ntu	-- [11]	--	--	--
Metals					
Aluminum	ug/l	-- [12]	<4.9	--	<4.9
Aluminum, dissolved	ug/l	-- [12]	<4.9	--	<4.9
Antimony	ug/l	20	--	--	--
Arsenic	ug/l	100 [13]	--	--	--
Barium	ug/l	--	120	--	130
Beryllium	ug/l	-- [14]	<0.40	--	<0.40
Bismuth	ug/l	--	--	--	--
Boron	ug/l	200 [15]	190	--	150
Cadmium	ug/l	0.2 [13]	<0.090	--	<0.090
Calcium	ug/l	--	93000	--	120000
Calcium, dissolved	ug/l	--	110000	--	110000
Chromium	ug/l	-- [16]	<5.0	--	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	--	<5.0
Cobalt	ug/l	0.9	0.55	--	<0.50
Copper	ug/l	5	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	--	<0.50
Iron	ug/l	300	110	--	110
Iron, dissolved	ug/l	300	<100	--	<100
Lead	ug/l	-- [17]	<0.50	--	<0.50
Lithium	ug/l	--	--	--	--
Magnesium	ug/l	--	24000	--	33000
Magnesium, dissolved	ug/l	--	26000	--	32000
Manganese	ug/l	--	70	--	64
Mercury	ug/l	0.2 [18]	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.10	--	<0.10
Molybdenum	ug/l	40	<0.50	--	<0.50
Nickel	ug/l	25	2.1	--	2.0
Potassium	ug/l	--	9300	--	6600
Selenium	ug/l	100	<2.0	--	<2.0
Silicon	ug/l	--	--	--	--
Silver	ug/l	0.1	<0.090	--	<0.090
Sodium	ug/l	--	53000	--	66000
Strontium	ug/l	--	--	--	--
Tellurium	ug/l	--	--	--	--
Tellurium, dissolved	ug/l	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--
Tin	ug/l	--	--	--	--
Titanium	ug/l	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--
Uranium	ug/l	5 [15]	--	--	--
Vanadium	ug/l	6	0.50	--	<0.50
Zinc	ug/l	30 [13]	<5.0	--	7.2
Zirconium	ug/l	4 [15]	--	--	--
Phenols					
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-2 01-Dec-1988	SW-2 01-Nov-1990	SW-2 01-Dec-1991	SW-2 01-Aug-1993	SW-2 01-Sep-1993	SW-2 01-Nov-1993
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	580	630	494	--	556
Ammonia, unionized	ug/l	20	--	--	--	<100	--	**180**
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	1400	--	8080
Biochemical Oxygen Demand, 5 Day	ug/l	--	4000	3000	9000	19000	--	6100
Chemical Oxygen Demand	ug/l	--	41000	--	--	89000	24000	40600
Chloride	ug/l	--	89000	104000	141000	112500	--	183000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	18	--	13
Conductivity	uS/cm	--	--	1444	--	1175	--	1408
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	11.1	--	10
Fluoride	ug/l	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	539000	--	601000
Nitrate	ug/l	--	--	--	--	1400	--	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	<100	--	560
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	9520	--	9890
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.75	--	--	--	--	8.28
Phosphorus	ug/l	-- [9]	--	**<100**	**<100**	30	--	**<100**
Sulphate	ug/l	--	--	--	36000	23000	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	990	810
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	683000	842000	920000	767000	--	915000
Total Organic Carbon	ug/l	--	--	--	--	7100	9210	18900
Total Suspended Solids	ug/l	--	--	--	--	1214000	--	31000
Turbidity	ntu	-- [11]	--	--	--	>999	--	20.3
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	--	<30	<30	210	--	160
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	<10	--	--	--	--	--
Barium	ug/l	--	440	220	460	--	--	--
Beryllium	ug/l	-- [14]	--	<10	<10	--	--	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	170	**220**	--	--	--
Cadmium	ug/l	0.2 [13]	<2	<0.2	**0.4**	0.2	--	**0.5**
Calcium	ug/l	--	--	120000	203000	146000	--	161000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<20	<10	<10	17	--	<10
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	<20	<10	--	--	--
Copper	ug/l	5	--	<5	<5	4	--	4
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	290	<10	130	**1448**	--	**2500**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<50	<2	6	99	--	2
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	50000	64000	42400	--	48300
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	<50	190	1480	294	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<1	--	--	<0.1	--	<0.1
Molybdenum	ug/l	40	--	<10	<10	--	--	--
Nickel	ug/l	25	--	<10	<10	<200	--	<20
Potassium	ug/l	--	--	21000	25000	16000	--	21700
Selenium	ug/l	100	--	--	--	3	--	2
Silicon	ug/l	--	--	7300	9700	--	--	--
Silver	ug/l	0.1	--	<1	<1	**0.7**	--	**2**
Sodium	ug/l	--	--	60000	96000	61300	--	84600
Strontium	ug/l	--	--	880	1310	--	--	--
Sulfur	ug/l	--	--	11000	12000	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	<10	<50	--	--	--
Tin	ug/l	--	--	<50	<50	--	--	--
Titanium	ug/l	--	--	<10	<10	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	**20**	--	--	--
Zinc	ug/l	30 [13]	<20	<10	<10	**385**	--	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<2	<2	<2	<2	<2	**6**

Parameter	Unit	PWQO [1]	SW-2 01-Aug-1994	SW-2 01-Oct-1994	SW-2 01-Dec-1994	SW-2 01-May-1995	SW-2 01-Jul-1995	SW-2 01-Sep-1995
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	443	--	452	464	478	501
Ammonia, unionized	ug/l	20	<100	--	--	**170**	**230**	**300**
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	1820	--	2170	4550	6040	5590
Biochemical Oxygen Demand, 5 Day	ug/l	--	21500	--	2000	1000	10000	4000
Chemical Oxygen Demand	ug/l	--	42600	17500	23000	15000	28000	18000
Chloride	ug/l	--	142000	--	104000	106000	113000	112000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	10	--	8.1	8	11	12
Conductivity	uS/cm	--	1139	--	--	1217	1388	1289
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	9.1	8.1	8.5
Fluoride	ug/l	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	464000	--	449000	510000	554000	553000
Nitrate	ug/l	--	2100	--	1740	1600	930	1110
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	360	--	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	3400	--	3360	4610	6820	6600
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.78	--	7.97	8.16	8.06	7.95
Phosphorus	ug/l	-- [9]	**100**	--	<10	<10	**80**	**60**
Sulphate	ug/l	--	30100	--	40300	39000	33000	27000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	680	310	--	100	--	200
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	740000	--	--	791000	902000	838000
Total Organic Carbon	ug/l	--	6100	8200	4100	6700	8700	8700
Total Suspended Solids	ug/l	--	141000	--	16000	2000	16000	10000
Turbidity	ntu	-- [11]	173	--	1.6	1.5	7	8
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	75	--	400	<30	<30	<30
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	0.5	--	--	--
Barium	ug/l	--	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	<0.1	--	<0.1	<0.15	<0.15	<0.15
Calcium	ug/l	--	127000	--	121000	148000	159000	157000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<10	--	<10	<10	<10	<10
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--
Copper	ug/l	5	0.6	--	**6**	<5	<5	<5
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**790**	--	**1600**	150	**670**	**1100**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.2	--	0.3	<2	<2	<2
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	35600	--	35100	34000	38000	39000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	228	--	230000	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	--	<100	<0.2	<0.2	<0.2
Molybdenum	ug/l	40	--	--	--	--	--	--
Nickel	ug/l	25	<20	--	<20	<10	<10	<10
Potassium	ug/l	--	12500	--	12100	12000	1000	16000
Selenium	ug/l	100	<1	--	5	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	**0.8**	--	--	<0.1	<0.1	<0.1
Sodium	ug/l	--	47000	--	42800	45000	58000	60000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--
Zinc	ug/l	30 [13]	<10	--	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	<1	<1	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-2 01-May-1996	SW-2 01-Sep-1996	SW-2 01-Jun-1997	SW-2 01-Aug-1997	SW-2 01-Sep-1998	SW-2 01-Nov-1998
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	429	553	456	506	524	472
Ammonia, unionized	ug/l	20	**130**	**230**	**180**	**230**	**240**	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	3300	5950	4670	6070	6330	8570
Biochemical Oxygen Demand, 5 Day	ug/l	--	18000	5000	4000	6000	6000	3000
Chemical Oxygen Demand	ug/l	--	45000	24000	14000	31000	19000	13000
Chloride	ug/l	--	82000	140000	114000	140000	138000	150000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	6	10	5	8	7	6
Conductivity	uS/cm	--	1075	1420	1173	1327	1315	1312
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	7.8	--	8.2	6.6	8.6	10.2
Fluoride	ug/l	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	503000	607000	483000	555000	613000	628000
Nitrate	ug/l	--	460	1200	990	2540	760	740
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<10	<10	<100	240	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	5200	6640	5080	6910	6330	8730
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.76	7.81	8.16	7.7	7.82	8.01
Phosphorus	ug/l	-- [9]	30	**50**	<10	**90**	**40**	<10
Sulphate	ug/l	--	38000	26000	29000	23000	20000	28000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	699000	923000	762000	863000	855000	853000
Total Organic Carbon	ug/l	--	18000	10300	6000	8900	7600	7000
Total Suspended Solids	ug/l	--	9000	41000	5000	296000	15000	5000
Turbidity	ntu	-- [11]	13	13	5	>100	11	7.5
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<30	550	<30	<30	<30	<30
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	280
Beryllium	ug/l	-- [14]	--	--	--	--	--	<10
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--	130
Cadmium	ug/l	0.2 [13]	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Calcium	ug/l	--	150000	167000	139000	153000	176000	177000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<10	30	20	<10	<10	<10
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	<0.4
Copper	ug/l	5	**8**	<5	**15**	<5	--	<5
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**2370**	**1860**	**620**	**2460**	**1690**	**1360**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<2	<2	<2	<2	<2	<2
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	31000	46000	33000	42000	42000	45000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	410
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Molybdenum	ug/l	40	--	--	--	--	--	<10
Nickel	ug/l	25	10	<10	<10	<10	<10	<10
Potassium	ug/l	--	9000	18000	12000	20000	16000	16000
Selenium	ug/l	100	<1	<0.1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	7600
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Sodium	ug/l	--	46000	70000	49000	75000	70000	67000
Strontium	ug/l	--	--	--	--	--	--	1000
Sulfur	ug/l	--	--	--	--	--	--	9000
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	<10
Tin	ug/l	--	--	--	--	--	--	<50
Titanium	ug/l	--	--	--	--	--	--	<10
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	<10
Zinc	ug/l	30 [13]	10	20	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	1	<1	<1	<1	<1	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-2 15-Jul-1999	SW-2 16-Oct-1999	SW-2 01-Jul-2000	SW-2 22-Oct-2000	SW-2 16-Dec-2000	SW-2 28-Apr-2001
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	500	492	462	527	530	431
Ammonia, unionized	ug/l	20	**60**	**220**	<20	**170**	**240**	**110**
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	5040	5100	1820	5260	6960	2220
Biochemical Oxygen Demand, 5 Day	ug/l	--	9000	18000	8000	4000	30000	2000
Chemical Oxygen Demand	ug/l	--	20000	19000	15000	35000	30000	11000
Chloride	ug/l	--	129000	143000	123000	174000	141000	105000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	7	13	8	8	8	7
Conductivity	uS/cm	--	1241	1290	1180	1350	1420	1110
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	6.6	6.8	4.7	12.2	11.8	11.2
Fluoride	ug/l	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	576000	544000	433000	601000	635000	462000
Nitrate	ug/l	--	2380	1420	2260	1520	1790	1270
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	280	270	330	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	1320	7260	8160	2570
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.45	7.85	7.34	7.99	7.95	8.1
Phosphorus	ug/l	-- [9]	20	30	**80**	30	--	<10
Sulphate	ug/l	--	20000	34000	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	400	300	200	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	807000	839000	767000	878000	923000	722000
Total Organic Carbon	ug/l	--	5100	9000	5700	6300	7100	4600
Total Suspended Solids	ug/l	--	--	3000	6000	28000	114000	<2000
Turbidity	ntu	-- [11]	12	6.4	7	2.2	19	1.3
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<30	<30	<50	<50	<50	<50
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	--	270	--	--	190
Beryllium	ug/l	-- [14]	--	--	<2	--	--	<2
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	160	--	--	90
Cadmium	ug/l	0.2 [13]	<0.15	<0.15	<0.1	<0.1	<0.1	**0.3**
Calcium	ug/l	--	166000	155000	119000	173000	185000	142000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	10	<10	<10	<10	<10	4
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	0.6	--	--	**1.2**
Copper	ug/l	5	<5	<5	1	<1	3	2
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	140	**530**	**760**	**430**	**5240**	250
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<2	<2	<1	--	--	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	39000	38000	33000	41000	42000	26000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	280	--	--	150
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	<10	--	--	<10
Nickel	ug/l	25	<10	<10	<10	<10	<10	<10
Potassium	ug/l	--	16000	17000	13000	--	--	8000
Selenium	ug/l	100	<0.1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	7750	--	--	5910
Silver	ug/l	0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	70000	72000	56000	63000	66000	47000
Strontium	ug/l	--	--	--	923	--	--	865
Sulfur	ug/l	--	--	--	9000	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	<1	--	--	**200**
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	<10	--	--	<1
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	2	--	--	3
Zinc	ug/l	30 [13]	<10	<10	<10	<10	20	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	--	--	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-2 07-Sep-2001	SW-2 09-Nov-2001	SW-2 17-Apr-2002	SW-2 02-Oct-2002	SW-2 01-Apr-2003	SW-2 01-Oct-2003
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	476	468	409	473	470	353
Ammonia, unionized	ug/l	20	<20	<20	**70**	20	**210**	20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	320	450	2030	410	5480	450
Biochemical Oxygen Demand, 5 Day	ug/l	--	5000	2000	1000	3000	<1000	3000
Chemical Oxygen Demand	ug/l	--	32000	22000	12000	9000	19000	38000
Chloride	ug/l	--	--	125000	95000	--	106000	112000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	20	8	8	12	9	33
Conductivity	uS/cm	--	1270	1260	1110	1280	1260	949
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	11.3	--	--	--	5.5
Fluoride	ug/l	--	--	--	500	--	--	--
Hardness, Calcium Carbonate	ug/l	--	521000	556000	489000	561000	522000	393000
Nitrate	ug/l	--	<100	1280	800	510	1060	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	920	1240	2220	990	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	5850	210
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.8	7.97	8.18	7.94	7.76	7.79
Phosphorus	ug/l	-- [9]	30	10	30	**120**	**40**	**100**
Sulphate	ug/l	--	18000	--	40000	27000	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	200	200	--	300	1100
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	826000	819000	722000	832000	819000	617000
Total Organic Carbon	ug/l	--	13000	4400	4700	6100	8300	10100
Total Suspended Solids	ug/l	--	12000	2000	2000	49000	8000	6000
Turbidity	ntu	-- [11]	5.8	1.6	1.4	8.8	4.5	1.7
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<50	<50	<50	<10	<10	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	270	150	160	190	200	130
Beryllium	ug/l	-- [14]	<2	<2	<2	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	130	<50	<50	80	**250**	110
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	149000	158000	153000	157000	153000	108000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	6	7	<1	<1	<5	9
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.8	0.8	0.4	0.7	**1**	0.4
Copper	ug/l	5	1	1	3	2	<5	<1
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**1550**	**610**	300	**590**	**550**	120
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	36000	39000	26000	41000	34000	30000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	1340	270	110	764	208	203
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	<0.1	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	20	<10	<10	<5	<5	<5
Nickel	ug/l	25	<10	<10	<10	<5	<5	<5
Potassium	ug/l	--	12000	11000	7000	11000	16000	14000
Selenium	ug/l	100	--	<1	<1	--	<1	<1
Silicon	ug/l	--	7770	6370	4980	5600	6400	5300
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	57000	59000	45000	65000	68000	54000
Strontium	ug/l	--	1050	714	782	34	802	698
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	<1	<1	<1	<1	<1	<10
Tin	ug/l	--	--	--	<10	--	--	--
Titanium	ug/l	--	<10	<10	<10	<10	<10	<1
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	2	2	<1	<1	<5	3
Zinc	ug/l	30 [13]	**50**	<10	<10	6	<5	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	**12**	<1	<1	<1	<1	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-2 01-Dec-2003 [3]	SW-2 04-Jun-2004 [2]	SW-2 04-Jul-2004 [2]	SW-2 04-Oct-2004	SW-2 13-Jun-2005 [2]	SW-2 31-Aug-2005 [2]
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	--	--	424	--	--
Ammonia, unionized	ug/l	20	--	--	--	<20	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	70	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	<1000	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	16000	--	--
Chloride	ug/l	--	--	--	--	85000	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	13	--	--
Conductivity	uS/cm	--	--	--	--	1050	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	441000	--	--
Nitrate	ug/l	--	--	--	--	<100	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	<100	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	1480	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	7.18	--	--
Phosphorus	ug/l	-- [9]	--	--	--	**240**	--	--
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	683000	--	--
Total Organic Carbon	ug/l	--	--	--	--	9200	--	--
Total Suspended Solids	ug/l	--	--	--	--	870000	--	--
Turbidity	ntu	-- [11]	--	--	--	>100	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	50	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	--	--	--	<0.1	--	--
Calcium	ug/l	--	--	--	--	127000	--	--
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	--	--	--	2	--	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--
Copper	ug/l	5	--	--	--	3	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	**5570**	--	--
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	--	--	--	1	--	--
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	30000	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	<0.1	--	--
Molybdenum	ug/l	40	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	<5	--	--
Potassium	ug/l	--	--	--	--	9000	--	--
Selenium	ug/l	100	--	--	--	<1	--	--
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	<0.1	--	--
Sodium	ug/l	--	--	--	--	49000	--	--
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--
Zinc	ug/l	30 [13]	--	--	--	20	--	--
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	<1	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-2 30-Oct-2005	SW-2 31-Dec-2005 [3]	SW-2 08-Apr-2006	SW-2 15-Aug-2006 [2]	SW-2 25-Nov-2006	SW-2 22-Apr-2007
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	532	--	475	--	461	364
Ammonia, unionized	ug/l	20	**220**	--	<20	--	<20	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	5730	--	6140	--	3310	990
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	--	<1000	--	<1000	2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	162000	--	96000	--	109000	67000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	590	--	610	--	705	605
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	8600	--	7900	10700
Dissolved Oxygen (Field)	mg/l	-- [8]	9.71	--	11.04	--	10.91	10.1
Fluoride	ug/l	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	460500	--	499400	373900
Nitrate	ug/l	--	1020	--	650	--	550	320
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	6.9	--	7.2	--	7	7
Phosphorus	ug/l	-- [9]	**60**	--	30	--	**110**	**110**
Sulphate	ug/l	--	26000	--	39000	--	28000	12000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	8	--	4	--	2	3
Total Dissolved Solids	ug/l	--	384000	--	774000	--	800000	561000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	22000	--	4000	--	12000	6000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	--	<10	--	<10	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	280	--	170	--	220	80
Beryllium	ug/l	-- [14]	<1	--	<1	--	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	160	--	**260**	--	**300**	80
Cadmium	ug/l	0.2 [13]	**0.3**	--	<0.1	--	<0.1	<0.1
Calcium	ug/l	--	--	--	135000	--	144000	102000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	5	--	5	--	3	1
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	**1**	--	**1.1**	--	**1.4**	**2.3**
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**650**	--	**1320**	--	**5430**	**4410**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	--	<1	--	1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	30000	--	34000	29000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	230	--	570	970
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	--	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	<5	--	<5	--	<5	<5
Nickel	ug/l	25	8	--	8	--	8	5
Potassium	ug/l	--	--	--	11000	--	13000	8000
Selenium	ug/l	100	<1	--	<1	--	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	--	<0.1	--	<0.1	<0.1
Sodium	ug/l	--	--	--	58000	--	64000	39000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	**8**	--	6	--	2	2
Zinc	ug/l	30 [13]	<10	--	<10	--	10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-2 31-Aug-2007	SW-2 26-Nov-2007	SW-2 04-May-2008	SW-2 14-Aug-2008	SW-2 28-Nov-2008	SW-2 24-Apr-2009 W-7
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	466	470	423	463	571	403
Ammonia, unionized	ug/l	20	**28**	<20	<20	<20	10	2.36
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	<20
Ammonia Nitrogen	ug/l	--	4620	7100	5370	740	9380	220
Biochemical Oxygen Demand, 5 Day	ug/l	--	2000	8000	1000	8000	4000	2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	137000	133000	87000	93000	124000	94000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	755	670	1250	895	1090	1040
Conductivity (Field)	uS/cm	--	--	--	--	--	--	955
Dissolved Organic Carbon	ug/l	--	6000	8300	6700	7500	9200	4400
Dissolved Oxygen (Field)	mg/l	-- [8]	7.44	10.08	**5.01**	5.99	**7.44**	6.28
Fluoride	ug/l	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	518500	482800	435000	480000	514000	437000
Nitrate	ug/l	--	1300	1730	710	190	960	--
Nitrate as N	ug/l	--	--	--	--	--	--	250
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.1	7	7	7	7.1	7.8
Phosphorus	ug/l	-- [9]	**90**	30	<10	30	30	<10
Sulphate	ug/l	--	20000	22000	24000	4000	20000	18000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	23	2	8	18	2	9
Total Dissolved Solids	ug/l	--	858000	845000	702000	683000	936000	676000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	5000	<2000	14000	43000	5000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	<10
Aluminum, dissolved	ug/l	-- [12]	<10	<10	<10	<10	<10	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	330	130	200	310	250	120
Beryllium	ug/l	-- [14]	<1	<1	<1	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	170	130	**280**	**220**	**300**	90
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	150000	139000	128000	141000	148000	129000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	6	2	5	4	7	2
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.9	0.6	**1**	**2**	**1.7**	0.3
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**1000**	**310**	**410**	**7850**	**3280**	90
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	35000	33000	28000	31000	35000	28000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	280	220	170	690	530	80
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	5	<5
Potassium	ug/l	--	13000	13000	10000	12000	15000	7000
Selenium	ug/l	100	<1	<1	<1	<1	<1	1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	76000	71000	57000	62000	75000	53000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	**8**	2	6	3	**14**	2
Zinc	ug/l	30 [13]	10	10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-2 25-Aug-2009 A-8	SW-2 30-Nov-2009 W-2	SW-2 17-May-2010 W-8	SW-2 21-Aug-2010 [4] A-6	SW-2 27-Nov-2010 W-7	SW-2 09-May-2011 W-7
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	468	589	476	437	599	450
Ammonia, unionized	ug/l	20	**23.79**	18.96	**33.37**	3.92	**121.51**	**25.87**
Ammonia, unionized (Field)	ug/l	20	20	20	**30**	<20	**120**	**30**
Ammonia Nitrogen	ug/l	--	4460	9620	6160	410	10700	4430
Biochemical Oxygen Demand, 5 Day	ug/l	--	7000	14000	8000	6000	3000	5000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	77000	119000	105000	113000	117000	86000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1080	1450	1200	1160	1450	1050
Conductivity (Field)	uS/cm	--	1120	1205	1015	1100	1130	1050
Dissolved Organic Carbon	ug/l	--	6300	10700	7200	6300	9500	6800
Dissolved Oxygen (Field)	mg/l	-- [8]	6.88	**6.48**	**5.88**	**4.95**	8.61	6.01
Fluoride	ug/l	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	432000	529000	417000	467000	521000	395000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	1020	1360	470	1140	1350
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.1	7.2	7.3	7.2	8	7.5
Phosphorus	ug/l	-- [9]	**50**	20	10	20	10	10
Sulphate	ug/l	--	6000	17000	18000	12000	28000	22000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	21	5	15	26	4	10
Total Dissolved Solids	ug/l	--	702000	943000	780000	754000	943000	682000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	57000	18000	13000	52000	9000	15000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	<10	<10	<10	<10	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	260	230	210	230	230	180
Beryllium	ug/l	-- [14]	<1	<1	<1	<1	<1	<0.5
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	**220**	**400**	**300**	140	**310**	**230**
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	130000	154000	124000	139000	151000	117000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	5	5	4	3	4	4
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	**1.0**	**1.6**	**1.4**	0.9	**1.7**	**1.0**
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	<50	<50	<50
Iron	ug/l	300	**710**	**690**	**560**	**960**	**1690**	**530**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	26000	35000	26000	29000	35000	25000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	370	420	350	640	630	240
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	6	<5	<5	5	<5
Potassium	ug/l	--	6000	19000	12000	10000	16000	10000
Selenium	ug/l	100	<1	1	<1	<10	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	42000	83000	67000	63000	75000	53000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	**7**	**7**	4	4	6	4
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-2 08-Sep-2011 [32] W-7	SW-2 29-Nov-2011 W-10	SW-2 06-May-2012 W-7	SW-2 22-Aug-2012 [2] SW-2	SW-2 12-Nov-2012 [32] W - 11	SW-2 29-May-2014 W-8
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	458	465	435	--	524	420
Ammonia, unionized	ug/l	20	1.25	**23.34**	13.06	--	0.29	19
Ammonia, unionized (Field)	ug/l	20	<20	20	--	--	--	--
Ammonia Nitrogen	ug/l	--	110	3470	2070	--	50	3400
Biochemical Oxygen Demand, 5 Day	ug/l	--	7000	6000	5000	--	2000	6000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	123000	125000	96000	--	124000	--
Chloride, dissolved	ug/l	--	--	--	--	--	--	100000
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1210	1220	1120	--	1320	1100
Conductivity (Field)	uS/cm	--	1120	1070	1040	--	600	690
Dissolved Organic Carbon	ug/l	--	6100	4300	6100	--	6200	5900
Dissolved Oxygen (Field)	mg/l	-- [8]	**4.98**	**5.97**	6.14	--	**5.05**	**4.77**
Fluoride	ug/l	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	455000	412000	402000	--	486000	420000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	480	1480	2960	--	990	1410
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	7.7	7.5	--	7.6	7.4
Phosphorus	ug/l	-- [9]	**60**	30	10	--	**80**	10
Sulphate	ug/l	--	16000	21000	22000	--	26000	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	24000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	22	6	11	--	7	12
Total Dissolved Solids	ug/l	--	786000	793000	728000	--	858000	628000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	198000	18000	2000	--	<2000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	<10	<10	--	<10	7.3
Antimony	ug/l	20	--	--	--	--	--	<0.50
Arsenic	ug/l	100 [13]	--	--	--	--	--	<1.0
Barium	ug/l	--	180	210	220	--	160	220
Beryllium	ug/l	-- [14]	<10	<0.5	<0.5	--	<10	<0.50
Bismuth	ug/l	--	--	--	--	--	--	<1.0
Boron	ug/l	200 [15]	200	150	170	--	200	**270**
Cadmium	ug/l	0.2 [13]	<10	<0.1	<0.1	--	<10	<0.10
Calcium	ug/l	--	136000	122000	118000	--	150000	130000
Calcium, dissolved	ug/l	--	--	--	--	--	--	120000
Chromium	ug/l	-- [16]	<50	4	6	--	<50	<5.0
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	<5.0
Cobalt	ug/l	0.9	<10	0.9	**1.1**	--	<10	**0.95**
Copper	ug/l	5	--	--	--	--	--	<1.0
Hexavalent Chromium	ug/l	1 [7]	<50	<50	<50	--	<50	<0.50
Iron	ug/l	300	**5000**	**1550**	**1530**	--	**4700**	**670**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<10	<1	<1	--	<10	<0.50
Lithium	ug/l	--	--	--	--	--	--	7.6
Magnesium	ug/l	--	28000	26000	26000	--	34000	30000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	28000
Manganese	ug/l	--	640	350	340	--	510	180
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	--	<0.1	<0.10
Molybdenum	ug/l	40	<10	<5	<5	--	<10	<0.50
Nickel	ug/l	25	10	<5	<5	--	<10	3.4
Potassium	ug/l	--	13000	10000	11000	--	13000	13000
Selenium	ug/l	100	<50	<1	<1	--	<50	<2.0
Silicon	ug/l	--	--	--	--	--	--	7000
Silver	ug/l	0.1	<10	<0.1	<0.1	--	<10	<0.10
Sodium	ug/l	--	69000	66000	64000	--	78000	75000
Strontium	ug/l	--	--	--	--	--	--	710
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	<1.0
Thallium	ug/l	0.3 [19]	--	--	--	--	--	<0.050
Tin	ug/l	--	--	--	--	--	--	<1.0
Titanium	ug/l	--	--	--	--	--	--	<5.0
Tungsten	ug/l	30 [20]	--	--	--	--	--	<1.0
Uranium	ug/l	5 [15]	--	--	--	--	--	0.30
Vanadium	ug/l	6	<50	**7**	5	--	<50	<0.50
Zinc	ug/l	30 [13]	<50	<10	<10	--	<50	5.4
Zirconium	ug/l	4 [15]	--	--	--	--	--	<1.0
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-2 26-Aug-2014 S-8	SW-2 17-Nov-2014 W-9	SW-2 28-Apr-2015 W-9	SW-2 25-Aug-2015 W-7	SW-2 11-Nov-2015 W-4	SW-2 18-Apr-2016 W-11
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	400	490	460	410	410	420
Ammonia, unionized	ug/l	20	7	11	**23.46**	9.01	11.17	**40.46**
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	490	4300	6400	540	1800	7500
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	3000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	110000	130000	110000	130000	130000	87000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1000	1300	1200	1200	1200	1100
Conductivity (Field)	uS/cm	--	785	740	780	890	1400	840
Dissolved Organic Carbon	ug/l	--	4700	4500	7100	4700	4000	6700
Dissolved Oxygen (Field)	mg/l	-- [8]	**2.29**	**3.61**	**4.88**	**4.88**	**3.08**	**3.99**
Fluoride	ug/l	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	380000	550000	480000	430000	490000	400000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	500	1300	1790	650	1740	1080
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.5	7.4	7.4	7.6	7.7	7.6
Phosphorus	ug/l	-- [9]	**47**	13	30	**38**	18	9
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	10000	17000	29000	13000	22000	26000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	22	2	7	21	5	6.1
Total Dissolved Solids	ug/l	--	586000	708000	654000	686000	698000	406000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	29000	18000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	9.1	15	6
Aluminum, dissolved	ug/l	-- [12]	16	70	19	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	250	260	210	230	230	180
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	190	150	**290**	190	130	**310**
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1
Calcium	ug/l	--	120000	170000	140000	120000	140000	120000
Calcium, dissolved	ug/l	--	110000	160000	140000	120000	140000	120000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	0.78	**1.1**	0.89	0.56	0.61	0.9
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**1300**	**4600**	**1300**	**740**	**970**	240
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	0.58	<0.50	<0.50	<0.50	<0.5
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	31000	37000	31000	31000	34000	27000
Magnesium, dissolved	ug/l	--	28000	38000	33000	31000	35000	26000
Manganese	ug/l	--	310	530	220	240	210	87
Mercury	ug/l	0.2 [18]	--	--	--	<0.10	<0.10	<0.1
Mercury, dissolved	ug/l	0.2 [18]	<0.10	<0.10	<0.10	--	--	--
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
Nickel	ug/l	25	1.9	3.8	3.7	1.7	2.6	4
Potassium	ug/l	--	10000	12000	12000	9100	11000	11000
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1
Sodium	ug/l	--	70000	77000	69000	73000	75000	61000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<0.50	<0.50	0.54	<0.50	<0.50	<0.5
Zinc	ug/l	30 [13]	<5.0	**35**	<5.0	<5.0	<5.0	5
Zirconium	ug/l	4 [15]	<1.0	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-2 07-Jul-2016 W-8	SW-2 31-Oct-2016 W-9	SW-2 23-May-2017 SW-2	SW-2 26-Jul-2017 SW-2	SW-2 22-Nov-2017 SW-2	SW-2 15-May-2018 SW-2
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	430	440	410	470	550	440
Ammonia, unionized	ug/l	20	5.86	6.99	**23.18**	9.1	**22.81**	**27.87**
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	480	1400	3400	2500	6100	2400
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	130000	130000	87000	120000	120000	110000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1200	1300	1100	1100	1400	1100
Conductivity (Field)	uS/cm	--	710	685	885	560	799	1050
Dissolved Organic Carbon	ug/l	--	4200	3800	5400	4700	6000	4300
Dissolved Oxygen (Field)	mg/l	-- [8]	**2.99**	**3.46**	**5.2**	**5.10**	**6.62**	6.69
Fluoride	ug/l	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	450000	470000	420000	470000	500000	430000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	1090	1380	1440	1380	1220	2120
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	7.5	7.5	7.0	7.5	7.7
Phosphorus	ug/l	-- [9]	19	**53**	12	11	**33**	23
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	18000	24000	21000	20000	20000	20000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	23	8	12	18.9	4.4	13
Total Dissolved Solids	ug/l	--	702000	732000	584000	680000	715000	630000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	34000	10000	10000	14000	23000	18000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	15	<5.0	6.5	9.2	21	53
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	270	200	190	210	200	230
Beryllium	ug/l	-- [14]	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	**220**	110	**230**	180	200	**210**
Cadmium	ug/l	0.2 [13]	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Calcium	ug/l	--	140000	140000	130000	140000	150000	140000
Calcium, dissolved	ug/l	--	130000	130000	120000	140000	150000	120000
Chromium	ug/l	-- [16]	<5	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	**1.0**	0.66	0.68	0.69	**1.2**	**1.1**
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**1200**	**640**	300	**480**	**890**	**2600**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.5	<0.50	<0.50	<0.50	<0.50	0.52
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	35000	35000	29000	31000	34000	32000
Magnesium, dissolved	ug/l	--	32000	35000	27000	32000	33000	28000
Manganese	ug/l	--	220	160	93	160	370	320
Mercury	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	4	2.1	2.4	1.9	3.3	3.2
Potassium	ug/l	--	9200	11000	9400	9400	11000	11000
Selenium	ug/l	100	<2	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	79000	77000	60000	68000	75000	74000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<0.5	<0.50	<0.50	<0.50	<0.50	0.65
Zinc	ug/l	30 [13]	<5	<5.0	<5.0	<5.0	<5.0	6.1
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-2 29-Aug-2018 SW-2	SW-2 02-Nov-2018 SW-2	SW-2 04-Jun-2019 SW-2	SW-2 07-Aug-2019 SW2	SW-2 17-Nov-2019 SW-2	SW-2 05-May-2020 SW-2
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	440	390	410	410	450	440
Ammonia, unionized	ug/l	20	14.28	5.27	15.28	2.96	8.21	**52.78**
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	1000	1200	2400	180	3200	6700
Biochemical Oxygen Demand, 5 Day	ug/l	--	4000	2000	6000	4000	<2000	6000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	130000	110000	91000	110000	110000	79000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1200	1000	1100	1100	1200	1100
Conductivity (Field)	uS/cm	--	495	530	505	605	910	941
Dissolved Organic Carbon	ug/l	--	4400	3800	3900	7100	3400	4800
Dissolved Oxygen (Field)	mg/l	-- [8]	**3.33**	9.23	**4.89**	5.01	**5.88**	8.21
Fluoride	ug/l	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	440000	390000	410000	430000	480000	430000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	590	1310	2270	<100	1660	1940
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	59	136
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	1720	2070
pH (Field)	-	6.5 - 8.5	7.5	7.5	7.42	7.5	7.4	7.57
Phosphorus	ug/l	-- [9]	26	5	8	**51**	20	10
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	12000	19000	20000	<1000	22000	20000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	22	6.4	13.5	24	2.6	11.8
Total Dissolved Solids	ug/l	--	720000	540000	630000	615000	645000	565000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	15000	<10000	<10000	<10000	20000	47000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	28	7.5	8.2	--	33	35
Aluminum, dissolved	ug/l	-- [12]	--	--	--	<5.0	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	250	170	180	180	200	190
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	130	100	160	170	110	**220**
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Calcium	ug/l	--	130000	120000	120000	130000	140000	120000
Calcium, dissolved	ug/l	--	130000	110000	120000	130000	140000	130000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	**1.1**	0.60	0.57	0.51	0.90	**0.95**
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**1900**	**540**	**330**	**600**	**1400**	**2200**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	30000	27000	27000	29000	30000	27000
Magnesium, dissolved	ug/l	--	30000	27000	26000	28000	32000	27000
Manganese	ug/l	--	520	180	93	97	350	300
Mercury	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	2.2	1.7	1.9	2.1	2.6	2.7
Potassium	ug/l	--	9200	9100	9200	5800	9500	9800
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	77000	70000	58000	63000	73000	62000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	5.7	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-2 26-Aug-2020 SW-2	SW-2 29-Oct-2020 SW-2
General Chemistry				
Alkalinity (Total as CaCO3)	mg/l	-- [6]	410	430
Ammonia, unionized	ug/l	20	3.58	10.42
Ammonia, unionized (Field)	ug/l	20	--	--
Ammonia Nitrogen	ug/l	--	510	2300
Biochemical Oxygen Demand, 5 Day	ug/l	--	5000	<2000
Chemical Oxygen Demand	ug/l	--	--	--
Chloride	ug/l	--	--	--
Chloride, dissolved	ug/l	--	110000	100000
Chromium (III)	ug/l	8.9 [7]	<5	<5
Color	color unit	--	--	--
Conductivity	uS/cm	--	1100	1100
Conductivity (Field)	uS/cm	--	896	844
Dissolved Organic Carbon	ug/l	--	4100	3700
Dissolved Oxygen (Field)	mg/l	-- [8]	6.94	**4.21**
Fluoride	ug/l	--	--	--
Hardness, Calcium Carbonate	ug/l	--	410000	430000
Nitrate	ug/l	--	--	--
Nitrate as N	ug/l	--	1310	1460
Nitrite	ug/l	--	--	--
Nitrite as N	ug/l	--	--	--
Nitrogen	ug/l	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--
pH (Field)	-	6.5 - 8.5	7.41	7.42
Phosphorus	ug/l	-- [9]	28	8
Sulphate	ug/l	--	--	--
Sulphate, dissolved	ug/l	--	9400	15000
Tannin & Lignin	ug/l	--	--	--
Temperature (Field)	deg c	-- [10]	15.1	9.1
Total Dissolved Solids	ug/l	--	365000	620000
Total Organic Carbon	ug/l	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000
Turbidity	ntu	-- [11]	--	--
Metals				
Aluminum	ug/l	-- [12]	8.5	16
Aluminum, dissolved	ug/l	-- [12]	--	--
Antimony	ug/l	20	--	--
Arsenic	ug/l	100 [13]	--	--
Barium	ug/l	--	190	190
Beryllium	ug/l	-- [14]	<0.40	<0.40
Bismuth	ug/l	--	--	--
Boron	ug/l	200 [15]	120	100
Cadmium	ug/l	0.2 [13]	<0.090	<0.090
Calcium	ug/l	--	110000	120000
Calcium, dissolved	ug/l	--	--	--
Chromium	ug/l	-- [16]	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	--	--
Cobalt	ug/l	0.9	0.57	0.65
Copper	ug/l	5	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50
Iron	ug/l	300	**690**	**660**
Iron, dissolved	ug/l	300	--	--
Lead	ug/l	-- [17]	<0.50	<0.50
Lithium	ug/l	--	--	--
Magnesium	ug/l	--	26000	29000
Magnesium, dissolved	ug/l	--	--	--
Manganese	ug/l	--	140	190
Mercury	ug/l	0.2 [18]	<0.10	<0.10
Mercury, dissolved	ug/l	0.2 [18]	--	--
Molybdenum	ug/l	40	<0.50	<0.50
Nickel	ug/l	25	1.4	1.6
Potassium	ug/l	--	7700	9900
Selenium	ug/l	100	<2.0	<2.0
Silicon	ug/l	--	--	--
Silver	ug/l	0.1	<0.090	<0.090
Sodium	ug/l	--	66000	70000
Strontium	ug/l	--	--	--
Sulfur	ug/l	--	--	--
Tellurium	ug/l	--	--	--
Thallium	ug/l	0.3 [19]	--	--
Tin	ug/l	--	--	--
Titanium	ug/l	--	--	--
Tungsten	ug/l	30 [20]	--	--
Uranium	ug/l	5 [15]	--	--
Vanadium	ug/l	6	<0.50	<0.50
Zinc	ug/l	30 [13]	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--
Phenols				
Phenolics, Total Recoverable	ug/l	1 [21]	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-2 28-Apr-2021 SW2	SW-2 14-Jul-2021 SW-2	SW-2 22-Nov-2021 SW-2	SW-2 27-Apr-2022 SW-2	SW-2 17-Aug-2022 [5] SW-2	SW-2 11-Dec-2022 SW-2
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	440	370	460	440	400	400
Ammonia, unionized	ug/l	20	**47.41**	2.47	**25.92**	**41.49**	18.18	6.12
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	11000	230	5000	9000	810	1400
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	2000	<2000	2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	98000	98000	110000	79000	100000	98000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1100	980	1200	1100	1000	1100
Conductivity (Field)	uS/cm	--	780	824	583	542	704	683
Dissolved Organic Carbon	ug/l	--	5900	3900	4000	7600	4100	3700
Dissolved Oxygen (Field)	mg/l	-- [8]	**4.49**	**3.20**	**5.89**	7.33	5.87	**7.44**
Fluoride	ug/l	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	420000	370000	450000	400000	400000	420000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	2020	760	1300	1380	860	180
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	69	26	51	36	42	12
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	2080	790	1350	1420	900	190
pH (Field)	-	6.5 - 8.5	7.21	7.34	7.52	7.5	7.61	7.65
Phosphorus	ug/l	-- [9]	7	19	9	7	11	**31**
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	20000	11000	33000	28000	9800	46000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	14.7	23.1	7.9	7.0	24.9	2.1
Total Dissolved Solids	ug/l	--	555000	450000	680000	565000	510000	480000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	<10000	10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	7.0	14	6.2	<4.9	10	26
Aluminum, dissolved	ug/l	-- [12]	--	--	--	<4.9	<4.9	6.3
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	190	210	200	180	230	120
Beryllium	ug/l	-- [14]	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	**250**	160	120	**360**	170	170
Cadmium	ug/l	0.2 [13]	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090
Calcium	ug/l	--	120000	100000	130000	120000	130000	120000
Calcium, dissolved	ug/l	--	120000	100000	130000	120000	110000	120000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	0.74	0.61	0.60	0.81	0.67	0.71
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	250	**720**	**430**	290	**810**	**690**
Iron, dissolved	ug/l	300	--	--	--	<100	100	<100
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	28000	26000	32000	28000	31000	28000
Magnesium, dissolved	ug/l	--	29000	27000	32000	27000	28000	28000
Manganese	ug/l	--	89	160	170	82	210	220
Mercury	ug/l	0.2 [18]	**0.23**	<0.10	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	<0.10	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	3.5	1.7	2.4	3.7	1.9	2.1
Potassium	ug/l	--	12000	7700	11000	14000	9100	13000
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090
Sodium	ug/l	--	71000	66000	71000	70000	73000	66000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-2 29-May-2023 SW-2	SW-2 21-Sep-2023 SW-2	SW-2 03-Dec-2023 SW-2
General Chemistry					
Alkalinity (Total as CaCO3)	mg/l	-- [6]	400	440	440
Ammonia, unionized	ug/l	20	**25.61**	15.93	12.56
Ammonia, unionized (Field)	ug/l	20	--	--	--
Ammonia Nitrogen	ug/l	--	2900	1200	2800
Biochemical Oxygen Demand, 5 Day	ug/l	--	5000	<2000	4000
Chemical Oxygen Demand	ug/l	--	--	--	--
Chloride	ug/l	--	--	--	--
Chloride, dissolved	ug/l	--	54000	110000	100000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5
Color	color unit	--	--	--	--
Conductivity	uS/cm	--	1000	1100	1200
Conductivity (Field)	uS/cm	--	717	601	578
Dissolved Organic Carbon	ug/l	--	4200	3800	3100
Dissolved Oxygen (Field)	mg/l	-- [8]	6.01	**3.96**	**4.58**
Fluoride	ug/l	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	450000	460000	460000
Nitrate	ug/l	--	--	--	--
Nitrate as N	ug/l	--	1660	1460	2370
Nitrite	ug/l	--	--	--	--
Nitrite as N	ug/l	--	91	161	97
Nitrogen	ug/l	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	1750	1620	2460
pH (Field)	-	6.5 - 8.5	7.61	7.66	7.59
Phosphorus	ug/l	-- [9]	13	19	6
Sulphate	ug/l	--	--	--	--
Sulphate, dissolved	ug/l	--	7500	11000	18000
Tannin & Lignin	ug/l	--	--	--	--
Temperature (Field)	deg c	-- [10]	12.1	16.0	4.1
Total Dissolved Solids	ug/l	--	570000	635000	570000
Total Organic Carbon	ug/l	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	53000	10000
Turbidity	ntu	-- [11]	--	--	--
Metals					
Aluminum	ug/l	-- [12]	6.8	<4.9	7.5
Aluminum, dissolved	ug/l	-- [12]	<4.9	<4.9	<4.9
Antimony	ug/l	20	--	--	--
Arsenic	ug/l	100 [13]	--	--	--
Barium	ug/l	--	180	230	190
Beryllium	ug/l	-- [14]	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--
Boron	ug/l	200 [15]	190	130	99
Cadmium	ug/l	0.2 [13]	<0.090	<0.090	<0.090
Calcium	ug/l	--	120000	140000	140000
Calcium, dissolved	ug/l	--	130000	130000	130000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	0.61	<0.50	<0.50
Copper	ug/l	5	--	--	--
Hexavalent Chromium	ug/l	1 [7]	0.51	<0.50	<0.50
Iron	ug/l	300	**350**	180	**390**
Iron, dissolved	ug/l	300	<100	180	<100
Lead	ug/l	-- [17]	<0.50	<0.50	7.7
Lithium	ug/l	--	--	--	--
Magnesium	ug/l	--	27000	32000	33000
Magnesium, dissolved	ug/l	--	29000	31000	33000
Manganese	ug/l	--	100	180	140
Mercury	ug/l	0.2 [18]	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	<0.50	<0.50	<0.50
Nickel	ug/l	25	1.8	1.5	1.6
Potassium	ug/l	--	8000	10000	10000
Selenium	ug/l	100	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--
Silver	ug/l	0.1	<0.090	<0.090	<0.090
Sodium	ug/l	--	60000	73000	75000
Strontium	ug/l	--	--	--	--
Sulfur	ug/l	--	--	--	--
Tellurium	ug/l	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--
Tin	ug/l	--	--	--	--
Titanium	ug/l	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--
Uranium	ug/l	5 [15]	--	--	--
Vanadium	ug/l	6	<0.50	<0.50	<0.50
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--
Phenols					
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-20 01-Aug-1994	SW-20 01-Oct-1994	SW-20 01-Dec-1994
General Chemistry					
Alkalinity (Total as CaCO3)	mg/l	-- [6]	512	--	439
Ammonia, unionized	ug/l	20	<100	--	--
Ammonia Nitrogen	ug/l	--	590	--	1110
Biochemical Oxygen Demand, 5 Day	ug/l	--	4200	--	101000
Chemical Oxygen Demand	ug/l	--	132000	58000	29700
Chloride	ug/l	--	127000	--	88000
Color	color unit	--	44	--	16
Conductivity	uS/cm	--	1196	--	--
Hardness, Calcium Carbonate	ug/l	--	490000	--	374000
Nitrate	ug/l	--	<100	--	<100
Nitrite	ug/l	--	<100	--	<100
Nitrogen	ug/l	--	3080	--	560
pH (Field)	-	6.5 - 8.5	7.24	--	7.91
Phosphorus	ug/l	-- [9]	**670**	--	<10
Sulphate	ug/l	--	3100	--	15900
Tannin & Lignin	ug/l	--	2710	1520	--
Total Dissolved Solids	ug/l	--	777400	--	--
Total Organic Carbon	ug/l	--	21300	15300	10800
Total Suspended Solids	ug/l	--	--	--	<1000
Turbidity	ntu	-- [11]	44	--	2.9
Metals					
Aluminum, dissolved	ug/l	-- [12]	238	--	47
Cadmium	ug/l	0.2 [13]	<0.1	--	<0.1
Calcium	ug/l	--	122000	--	89000
Chromium	ug/l	-- [16]	<10	--	<10
Copper	ug/l	5	2	--	0.6
Iron	ug/l	300	**5300**	--	**860**
Lead	ug/l	-- [17]	1	--	<0.2
Magnesium	ug/l	--	44600	--	36400
Manganese	ug/l	--	2100	--	367
Mercury, dissolved	ug/l	0.2 [18]	<0.1	--	<0.1
Nickel	ug/l	25	<20	--	<20
Potassium	ug/l	--	7800	--	13100
Selenium	ug/l	100	<1	--	6
Silver	ug/l	0.1	**0.7**	--	**1**
Sodium	ug/l	--	62700	--	49000
Zinc	ug/l	30 [13]	12	--	<10
Phenols					
Phenolics, Total Recoverable	ug/l	1 [21]	**5**	**4**	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-21 01-Jul-1995	SW-21 01-Sep-1995	SW-21 01-May-1996	SW-21 01-Jun-1997	SW-21 01-Sep-1998	SW-21 01-Nov-1998
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	520	574	416	585	623	422
Ammonia, unionized	ug/l	20	**150**	**250**	<20	**160**	**50**	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	3890	4700	120	4210	4660	700
Biochemical Oxygen Demand, 5 Day	ug/l	--	5000	18000	<1000	18000	17000	<1000
Chemical Oxygen Demand	ug/l	--	39000	81000	53000	76000	67000	8000
Chloride	ug/l	--	102000	106000	42000	99000	125000	136000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	15	34	18	26	29	5
Conductivity	uS/cm	--	1426	1334	935	1312	1380	1121
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	5.9	5.9	8.4	5.5	3.5	6
Hardness, Calcium Carbonate	ug/l	--	565000	543000	432000	506000	599000	561000
Nitrate	ug/l	--	790	810	2640	3100	740	170
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	130	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	4170	6200	1330	6470	5670	900
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.99	7.86	8.1	7.94	7.58	8.11
Phosphorus	ug/l	-- [9]	20	**130**	20	**240**	**100**	<10
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	30000	<3000	40000	<3000	<3000	25000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	926900	867100	607750	852800	897000	728650
Total Organic Carbon	ug/l	--	13000	31800	20000	28000	26000	4100
Total Suspended Solids	ug/l	--	18000	139000	7000	104000	64000	13000
Turbidity	ntu	-- [11]	6	60	0.7	14	28	2.3
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<30	<30	<30	50	<30	<30
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	150
Beryllium	ug/l	-- [14]	--	--	--	--	--	<10
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--	80
Cadmium	ug/l	0.2 [13]	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Calcium	ug/l	--	157000	135000	115000	130000	154000	165000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<10	<10	<10	20	<10	<10
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	<0.4
Copper	ug/l	5	<5	<5	**9**	**12**	<5	<10
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**920**	--	90	**1540**	**830**	180
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<2	<2	<2	<2	<2	<2
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	50000	35000	44000	52000	36000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	42000	--	--	--	--	90
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Molybdenum	ug/l	40	--	--	--	--	--	<10
Nickel	ug/l	25	<10	<10	10	<10	<10	<10
Potassium	ug/l	--	2000	30000	19000	23000	26000	6000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	4900
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Sodium	ug/l	--	66000	84000	43000	80000	100000	47000
Strontium	ug/l	--	--	--	--	--	--	1110
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	<10
Tin	ug/l	--	--	--	--	--	--	<50
Titanium	ug/l	--	--	--	--	--	--	<10
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	<10
Zinc	ug/l	30 [13]	<10	<10	10	10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	<1	<1	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-21 15-Jul-1999	SW-21 16-Oct-1999	SW-21 01-Jul-2000	SW-21 22-Oct-2000	SW-21 01-Dec-2000	SW-21 28-Apr-2001
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	417	424	315	455	371	429
Ammonia, unionized	ug/l	20	<20	<20	--	<20	<20	**40**
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	960	20	<20	360	50	980
Biochemical Oxygen Demand, 5 Day	ug/l	--	21000	<1000	<1000	4000	2000	1000
Chemical Oxygen Demand	ug/l	--	85000	22000	21000	12000	11000	22000
Chloride	ug/l	--	75000	127000	63000	132000	76000	95000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	84	13	14	16	7	16
Conductivity	uS/cm	--	946	1140	773	1160	922	1060
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	2.7	4.9	3.5	12.6	14	8.7
Hardness, Calcium Carbonate	ug/l	--	499000	487000	342000	537000	441000	403000
Nitrate	ug/l	--	270	650	<100	210	<100	670
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	570	970	2100	2040
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	6.99	7.72	6.79	7.63	7.27	7.97
Phosphorus	ug/l	-- [9]	**1050**	<10	30	30	**90**	**40**
Silica	ug/l	--	--	--	<20	--	--	--
Sulphate	ug/l	--	21000	26000	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	500	800	<100	400
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	614900	741000	502450	754000	599300	689000
Total Organic Carbon	ug/l	--	23400	7300	5300	6500	3800	8900
Total Suspended Solids	ug/l	--	--	3000	9000	16000	62000	12000
Turbidity	ntu	-- [11]	>100	1.4	3.5	9.5	13	3.1
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	30	<30	<50	<50	<50	<50
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	--	110	--	--	210
Beryllium	ug/l	-- [14]	--	--	<2	--	--	<2
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	80	--	--	130
Cadmium	ug/l	0.2 [13]	<0.15	<0.15	<0.1	<0.1	<0.1	**0.3**
Calcium	ug/l	--	142000	137000	99000	159000	132000	115000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	10	<10	<10	<10	<10	3
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	<0.4	--	--	**2.4**
Copper	ug/l	5	<5	<5	<1	<1	1	2
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**3010**	200	**390**	**1350**	**3770**	**960**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<2	<2	<1	--	--	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	35000	35000	23000	34000	27000	28000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	210	--	--	70
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	10	--	--	<10
Nickel	ug/l	25	20	<10	<10	<10	<10	<10
Potassium	ug/l	--	1000	12000	<1000	--	--	9000
Selenium	ug/l	100	<0.1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	4330	--	--	4770
Silver	ug/l	0.1	<0.1	<0.1	**0.3**	<0.1	<0.1	<0.1
Sodium	ug/l	--	40000	61000	29000	46000	36000	46000
Strontium	ug/l	--	--	--	899	--	--	892
Sulfur	ug/l	--	--	--	8000	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	<1	--	--	<1
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	<10	--	--	<10
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	<1	--	--	<1
Zinc	ug/l	30 [13]	30	<10	<10	<10	<10	**70**
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	**2**	<1	<1	--	--	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-21 17-Apr-2002	SW-21 01-Apr-2003	SW-21 13-Jun-2005	SW-21 31-Aug-2005	SW-21 30-Oct-2005	SW-21 31-Dec-2005 [3]
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	276	386	435	441	476	--
Ammonia, unionized	ug/l	20	<20	**80**	<20	**30**	<20	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	260	2160	1640	2510	700	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	9000	14000	<1000	--
Chemical Oxygen Demand	ug/l	--	18000	19000	--	--	--	--
Chloride	ug/l	--	53000	95000	102000	105000	155000	--
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	15	16	--	--	--	--
Conductivity	uS/cm	--	706	1020	1400	1300	370	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	**0.34**	**0.4**	10.41	--
Hardness, Calcium Carbonate	ug/l	--	307000	432000	--	--	--	--
Nitrate	ug/l	--	120	280	<100	180	<100	--
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	900	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	3200	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.08	7.75	**6.3**	**6**	7.1	--
Phosphorus	ug/l	-- [9]	**50**	**60**	**90**	**1120**	**120**	--
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	26000	--	11000	83000	50000	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	200	500	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	11.2	19.4	7	--
Total Dissolved Solids	ug/l	--	458900	663000	910000	845000	241000	--
Total Organic Carbon	ug/l	--	5400	7600	--	--	--	--
Total Suspended Solids	ug/l	--	6000	19000	26000	13900000	17000	--
Turbidity	ntu	-- [11]	2.7	3.9	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<50	<10	<10	8860	<10	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	70	130	170	--	210	--
Beryllium	ug/l	-- [14]	<2	<1	<1	--	<1	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	<50	110	180	**340**	200	--
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	--	<0.1	--
Calcium	ug/l	--	90000	122000	--	--	--	--
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	2	<5	5	--	4	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.5	0.7	0.7	--	0.5	--
Copper	ug/l	5	1	<5	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**640**	**510**	**630**	**16200**	**550**	--
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	--	<1	--	<1	--
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	20000	31000	--	--	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	220	102	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	--	<0.1	--
Molybdenum	ug/l	40	<10	<5	<5	--	<5	--
Nickel	ug/l	25	<10	<5	<5	12	6	--
Potassium	ug/l	--	4000	12000	--	--	--	--
Selenium	ug/l	100	<1	<1	1	--	11	--
Silicon	ug/l	--	3110	4600	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	--	<0.1	--
Sodium	ug/l	--	22000	54000	--	--	--	--
Strontium	ug/l	--	646	738	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	<1	<1	--	--	--	--
Tin	ug/l	--	<10	--	--	--	--	--
Titanium	ug/l	--	<10	<10	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<1	<5	**8**	--	5	--
Zinc	ug/l	30 [13]	<10	<5	<10	**140**	<10	--
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-21 08-Apr-2006	SW-21 15-Aug-2006	SW-21 25-Nov-2006	SW-21 22-Apr-2007	SW-21 31-Aug-2007	SW-21 26-Nov-2007
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	381	504	395	384	489	442
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	0.23
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	3220	810	560	1790	460	200
Biochemical Oxygen Demand, 5 Day	ug/l	--	2000	4000	1000	2000	4000	1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	82000	117000	48000	85000	122000	136000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	445	1250	510	445	510	485
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	7900	13400	13400	7700	10300	8100
Dissolved Oxygen (Field)	mg/l	-- [8]	10.92	9.8	9.18	10.04	8.19	8.92
Hardness, Calcium Carbonate	ug/l	--	380700	488500	378700	418900	524200	488500
Nitrate	ug/l	--	360	<100	<100	740	<100	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	7.3	7.1	7.2	7.3	7.1
Phosphorus	ug/l	-- [9]	20	**40**	**60**	**50**	**50**	<10
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	46000	5000	12000	27000	4000	14000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	4	21	1	2	24	1
Total Dissolved Solids	ug/l	--	657000	813000	565000	663000	813000	806000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	2000	10000	4000	<2000	<2000	<2000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	20	<10	<10	<10	30
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	120	210	80	120	220	160
Beryllium	ug/l	-- [14]	<1	<1	<1	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	**210**	**320**	160	190	**350**	160
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	108000	138000	99000	120000	149000	138000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	4	4	2	4	7	2
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.5	**1**	**2.7**	0.7	0.7	0.5
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	150	**400**	**2560**	**310**	190	**320**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	27000	35000	32000	29000	37000	35000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	130	440	1210	150	290	300
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	6	6	5	<5	<5	<5
Potassium	ug/l	--	9000	10000	7000	10000	9000	10000
Selenium	ug/l	100	<1	1	<1	<1	2	2
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	48000	64000	33000	54000	70000	69000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	6	6	1	**8**	**10**	3
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-21 04-May-2008	SW-21 14-Aug-2008	SW-21 28-Nov-2008	SW-21 24-Apr-2009 W-4	SW-21 25-Aug-2009 A-4	SW-21 30-Nov-2009 W-7
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	346	402	451	383	480	414
Ammonia, unionized	ug/l	20	<20	<20	<20	1.04	1.39	0.53
Ammonia, unionized (Field)	ug/l	20	--	--	--	<20	--	--
Ammonia Nitrogen	ug/l	--	440	160	550	180	190	100
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	4000	<1000	3000	2000	<1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	73000	90000	115000	87000	101000	109000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	906	730	515	977	1170	1120
Conductivity (Field)	uS/cm	--	--	--	--	1020	555	1040
Dissolved Organic Carbon	ug/l	--	6800	8200	5600	7100	9500	6300
Dissolved Oxygen (Field)	mg/l	-- [8]	**6.04**	6.11	7.62	**6.21**	7.09	**6.71**
Hardness, Calcium Carbonate	ug/l	--	369000	467000	470000	361000	453000	419000
Nitrate	ug/l	--	330	<100	<100	--	--	--
Nitrate as N	ug/l	--	--	--	--	1040	<100	<100
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.2	7.1	7.2	7.6	7.3	7.7
Phosphorus	ug/l	-- [9]	20	**120**	<10	<10	20	<10
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	24000	2000	20000	22000	2000	19000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	7	22	2	7	19	3
Total Dissolved Solids	ug/l	--	589000	663000	787000	635000	761000	728000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	29000	<2000	<2000	<2000	2000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	<10	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	20	<10	--	<10	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	130	270	150	130	190	140
Beryllium	ug/l	-- [14]	<1	<1	<1	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	200	170	150	200	**280**	180
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	105000	141000	132000	105000	132000	120000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	3	2	6	4	5	3
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.6	**1.2**	0.4	0.6	0.7	0.4
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	110	**8760**	260	60	**510**	220
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	26000	28000	34000	24000	30000	29000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	120	640	290	80	240	200
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	10000	7000	11000	10000	6000	11000
Selenium	ug/l	100	<1	<1	1	<1	7	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	49000	49000	66000	51000	64000	65000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	3	1	**10**	5	**8**	4
Zinc	ug/l	30 [13]	<10	10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-21 17-May-2010 W-4	SW-21 21-Aug-2010 [4] A-3	SW-21 27-Nov-2010 W-3	SW-21 09-May-2011 W-6	SW-21 08-Sep-2011 W-5	SW-21 29-Nov-2011 [4] W-5
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	391	467	410	380	473	404
Ammonia, unionized	ug/l	20	5.89	4.2	0.79	6.92	3.65	1.1
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	300	190	150	750	190	130
Biochemical Oxygen Demand, 5 Day	ug/l	--	1000	2000	2000	<1000	2000	3000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	91000	94000	97000	76000	103000	119000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1000	1140	1050	909	1140	1080
Conductivity (Field)	uS/cm	--	920	928	905	930	945	905
Dissolved Organic Carbon	ug/l	--	6600	10600	7200	7200	10200	5200
Dissolved Oxygen (Field)	mg/l	-- [8]	6.04	**4.21**	7.88	6.31	**4.1**	6.99
Hardness, Calcium Carbonate	ug/l	--	361000	463000	392000	329000	441000	436000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	<100	<100	1140	<100	<100
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.8	7.6	7.7	7.7	7.6	7.8
Phosphorus	ug/l	-- [9]	<10	20	10	20	20	<10
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	19000	3000	16000	19000	1000	16000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	17	25	3	10.0	23	6
Total Dissolved Solids	ug/l	--	650000	741000	683000	591000	741000	702000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	<2000	<2000	2000	8000	<2000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	<10	<10	<10	<10	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	140	200	130	120	190	150
Beryllium	ug/l	-- [14]	<1	<1	<1	<0.5	<0.5	<0.5
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	**240**	**290**	140	190	**250**	140
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	105000	136000	111000	92000	127000	125000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	3	2	2	3	4	3
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.6	0.7	0.4	0.5	0.5	0.3
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	<50	<50	<50	<50	<50
Iron	ug/l	300	**310**	**590**	170	90	**560**	**340**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	24000	30000	28000	24000	30000	30000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	120	200	150	80	270	210
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	11000	6000	9000	9000	5000	8000
Selenium	ug/l	100	1	<10	<1	<1	<1	<5
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	58000	57000	56000	55000	58000	66000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	5	4	3	4	5	4
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-21 06-May-2012 W-5	SW-21 22-Aug-2012 [33] W-4	SW-21 12-Nov-2012 W - 6	SW-21 29-May-2014 W-4	SW-21 26-Aug-2014 S-5	SW-21 17-Nov-2014 W-6
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	371	525	424	370	440	360
Ammonia, unionized	ug/l	20	1.36	3.92	0.94	7	11	4
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	200	260	150	720	410	1500
Biochemical Oxygen Demand, 5 Day	ug/l	--	1000	1000	1000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	90000	93000	115000	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	90000	91000	100000
Chromium (III)	ug/l	8.9 [7]	--	--	--	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	978	1320	1170	1000	1100	1000
Conductivity (Field)	uS/cm	--	940	965	915	925	890	1060
Dissolved Organic Carbon	ug/l	--	6200	11500	8100	6600	10000	5300
Dissolved Oxygen (Field)	mg/l	-- [8]	6.20	**0.96**	**4.08**	**3.99**	**1.77**	**1.48**
Hardness, Calcium Carbonate	ug/l	--	345000	564000	450000	380000	400000	400000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	<100	<100	<100	<100	300
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.6	7.4	7.6	7.7	7.8	7.5
Phosphorus	ug/l	-- [9]	<10	**70**	10	19	23	**280**
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	23000	87000	50000	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	21000	<1000	7000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	9	26	8	11	21	1
Total Dissolved Solids	ug/l	--	636000	858000	760000	562000	592000	550000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	90000	<2000	<10000	<10000	26000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	<10	<10	8.6	5.2	9.4
Antimony	ug/l	20	--	--	--	<0.50	--	--
Arsenic	ug/l	100 [13]	--	--	--	<1.0	--	--
Barium	ug/l	--	140	170	160	130	170	130
Beryllium	ug/l	-- [14]	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	<1.0	--	--
Boron	ug/l	200 [15]	130	**280**	150	180	**260**	130
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Calcium	ug/l	--	97000	163000	129000	110000	120000	120000
Calcium, dissolved	ug/l	--	--	--	--	110000	110000	110000
Chromium	ug/l	-- [16]	5	3	3	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	--	--	--	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	0.4	**1.3**	0.4	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	<1.0	--	--
Hexavalent Chromium	ug/l	1 [7]	<50	<50	<50	<0.50	<0.50	<0.50
Iron	ug/l	300	100	**1320**	260	**310**	160	**1600**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	5.2	--	--
Magnesium	ug/l	--	25000	38000	31000	28000	32000	30000
Magnesium, dissolved	ug/l	--	--	--	--	27000	30000	29000
Manganese	ug/l	--	120	840	200	170	220	180
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	<5	<5	<5	<0.50	<0.50	<0.50
Nickel	ug/l	25	<5	<5	<5	2.7	2.2	2.0
Potassium	ug/l	--	9000	10000	7000	11000	8800	7200
Selenium	ug/l	100	<1	<1	<10	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	6000	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Sodium	ug/l	--	54000	70000	60000	64000	66000	60000
Strontium	ug/l	--	--	--	--	640	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	<1.0	--	--
Thallium	ug/l	0.3 [19]	--	--	--	<0.050	--	--
Tin	ug/l	--	--	--	--	<1.0	--	--
Titanium	ug/l	--	--	--	--	<5.0	--	--
Tungsten	ug/l	30 [20]	--	--	--	<1.0	--	--
Uranium	ug/l	5 [15]	--	--	--	0.17	--	--
Vanadium	ug/l	6	4	6	4	<0.50	<0.50	<0.50
Zinc	ug/l	30 [13]	<10	<10	<10	<5.0	6.6	<5.0
Zirconium	ug/l	4 [15]	--	--	--	<1.0	<1.0	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-21 28-Apr-2015 W-4	SW-21 25-Aug-2015 [2] SW-21	SW-21 11-Nov-2015 W-10	SW-21 18-Apr-2016 W-7	SW-21 07-Jul-2016 W-4	SW-21 31-Oct-2016 W-5
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	360	--	430	360	440	430
Ammonia, unionized	ug/l	20	7.54	--	0.24	10.72	4.85	0.73
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	1900	--	130	1700	340	170
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	--	<2000	<2000	<2000	2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	87000	--	120000	79000	91000	130000
Chromium (III)	ug/l	8.9 [7]	<5	--	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	980	--	1100	970	1100	1200
Conductivity (Field)	uS/cm	--	740	--	1060	345	605	610
Dissolved Organic Carbon	ug/l	--	6400	--	9700	6100	9000	8000
Dissolved Oxygen (Field)	mg/l	-- [8]	**5.88**	--	**1.41**	**2.11**	**1.26**	**1.12**
Hardness, Calcium Carbonate	ug/l	--	370000	--	450000	370000	400000	440000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	850	--	<100	1570	<100	<100
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	--	7.2	7.7	7.5	7.4
Phosphorus	ug/l	-- [9]	21	--	**68**	6	30	**120**
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	25000	--	<1000	27000	<1000	<10000 [36]
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	8	--	4	5.2	22	9
Total Dissolved Solids	ug/l	--	528000	--	636000	530000	596000	644000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	--	22000	<10000	<10000	14000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	15	6	98	23
Aluminum, dissolved	ug/l	-- [12]	21	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	140	--	150	130	180	170
Beryllium	ug/l	-- [14]	<0.50	--	<0.50	<0.5	<0.5	<0.50
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	170	--	190	**230**	**270**	190
Cadmium	ug/l	0.2 [13]	<0.10	--	<0.10	<0.1	<0.1	<0.10
Calcium	ug/l	--	110000	--	120000	110000	110000	130000
Calcium, dissolved	ug/l	--	100000	--	120000	110000	110000	120000
Chromium	ug/l	-- [16]	<5.0	--	<5.0	<5	<5	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	--	<5.0	<5.0	<5	<5.0
Cobalt	ug/l	0.9	0.51	--	<0.50	<0.5	0.8	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	--	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**400**	--	230	<100	**490**	**2500**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	--	<0.50	<0.5	<0.5	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	27000	--	32000	26000	32000	35000
Magnesium, dissolved	ug/l	--	27000	--	34000	26000	31000	34000
Manganese	ug/l	--	200	--	220	32	160	230
Mercury	ug/l	0.2 [18]	--	--	<0.10	<0.1	<0.1	<0.1
Mercury, dissolved	ug/l	0.2 [18]	<0.10	--	--	--	--	--
Molybdenum	ug/l	40	<0.50	--	<0.50	<0.5	<0.5	<0.50
Nickel	ug/l	25	2.5	--	2.5	3	4	1.8
Potassium	ug/l	--	9900	--	8300	10000	13000	8200
Selenium	ug/l	100	<2.0	--	<2.0	<2	<2	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	--	<0.10	<0.1	<0.1	<0.10
Sodium	ug/l	--	55000	--	63000	54000	63000	68000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	0.50	--	<0.50	<0.5	0.5	0.58
Zinc	ug/l	30 [13]	<5.0	--	<5.0	<5	<5	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-21 23-May-2017 [34] SW-21	SW-21 26-Jul-2017 SW-21	SW-21 22-Nov-2017 SW-21	SW-21 15-May-2018 SW-21	SW-21 29-Aug-2018 SW-21	SW-21 02-Nov-2018 SW-21
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	390	420	540	390	440	350
Ammonia, unionized	ug/l	20	--	0.3	1.67	2.42	8.32	0.23
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	1200	81	500	430	850	79
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	5000	3000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	67000	100000	120000	82000	120000	110000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	970	1000	1400	960	1100	940
Conductivity (Field)	uS/cm	--	--	767	905	680	890	830
Dissolved Organic Carbon	ug/l	--	4600	6600	4100	5500	8300	5700
Dissolved Oxygen (Field)	mg/l	-- [8]	**1.99**	**2.44**	**2.11**	**3.11**	**1.27**	**4.82**
Hardness, Calcium Carbonate	ug/l	--	410000	420000	500000	370000	440000	380000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	2070	250	1230	330	<100	<100
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	7.08	7.45	7.35	7.3	7.3
Phosphorus	ug/l	-- [9]	26	12	30	6	**200**	7
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	24000	1000	21000	16000	<1000	7100
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	9.8	16.8	4.4	14	23.1	7.1
Total Dissolved Solids	ug/l	--	576000	602000	675000	540000	685000	545000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	11000	<10000	<10000	<10000	17000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	190	8.3	17	6.4	78	5.5
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	220	170	160	150	180	130
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	200	200	180	**220**	200	120
Cadmium	ug/l	0.2 [13]	0.17	<0.10	<0.10	<0.10	<0.10	<0.10
Calcium	ug/l	--	140000	110000	110000	120000	120000	100000
Calcium, dissolved	ug/l	--	120000	120000	150000	100000	120000	110000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	**2.5**	<0.50	**1.3**	0.53	0.62	<0.50
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**7700**	280	**1600**	140	**4400**	260
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	2.6	<0.50	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	29000	28000	26000	30000	30000	25000
Magnesium, dissolved	ug/l	--	27000	29000	32000	25000	32000	29000
Manganese	ug/l	--	1200	56	780	87	130	50
Mercury	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	0.62	<0.50	0.58	<0.50	<0.50	<0.50
Nickel	ug/l	25	3.9	1.4	2.2	2.3	1.3	1.5
Potassium	ug/l	--	9200	6500	12000	10000	6500	8900
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	50000	57000	52000	63000	69000	61000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	2.1	<0.50	<0.50	<0.50	0.55	<0.50
Zinc	ug/l	30 [13]	21	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-21 04-Jun-2019 [35] SW-21	SW-21 04-Jun-2019 SW-21	SW-21 07-Aug-2019 [35] SW-21	SW-21 17-Nov-2019 SW-21	SW-21 05-May-2020 SW-21	SW-21 26-Aug-2020 [2] SW-21
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	370	--	380	350	--
Ammonia, unionized	ug/l	20	--	0.69	--	0.52	9.02	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	140	--	250	3400	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<2000	--	<2000	<2000	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	79000	--	96000	68000	--
Chromium (III)	ug/l	8.9 [7]	--	<5	--	<5	<5	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	920	--	1000	870	--
Conductivity (Field)	uS/cm	--	--	880	--	666	618	--
Dissolved Organic Carbon	ug/l	--	--	4900	--	4300	4700	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	**2.01**	--	**1.92**	**5.86**	--
Hardness, Calcium Carbonate	ug/l	--	--	370000	--	390000	330000	--
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	1090	--	<100	840	--
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	<10	17	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	<100	860	--
pH (Field)	-	6.5 - 8.5	--	7.32	--	7.3	7.34	--
Phosphorus	ug/l	-- [9]	--	6	--	9	14	--
Silica	ug/l	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	15000	--	13000	15000	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	13.1	--	2.9	4.7	--
Total Dissolved Solids	ug/l	--	--	535000	--	545000	480000	--
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	<10000	--	<10000	<10000	--
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	<5.0	--	<5.0	6.4	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	130	--	130	110	--
Beryllium	ug/l	-- [14]	--	<0.50	--	<0.50	<0.50	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	150	--	85	120	--
Cadmium	ug/l	0.2 [13]	--	<0.10	--	<0.10	<0.10	--
Calcium	ug/l	--	--	100000	--	110000	92000	--
Calcium, dissolved	ug/l	--	--	110000	--	110000	95000	--
Chromium	ug/l	-- [16]	--	<5.0	--	<5.0	<5.0	--
Chromium, dissolved	ug/l	-- [16]	--	<5.0	--	<5.0	<5.0	--
Cobalt	ug/l	0.9	--	<0.50	--	<0.50	<0.50	--
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	<0.50	--	<0.50	<0.50	--
Iron	ug/l	300	--	<100	--	**500**	180	--
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	--	<0.50	--	<0.50	<0.50	--
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	25000	--	26000	23000	--
Magnesium, dissolved	ug/l	--	--	24000	--	28000	23000	--
Manganese	ug/l	--	--	28	--	120	47	--
Mercury	ug/l	0.2 [18]	--	<0.1	--	<0.1	<0.10	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	--	<0.50	--	<0.50	<0.50	--
Nickel	ug/l	25	--	1.6	--	1.4	1.4	--
Potassium	ug/l	--	--	7900	--	6100	7300	--
Selenium	ug/l	100	--	<2.0	--	<2.0	<2.0	--
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	<0.10	--	<0.10	<0.10	--
Sodium	ug/l	--	--	50000	--	58000	47000	--
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	<0.50	--	<0.50	<0.50	--
Zinc	ug/l	30 [13]	--	<5.0	--	<5.0	5.3	--
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-21 29-Oct-2020 SW-21	SW-21 28-Apr-2021 SW21	SW-21 14-Jul-2021 SW-21	SW-21 22-Nov-2021 SW-21
General Chemistry						
Alkalinity (Total as CaCO3)	mg/l	-- [6]	370	340	430	380
Ammonia, unionized	ug/l	20	1.93	1.26	7.67	9.68
Ammonia, unionized (Field)	ug/l	20	--	--	--	--
Ammonia Nitrogen	ug/l	--	1000	560	760	2100
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	5000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--
Chloride, dissolved	ug/l	--	97000	84000	89000	94000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5
Color	color unit	--	--	--	--	--
Conductivity	uS/cm	--	970	930	1000	1000
Conductivity (Field)	uS/cm	--	684	708	664	640
Dissolved Organic Carbon	ug/l	--	4800	4900	8500	3800
Dissolved Oxygen (Field)	mg/l	-- [8]	**2.01**	**3.82**	**2.80**	**2.88**
Hardness, Calcium Carbonate	ug/l	--	370000	360000	400000	450000
Nitrate	ug/l	--	--	--	--	--
Nitrate as N	ug/l	--	<100	470	<100	<100
Nitrite	ug/l	--	--	--	--	--
Nitrite as N	ug/l	--	--	<10	<10	<10
Nitrogen	ug/l	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	470	<100	<100
pH (Field)	-	6.5 - 8.5	7.11	7.29	7.31	7.5
Phosphorus	ug/l	-- [9]	9	10	24	**610**
Silica	ug/l	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--
Sulphate, dissolved	ug/l	--	<1000	21000	<1000	20000
Tannin & Lignin	ug/l	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	7.3	4.1	23.2	7.0
Total Dissolved Solids	ug/l	--	515000	440000	540000	545000
Total Organic Carbon	ug/l	--	--	--	--	--
Total Suspended Solids	ug/l	--	10000	<10000	<10000	11000
Turbidity	ntu	-- [11]	--	--	--	--
Metals						
Aluminum	ug/l	-- [12]	6.0	9.8	7.5	8.4
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--
Antimony	ug/l	20	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--
Barium	ug/l	--	140	130	160	150
Beryllium	ug/l	-- [14]	<0.40	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--	--
Boron	ug/l	200 [15]	110	130	**250**	170
Cadmium	ug/l	0.2 [13]	<0.090	<0.090	<0.090	<0.090
Calcium	ug/l	--	100000	100000	110000	110000
Calcium, dissolved	ug/l	--	--	100000	110000	130000
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	--	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	0.75
Copper	ug/l	5	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**630**	150	**440**	**3400**
Iron, dissolved	ug/l	300	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--
Magnesium	ug/l	--	26000	25000	28000	25000
Magnesium, dissolved	ug/l	--	--	25000	30000	32000
Manganese	ug/l	--	130	61	180	420
Mercury	ug/l	0.2 [18]	<0.10	<0.10	<0.10	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	<0.10
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	<1.0	2.2	2.3	2.2
Potassium	ug/l	--	4700	9200	8800	12000
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--
Silver	ug/l	0.1	<0.090	<0.090	<0.090	<0.090
Sodium	ug/l	--	59000	58000	65000	60000
Strontium	ug/l	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--
Tin	ug/l	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--
Vanadium	ug/l	6	<0.50	<0.50	<0.50	<0.50
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--
Phenols						
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--

Parameter	Unit	PWQO [1]	SW-21 27-Apr-2022 SW-21	SW-21 11-Dec-2022 [2] SW-21	SW-21 29-May-2023 SW-21	SW-21 21-Sep-2023 SW-21	SW-21 03-Dec-2023 SW-21
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	350	--	400	400	410
Ammonia, unionized	ug/l	20	12.02	--	12.57	11.39	1.32
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	2800	--	1100	1600	390
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	--	5000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	71000	--	71000	85000	93000
Chromium (III)	ug/l	8.9 [7]	<5	--	<5	<5	<5
Color	color unit	--	--	--	--	--	--
Conductivity	uS/cm	--	910	--	1000	1000	1100
Conductivity (Field)	uS/cm	--	844	--	724	797	704
Dissolved Organic Carbon	ug/l	--	6500	--	4200	6900	3900
Dissolved Oxygen (Field)	mg/l	-- [8]	**5.49**	--	**3.89**	**3.00**	**3.98**
Hardness, Calcium Carbonate	ug/l	--	340000	--	430000	420000	420000
Nitrate	ug/l	--	--	--	--	--	--
Nitrate as N	ug/l	--	1100	--	1790	350	<100
Nitrite	ug/l	--	--	--	--	--	--
Nitrite as N	ug/l	--	27	--	73	<10	<10
Nitrogen	ug/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	1120	--	1860	350	<100
pH (Field)	-	6.5 - 8.5	7.4	--	7.63	7.39	7.44
Phosphorus	ug/l	-- [9]	17	--	12	**46**	15
Silica	ug/l	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	26000	--	18000	7000	9300
Tannin & Lignin	ug/l	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	9.0	--	14.9	15.9	4.9
Total Dissolved Solids	ug/l	--	470000	--	600000	560000	615000
Total Organic Carbon	ug/l	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	--	<10000	<10000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--
Metals							
Aluminum	ug/l	-- [12]	<4.9	--	9.8	8.9	23
Aluminum, dissolved	ug/l	-- [12]	<4.9	--	<4.9	<4.9	<4.9
Antimony	ug/l	20	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--
Barium	ug/l	--	120	--	180	180	140
Beryllium	ug/l	-- [14]	<0.40	--	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--	--	--
Boron	ug/l	200 [15]	190	--	180	200	100
Cadmium	ug/l	0.2 [13]	<0.090	--	<0.090	<0.090	<0.090
Calcium	ug/l	--	100000	--	120000	120000	120000
Calcium, dissolved	ug/l	--	97000	--	130000	120000	120000
Chromium	ug/l	-- [16]	<5.0	--	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	--	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	--	0.60	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	--	<0.50	<0.50	<0.50
Iron	ug/l	300	130	--	**500**	280	**360**
Iron, dissolved	ug/l	300	<100	--	<100	**420**	**320**
Lead	ug/l	-- [17]	<0.50	--	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--
Magnesium	ug/l	--	24000	--	27000	30000	30000
Magnesium, dissolved	ug/l	--	24000	--	28000	28000	30000
Manganese	ug/l	--	50	--	110	150	120
Mercury	ug/l	0.2 [18]	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.10	--	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	<0.50	--	<0.50	<0.50	<0.50
Nickel	ug/l	25	2.2	--	2.0	1.4	1.2
Potassium	ug/l	--	9800	--	7900	6600	6500
Selenium	ug/l	100	<2.0	--	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	<0.090	--	<0.090	<0.090	<0.090
Sodium	ug/l	--	55000	--	59000	72000	66000
Strontium	ug/l	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--
Vanadium	ug/l	6	<0.50	--	<0.50	<0.50	<0.50
Zinc	ug/l	30 [13]	<5.0	--	7.5	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-22 01-Jul-1995	SW-22 01-Sep-1995	SW-22 01-May-1996	SW-22 01-Sep-1996	SW-22 01-Jun-1997	SW-22 01-Sep-1998
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	490	474	390	442	293	455
Ammonia, unionized	ug/l	20	<10	<20	**60**	<20	<20	20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	500	250	1700	190	20	2000
Biochemical Oxygen Demand, 5 Day	ug/l	--	4000	4000	20000	4000	9000	3000
Chemical Oxygen Demand	ug/l	--	31000	26000	61000	32000	25000	24000
Chloride	ug/l	--	88000	100000	72000	105000	59000	52000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	16	25	7	21	13	19
Conductivity	uS/cm	--	1284	1149	967	1135	733	1148
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	1.7	4.5	4.7	--	6.2	1.8
Hardness, Calcium Carbonate	ug/l	--	580000	531000	434000	537000	331000	437000
Nitrate	ug/l	--	<100	<100	<100	<10	<100	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<10	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	1000	750	3090	--	800	2830
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.91	7.46	7.79	7.48	7.97	7.37
Phosphorus	ug/l	-- [9]	**50**	**50**	30	**110**	**40**	**100**
Sulphate	ug/l	--	21000	11000	36000	15000	17000	8000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	834600	746850	628550	737750	476450	746200
Total Organic Carbon	ug/l	--	11300	11100	23000	12200	7800	10500
Total Suspended Solids	ug/l	--	26000	24000	4000	203000	43000	14000
Turbidity	ntu	-- [11]	8.8	10	3.8	32	9.7	4.2
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<30	<30	30	450	130	<30
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Calcium	ug/l	--	166000	150000	129000	149000	88000	109000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<10	<50	<10	20	20	<10
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--
Copper	ug/l	5	<5	<5	**9**	0.7	<5	<5
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**1290**	**1940**	**610**	**510**	**750**	**590**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<2	<2	<2	<2	<2	<2
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	40000	38000	27000	40000	22000	40000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.2	<0.2	<0.2	<0.2	**3000**	<0.2
Molybdenum	ug/l	40	--	--	--	--	--	--
Nickel	ug/l	25	<10	<10	<10	10	<10	<10
Potassium	ug/l	--	4000	6000	--	4000	--	9000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	46000	48000	39000	48000	24000	55000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--
Zinc	ug/l	30 [13]	20	<10	10	20	20	<100
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	<1	<1	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-22 01-Nov-1998	SW-22 16-Oct-1999	SW-22 22-Oct-2000	SW-22 28-Apr-2001	SW-22 09-Nov-2001	SW-22 17-Apr-2002
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	546	501	633	622	523	525
Ammonia, unionized	ug/l	20	**120**	<20	<20	**170**	<20	**90**
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	3190	730	3620	4650	140	2390
Biochemical Oxygen Demand, 5 Day	ug/l	--	10000	<1000	18000	19000	2000	10000
Chemical Oxygen Demand	ug/l	--	51000	53000	88000	64000	27000	45000
Chloride	ug/l	--	<10	128000	153000	84000	168000	81000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	16	21	37	29	22	27
Conductivity	uS/cm	--	1397	1360	1450	1310	1630	1270
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	5.1	2.9	11.5	9.4	--	--
Hardness, Calcium Carbonate	ug/l	--	599000	529000	569000	562000	574000	478000
Nitrate	ug/l	--	3120	990	1830	1330	3770	1610
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	5240	--	5930	5930	2060	6030
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.98	7.66	8.08	8.1	8.07	8.22
Phosphorus	ug/l	-- [9]	**260**	<10	30	30	**50**	**140**
Sulphate	ug/l	--	6000	71000	--	--	--	47000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	1100	1000	800	800
Temperature (Field)	deg c	-- [10]	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	908050	884000	942500	851500	1059500	825500
Total Organic Carbon	ug/l	--	21000	18800	23300	24500	15200	17200
Total Suspended Solids	ug/l	--	26000	5000	140000	46000	44000	10000
Turbidity	ntu	-- [11]	13	1.8	2.8	9.9	9.8	4.4
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<30	<30	<50	<50	<50	<50
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	150	--	--	230	130	160
Beryllium	ug/l	-- [14]	<10	--	--	<2	<2	<2
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	200	--	--	**350**	**260**	**330**
Cadmium	ug/l	0.2 [13]	<0.15	<0.15	<0.1	**0.3**	<0.1	0.1
Calcium	ug/l	--	149000	136000	142000	139000	144000	124000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	--	<10	<10	4	8	<1
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	**1.5**	--	--	0.9	**1.7**	**1.2**
Copper	ug/l	5	<5	<5	<1	**11**	2	2
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**880**	170	**950**	**1240**	**600**	120
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<2	<2	--	2	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	55000	46000	52000	52000	52000	41000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	1310	--	--	440	380	310
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<10	--	--	<10	<10	<10
Nickel	ug/l	25	<100	<10	<10	<10	<10	<10
Potassium	ug/l	--	25000	27000	--	21000	26000	24000
Selenium	ug/l	100	<1	<1	<1	4	1	<1
Silicon	ug/l	--	5000	--	--	6140	4150	4140
Silver	ug/l	0.1	<0.1	<0.1	<0.1	**0.2**	<0.1	<0.1
Sodium	ug/l	--	102000	97000	105000	76000	115000	74000
Strontium	ug/l	--	500	--	--	650	510	486
Sulfur	ug/l	--	3000	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	<10	--	--	<1	--	<1
Tin	ug/l	--	<50	--	--	--	--	<10
Titanium	ug/l	--	<10	--	--	<10	--	<10
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<10	--	--	<1	3	<1
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	--	<1	<1	<1

Parameter	Unit	PWQO [1]	SW-22 01-Apr-2003	SW-22 13-Jun-2005 [2]	SW-22 31-Aug-2005 [2]	SW-22 30-Oct-2005	SW-22 31-Dec-2005 [3]	SW-22 08-Apr-2006
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	570	--	--	529	--	414
Ammonia, unionized	ug/l	20	**150**	--	--	<20	--	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	3970	--	--	4670	--	3160
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	--	--	1000	--	<1000
Chemical Oxygen Demand	ug/l	--	42000	--	--	--	--	--
Chloride	ug/l	--	104000	--	--	161000	--	81000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	25	--	--	--	--	--
Conductivity	uS/cm	--	1350	--	--	405	--	515
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	7400
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	10.03	--	11.88
Hardness, Calcium Carbonate	ug/l	--	530000	--	--	--	--	418200
Nitrate	ug/l	--	220	--	--	820	--	330
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	4680	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.91	--	--	7	--	7.3
Phosphorus	ug/l	-- [9]	30	--	--	**40**	--	30
Sulphate	ug/l	--	--	--	--	25000	--	30000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	500	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	7	--	1
Total Dissolved Solids	ug/l	--	877500	--	--	263000	--	670000
Total Organic Carbon	ug/l	--	19400	--	--	--	--	--
Total Suspended Solids	ug/l	--	7000	--	--	38000	--	14000
Turbidity	ntu	-- [11]	3	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	--	--	<10	--	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	170	--	--	260	--	160
Beryllium	ug/l	-- [14]	<1	--	--	<1	--	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	**220**	--	--	170	--	190
Cadmium	ug/l	0.2 [13]	<0.1	--	--	0.1	--	<0.1
Calcium	ug/l	--	128000	--	--	--	--	123000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<5	--	--	4	--	4
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	**2.2**	--	--	0.9	--	0.8
Copper	ug/l	5	<5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**640**	--	--	**600**	--	**760**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	--	--	<1	--	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	51000	--	--	--	--	27000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	861	--	--	--	--	250
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	--	--	<0.1	--	<0.1
Molybdenum	ug/l	40	<5	--	--	<5	--	<5
Nickel	ug/l	25	<5	--	--	7	--	7
Potassium	ug/l	--	28000	--	--	--	--	8000
Selenium	ug/l	100	1	--	--	<1	--	<1
Silicon	ug/l	--	5000	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	<0.1	--	<0.1
Sodium	ug/l	--	88000	--	--	--	--	45000
Strontium	ug/l	--	496	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	<1	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	<10	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<5	--	--	4	--	6
Zinc	ug/l	30 [13]	<5	--	--	<10	--	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	<1	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-22 15-Aug-2006 [2]	SW-22 25-Nov-2006	SW-22 22-Apr-2007	SW-22 31-Aug-2007	SW-22 26-Nov-2007	SW-22 04-May-2008
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	428	379	463	377	388
Ammonia, unionized	ug/l	20	--	<20	<20	**38**	0.09	<20
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	930	1530	4620	90	1920
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	1000	2000	2000	1000	1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	104000	83000	137000	104000	78000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	605	550	750	555	600
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	7800	7800	9800	5900	6000
Dissolved Oxygen (Field)	mg/l	-- [8]	--	10.44	10.04	7.33	9.88	**5.1**
Hardness, Calcium Carbonate	ug/l	--	--	433700	390700	514400	396600	412000
Nitrate	ug/l	--	--	390	800	1090	<100	470
Nitrate as N	ug/l	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	7.1	7.2	7.2	7	7
Phosphorus	ug/l	-- [9]	--	**60**	**190**	**50**	30	10
Sulphate	ug/l	--	--	27000	27000	18000	15000	19000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	1	2	24	2	8
Total Dissolved Solids	ug/l	--	--	735000	649000	845000	670000	637000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	2000	<2000	2000	9000	2000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	--	<10	<10	<10	<10	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	130	120	310	130	190
Beryllium	ug/l	-- [14]	--	<1	<1	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	**230**	180	190	100	170
Cadmium	ug/l	0.2 [13]	--	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	--	121000	112000	150000	116000	122000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	--	3	3	71	2	4
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	0.6	0.6	0.9	0.4	0.7
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	--	170	110	**420**	**980**	**780**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	--	<1	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	32000	27000	34000	26000	26000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	--	240	140	220	260	200
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	<5	<5	<5	<5	<5
Nickel	ug/l	25	--	<5	<5	<5	<5	<5
Potassium	ug/l	--	--	12000	10000	13000	9000	8000
Selenium	ug/l	100	--	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	58000	53000	75000	49000	45000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	1	6	6	2	3
Zinc	ug/l	30 [13]	--	<10	<10	10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-22 14-Aug-2008	SW-22 28-Nov-2008	SW-22 24-Apr-2009 W-6	SW-22 25-Aug-2009 A-9	SW-22 30-Nov-2009 W-3	SW-22 17-May-2010 W-9
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	429	455	431	455	422	475
Ammonia, unionized	ug/l	20	<20	<20	0.98	1.34	0.18	**104.32**
Ammonia, unionized (Field)	ug/l	20	--	--	<20	--	--	**40**
Ammonia Nitrogen	ug/l	--	150	140	310	270	40	6160
Biochemical Oxygen Demand, 5 Day	ug/l	--	4000	2000	3000	8000	<1000	12000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	99000	109000	93000	77000	93000	104000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	800	680	1100	1070	1070	1190
Conductivity (Field)	uS/cm	--	--	--	1120	685	965	1000
Dissolved Organic Carbon	ug/l	--	10400	8100	7800	8100	5500	7500
Dissolved Oxygen (Field)	mg/l	-- [8]	**5.11**	**7.39**	6.61	7.07	**6.39**	6.01
Hardness, Calcium Carbonate	ug/l	--	445000	514000	437000	434000	406000	436000
Nitrate	ug/l	--	<100	140	--	--	--	--
Nitrate as N	ug/l	--	--	--	890	470	240	1510
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.1	7.2	7.3	7.1	7.6	7.8
Phosphorus	ug/l	-- [9]	20	**70**	10	**60**	20	20
Sulphate	ug/l	--	1000	19000	21000	13000	15000	18000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	19	1	8	20	4	15
Total Dissolved Solids	ug/l	--	702000	754000	715000	696000	696000	774000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	92000	2000	92000	19000	27000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	<10	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	<10	--	<10	<10	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	180	170	190	240	140	210
Beryllium	ug/l	-- [14]	<1	<1	<1	<1	<1	<1
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	**230**	150	**240**	170	170	**230**
Cadmium	ug/l	0.2 [13]	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	127000	153000	129000	131000	123000	130000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	3	5	3	4	3	2
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.8	0.7	**1.0**	**1.3**	0.6	**1.2**
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--	--
Iron	ug/l	300	**490**	**2510**	**480**	**7690**	**920**	**610**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	2	<1	<1	<1	<1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	31000	32000	28000	26000	24000	27000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	310	250	240	630	150	340
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	8000	9000	10000	6000	8000	13000
Selenium	ug/l	100	<1	<1	<1	1	1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	62000	54000	61000	42000	48000	71000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<1	**10**	3	**7**	6	1
Zinc	ug/l	30 [13]	<10	30	<10	<10	20	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-22 21-Aug-2010 [4] A-5	SW-22 27-Nov-2010 W-8	SW-22 09-May-2011 W-8	SW-22 08-Sep-2011 W-8	SW-22 29-Nov-2011 W-9	SW-22 06-May-2012 [33] W-8
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	446	513	450	463	462	437
Ammonia, unionized	ug/l	20	<0.22	1.97	**67.52**	3.61	**24.73**	10.4
Ammonia, unionized (Field)	ug/l	20	<20	<20	**70**	<20	**30**	--
Ammonia Nitrogen	ug/l	--	<20	590	4300	140	3170	770
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	2000	3000	6000	4000	4000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	109000	101000	85000	120000	118000	93000
Chloride, dissolved	ug/l	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1150	1250	1050	1200	1200	1110
Conductivity (Field)	uS/cm	--	1020	1055	825	1190	815	815
Dissolved Organic Carbon	ug/l	--	5600	6400	7100	5300	4300	6600
Dissolved Oxygen (Field)	mg/l	-- [8]	**4.81**	8.99	**5.88**	**3.88**	**4.91**	**5.38**
Hardness, Calcium Carbonate	ug/l	--	449000	512000	426000	479000	440000	415000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	130	2930	1370	500	1420	3910
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.3	7.5	7.9	7.7	7.8	7.8
Phosphorus	ug/l	-- [9]	**40**	30	30	**60**	20	**190**
Sulphate	ug/l	--	10000	21000	22000	12000	21000	21000
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	25	3	11.0	24	5	12
Total Dissolved Solids	ug/l	--	748000	813000	682000	780000	780000	722000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	8000	7000	10000	177000	14000	32000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<10	<10	<10	<10	<10	<10
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	180	160	190	140	210	180
Beryllium	ug/l	-- [14]	<1	<1	<0.5	<0.5	<0.5	<0.5
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	170	140	**220**	150	150	190
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	137000	149000	126000	144000	130000	120000
Calcium, dissolved	ug/l	--	--	--	--	--	--	--
Chromium	ug/l	-- [16]	3	3	3	4	4	6
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.9	0.9	0.9	0.9	0.9	**1.6**
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<50	<50	<50	<50	<50	<50
Iron	ug/l	300	230	40	**1560**	**460**	**1530**	**1410**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<1	1
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	26000	34000	27000	29000	28000	28000
Magnesium, dissolved	ug/l	--	--	--	--	--	--	--
Manganese	ug/l	--	280	140	250	240	340	830
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	10000	12000	10000	14000	10000	12000
Selenium	ug/l	100	<10	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	58000	68000	57000	72000	69000	62000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	4	5	4	5	**7**	6
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10	10
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-22 22-Aug-2012 [33] W-5	SW-22 12-Nov-2012 W - 10	SW-22 29-May-2014 W-10	SW-22 26-Aug-2014 [2] SW-22	SW-22 17-Nov-2014 W-10	SW-22 28-Apr-2015 W-10
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	527	522	420	--	490	520
Ammonia, unionized	ug/l	20	6.17	**27.85**	16	--	6	0.38
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	350	5580	3400	--	4400	95
Biochemical Oxygen Demand, 5 Day	ug/l	--	1000	2000	8000	--	9000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	97000	122000	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	99000	--	130000	95000
Chromium (III)	ug/l	8.9 [7]	--	--	<5	--	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1380	1320	1100	--	1300	1300
Conductivity (Field)	uS/cm	--	880	965	720	--	805	905
Dissolved Organic Carbon	ug/l	--	12200	6300	6600	--	4500	5600
Dissolved Oxygen (Field)	mg/l	-- [8]	**1.08**	**3.92**	**3.22**	--	**1.40**	**2.11**
Hardness, Calcium Carbonate	ug/l	--	578000	484000	430000	--	540000	530000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	970	2350	--	1350	3520
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.5	7.5	7.3	--	7.2	7.4
Phosphorus	ug/l	-- [9]	**130**	20	**51**	--	**45**	**43**
Sulphate	ug/l	--	112000	26000	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	24000	--	16000	15000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	25	8	13	--	1	8
Total Dissolved Solids	ug/l	--	897000	858000	628000	--	700000	696000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	15000	4000	26000	--	21000	26000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	10	<10	340	--	28	150
Antimony	ug/l	20	--	--	0.83	--	--	--
Arsenic	ug/l	100 [13]	--	--	3.3	--	--	--
Barium	ug/l	--	170	220	530	--	250	280
Beryllium	ug/l	-- [14]	<0.5	<0.5	<0.50	--	<0.50	<0.50
Bismuth	ug/l	--	--	--	<1.0	--	--	--
Boron	ug/l	200 [15]	**280**	150	**360**	--	140	190
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	**0.43**	--	<0.10	**0.31**
Calcium	ug/l	--	169000	141000	180000	--	160000	170000
Calcium, dissolved	ug/l	--	--	--	130000	--	150000	150000
Chromium	ug/l	-- [16]	2	4	<5.0	--	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	--	--	<5.0	--	<5.0	<5.0
Cobalt	ug/l	0.9	**1.4**	0.9	**7.4**	--	**0.97**	**3.2**
Copper	ug/l	5	--	--	**12**	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<50	<50	<1.0	--	<0.50	<0.50
Iron	ug/l	300	**1360**	**540**	**28000**	--	**2700**	**3600**
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	3.1	--	<0.50	2.5
Lithium	ug/l	--	--	--	<5.0	--	--	--
Magnesium	ug/l	--	38000	32000	34000	--	38000	39000
Magnesium, dissolved	ug/l	--	--	--	29000	--	37000	40000
Manganese	ug/l	--	960	270	9200	--	400	4600
Mercury	ug/l	0.2 [18]	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.10	--	<0.10	<0.10
Molybdenum	ug/l	40	<5	<5	1.0	--	<0.50	0.63
Nickel	ug/l	25	<5	<5	7.3	--	2.8	4.6
Potassium	ug/l	--	10000	11000	14000	--	12000	12000
Selenium	ug/l	100	<1	<1	<2.0	--	<2.0	<2.0
Silicon	ug/l	--	--	--	8900	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.10	--	<0.10	<0.10
Sodium	ug/l	--	71000	67000	73000	--	81000	67000
Strontium	ug/l	--	--	--	820	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	<1.0	--	--	--
Thallium	ug/l	0.3 [19]	--	--	0.081	--	--	--
Tin	ug/l	--	--	--	<1.0	--	--	--
Titanium	ug/l	--	--	--	21	--	--	--
Tungsten	ug/l	30 [20]	--	--	<1.0	--	--	--
Uranium	ug/l	5 [15]	--	--	0.67	--	--	--
Vanadium	ug/l	6	4	4	**9.5**	--	<0.50	4.4
Zinc	ug/l	30 [13]	<10	<10	**48**	--	<5.0	**32**
Zirconium	ug/l	4 [15]	--	--	<1.0	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-22 25-Aug-2015 [2] SW-22	SW-22 11-Nov-2015 W-5	SW-22 18-Apr-2016 W-12	SW-22 07-Jul-2016 [2] SW-22	SW-22 31-Oct-2016 W-10	SW-22 23-May-2017 SW-22
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	410	410	--	440	360
Ammonia, unionized	ug/l	20	--	0.51	**30.63**	--	1.83	2.66
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	560	5500	--	460	500
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<2000	<2000	--	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	130000	81000	--	130000	77000
Chromium (III)	ug/l	8.9 [7]	--	<5	<5	--	<5	<5
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	1200	1100	--	1300	940
Conductivity (Field)	uS/cm	--	--	1580	460	--	860	875
Dissolved Organic Carbon	ug/l	--	--	4100	6100	--	4700	5900
Dissolved Oxygen (Field)	mg/l	-- [8]	--	**1.94**	**2.29**	--	**1.46**	**2.01**
Hardness, Calcium Carbonate	ug/l	--	--	480000	420000	--	460000	360000
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	1510	1460	--	630	1280
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	6.9	7.6	--	7.4	7.5
Phosphorus	ug/l	-- [9]	--	**94**	30	--	**51**	8
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	20000	26000	--	15000	17000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	4	6.5	--	8	8.8
Total Dissolved Solids	ug/l	--	--	698000	400000	--	702000	516000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	<10000	<10000	--	16000	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	12	18	--	8.2	5.6
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	220	180	--	170	150
Beryllium	ug/l	-- [14]	--	<0.50	<0.5	--	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	130	**300**	--	**230**	**230**
Cadmium	ug/l	0.2 [13]	--	<0.10	<0.1	--	<0.10	<0.10
Calcium	ug/l	--	--	130000	120000	--	140000	110000
Calcium, dissolved	ug/l	--	--	140000	120000	--	130000	100000
Chromium	ug/l	-- [16]	--	<5.0	<5	--	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	--	<5.0	<5.0	--	<5.0	<5.0
Cobalt	ug/l	0.9	--	0.53	**1.0**	--	**1.1**	0.58
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	<0.50	<0.50	--	<0.50	<0.50
Iron	ug/l	300	--	**860**	**830**	--	250	190
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	--	<0.50	<0.5	--	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	34000	28000	--	32000	26000
Magnesium, dissolved	ug/l	--	--	34000	28000	--	33000	25000
Manganese	ug/l	--	--	190	210	--	910	58
Mercury	ug/l	0.2 [18]	--	<0.10	<0.1	--	<0.1	<0.1
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	--	<0.50	<0.5	--	0.60	<0.50
Nickel	ug/l	25	--	2.0	4	--	3.1	1.8
Potassium	ug/l	--	--	11000	11000	--	15000	8400
Selenium	ug/l	100	--	<2.0	<2	--	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	<0.10	<0.1	--	<0.10	<0.10
Sodium	ug/l	--	--	74000	59000	--	79000	52000
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	<0.50	<0.5	--	0.74	<0.50
Zinc	ug/l	30 [13]	--	<5.0	5	--	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-22 26-Jul-2017 SW-22	SW-22 22-Nov-2017 SW-22	SW-22 15-May-2018 [37] SW-22	SW-22 29-Aug-2018 [24] SW-22	SW-22 02-Nov-2018 [38] SW-22	SW-22 07-Aug-2019 [35] SW-22
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	470	470	--	--	370	--
Ammonia, unionized	ug/l	20	13.01	5.22	--	--	1.1	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	2500	1700	--	--	370	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	4000	<2000	--	--	2000	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	120000	120000	--	--	99000	--
Chromium (III)	ug/l	8.9 [7]	<5	<5	--	--	<5	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1100	1200	--	--	940	--
Conductivity (Field)	uS/cm	--	525	820	890	--	865	--
Dissolved Organic Carbon	ug/l	--	4700	5100	--	--	5200	--
Dissolved Oxygen (Field)	mg/l	-- [8]	**1.48**	**2.04**	**2.98**	--	**4.09**	--
Hardness, Calcium Carbonate	ug/l	--	490000	420000	--	--	400000	--
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	1160	880	--	--	220	--
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.14	7.4	7.4	--	7.3	--
Phosphorus	ug/l	-- [9]	7	20	--	--	**1200**	--
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	19000	22000	--	--	7100	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	19.4	4.8	13	--	7.3	--
Total Dissolved Solids	ug/l	--	722000	630000	--	--	545000	--
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	--	--	28000	--
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	26	<5.0	--	--	53	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	210	150	--	--	210	--
Beryllium	ug/l	-- [14]	<0.50	<0.50	--	--	<0.50	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	180	130	--	--	200	--
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	--	--	**0.25**	--
Calcium	ug/l	--	140000	120000	--	--	110000	--
Calcium, dissolved	ug/l	--	140000	120000	--	--	110000	--
Chromium	ug/l	-- [16]	<5.0	<5.0	--	--	<5.0	--
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	--	--	<5.0	--
Cobalt	ug/l	0.9	0.65	<0.50	--	--	**2.6**	--
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	--	--	<0.50	--
Iron	ug/l	300	**420**	<100	--	--	**14000**	--
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	--	--	<0.50	--
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	31000	30000	--	--	24000	--
Magnesium, dissolved	ug/l	--	32000	30000	--	--	27000	--
Manganese	ug/l	--	150	33	--	--	3000	--
Mercury	ug/l	0.2 [18]	<0.1	<0.1	--	--	<0.1	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	<0.50	<0.50	--	--	0.97	--
Nickel	ug/l	25	2.2	2.4	--	--	3.1	--
Potassium	ug/l	--	9400	8500	--	--	13000	--
Selenium	ug/l	100	<2.0	<2.0	--	--	<2.0	--
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	--	--	<0.10	--
Sodium	ug/l	--	69000	63000	--	--	59000	--
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	<0.50	<0.50	--	--	3.6	--
Zinc	ug/l	30 [13]	<5.0	<5.0	--	--	17	--
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-22 17-Nov-2019 [39] SW-22	SW-22 05-May-2020 SW-22	SW-22 26-Aug-2020 [2] SW-22	SW-22 29-Oct-2020 SW-22	SW-22 28-Apr-2021 SW22	SW-22 14-Jul-2021 [2] SW-22
General Chemistry								
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	420	--	440	440	--
Ammonia, unionized	ug/l	20	--	12.47	--	5.41	**20.18**	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	4600	--	2700	7300	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<2000	--	<2000	3000	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	79000	--	100000	95000	--
Chromium (III)	ug/l	8.9 [7]	--	<5	--	<5	<5	--
Color	color unit	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	1000	--	1100	1100	--
Conductivity (Field)	uS/cm	--	--	515	--	699	825	--
Dissolved Organic Carbon	ug/l	--	--	4900	--	3600	5900	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	**4.38**	--	**2.44**	**2.89**	--
Hardness, Calcium Carbonate	ug/l	--	--	420000	--	440000	420000	--
Nitrate	ug/l	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	1570	--	1480	2050	--
Nitrite	ug/l	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	101	--	--	48	--
Nitrogen	ug/l	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	1670	--	--	2100	--
pH (Field)	-	6.5 - 8.5	--	7.22	--	7.13	7.01	--
Phosphorus	ug/l	-- [9]	--	5	--	8	**49**	--
Sulphate	ug/l	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	21000	--	15000	19000	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	8.4	--	7.2	14.9	--
Total Dissolved Solids	ug/l	--	--	580000	--	615000	570000	--
Total Organic Carbon	ug/l	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	12000	--	<10000	27000	--
Turbidity	ntu	-- [11]	--	--	--	--	--	--
Metals								
Aluminum	ug/l	-- [12]	--	8.2	--	5.8	17	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--	--
Barium	ug/l	--	--	170	--	190	200	--
Beryllium	ug/l	-- [14]	--	<0.50	--	<0.40	<0.40	--
Bismuth	ug/l	--	--	--	--	--	--	--
Boron	ug/l	200 [15]	--	**220**	--	110	**250**	--
Cadmium	ug/l	0.2 [13]	--	<0.10	--	<0.090	<0.090	--
Calcium	ug/l	--	--	120000	--	130000	120000	--
Calcium, dissolved	ug/l	--	--	120000	--	--	120000	--
Chromium	ug/l	-- [16]	--	<5.0	--	<5.0	<5.0	--
Chromium, dissolved	ug/l	-- [16]	--	<5.0	--	--	<5.0	--
Cobalt	ug/l	0.9	--	0.72	--	0.58	0.81	--
Copper	ug/l	5	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	0.51	--	<0.50	<0.50	--
Iron	ug/l	300	--	**310**	--	**380**	**760**	--
Iron, dissolved	ug/l	300	--	--	--	--	--	--
Lead	ug/l	-- [17]	--	<0.50	--	<0.50	<0.50	--
Lithium	ug/l	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	27000	--	30000	28000	--
Magnesium, dissolved	ug/l	--	--	28000	--	--	29000	--
Manganese	ug/l	--	--	93	--	150	140	--
Mercury	ug/l	0.2 [18]	--	<0.10	--	<0.10	**0.26**	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--	--
Molybdenum	ug/l	40	--	<0.50	--	<0.50	<0.50	--
Nickel	ug/l	25	--	2.4	--	1.7	3.4	--
Potassium	ug/l	--	--	9800	--	10000	12000	--
Selenium	ug/l	100	--	<2.0	--	<2.0	<2.0	--
Silicon	ug/l	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	<0.10	--	<0.090	<0.090	--
Sodium	ug/l	--	--	62000	--	72000	71000	--
Strontium	ug/l	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--	--
Vanadium	ug/l	6	--	<0.50	--	<0.50	<0.50	--
Zinc	ug/l	30 [13]	--	<5.0	--	<5.0	<5.0	--
Zirconium	ug/l	4 [15]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-22 22-Nov-2021 SW-22
General Chemistry			
Alkalinity (Total as CaCO3)	mg/l	-- [6]	350
Ammonia, unionized	ug/l	20	14.27
Ammonia, unionized (Field)	ug/l	20	--
Ammonia Nitrogen	ug/l	--	3600
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000
Chemical Oxygen Demand	ug/l	--	--
Chloride	ug/l	--	--
Chloride, dissolved	ug/l	--	95000
Chromium (III)	ug/l	8.9 [7]	<5
Color	color unit	--	--
Conductivity	uS/cm	--	980
Conductivity (Field)	uS/cm	--	853
Dissolved Organic Carbon	ug/l	--	4200
Dissolved Oxygen (Field)	mg/l	-- [8]	**3.11**
Hardness, Calcium Carbonate	ug/l	--	360000
Nitrate	ug/l	--	--
Nitrate as N	ug/l	--	<100
Nitrite	ug/l	--	--
Nitrite as N	ug/l	--	<10
Nitrogen	ug/l	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	<100
pH (Field)	-	6.5 - 8.5	7.49
Phosphorus	ug/l	-- [9]	14
Sulphate	ug/l	--	--
Sulphate, dissolved	ug/l	--	19000
Tannin & Lignin	ug/l	--	--
Temperature (Field)	deg c	-- [10]	5.4
Total Dissolved Solids	ug/l	--	525000
Total Organic Carbon	ug/l	--	--
Total Suspended Solids	ug/l	--	61000
Turbidity	ntu	-- [11]	--
Metals			
Aluminum	ug/l	-- [12]	23
Aluminum, dissolved	ug/l	-- [12]	--
Antimony	ug/l	20	--
Arsenic	ug/l	100 [13]	--
Barium	ug/l	--	130
Beryllium	ug/l	-- [14]	<0.40
Bismuth	ug/l	--	--
Boron	ug/l	200 [15]	100
Cadmium	ug/l	0.2 [13]	<0.090
Calcium	ug/l	--	110000
Calcium, dissolved	ug/l	--	100000
Chromium	ug/l	-- [16]	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0
Cobalt	ug/l	0.9	<0.50
Copper	ug/l	5	--
Hexavalent Chromium	ug/l	1 [7]	<0.50
Iron	ug/l	300	**740**
Iron, dissolved	ug/l	300	--
Lead	ug/l	-- [17]	<0.50
Lithium	ug/l	--	--
Magnesium	ug/l	--	26000
Magnesium, dissolved	ug/l	--	26000
Manganese	ug/l	--	140
Mercury	ug/l	0.2 [18]	--
Mercury, dissolved	ug/l	0.2 [18]	<0.10
Molybdenum	ug/l	40	<0.50
Nickel	ug/l	25	1.2
Potassium	ug/l	--	6400
Selenium	ug/l	100	<2.0
Silicon	ug/l	--	--
Silver	ug/l	0.1	<0.090
Sodium	ug/l	--	59000
Strontium	ug/l	--	--
Sulfur	ug/l	--	--
Tellurium	ug/l	--	--
Thallium	ug/l	0.3 [19]	--
Tin	ug/l	--	--
Titanium	ug/l	--	--
Tungsten	ug/l	30 [20]	--
Uranium	ug/l	5 [15]	--
Vanadium	ug/l	6	<0.50
Zinc	ug/l	30 [13]	<5.0
Zirconium	ug/l	4 [15]	--
Phenols			
Phenolics, Total Recoverable	ug/l	1 [21]	--

Parameter	Unit	PWQO [1]	SW-22 27-Apr-2022 SW-22	SW-22 11-Dec-2022 SW-22	SW-22 29-May-2023 SW-22	SW-22 21-Sep-2023 SW-22	SW-22 03-Dec-2023 [3] SW-22
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	370	400	350	440	--
Ammonia, unionized	ug/l	20	2.92	2.66	3.69	8.2	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	730	640	730	1100	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	58000	96000	59000	110000	--
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	--
Color	color unit	--	--	--	--	--	--
Conductivity	uS/cm	--	910	1000	890	1100	--
Conductivity (Field)	uS/cm	--	888	701	608	582	--
Dissolved Organic Carbon	ug/l	--	4900	6600	5500	3900	--
Dissolved Oxygen (Field)	mg/l	-- [8]	**5.4**	**4.59**	**3.68**	**2.28**	--
Hardness, Calcium Carbonate	ug/l	--	370000	410000	360000	460000	--
Nitrate	ug/l	--	--	--	--	--	--
Nitrate as N	ug/l	--	260	<100	120	1450	--
Nitrite	ug/l	--	--	--	--	--	--
Nitrite as N	ug/l	--	<10	<10	13	90	--
Nitrogen	ug/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	260	<100	140	1540	--
pH (Field)	-	6.5 - 8.5	7.4	7.61	7.39	7.41	--
Phosphorus	ug/l	-- [9]	13	8	19	16	--
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	37000	1700	12000	12000	--
Tannin & Lignin	ug/l	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	8.1	2.6	11.4	15.9	--
Total Dissolved Solids	ug/l	--	460000	415000	525000	620000	--
Total Organic Carbon	ug/l	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	--
Turbidity	ntu	-- [11]	--	--	--	--	--
Metals							
Aluminum	ug/l	-- [12]	9.5	6.8	<4.9	<4.9	--
Aluminum, dissolved	ug/l	-- [12]	<4.9	8.7	<4.9	<4.9	--
Antimony	ug/l	20	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--
Barium	ug/l	--	100	140	130	220	--
Beryllium	ug/l	-- [14]	<0.40	<0.40	<0.40	<0.40	--
Bismuth	ug/l	--	--	--	--	--	--
Boron	ug/l	200 [15]	110	160	200	140	--
Cadmium	ug/l	0.2 [13]	<0.090	<0.090	<0.090	<0.090	--
Calcium	ug/l	--	110000	120000	97000	140000	--
Calcium, dissolved	ug/l	--	100000	110000	100000	130000	--
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	--
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	--
Cobalt	ug/l	0.9	0.51	<0.50	0.53	<0.50	--
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	--
Iron	ug/l	300	<100	**310**	**410**	170	--
Iron, dissolved	ug/l	300	<100	280	**360**	190	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	--
Lithium	ug/l	--	--	--	--	--	--
Magnesium	ug/l	--	27000	31000	23000	33000	--
Magnesium, dissolved	ug/l	--	27000	31000	24000	30000	--
Manganese	ug/l	--	70	210	220	180	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.10	<0.10	<0.10	<0.10	--
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	--
Nickel	ug/l	25	2.5	2.1	1.6	1.5	--
Potassium	ug/l	--	8700	8200	8900	10000	--
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	--
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	<0.090	<0.090	<0.090	<0.090	--
Sodium	ug/l	--	52000	68000	54000	75000	--
Strontium	ug/l	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--
Vanadium	ug/l	6	<0.50	<0.50	<0.50	<0.50	--
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	--
Zirconium	ug/l	4 [15]	--	--	--	--	--
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--

APPENDIX C_V
ARNPIRIOR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-23 28-Apr-2001	SW-23 09-Nov-2001	SW-23 17-Apr-2002	SW-23 01-Apr-2003	SW-23 01-Oct-2003
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	352	437	235	365	375
Ammonia, unionized	ug/l	20	<20	<20	20	**50**	**30**
Ammonia Nitrogen	ug/l	--	350	70	580	1220	780
Biochemical Oxygen Demand, 5 Day	ug/l	--	3000	2000	<1000	<1000	2000
Chemical Oxygen Demand	ug/l	--	17000	26000	18000	8000	29000
Chloride	ug/l	--	72000	115000	61000	87000	92000
Chloride, dissolved	ug/l	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--
Color	color unit	--	15	34	16	12	18
Conductivity	uS/cm	--	863	1220	628	958	957
Conductivity (Field)	uS/cm	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	10.6	10.4	--	--	8.6
Hardness, Calcium Carbonate	ug/l	--	353000	469000	251000	405000	395000
Nitrate	ug/l	--	400	<100	440	250	<100
Nitrate as N	ug/l	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	--
Nitrogen	ug/l	--	690	970	1110	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	1580	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.13	8.13	8.31	7.84	7.76
Phosphorus	ug/l	-- [9]	10	20	30	**70**	**230**
Sulphate	ug/l	--	--	--	23000	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	400	1100	800	300	1000
Temperature (Field)	deg c	-- [10]	--	--	--	--	--
Total Dissolved Solids	ug/l	--	560950	793000	408200	622700	622050
Total Organic Carbon	ug/l	--	8300	11800	5300	7200	11200
Total Suspended Solids	ug/l	--	<2000	10000	2000	5000	25000
Turbidity	ntu	-- [11]	0.5	4.8	0.6	0.6	56.5
Metals							
Aluminum	ug/l	-- [12]	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	<50	<50	<50	<10	10
Barium	ug/l	--	110	110	80	120	90
Beryllium	ug/l	-- [14]	<2	<2	<2	<1	<1
Boron	ug/l	200 [15]	150	<50	--	130	120
Cadmium	ug/l	0.2 [13]	**0.3**	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	95000	120000	69000	111000	99000
Calcium, dissolved	ug/l	--	--	--	--	--	--
Chromium	ug/l	-- [16]	6	3	11	<5	7
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--
Cobalt	ug/l	0.9	0.5	0.4	0.2	0.4	**1.2**
Copper	ug/l	5	**24**	<1	2	<5	<1
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--
Iron	ug/l	300	80	120	90	--	**5460**
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	1	<1	<1	<1	<1
Magnesium	ug/l	--	28000	41000	19000	31000	36000
Magnesium, dissolved	ug/l	--	--	--	--	--	--
Manganese	ug/l	--	70	50	50	50	1010
Mercury	ug/l	0.2 [18]	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<10	<10	<10	<5	<5
Nickel	ug/l	25	<10	<10	<10	<5	<5
Potassium	ug/l	--	10000	13000	6000	12000	11000
Selenium	ug/l	100	<1	<1	<1	<1	<1
Silicon	ug/l	--	4400	6360	2260	4700	4800
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	40000	62000	28000	51000	61000
Strontium	ug/l	--	650	656	433	715	612
Thallium	ug/l	0.3 [19]	<1	<1	<1	<1	<1
Tin	ug/l	--	--	--	<10	--	--
Titanium	ug/l	--	<10	<10	<10	<10	<10
Vanadium	ug/l	6	<1	1	<1	<5	2
Zinc	ug/l	30 [13]	<10	<10	<10	<5	<10
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	<1	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-23 01-Dec-2003	SW-23 04-Jun-2004	SW-23 04-Jul-2004	SW-23 04-Oct-2004 [2]	SW-23 13-Jun-2005 [2]
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	38	397	444	--	--
Ammonia, unionized	ug/l	20	<20	<20	<20	--	--
Ammonia Nitrogen	ug/l	--	<20	1250	1430	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	17000	5000	--	--
Chemical Oxygen Demand	ug/l	--	21000	42000	29000	--	--
Chloride	ug/l	--	4000	102000	104000	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--
Color	color unit	--	38	28	28	--	--
Conductivity	uS/cm	--	104	1010	1110	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	31000	357000	402000	--	--
Nitrate	ug/l	--	230	<100	<100	--	--
Nitrate as N	ug/l	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	--	--
Nitrite as N	ug/l	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	9450	2030	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	6.74	7.35	7.29	--	--
Phosphorus	ug/l	-- [9]	30	**330**	**120**	--	--
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	1100	1100	900	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--
Total Dissolved Solids	ug/l	--	67600	656500	721500	--	--
Total Organic Carbon	ug/l	--	7900	16700	13900	--	--
Total Suspended Solids	ug/l	--	2000	1070000	33000	--	--
Turbidity	ntu	-- [11]	4.1	43.6	59.3	--	--
Metals							
Aluminum	ug/l	-- [12]	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	130	30	30	--	--
Barium	ug/l	--	20	--	--	--	--
Beryllium	ug/l	-- [14]	<1	--	--	--	--
Boron	ug/l	200 [15]	<10	--	--	--	--
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	--	--
Calcium	ug/l	--	9000	90000	105000	--	--
Calcium, dissolved	ug/l	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<1	2	8	--	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--
Cobalt	ug/l	0.9	<0.2	--	--	--	--
Copper	ug/l	5	2	<1	<1	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--
Iron	ug/l	300	21	**8910**	**5640**	--	--
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	--	--
Magnesium	ug/l	--	2000	32000	34000	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--
Manganese	ug/l	--	10	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	--	--
Molybdenum	ug/l	40	<5	--	--	--	--
Nickel	ug/l	25	<5	5	<5	--	--
Potassium	ug/l	--	1000	13000	11000	--	--
Selenium	ug/l	100	<1	<1	<1	--	--
Silicon	ug/l	--	2900	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	--	--
Sodium	ug/l	--	4000	64000	62000	--	--
Strontium	ug/l	--	68	--	--	--	--
Thallium	ug/l	0.3 [19]	<1	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	<10	--	--	--	--
Vanadium	ug/l	6	<1	--	--	--	--
Zinc	ug/l	30 [13]	<10	<10	<10	--	--
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	<1	<1	<1	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-23 31-Aug-2005 [2]	SW-23 30-Oct-2005 [2]	SW-23 31-Dec-2005 [3]	SW-23 08-Apr-2006 [2]	SW-23 15-Aug-2006 [2]
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	--	--	--	--
Ammonia, unionized	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--
Color	color unit	--	--	--	--	--	--
Conductivity	uS/cm	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--
Nitrate	ug/l	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--
Phosphorus	ug/l	-- [9]	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--
Total Organic Carbon	ug/l	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--
Turbidity	ntu	-- [11]	--	--	--	--	--
Metals							
Aluminum	ug/l	-- [12]	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--
Calcium, dissolved	ug/l	--	--	--	--	--	--
Chromium	ug/l	-- [16]	--	--	--	--	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--
Selenium	ug/l	100	--	--	--	--	--
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--
Zinc	ug/l	30 [13]	--	--	--	--	--
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-23 25-Nov-2006 [2]	SW-23 31-Aug-2007 [2]	SW-23 26-Nov-2007 [2]	SW-23 04-May-2008 [2]	SW-23 14-Aug-2008 [2]
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	--	--	--	--
Ammonia, unionized	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--
Color	color unit	--	--	--	--	--	--
Conductivity	uS/cm	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--
Nitrate	ug/l	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--
Phosphorus	ug/l	-- [9]	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--
Total Organic Carbon	ug/l	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--
Turbidity	ntu	-- [11]	--	--	--	--	--
Metals							
Aluminum	ug/l	-- [12]	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--
Calcium, dissolved	ug/l	--	--	--	--	--	--
Chromium	ug/l	-- [16]	--	--	--	--	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--
Selenium	ug/l	100	--	--	--	--	--
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--
Zinc	ug/l	30 [13]	--	--	--	--	--
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-23 28-Nov-2008 [3]	SW-23 25-Aug-2009 [2] SW-23	SW-23 30-Nov-2009 [2] SW-23	SW-23 21-Aug-2010 [2] SW-23	SW-23 27-Nov-2010 [2] SW-23
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	--	--	--	--
Ammonia, unionized	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--
Color	color unit	--	--	--	--	--	--
Conductivity	uS/cm	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--
Nitrate	ug/l	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--
Phosphorus	ug/l	-- [9]	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--
Total Organic Carbon	ug/l	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--
Turbidity	ntu	-- [11]	--	--	--	--	--
Metals							
Aluminum	ug/l	-- [12]	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--
Calcium, dissolved	ug/l	--	--	--	--	--	--
Chromium	ug/l	-- [16]	--	--	--	--	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--
Selenium	ug/l	100	--	--	--	--	--
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--
Zinc	ug/l	30 [13]	--	--	--	--	--
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-23 09-May-2011 [2] SW-23	SW-23 08-Sep-2011 [2] SW-23	SW-23 29-Nov-2011 [2] SW-23	SW-23 06-May-2012 [2] W-23	SW-23 22-Aug-2012 [2] SW-23
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	--	--	--	--
Ammonia, unionized	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--
Color	color unit	--	--	--	--	--	--
Conductivity	uS/cm	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--
Nitrate	ug/l	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--
Phosphorus	ug/l	-- [9]	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--
Total Organic Carbon	ug/l	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--
Turbidity	ntu	-- [11]	--	--	--	--	--
Metals							
Aluminum	ug/l	-- [12]	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--
Calcium, dissolved	ug/l	--	--	--	--	--	--
Chromium	ug/l	-- [16]	--	--	--	--	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--
Selenium	ug/l	100	--	--	--	--	--
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--
Zinc	ug/l	30 [13]	--	--	--	--	--
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-23 12-Nov-2012 [2] SW-23	SW-23 26-Aug-2014 [2] SW-23	SW-23 17-Nov-2014 [2] SW-23	SW-23 28-Apr-2015 [2] SW-23	SW-23 25-Aug-2015 [2] SW-23
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	--	--	--	--
Ammonia, unionized	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--
Color	color unit	--	--	--	--	--	--
Conductivity	uS/cm	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--
Nitrate	ug/l	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--
Phosphorus	ug/l	-- [9]	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--
Total Organic Carbon	ug/l	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--
Turbidity	ntu	-- [11]	--	--	--	--	--
Metals							
Aluminum	ug/l	-- [12]	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--
Calcium, dissolved	ug/l	--	--	--	--	--	--
Chromium	ug/l	-- [16]	--	--	--	--	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--
Selenium	ug/l	100	--	--	--	--	--
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--
Zinc	ug/l	30 [13]	--	--	--	--	--
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-23 11-Nov-2015 [2] SW-23	SW-23 18-Apr-2016 W-3	SW-23 07-Jul-2016 [2] SW-23	SW-23 31-Oct-2016 [2] SW-23	SW-23 23-May-2017 [24] SW-23
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	280	--	--	--
Ammonia, unionized	ug/l	20	--	<0.54	--	--	--
Ammonia Nitrogen	ug/l	--	--	<50	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<2000	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	62000	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	<5	--	--	--
Color	color unit	--	--	--	--	--	--
Conductivity	uS/cm	--	--	760	--	--	--
Conductivity (Field)	uS/cm	--	--	480	--	--	--
Dissolved Organic Carbon	ug/l	--	--	4200	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	**2.66**	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	310000	--	--	--
Nitrate	ug/l	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	570	--	--	--
Nitrite	ug/l	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	7.87	--	--	--
Phosphorus	ug/l	-- [9]	--	7	--	--	--
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	24000	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	7.1	--	--	--
Total Dissolved Solids	ug/l	--	--	424000	--	--	--
Total Organic Carbon	ug/l	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	<10000	--	--	--
Turbidity	ntu	-- [11]	--	--	--	--	--
Metals							
Aluminum	ug/l	-- [12]	--	7	--	--	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--
Barium	ug/l	--	--	93	--	--	--
Beryllium	ug/l	-- [14]	--	<0.5	--	--	--
Boron	ug/l	200 [15]	--	120	--	--	--
Cadmium	ug/l	0.2 [13]	--	<0.1	--	--	--
Calcium	ug/l	--	--	93000	--	--	--
Calcium, dissolved	ug/l	--	--	90000	--	--	--
Chromium	ug/l	-- [16]	--	<5	--	--	--
Chromium, dissolved	ug/l	-- [16]	--	<5.0	--	--	--
Cobalt	ug/l	0.9	--	<0.5	--	--	--
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	<0.50	--	--	--
Iron	ug/l	300	--	<100	--	--	--
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	--	<0.5	--	--	--
Magnesium	ug/l	--	--	21000	--	--	--
Magnesium, dissolved	ug/l	--	--	21000	--	--	--
Manganese	ug/l	--	--	<2	--	--	--
Mercury	ug/l	0.2 [18]	--	<0.1	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--
Molybdenum	ug/l	40	--	<0.5	--	--	--
Nickel	ug/l	25	--	2	--	--	--
Potassium	ug/l	--	--	5000	--	--	--
Selenium	ug/l	100	--	<2	--	--	--
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	--	<0.1	--	--	--
Sodium	ug/l	--	--	34000	--	--	--
Strontium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Vanadium	ug/l	6	--	<0.5	--	--	--
Zinc	ug/l	30 [13]	--	<5	--	--	--
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-23 26-Jul-2017 [2] SW-23	SW-23 22-Nov-2017 [2] SW-23	SW-23 15-May-2018 [24] SW-23	SW-23 29-Aug-2018 [24] SW-23	SW-23 02-Nov-2018 [2] SW-23
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	--	--	--	--
Ammonia, unionized	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--
Color	color unit	--	--	--	--	--	--
Conductivity	uS/cm	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--
Nitrate	ug/l	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--
Phosphorus	ug/l	-- [9]	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--
Total Organic Carbon	ug/l	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--
Turbidity	ntu	-- [11]	--	--	--	--	--
Metals							
Aluminum	ug/l	-- [12]	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--
Calcium, dissolved	ug/l	--	--	--	--	--	--
Chromium	ug/l	-- [16]	--	--	--	--	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--
Selenium	ug/l	100	--	--	--	--	--
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--
Zinc	ug/l	30 [13]	--	--	--	--	--
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-23 04-Jun-2019 [35] SW-23	SW-23 07-Aug-2019 [2] SW-23	SW-23 17-Nov-2019 [3] SW-23	SW-23 05-May-2020 SW23	SW-23 26-Aug-2020 [2] SW-23
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	--	--	290	--
Ammonia, unionized	ug/l	20	--	--	--	15.46	--
Ammonia Nitrogen	ug/l	--	--	--	--	2800	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	<2000	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	47000	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	<5	--
Color	color unit	--	--	--	--	--	--
Conductivity	uS/cm	--	--	--	--	730	--
Conductivity (Field)	uS/cm	--	--	--	--	565	--
Dissolved Organic Carbon	ug/l	--	--	--	--	3800	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	**5.83**	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	300000	--
Nitrate	ug/l	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	<100	--
Nitrite	ug/l	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	<10	--
Nitrogen	ug/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	<100	--
pH (Field)	-	6.5 - 8.5	--	--	--	7.52	--
Phosphorus	ug/l	-- [9]	--	--	--	11	--
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	13000	--
Tannin & Lignin	ug/l	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	8.7	--
Total Dissolved Solids	ug/l	--	--	--	--	380000	--
Total Organic Carbon	ug/l	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	<10000	--
Turbidity	ntu	-- [11]	--	--	--	--	--
Metals							
Aluminum	ug/l	-- [12]	--	--	--	13	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--
Barium	ug/l	--	--	--	--	81	--
Beryllium	ug/l	-- [14]	--	--	--	<0.50	--
Boron	ug/l	200 [15]	--	--	--	76	--
Cadmium	ug/l	0.2 [13]	--	--	--	<0.10	--
Calcium	ug/l	--	--	--	--	89000	--
Calcium, dissolved	ug/l	--	--	--	--	87000	--
Chromium	ug/l	-- [16]	--	--	--	<5.0	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	<5.0	--
Cobalt	ug/l	0.9	--	--	--	<0.50	--
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	<0.50	--
Iron	ug/l	300	--	--	--	<100	--
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	--	--	--	<0.50	--
Magnesium	ug/l	--	--	--	--	20000	--
Magnesium, dissolved	ug/l	--	--	--	--	20000	--
Manganese	ug/l	--	--	--	--	7.4	--
Mercury	ug/l	0.2 [18]	--	--	--	<0.10	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	<0.50	--
Nickel	ug/l	25	--	--	--	1.2	--
Potassium	ug/l	--	--	--	--	3300	--
Selenium	ug/l	100	--	--	--	<2.0	--
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	<0.10	--
Sodium	ug/l	--	--	--	--	30000	--
Strontium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	<0.50	--
Zinc	ug/l	30 [13]	--	--	--	<5.0	--
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-23 29-Oct-2020 [2] SW-23
General Chemistry			
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--
Ammonia, unionized	ug/l	20	--
Ammonia Nitrogen	ug/l	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--
Chemical Oxygen Demand	ug/l	--	--
Chloride	ug/l	--	--
Chloride, dissolved	ug/l	--	--
Chromium (III)	ug/l	8.9 [7]	--
Color	color unit	--	--
Conductivity	uS/cm	--	--
Conductivity (Field)	uS/cm	--	--
Dissolved Organic Carbon	ug/l	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--
Hardness, Calcium Carbonate	ug/l	--	--
Nitrate	ug/l	--	--
Nitrate as N	ug/l	--	--
Nitrite	ug/l	--	--
Nitrite as N	ug/l	--	--
Nitrogen	ug/l	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--
pH (Field)	-	6.5 - 8.5	--
Phosphorus	ug/l	-- [9]	--
Sulphate	ug/l	--	--
Sulphate, dissolved	ug/l	--	--
Tannin & Lignin	ug/l	--	--
Temperature (Field)	deg c	-- [10]	--
Total Dissolved Solids	ug/l	--	--
Total Organic Carbon	ug/l	--	--
Total Suspended Solids	ug/l	--	--
Turbidity	ntu	-- [11]	--
Metals			
Aluminum	ug/l	-- [12]	--
Aluminum, dissolved	ug/l	-- [12]	--
Barium	ug/l	--	--
Beryllium	ug/l	-- [14]	--
Boron	ug/l	200 [15]	--
Cadmium	ug/l	0.2 [13]	--
Calcium	ug/l	--	--
Calcium, dissolved	ug/l	--	--
Chromium	ug/l	-- [16]	--
Chromium, dissolved	ug/l	-- [16]	--
Cobalt	ug/l	0.9	--
Copper	ug/l	5	--
Hexavalent Chromium	ug/l	1 [7]	--
Iron	ug/l	300	--
Iron, dissolved	ug/l	300	--
Lead	ug/l	-- [17]	--
Magnesium	ug/l	--	--
Magnesium, dissolved	ug/l	--	--
Manganese	ug/l	--	--
Mercury	ug/l	0.2 [18]	--
Mercury, dissolved	ug/l	0.2 [18]	--
Molybdenum	ug/l	40	--
Nickel	ug/l	25	--
Potassium	ug/l	--	--
Selenium	ug/l	100	--
Silicon	ug/l	--	--
Silver	ug/l	0.1	--
Sodium	ug/l	--	--
Strontium	ug/l	--	--
Thallium	ug/l	0.3 [19]	--
Tin	ug/l	--	--
Titanium	ug/l	--	--
Vanadium	ug/l	6	--
Zinc	ug/l	30 [13]	--
Phenols			
Phenolics, Total Recoverable	ug/l	1 [21]	--

Parameter	Unit	PWQO [1]	SW-23 28-Apr-2021 [2] SW-23	SW-23 28-Apr-2021 [2] SW23	SW-23 14-Jul-2021 [2] SW-23	SW-23 22-Nov-2021 [2] SW-23	SW-23 27-Apr-2022 SW-23
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	--	--	--	280
Ammonia, unionized	ug/l	20	--	--	--	--	<0.64
Ammonia Nitrogen	ug/l	--	--	--	--	--	<50
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	<2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	58000
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	<5
Color	color unit	--	--	--	--	--	--
Conductivity	uS/cm	--	--	--	--	--	730
Conductivity (Field)	uS/cm	--	--	--	--	--	715
Dissolved Organic Carbon	ug/l	--	--	--	--	--	4900
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	**2.61**
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	300000
Nitrate	ug/l	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	480
Nitrite	ug/l	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	<10
Nitrogen	ug/l	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	480
pH (Field)	-	6.5 - 8.5	--	--	--	--	7.90
Phosphorus	ug/l	-- [9]	--	--	--	--	9
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	20000
Tannin & Lignin	ug/l	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--	8.4
Total Dissolved Solids	ug/l	--	--	--	--	--	370000
Total Organic Carbon	ug/l	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	<10000
Turbidity	ntu	-- [11]	--	--	--	--	--
Metals							
Aluminum	ug/l	-- [12]	--	--	--	--	5.2
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	<4.9
Barium	ug/l	--	--	--	--	--	84
Beryllium	ug/l	-- [14]	--	--	--	--	<0.40
Boron	ug/l	200 [15]	--	--	--	--	93
Cadmium	ug/l	0.2 [13]	--	--	--	--	<0.090
Calcium	ug/l	--	--	--	--	--	90000
Calcium, dissolved	ug/l	--	--	--	--	--	89000
Chromium	ug/l	-- [16]	--	--	--	--	<5.0
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	<5.0
Cobalt	ug/l	0.9	--	--	--	--	<0.50
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--	<0.50
Iron	ug/l	300	--	--	--	--	<100
Iron, dissolved	ug/l	300	--	--	--	--	<100
Lead	ug/l	-- [17]	--	--	--	--	<0.50
Magnesium	ug/l	--	--	--	--	--	20000
Magnesium, dissolved	ug/l	--	--	--	--	--	20000
Manganese	ug/l	--	--	--	--	--	2.8
Mercury	ug/l	0.2 [18]	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	<0.10
Molybdenum	ug/l	40	--	--	--	--	<0.50
Nickel	ug/l	25	--	--	--	--	1.4
Potassium	ug/l	--	--	--	--	--	4400
Selenium	ug/l	100	--	--	--	--	<2.0
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	<0.090
Sodium	ug/l	--	--	--	--	--	38000
Strontium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	<0.50
Zinc	ug/l	30 [13]	--	--	--	--	<5.0
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-23 11-Dec-2022 [2] SW-23	SW-23 29-May-2023 [25] SW-23	SW-23 21-Sep-2023 [25] SW-23	SW-23 03-Dec-2023 [24] SW-23
General Chemistry						
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	--	--	--
Ammonia, unionized	ug/l	20	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--
Color	color unit	--	--	--	--	--
Conductivity	uS/cm	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--
Nitrate	ug/l	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--
Phosphorus	ug/l	-- [9]	--	--	--	--
Sulphate	ug/l	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--
Total Organic Carbon	ug/l	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--
Turbidity	ntu	-- [11]	--	--	--	--
Metals						
Aluminum	ug/l	-- [12]	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--
Barium	ug/l	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--
Cadmium	ug/l	0.2 [13]	--	--	--	--
Calcium	ug/l	--	--	--	--	--
Calcium, dissolved	ug/l	--	--	--	--	--
Chromium	ug/l	-- [16]	--	--	--	--
Chromium, dissolved	ug/l	-- [16]	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--
Copper	ug/l	5	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	--	--	--	--
Iron	ug/l	300	--	--	--	--
Iron, dissolved	ug/l	300	--	--	--	--
Lead	ug/l	-- [17]	--	--	--	--
Magnesium	ug/l	--	--	--	--	--
Magnesium, dissolved	ug/l	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--
Mercury	ug/l	0.2 [18]	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--
Nickel	ug/l	25	--	--	--	--
Potassium	ug/l	--	--	--	--	--
Selenium	ug/l	100	--	--	--	--
Silicon	ug/l	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--
Sodium	ug/l	--	--	--	--	--
Strontium	ug/l	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--
Tin	ug/l	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--
Zinc	ug/l	30 [13]	--	--	--	--
Phenols						
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	--	--

Parameter	Unit	PWQO [1]	SW-24 01-Apr-2003
General Chemistry			
Alkalinity (Total as CaCO3)	mg/l	-- [6]	274
Ammonia, unionized	ug/l	20	<20
Ammonia Nitrogen	ug/l	--	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000
Chemical Oxygen Demand	ug/l	--	<5000
Chloride	ug/l	--	32000
Color	color unit	--	8
Conductivity	uS/cm	--	631
Hardness, Calcium Carbonate	ug/l	--	313000
Nitrate	ug/l	--	340
Nitrite	ug/l	--	<100
Nitrogen, Total Kjeldahl	ug/l	--	330
pH (Field)	-	6.5 - 8.5	8.06
Phosphorus	ug/l	-- [9]	**40**
Tannin & Lignin	ug/l	--	<100
Total Dissolved Solids	ug/l	--	410150
Total Organic Carbon	ug/l	--	3300
Total Suspended Solids	ug/l	--	4000
Turbidity	ntu	-- [11]	0.6
Metals			
Aluminum, dissolved	ug/l	-- [12]	20
Barium	ug/l	--	80
Beryllium	ug/l	-- [14]	<1
Boron	ug/l	200 [15]	<50
Cadmium	ug/l	0.2 [13]	<0.1
Calcium	ug/l	--	89000
Chromium	ug/l	-- [16]	<5
Cobalt	ug/l	0.9	<0.2
Copper	ug/l	5	<5
Iron	ug/l	300	90
Lead	ug/l	-- [17]	<1
Magnesium	ug/l	--	22000
Manganese	ug/l	--	30
Mercury, dissolved	ug/l	0.2 [18]	<0.1
Molybdenum	ug/l	40	<5
Nickel	ug/l	25	<5
Potassium	ug/l	--	4000
Selenium	ug/l	100	<0.1
Silicon	ug/l	--	4500
Silver	ug/l	0.1	<0.1
Sodium	ug/l	--	23000
Strontium	ug/l	--	425
Thallium	ug/l	0.3 [19]	<1
Titanium	ug/l	--	<10
Vanadium	ug/l	6	<5
Zinc	ug/l	30 [13]	<5
Phenols			
Phenolics, Total Recoverable	ug/l	1 [21]	<1

Parameter	Unit	PWQO [1]	SW-25 17-Apr-2002
General Chemistry			
Alkalinity (Total as CaCO3)	mg/l	-- [6]	238
Ammonia, unionized	ug/l	20	20
Ammonia Nitrogen	ug/l	--	550
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000
Chemical Oxygen Demand	ug/l	--	25000
Chloride	ug/l	--	45000
Color	color unit	--	50
Conductivity	uS/cm	--	630
Hardness, Calcium Carbonate	ug/l	--	235000
Nitrate	ug/l	--	470
Nitrite	ug/l	--	<100
Nitrogen	ug/l	--	1030
pH (Field)	-	6.5 - 8.5	8.38
Phosphorus	ug/l	-- [9]	30
Sulphate	ug/l	--	24000
Tannin & Lignin	ug/l	--	900
Total Dissolved Solids	ug/l	--	409500
Total Organic Carbon	ug/l	--	5800
Total Suspended Solids	ug/l	--	3000
Turbidity	ntu	-- [11]	0.8
Metals			
Aluminum, dissolved	ug/l	-- [12]	<50
Barium	ug/l	--	80
Beryllium	ug/l	-- [14]	<2
Cadmium	ug/l	0.2 [13]	<0.1
Calcium	ug/l	--	66000
Chromium	ug/l	-- [16]	<1
Cobalt	ug/l	0.9	0.3
Copper	ug/l	5	2
Iron	ug/l	300	100
Lead	ug/l	-- [17]	<1
Magnesium	ug/l	--	17000
Manganese	ug/l	--	50
Mercury, dissolved	ug/l	0.2 [18]	<0.1
Molybdenum	ug/l	40	<10
Nickel	ug/l	25	<10
Potassium	ug/l	--	6000
Selenium	ug/l	100	<1
Silicon	ug/l	--	2270
Silver	ug/l	0.1	<0.1
Sodium	ug/l	--	27000
Strontium	ug/l	--	432
Thallium	ug/l	0.3 [19]	<1
Tin	ug/l	--	<10
Titanium	ug/l	--	<10
Vanadium	ug/l	6	<1
Zinc	ug/l	30 [13]	<10
Phenols			
Phenolics, Total Recoverable	ug/l	1 [21]	<1

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-26 17-Jun-2010 W-10	SW-26 21-Aug-2010 A-10	SW-26 27-Nov-2010 W-6	SW-26 09-May-2011 W-4	SW-26 08-Sep-2011 W-6
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	24	23	31	30	35
Ammonia, unionized	ug/l	20	<0.57	<2.37	<0.13	0.34	<0.88
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<20	<20	<20	20	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	<1000	<1000	1000
Chloride	ug/l	--	4000	4000	3000	5000	5000
Chloride, dissolved	ug/l	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	--
Conductivity	uS/cm	--	72	69	82	86	93
Conductivity (Field)	uS/cm	--	204	130	188	78	110
Dissolved Organic Carbon	ug/l	--	6600	6300	7200	7800	6700
Dissolved Oxygen (Field)	mg/l	-- [8]	13.92	13.96	14.88	13.81	11.4
Hardness, Calcium Carbonate	ug/l	--	26000	26000	31000	31000	33000
Nitrate as N	ug/l	--	<100	<100	230	150	120
Nitrite as N	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.9	8.5	7.8	8.0	8.0
Phosphorus	ug/l	-- [9]	**50**	30	<10	30	10
Sulphate	ug/l	--	6000	6000	6000	6000	7000
Sulphate, dissolved	ug/l	--	--	--	--	--	--
Temperature (Field)	deg c	-- [10]	19	21	3	9.0	22
Total Dissolved Solids	ug/l	--	47000	45000	53000	56000	60000
Total Suspended Solids	ug/l	--	8000	<2000	<2000	19000	3000
Metals							
Aluminum	ug/l	-- [12]	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	200	30	40	100	40
Antimony	ug/l	20	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--
Barium	ug/l	--	10	10	10	10	10
Beryllium	ug/l	-- [14]	<1	<1	<1	<0.5	<0.5
Bismuth	ug/l	--	--	--	--	--	--
Boron	ug/l	200 [15]	<10	<10	<10	<10	10
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	7000	7000	9000	9000	10000
Calcium, dissolved	ug/l	--	--	--	--	--	--
Chromium	ug/l	-- [16]	<1	<1	<1	<1	1
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	--
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<50	<50	<50	<50	<50
Iron	ug/l	300	240	130	170	220	160
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	2	<1
Lithium	ug/l	--	--	--	--	--	--
Magnesium	ug/l	--	2000	2000	2000	2000	2000
Magnesium, dissolved	ug/l	--	--	--	--	--	--
Manganese	ug/l	--	20	10	<10	20	10
Mercury	ug/l	0.2 [18]	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.2	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5
Potassium	ug/l	--	<1000	<1000	<1000	<1000	<1000
Selenium	ug/l	100	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	<2000	3000	4000	4000	5000
Strontium	ug/l	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--
Vanadium	ug/l	6	<1	<1	<1	<1	<1
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<10
Zirconium	ug/l	4 [15]	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-26 29-Nov-2011 W-1	SW-26 06-May-2012 W-1	SW-26 22-Aug-2012 W-2	SW-26 12-Nov-2012 W - 4	SW-26 29-May-2014 W-11
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	30	23	22	35	17
Ammonia, unionized	ug/l	20	<0.76	<0.34	8.42	<0.39	1
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<20	<20	240	<20	68
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	1000	1000	<2000
Chloride	ug/l	--	5000	3000	2000	5000	--
Chloride, dissolved	ug/l	--	--	--	--	--	4000
Chromium (III)	ug/l	8.9 [7]	--	--	--	--	<5
Conductivity	uS/cm	--	83	64	60	93	62
Conductivity (Field)	uS/cm	--	82	125	135	110	135
Dissolved Organic Carbon	ug/l	--	5600	7900	5800	7600	7300
Dissolved Oxygen (Field)	mg/l	-- [8]	14.04	12.42	9.62	12.44	12.88
Hardness, Calcium Carbonate	ug/l	--	31000	21000	26000	31000	21000
Nitrate as N	ug/l	--	150	190	<100	160	100
Nitrite as N	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.5	8.0	7.9	8.1	8.0
Phosphorus	ug/l	-- [9]	20	10	20	10	19
Sulphate	ug/l	--	6000	6000	6000	7000	--
Sulphate, dissolved	ug/l	--	--	--	--	--	5000
Temperature (Field)	deg c	-- [10]	5	9	22	8	9
Total Dissolved Solids	ug/l	--	54000	42000	39000	60000	58000
Total Suspended Solids	ug/l	--	<2000	<2000	<2000	<2000	<10000
Metals							
Aluminum	ug/l	-- [12]	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [12]	40	130	100	50	230
Antimony	ug/l	20	--	--	--	--	<0.50
Arsenic	ug/l	100 [13]	--	--	--	--	<1.0
Barium	ug/l	--	10	10	10	10	13
Beryllium	ug/l	-- [14]	<0.5	<0.5	<0.5	<0.5	<0.50
Bismuth	ug/l	--	--	--	--	--	<1.0
Boron	ug/l	200 [15]	<10	<10	<10	<10	<10
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.10
Calcium	ug/l	--	9000	5000	7000	9000	6500
Calcium, dissolved	ug/l	--	--	--	--	--	5900
Chromium	ug/l	-- [16]	<1	2	<1	<1	<5.0
Chromium, dissolved	ug/l	-- [16]	--	--	--	--	<5.0
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	<0.2	<0.50
Copper	ug/l	5	--	--	--	--	1.3
Hexavalent Chromium	ug/l	1 [7]	<50	<50	<50	<50	<0.50
Iron	ug/l	300	190	200	160	130	**320**
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	<1	<1	<1	<1	<0.50
Lithium	ug/l	--	--	--	--	--	<5.0
Magnesium	ug/l	--	2000	2000	2000	2000	1600
Magnesium, dissolved	ug/l	--	--	--	--	--	1400
Manganese	ug/l	--	<10	10	20	<10	13
Mercury	ug/l	0.2 [18]	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.10
Molybdenum	ug/l	40	<5	<5	<5	<5	<0.50
Nickel	ug/l	25	<5	<5	<5	<5	<1.0
Potassium	ug/l	--	<1000	<1000	<1000	<1000	690
Selenium	ug/l	100	<1	<1	<1	<1	<2.0
Silicon	ug/l	--	--	--	--	--	3100
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Sodium	ug/l	--	4000	3000	2000	4000	3900
Strontium	ug/l	--	--	--	--	--	36
Tellurium	ug/l	--	--	--	--	--	<1.0
Thallium	ug/l	0.3 [19]	--	--	--	--	<0.050
Tin	ug/l	--	--	--	--	--	<1.0
Titanium	ug/l	--	--	--	--	--	7.9
Tungsten	ug/l	30 [20]	--	--	--	--	<1.0
Uranium	ug/l	5 [15]	--	--	--	--	<0.10
Vanadium	ug/l	6	<1	<1	<1	<1	0.54
Zinc	ug/l	30 [13]	<10	<10	<10	<10	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	<1.0

APPENDIX C_V
ARNPIRON WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-26 26-Aug-2014 S-1	SW-26 17-Nov-2014 W-1	SW-26 28-Apr-2015 W-11	SW-26 25-Aug-2015 W-4	SW-26 11-Nov-2015 W-8
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	25	29	33	23	26
Ammonia, unionized	ug/l	20	3	0	1.72	4.91	<0.53
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	110	<50	150	140	<50
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	4000	4000	10000	2200	2800
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5
Conductivity	uS/cm	--	78	85	110	62	76
Conductivity (Field)	uS/cm	--	155	160	180	105	380
Dissolved Organic Carbon	ug/l	--	6700	7600	7500	6400	6700
Dissolved Oxygen (Field)	mg/l	-- [8]	11.94	13.13	13.08	11.11	13.61
Hardness, Calcium Carbonate	ug/l	--	28000	34000	39000	23000	29000
Nitrate as N	ug/l	--	<100	150	210	<100	110
Nitrite as N	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.9	7.8	7.9	7.9	7.9
Phosphorus	ug/l	-- [9]	15	25	**760**	13	11
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	6000	5000	6000	5600	5400
Temperature (Field)	deg c	-- [10]	20	3	7	22	6
Total Dissolved Solids	ug/l	--	48000	46000	74000	56000	50000
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	<10000
Metals							
Aluminum	ug/l	-- [12]	--	--	--	97	97
Aluminum, dissolved	ug/l	-- [12]	130	300	350	--	--
Antimony	ug/l	20	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--
Barium	ug/l	--	15	16	19	11	12
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--
Boron	ug/l	200 [15]	<10	15	10	<10	<10
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.10	<0.10
Calcium	ug/l	--	7900	10000	12000	7200	7600
Calcium, dissolved	ug/l	--	8000	9500	11000	6300	8300
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	170	**370**	**420**	150	190
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	0.68	1.2	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--
Magnesium	ug/l	--	2000	2500	2600	1800	2100
Magnesium, dissolved	ug/l	--	1900	2400	2700	1700	2100
Manganese	ug/l	--	9.8	15	16	8.5	7.7
Mercury	ug/l	0.2 [18]	--	--	--	<0.10	<0.10
Mercury, dissolved	ug/l	0.2 [18]	<0.10	<0.10	<0.10	--	--
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	<1.0	1.3	2.2	<1.0	<1.0
Potassium	ug/l	--	660	850	790	640	690
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	3900	4200	6100	2600	3300
Strontium	ug/l	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--
Vanadium	ug/l	6	<0.50	0.69	1.1	0.59	0.56
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	<1.0	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-26 18-Apr-2016 W-1	SW-26 07-Jul-2016 W-1	SW-26 31-Oct-2016 W-1	SW-26 23-May-2017 SW-26	SW-26 26-Jul-2017 SW-26
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	37	18	26	25	39
Ammonia, unionized	ug/l	20	<1.09	<1.32	<0.46	<0.82	<2.6
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	<50	<50	<50	<50
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	12000	2300	3000	4600	6700
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5
Conductivity	uS/cm	--	120	58	77	78	110
Conductivity (Field)	uS/cm	--	105	380	340	0.07	128
Dissolved Organic Carbon	ug/l	--	6900	6000	6000	7200	7000
Dissolved Oxygen (Field)	mg/l	-- [8]	13.72	10.04	12.66	10.04	10.05
Hardness, Calcium Carbonate	ug/l	--	40000	21000	27000	25000	41000
Nitrate as N	ug/l	--	290	<100	110	130	220
Nitrite as N	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.21	7.9	7.8	7.8	8.05
Phosphorus	ug/l	-- [9]	13	26	22	**43**	29
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	5900	4200	6000	2300	5100
Temperature (Field)	deg c	-- [10]	6.2	18	7	14.5	22.9
Total Dissolved Solids	ug/l	--	74000	54000	60000	40000	86000
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	<10000
Metals							
Aluminum	ug/l	-- [12]	350	290	160	380	210
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--
Barium	ug/l	--	18	15	13	14	17
Beryllium	ug/l	-- [14]	<0.5	<0.5	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--
Boron	ug/l	200 [15]	<10	<10	22	<10	12
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.10	<0.10	<0.10
Calcium	ug/l	--	9800	6400	8100	8700	10000
Calcium, dissolved	ug/l	--	12000	5900	7600	7300	12000
Chromium	ug/l	-- [16]	<5	<5	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.5	<0.5	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**360**	**350**	280	**500**	**350**
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	<0.5	0.5	0.68	1.5	2.2
Lithium	ug/l	--	--	--	--	--	--
Magnesium	ug/l	--	2400	1700	2200	2000	2600
Magnesium, dissolved	ug/l	--	2600	1500	2100	1700	2600
Manganese	ug/l	--	11	19	15	20	20
Mercury	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--
Molybdenum	ug/l	40	<0.5	<0.5	<0.50	<0.50	<0.50
Nickel	ug/l	25	<1	1	1.0	1.1	1.0
Potassium	ug/l	--	810	700	690	790	820
Selenium	ug/l	100	<2	<2	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Sodium	ug/l	--	5600	2500	3700	4400	6400
Strontium	ug/l	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--
Vanadium	ug/l	6	0.9	1.1	0.90	1.3	0.76
Zinc	ug/l	30 [13]	6	<5	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-26 22-Nov-2017 SW-26	SW-26 15-May-2018 SW-26	SW-26 29-Aug-2018 SW-26	SW-26 02-Nov-2018 SW-26	SW-26 04-Jun-2019 SW-26
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	44	27	24	27	29
Ammonia, unionized	ug/l	20	<0.28	<1.04	<1.05	0.9	1.54
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	<50	<50	98	200
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	8200	6300	2200	3500	6700
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5
Conductivity	uS/cm	--	120	89	65	75	90
Conductivity (Field)	uS/cm	--	420	98	410	395	440
Dissolved Organic Carbon	ug/l	--	6900	6900	6700	6600	7500
Dissolved Oxygen (Field)	mg/l	-- [8]	12.04	15.04	11.44	11.86	12.12
Hardness, Calcium Carbonate	ug/l	--	41000	30000	25000	29000	31000
Nitrate as N	ug/l	--	390	230	<100	160	210
Nitrite as N	ug/l	--	--	--	--	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.7	8.1	7.7	7.8	7.52
Phosphorus	ug/l	-- [9]	25	**45**	15	22	**76**
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	5900	3100	3100	2100	<1000
Temperature (Field)	deg c	-- [10]	3.9	8.8	21	7.0	13
Total Dissolved Solids	ug/l	--	95000	100000	90000	65000	90000
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	10000	11000
Metals							
Aluminum	ug/l	-- [12]	180	85	140	260	530
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--
Barium	ug/l	--	18	14	13	14	19
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.50	<0.50
Bismuth	ug/l	--	--	--	--	--	--
Boron	ug/l	200 [15]	<10	<10	<10	<10	<10
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.10	<0.10
Calcium	ug/l	--	12000	9500	7700	8400	10000
Calcium, dissolved	ug/l	--	12000	8600	7300	8200	9300
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	290	150	230	**340**	**720**
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	<0.50	<0.50	<0.50	<0.50	4.8
Lithium	ug/l	--	--	--	--	--	--
Magnesium	ug/l	--	2800	2100	2000	2100	2300
Magnesium, dissolved	ug/l	--	2800	1900	1800	2000	2000
Manganese	ug/l	--	12	5.7	16	14	40
Mercury	ug/l	0.2 [18]	<0.1	<0.1	<0.1	<0.1	<0.1
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	<1.0	<1.0	<1.0	<1.0	1.7
Potassium	ug/l	--	810	780	660	700	810
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	9500	5700	2700	3500	4800
Strontium	ug/l	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--
Vanadium	ug/l	6	0.61	0.68	0.79	0.63	1.7
Zinc	ug/l	30 [13]	<5.0	<5.0	<5.0	<5.0	6.7
Zirconium	ug/l	4 [15]	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-26 07-Aug-2019 SW26	SW-26 17-Nov-2019 SW-26	SW-26 05-May-2020 SW26	SW-26 26-Aug-2020 SW-26	SW-26 29-Oct-2020 SW-26
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	32	40	25	24	25
Ammonia, unionized	ug/l	20	5.61	0.46	**147.57**	7	**74.25**
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	250	120	7900	170	5800
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	4700	7300	5200	2100	3000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5
Conductivity	uS/cm	--	90	120	78	67	68
Conductivity (Field)	uS/cm	--	415	430	58	79	75
Dissolved Organic Carbon	ug/l	--	7300	6700	6700	6800	7300
Dissolved Oxygen (Field)	mg/l	-- [8]	10.69	12.88	11.69	14.49	14.22
Hardness, Calcium Carbonate	ug/l	--	33000	46000	28000	26000	27000
Nitrate as N	ug/l	--	130	280	140	120	170
Nitrite as N	ug/l	--	--	<10	<10	--	--
Nitrogen, Nitrate-Nitrite	ug/l	--	--	280	140	--	--
pH (Field)	-	6.5 - 8.5	7.7	7.6	8.1	8.2	7.81
Phosphorus	ug/l	-- [9]	**130**	23	22	18	12
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	<1000	6900	3600	2500	4500
Temperature (Field)	deg c	-- [10]	22	2.0	7.4	14.9	11
Total Dissolved Solids	ug/l	--	90000	80000	70000	20000	55000
Total Suspended Solids	ug/l	--	43000	<10000	<10000	<10000	<10000
Metals							
Aluminum	ug/l	-- [12]	--	230	310	200	170
Aluminum, dissolved	ug/l	-- [12]	--	--	--	--	--
Antimony	ug/l	20	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--
Barium	ug/l	--	35	17	15	12	13
Beryllium	ug/l	-- [14]	<0.50	<0.50	<0.50	<0.40	<0.40
Bismuth	ug/l	--	--	--	--	--	--
Boron	ug/l	200 [15]	11	<10	<10	<10	<10
Cadmium	ug/l	0.2 [13]	<0.10	<0.10	<0.10	<0.090	<0.090
Calcium	ug/l	--	21000	12000	7900	7300	7000
Calcium, dissolved	ug/l	--	9400	13000	8000	--	--
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	--	--
Cobalt	ug/l	0.9	**1.0**	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**1300**	**330**	**410**	280	260
Iron, dissolved	ug/l	300	--	--	--	--	--
Lead	ug/l	-- [17]	18	1.2	<0.50	<0.50	<0.50
Lithium	ug/l	--	--	--	--	--	--
Magnesium	ug/l	--	3700	2800	2000	1800	1900
Magnesium, dissolved	ug/l	--	2200	3200	1900	--	--
Manganese	ug/l	--	120	16	14	17	10
Mercury	ug/l	0.2 [18]	<0.1	<0.1	<0.10	<0.10	<0.10
Mercury, dissolved	ug/l	0.2 [18]	--	--	--	--	--
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	2.3	<1.0	1.1	<1.0	<1.0
Potassium	ug/l	--	1000	870	710	600	640
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.090	<0.090
Sodium	ug/l	--	4500	5900	4100	2900	3000
Strontium	ug/l	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--
Vanadium	ug/l	6	2.5	1.1	0.75	0.87	0.56
Zinc	ug/l	30 [13]	19	<5.0	<5.0	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-26 28-Apr-2021 SW26	SW-26 14-Jul-2021 SW-26	SW-26 22-Nov-2021 SW26
General Chemistry					
Alkalinity (Total as CaCO3)	mg/l	-- [6]	29	22	35
Ammonia, unionized	ug/l	20	<0.63	3.74	4.44
Ammonia, unionized (Field)	ug/l	20	--	--	--
Ammonia Nitrogen	ug/l	--	<50	150	1000
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000
Chloride	ug/l	--	--	--	--
Chloride, dissolved	ug/l	--	6700	3000	6700
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5
Conductivity	uS/cm	--	93	64	100
Conductivity (Field)	uS/cm	--	81	110	105
Dissolved Organic Carbon	ug/l	--	7200	6600	7400
Dissolved Oxygen (Field)	mg/l	-- [8]	13.87	10.99	13.64
Hardness, Calcium Carbonate	ug/l	--	33000	23000	34000
Nitrate as N	ug/l	--	160	440	230
Nitrite as N	ug/l	--	<10	<10	<10
Nitrogen, Nitrate-Nitrite	ug/l	--	160	440	230
pH (Field)	-	6.5 - 8.5	7.82	7.81	7.54
Phosphorus	ug/l	-- [9]	18	9	17
Sulphate	ug/l	--	--	--	--
Sulphate, dissolved	ug/l	--	5300	3700	6000
Temperature (Field)	deg c	-- [10]	10.4	20	5.4
Total Dissolved Solids	ug/l	--	80000	30000	65000
Total Suspended Solids	ug/l	--	<10000	<10000	<10000
Metals					
Aluminum	ug/l	-- [12]	270	100	140
Aluminum, dissolved	ug/l	-- [12]	--	--	--
Antimony	ug/l	20	--	--	--
Arsenic	ug/l	100 [13]	--	--	--
Barium	ug/l	--	18	11	16
Beryllium	ug/l	-- [14]	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--
Boron	ug/l	200 [15]	<10	<10	<10
Cadmium	ug/l	0.2 [13]	<0.090	<0.090	<0.090
Calcium	ug/l	--	10000	6100	10000
Calcium, dissolved	ug/l	--	9300	6600	9900
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50
Iron	ug/l	300	**370**	170	260
Iron, dissolved	ug/l	300	--	--	--
Lead	ug/l	-- [17]	0.98	<0.50	0.62
Lithium	ug/l	--	--	--	--
Magnesium	ug/l	--	2400	1600	2400
Magnesium, dissolved	ug/l	--	2300	1700	2300
Manganese	ug/l	--	11	8.7	8.9
Mercury	ug/l	0.2 [18]	**0.30**	<0.10	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	<0.10
Molybdenum	ug/l	40	<0.50	<0.50	<0.50
Nickel	ug/l	25	1.0	<1.0	1.2
Potassium	ug/l	--	840	620	720
Selenium	ug/l	100	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--
Silver	ug/l	0.1	<0.090	<0.090	<0.090
Sodium	ug/l	--	5000	2900	5000
Strontium	ug/l	--	--	--	--
Tellurium	ug/l	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--
Tin	ug/l	--	--	--	--
Titanium	ug/l	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--
Uranium	ug/l	5 [15]	--	--	--
Vanadium	ug/l	6	0.66	<0.50	0.60
Zinc	ug/l	30 [13]	5.5	<5.0	<5.0
Zirconium	ug/l	4 [15]	--	--	--

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-26 27-Apr-2022 SW-26	SW-26 17-Aug-2022 [40] SW-26	SW-26 11-Dec-2022 SW-26	SW-26 29-May-2023 SW-26	SW-26 21-Sep-2023 SW-26
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	33	28	47	38	23
Ammonia, unionized	ug/l	20	<0.35	**26.7**	7.54	1.52	2.62
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<50	750	720	110	150
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000
Chloride	ug/l	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	5500	2600	6600	11000	<1000
Chromium (III)	ug/l	8.9 [7]	<5	<5	<5	<5	<5
Conductivity	uS/cm	--	92	69	120	140	70
Conductivity (Field)	uS/cm	--	89	109	138	129	124
Dissolved Organic Carbon	ug/l	--	7300	6500	7400	7300	7100
Dissolved Oxygen (Field)	mg/l	-- [8]	13.92	14.11	14.99	15.02	14.72
Hardness, Calcium Carbonate	ug/l	--	35000	30000	46000	44000	26000
Nitrate as N	ug/l	--	200	130	220	320	140
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10
Nitrogen, Nitrate-Nitrite	ug/l	--	200	130	220	320	140
pH (Field)	-	6.5 - 8.5	7.92	7.90	7.95	7.78	7.85
Phosphorus	ug/l	-- [9]	30	6	7	**57**	11
Sulphate	ug/l	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	2800	2200	1600	6600	4100
Temperature (Field)	deg c	-- [10]	0.2	22.2	4.4	12.9	13.9
Total Dissolved Solids	ug/l	--	65000	65000	90000	125000	55000
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	15000	<10000
Metals							
Aluminum	ug/l	-- [12]	440	150	170	420	63
Aluminum, dissolved	ug/l	-- [12]	81	71	73	75	63
Antimony	ug/l	20	--	--	--	--	--
Arsenic	ug/l	100 [13]	--	--	--	--	--
Barium	ug/l	--	16	13	16	22	12
Beryllium	ug/l	-- [14]	<0.40	<0.40	<0.40	<0.40	<0.40
Bismuth	ug/l	--	--	--	--	--	--
Boron	ug/l	200 [15]	<10	<10	11	15	<10
Cadmium	ug/l	0.2 [13]	<0.090	<0.090	<0.090	<0.090	<0.090
Calcium	ug/l	--	10000	8800	13000	12000	7600
Calcium, dissolved	ug/l	--	10000	8700	13000	13000	7500
Chromium	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [7]	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**580**	260	280	**610**	140
Iron, dissolved	ug/l	300	150	130	150	130	120
Lead	ug/l	-- [17]	0.99	<0.50	<0.50	4.5	<0.50
Lithium	ug/l	--	--	--	--	--	--
Magnesium	ug/l	--	2300	2100	3500	3000	1800
Magnesium, dissolved	ug/l	--	2100	2000	3300	2800	1700
Manganese	ug/l	--	23	16	13	36	5.6
Mercury	ug/l	0.2 [18]	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [18]	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel	ug/l	25	1.2	<1.0	<1.0	1.3	<1.0
Potassium	ug/l	--	1000	680	920	950	730
Selenium	ug/l	100	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	<0.090	<0.090	<0.090	<0.090	<0.090
Sodium	ug/l	--	4500	2600	5500	8900	3500
Strontium	ug/l	--	--	--	--	--	--
Tellurium	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Tungsten	ug/l	30 [20]	--	--	--	--	--
Uranium	ug/l	5 [15]	--	--	--	--	--
Vanadium	ug/l	6	1.1	0.67	0.66	1.5	0.56
Zinc	ug/l	30 [13]	8.4	<5.0	<5.0	<5.0	8.1
Zirconium	ug/l	4 [15]	--	--	--	--	--

Parameter	Unit	PWQO [1]	SW-26 03-Dec-2023 SW-26
General Chemistry			
Alkalinity (Total as CaCO3)	mg/l	-- [6]	25
Ammonia, unionized	ug/l	20	3.7
Ammonia, unionized (Field)	ug/l	20	--
Ammonia Nitrogen	ug/l	--	460
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000
Chloride	ug/l	--	--
Chloride, dissolved	ug/l	--	1800
Chromium (III)	ug/l	8.9 [7]	<5
Conductivity	uS/cm	--	64
Conductivity (Field)	uS/cm	--	139
Dissolved Organic Carbon	ug/l	--	7400
Dissolved Oxygen (Field)	mg/l	-- [8]	14.80
Hardness, Calcium Carbonate	ug/l	--	25000
Nitrate as N	ug/l	--	180
Nitrite as N	ug/l	--	<10
Nitrogen, Nitrate-Nitrite	ug/l	--	180
pH (Field)	-	6.5 - 8.5	7.81
Phosphorus	ug/l	-- [9]	8
Sulphate	ug/l	--	--
Sulphate, dissolved	ug/l	--	4400
Temperature (Field)	deg c	-- [10]	5.1
Total Dissolved Solids	ug/l	--	55000
Total Suspended Solids	ug/l	--	<10000
Metals			
Aluminum	ug/l	-- [12]	230
Aluminum, dissolved	ug/l	-- [12]	100
Antimony	ug/l	20	--
Arsenic	ug/l	100 [13]	--
Barium	ug/l	--	13
Beryllium	ug/l	-- [14]	<0.40
Bismuth	ug/l	--	--
Boron	ug/l	200 [15]	<10
Cadmium	ug/l	0.2 [13]	<0.090
Calcium	ug/l	--	7800
Calcium, dissolved	ug/l	--	6900
Chromium	ug/l	-- [16]	<5.0
Chromium, dissolved	ug/l	-- [16]	<5.0
Cobalt	ug/l	0.9	<0.50
Copper	ug/l	5	--
Hexavalent Chromium	ug/l	1 [7]	<0.50
Iron	ug/l	300	**330**
Iron, dissolved	ug/l	300	160
Lead	ug/l	-- [17]	<0.50
Lithium	ug/l	--	--
Magnesium	ug/l	--	1900
Magnesium, dissolved	ug/l	--	1700
Manganese	ug/l	--	10
Mercury	ug/l	0.2 [18]	--
Mercury, dissolved	ug/l	0.2 [18]	<0.10
Molybdenum	ug/l	40	<0.50
Nickel	ug/l	25	1.1
Potassium	ug/l	--	660
Selenium	ug/l	100	<2.0
Silicon	ug/l	--	--
Silver	ug/l	0.1	<0.090
Sodium	ug/l	--	2500
Strontium	ug/l	--	--
Tellurium	ug/l	--	--
Thallium	ug/l	0.3 [19]	--
Tin	ug/l	--	--
Titanium	ug/l	--	--
Tungsten	ug/l	30 [20]	--
Uranium	ug/l	5 [15]	--
Vanadium	ug/l	6	0.66
Zinc	ug/l	30 [13]	7.9
Zirconium	ug/l	4 [15]	--

Parameter	Unit	PWQO [1]	SW-3 01-Dec-1988	SW-3 01-Nov-1990	SW-3 01-Oct-1991	SW-3 01-Dec-1991	SW-3 01-Dec-1992
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	600	500	740	908
Ammonia, unionized	ug/l	20	--	--	--	--	**70**
Ammonia Nitrogen	ug/l	--	--	--	--	--	18600
Bicarbonate	ug/l	--	--	--	--	--	907000
Biochemical Oxygen Demand, 5 Day	ug/l	--	5000	4000	4000	14000	13000
Chemical Oxygen Demand	ug/l	--	52000	--	--	--	73000
Chloride	ug/l	--	101000	110000	138000	174000	201000
Color	color unit	--	--	--	--	--	26
Conductivity	uS/cm	--	--	1361	1210	--	2170
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	4.7
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	713000
Nitrate	ug/l	--	--	--	--	--	<100
Nitrite	ug/l	--	--	--	--	--	<100
Nitrogen	ug/l	--	--	--	--	--	19900
pH (Field)	-	6.5 - 8.5	7.5	--	--	--	6.95
Phosphorus	ug/l	-- [9]	--	**<100**	--	**<100**	**80**
Sulphate	ug/l	--	--	--	--	24000	--
Tannin & Lignin	ug/l	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	810000	736000	716000	990000	1411000
Total Organic Carbon	ug/l	--	27000	--	--	--	29000
Total Suspended Solids	ug/l	--	--	--	--	--	102000
Turbidity	ntu	-- [11]	--	--	--	--	61
Metals							
Aluminum, dissolved	ug/l	-- [12]	--	<30	--	<30	<30
Arsenic	ug/l	100 [13]	<10	--	--	--	--
Barium	ug/l	--	520	290	--	560	--
Beryllium	ug/l	-- [14]	--	<10	--	<10	--
Boron	ug/l	200 [15]	--	130	--	**290**	--
Cadmium	ug/l	0.2 [13]	<2	<0.2	**0.4**	**1.1**	<0.15
Calcium	ug/l	--	--	140000	--	224000	167000
Chromium	ug/l	-- [16]	<20	<10	<10	<10	<10
Cobalt	ug/l	0.9	--	<20	--	<10	--
Copper	ug/l	5	--	<5	<10	<5	<5
Iron	ug/l	300	**500**	<50	**2960**	20	230
Lead	ug/l	-- [17]	<50	<2	5	11	<2
Magnesium	ug/l	--	--	47000	--	75000	72000
Manganese	ug/l	--	<50	470	530	480	--
Mercury, dissolved	ug/l	0.2 [18]	<1	--	--	--	<0.2
Molybdenum	ug/l	40	--	<10	--	<10	--
Nickel	ug/l	25	--	<10	--	**30**	20
Potassium	ug/l	--	--	28000	--	34000	36000
Selenium	ug/l	100	--	--	--	--	--
Silicon	ug/l	--	--	5900	--	10300	8700
Silver	ug/l	0.1	--	<1	--	<1	<0.1
Sodium	ug/l	--	--	67000	--	114000	126000
Strontium	ug/l	--	--	660	--	1190	--
Sulfur	ug/l	--	--	4000	--	8000	--
Thallium	ug/l	0.3 [19]	--	<10	--	<50	--
Tin	ug/l	--	--	<50	--	<10	--
Titanium	ug/l	--	--	<10	--	<10	--
Vanadium	ug/l	6	--	<10	--	<10	--
Zinc	ug/l	30 [13]	<20	<10	--	<10	<10
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	<2	<2	**6**	<2	<1

Parameter	Unit	PWQO [1]	SW-3 01-Feb-1993	SW-3 01-Aug-1993	SW-3 01-Aug-1994	SW-3 01-Oct-1994	SW-3 01-Dec-1994
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	836	568	600	--	610
Ammonia, unionized	ug/l	20	**90**	<100	<100	--	--
Ammonia Nitrogen	ug/l	--	21600	26110	8240	--	14800
Bicarbonate	ug/l	--	835000	--	--	--	532000
Biochemical Oxygen Demand, 5 Day	ug/l	--	18000	94500	252000	--	4800
Chemical Oxygen Demand	ug/l	--	73000	278000	1015000	49700	63000
Chloride	ug/l	--	174000	200000	161000	--	123000
Color	color unit	--	--	11	25	--	6.5
Conductivity	uS/cm	--	2120	1466	1517	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	5	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	737000	536000	521000	--	488000
Nitrate	ug/l	--	<100	450	<100	--	480
Nitrite	ug/l	--	<100	<100	<100	--	<100
Nitrogen	ug/l	--	24400	11500	13440	--	14000
pH (Field)	-	6.5 - 8.5	6.86	7.07	7.35	--	7.59
Phosphorus	ug/l	-- [9]	--	**1330**	**2850**	--	<10
Sulphate	ug/l	--	--	18300	15700	--	33000
Tannin & Lignin	ug/l	--	--	--	7520	710	--
Total Dissolved Solids	ug/l	--	1378000	953000	986000	--	--
Total Organic Carbon	ug/l	--	23000	13900	18200	15700	11000
Total Suspended Solids	ug/l	--	67000	6793000	9680000	--	20000
Turbidity	ntu	-- [11]	55	>999	>400	--	301
Metals							
Aluminum, dissolved	ug/l	-- [12]	<30	6607	195	--	450
Arsenic	ug/l	100 [13]	--	--	--	--	--
Barium	ug/l	--	540	--	--	--	--
Beryllium	ug/l	-- [14]	<10	--	--	--	--
Boron	ug/l	200 [15]	**290**	--	--	--	--
Cadmium	ug/l	0.2 [13]	**0.57**	**0.6**	<0.1	--	<0.1
Calcium	ug/l	--	191000	160000	140000	--	131000
Chromium	ug/l	-- [16]	<10	15	<10	--	<10
Cobalt	ug/l	0.9	<10	--	--	--	--
Copper	ug/l	5	<5	**17**	**6600**	--	**16**
Iron	ug/l	300	**5070**	**77700**	**9900**	--	**3900**
Lead	ug/l	-- [17]	<2	39	<0.2	--	0.8
Magnesium	ug/l	--	63000	47800	41500	--	38000
Manganese	ug/l	--	1390	2780	2800	--	600
Mercury, dissolved	ug/l	0.2 [18]	**0.3**	<0.1	<0.1	--	<0.1
Molybdenum	ug/l	40	<10	--	--	--	--
Nickel	ug/l	25	<10	22	<20	--	<20
Potassium	ug/l	--	27000	31600	26600	--	20000
Selenium	ug/l	100	--	6	1	--	6
Silicon	ug/l	--	7600	--	--	--	--
Silver	ug/l	0.1	<0.1	**0.6**	**700**	--	**0.7**
Sodium	ug/l	--	96000	28100	65600	--	55000
Strontium	ug/l	--	880	--	--	--	--
Sulfur	ug/l	--	5000	--	--	--	--
Thallium	ug/l	0.3 [19]	<50	--	--	--	--
Tin	ug/l	--	<50	--	--	--	--
Titanium	ug/l	--	<10	--	--	--	--
Vanadium	ug/l	6	<10	--	--	--	--
Zinc	ug/l	30 [13]	<10	**94**	<10	--	25
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	**5**	**16**	**80**	**6**	**4**

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-3 01-May-1995	SW-3 22-Oct-2000	SW-3 09-Nov-2001
General Chemistry					
Alkalinity (Total as CaCO3)	mg/l	-- [6]	596	469	606
Ammonia, unionized	ug/l	20	**210**	<20	**530**
Ammonia Nitrogen	ug/l	--	17300	60	13900
Bicarbonate	ug/l	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	2000	6000
Chemical Oxygen Demand	ug/l	--	--	21000	40000
Chloride	ug/l	--	132000	119000	137000
Color	color unit	--	10	18	10
Conductivity	uS/cm	--	1552	1110	1560
Dissolved Oxygen (Field)	mg/l	-- [8]	5.7	12.4	9
Hardness, Calcium Carbonate	ug/l	--	541000	485000	586000
Nitrate	ug/l	--	<100	3000	260
Nitrite	ug/l	--	<100	<100	<100
Nitrogen	ug/l	--	18900	710	22700
pH (Field)	-	6.5 - 8.5	7.32	8.06	7.79
Phosphorus	ug/l	-- [9]	**130**	**40**	**100**
Sulphate	ug/l	--	51000	--	--
Tannin & Lignin	ug/l	--	700	1000	900
Total Dissolved Solids	ug/l	--	1009000	722000	1014000
Total Organic Carbon	ug/l	--	--	12300	18600
Total Suspended Solids	ug/l	--	1854000	<10	28000
Turbidity	ntu	-- [11]	30	2.5	86
Metals					
Aluminum, dissolved	ug/l	-- [12]	190	<50	60
Arsenic	ug/l	100 [13]	--	--	--
Barium	ug/l	--	--	--	780
Beryllium	ug/l	-- [14]	--	--	<2
Boron	ug/l	200 [15]	--	--	100
Cadmium	ug/l	0.2 [13]	<0.15	<0.1	**0.4**
Calcium	ug/l	--	162000	125000	167000
Chromium	ug/l	-- [16]	<10	<10	9
Cobalt	ug/l	0.9	--	--	**4**
Copper	ug/l	5	<5	<1	**10**
Iron	ug/l	300	**23200**	**610**	**26900**
Lead	ug/l	-- [17]	3	--	2
Magnesium	ug/l	--	33000	42000	41000
Manganese	ug/l	--	--	--	7550
Mercury, dissolved	ug/l	0.2 [18]	<0.2	<0.1	<0.1
Molybdenum	ug/l	40	--	--	<10
Nickel	ug/l	25	<10	<10	<10
Potassium	ug/l	--	27000	--	15000
Selenium	ug/l	100	<1	<1	1
Silicon	ug/l	--	--	--	11900
Silver	ug/l	0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	82000	56000	79000
Strontium	ug/l	--	--	--	876
Sulfur	ug/l	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	<1
Tin	ug/l	--	--	--	--
Titanium	ug/l	--	--	--	<10
Vanadium	ug/l	6	--	--	2
Zinc	ug/l	30 [13]	**50**	<10	30
Phenols					
Phenolics, Total Recoverable	ug/l	1 [21]	--	--	<1

Parameter	Unit	PWQO [1]	SW-4 01-Oct-1983	SW-4 01-Mar-1988	SW-4 01-Dec-1988	SW-4 01-Oct-1990	SW-4 01-Oct-1991
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	622	--	--	510	402
Ammonia, unionized	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	3400	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	1200	4000	4000	15000
Chemical Oxygen Demand	ug/l	--	80000	35000	78000	--	--
Chloride	ug/l	--	90000	77000	45000	70000	99000
Color	color unit	--	--	--	--	--	--
Conductivity	uS/cm	--	1270	1060	--	1236	880
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	655000	--	--	--	--
Nitrate	ug/l	--	--	12	--	--	--
Nitrite	ug/l	--	--	510	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	7.9	7.35	--	--
Phosphorus	ug/l	-- [9]	--	--	--	**<100**	--
Sulphate	ug/l	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	826000	689000	610000	722000	526000
Total Organic Carbon	ug/l	--	--	--	19000	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--
Turbidity	ntu	-- [11]	--	--	--	--	--
Metals							
Aluminum, dissolved	ug/l	-- [12]	--	--	--	<30	--
Arsenic	ug/l	100 [13]	--	--	<10	--	--
Barium	ug/l	--	--	--	290	210	--
Beryllium	ug/l	-- [14]	--	--	--	<10	--
Boron	ug/l	200 [15]	--	--	--	90	--
Cadmium	ug/l	0.2 [13]	--	--	<2	**3**	<0.2
Calcium	ug/l	--	--	--	--	134000	--
Chromium	ug/l	-- [16]	--	--	<20	<10	<10
Cobalt	ug/l	0.9	--	--	--	<20	--
Copper	ug/l	5	--	--	--	<5	<10
Iron	ug/l	300	**1900**	**1200**	**480**	40	**3630**
Lead	ug/l	-- [17]	--	--	<50	<2	4
Magnesium	ug/l	--	--	--	--	53000	--
Manganese	ug/l	--	--	--	<50	1880	1650
Mercury, dissolved	ug/l	0.2 [18]	--	--	<1	--	<1
Molybdenum	ug/l	40	--	--	--	<10	--
Nickel	ug/l	25	--	--	--	<10	--
Potassium	ug/l	--	--	--	--	44000	--
Selenium	ug/l	100	--	--	--	--	--
Silicon	ug/l	--	--	--	--	7600	--
Silver	ug/l	0.1	--	--	--	<1	--
Sodium	ug/l	--	--	--	--	54000	--
Strontium	ug/l	--	--	--	--	480	--
Sulfur	ug/l	--	--	--	--	7000	--
Thallium	ug/l	0.3 [19]	--	--	--	<10	--
Tin	ug/l	--	--	--	--	<50	--
Titanium	ug/l	--	--	--	--	<10	--
Vanadium	ug/l	6	--	--	--	<10	--
Zinc	ug/l	30 [13]	--	--	<20	30	20
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	**6.5**	--	<2	<2	**4**

Parameter	Unit	PWQO [1]	SW-4 01-Dec-1991	SW-4 01-Aug-1993	SW-4 01-Sep-1993	SW-4 01-Oct-1993	SW-4 01-Aug-1994
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	810	572	--	306	484
Ammonia, unionized	ug/l	20	--	<100	--	**110**	<100
Ammonia Nitrogen	ug/l	--	--	10200	--	7020	8280
Biochemical Oxygen Demand, 5 Day	ug/l	--	15000	253000	--	4300	56900
Chemical Oxygen Demand	ug/l	--	--	2674000	362000	61400	874000
Chloride	ug/l	--	118000	117500	--	98000	55000
Color	color unit	--	--	70	--	23	44
Conductivity	uS/cm	--	--	1372	--	786	1057
Dissolved Oxygen (Field)	mg/l	-- [8]	--	<1	--	6.4	--
Hardness, Calcium Carbonate	ug/l	--	--	449000	--	281000	404000
Nitrate	ug/l	--	--	<100	--	<100	<100
Nitrite	ug/l	--	--	<100	--	160	<100
Nitrogen	ug/l	--	--	65000	--	7470	12320
pH (Field)	-	6.5 - 8.5	--	7.18	--	8.14	7.28
Phosphorus	ug/l	-- [9]	**<100**	**1670**	--	**140**	**3970**
Sulphate	ug/l	--	15000	3500	--	--	16900
Tannin & Lignin	ug/l	--	--	--	3020	2110	3310
Total Dissolved Solids	ug/l	--	1000000	892000	--	511000	687000
Total Organic Carbon	ug/l	--	--	51200	36700	17100	30400
Total Suspended Solids	ug/l	--	--	5970000	--	17000	898000
Turbidity	ntu	-- [11]	--	>999	--	11.7	105
Metals							
Aluminum, dissolved	ug/l	-- [12]	<30	6883	--	254	67
Arsenic	ug/l	100 [13]	--	--	--	--	--
Barium	ug/l	--	390	--	--	--	--
Beryllium	ug/l	-- [14]	<10	--	--	--	--
Boron	ug/l	200 [15]	130	--	--	--	--
Cadmium	ug/l	0.2 [13]	**0.5**	**1.6**	--	**0.24**	<0.1
Calcium	ug/l	--	224000	118000	--	68000	95000
Chromium	ug/l	-- [16]	<10	83	--	<10	<10
Cobalt	ug/l	0.9	<10	--	--	--	--
Copper	ug/l	5	<5	5	--	3	1.7
Iron	ug/l	300	40	--	--	**449**	**4500**
Lead	ug/l	-- [17]	4	236	--	1	5.2
Magnesium	ug/l	--	76000	37600	--	26800	40300
Manganese	ug/l	--	2350	5340	--	--	1800
Mercury, dissolved	ug/l	0.2 [18]	--	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	<10	--	--	--	--
Nickel	ug/l	25	<10	**90**	--	<20	<20
Potassium	ug/l	--	48000	46400	--	21800	27100
Selenium	ug/l	100	--	10	--	3	1
Silicon	ug/l	--	12000	--	--	--	--
Silver	ug/l	0.1	<1	**1.2**	--	**2**	**0.6**
Sodium	ug/l	--	83000	87900	--	37700	42300
Strontium	ug/l	--	760	--	--	--	--
Sulfur	ug/l	--	5000	--	--	--	--
Thallium	ug/l	0.3 [19]	<50	--	--	--	--
Tin	ug/l	--	<50	--	--	--	--
Titanium	ug/l	--	<10	--	--	--	--
Vanadium	ug/l	6	<10	--	--	--	--
Zinc	ug/l	30 [13]	<10	**1338**	--	<100	15
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	<2	<2	<2	**9**	**37**

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-4 01-Oct-1994	SW-4 01-Dec-1994	SW-4 09-Nov-2001
General Chemistry					
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	688	573
Ammonia, unionized	ug/l	20	--	--	**280**
Ammonia Nitrogen	ug/l	--	--	17860	7260
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	10900	11000
Chemical Oxygen Demand	ug/l	--	--	80000	64000
Chloride	ug/l	--	--	125000	155000
Color	color unit	--	--	25	18
Conductivity	uS/cm	--	--	--	1600
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	9.7
Hardness, Calcium Carbonate	ug/l	--	--	511000	550000
Nitrate	ug/l	--	--	<100	<100
Nitrite	ug/l	--	--	<100	<100
Nitrogen	ug/l	--	--	21650	13000
pH (Field)	-	6.5 - 8.5	--	7.22	7.86
Phosphorus	ug/l	-- [9]	--	**230**	**800**
Sulphate	ug/l	--	--	20900	--
Tannin & Lignin	ug/l	--	2190	--	700
Total Dissolved Solids	ug/l	--	--	--	1040000
Total Organic Carbon	ug/l	--	22800	20000	23000
Total Suspended Solids	ug/l	--	--	38000	142000
Turbidity	ntu	-- [11]	--	4.7	>100
Metals					
Aluminum, dissolved	ug/l	-- [12]	--	460	110
Arsenic	ug/l	100 [13]	--	--	--
Barium	ug/l	--	--	--	300
Beryllium	ug/l	-- [14]	--	--	<2
Boron	ug/l	200 [15]	--	--	**310**
Cadmium	ug/l	0.2 [13]	--	<0.1	0.1
Calcium	ug/l	--	--	123000	151000
Chromium	ug/l	-- [16]	--	<10	10
Cobalt	ug/l	0.9	--	--	**2**
Copper	ug/l	5	--	4	**13**
Iron	ug/l	300	--	**13800**	**35500**
Lead	ug/l	-- [17]	--	<0.2	3
Magnesium	ug/l	--	--	48000	42000
Manganese	ug/l	--	--	1500	430
Mercury, dissolved	ug/l	0.2 [18]	--	<0.1	<0.1
Molybdenum	ug/l	40	--	--	<10
Nickel	ug/l	25	--	<20	<10
Potassium	ug/l	--	--	31000	25000
Selenium	ug/l	100	--	6	2
Silicon	ug/l	--	--	--	7400
Silver	ug/l	0.1	--	**1.5**	<0.1
Sodium	ug/l	--	--	82000	109000
Strontium	ug/l	--	--	--	565
Sulfur	ug/l	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	<1
Tin	ug/l	--	--	--	--
Titanium	ug/l	--	--	--	<10
Vanadium	ug/l	6	--	--	4
Zinc	ug/l	30 [13]	--	<10	20
Phenols					
Phenolics, Total Recoverable	ug/l	1 [21]	--	<3	<1

Parameter	Unit	PWQO [1]	SW-5 01-Nov-1982	SW-5 01-Oct-1983	SW-5 01-Dec-1988	SW-5 01-Nov-1990	SW-5 01-Oct-1991
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	357.8	252	--	670	510
Ammonia, unionized	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	<100	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	2900	--	4000	10000	9000
Chemical Oxygen Demand	ug/l	--	24000	27000	49000	--	--
Chloride	ug/l	--	37000	54000	96000	170000	184000
Color	color unit	--	11	--	--	--	--
Conductivity	uS/cm	--	641	630	--	1624	1220
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	304000	318000	--	--	--
Nitrate	ug/l	--	300	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--
Nitrogen	ug/l	--	1000	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.1	8	7.65	--	--
Phosphate	ug/l	--	<20	--	--	--	--
Phosphorus	ug/l	-- [9]	**770**	--	--	**<100**	--
Silica	ug/l	--	2300	--	--	--	--
Sulphate	ug/l	--	28000	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	417000	793000	696000	975000	730000
Total Organic Carbon	ug/l	--	--	--	21000	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--
Turbidity	ntu	-- [11]	250	--	--	--	--
Metals							
Aluminum, dissolved	ug/l	-- [12]	2100	--	--	<30	--
Arsenic	ug/l	100 [13]	--	--	<10	--	--
Barium	ug/l	--	--	--	340	160	--
Beryllium	ug/l	-- [14]	--	--	--	<10	--
Boron	ug/l	200 [15]	--	--	--	130	--
Cadmium	ug/l	0.2 [13]	<2	--	<2	<0.2	**2.1**
Calcium	ug/l	--	90000	--	--	138000	--
Chromium	ug/l	-- [16]	9	--	30	<10	<10
Cobalt	ug/l	0.9	**20**	--	--	<20	--
Copper	ug/l	5	**52**	--	--	<5	<10
Iron	ug/l	300	**4500**	100	**1130**	150	**840**
Lead	ug/l	-- [17]	17	--	<50	<2	10
Magnesium	ug/l	--	19000	--	--	57000	--
Manganese	ug/l	--	740	--	<50	160	1560
Mercury, dissolved	ug/l	0.2 [18]	--	--	<1	--	<1
Molybdenum	ug/l	40	--	--	--	40	--
Nickel	ug/l	25	8	--	--	<10	--
Potassium	ug/l	--	4000	--	--	26000	--
Selenium	ug/l	100	--	--	--	--	--
Silicon	ug/l	--	--	--	--	4800	--
Silver	ug/l	0.1	--	--	--	<1	--
Sodium	ug/l	--	17000	--	--	102000	--
Strontium	ug/l	--	--	--	--	530	--
Sulfur	ug/l	--	--	--	--	4000	--
Thallium	ug/l	0.3 [19]	--	--	--	<10	--
Tin	ug/l	--	--	--	--	<50	--
Titanium	ug/l	--	--	--	--	<10	--
Vanadium	ug/l	6	--	--	--	--	--
Zinc	ug/l	30 [13]	26	--	<20	<10	<10
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	--	**2**	<2	<2	**6**

Parameter	Unit	PWQO [1]	SW-5 01-Dec-1991
General Chemistry			
Alkalinity (Total as CaCO3)	mg/l	-- [6]	1010
Ammonia, unionized	ug/l	20	--
Ammonia Nitrogen	ug/l	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	17000
Chemical Oxygen Demand	ug/l	--	--
Chloride	ug/l	--	301000
Color	color unit	--	--
Conductivity	uS/cm	--	--
Dissolved Oxygen (Field)	mg/l	-- [8]	--
Hardness, Calcium Carbonate	ug/l	--	--
Nitrate	ug/l	--	--
Nitrite	ug/l	--	--
Nitrogen	ug/l	--	--
pH (Field)	-	6.5 - 8.5	--
Phosphate	ug/l	--	--
Phosphorus	ug/l	-- [9]	**<100**
Silica	ug/l	--	--
Sulphate	ug/l	--	12000
Tannin & Lignin	ug/l	--	--
Total Dissolved Solids	ug/l	--	1350000
Total Organic Carbon	ug/l	--	--
Total Suspended Solids	ug/l	--	--
Turbidity	ntu	-- [11]	--
Metals			
Aluminum, dissolved	ug/l	-- [12]	<30
Arsenic	ug/l	100 [13]	--
Barium	ug/l	--	350
Beryllium	ug/l	-- [14]	<10
Boron	ug/l	200 [15]	**220**
Cadmium	ug/l	0.2 [13]	**3.1**
Calcium	ug/l	--	282000
Chromium	ug/l	-- [16]	<10
Cobalt	ug/l	0.9	<10
Copper	ug/l	5	<5
Iron	ug/l	300	90
Lead	ug/l	-- [17]	5
Magnesium	ug/l	--	105000
Manganese	ug/l	--	3530
Mercury, dissolved	ug/l	0.2 [18]	--
Molybdenum	ug/l	40	<10
Nickel	ug/l	25	<10
Potassium	ug/l	--	29000
Selenium	ug/l	100	--
Silicon	ug/l	--	9400
Silver	ug/l	0.1	<1
Sodium	ug/l	--	199000
Strontium	ug/l	--	1030
Sulfur	ug/l	--	4000
Thallium	ug/l	0.3 [19]	<50
Tin	ug/l	--	<50
Titanium	ug/l	--	<10
Vanadium	ug/l	6	<10
Zinc	ug/l	30 [13]	<10
Phenols			
Phenolics, Total Recoverable	ug/l	1 [21]	<2

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-5 01-Jun-1994	SW-5 01-Oct-1994	SW-5 01-Dec-1994	SW-5 01-May-1995	SW-5 01-Sep-1995
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	352	--	773	505	402
Ammonia, unionized	ug/l	20	<100	--	--	**490**	**220**
Ammonia Nitrogen	ug/l	--	5140	--	23400	12900	4050
Biochemical Oxygen Demand, 5 Day	ug/l	--	23600	--	17400	--	--
Chemical Oxygen Demand	ug/l	--	226000	--	166000	--	--
Chloride	ug/l	--	132000	--	150000	147000	182000
Color	color unit	--	32	--	14.9	21	38
Conductivity	uS/cm	--	1020	--	--	1395	1443
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	8.6	0.2
Hardness, Calcium Carbonate	ug/l	--	285000	--	759000	386000	366000
Nitrate	ug/l	--	<100	--	<100	<100	<100
Nitrite	ug/l	--	<100	--	<100	<100	<100
Nitrogen	ug/l	--	11200	--	27720	15300	7450
pH (Field)	-	6.5 - 8.5	7.45	--	7.16	7.99	7.71
Phosphate	ug/l	--	--	--	--	--	--
Phosphorus	ug/l	-- [9]	**3090**	--	**1010**	**120**	**850**
Silica	ug/l	--	--	--	--	--	--
Sulphate	ug/l	--	3300	--	14300	16000	47000
Tannin & Lignin	ug/l	--	3910	830	--	800	1800
Total Dissolved Solids	ug/l	--	663000	--	--	907000	938000
Total Organic Carbon	ug/l	--	34700	21700	17400	--	--
Total Suspended Solids	ug/l	--	2580000	--	836000	--	342000
Turbidity	ntu	-- [11]	>400	--	4.7	30	90
Metals							
Aluminum, dissolved	ug/l	-- [12]	460	--	12000	40	910
Arsenic	ug/l	100 [13]	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--
Beryllium	ug/l	-- [14]	--	--	--	--	--
Boron	ug/l	200 [15]	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	<0.1	--	**0.7**	<0.15	<0.15
Calcium	ug/l	--	62000	--	207000	67000	59000
Chromium	ug/l	-- [16]	<10	--	37	<10	<10
Cobalt	ug/l	0.9	--	--	--	--	--
Copper	ug/l	5	3	--	**65**	<5	<5
Iron	ug/l	300	**1500**	--	**43000**	**2240**	**3190**
Lead	ug/l	-- [17]	2.6	--	560	<2	2
Magnesium	ug/l	--	31700	--	58000	53000	53000
Manganese	ug/l	--	2300	--	2200	--	--
Mercury, dissolved	ug/l	0.2 [18]	<100	--	<0.1	<0.2	<0.2
Molybdenum	ug/l	40	--	--	--	--	--
Nickel	ug/l	25	<20	--	**48**	<10	<10
Potassium	ug/l	--	26900	--	35000	30000	32000
Selenium	ug/l	100	<1	--	7	<1	<1
Silicon	ug/l	--	--	--	--	--	--
Silver	ug/l	0.1	**0.5**	--	**2**	<0.1	<0.1
Sodium	ug/l	--	86000	--	97000	119000	167000
Strontium	ug/l	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--
Thallium	ug/l	0.3 [19]	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--
Zinc	ug/l	30 [13]	<10	--	**140**	<10	20
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	**40**	--	**2**	--	<1

Parameter	Unit	PWQO [1]	SW-5 09-Nov-2001
General Chemistry			
Alkalinity (Total as CaCO3)	mg/l	-- [6]	683
Ammonia, unionized	ug/l	20	**370**
Ammonia Nitrogen	ug/l	--	9660
Biochemical Oxygen Demand, 5 Day	ug/l	--	8000
Chemical Oxygen Demand	ug/l	--	71000
Chloride	ug/l	--	157000
Color	color unit	--	36
Conductivity	uS/cm	--	1720
Dissolved Oxygen (Field)	mg/l	-- [8]	8.9
Hardness, Calcium Carbonate	ug/l	--	554000
Nitrate	ug/l	--	150
Nitrite	ug/l	--	<100
Nitrogen	ug/l	--	14400
pH (Field)	-	6.5 - 8.5	8.13
Phosphate	ug/l	--	--
Phosphorus	ug/l	-- [9]	**230**
Silica	ug/l	--	--
Sulphate	ug/l	--	--
Tannin & Lignin	ug/l	--	1500
Total Dissolved Solids	ug/l	--	1118000
Total Organic Carbon	ug/l	--	23900
Total Suspended Solids	ug/l	--	124000
Turbidity	ntu	-- [11]	75
Metals			
Aluminum, dissolved	ug/l	-- [12]	330
Arsenic	ug/l	100 [13]	--
Barium	ug/l	--	220
Beryllium	ug/l	-- [14]	<2
Boron	ug/l	200 [15]	**370**
Cadmium	ug/l	0.2 [13]	<0.1
Calcium	ug/l	--	141000
Chromium	ug/l	-- [16]	8
Cobalt	ug/l	0.9	**3.3**
Copper	ug/l	5	**8**
Iron	ug/l	300	**2610**
Lead	ug/l	-- [17]	4
Magnesium	ug/l	--	49000
Manganese	ug/l	--	570
Mercury, dissolved	ug/l	0.2 [18]	<0.1
Molybdenum	ug/l	40	<10
Nickel	ug/l	25	<10
Potassium	ug/l	--	39000
Selenium	ug/l	100	1
Silicon	ug/l	--	7150
Silver	ug/l	0.1	<0.1
Sodium	ug/l	--	136000
Strontium	ug/l	--	675
Sulfur	ug/l	--	--
Thallium	ug/l	0.3 [19]	<1
Tin	ug/l	--	--
Titanium	ug/l	--	<10
Vanadium	ug/l	6	3
Zinc	ug/l	30 [13]	<10
Phenols			
Phenolics, Total Recoverable	ug/l	1 [21]	**4**

APPENDIX C_V
ARNPIROR WASTE DISPOSAL SITE
SURFACE WATER

Parameter	Unit	PWQO [1]	SW-6 01-Nov-1982	SW-6 01-Mar-1988	SW-6 01-Dec-1988	SW-6 01-Nov-1990	SW-6 01-Oct-1991
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	905	419	--	750	474
Ammonia, unionized	ug/l	20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	28000	4300	--	--	--
Bicarbonate	ug/l	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	57000	1000	5000	6000	26000
Chemical Oxygen Demand	ug/l	--	222000	65000	72000	--	--
Chloride	ug/l	--	121000	73200	131000	141000	447000
Color	color unit	--	44.3	--	--	--	--
Conductivity	uS/cm	--	1855	1010	--	1679	1860
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	238000	--	--	--	--
Nitrate	ug/l	--	27000	120	--	--	--
Nitrite	ug/l	--	--	50	--	--	--
Nitrogen	ug/l	--	28000	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.6	7.7	7.2	--	--
Phosphate	ug/l	--	<40	--	--	--	--
Phosphorus	ug/l	-- [9]	**2920**	--	--	**<100**	--
Silica	ug/l	--	10800	--	--	--	--
Sulphate	ug/l	--	10500	--	--	--	--
Total Dissolved Solids	ug/l	--	1206000	657000	1027000	994000	1220000
Total Organic Carbon	ug/l	--	--	--	25000	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--
Turbidity	ntu	-- [11]	150	--	--	--	--
Metals							
Aluminum, dissolved	ug/l	-- [12]	<100	--	--	<30	--
Arsenic	ug/l	100 [13]	--	--	<10	--	--
Barium	ug/l	--	--	--	460	160	--
Beryllium	ug/l	-- [14]	--	--	--	<10	--
Boron	ug/l	200 [15]	--	--	--	<140	--
Cadmium	ug/l	0.2 [13]	<10	--	<2	<0.2	**6**
Calcium	ug/l	--	71000	--	--	170000	--
Chromium	ug/l	-- [16]	50	--	<20	<10	<10
Cobalt	ug/l	0.9	**14**	--	--	<20	--
Copper	ug/l	5	**34**	--	--	<10	<10
Iron	ug/l	300	**1100**	**2400**	**1560**	<10	<9660
Lead	ug/l	-- [17]	<60	--	<50	<2	31
Magnesium	ug/l	--	15000	--	--	47000	--
Manganese	ug/l	--	2900	--	<50	2250	3360
Mercury, dissolved	ug/l	0.2 [18]	--	--	<1	--	--
Molybdenum	ug/l	40	--	--	--	<10	--
Nickel	ug/l	25	<10	--	--	<10	--
Potassium	ug/l	--	32000	--	--	26000	--
Silicon	ug/l	--	--	--	--	5100	--
Silver	ug/l	0.1	--	--	--	<1	--
Sodium	ug/l	--	104000	--	--	99000	--
Strontium	ug/l	--	--	--	--	530	--
Sulfur	ug/l	--	--	--	--	11000	--
Thallium	ug/l	0.3 [19]	--	--	--	<10	--
Tin	ug/l	--	--	--	--	50	--
Titanium	ug/l	--	--	--	--	<10	--
Vanadium	ug/l	6	--	--	--	<10	--
Zinc	ug/l	30 [13]	**98**	--	<20	--	--
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	**9**	--	<2	--	**9**

Parameter	Unit	PWQO [1]	SW-6 01-Dec-1991	SW-6 01-Dec-1992
General Chemistry				
Alkalinity (Total as CaCO3)	mg/l	-- [6]	860	814
Ammonia, unionized	ug/l	20	--	**350**
Ammonia Nitrogen	ug/l	--	--	29400
Bicarbonate	ug/l	--	--	812000
Biochemical Oxygen Demand, 5 Day	ug/l	--	6000	6000
Chemical Oxygen Demand	ug/l	--	--	73000
Chloride	ug/l	--	216000	215000
Color	color unit	--	--	26
Conductivity	uS/cm	--	--	2390
Dissolved Oxygen (Field)	mg/l	-- [8]	--	7.6
Fluoride	ug/l	--	--	8
Hardness, Calcium Carbonate	ug/l	--	--	664000
Nitrate	ug/l	--	--	--
Nitrite	ug/l	--	--	--
Nitrogen	ug/l	--	--	33600
pH (Field)	-	6.5 - 8.5	--	7.38
Phosphate	ug/l	--	--	--
Phosphorus	ug/l	-- [9]	**<100**	**70**
Silica	ug/l	--	--	--
Sulphate	ug/l	--	72000	--
Total Dissolved Solids	ug/l	--	1180000	1554000
Total Organic Carbon	ug/l	--	--	30000
Total Suspended Solids	ug/l	--	--	65000
Turbidity	ntu	-- [11]	--	7.1
Metals				
Aluminum, dissolved	ug/l	-- [12]	<30	<30
Arsenic	ug/l	100 [13]	--	--
Barium	ug/l	--	240	--
Beryllium	ug/l	-- [14]	<10	--
Boron	ug/l	200 [15]	<520	--
Cadmium	ug/l	0.2 [13]	<1.6	<0.15
Calcium	ug/l	--	263000	152000
Chromium	ug/l	-- [16]	<10	<10
Cobalt	ug/l	0.9	<10	--
Copper	ug/l	5	<5	<5
Iron	ug/l	300	110	--
Lead	ug/l	-- [17]	9	<2
Magnesium	ug/l	--	61000	69000
Manganese	ug/l	--	3220	--
Mercury, dissolved	ug/l	0.2 [18]	--	<0.2
Molybdenum	ug/l	40	<10	--
Nickel	ug/l	25	<10	<10
Potassium	ug/l	--	17000	31000
Silicon	ug/l	--	9700	10600
Silver	ug/l	0.1	<1	<0.1
Sodium	ug/l	--	150000	131000
Strontium	ug/l	--	820	--
Sulfur	ug/l	--	27000	--
Thallium	ug/l	0.3 [19]	<50	--
Tin	ug/l	--	50	--
Titanium	ug/l	--	<10	--
Vanadium	ug/l	6	<10	--
Zinc	ug/l	30 [13]	<10	<10
Phenols				
Phenolics, Total Recoverable	ug/l	1 [21]	<2	<1

Parameter	Unit	PWQO [1]	SW-8 01-Mar-1983	SW-8 01-Nov-1990	SW-8 01-Oct-1991	SW-8 01-Dec-1991	SW-8 01-Dec-1992
General Chemistry							
Alkalinity (Total as CaCO3)	mg/l	-- [6]	--	<5	18	--	<2
Ammonia, unionized	ug/l	20	--	--	--	--	<20
Ammonia Nitrogen	ug/l	--	60	--	--	--	80
Bicarbonate	ug/l	--	--	--	--	--	8000
Biochemical Oxygen Demand, 5 Day	ug/l	--	200	<1000	3000	--	<1000
Chemical Oxygen Demand	ug/l	--	35000	--	--	--	<3000
Chloride	ug/l	--	5200	2000	<1000	--	<1000
Color	color unit	--	--	--	--	--	<2
Conductivity	uS/cm	--	92	10	50	--	4
Dissolved Oxygen (Field)	mg/l	-- [8]	--	--	--	--	9.8
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	<2000
Nitrate	ug/l	--	4	--	--	--	<100
Nitrite	ug/l	--	240	--	--	--	<100
Nitrogen	ug/l	--	--	--	--	--	100
pH (Field)	-	6.5 - 8.5	7.2	--	--	--	7.8
Phosphorus	ug/l	-- [9]	--	**<100**	--	**<100**	<30
Total Dissolved Solids	ug/l	--	60000	6000	30000	--	3000
Total Organic Carbon	ug/l	--	--	--	--	--	700
Total Suspended Solids	ug/l	--	--	--	--	--	<2000
Turbidity	ntu	-- [11]	--	--	--	--	<1
Metals							
Aluminum, dissolved	ug/l	-- [12]	--	<30	--	450	<30
Barium	ug/l	--	--	<10	--	20	--
Beryllium	ug/l	-- [14]	--	<10	--	<10	--
Boron	ug/l	200 [15]	--	10	--	<10	--
Cadmium	ug/l	0.2 [13]	--	<0.2	<0.2	<0.2	<0.15
Calcium	ug/l	--	--	<1000	--	22000	<1000
Chromium	ug/l	-- [16]	--	<10	<10	<10	<10
Cobalt	ug/l	0.9	--	<20	--	<10	--
Copper	ug/l	5	--	<10	<10	<5	<5
Iron	ug/l	300	**400**	<10	110	**420**	<10
Lead	ug/l	-- [17]	--	<2	3	<2	<2
Magnesium	ug/l	--	--	<1000	--	4000	<1000
Manganese	ug/l	--	--	<10	10	<10	--
Mercury, dissolved	ug/l	0.2 [18]	--	--	<1	--	<0.2
Molybdenum	ug/l	40	--	<10	--	<10	--
Nickel	ug/l	25	--	<10	--	<10	<10
Potassium	ug/l	--	--	<1000	--	<1000	<1000
Silicon	ug/l	--	--	1700	--	3200	<100
Silver	ug/l	0.1	--	<1	--	<10	<0.1
Sodium	ug/l	--	--	2000	--	2000	<1000
Strontium	ug/l	--	--	<10	--	70	--
Sulfur	ug/l	--	--	<3000	--	4000	--
Thallium	ug/l	0.3 [19]	--	<10	--	<50	--
Tin	ug/l	--	--	<50	--	<50	--
Titanium	ug/l	--	--	<10	--	<10	--
Vanadium	ug/l	6	--	<10	--	<10	--
Zinc	ug/l	30 [13]	--	<10	20	<10	<10
Phenols							
Phenolics, Total Recoverable	ug/l	1 [21]	--	<2	<2	--	<1

Parameter	Unit	PWQO [1]	SW-9 01-Dec-1992
General Chemistry			
Alkalinity (Total as CaCO3)	mg/l	-- [6]	34
Ammonia, unionized	ug/l	20	<20
Ammonia Nitrogen	ug/l	--	30
Bicarbonate	ug/l	--	34000
Biochemical Oxygen Demand, 5 Day	ug/l	--	1000
Chemical Oxygen Demand	ug/l	--	19000
Chloride	ug/l	--	<1000
Color	color unit	--	43
Conductivity	uS/cm	--	77
Dissolved Oxygen (Field)	mg/l	-- [8]	11
Hardness, Calcium Carbonate	ug/l	--	28000
Nitrate	ug/l	--	190
Nitrite	ug/l	--	<100
Nitrogen	ug/l	--	260
pH (Field)	-	6.5 - 8.5	7.2
Phosphorus	ug/l	-- [9]	<30
Total Dissolved Solids	ug/l	--	50000
Total Organic Carbon	ug/l	--	7600
Total Suspended Solids	ug/l	--	<2000
Turbidity	ntu	-- [11]	1.6
Metals			
Aluminum, dissolved	ug/l	-- [12]	180
Cadmium	ug/l	0.2 [13]	<0.15
Calcium	ug/l	--	8000
Chromium	ug/l	-- [16]	<10
Copper	ug/l	5	<5
Iron	ug/l	300	170
Lead	ug/l	-- [17]	<2
Magnesium	ug/l	--	2000
Mercury, dissolved	ug/l	0.2 [18]	<0.2
Nickel	ug/l	25	<10
Potassium	ug/l	--	1000
Silicon	ug/l	--	2500
Silver	ug/l	0.1	0.1
Sodium	ug/l	--	4000
Zinc	ug/l	30 [13]	<10
Phenols			
Phenolics, Total Recoverable	ug/l	1 [21]	<1

Footnotes:

Tables should be read in conjunction with the accompanying document.

< Indicates parameter not detected above laboratory method detection limit.

> Indicates parameter detected above equipment analytical range.

-- Chemical not analyzed or criteria not defined.

Value Parameter is greater than PWQO

(1) Provincial Water Quality Objectives (July 1994, reprinted February 1999)

(2) Monitoring location was dry during this sampling event. No sample was collected.

(3) Monitoring location was frozen during this sampling event. No sample was collected.

(4) Selenium MRL elevated due to matrix interference.

(5) clarity: clear, sediments: none, colour: none, odour: none.

(6) Alkalinity should not be decreased by more than 25% of the natural concentration.

(7) Adopted Canadian Water Quality Guidelines.

(8) Objective depends on water temperature and biota. Dissolved oxygen concentrations should not be less than the values specified in the PWQO document for cold water biota (e.g. salmonid fish communities) and warm water biota (e.g. centrarchid fish communities).

(9) Current scientific evidence is insufficient to develop a firm Objective at this time. Accordingly, the following phosphorus concentrations should be considered as general guidelines which should be supplemented by site-specific studies: To avoid nuisance concentrations of algae in lakes, average total phosphorus concentrations for the ice-free period should not exceed 20 ug/L; A high level of protection against aesthetic deterioration will be provided by a total phosphorus concentration for the ice-free period of 10 ug/L or less. This should apply to all lakes naturally below this value; Excessive plant growth in rivers and streams should be eliminated at a total phosphorus concentration below 30 ug/L.

(10) (1) General: The natural thermal regime of any body of water shall not be altered so as to impair the quality of the natural environment. In particular, the diversity, distribution and abundance of plant and animal life shall not be significantly changed. (2) Waste Heat Discharge: (a) Ambient Temperature Changes: The temperature at the edge of a mixing zone shall not exceed the natural ambient water temperature at a representative control location by more than 10°C (18°F). However, in special circumstances, local conditions may require a significantly lower temperature difference than 10°C (18°F). Potential dischargers are to apply to the MOEE for guidance as to the allowable temperature rise for each thermal discharge. This ministry will also specify the nature of the mixing zone and the procedure for the establishment of a representative control location for temperature recording on a case-by-case basis. (b) Discharge Temperature Permitted: The maximum temperature of the receiving body of water, at any point in the thermal plume outside a mixing zone, shall not exceed 30°C (86°F) or the temperature of a representative control location plus 10°C (18°F) or the allowed temperature difference, which ever is the lesser temperature. These maximum temperatures are to be measured on a mean daily basis from continuous records. (c) Taking and Discharging of Cooling Water: Users of cooling water shall meet both the Objectives for temperature outlined above and the "Procedures for the Taking and Discharge of Cooling Water" as outlined in the MOEE publication Deriving Receiving-Water Based, Point-Source Effluent Requirements for Ontario Waters(1994).

(11) Suspended matter should not be added to surface water in concentrations that will change the natural Secchi disc reading by more than 10 percent.

(12) At pH 4.5 to 5.5 the Interim PWQO is 15 µg/L based on inorganic monomeric aluminum measure in clay-free samples; At pH > 5.5 to 6.5, no condition should be permitted which would increase the acid soluble inorganic aluminum concentration in clay-free samples to more than 10% above natural background concentrations for waters representative of that geological area of the Province that are unaffected by man-made inputs. At pH > 6.5 to 9.0, the Interim PWQO is 75 µg/L based on total aluminum measured in clay-free samples. If natural background aluminum concentrations in water bodies unaffected by man-made inputs are greater than the numerical Interim PWQO (above), no condition is permitted that would increase the aluminum concentration in clay-free samples by more than 10% of the natural background level. Note: pH values of < 6.5 and > 8.5 are outside the range considered acceptable by the PWQO for pH. See the Scientific Criteria Document for Development of Provincial Water Quality Objectives and Guidelines - Aluminum for a discussion of analytical procedures.

(13) An Interim PWQO also exists for this parameter. See Section 1.10 of the PWQO - Where both a PWQO and an Interim PWQO exist.

(14) If hardness as CaCO3 < 75 mg/L, PWQO = 11 µg/L; if hardness as CaCO3 > 75 mg/L, PWQO = 1100 µg/L.

(15) See Section 1.2.3. of PWQO. This Interim PWQO was set for emergency purposes based on the best information readily available. Employ due caution when applying this value.

(16) PWQO values exist for Cr(III) and Cr(VI)

(17) If alkalinity as CaCO3 < 20 mg/L, PWQO = 5 µg/L; if alkalinity as CaCO3 from 20 to 40 mg/L, PWQO = 10 µg/L; if alkalinity as CaCO3 from 40 to 80 mg/L, PWQO = 20 µg/L; if alkalinity as CaCO3 > 80 mg/L, PWQO = 25 ug/L. An Interim PWQO also exists for this parameter. See Section 1.10 of the PWQO - Where both a PWQO and an Interim PWQO exist.

(18) In a filtered water sample.

(19) See Section 1.2.2. of PWQO. This Interim PWQO is currently under development. The value is subject to change upon publication by MOEE.

(20) See Section 1.2.3. of PWQO. This Interim PWQO was set for emergency purposes based on the best information readily available. Employ due caution when applying this value.

(21) Determined by the total reactive phenols test - the 4-AAP (4-amino-antipyrine) test. This objective should be used primarily as a screening tool. The isomer specific PWQOs for various phenolics should be employed where possible.
(22) **
(23) This parameter was not measured.
(24) Monitoring location was dry during this sampling event. No sample was collected.
(25) Monitoring location was dry during this sampling event.
(26) Selenium MRL elevated due to matrix interference (dilution was done).
(27) Holding time for Cr(VI) analysis was exceeded for the entire report.
(28) The results for dissolved magnesium, potassium and calcium are greater than total magnesium, potassium and calcium. The results have been confirmed by re-analysis.
(29) The reported concentrations for parameters originally assigned to SW-18 were reassigned to SW-19, and vice versa, for the November 2015 monitoring session. This reassignment was made based on a review of field notes and historical data. Parameters measured in the field were not reassigned.
(30) Selenium MRL elevated due to matrix interference. All mercury results for this report were analysed at Exova Pointe Claire.
(31) The reported concentrations for parameters originally assigned to SW-19 were reassigned to SW-18, and vice versa, for the November 2015 monitoring session. This reassignment was made based on a review of field notes and historical data. Parameters measured in the field were not reassigned.
(32) Metals analysis performed on aqua-regia digest of sample material except for Boron.
(33) Cr(VI) sample was filtered prior to analysis.
(34) Field measured pH and conductivity not recorded.
(35) Insufficient water at monitoring location to sample. No sample was collected.
(36) Detection Limit was raised due to matrix interferences.
(37) Insufficient volume to collect a sample.
(38) Sample was collected with a syringe.
(39) No sample was collected.
(40) clarity: clear, sediments: none, colour: faint beige, odour: none

C-VI 2013 Historical Data

Bedrock Groundwater

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR 08-1D 27-Nov-2008	BR 08-1D 28-Apr-2009	BR 08-1D 29-Nov-2009 [5]	BR 08-1D 19-May-2010	BR 08-1D 29-Nov-2010	BR 08-1D 11-May-2011	BR 08-1D 30-Nov-2011	BR 08-1D 20-May-2012	BR 08-1D 13-Nov-2012	BR 08-1D 17-Jun-2013	BR 08-1D 29-Oct-2013
General Chemistry														
Alkalinity (Total as CaCO3)	mg/l	--	--	559	556	386	484	470	570	515	621	387	577	581
Ammonia Nitrogen	mg/l	--	--	0.23	0.25	0.32	0.26	0.31	0.18	0.23	0.31	0.2	0.26	0.34
Bicarbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	581
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	38	26	17	54	35	52	16	74	24	49	61
Conductivity	uS/cm	--	--	765	1030	766	1030	919	1070	938	1270	750	1110	1160
Dissolved Organic Carbon	mg/l	--	5	8.9	12.1	5.2	9.9	6	11.1	20.7	7.9	2.9	8	7.6
Hardness, Calcium Carbonate	mg/l	--	--	557	520	307	523	421	541	485	441	303	591	560
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	0.56	0.80
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	<0.05	0.2	0.15	0.06	0.06	0.14	<0.01	0.04	0.04	0.02	0.03
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	6	1	16	2	8	1	1	1	8	<3	<3
Tannin & Lignin	mg/l	--	--	1.9	0.3	0.2	--	0.1	0.2	0.8	0.3	0.1	0.3	0.2
Total Dissolved Solids	mg/l	--	500	708	670	498	670	597	696	610	826	488	722	754
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--	--	--	--	--	--	--	--	--	--	--	7.48
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--
Metals														
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.2	0.2	0.11	0.33	0.25	0.28	0.57	0.37	0.12	0.34	0.36
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron, Dissolved	mg/l	5	--	1.08	1	1.5	0.94	1.3	0.89	0.78	1.2	1.8	1.3	1.3
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	119	111	62	109	91	116	115	96	62	128	122
Chromium, Dissolved	mg/l	0.05	--	0.003	0.004	0.002	<0.001	<0.001	0.003	0.009	0.004	0.001	<0.001	0.003
Cobalt, Dissolved	mg/l	--	--	0.0005	<0.0002	<0.0002	<0.0002	0.0002	0.0002	0.0003	0.0002	<0.0002	0.0008	0.0023
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	<0.001	<0.001
Iron, Dissolved	mg/l	--	0.3	0.98	0.37	2.03	0.27	1.71	0.09	2.89	0.32	0.99	0.24	0.85
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	63	59	37	61	47	61	48	49	36	66	62
Manganese, Dissolved	mg/l	--	0.05	0.04	0.02	<0.01	0.01	0.02	0.01	0.07	0.01	<0.01	0.01	0.02
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	--	8	7	9	9	9	6	7	7	10	11
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [9]	19	14	33	21	29	20	7	23	45	26	27
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	0.008	0.011	0.005	0.002	0.003	0.005	0.004	<0.005	0.002	0.003	0.002
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements														
Conductivity (Field)	uS/cm	--	--	--	840	870	1087	855	1130	1100	1110	1105	1074	1223
pH (Field)	-	--	--	6.8	6.8	6.9	7.3	7.3	6.8	6.9	6.9	6.9	7.5	7.1
Temperature (Field)	deg c	--	15 [7]	6	9	8	9.8	7.1	11	10	10	9	11.2	9.6

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR 08-1S 27-Nov-2008	BR 08-1S 28-Apr-2009 (5)	BR 08-1S 29-Nov-2009	BR 08-1S 19-May-2010	BR 08-1S 29-Nov-2010	BR 08-1S 11-May-2011	BR 08-1S 30-Nov-2011	BR 08-1S 20-May-2012 (9)	BR 08-1S 13-Nov-2012	BR 08-1S 17-Jun-13	BR 08-1S 29-Oct-13	BR 08-1S 29-Oct-13 Duplicate
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	541	495 (5)	551	492	560	560	590	642	645	525	558	516
Ammonia Nitrogen	mg/l	--	--	0.18	0.18 (5)	0.23	0.28	0.25	0.24	1.88	0.4	0.28	0.17	0.51	0.64
Bicarbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	558	516
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	29	20 (5)	35	48	45	49	24	84	69	54	74	87
Conductivity	uS/cm	--	--	635	921 (5)	1050	1020	1090	1050	1080	1300	1270	1040	1170	1160
Dissolved Organic Carbon	mg/l	--	5	11.1	10.7 (5)	11	11.1	9.5	9.5	25.5	8.8	8.8	8.5	9.2	9.7
Hardness, Calcium Carbonate	mg/l	--	--	507	484 (5)	532	523	520	541	587	461	610	522	485	494
Nitrate	mg/l	-- (11)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	0.47	0.86	1.11
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.24	0.44 (5)	0.53	0.71	0.45	0.31	0.09	0.24	0.36	0.15	0.19	0.12
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01 (5)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.02
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 (6)	5	1 (5)	1	2	1	1	<1	<1	<3	4	6	10
Tannin & Lignin	mg/l	--	--	2.1	0.5 (5)	0.3	--	0.1	0.4	1.8	0.3	0.3	0.5	0.1	0.2
Total Dissolved Solids	mg/l	--	500	670	599 (5)	683	663	708	682	702	845	826	676	760	754
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--	--	--	--	--	--	--	--	--	--	--	7.54	7.58
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01 (5)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.03	0.04
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.19	0.14 (5)	0.25	0.29	0.28	0.24	0.1	0.4	0.38	0.26	0.22	0.24
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001 (5)	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron, Dissolved	mg/l	5	--	0.82	0.67 (5)	0.98	0.86	0.87	0.69	0.3	1.2	1.2	0.71	0.40	0.45
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001 (5)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	109	103 (5)	114	112	116	116	151	99	134	115	110	112
Chromium, Dissolved	mg/l	0.05	--	0.002	0.003 (5)	0.002	<0.001	<0.001	0.002	<0.005	0.005	0.003	<0.001	0.004	0.006
Cobalt, Dissolved	mg/l	--	--	0.0003	0.0002 (5)	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	<0.0002	0.0002	0.0007	0.0032	0.0010
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	<0.001	<0.001	<0.001
Iron, Dissolved	mg/l	--	0.3	0.47	0.36 (5)	0.57	0.66	0.61	0.63	4.92	0.7	0.59	0.36	0.99	0.98
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001 (5)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	57	55 (5)	60	59	56	61	51	52	67	57	51	52
Manganese, Dissolved	mg/l	--	0.05	0.02	0.01 (5)	0.01	0.01	0.02	0.01	0.48	0.01	0.01	0.01	0.15	0.14
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001 (5)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005 (5)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005 (5)	<0.005	<0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	0.009	0.008
Potassium, Dissolved	mg/l	--	--	--	8 (5)	10	9	9	9	7	8	10	11	11	11
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001 (5)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001 (5)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (8)	15	15 (5)	19	21	19	23	12	21	32	38	56	53
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	0.004	0.009 (5)	0.006	0.003	0.005	0.004	0.006	<0.005	0.006	0.003	0.003	0.003
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01 (5)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	705	720	1033	945	1090	1040	1105	1120	994	1218	--
pH (Field)	-	--	--	7	7.1	7.3	7.3	7.2	6.9	6.9	6.9	6.8	7.4	7.2	--
Temperature (Field)	deg c	--	15 (7)	6	9	7	9	7.6	10	9	11	9	10.3	10.8	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR 08-2D 27-Nov-2008	BR 08-2D 29-Apr-2009	BR 08-2D 29-Nov-2009	BR 08-2D 20-May-2010	BR 08-2D 29-Nov-2010	BR 08-2D 10-May-2011	BR 08-2D 30-Nov-2011 [9]	BR 08-2D 20-May-2012 [9]	BR 08-2D 14-Nov-2012 [10]	BR 08-2D 29-Oct-2013		
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	459	412	501	363	506	360	495	525	535	496		
Ammonia Nitrogen	mg/l	--	--	0.23	0.18	0.16	0.17	0.17	0.12	0.13	0.13	0.12	0.10		
Bicarbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	496		
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Chloride	mg/l	--	250	16	23	5	22	9	39	9	8	7	7		
Conductivity	uS/cm	--	--	720	873	884	773	883	822	902	921	945	880		
Dissolved Organic Carbon	mg/l	--	5	9.2	6.4	11	7.3	12.2	3.5	10.7	14.4	13.4	11.0		
Hardness, Calcium Carbonate	mg/l	--	--	432	377	428	404	493	411	499	361	511	484		
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--		
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--		
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	0.11		
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Phosphorus	mg/l	--	--	0.17	0.17	0.07	0.06	0.04	0.14	0.09	0.06	0.06	0.09		
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02		
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Sulfate	mg/l	--	500 [6]	93	47	4	33	8	53	17	6	6	19		
Tannin & Lignin	mg/l	--	--	1.7	0.3	0.3	0.2	0.2	<0.1	0.1	0.5	0.4	0.2		
Total Dissolved Solids	mg/l	--	500	663	567	575	502	574	534	586	599	614	572		
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
pH		--	--	--	--	--	--	--	--	--	--	--	7.63		
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--		
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04		
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--		
Barium, Dissolved	mg/l	1	--	0.05	0.06	0.16	0.21	0.21	0.03	0.41	0.34	0.33	0.21		
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
Boron, Dissolved	mg/l	5	--	0.7	0.73	0.57	0.54	0.7	0.78	0.51	0.65	0.76	0.59		
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
Calcium, Dissolved	mg/l	--	--	94	80	99	91	110	92	114	77	109	103		
Chromium, Dissolved	mg/l	0.05	--	0.002	0.002	0.002	<0.001	0.001	0.009	0.005	0.004	0.004	0.002		
Cobalt, Dissolved	mg/l	--	--	0.0007	0.0005	0.0003	0.0003	0.0003	0.0032	0.0002	0.0002	0.0002	0.0003		
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	<0.001		
Iron, Dissolved	mg/l	--	0.3	7.42	<0.03	0.99	1.13	1.63	0.13	1.1	1.12	1.09	0.08		
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
Magnesium, Dissolved	mg/l	--	--	48	43	44	43	53	44	52	41	58	55		
Manganese, Dissolved	mg/l	--	0.05	0.05	0.03	0.06	0.06	0.04	0.03	0.09	0.06	0.06	<0.01		
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
Molybdenum, Dissolved	mg/l	--	--	0.008	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		
Potassium, Dissolved	mg/l	--	--	--	6	6	5	7	5	6	4	6	6		
Selenium, Dissolved	mg/l	0.01	--	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.001		
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
Sodium, Dissolved	mg/l	--	200 [8]	66	36	17	13	11	14	18	7	10	9		
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Vanadium, Dissolved	mg/l	--	--	0.006	0.006	0.005	0.001	0.002	0.002	0.003	<0.005	0.008	0.006		
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	914	945	860	758	908	874	960	940	908		
pH (Field)	-	--	--	6.9	7	7.2	7.6	7.8	7.4	7.2	7.2	7.2	7.3		
Temperature (Field)	deg c	--	15 [7]	6	10	6	9	7	10	9	9	8	9.6		

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR 08-2S 27-Nov-2008	BR 08-2S 29-Apr-2009	BR 08-2S 29-Nov-2009	BR 08-2S 20-May-2010	BR 08-2S 29-Nov-2010	BR 08-2S 10-May-2011 [9]	BR 08-2S 30-Nov-2011	BR 08-2S 20-May-2012 [9]	BR 08-2S 14-Nov-2012	BR 08-2S 17-Jun-13	BR 08-2S 29-Oct-2013
General Chemistry														
Alkalinity (Total as CaCO3)	mg/l	--	--	380	374	387	338	394	510	364	356	376	370	371
Ammonia Nitrogen	mg/l	--	--	0.23	0.16	0.1	0.16	0.12	0.14	0.06	0.12	0.06	0.08	<0.02
Bicarbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	371
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	34	36	31	34	37	9	33	35	33	31	33
Conductivity	uS/cm	--	--	670	906	886	806	873	868	829	828	867	825	850
Dissolved Organic Carbon	mg/l	--	5	9.7	6.2	5	3.2	4.8	12.9	2.6	2.6	2.9	2.7	2.9
Hardness, Calcium Carbonate	mg/l	--	--	378	365	377	386	397	465	428	315	432	451	428
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	0.16	<0.10
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.61	0.27	0.12	0.07	0.12	0.08	0.09	0.08	0.05	0.03	0.01
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	152	82	61	59	52	7	57	54	58	56	60
Tannin & Lignin	mg/l	--	--	3.1	0.1	0.2	0.2	<0.1	0.4	<0.1	0.1	<0.1	0.2	<0.1
Total Dissolved Solids	mg/l	--	500	696	589	576	524	567	564	539	538	564	536	552
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--	--	--	--	--	--	--	--	--	--	--	7.80
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--
Metals														
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.04	0.03	0.04	0.03	0.03	0.3	0.04	0.03	0.04	0.03	0.03
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron, Dissolved	mg/l	5	--	1.22	0.9	0.96	0.82	1.2	0.49	1.2	0.9	1.2	1	1.3
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	87	85	85	87	93	102	99	70	97	103	97
Chromium, Dissolved	mg/l	0.05	--	0.002	0.002	0.001	<0.001	0.003	0.012	0.006	0.003	0.003	<0.001	0.002
Cobalt, Dissolved	mg/l	--	--	0.0009	0.001	0.0019	0.0021	0.0046	0.0004	0.0017	0.0022	0.0018	0.0076	0.0006
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	<0.001	<0.001
Iron, Dissolved	mg/l	--	0.3	1.56	0.04	0.04	0.16	0.33	0.72	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	39	37	40	41	40	51	44	34	46	47	45
Manganese, Dissolved	mg/l	--	0.05	0.06	0.03	0.02	0.03	0.05	0.06	0.01	0.02	0.01	0.04	<0.01
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	0.005	0.006	0.008	0.007
Potassium, Dissolved	mg/l	--	--	--	6	6	5	6	5	6	4	7	6	6
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.1	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [8]	70	48	31	19	24	16	13	11	15	14	9
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	0.006	0.007	0.003	<0.001	0.003	0.004	0.002	0.005	0.005	0.003	<0.001
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements														
Conductivity (Field)	uS/cm	--	--	--	890	885	9	785	860	870	890	865	783	878
pH (Field)	-	--	--	7	7.8	7.3	7.9	7.4	7.7	7.6	7.6	7.4	7.9	7.5
Temperature (Field)	deg c	--	15 [7]	6	11	9	810	8	9	10	10	9	10.5	9.7

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR 08-3D 27-Nov-2008	BR 08-3D 28-Apr-2009	BR 08-3D 28-Nov-2009	BR 08-3D 20-May-2010	BR 08-3D 29-Nov-2010	BR 08-3D 10-May-2011	BR 08-3D 30-Nov-2011	BR 08-3D 20-May-2012	BR 08-3D 14-Nov-2012	BR 08-3D 17-Jun-2013	BR 08-3D 28-Oct-13	
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	419	338	393	387	427	370	406	416	418	394	367	
Ammonia Nitrogen	mg/l	--	--	0.08	0.07	0.09	0.05	0.08	0.06	0.1	0.11	0.11	0.07	0.07	
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	
Chloride	mg/l	--	250	2	2	2	4	3	6	3	3	3	2	2	
Conductivity	uS/cm	--	--	580	657	739	741	774	676	750	771	777	720	710	
Dissolved Organic Carbon	mg/l	--	5	2	1.8	2.6	3.6	3	2.6	2.4	3.3	3	2.2	2.0	
Hardness, Calcium Carbonate	mg/l	--	--	417	354	389	455	454	362	436	330	466	450	392	
Nitrate	mg/l	-- (11)	--	--	--	--	--	--	--	--	--	--	--	--	
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	0.16	<0.10	
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Phosphorus	mg/l	--	--	0.08	0.1	0.11	0.06	0.07	0.05	0.04	0.05	0.07	0.15	0.10	
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Sulfate	mg/l	--	500 (6)	28	34	29	25	25	29	28	27	29	30	29	
Tannin & Lignin	mg/l	--	--	1.2	0.1	0.1	0.7	<0.1	0.2	<0.1	0.5	0.2	0.2	<0.1	
Total Dissolved Solids	mg/l	--	500	510	427	480	482	503	439	488	501	505	468	462	
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
pH		--	--											7.95	
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--	--	--		
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.06	0.06	
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--		
Barium, Dissolved	mg/l	1	--	0.06	0.04	0.05	0.05	0.05	0.04	0.06	0.06	0.06	0.05	0.05	
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Boron, Dissolved	mg/l	5	--	0.24	0.17	0.26	0.16	0.25	0.18	0.23	0.18	0.28	0.17	0.23	
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Calcium, Dissolved	mg/l	--	--	86	71	80	95	96	74	92	66	96	93	81	
Chromium, Dissolved	mg/l	0.05	--	0.001	0.002	0.001	<0.001	0.002	<0.001	0.006	0.002	0.003	<0.001	<0.001	
Cobalt, Dissolved	mg/l	--	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0014	0.003	
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	<0.001	<0.001	
Iron, Dissolved	mg/l	--	0.3	0.41	0.24	0.41	0.57	0.38	0.35	0.36	0.5	0.44	0.35	0.38	
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Magnesium, Dissolved	mg/l	--	--	49	43	46	53	52	43	50	40	55	53	46	
Manganese, Dissolved	mg/l	--	0.05	0.01	<0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.02	0.02	
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Potassium, Dissolved	mg/l	--	--	--	3	4	4	4	3	4	3	5	4	4	
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Sodium, Dissolved	mg/l	--	200 (9)	<2	<2	2	<2	<2	<2	<2	<2	<2	<2	<2	
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	
Vanadium, Dissolved	mg/l	--	--	0.004	0.005	0.003	<0.001	0.003	0.001	0.002	0.005	0.005	0.002	<0.001	
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	610	645	780	696	716	705	770	775	700	648	
pH (Field)	-	--	--	6.9	6.9	6.8	7.74	7.4	7.6	7.6	7.3	7.4	7.6	7.6	
Temperature (Field)	deg c	--	15 (7)	6	9	6	10	7	9	8	10	8	9.2	9.2	

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR 08-3S 27-Nov-2008	BR 08-3S 28-Apr-2009	BR 08-3S 28-Nov-2009	BR 08-3S 20-May-2010	BR 08-3S 29-Nov-2010	BR 08-3S 10-May-2011	BR 08-3S 30-Nov-2011	BR 08-3S 20-May-2012	BR 08-3S 14-Nov-2012	BR 08-3S 17-Jun-13	BR 08-3S 28-Oct-13
General Chemistry														
Alkalinity (Total as CaCO3)	mg/l	--	--	412	355	397	367	426	370	397	413	416	389	360
Ammonia Nitrogen	mg/l	--	--	0.09	0.07	0.09	0.07	0.13	0.06	0.07	0.12	0.11	0.07	0.07
Bicarbonate	mg/l	--	--											
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	2	2	2	4	3	3	3	3	3	2	3
Conductivity	uS/cm	--	--	625	687	747	708	788	671	736	767	777	720	701
Dissolved Organic Carbon	mg/l	--	5	2	1.9	2.6	3.8	2.7	2.5	2.3	3.1	2.8	2.2	2
Hardness, Calcium Carbonate	mg/l	--	--	428	366	417	426	432	387	427	332	445	448	392
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	0.13	<0.10
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.54	0.51	0.17	0.16	0.09	0.08	0.03	0.09	0.04	0.17	0.06
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	29	32	29	27	25	30	29	27	29	30	29
Tannin & Lignin	mg/l	--	--	2.1	0.2	0.3	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1
Total Dissolved Solids	mg/l	--	500	503	447	486	460	512	436	478	499	505	468	456
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--											7.97
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--
Metals														
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.08	0.04
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.06	0.04	0.06	0.05	0.05	0.04	0.06	0.06	0.06	0.05	0.05
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron, Dissolved	mg/l	5	--	0.24	0.17	0.28	0.16	0.23	0.16	0.2	0.21	0.27	0.18	0.23
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	89	74	86	88	92	79	90	67	91	92	81
Chromium, Dissolved	mg/l	0.05	--	0.001	0.002	0.001	<0.001	0.002	0.001	0.006	0.003	0.003	<0.001	<0.001
Cobalt, Dissolved	mg/l	--	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0067	0.0021
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	<0.001	<0.001
Iron, Dissolved	mg/l	--	0.3	0.39	0.27	0.39	0.67	0.31	0.32	0.37	0.52	0.43	0.38	0.38
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	50	44	49	50	49	46	49	40	53	53	46
Manganese, Dissolved	mg/l	--	0.05	0.01	<0.01	0.01	0.02	0.02	0.01	0.02	0.03	0.02	0.03	0.02
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	--	4	4	4	4	3	4	3	4	4	4
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [9]	<2	<2	<2	3	<2	<2	<2	2	<2	<2	<2
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	0.004	0.004	0.003	<0.001	0.003	0.002	0.002	0.006	0.006	0.001	<0.001
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements														
Conductivity (Field)	uS/cm	--	--	--	690	725	805	806	725	740	775	805	706	651
pH (Field)	-	--	--	7	7.8	7.7	7.6	7.3	7.3	7.4	7.2	7.3	7.7	7.7
Temperature (Field)	deg c	--	15 [7]	7	9	7	10	7.1	10	8	10	9	9.3	10.4

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-1 01-Apr-1988	BR-1 01-Nov-1988	BR-1 01-Nov-1990	BR-1 01-Oct-1991	BR-1 01-Dec-1991	BR-1 01-Dec-1992	BR-1 01-Feb-1993	BR-1 01-Sep-1993	BR-1 01-Nov-1993	BR-1 01-Aug-1994	BR-1 01-Dec-1994	BR-1 01-Jun-1997
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	805	900	1010	900	1110	1180	842	1034	1042	1128	800	1385
Ammonia Nitrogen	mg/l	--	--	18.2	--	--	--	--	--	--	28.3	43.2	34.16	33.7	43
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	70	90	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	157	139	148	170	220	240	177	335	340	384	368	198
Conductivity	uS/cm	--	--	2050	--	2180	1780	--	--	--	2521	2891	2910	2803	2966
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate	mg/l	-- [11]	--	0.02	--	--	--	--	--	--	<0.1	2.29	<0.1	<0.1	<0.1
Nitrite	mg/l	-- [13]	--	0.004	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	31.5	45.1	52.1	38.53	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	<0.1	<0.1	0.12	--	0.18
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	<0.1	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	<0.1	--	<0.1	<0.1	--	0.6	<0.1	2.11	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	--	--	--	--	110	21	5	33.8	167.4	68.5	71.2	23
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	--	1142	1282	1080	1520	1640	1120	1760	1612	1796	1640	1776
Total Organic Carbon	mg/l	--	--	--	24	--	--	--	64	--	63.9	68.1	52.6	52.3	64
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	--	--	<0.03	--	<0.03	<0.03	--	--	--	--	--	0.12
Arsenic, Dissolved	mg/l	0.025	--	--	0.01	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	1.58	2.27	--	2.86	2.16	--	--	--	--	--	3.25
Beryllium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--	--	<0.01
Boron, Dissolved	mg/l	5	--	--	--	0.35	--	0.58	0.57	--	0.47	0.56	0.51	0.46	0.55
Cadmium, Dissolved	mg/l	0.005	--	--	<0.004	0.003	<0.002	0.003	<0.01	--	0.001	<0.01	<0.0001	<0.0001	<0.005
Calcium, Dissolved	mg/l	--	--	--	--	277	--	329	319	--	290	289	265	206	277
Chromium, Dissolved	mg/l	0.05	--	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	0.015	0.018	<0.01	<0.01	<0.01
Cobalt, Dissolved	mg/l	--	--	--	--	<0.02	--	<0.01	<0.01	--	--	--	--	--	<0.01
Copper, Dissolved	mg/l	--	1	--	--	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	0.022	<0.01	0.01
Iron, Dissolved	mg/l	--	0.3	0.3	4.57	0.47	33.6	0.23	<0.01	--	67.7	67.05	54	20	67
Lead, Dissolved	mg/l	0.01	--	--	<0.05	<0.002	0.011	0.014	<0.05	--	0.0067	0.023	0.001	0.0006	<0.002
Magnesium, Dissolved	mg/l	--	--	--	--	54	--	79	84	--	75.7	83.3	83.6	57.9	66
Manganese, Dissolved	mg/l	--	0.05	--	0.55	0.24	0.65	0.49	0.38	--	0.429	0.478	0.27	0.258	0.2
Mercury, Dissolved	mg/l	0.001	--	--	<0.001	--	<0.001	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	0.0023
Molybdenum, Dissolved	mg/l	--	--	--	--	0.03	--	<0.01	<0.01	--	--	--	--	--	<0.03
Nickel, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	0.02	--	0.03	0.026	<0.02	<0.02	0.02
Potassium, Dissolved	mg/l	--	--	--	--	47	--	48	60	--	36.7	44.6	45.5	32.6	53
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	--	--	6.4	--	8.4	8	--	--	--	--	--	7.7
Silver, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	<0.02	<0.02	<0.01	<0.01
Sodium, Dissolved	mg/l	--	200 [8]	--	--	86	--	142	183	--	142	186	153	116	157
Strontium, Dissolved	mg/l	--	--	--	--	3.82	--	4.93	4.4	--	--	--	--	--	5.25
Sulfur	mg/l	--	--	--	--	44	--	28	7	--	--	--	--	--	8
Thallium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.05	<0.05	--	--	--	--	--	<0.2
Tin, Dissolved	mg/l	--	--	--	--	<0.05	--	<0.05	<0.05	--	--	--	--	--	<0.05
Titanium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--	--	<0.01
Vanadium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--	--	<0.01
Zinc, Dissolved	mg/l	--	5	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	--	--	--	--	0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.2	6.9	--	--	--	--	--	7.46	7.13	7.1	7.16	7
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-1 22-Nov-1998	BR-1 15-Jul-1999	BR-1 16-Oct-1999
General Chemistry						
Alkalinity (Total as CaCO3)	mg/l	--	--	1380	1417	1382
Ammonia Nitrogen	mg/l	--	--	80.2	93.9	60
Bicarbonate	mg/l	--	--			
Chemical Oxygen Demand	mg/l	--	--	--	--	--
Chloride	mg/l	--	250	263	204	261
Conductivity	uS/cm	--	--	2980	2720	2930
Dissolved Organic Carbon	mg/l	--	5	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--
Nitrate	mg/l	-- [11]	--	-- [12]	<0.1	<0.01
Nitrite	mg/l	-- [13]	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--
Phosphate	mg/l	--	--	0.06	<0.03	<0.03
Phosphorus	mg/l	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--
Silica	mg/l	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	-- [12]	<3	42
Tannin & Lignin	mg/l	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	1788	1772	1740
Total Organic Carbon	mg/l	--	--	125	103.4	120.6
pH		--	--			
Turbidity	ntu	--	5 [14] [7]	--	--	--
Metals						
Aluminum, Dissolved	mg/l	--	--	0.15	0.07	0.04
Arsenic, Dissolved	mg/l	0.025	--	--	--	--
Barium, Dissolved	mg/l	1	--	4.08	3.03	2.09
Beryllium, Dissolved	mg/l	--	--	-- [12]	<0.01	<0.01
Boron, Dissolved	mg/l	5	--	0.93	0.85	0.94
Cadmium, Dissolved	mg/l	0.005	--	-- [12]	<0.005	<0.01
Calcium, Dissolved	mg/l	--	--	284	272	243
Chromium, Dissolved	mg/l	0.05	--	-- [12]	0.08	<0.01
Cobalt, Dissolved	mg/l	--	--	-- [12]	<0.01	<0.01
Copper, Dissolved	mg/l	--	1	-- [12]	<0.005	<0.01
Iron, Dissolved	mg/l	--	0.3	64.7	47.4	29.3
Lead, Dissolved	mg/l	0.01	--	-- [12]	<0.002	<0.002
Magnesium, Dissolved	mg/l	--	--	98	93	81
Manganese, Dissolved	mg/l	--	0.05	0.08	0.09	0.19
Mercury, Dissolved	mg/l	0.001	--	-- [12]	<0.0002	<0.0002
Molybdenum, Dissolved	mg/l	--	--	-- [12]	<0.01	<0.01
Nickel, Dissolved	mg/l	--	--	0.02	0.01	<0.01
Potassium, Dissolved	mg/l	--	--	60	58	51
Selenium, Dissolved	mg/l	0.01	--	--	--	--
Silicon, Dissolved	mg/l	--	--	9.6	8.7	8.5
Silver, Dissolved	mg/l	--	--	0.02	<0.01	0.01
Sodium, Dissolved	mg/l	--	200 [9]	192	195	188
Strontium, Dissolved	mg/l	--	--	5.64	4.84	3.89
Sulfur	mg/l	--	--	3	<3	13
Thallium, Dissolved	mg/l	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	-- [12]	<0.05	--
Titanium, Dissolved	mg/l	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	-- [12]	--	<0.01
Zinc, Dissolved	mg/l	--	5	-- [12]	--	0.02
Field Measurements						
Conductivity (Field)	uS/cm	--	--	--	--	--
pH (Field)	-	--	--	6.98	6.46	6.67
Temperature (Field)	deg c	--	15 [7]	--	--	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-1D 01-Jul-2000	BR-1D 01-Oct-2000	BR-1D 14-Oct-2000	BR-1D 06-Sep-2001	BR-1D 06-Nov-2001	BR-1D 28-May-2002	BR-1D 02-Oct-2002	BR-1D 03-May-2003	BR-1D 03-Nov-2003	BR-1D 04-May-2004	BR-1D 04-Oct-2004	BR-1D 14-Jun-2005
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	1340	--	1300	950	903	787	798	1090	1340	1220	1610	1500
Ammonia Nitrogen	mg/l	--	--	43.2	--	40.1	31	40.8	23	23	28	52	67	67.1	73.7
Bicarbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	247	--	233	162	138	123	248	230	186	208	222	227
Conductivity	uS/cm	--	--	2990	--	2190	2080	1940	1830	1810	2380	2830	2940	3360	3500
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	646	760	687.7	699	--	--	--	--	875
Nitrate	mg/l	-- [11]	--	<0.1	--	<0.1	<0.1	<0.1	7.48	0.1	<0.1	0.1	<0.1	0.19	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	43.2	--	40.1	--	--	29.4	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	70.8	86	--
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	<0.03	--	0.42	0.2	0.39	0.3	--
Phosphorus	mg/l	--	--	0.86	--	--	--	--	0.5	--	<0.005	<0.01	0.17	0.35	0.32
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.2	0.09	--	--	--
Sulfate	mg/l	--	500 [6]	35	--	1	1	6	9	7	5	6	6	<1	9
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	1960	--	1868	1280	1100	1190	1180	556	1840	1910	2180	2275
Total Organic Carbon	mg/l	--	--	103	--	184	--	--	28.6	--	37.4	47.4	49.6	59.9	--
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	1.33	--	0.19	<0.05	0.09	<0.05	0.05	0.02	0.01	--	--	0.02
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.88	--	1.02	0.95	0.96	0.46	0.88	0.45	0.68	--	--	0.64
Beryllium, Dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	--	--	<0.001
Boron, Dissolved	mg/l	5	--	0.84	--	0.89	0.69	0.55	0.63	0.63	--	1.45	1.65	2.08	1.98
Cadmium, Dissolved	mg/l	0.005	--	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	214	--	270	143	169	157	161	98	249	221	230	227
Chromium, Dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.023	0.024	0.005	0.012	<0.005	0.044	0.01	0.012	<0.005
Cobalt, Dissolved	mg/l	--	--	<0.01	--	0.0058	0.0043	0.0089	0.0033	0.0051	<0.005	0.0047	--	--	0.0072
Copper, Dissolved	mg/l	--	1	<0.01	--	0.003	0.001	<0.001	0.006	0.002	<0.005	<0.001	<0.001	0.001	--
Iron, Dissolved	mg/l	--	0.3	42.2	--	50.4	28.9	42.9	7.74	24.6	9.31	13.9	11	17.2	13.4
Lead, Dissolved	mg/l	0.01	--	0.026	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	84	--	108	70	82	72	72	95	97	79	80	75
Manganese, Dissolved	mg/l	--	0.05	0.85	--	0.29	0.09	0.08	0.08	0.076	0.053	0.075	0.09	0.11	--
Mercury, Dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	--	0.23	0.02	<0.01	<0.01	<0.005	<0.005	<0.005	--	--	<0.005
Nickel, Dissolved	mg/l	--	--	0.06	--	0.03	0.02	<0.01	0.01	<0.005	0.013	0.032	0.048	0.046	0.051
Potassium, Dissolved	mg/l	--	--	40	--	40	35	34	29	35	39	61	60	59	57
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	0.003
Silicon, Dissolved	mg/l	--	--	12.9	--	9.1	8.05	8.33	5.2	5.6	6.2	8.3	--	--	--
Silver, Dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [9]	329	--	176	133	111	86	102	133	188	197	202	214
Strontium, Dissolved	mg/l	--	--	3.55	--	8.16	7.59	4.48	5.74	7.12	8.75	7.73	--	--	--
Sulfur	mg/l	--	--	15	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.01	--	<0.001	0.017	0.027	0.005	0.008	--	--	--	--	0.033
Zinc, Dissolved	mg/l	--	5	0.08	--	<0.01	0.01	<0.01	0.02	<0.005	<0.005	0.016	--	--	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.67	--	7.08	7.11	7.19	--	7.22	7.02	6.99	6.74	6.66	6.95
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	--	--	--	-- [15]

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-1D 24-Nov-2005	BR-1D 08-Apr-2006	BR-1D 24-Nov-2006	BR-1D 25-Apr-2007	BR-1D 04-Dec-2007	BR-1D 04-May-2008	BR-1D 28-Nov-2008	BR-1D 28-Apr-2009	BR-1D 28-Nov-2009	BR-1D 20-May-2010 [16]	BR-1D 29-Nov-2010 [9]	BR-1D 10-May-2011 [17]
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	1620	1650	1530	1470	1580	1620	1450	1395	1350	1240	1200	1250
Ammonia Nitrogen	mg/l	--	--	79.5	82	82.2	83.1	94.7	96.1	83	66.9	65	53.8	66.9	50.7
Bicarbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	235	225	229	213	222	236	218	204	201	198	214	192
Conductivity	uS/cm	--	--	2950	1635	1460	1690	3430	1630	1515	3220	3210	3070	2980	2960
Dissolved Organic Carbon	mg/l	--	5	--	64	67.8	70.9	61.5	66.9	49.4	48.8	48.9	43.6	40.3	43.4
Hardness, Calcium Carbonate	mg/l	--	--	--	924.6	874.6	978	883	918	854	862	839	979	755	887
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	1.83	0.34	0.28	0.36	0.33	0.17	0.14	0.13	0.11	0.13	0.08	0.13
Phosphorus (dissolved reactive)	mg/l	--	--	--	0.15	0.19	0.13	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	6	5	4	6	4	3	84	143	178	269	82	316
Tannin & Lignin	mg/l	--	--	--	--	--	3.7	6	6.2	5.8	6	5.6	9	3.3	1.6
Total Dissolved Solids	mg/l	--	500	1918	2180	2180	2130	2230	2240	2150	2090	2090	2000	1940	2070
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	0.01	0.02	0.02	0.03	0.02	0.02	0.02	<0.01	0.02	0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	0.99	0.95	0.94	0.96	0.93	0.89	0.79	0.8	0.83	0.55	0.68
Beryllium, Dissolved	mg/l	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005
Boron, Dissolved	mg/l	5	--	3.08	2.67	2.71	2.32	3.36	3.3	2.99	2.2	2.4	2.2	2.6	2.2
Cadmium, Dissolved	mg/l	0.005	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	--	237	217	240	225	221	202	200	196	227	159	197
Chromium, Dissolved	mg/l	0.05	--	--	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	<0.005
Cobalt, Dissolved	mg/l	--	--	--	0.0073	0.0068	0.0102	0.0082	0.008	0.0073	0.0054	0.0075	0.0057	0.0063	0.0056
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	5.15	15.7	17.3	21.4	8.22	8.71	10.9	15.5	9.83	15	5.3	9.07
Lead, Dissolved	mg/l	0.01	--	--	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	--	81	81	92	78	89	85	88	85	100	87	96
Manganese, Dissolved	mg/l	--	0.05	--	0.09	0.08	0.1	0.07	0.06	0.09	0.11	0.11	0.13	0.06	0.12
Mercury, Dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	0.045	0.043	0.036	0.042	0.044	0.045	0.039	0.027	0.036	0.029	0.031	0.03
Potassium, Dissolved	mg/l	--	--	--	60	60	64	69	67	60	51	48	52	52	46
Selenium, Dissolved	mg/l	0.01	--	--	0.002	0.004	0.003	0.006	0.003	<0.001	0.003	<0.001	<0.001	<0.01	<0.01
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [8]	--	210	206	236	215	242	217	228	238	265	230	256
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	--	0.015	0.018	0.02	0.032	0.036	0.036	0.028	0.031	0.009	0.011	<0.005
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	2280	2145	3375	3295	3195
pH (Field)	-	--	--	7.2	6.5	6.9	6.4	6.8	6.7	6.8	7.2	7.4	7.4	7.2	7.5
Temperature (Field)	deg c	--	15 [7]	6	7	6	7	8	10	8	12.5	8	12	10	11

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-1D 29-Nov-2011	BR-1D 20-May-2012 (9)	BR-1D 14-Nov-2012 (10)	BR-1D 17-Jun-13	BR-1D 29-Oct-2013	BR-1D 29-Oct-2013 Duplicate
General Chemistry									
Alkalinity (Total as CaCO3)	mg/l	--	--	1180	1140	1160	1120	945	945
Ammonia Nitrogen	mg/l	--	--	58.2	45.4	48.6	38.1	34.1	34.1
Bicarbonate	mg/l	--	--	--	--	--	--	945	945
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	209	192	186	172	162	163
Conductivity	uS/cm	--	--	3020	3000	3080	3000	2670	2700
Dissolved Organic Carbon	mg/l	--	5	1.4	37.3	40	33.5	31.4	31.4
Hardness, Calcium Carbonate	mg/l	--	--	729	677	923	919	812	818
Nitrate	mg/l	-- (11)	--	--	--	--	--	--	--
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	43.3	35.8	39.7
Phosphate	mg/l	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.1	0.05	0.05	1.21	0.14	0.14
Phosphorus (dissolved reactive)	mg/l	--	--	0.01	<0.01	<0.01	<0.01	0.05	0.02
Silica	mg/l	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 (6)	118	283	311	395	330	333
Tannin & Lignin	mg/l	--	--	5	3.1	5.7	2.9	1.7	1.9
Total Dissolved Solids	mg/l	--	500	1960	1950	2160	2100	1870	1890
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--
pH		--	--	--	--	--	--	7.51	7.85
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--
Metals									
Aluminum, Dissolved	mg/l	--	--	0.01	<0.01	0.01	0.03	0.08	0.13
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.63	0.77	0.83	0.67	0.58	0.65
Beryllium, Dissolved	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron, Dissolved	mg/l	5	--	2.2	1.8	1.8	2.1	1.9	1.8
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	150	149	203	203	180	181
Chromium, Dissolved	mg/l	0.05	--	<0.005	<0.005	<0.005	0.005	0.010	0.009
Cobalt, Dissolved	mg/l	--	--	0.007	0.0061	0.0055	0.0101	0.0092	0.0096
Copper, Dissolved	mg/l	--	1	--	--	--	0.001	0.003	0.002
Iron, Dissolved	mg/l	--	0.3	7.01	9.68	12.6	4.23	4.87	6.08
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	86	74	101	100	88	89
Manganese, Dissolved	mg/l	--	0.05	0.07	0.12	0.13	0.13	0.14	0.13
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	0.006	0.012	0.012
Nickel, Dissolved	mg/l	--	--	0.034	0.032	0.028	0.028	0.073	0.076
Potassium, Dissolved	mg/l	--	--	49	39	47	48	42	42
Selenium, Dissolved	mg/l	0.01	--	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (8)	232	230	341	312	256	246
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	0.018	<0.005	<0.005	0.008	0.007	0.005
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements									
Conductivity (Field)	uS/cm	--	--	3205	3205	3215	2810	2590	--
pH (Field)	-	--	--	7.4	7.6	7.4	7.7	7.3	--
Temperature (Field)	deg c	--	15 (7)	11	13	12	9.8	9.0	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-1S 01-Jul-2000	BR-1S 01-Oct-2000	BR-1S 14-Oct-2000	BR-1S 06-Sep-2001	BR-1S 06-Nov-2001	BR-1S 28-May-2002	BR-1S 02-Oct-2002	BR-1S 03-May-2003	BR-1S 03-Nov-2003	BR-1S 04-May-2004	BR-1S 04-Oct-2004	BR-1S 14-Jun-2005
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	1350	--	1250	814	774	767	918	948	1140	1220	1650	1470
Ammonia Nitrogen	mg/l	--	--	51.1	--	49.2	23.6	21.5	19.3	17	21.6	33	52	75	58.9
Bicarbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	237	--	231	137	127	114	169	195	182	211	244	217
Conductivity	uS/cm	--	--	2970	--	2140	1770	1700	1720	2050	2100	2460	2740	3420	3900
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	645	691	636.3	840	--	--	--	--	923
Nitrate	mg/l	-- [11]	--	<0.1	--	<0.1	<0.1	0.1	<0.1	0.18	<0.1	0.34	<0.1	0.2	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	51.1	--	49.2	--	--	20.4	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	56.9	84	--
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	<0.03	--	0.79	0.2	0.13	0.41	--
Phosphorus	mg/l	--	--	0.33	--	--	--	--	0.07	--	<0.005	<0.01	0.06	0.18	0.08
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.42	0.09	--	--	--
Sulfate	mg/l	--	500 [6]	3	--	2	1	5	1	5	6	3	3	<1	5
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	1896	--	1656	1030	924	1118	1330	1370	1600	1780	2220	2535
Total Organic Carbon	mg/l	--	--	138	--	149	--	--	21.9	--	23	31.1	41.3	67.1	--
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	0.05	--	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	--	--	0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.65	--	0.58	0.32	0.23	0.3	0.4	0.31	0.43	--	--	0.62
Beryllium, Dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	1	<0.001	<0.001	--	--	<0.001
Boron, Dissolved	mg/l	5	--	0.9	--	0.91	0.7	0.65	0.56	0.87	0.69	1.09	1.27	2.66	1.58
Cadmium, Dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	270	--	245	146	161	143	203	217	227	223	248	238
Chromium, Dissolved	mg/l	0.05	--	0.03	--	<0.01	0.017	0.018	0.002	0.002	<0.005	0.031	0.003	0.009	<0.005
Cobalt, Dissolved	mg/l	--	--	<0.01	--	0.0052	0.0015	0.0024	0.0018	0.0024	<0.005	0.0028	--	--	0.0058
Copper, Dissolved	mg/l	--	1	<0.01	--	0.002	<0.001	0.001	0.001	0.002	<0.005	<0.001	<0.001	0.001	--
Iron, Dissolved	mg/l	--	0.3	20.9	--	15	4.95	0.94	5.59	1.59	5.27	5.26	8.14	10.2	9.05
Lead, Dissolved	mg/l	0.01	--	<0.002	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	115	--	91	68	70	68	81	88	86	78	81	80
Manganese, Dissolved	mg/l	--	0.05	0.2	--	0.11	0.07	0.07	0.1	0.055	0.131	0.06	0.18	0.11	--
Mercury, Dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	--	<0.01	0.02	<0.01	<0.01	<0.005	<0.005	<0.005	--	--	<0.005
Nickel, Dissolved	mg/l	--	--	0.03	--	0.03	0.02	<0.01	<0.01	0.012	0.008	0.024	0.041	0.052	0.047
Potassium, Dissolved	mg/l	--	--	52	--	42	30	29	22	33	29	48	50	59	45
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	0.003
Silicon, Dissolved	mg/l	--	--	8.41	--	8.76	6.3	5.62	74	5.3	5.6	7	--	--	--
Silver, Dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [9]	191	--	165	82	78	74	114	117	161	188	214	203
Strontium, Dissolved	mg/l	--	--	1.01	--	5.67	8.56	4.49	5.41	9.05	7.33	5.7	--	--	--
Sulfur	mg/l	--	--	4	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.1	--	0.002	0.005	0.005	<0.001	<0.005	--	--	--	--	0.032
Zinc, Dissolved	mg/l	--	5	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	0.011	--	--	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	6.58	--	6.98	6.94	7.19	7.32	7.22	7.25	7.24	6.66	6.56	6.88
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	--	--	--	-- (15)

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-1S 24-Nov-2005	BR-1S 08-Apr-2006	BR-1S 24-Nov-2006	BR-1S 25-Apr-2007	BR-1S 04-Dec-2007	BR-1S 04-May-2008	BR-1S 28-Nov-2008	BR-1S 29-Apr-2009	BR-1S 28-Nov-2009	BR-1S 0-May-2010 (16	BR-1S 9-Nov-2010 (16	BR-1S 0-May-2011 (18
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	1500	1530	1500	1400	1570	1570	1580	1467	1646	1590	1611	1670
Ammonia Nitrogen	mg/l	--	--	64.9	67	84.7	71.2	85.6	80.6	95.2	75.6	94.4	92.8	89.7	97.0
Bicarbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	267	216	246	194	246	213	226	185	220	223	236	213
Conductivity	uS/cm	--	--	3120	1770	1395	1665	3470	1510	1390	3070	3440	3280	3240	3190
Dissolved Organic Carbon	mg/l	--	5	--	51.4	57.9	46.7	59.8	47.9	56.2	54.6	105	53.3	50.9	54.5
Hardness, Calcium Carbonate	mg/l	--	--	--	921.2	850	833	953	960	939	884	883	1010	939	918
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.16	0.15	0.09	0.26	0.04	0.07	0.02	0.03	0.02	0.02	0.01	0.03
Phosphorus (dissolved reactive)	mg/l	--	--	--	0.16	0.06	0.15	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	3	10	5	4	3	4	2	<1	<1	3	<1	<1
Tannin & Lignin	mg/l	--	--	--	--	--	2.2	4.7	4.5	4.4	4.6	6.5	5.7	3.1	2.5
Total Dissolved Solids	mg/l	--	500	2028	2060	2250	2040	2260	2160	2240	2000	2240	2130	2110	2070
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.02	<0.01	0.03	<0.1	<0.1	<0.1
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	0.68	0.66	0.53	0.69	0.63	0.7	0.53	0.65	0.6	0.7	0.5
Beryllium, Dissolved	mg/l	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.005
Boron, Dissolved	mg/l	5	--	3.28	2.21	3.22	1.87	3.81	3.1	3.95	2.5	2.8	2.7	2.6	2.8
Cadmium, Dissolved	mg/l	0.005	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001
Calcium, Dissolved	mg/l	--	--	--	234	217	210	253	241	239	217	225	256	239	226
Chromium, Dissolved	mg/l	0.05	--	--	0.008	<0.005	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.005
Cobalt, Dissolved	mg/l	--	--	--	0.0068	0.0083	0.008	0.0092	0.0074	0.0088	0.0066	0.0083	0.006	0.006	0.006
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	9.38	10.8	10.2	7.58	6.6	7.65	8.19	7.69	7.25	7.7	6.7	7.6
Lead, Dissolved	mg/l	0.01	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01
Magnesium, Dissolved	mg/l	--	--	--	82	75	75	78	87	83	83	78	89	83	86
Manganese, Dissolved	mg/l	--	0.05	--	0.12	0.09	0.09	0.09	0.11	0.08	0.06	0.09	<0.1	<0.1	<0.1
Mercury, Dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.05	<0.05
Nickel, Dissolved	mg/l	--	--	0.05	0.051	0.054	0.053	0.065	0.051	0.051	0.04	0.045	<0.05	<0.05	<0.05
Potassium, Dissolved	mg/l	--	--	--	53	59	51	65	58	61	50	60	65	54	55
Selenium, Dissolved	mg/l	0.01	--	--	0.004	0.004	0.004	0.002	0.004	<0.001	0.003	0.003	<0.01	<0.01	<0.01
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.001
Sodium, Dissolved	mg/l	--	200 [8]	--	192	200	174	205	208	219	179	209	212	191	180
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	--	0.008	0.018	0.012	0.037	0.025	0.06	0.04	0.054	<0.01	0.02	<0.005
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	2050	2160	2100	2115	1990
pH (Field)	-	--	--	7	6.3	7	6.4	6.9	7	6.9	7.3	7.2	7.2	7.2	7.4
Temperature (Field)	deg c	--	15 [7]	4	6	6	6	8	10	8	13	7	14	9	13

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-1S 9-Nov-2011 (19	BR-1S 0-May-2012 (16	BR-1S 4-Nov-2012 (10	BR-1S 17-Jun-13	BR-1S 29-Oct-13							
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	1620	1740	1714	1610	1790							
Ammonia Nitrogen	mg/l	--	--	95.5	108	101	86.5	90.5							
Bicarbonate	mg/l	--	--	--	--	--	--	1790							
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--							
Chloride	mg/l	--	250	218	232	257	208	242							
Conductivity	uS/cm	--	--	3390	3550	3760	3240	3550							
Dissolved Organic Carbon	mg/l	--	5	40.6	63.1	67.3	52.9	65.7							
Hardness, Calcium Carbonate	mg/l	--	--	890	916	1240	1040	1020							
Nitrate	mg/l	-- [11]	--	--	--	--	--	--							
Nitrite	mg/l	-- [13]	--	--	--	--	--	--							
Nitrogen	mg/l	--	--	--	--	--	--	--							
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	97.3	112							
Phosphate	mg/l	--	--	--	--	--	--	--							
Phosphorus	mg/l	--	--	0.01	0.02	0.03	0.03	0.02							
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01							
Silica	mg/l	--	--	--	--	--	--	--							
Sulfate	mg/l	--	500 [6]	<1	1	<3	3	<3							
Tannin & Lignin	mg/l	--	--	7.3	5.6	7.9	7.4	3.5							
Total Dissolved Solids	mg/l	--	500	2200	2310	2440	2110	2310							
Total Organic Carbon	mg/l	--	--	--	--	--	--	--							
pH		--	--	--	--	--	--	6.98							
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--							
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.1	<0.01	<0.01	0.01							
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--							
Barium, Dissolved	mg/l	1	--	0.7	0.8	0.79	0.71	0.67							
Beryllium, Dissolved	mg/l	--	--	<0.0005	<0.005	<0.0005	<0.0005	<0.0005							
Boron, Dissolved	mg/l	5	--	3.4	3.2	4	3.2	3.8							
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.001	<0.0001	<0.0001	<0.0001							
Calcium, Dissolved	mg/l	--	--	226	230	358	254	250							
Chromium, Dissolved	mg/l	0.05	--	<0.005	<0.005	<0.005	0.009	<0.005							
Cobalt, Dissolved	mg/l	--	--	0.0081	0.009	0.0084	0.0127	0.0116							
Copper, Dissolved	mg/l	--	1	--	--	--	<0.001	<0.001							
Iron, Dissolved	mg/l	--	0.3	8.35	10.7	6.45	7.93	9.29							
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.01	<0.001	<0.001	<0.001							
Magnesium, Dissolved	mg/l	--	--	79	83	85	99	95							
Manganese, Dissolved	mg/l	--	0.05	0.07	<0.1	0.06	0.07	0.07							
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001							
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.05	<0.005	<0.005	<0.005							
Nickel, Dissolved	mg/l	--	--	0.043	<0.05	0.047	0.04	0.045							
Potassium, Dissolved	mg/l	--	--	54	62	101	64	65							
Selenium, Dissolved	mg/l	0.01	--	<0.005	<0.01	<0.01	<0.01	<0.01							
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--							
Silver, Dissolved	mg/l	--	--	<0.0001	<0.001	<0.0001	<0.0001	<0.0001							
Sodium, Dissolved	mg/l	--	200 [8]	183	194	219	230	227							
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--							
Sulfur	mg/l	--	--	--	--	--	--	--							
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--							
Tin, Dissolved	mg/l	--	--	--	--	--	--	--							
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--							
Vanadium, Dissolved	mg/l	--	--	0.03	<0.005	<0.005	<0.005	0.006							
Zinc, Dissolved	mg/l	--	5	<0.01	<0.1	<0.01	<0.01	<0.01							
Field Measurements															
Conductivity (Field)	uS/cm	--	--	1985	2010	2108	3120	3630							
pH (Field)	-	--	--	7.3	7.4	7.3	7.1	6.7							
Temperature (Field)	deg c	--	15 [7]	11	14	14	8.3	9.3							

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-2 01-Apr-1988	BR-2 01-Nov-1988	BR-2 01-Nov-1990	BR-2 01-Oct-1991	BR-2 01-Dec-1991	BR-2 01-Dec-1992	BR-2 01-Feb-1993	BR-2 01-Sep-1993	BR-2 01-Nov-1993	BR-2 01-Aug-1994	BR-2 01-Dec-1994
General Chemistry														
Alkalinity (Total as CaCO3)	mg/l	--	--	--	548	--	450	540	520	557	450	481	256	452
Ammonia Nitrogen	mg/l	--	--	0.69	--	--	--	--	--	--	5.59	6.13	<0.1	5.73
Bicarbonate	mg/l	--	--											
Chemical Oxygen Demand	mg/l	--	--	30	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	29.9	56	66	70	67	74	69	83	53.2	29.8	58.5
Conductivity	uS/cm	--	--	820	--	928	940	--	--	--	1086	1142	643	1172
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate	mg/l	-- [11]	--	0.43	--	--	--	--	--	--	<0.1	0.62	1.02	<0.1
Nitrite	mg/l	-- [13]	--	0.048	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	5.79	6.16	43.42	6.6
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	<0.1	<0.1	<0.1	--
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	<0.1
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	<0.1	--	0.1	<0.1	--	0.29	<0.1	<0.1	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	--	--	--	--	37	35	53	51.2	82.6	64.3	55.8
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	--	645	558	584	700	730	720	706	620	376	664
Total Organic Carbon	mg/l	--	--	--	9	--	--	--	13	--	10	10	1.5	8.9
pH		--	--											
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--
Metals														
Aluminum, Dissolved	mg/l	--	--	--	<0.03	<0.03	--	<0.03	<0.03	--	--	--	--	--
Arsenic, Dissolved	mg/l	0.025	--	--	0.02	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	0.57	0.3	--	0.25	0.31	--	--	--	--	--
Beryllium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--	--
Boron, Dissolved	mg/l	5	--	--	--	0.25	--	0.39	0.43	--	0.35	0.48	0.66	0.46
Cadmium, Dissolved	mg/l	0.005	--	--	<0.004	<0.002	<0.002	<0.002	<0.01	--	0.002	<0.01	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	--	--	116	--	123	116	--	108	110	49	76
Chromium, Dissolved	mg/l	0.05	--	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	<0.01	0.011	<0.01	<0.01
Cobalt, Dissolved	mg/l	--	--	--	40	<0.02	--	<0.01	<0.01	--	--	--	--	--
Copper, Dissolved	mg/l	--	1	--	--	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	0.02	<0.01
Iron, Dissolved	mg/l	--	0.3	1.1	6.68	0.03	0.53	0.72	<0.01	--	5.3	3.9	0.4	3.2
Lead, Dissolved	mg/l	0.01	--	--	<0.05	<0.002	0.0053	0.003	<0.05	--	0.003	0.012	0.0002	<0.0002
Magnesium, Dissolved	mg/l	--	--	--	--	47	--	51	52	--	41.1	43.8	24.4	29.8
Manganese, Dissolved	mg/l	--	0.05	--	0.34	0.31	0.07	0.42	0.27	--	0.3	0.213	0.016	0.017
Mercury, Dissolved	mg/l	0.001	--	--	<0.001	--	<0.001	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--	--	<0.01	--	0.01	<0.01	--	--	--	--	--
Nickel, Dissolved	mg/l	--	--	--	--	<0.01	--	0.01	0.02	--	0.03	0.024	<0.02	<0.02
Potassium, Dissolved	mg/l	--	--	--	--	12	--	12	13	--	12.4	13.5	8.3	11.9
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	--	--	6.2	--	7.6	6.9	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	<0.02	<0.02	<0.01
Sodium, Dissolved	mg/l	--	200 [8]	--	--	52	--	75	75	--	56.5	68.1	35.6	47.5
Strontium, Dissolved	mg/l	--	--	--	--	5.91	--	3.85	6.25	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	12	--	16	12	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.05	<0.05	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	<0.05	--	<0.05	<0.05	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--	--
Zinc, Dissolved	mg/l	--	5	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	--	--	--	--
Field Measurements														
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.5	7.05	--	--	--	--	--	7.38	7.55	8.2	7.13
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-3 01-Apr-1988	BR-3 01-Nov-1988	BR-3 01-Nov-1990	BR-3 01-Oct-1991	BR-3 01-Dec-1991	BR-3 01-Dec-1992	BR-3 01-Feb-1993	BR-3 01-Sep-1993	BR-3 01-Nov-1993	BR-3 01-Aug-1994	BR-3 01-Dec-1994	BR-3 01-May-1995
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	327	--	410	484	384	457	508	470	444	448	416	437
Ammonia Nitrogen	mg/l	--	--	0.04	--	--	--	--	--	--	0.21	0.29	<0.1	0.23	0.08
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	25	14	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	23.3	33	58	59	48	55	52	62	53.1	68	44	46
Conductivity	uS/cm	--	--	710	--	801	860	--	--	--	961	1007	965	1045	1001
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate	mg/l	-- [11]	--	2.79	--	--	--	--	--	--	0.54	0.82	0.48	0.53	<0.1
Nitrite	mg/l	-- [13]	--	0.016	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	0.84	1.21	1.4	0.45	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	<0.1	<0.1	<0.1	--	<0.03
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	<0.1	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	<0.1	--	0.1	<0.1	--	0.238	<0.1	<0.1	--	<0.1
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	--	--	--	--	33	29	43	40.2	73.4	46	49.9	44
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	--	413	472	534	490	620	620	568	552	568	576	600
Total Organic Carbon	mg/l	--	--	--	1	--	--	--	7.2	--	4.9	6.13	4.9	5.4	6.3
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	--	--	<0.03	--	<0.03	<0.03	--	--	--	--	--	<0.03
Arsenic, Dissolved	mg/l	0.025	--	--	<0.01	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	0.17	0.07	--	0.13	0.13	--	--	--	--	--	0.13
Beryllium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--	--	<0.1
Boron, Dissolved	mg/l	5	--	--	--	0.3	--	0.45	0.48	--	0.43	0.43	0.43	0.48	0.53
Cadmium, Dissolved	mg/l	0.005	--	--	<0.002	<0.002	<0.002	<0.002	<0.01	--	0.00015	<0.01	<0.0001	<0.0001	<0.005
Calcium, Dissolved	mg/l	--	--	--	--	111	--	127	132	--	125	130	100	95.9	127
Chromium, Dissolved	mg/l	0.05	--	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt, Dissolved	mg/l	--	--	--	--	<0.02	--	<0.01	<0.01	--	--	--	--	--	<0.01
Copper, Dissolved	mg/l	--	1	--	--	<0.01	<0.01	0.06	<0.01	--	<0.01	<0.01	0.03	<0.01	0.006
Iron, Dissolved	mg/l	--	0.3	0.1	18.36	<0.01	0.35	0.05	<0.01	--	12.3	1.32	0.4	1.96	0.06
Lead, Dissolved	mg/l	0.01	--	--	<0.05	<0.002	0.004	0.003	<0.05	--	0.003	0.01	<0.0002	<0.0002	<0.002
Magnesium, Dissolved	mg/l	--	--	--	--	44	--	46	51	--	41.7	45.5	41.3	33	42
Manganese, Dissolved	mg/l	--	0.05	--	--	0.05	0.11	0.11	0.1	--	0.11	0.105	0.092	0.1	0.13
Mercury, Dissolved	mg/l	0.001	--	--	<0.001	--	<0.001	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002
Molybdenum, Dissolved	mg/l	--	--	--	--	0.01	--	<0.01	<0.01	--	--	--	--	--	<0.01
Nickel, Dissolved	mg/l	--	--	--	--	<0.01	--	0.01	<0.01	--	0.022	<0.02	<0.02	<0.02	0.02
Potassium, Dissolved	mg/l	--	--	--	--	9	--	6	8	--	6.04	8.03	9.6	8.5	7
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	--	--	5.1	--	6.6	6.2	--	--	--	--	--	6
Silver, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	<0.02	<0.02	<0.01	<0.01
Sodium, Dissolved	mg/l	--	200 [8]	--	--	35	--	27	34	--	30.2	30.3	24.7	21.3	26
Strontium, Dissolved	mg/l	--	--	--	--	3.24	--	3.76	3.18	--	--	--	--	--	4.08
Sulfur	mg/l	--	--	--	--	12	--	8	10	--	--	--	--	--	16
Thallium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.05	<0.05	--	--	--	--	--	<0.05
Tin, Dissolved	mg/l	--	--	--	--	0.05	--	<0.05	<0.05	--	--	--	--	--	<0.05
Titanium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--	--	<0.01
Vanadium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	--	--	--	--	<0.01
Zinc, Dissolved	mg/l	--	5	--	0.03	<0.01	<0.01	<0.01	<0.01	--	--	--	--	--	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.6	7.55	--	--	--	--	--	7.73	7.77	7.6	7.32	7.34
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-3 01-Sep-1995	BR-3 04-Apr-1996	BR-3 09-Sep-1996	BR-3 01-Jun-1997	BR-3 01-Aug-1997	BR-3 22-Nov-1998	BR-3 15-Jul-1999	BR-3 16-Oct-1999	BR-3 01-Jul-2000	BR-3 01-Oct-2000	BR-3 14-Oct-2000	BR-3 07-Sep-2001
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	446	414	435	440	437	427	445	437	443	--	444	452
Ammonia Nitrogen	mg/l	--	--	0.07	0.02	0.16	0.3	0.27	0.32	0.45	0.62	0.68	--	0.35	0.28
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	38	47	47	46	47	47	44	44	44	--	40	43
Conductivity	uS/cm	--	--	973	957	977	962	960	922	823	907	945	--	819	937
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	433
Nitrate	mg/l	-- [11]	--	0.16	0.11	0.34	<0.1	0.3	-- (12)	<0.1	<0.01	<0.1	--	<0.1	<0.1
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	1.38	--	0.61	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	<0.03	<0.03	<0.03	<0.03	<0.03	-- (12)	<0.03	<0.03	<0.03	--	<0.03	--
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	--	0.03	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.1	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	43	48	46	43	44	41	42	43	39	--	40	31
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	584	572	596	604	588	552	512	556	596	--	580	576
Total Organic Carbon	mg/l	--	--	5.4	5	5	5.4	4.2	4.2	4	4.5	3.3	--	3.8	--
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.03	<0.03	0.37	0.04	<0.03	-- (12)	<0.03	<0.03	<0.05	--	<0.05	<0.05
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.11	0.09	0.1	0.11	0.11	0.12	0.13	0.37	0.17	--	0.14	0.12
Beryllium, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	-- (12)	<0.01	<0.01	<0.002	--	<0.0002	<0.002
Boron, Dissolved	mg/l	5	--	0.59	0.51	0.47	0.46	0.42	0.45	0.47	0.5	0.46	--	0.48	0.51
Cadmium, Dissolved	mg/l	0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	-- (12)	<0.005	<0.01	<0.005	--	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	129	114	121	113	114	128	126	116	124	--	121	104
Chromium, Dissolved	mg/l	0.05	--	0.08	<0.01	0.02	0.02	<0.01	-- (12)	<0.01	<0.01	<0.01	--	<0.01	0.007
Cobalt, Dissolved	mg/l	--	--	0.01	<0.01	<0.01	<0.01	<0.01	-- (12)	<0.01	<0.01	<0.01	--	0.005	0.0019
Copper, Dissolved	mg/l	--	1	<0.005	0.009	<0.005	<0.005	<0.005	0.005	<0.005	<0.01	<0.01	--	<0.001	<0.001
Iron, Dissolved	mg/l	--	0.3	0.05	0.04	0.42	0.7	0.47	1.41	1.87	3.74	4.01	--	2.09	1.07
Lead, Dissolved	mg/l	0.01	--	<0.002	<0.002	<0.002	<0.002	<0.002	-- (12)	<0.002	<0.002	<0.001	--	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	45	42	47	42	44	46	45	42	42	--	45	42
Manganese, Dissolved	mg/l	--	0.05	0.12	0.1	0.11	0.1	0.11	0.09	0.09	0.1	0.1	--	0.09	0.09
Mercury, Dissolved	mg/l	0.001	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-- (12)	<0.0002	<0.0002	<0.0001	--	<0.0001	--
Molybdenum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.03	<0.03	<0.03	-- (12)	<0.01	<0.01	<0.01	--	<0.01	0.01
Nickel, Dissolved	mg/l	--	--	<0.01	0.02	<0.01	<0.01	0.01	-- (12)	<0.01	<0.01	<0.01	--	<0.01	<0.01
Potassium, Dissolved	mg/l	--	--	8	12	8	7	8	6	8	8	8	--	7	7
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	7	5.3	4.8	4.7	4.5	4.8	5.3	5.5	5.78	--	5.99	5.66
Silver, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	-- (12)	<0.01	0.01	<0.01	--	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [9]	27	27	28	25	28	23	27	26	24	--	25	20
Strontium, Dissolved	mg/l	--	--	3.85	3.55	3.3	3.47	3.01	3.41	3.66	3.57	3.31	--	3.36	5.22
Sulfur	mg/l	--	--	17	16	14	13	14	15	13	13	15	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.05	0.2	<0.2	<0.2	<0.2	-- (12)	<0.2	<0.2	<0.2	--	<0.001	<0.001
Tin, Dissolved	mg/l	--	--	<0.05	<0.05	<0.05	<0.05	<0.05	-- (12)	<0.05	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	-- (12)	<0.01	<0.01	<0.01	--	<0.01	<0.01
Vanadium, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	-- (12)	--	<0.01	<0.01	--	<0.001	0.002
Zinc, Dissolved	mg/l	--	5	<0.01	0.01	0.02	0.01	<0.01	-- (12)	--	0.04	<0.01	--	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.8	7.45	7.32	7.51	7.14	8.05	6.78	7.32	6.86	--	7.41	7.38
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-3 06-Nov-2001	BR-3 28-May-2002	BR-3 02-Oct-2002	BR-3 03-May-2003	BR-3 03-Nov-2003	BR-3 04-May-2004	BR-3 04-Oct-2004	BR-3 09-Jun-2005	BR-3 29-Oct-2005	BR-3 08-Apr-2006	BR-3 24-Nov-2006	BR-3 25-Apr-2007
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	433	440	440	442	430	433	431	426	435	446	429	433
Ammonia Nitrogen	mg/l	--	--	0.49	0.4	0.28	0.3	0.35	0.69	0.58	0.45	0.46	0.57	0.64	0.61
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	53	42	41	42	41	43	41	42	42	40	42	41
Conductivity	uS/cm	--	--	933	995	961	974	950	922	960	1400	1150	520	810	710
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	3.2	2.8	3.7
Hardness, Calcium Carbonate	mg/l	--	--	436	479.5	493	--	--	--	--	455.6	--	454	464.7	466
Nitrate	mg/l	-- [11]	--	3.74	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	0.62	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	0.83	0.76	--	--	--	--	--
Phosphate	mg/l	--	--	--	<0.03	--	0.26	0.05	0.12	0.26	--	--	--	--	--
Phosphorus	mg/l	--	--	--	0.07	--	<0.005	<0.01	0.04	--	<0.01	0.03	0.15	0.07	0.07
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	0.06	0.02	0.11
Silica	mg/l	--	--	--	--	--	0.09	0.02	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	24	46	38	42	44	46	42	45	41	44	45	47
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	584	647	625	689	618	599	624	580	748	612	629	639
Total Organic Carbon	mg/l	--	--	--	3.8	--	3.1	2.7	2.7	3.6	--	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	0.56	0.78	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.05	<0.05	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.14	0.15	0.15	0.15	0.16	--	0.23	0.21	--	0.25	0.25	0.24
Beryllium, Dissolved	mg/l	--	--	<0.002	<0.002	<0.001	<0.001	<0.001	--	<0.001	<0.001	--	<0.001	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.44	0.47	0.43	0.49	0.5	0.53	0.53	0.46	0.45	0.46	0.58	0.45
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	110	118	128	112	122	110	104	115	--	116	117	119
Chromium, Dissolved	mg/l	0.05	--	<0.001	<0.001	<0.001	0.012	0.002	<0.001	<0.001	0.002	--	0.003	0.002	0.002
Cobalt, Dissolved	mg/l	--	--	0.0005	0.0037	<0.0002	0.0031	0.003	--	0.0003	0.0028	--	0.0031	0.003	0.006
Copper, Dissolved	mg/l	--	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	2.16	1.16	0.86	1.09	1.31	2.55	3.69	2.22	0.74	2.31	3.58	2.82
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	39	45	42	42	44	43	40	41	--	40	42	41
Manganese, Dissolved	mg/l	--	0.05	0.07	0.08	0.09	0.077	0.076	0.08	0.08	--	--	0.08	0.09	0.09
Mercury, Dissolved	mg/l	0.001	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	--	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.01	<0.01	<0.005	<0.005	0.007	0.007	<0.005	0.008	0.011	0.009	0.009	0.005
Potassium, Dissolved	mg/l	--	--	8	8	8	8	9	8	8	7	--	8	8	8
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	5.59	4.61	4.5	5.3	5.5	--	6.6	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [9]	23	24	25	23	24	23	23	22	--	23	23	24
Strontium, Dissolved	mg/l	--	--	3.13	4.08	4.64	4	3.69	--	3.76	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	--	<0.01	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.005	--	--	--	<0.001	0.005	--	0.004	0.001	0.002
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.005	0.004	<0.001	--	<0.01	<0.01	<0.01	<0.01	<0.01	0.24
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.57	7.61	7.6	7.46	7.53	6.96	7.12	6.9	6.8	7	7	7.3
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	13.3	11	6	5	4

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-3 06-Dec-2007	BR-3 03-May-2008	BR-3 28-Nov-2008	BR-3 29-Apr-2009	BR-3 28-Nov-2009	BR-3 20-May-2010	BR-3 29-Nov-2010	BR-3 10-May-2011 (9	BR-3 30-Nov-2011 (9	BR-3 13-Jun-13		
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	447	436	439	445	475	497	446	450	460	--		
Ammonia Nitrogen	mg/l	--	--	1.9	1.14	0.61	0.50	0.53	0.56	0.60	0.56	0.92	--		
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Chloride	mg/l	--	250	39	39	41	39	57	65	65	67	62	--		
Conductivity	uS/cm	--	--	740	700	690	991	1090	1100	1090	1070	1090	--		
Dissolved Organic Carbon	mg/l	--	5	4.5	3.3	3.1	4	6.7	11.8	6.3	6.9	5.4	--		
Hardness, Calcium Carbonate	mg/l	--	--	433	477	449	463	496	556	499	483	537	--		
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--		
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--		
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Phosphorus	mg/l	--	--	0.01	0.01	<0.01	<0.01	<0.01	0.02	0.1	0.02	0.02	--		
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--		
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Sulfate	mg/l	--	500 [6]	34	39	48	53	47	20	84	83	65	--		
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Total Dissolved Solids	mg/l	--	500	634	621	642	644	708	715	708	696	708	--		
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--		
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--		
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--		
Barium, Dissolved	mg/l	1	--	0.29	0.23	0.25	0.22	0.22	0.21	0.19	0.19	0.22	--		
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	--		
Boron, Dissolved	mg/l	5	--	0.53	0.61	0.54	0.51	0.61	0.54	0.52	0.46	0.43	--		
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--		
Calcium, Dissolved	mg/l	--	--	109	120	117	118	131	147	134	126	144	--		
Chromium, Dissolved	mg/l	0.05	--	0.004	0.003	0.005	0.002	0.003	<0.001	0.002	0.002	0.004	--		
Cobalt, Dissolved	mg/l	--	--	0.0017	0.0027	0.0021	0.0022	0.0029	0.0007	0.0014	0.0007	0.0008	--		
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--		
Iron, Dissolved	mg/l	--	0.3	2.77	1.69	2.34	2.06	2.55	0.11	1.72	1.79	1.05	--		
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--		
Magnesium, Dissolved	mg/l	--	--	39	43	38	41	41	46	40	41	43	--		
Manganese, Dissolved	mg/l	--	0.05	0.08	0.09	0.09	0.08	0.27	0.26	0.22	0.2	0.19	--		
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	--		
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	--		
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	--		
Potassium, Dissolved	mg/l	--	--	8	8	8	8	9	10	9	9	9	--		
Selenium, Dissolved	mg/l	0.01	--	0.004	0.002	0.002	<0.001	0.002	0.003	<0.001	<0.01	<0.01	--		
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--		
Sodium, Dissolved	mg/l	--	200 [8]	22	24	22	24	31	40	35	35	39	--		
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		
Vanadium, Dissolved	mg/l	--	--	0.008	0.004	0.009	0.006	0.007	0.003	0.001	0.002	0.001	--		
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--		
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	1000	960	12	950	980	1005	--		
pH (Field)	-	--	--	7.1	7.2	7.3	7.5	7.7	7.4	7.2	7.3	7.2	--		
Temperature (Field)	deg c	--	15 [7]	6	7	6	10.5	6	995	6.4	11	10	--		

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-3D 03-Nov-2003											
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	428											
Ammonia Nitrogen	mg/l	--	--	0.33											
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--											
Chloride	mg/l	--	250	41											
Conductivity	uS/cm	--	--	955											
Dissolved Organic Carbon	mg/l	--	5	--											
Hardness, Calcium Carbonate	mg/l	--	--	--											
Nitrate	mg/l	-- [11]	--	<0.1											
Nitrite	mg/l	-- [13]	--	--											
Nitrogen	mg/l	--	--	--											
Nitrogen, Total Kjeldahl	mg/l	--	--	--											
Phosphate	mg/l	--	--	0.05											
Phosphorus	mg/l	--	--	<0.01											
Phosphorus (dissolved reactive)	mg/l	--	--	--											
Silica	mg/l	--	--	0.03											
Sulfate	mg/l	--	500 [6]	44											
Tannin & Lignin	mg/l	--	--	--											
Total Dissolved Solids	mg/l	--	500	621											
Total Organic Carbon	mg/l	--	--	2.8											
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	0.78											
Metals															
Aluminum, Dissolved	mg/l	--	--	0.01											
Arsenic, Dissolved	mg/l	0.025	--	--											
Barium, Dissolved	mg/l	1	--	0.16											
Beryllium, Dissolved	mg/l	--	--	<0.001											
Boron, Dissolved	mg/l	5	--	0.48											
Cadmium, Dissolved	mg/l	0.005	--	<0.0001											
Calcium, Dissolved	mg/l	--	--	122											
Chromium, Dissolved	mg/l	0.05	--	0.004											
Cobalt, Dissolved	mg/l	--	--	0.0031											
Copper, Dissolved	mg/l	--	1	0.002											
Iron, Dissolved	mg/l	--	0.3	1.31											
Lead, Dissolved	mg/l	0.01	--	<0.001											
Magnesium, Dissolved	mg/l	--	--	44											
Manganese, Dissolved	mg/l	--	0.05	0.079											
Mercury, Dissolved	mg/l	0.001	--	<0.0001											
Molybdenum, Dissolved	mg/l	--	--	<0.005											
Nickel, Dissolved	mg/l	--	--	0.008											
Potassium, Dissolved	mg/l	--	--	9											
Selenium, Dissolved	mg/l	0.01	--	--											
Silicon, Dissolved	mg/l	--	--	5.6											
Silver, Dissolved	mg/l	--	--	<0.0001											
Sodium, Dissolved	mg/l	--	200 [8]	24											
Strontium, Dissolved	mg/l	--	--	3.63											
Sulfur	mg/l	--	--	--											
Thallium, Dissolved	mg/l	--	--	<0.001											
Tin, Dissolved	mg/l	--	--	--											
Titanium, Dissolved	mg/l	--	--	<0.01											
Vanadium, Dissolved	mg/l	--	--	--											
Zinc, Dissolved	mg/l	--	5	0.001											
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--											
pH (Field)	-	--	--	7.56											
Temperature (Field)	deg c	--	15 [7]	--											

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-4 01-Apr-1988	BR-4 01-Nov-1988	BR-4 01-Dec-1988	BR-4 01-Nov-1990	BR-4 01-Oct-1991	BR-4 01-Dec-1991	BR-4 01-Feb-1992	BR-4 01-Dec-1992	BR-4 01-Sep-1993	BR-4 01-Nov-1993	BR-4 01-Aug-1994	BR-4 01-Dec-1994
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	329	366	--	336	368	344	--	770	640	650	701	608
Ammonia Nitrogen	mg/l	--	--	0.13	--	--	--	--	--	--	--	0.21	0.26	0.25	0.7
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	25	5	6	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	23.4	20	24	32	35	45	--	72	100	70.9	92	68
Conductivity	uS/cm	--	--	700	--	--	813	690	--	--	--	1361	1376	1410	1424
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate	mg/l	-- (11)	--	0.2	--	--	--	--	--	--	--	<0.1	0.7	<0.1	<0.1
Nitrite	mg/l	-- (13)	--	0.024	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	0.67	1.68	0.28	2.69
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	<0.1	0.1	<0.1	--
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	0.14
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	<0.1	--	--	--	<0.1	0.426	0.22	0.42	--
Silica	mg/l	--	--												
Sulfate	mg/l	--	500 (6)	--	--	--	--	--	65	--	26	20.9	34.6	16.6	24
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	--	389	401	466	422	440	--	950	885	800	848	824
Total Organic Carbon	mg/l	--	--	--	<0.5	<0.5	--	--	--	--	11	10.3	106	13	12.4
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	--	--	--	<0.03	--	<0.03	--	<0.03	--	--	--	--
Arsenic, Dissolved	mg/l	0.025	--	--	<0.01	<0.01	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	0.17	0.21	0.27	--	0.27	--	3.1	--	--	--	--
Beryllium, Dissolved	mg/l	--	--	--	--	--	<0.01	--	<0.01	--	<0.01	--	--	--	--
Boron, Dissolved	mg/l	5	--	--	--	--	0.2	--	0.17	--	0.2	0.18	0.19	0.19	0.27
Cadmium, Dissolved	mg/l	0.005	--	--	<0.004	<0.002	<0.002	<0.002	<0.002	--	<0.01	0.00012	<0.01	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	--	--	--	98	--	106	--	187	180	190	160	135
Chromium, Dissolved	mg/l	0.05	--	--	<0.02	<0.02	<0.01	<0.01	<0.01	--	<0.01	<0.01	0.15	<0.01	<0.01
Cobalt, Dissolved	mg/l	--	--	--	--	--	<0.02	--	<0.01	--	<0.01	--	--	--	--
Copper, Dissolved	mg/l	--	1	--	--	--	<0.01	<0.01	<0.01	--	0.01	<0.01	<0.01	<0.01	<0.01
Iron, Dissolved	mg/l	--	0.3	2.4	1.01	0.07	0.04	1.67	0.18	--	<0.01	35.4	52.3	1.1	53
Lead, Dissolved	mg/l	0.01	--	--	<0.05	<0.05	<0.002	0.003	0.002	--	<0.05	0.003	0.015	0.0003	0.0004
Magnesium, Dissolved	mg/l	--	--	--	--	--	43	--	47	--	67	55.8	63.8	60.1	51
Manganese, Dissolved	mg/l	--	0.05	--	0.07	<0.05	<0.01	0.02	0.02	--	0.12	0.27	0.27	147	0.21
Mercury, Dissolved	mg/l	0.001	--	--	<0.001	<0.001	--	<0.001	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--	--	--	<0.01	--	0.01	--	<0.01	--	--	--	--
Nickel, Dissolved	mg/l	--	--	--	--	--	<0.01	--	0.01	--	<0.01	<0.02	<0.02	<0.02	<0.02
Potassium, Dissolved	mg/l	--	--	--	--	--	5	--	6	--	6	6.04	6.15	9	7.7
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	--	--	--	4.4	--	4.4	--	7.6	--	--	--	--
Silver, Dissolved	mg/l	--	--	--	--	--	<0.01	--	0.01	--	<0.01	<0.01	<0.02	<0.02	<0.01
Sodium, Dissolved	mg/l	--	200 (8)	--	--	--	12	--	9	--	33	36.3	40.5	37.8	28.5
Strontium, Dissolved	mg/l	--	--	--	--	--	4.92	--	6.42	--	5.27	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	15	--	21	--	7	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	<0.01	--	<0.05	--	<0.05	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	<0.05	--	<0.05	--	<0.05	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	<0.01	--	<0.01	--	<0.01	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	--	--	--	<0.01	--	<0.01	--	<0.01	--	--	--	--
Zinc, Dissolved	mg/l	--	5	--	0.04	0.05	<0.01	0.01	<0.01	--	<0.01	--	--	--	--
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.5	7.4	7.6	--	--	--	--	--	7.59	7.52	7.2	6.85
Temperature (Field)	deg c	--	15 (7)	--	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-4 01-Sep-1995	BR-4 01-Jun-1997	BR-4 01-Aug-1997	BR-4 22-Nov-1998	BR-4 15-Jul-1999	BR-4 16-Oct-1999	BR-4 01-Jul-2000	BR-4 01-Oct-2000	BR-4 14-Oct-2000	BR-4 07-Sep-2001	BR-4 07-Nov-2001	BR-4 13-Jun-13
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	496	498	510	520	501	474	485	--	485	480	465	--
Ammonia Nitrogen	mg/l	--	--	1.11	3.22	4	1.76	1.81	0.72	1.36	--	1.11	0.87	0.69	--
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	56	71	75	76	65	70	74	--	67	71	65	--
Conductivity	uS/cm	--	--	1062	1087	1143	1113	943	1030	1090	--	922	1070	1060	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	496	527	--
Nitrate	mg/l	-- (11)	--	0.12	0.44	<0.1	-- (12)	0.12	<0.01	<0.1	--	<0.1	<0.1	<0.1	--
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	1.6	--	1.54	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	<0.03	<0.03	<0.03	-- (12)	<0.03	<0.03	<0.03	--	<0.03	--	--	--
Phosphorus	mg/l	--	--	--	--	--	--	--	--	1	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.1	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--												--
Sulfate	mg/l	--	500 (6)	20	19	23	30	30	36	33	--	31	37	32	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	636	672	688	672	656	660	680	--	600	668	688	--
Total Organic Carbon	mg/l	--	--	5.8	11.5	24.5	17	14.7	17.2	9.1	--	6.4	--	--	--
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.03	0.05	0.06	0.05	<0.03	0.04	<0.05	--	<0.05	0.08	<0.05	--
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.99	3.09	5.9	4.5	3.24	2.59	1.3	--	0.82	2.2	0.65	--
Beryllium, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	-- (12)	<0.01	<0.01	<0.002	--	<0.002	<0.002	<0.002	--
Boron, Dissolved	mg/l	5	--	0.24	0.22	0.2	0.21	0.24	0.26	0.23	--	0.23	0.24	0.16	--
Cadmium, Dissolved	mg/l	0.005	--	<0.005	<0.005	<0.005	-- (12)	<0.005	<0.01	<0.005	--	<0.0001	<0.0001	<0.0001	--
Calcium, Dissolved	mg/l	--	--	139	123	122	150	143	132	134	--	135	121	125	--
Chromium, Dissolved	mg/l	0.05	--	<0.01	<0.01	<0.01	-- (12)	<0.01	<0.01	<0.01	--	<0.01	0.012	0.006	--
Cobalt, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	-- (12)	<0.01	<0.01	<0.01	--	0.0022	0.0004	0.0018	--
Copper, Dissolved	mg/l	--	1	<0.005	0.012	0.0008	-- (12)	<0.005	<0.01	<0.01	--	0.001	<0.001	0.001	--
Iron, Dissolved	mg/l	--	0.3	5.01	10.7	17.6	16.1	9.87	10.5	12.5	--	1.51	24.1	0.16	--
Lead, Dissolved	mg/l	0.01	--	<0.002	<0.002	<0.002	-- (12)	<0.002	<0.002	<0.001	--	<0.001	<0.001	<0.001	--
Magnesium, Dissolved	mg/l	--	--	51	50	51	57	53	48	--	--	49	47	52	--
Manganese, Dissolved	mg/l	--	0.05	0.08	0.1	0.06	0.01	0.03	0.04	0.09	--	0.07	0.07	0.06	--
Mercury, Dissolved	mg/l	0.001	--	<0.0002	<0.0002	0.0002	-- (12)	<0.0002	<0.0002	<0.0001	--	<0.0001	--	--	--
Molybdenum, Dissolved	mg/l	--	--	<0.01	<0.03	<0.03	-- (12)	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	--
Nickel, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	-- (12)	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	--
Potassium, Dissolved	mg/l	--	--	6	7	9	6	7	7	7	--	6	7	7	--
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	7.5	6.6	6.7	6.8	6.2	6	6.84	--	6.74	7.31	5.44	--
Silver, Dissolved	mg/l	--	--	<0.01	<0.007	<0.01	-- (12)	<0.01	<0.01	<0.01	--	<0.0001	<0.0001	<0.0001	--
Sodium, Dissolved	mg/l	--	200 (9)	21	27	35	28	33	29	35	--	35	28	23	--
Strontium, Dissolved	mg/l	--	--	--	5.15	5.4	6.09	6.05	5.65	7.62	--	5.36	8.76	4.62	--
Sulfur	mg/l	--	--	8	6	7	11	11	11	12	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.05	<0.2	<0.2	-- (12)	<0.2	<0.2	<0.2	--	<0.001	<0.001	<0.001	--
Tin, Dissolved	mg/l	--	--	<0.05	<0.05	<0.05	-- (12)	<0.05	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	-- (12)	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	--
Vanadium, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	-- (12)	<0.01	<0.01	<0.01	--	<0.001	0.022	0.002	--
Zinc, Dissolved	mg/l	--	5	<0.01	0.01	<0.01	-- (12)	<0.01	0.06	<0.01	--	<0.01	0.01	<0.01	--
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.58	7.6	7.05	7.49	6.76	7.25	6.91	--	7.41	7.47	7.37	--
Temperature (Field)	deg c	--	15 (7)	--	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-5 01-Feb-1993	BR-5 01-Sep-1993	BR-5 01-Nov-1993	BR-5 01-Aug-1994	BR-5 01-Dec-1994	BR-5 01-May-1995	BR-5 01-Sep-1995	BR-5 01-Apr-1996	BR-5 01-Sep-1996	BR-5 01-Jun-1997	BR-5 01-Aug-1997	BR-5 15-Jul-1999
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	240	302	289	282	312	400	483	454	464	464	442	444
Ammonia Nitrogen	mg/l	--	--	--	0.24	<0.1	<0.1	<0.1	0.63	2.19	2.2	2.74	2.37	1.4	2.73
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	706	--	730	--	--	--	--	--	--	--
Chloride	mg/l	--	250	28	34	26.6	39.5	47	43	56	58	58	56	51	51
Conductivity	uS/cm	--	--	--	645	--	653	--	898	1074	1040	1025	1053	961	866
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate	mg/l	-- (11)	--	--	0.4	0.95	0.6	0.36	<0.1	<0.01	<0.1	<0.1	<0.01	<0.1	<0.1
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	0.93	0.37	<0.1	0.75	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	<0.1	<0.1	<0.1	--	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Phosphorus	mg/l	--	--	--	--	--	--	<0.1	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	0.207	<0.1	<0.1	--	<0.1	<0.1	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 (6)	38	36.9	76.7	47.5	36.9	32	35	43	34	42	44	43
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	360	432	408	400	464	536	644	628	624	660	584	524
Total Organic Carbon	mg/l	--	--	--	2.2	2.07	1.9	3.2	6.5	10.4	9.8	10	9.6	5.7	7.3
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	--	--	--	--	--	<0.03	0.04	0.06	0.29	0.03	<0.03	<0.03
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	--	--	--	--	0.39	0.55	0.49	0.39	0.47	0.37	0.4
Beryllium, Dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
Boron, Dissolved	mg/l	5	--	--	0.2	0.26	0.23	0.26	0.26	0.29	0.29	0.24	0.27	0.17	0.24
Cadmium, Dissolved	mg/l	0.005	--	--	0.11	<0.01	<0.0001	<0.0001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Calcium, Dissolved	mg/l	--	--	--	59	70	58	52.8	100	116	108	107	105	107	118
Chromium, Dissolved	mg/l	0.05	--	--	0.01	0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt, Dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
Copper, Dissolved	mg/l	--	1	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	0.008	0.015	0.012	<0.005	<0.005
Iron, Dissolved	mg/l	--	0.3	--	1.82	1.1	0.39	2.86	0.89	3.72	1.44	2.59	1.87	1.59	3.17
Lead, Dissolved	mg/l	0.01	--	--	0.003	0.003	0.0009	0.0002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002
Magnesium, Dissolved	mg/l	--	--	--	40.8	46.8	37.7	32	45	35	38	44	36	37	39
Manganese, Dissolved	mg/l	--	0.05	--	0.026	<0.01	<0.01	0.022	0.09	0.09	0.12	0.07	0.11	0.11	0.12
Mercury, Dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum, Dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	<0.01	<0.03	<0.03	<0.03	<0.01
Nickel, Dissolved	mg/l	--	--	--	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Potassium, Dissolved	mg/l	--	--	--	7.6	6.79	7.4	3.7	6	7	7	8	7	6	7
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	6.7	<0.01	6.8	5.4	5.9	5.4	6.4
Silver, Dissolved	mg/l	--	--	--	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.0012	<0.01	<0.01	<0.01
Sodium, Dissolved	mg/l	--	200 (9)	--	11.5	0.01	10.4	8.9	23	64	61	59	56	44	54
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	8.04	9.54	9.04	7.27	7.55	5.73	8
Sulfur	mg/l	--	--	--	--	--	--	--	13	11	14	11	13	14	13
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2	<0.2
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	<0.05	--	<0.05	0.05	<0.05	<0.05	<0.05
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
Vanadium, Dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc, Dissolved	mg/l	--	5	--	--	--	--	--	<0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	--	7.66	8.22	8.1	7.42	7.52	7.54	7.4	7.44	7.61	7.24	6.87
Temperature (Field)	deg c	--	15 (7)	--	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-5 16-Oct-1999											
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	438											
Ammonia Nitrogen	mg/l	--	--	2.32											
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--											
Chloride	mg/l	--	250	51											
Conductivity	uS/cm	--	--	956											
Dissolved Organic Carbon	mg/l	--	5	--											
Hardness, Calcium Carbonate	mg/l	--	--	--											
Nitrate	mg/l	-- [11]	--	<0.01											
Nitrite	mg/l	-- [13]	--	--											
Nitrogen	mg/l	--	--	--											
Nitrogen, Total Kjeldahl	mg/l	--	--	--											
Phosphate	mg/l	--	--	<0.03											
Phosphorus	mg/l	--	--	--											
Phosphorus (dissolved reactive)	mg/l	--	--	--											
Silica	mg/l	--	--	--											
Sulfate	mg/l	--	500 [6]	44											
Tannin & Lignin	mg/l	--	--	--											
Total Dissolved Solids	mg/l	--	500	576											
Total Organic Carbon	mg/l	--	--	9											
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--											
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.03											
Arsenic, Dissolved	mg/l	0.025	--	--											
Barium, Dissolved	mg/l	1	--	0.44											
Beryllium, Dissolved	mg/l	--	--	<0.01											
Boron, Dissolved	mg/l	5	--	0.34											
Cadmium, Dissolved	mg/l	0.005	--	<0.01											
Calcium, Dissolved	mg/l	--	--	111											
Chromium, Dissolved	mg/l	0.05	--	<0.01											
Cobalt, Dissolved	mg/l	--	--	<0.01											
Copper, Dissolved	mg/l	--	1	<0.01											
Iron, Dissolved	mg/l	--	0.3	2.91											
Lead, Dissolved	mg/l	0.01	--	<0.002											
Magnesium, Dissolved	mg/l	--	--	37											
Manganese, Dissolved	mg/l	--	0.05	0.08											
Mercury, Dissolved	mg/l	0.001	--	<0.0002											
Molybdenum, Dissolved	mg/l	--	--	<0.01											
Nickel, Dissolved	mg/l	--	--	<0.01											
Potassium, Dissolved	mg/l	--	--	6											
Selenium, Dissolved	mg/l	0.01	--	--											
Silicon, Dissolved	mg/l	--	--	6											
Silver, Dissolved	mg/l	--	--	0.01											
Sodium, Dissolved	mg/l	--	200 [9]	48											
Strontium, Dissolved	mg/l	--	--	7.75											
Sulfur	mg/l	--	--	13											
Thallium, Dissolved	mg/l	--	--	<0.2											
Tin, Dissolved	mg/l	--	--	--											
Titanium, Dissolved	mg/l	--	--	<0.01											
Vanadium, Dissolved	mg/l	--	--	<0.01											
Zinc, Dissolved	mg/l	--	5	0.23											
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--											
pH (Field)	-	--	--	7.4											
Temperature (Field)	deg c	--	15 [7]	--											

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-5D 01-Jul-2000	BR-5D 01-Oct-2000	BR-5D 14-Oct-2000	BR-5D 07-Sep-2001	BR-5D 06-Nov-2001	BR-5D 28-May-2002	BR-5D 02-Oct-2002	BR-5D 03-May-2003	BR-5D 03-Nov-2003	BR-5D 04-May-2004	BR-5D 04-Oct-2004	BR-5D 10-Jun-2005
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	453	--	445	450	433	466	460	458	434	445	429	441
Ammonia Nitrogen	mg/l	--	--	2.51	--	2.77	1.82	2.15	3.27	2.69	2.98	2.93	3.32	1.09	2.73
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	60	--	53	57	19	57	59	58	52	58	58	57
Conductivity	uS/cm	--	--	1020	--	856	1010	975	1110	1070	1060	1000	995	1030	1250
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	407	404	435.8	457	--	--	--	--	427.6
Nitrate	mg/l	-- [11]	--	<0.1	--	<0.1	<0.1	0.19	<0.1	1.13	<0.1	0.17	<0.1	2.46	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	4.74	--	2.77	--	--	4.32	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	4.85	1.55	--
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	--	--	0.37	0.22	0.07	0.26	--
Phosphorus	mg/l	--	--	0.12	--	--	--	--	<0.001	--	<0.005	--	0.03	--	0.03
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.13	0.5	--	--	--
Sulfate	mg/l	--	500 [6]	46	--	43	46	52	46	41	41	43	46	47	47
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	596	--	568	656	634	722	696	633	650	647	670	546
Total Organic Carbon	mg/l	--	--	6.5	--	6.2	--	--	0.16	--	7	3.2	5.9	7.4	--
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	3.72	3.26	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.05	--	0.07	<0.05	<0.05	<0.05	<0.01	0.02	<0.01	--	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.39	--	0.37	0.43	0.38	4.34	0.44	0.38	0.38	--	0.47	0.40
Beryllium, Dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	--	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.24	--	0.23	0.27	0.24	2.63	0.27	0.27	0.25	0.28	0.31	0.26
Cadmium, Dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	109	--	120	105	104	112	117	112	111	111	94	112
Chromium, Dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.006	<0.001	0.001	<0.001	0.014	0.001	0.002	0.001	0.004
Cobalt, Dissolved	mg/l	--	--	<0.01	--	0.006	0.0028	0.0034	0.0047	0.0035	0.0044	0.0043	--	0.0026	0.0042
Copper, Dissolved	mg/l	--	1	<0.01	--	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	--
Iron, Dissolved	mg/l	--	0.3	1.77	--	1.86	4.59	5.94	15.7	7.47	3.12	1.99	2.2	5.47	1.29
Lead, Dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	37	--	39	35	35	38	40	40	38	37	34	36
Manganese, Dissolved	mg/l	--	0.05	0.14	--	0.15	0.13	0.12	1.23	0.133	0.148	0.143	0.13	0.09	--
Mercury, Dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	0.02	<0.005	<0.005	<0.005	--	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	0.007	0.008	0.006	0.008
Potassium, Dissolved	mg/l	--	--	7	--	6	7	7	7	8	8	9	8	8	7
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	<0.001
Silicon, Dissolved	mg/l	--	--	6.74	--	7.18	6.87	6.66	57.2	5.6	6.4	--	--	8	--
Silver, Dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [9]	49	--	45	52	47	53	56	54	48	54	50	47
Strontium, Dissolved	mg/l	--	--	10.5	--	7.2	12.6	6.83	109	12.7	10.4	--	--	7.97	--
Sulfur	mg/l	--	--	16	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	<0.001	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	--	<0.01	--
Vanadium, Dissolved	mg/l	--	--	<0.01	--	<0.001	0.002	<0.001	0.03	<0.005	--	--	--	0.002	0.006
Zinc, Dissolved	mg/l	--	5	<0.01	--	<0.01	<0.01	<0.01	<0.03	<0.005	0.005	--	--	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.17	--	7.53	7.42	7.72	7.72	7.72	7.57	7.68	7.02	7.36	6.9
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	--	--	--	16.4

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-5D 29-Oct-2005	BR-5D 12-Apr-2006	BR-5D 25-Nov-2006	BR-5D 25-Apr-2007	BR-5D 04-Dec-2007	BR-5D 03-May-2008	BR-5D 27-Nov-2008	BR-5D 29-Apr-2009	BR-5D 29-Nov-2009	BR-5D 19-May-2010	BR-5D 29-Nov-2010	BR-5D 11-May-2011
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	410	440	423	418	410	406	412	407	438	354	465	436
Ammonia Nitrogen	mg/l	--	--	0.05	2.81	1.41	1.4	1.62	2.56	1.58	1.90	0.13	0.62	1.56	1.89
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	18	53	50	51	51	52	49	44	30	38	56	51
Conductivity	uS/cm	--	--	1240	1095	685	915	700	605	615	948	941	840	1040	954
Dissolved Organic Carbon	mg/l	--	5	--	6	5.7	5.7	4.6	4.8	3.8	4.4	3.3	3.5	4.4	5.1
Hardness, Calcium Carbonate	mg/l	--	--	--	438.3	421.7	449	406	410	430	410	435	432	502	410
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.07	0.07	0.13	0.2	0.04	0.07	0.02	0.02	0.02	0.03	0.01	0.03
Phosphorus (dissolved reactive)	mg/l	--	--	--	0.09	0.13	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	78	47	42	45	49	47	48	46	51	47	38	38
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	806	650	647	647	626	631	631	616	612	546	676	620
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	0.43	0.30	0.31	0.33	0.40	0.35	0.34	0.15	0.18	0.29	0.32
Beryllium, Dissolved	mg/l	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005
Boron, Dissolved	mg/l	5	--	0.17	0.27	0.2	0.24	0.21	0.28	0.22	0.22	0.15	0.13	0.22	0.18
Cadmium, Dissolved	mg/l	0.005	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	--	113	108	117	105	105	111	105	113	112	135	105
Chromium, Dissolved	mg/l	0.05	--	--	0.002	0.002	0.002	0.008	0.003	0.002	0.002	0.002	<0.001	<0.001	0.002
Cobalt, Dissolved	mg/l	--	--	--	0.0036	0.0039	0.0059	0.0039	0.0034	0.0036	0.0028	0.0014	0.0016	0.0034	0.0034
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	0.23	2.23	2.56	4.49	1.98	3.06	2.75	2.55	0.54	1.22	0.58	1.08
Lead, Dissolved	mg/l	0.01	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	--	38	37	38	35	36	37	36	37	37	40	36
Manganese, Dissolved	mg/l	--	0.05	--	0.12	0.13	0.15	0.17	0.12	0.15	0.1	0.05	0.07	0.1	0.09
Mercury, Dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.005	0.008	0.006	<0.005	0.01	0.005	0.008	<0.005	0.008	0.005	0.007	0.006
Potassium, Dissolved	mg/l	--	--	--	7	7	6	6	7	6	6	3	4	6	6
Selenium, Dissolved	mg/l	0.01	--	--	<0.001	0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [9]	--	47	41	42	37	41	40	37	19	27	45	39
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	--	0.001	<0.001	0.004	0.003	0.004	0.005	0.005	0.006	<0.001	0.002	0.003
Zinc, Dissolved	mg/l	--	5	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	655	680	870	890	840
pH (Field)	-	--	--	7	7.1	7.4	7.2	7.3	7.2	7.3	7.4	7.5	7.8	7.6	7.6
Temperature (Field)	deg c	--	15 [7]	11	6	6	5	6	6	6	9	6	12	9	10

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-5D 29-Nov-2011	BR-5D 20-May-2012	BR-5D 13-Nov-2012	BR-5D 14-Jun-13	BR-5D 28-Oct-13							
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	426	423	443	410	415							
Ammonia Nitrogen	mg/l	--	--	1.19	1.96	0.41	1.51	0.87							
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--							
Chloride	mg/l	--	250	46	54	44	56	49							
Conductivity	uS/cm	--	--	958	982	963	984	975							
Dissolved Organic Carbon	mg/l	--	5	3.2	4.3	3.2	4.4	3.7							
Hardness, Calcium Carbonate	mg/l	--	--	401	316	438	447	443							
Nitrate	mg/l	-- [11]	--	--	--	--	--	--							
Nitrite	mg/l	-- [13]	--	--	--	--	--	--							
Nitrogen	mg/l	--	--	--	--	--	--	--							
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	1.99	0.89							
Phosphate	mg/l	--	--	--	--	--	--	--							
Phosphorus	mg/l	--	--	0.01	<0.01	0.01	<0.01	0.01							
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	0.02							
Silica	mg/l	--	--	--	--	--	--	--							
Sulfate	mg/l	--	500 [6]	42	44	46	53	45							
Tannin & Lignin	mg/l	--	--	--	--	--	--	--							
Total Dissolved Solids	mg/l	--	500	623	638	626	640	634							
Total Organic Carbon	mg/l	--	--	--	--	--	--	--							
pH		--	--					7.9							
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--							
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01							
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--							
Barium, Dissolved	mg/l	1	--	0.27	0.34	0.19	0.35	0.28							
Beryllium, Dissolved	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005							
Boron, Dissolved	mg/l	5	--	0.25	0.17	0.18	0.17	0.19							
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001							
Calcium, Dissolved	mg/l	--	--	106	82	119	118	113							
Chromium, Dissolved	mg/l	0.05	--	0.001	0.003	0.002	0.003	0.002							
Cobalt, Dissolved	mg/l	--	--	0.0031	0.0035	0.0018	0.003	0.0029							
Copper, Dissolved	mg/l	--	1	--	--	--	<0.001	<0.001							
Iron, Dissolved	mg/l	--	0.3	1.49	1.19	1.07	0.92	0.87							
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001							
Magnesium, Dissolved	mg/l	--	--	33	27	39	37	39							
Manganese, Dissolved	mg/l	--	0.05	0.1	0.1	0.05	0.14	0.16							
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001							
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005							
Nickel, Dissolved	mg/l	--	--	0.006	0.005	0.006	0.006	0.006							
Potassium, Dissolved	mg/l	--	--	5	4	4	6	5							
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001							
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--							
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001							
Sodium, Dissolved	mg/l	--	200 [8]	35	30	27	42	34							
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--							
Sulfur	mg/l	--	--	--	--	--	--	--							
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--							
Tin, Dissolved	mg/l	--	--	--	--	--	--	--							
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--							
Vanadium, Dissolved	mg/l	--	--	0.003	0.003	0.003	0.004	<0.001							
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01							
Field Measurements															
Conductivity (Field)	uS/cm	--	--	830	960	950	963	887							
pH (Field)	-	--	--	7.4	7.3	7.4	7.5	8.0							
Temperature (Field)	deg c	--	15 [7]	8	10	8	10.7	9.3							

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-5S 01-Jul-2000	BR-5S 01-Oct-2000	BR-5S 14-Oct-2000	BR-5S 07-Sep-2001	BR-5S 06-Nov-2001	BR-5S 28-May-2002	BR-5S 02-Oct-2002	BR-5S 03-May-2003	BR-5S 04-May-2004	BR-5S 04-Oct-2004	BR-5S 10-Jun-2005	BR-5S 29-Oct-2005
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	368	--	440	445	445	386	409	--	400	403	405	422
Ammonia Nitrogen	mg/l	--	--	0.11	--	0.03	0.08	0.02	0.02	<0.02	--	0.09	--	0.1	1.78
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	14	--	13	20	20	13	14	--	18	18	17	42
Conductivity	uS/cm	--	--	772	--	748	884	889	844	853	--	834	886	840	885
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	447	464	407.9	460	--	--	--	444.5	--
Nitrate	mg/l	-- [11]	--	0.7	--	0.44	0.12	<0.1	0.18	0.74	--	1.6	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	2.72	--	0.16	--	--	0.31	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	0.22	--	--	--
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	<0.03	--	--	0.14	--	--	--
Phosphorus	mg/l	--	--	2.47	--	--	--	--	0.09	--	--	0.18	--	0.1	0.08
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	62	--	48	60	6	75	57	--	67	--	85	46
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	460	--	492	572	564	549	554	--	542	576	597	575
Total Organic Carbon	mg/l	--	--	4.7	--	3.2	--	--	2.5	--	--	2.1	2.5	--	--
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	0.2	--	<0.05	<0.05	<0.05	<0.05	<0.01	--	--	--	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.11	--	0.12	0.11	0.1	0.09	0.09	--	--	--	0.11	--
Beryllium, Dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	--	--	--	<0.001	--
Boron, Dissolved	mg/l	5	--	0.14	--	0.19	0.2	0.17	0.19	0.15	--	0.19	0.14	0.18	0.31
Cadmium, Dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001	--
Calcium, Dissolved	mg/l	--	--	90	--	118	107	110	91	105	--	98	--	104	--
Chromium, Dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.005	<0.001	<0.001	<0.001	--	0.001	--	0.002	--
Cobalt, Dissolved	mg/l	--	--	<0.01	--	0.0009	0.0004	0.0005	0.0002	0.0002	--	--	--	0.001	--
Copper, Dissolved	mg/l	--	1	<0.01	--	0.002	<0.001	<0.001	0.001	0.001	--	<0.001	--	--	--
Iron, Dissolved	mg/l	--	0.3	0.55	--	0.07	0.05	0.01	0.01	0.01	--	<0.01	--	0.26	7.15
Lead, Dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	--	<0.001	--
Magnesium, Dissolved	mg/l	--	--	41	--	52	51	46	44	48	--	48	--	45	--
Manganese, Dissolved	mg/l	--	0.05	0.12	--	0.03	0.06	0.06	<0.01	0.013	--	<0.01	--	--	--
Mercury, Dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	--	--	--	--	<0.0001	--
Molybdenum, Dissolved	mg/l	--	--	<0.01	--	<0.01	0.02	<0.01	<0.01	<0.005	--	--	--	<0.005	--
Nickel, Dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	0.02	<0.01	<0.005	--	<0.005	--	<0.005	0.007
Potassium, Dissolved	mg/l	--	--	3	--	4	4	4	4	4	--	5	--	4	--
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	0.002	--
Silicon, Dissolved	mg/l	--	--	3.86	--	4.85	4.45	4.52	3.31	3.2	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001	--
Sodium, Dissolved	mg/l	--	200 [8]	17	--	9	11	12	25	17	--	18	--	34	--
Strontium, Dissolved	mg/l	--	--	2.32	--	1.87	1.98	1.68	1.88	2.5	--	--	--	--	--
Sulfur	mg/l	--	--	23	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.01	--	<0.001	0.002	<0.001	<0.001	<0.005	--	--	--	0.005	--
Zinc, Dissolved	mg/l	--	5	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	--	--	--	<0.01	0.02
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.35	--	7.6	7.59	7.61	7.93	7.8	--	7.22	--	6.9	7
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	--	--	15.4	11

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-5S 12-Apr-2006	BR-5S 25-Nov-2006	BR-5S 25-Apr-2007	BR-5S 04-Dec-2007	BR-5S 03-May-2008	BR-5S 27-Nov-2008	BR-5S 29-Apr-2009	BR-5S 29-Nov-2009	BR-5S 19-May-2010	BR-5S 29-Nov-2010	BR-5S 11-May-2011	BR-5S 29-Nov-2011 [9]
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	404	381	397	399	397	397	395	429	399	423	419	403
Ammonia Nitrogen	mg/l	--	--	<0.02	<0.02	0.05	0.05	<0.02	<0.02	<0.02	1.20	0.06	<0.02	<0.02	<0.02
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	18	18	19	21	21	21	21	23	26	26	23	18
Conductivity	uS/cm	--	--	890	520	880	500	520	485	903	976	880	911	906	850
Dissolved Organic Carbon	mg/l	--	5	2.8	2.5	2.5	2.8	2.5	2.1	2.8	3.1	2.8	2.1	2.5	1.9
Hardness, Calcium Carbonate	mg/l	--	--	467.7	452	448	419	416	447	432	436	449	514	453	429
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.07	0.13	0.82	0.05	0.04	0.03	0.06	0.28	0.06	0.02	0.03	0.02
Phosphorus (dissolved reactive)	mg/l	--	--	0.1	0.08	0.04	0.03	<0.01	0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	67	84	79	70	76	63	83	87	99	62	80	54
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	549	575	585	577	592	567	587	634	572	592	589	552
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.1	0.1	0.1	0.11	0.1	0.11	0.09	0.09	0.09	0.1	0.09	0.1
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
Boron, Dissolved	mg/l	5	--	0.17	0.15	0.18	0.14	0.18	0.18	0.17	0.16	0.13	0.16	0.14	0.19
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	110	107	107	100	99	108	102	107	109	130	109	106
Chromium, Dissolved	mg/l	0.05	--	<0.001	<0.001	0.002	0.007	0.002	0.001	0.002	0.002	<0.001	0.001	0.001	0.001
Cobalt, Dissolved	mg/l	--	--	0.0004	0.0004	0.0041	0.0004	0.0003	0.0003	0.0003	0.0008	0.0004	0.0004	0.0006	0.0004
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	0.04	0.05	0.04	0.04	<0.03	<0.03	<0.03	0.03	0.05	0.07	0.48	<0.03
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	47	45	44	41	41	43	43	41	43	46	44	40
Manganese, Dissolved	mg/l	--	0.05	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	0.02	<0.01
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	4	4	4	4	4	4	4	4	4	4	4	3
Selenium, Dissolved	mg/l	0.01	--	<0.001	0.002	0.001	0.002	0.002	0.002	0.001	0.007	<0.001	<0.001	<0.001	<0.005
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [8]	19	25	20	21	20	21	31	37	41	22	43	21
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.001	0.001	0.004	0.003	0.003	0.004	0.005	0.005	<0.001	0.002	0.002	0.004
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	515	560	940	935	910	900
pH (Field)	-	--	--	7	7.3	7.2	7.4	7.5	7.4	7.5	7.4	7.7	7.6	7.5	7.5
Temperature (Field)	deg c	--	15 [7]	6	6	5	5	7	6	9	7	12	8	9	8

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-5S 20-May-2012	BR-5S 3-Nov-2012 (10	BR-5S 14-Jun-13	BR-5S 28-Oct-13								
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	411	435	390	366								
Ammonia Nitrogen	mg/l	--	--	0.06	0.04	<0.02	<0.02								
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--									
Chloride	mg/l	--	250	23	23	27	21								
Conductivity	uS/cm	--	--	896	902	918	787								
Dissolved Organic Carbon	mg/l	--	5	2.3	2.1	2.3	1.8								
Hardness, Calcium Carbonate	mg/l	--	--	327	443	433	424								
Nitrate	mg/l	-- (11)	--	--	--	--									
Nitrite	mg/l	-- (13)	--	--	--	--									
Nitrogen	mg/l	--	--	--	--	--									
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	0.12	<0.10								
Phosphate	mg/l	--	--	--	--	--									
Phosphorus	mg/l	--	--	0.03	0.02	0.02	0.05								
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	0.04								
Silica	mg/l	--	--	--	--	--									
Sulfate	mg/l	--	500 (6)	66	63	90	36								
Tannin & Lignin	mg/l	--	--	--	--	--									
Total Dissolved Solids	mg/l	--	500	582	586	597	512								
Total Organic Carbon	mg/l	--	--	--	--	--									
pH		--	--				7.9								
Turbidity	ntu	--	5 (14) (7)	--	--	--									
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	0.08	0.02								
Arsenic, Dissolved	mg/l	0.025	--	--	--	--									
Barium, Dissolved	mg/l	1	--	<0.01	0.09	0.08	0.08								
Beryllium, Dissolved	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005								
Boron, Dissolved	mg/l	5	--	<0.01	0.16	0.15	0.14								
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001								
Calcium, Dissolved	mg/l	--	--	78	108	104	104								
Chromium, Dissolved	mg/l	0.05	--	<0.001	0.001	0.002	0.001								
Cobalt, Dissolved	mg/l	--	--	<0.0002	0.0003	0.0128	0.0015								
Copper, Dissolved	mg/l	--	1	--	--	0.001	<0.001								
Iron, Dissolved	mg/l	--	0.3	0.38	<0.03	0.04	<0.03								
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001								
Magnesium, Dissolved	mg/l	--	--	32	42	42	40								
Manganese, Dissolved	mg/l	--	0.05	<0.01	<0.01	0.03	<0.01								
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001								
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005								
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005								
Potassium, Dissolved	mg/l	--	--	2	3	4	3								
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.01	<0.01	<0.01								
Silicon, Dissolved	mg/l	--	--	--	--	--	--								
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001								
Sodium, Dissolved	mg/l	--	200 (8)	21	27	42	15								
Strontium, Dissolved	mg/l	--	--	--	--	--	--								
Sulfur	mg/l	--	--	--	--	--	--								
Thallium, Dissolved	mg/l	--	--	--	--	--	--								
Tin, Dissolved	mg/l	--	--	--	--	--	--								
Titanium, Dissolved	mg/l	--	--	--	--	--	--								
Vanadium, Dissolved	mg/l	--	--	<0.001	0.002	0.002	<0.001								
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01								
Field Measurements															
Conductivity (Field)	uS/cm	--	--	880	865	878	782								
pH (Field)	-	--	--	7.4	7.5	7.9	7.7								
Temperature (Field)	deg c	--	15 (7)	10	8	11.1	9.1								

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-6 01-Feb-1993	BR-6 01-Sep-1993	BR-6 01-Nov-1993	BR-6 01-Aug-1994	BR-6 01-Dec-1994	BR-6 01-May-1995	BR-6 01-Sep-1995	BR-6 01-Apr-1996	BR-6 01-Sep-1996	BR-6 01-Jun-1997	BR-6 01-Aug-1997	BR-6 22-Nov-1998
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	464	476	462	391	439	452	455	404	437	405	409	452
Ammonia Nitrogen	mg/l	--	--	--	<0.1	4.53	<0.1	0.5	6	6.03	4.7	4.91	3.89	4	5.38
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	26	46	56.7	37	35	73	71	75	73	75	75	78
Conductivity	uS/cm	--	--	--	904	1115	771	943	1130	1124	1060	1090	1066	1074	1090
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate	mg/l	-- [11]	--	--	<0.1	0.46	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	-- (12)
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	<0.1	4.95	<0.1	0.67	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	<0.1	<0.1	<0.1	--	0.3	0.03	<0.03	<0.03	<0.03	<0.03	0.03
Phosphorus	mg/l	--	--	--	--	--	--	<0.1	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	0.279	0.11	<0.1	--	<0.1	<0.1	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	34	16.7	81	25.3	26.3	51	53	60	54	57	5	48
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	540	588	600	440	564	656	668	636	660	644	644	640
Total Organic Carbon	mg/l	--	--	--	8.8	8.9	5.6	7.3	9.3	9	6.9	8.2	5.7	5.9	8.2
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	--	--	--	--	--	<0.03	<0.03	<0.03	0.25	0.04	<0.03	-- (12)
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	--	--	--	--	0.44	0.4	0.36	0.36	0.33	0.31	0.37
Beryllium, Dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	-- (12)
Boron, Dissolved	mg/l	5	--	--	0.26	0.33	0.37	0.21	0.48	0.41	0.44	0.41	0.4	0.38	0.38
Cadmium, Dissolved	mg/l	0.005	--	--	0.00009	<0.01	<0.0001	<0.0001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-- (12)
Calcium, Dissolved	mg/l	--	--	--	110	107	72	90.5	98	88	84	91	81	89	101
Chromium, Dissolved	mg/l	0.05	--	--	<0.01	0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	-- (12)
Cobalt, Dissolved	mg/l	--	--	--	--	--	--	--	0.01	0.02	0.02	0.03	0.01	<0.01	0.01
Copper, Dissolved	mg/l	--	1	--	<0.01	<0.01	0.026	<0.01	<0.005	<0.005	0.008	0.005	0.017	0.01	-- (12)
Iron, Dissolved	mg/l	--	0.3	--	1.446	4.9	0.6	1.6	5.03	4.1	4.03	4.14	3.18	2.67	4.13
Lead, Dissolved	mg/l	0.01	--	--	0.0023	0.009	0.0002	0.0003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-- (12)
Magnesium, Dissolved	mg/l	--	--	--	53.9	42.2	46.2	41.8	37	35	36	40	34	37	42
Manganese, Dissolved	mg/l	--	0.05	--	0.378	0.317	132	0.225	0.28	0.24	0.23	0.21	0.2	0.21	0.2
Mercury, Dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-- (12)
Molybdenum, Dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	<0.01	<0.03	<0.03	<0.03	-- (12)
Nickel, Dissolved	mg/l	--	--	--	0.031	0.028	<0.02	<0.02	0.02	<0.01	<0.01	0.02	0.02	0.02	-- (12)
Potassium, Dissolved	mg/l	--	--	--	3.89	10.8	6.8	6.8	12	11	14	11	10	12	10
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	7.3	6.7	6.1	5.7	5.2	5	6
Silver, Dissolved	mg/l	--	--	--	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.0012	<0.001	<0.01	-- (12)
Sodium, Dissolved	mg/l	--	200 [8]	--	19.5	75.6	12.9	25	75	77	83	86	79	92	88
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	9.45	8.32	8.49	8.06	7.44	6.41	10.6
Sulfur	mg/l	--	--	--	--	--	--	--	19	17	20	16	18	19	17
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	<0.2	<0.2	<0.2	<0.2	-- (12)
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	-- (12)
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-- (12)
Vanadium, Dissolved	mg/l	--	--	--	--	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-- (12)
Zinc, Dissolved	mg/l	--	5	--	--	--	--	--	<0.01	<0.01	0.01	0.02	0.01	<0.01	-- (12)
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	--	7.71	8.17	8.1	7.24	7.51	7.35	7.37	7.36	7.33	7.3	7.62
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-6 15-Jul-1999	BR-6 16-Oct-1999										
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	453	476										
Ammonia Nitrogen	mg/l	--	--	4.8	5.26										
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--										
Chloride	mg/l	--	250	73	75										
Conductivity	uS/cm	--	--	979	1129										
Dissolved Organic Carbon	mg/l	--	5	--	--										
Hardness, Calcium Carbonate	mg/l	--	--	--	--										
Nitrate	mg/l	-- [11]	--	0.1	<0.01										
Nitrite	mg/l	-- [13]	--	--	--										
Nitrogen	mg/l	--	--	--	--										
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--										
Phosphate	mg/l	--	--	<0.03	<0.03										
Phosphorus	mg/l	--	--	--	--										
Phosphorus (dissolved reactive)	mg/l	--	--	--	--										
Silica	mg/l	--	--	--	--										
Sulfate	mg/l	--	500 [6]	51	50										
Tannin & Lignin	mg/l	--	--	--	--										
Total Dissolved Solids	mg/l	--	500	596	680										
Total Organic Carbon	mg/l	--	--	5.4	9.1										
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--										
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.03	<0.03										
Arsenic, Dissolved	mg/l	0.025	--	--	--										
Barium, Dissolved	mg/l	1	--	0.35	0.73										
Beryllium, Dissolved	mg/l	--	--	<0.01	<0.01										
Boron, Dissolved	mg/l	5	--	0.39	0.5										
Cadmium, Dissolved	mg/l	0.005	--	<0.005	<0.01										
Calcium, Dissolved	mg/l	--	--	101	99										
Chromium, Dissolved	mg/l	0.05	--	<0.01	<0.01										
Cobalt, Dissolved	mg/l	--	--	<0.01	<0.01										
Copper, Dissolved	mg/l	--	1	<0.005	<0.01										
Iron, Dissolved	mg/l	--	0.3	3.72	4.37										
Lead, Dissolved	mg/l	0.01	--	<0.002	<0.002										
Magnesium, Dissolved	mg/l	--	--	41	39										
Manganese, Dissolved	mg/l	--	0.05	0.22	0.19										
Mercury, Dissolved	mg/l	0.001	--	<0.0002	<0.0002										
Molybdenum, Dissolved	mg/l	--	--	<0.01	<0.01										
Nickel, Dissolved	mg/l	--	--	<0.01	<0.01										
Potassium, Dissolved	mg/l	--	--	11	11										
Selenium, Dissolved	mg/l	0.01	--	--	--										
Silicon, Dissolved	mg/l	--	--	6.4	6.7										
Silver, Dissolved	mg/l	--	--	<0.01	0.01										
Sodium, Dissolved	mg/l	--	200 [8]	91	87										
Strontium, Dissolved	mg/l	--	--	9.13	10.1										
Sulfur	mg/l	--	--	17	16										
Thallium, Dissolved	mg/l	--	--	<0.2	<0.2										
Tin, Dissolved	mg/l	--	--	<0.05	--										
Titanium, Dissolved	mg/l	--	--	<0.01	<0.01										
Vanadium, Dissolved	mg/l	--	--	<0.01	<0.01										
Zinc, Dissolved	mg/l	--	5	<0.01	0.23										
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--										
pH (Field)	-	--	--	6.87	7.38										
Temperature (Field)	deg c	--	15 [7]	--	--										

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-6D 01-Jul-2000	BR-6D 01-Oct-2000	BR-6D 14-Oct-2000	BR-6D 07-Sep-2001	BR-6D 06-Nov-2001	BR-6D 28-May-2002	BR-6D 02-Oct-2002	BR-6D 03-May-2003	BR-6D 03-Nov-2003	BR-6D 04-May-2004	BR-6D 04-Oct-2004	BR-6D 12-Apr-2006
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	424	--	435	431	445	383	408	439	434	394	399	411
Ammonia Nitrogen	mg/l	--	--	4.52	--	5.24	0.51	1.9	3	3.68	4.18	3.75	3.02	3.4	2.94
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	98	--	84	20	72	90	93	93	85	99	89	96
Conductivity	uS/cm	--	--	1100	--	940	852	1120	1150	1130	1170	1140	1130	1100	1020
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	4.1
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	447	359	354.2	366	--	--	--	--	379.2
Nitrate	mg/l	-- (11)	--	<0.1	--	<0.1	<0.1	<0.1	0.36	<0.1	<0.1	<0.1	<0.1	<0.1	--
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	5.49	--	5.25	--	--	3.84	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	3.53	4.08	--
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	<0.03	--	0.16	0.1	0.18	0.22	--
Phosphorus	mg/l	--	--	0.24	--	--	--	--	0.22	--	<0.005	--	0.1	0.17	0.16
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.2	0.1	--	--	--
Sulfate	mg/l	--	500 (6)	61	--	56	66	49	70	57	56	53	62	53	59
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	620	--	576	564	644	748	735	761	741	735	715	715
Total Organic Carbon	mg/l	--	--	4.8	--	5.6	--	--	5	--	5.2	5	2.4	5.2	--
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	4.88	26.5	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.05	--	0.06	<0.05	<0.05	0.07	<0.01	<0.01	0.01	--	--	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.32	--	0.35	0.09	0.31	3.03	0.32	0.3	0.37	--	--	0.31
Beryllium, Dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	--	--	<0.001
Boron, Dissolved	mg/l	5	--	0.39	--	0.4	0.24	0.37	4.09	0.37	0.41	0.38	0.41	0.42	0.41
Cadmium, Dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	86	--	94	98	86	81	84	91	94	78	80	91
Chromium, Dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.005	0.001	<0.001	<0.001	0.013	0.002	0.002	0.002	0.003
Cobalt, Dissolved	mg/l	--	--	0.01	--	0.018	0.0032	0.0117	0.0077	0.0076	0.0074	0.0103	--	--	0.0056
Copper, Dissolved	mg/l	--	1	<0.01	--	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--
Iron, Dissolved	mg/l	--	0.3	3.85	--	3.72	0.37	3.96	33.5	3.75	4.05	3.39	3.33	4.25	3.52
Lead, Dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	38	--	38	49	35	37	38	41	39	35	34	37
Manganese, Dissolved	mg/l	--	0.05	0.24	--	0.23	0.15	0.21	1.48	0.174	0.177	0.203	0.16	0.22	0.16
Mercury, Dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	--	<0.01	0.02	<0.01	0.02	<0.005	<0.005	<0.005	--	--	<0.005
Nickel, Dissolved	mg/l	--	--	<0.01	--	0.02	<0.01	<0.01	<0.01	<0.005	<0.005	0.013	0.009	0.013	0.009
Potassium, Dissolved	mg/l	--	--	11	--	12	3	11	10	11	11	14	11	9	11
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	<0.001
Silicon, Dissolved	mg/l	--	--	6.46	--	6.98	3.38	6.73	50.7	5.1	6	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (9)	90	--	76	16	77	91	99	94	86	94	84	92
Strontium, Dissolved	mg/l	--	--	10.4	--	7.68	2.86	6.65	128	14.3	12.7	--	--	--	--
Sulfur	mg/l	--	--	20	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	--	<0.01	<0.01	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.01	--	<0.001	0.002	<0.001	<0.001	<0.005	--	--	--	--	0.002
Zinc, Dissolved	mg/l	--	5	<0.01	--	<0.01	<0.01	<0.01	0.06	<0.005	0.004	--	--	--	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.19	--	7.54	7.47	7.47	7.62	7.66	7.68	7.63	7.43	7.18	7
Temperature (Field)	deg c	--	15 (7)	--	--	--	--	--	--	--	--	--	--	--	6

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-6D 25-Nov-2006	BR-6D 25-Apr-2007	BR-6D 04-Dec-2007	BR-6D 03-May-2008	BR-6D 27-Nov-2008	BR-6D 28-Apr-2009	BR-6D 29-Nov-2009	BR-6D 19-May-2010	BR-6D 29-Nov-2010	BR-6D 11-May-2011	BR-6D 29-Nov-2011	BR-6D 20-May-2012
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	394	383	402	385	386	385	406	367	417	402	401	404
Ammonia Nitrogen	mg/l	--	--	2.44	2.18	2.82	2.23	2.32	1.91	2.38	1.59	2.28	2.00	2.38	2.51
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	93	91	91	95	90	89	84	92	90	90	95	92
Conductivity	uS/cm	--	--	895	895	930	900	805	1080	1100	1090	1100	1040	1120	1100
Dissolved Organic Carbon	mg/l	--	5	3.1	3.3	4.7	3.2	2.8	3	3.7	3.3	3.5	3.6	2.9	2.9
Hardness, Calcium Carbonate	mg/l	--	--	358.5	359	351	351	336	345	338	322	374	347	341	267
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.13	0.28	0.08	0.09	0.07	0.09	0.07	0.07	0.07	0.06	0.03	0.06
Phosphorus (dissolved reactive)	mg/l	--	--	0.07	0.07	<0.01	<0.01	<0.01	0.02	0.02	0.02	<0.01	<0.01	<0.01	0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	58	60	55	59	57	59	54	61	52	54	59	55
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	728	722	722	708	715	702	715	708	715	676	728	715
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.29	0.27	0.32	0.29	0.3	0.24	0.3	0.27	0.26	0.25	0.3	0.26
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005
Boron, Dissolved	mg/l	5	--	0.38	0.4	0.43	0.45	0.41	0.41	0.43	0.36	0.35	0.32	0.4	0.3
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	86	86	83	83	80	82	81	76	92	83	82	64
Chromium, Dissolved	mg/l	0.05	--	0.003	0.002	0.006	0.004	0.003	0.003	0.002	<0.001	0.002	0.002	0.002	0.003
Cobalt, Dissolved	mg/l	--	--	0.0041	0.0058	0.0077	0.0055	0.0039	0.0027	0.0045	0.0038	0.0041	0.0034	0.0064	0.004
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	3.64	3.77	3.69	3.01	3.21	2.64	3.22	2.5	2.71	2.65	2.81	2.36
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	35	35	35	35	33	34	33	32	35	34	33	26
Manganese, Dissolved	mg/l	--	0.05	0.15	0.18	0.21	0.23	0.15	0.12	0.14	0.15	0.15	0.16	0.21	0.16
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	0.006	0.007	0.01	0.006	0.008	<0.005	0.007	<0.005	0.005	<0.005	0.006	<0.005
Potassium, Dissolved	mg/l	--	--	11	10	10	10	9	9	9	9	11	10	9	7
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [8]	86	89	86	89	85	90	81	95	94	82	95	72
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	0.001	0.003	0.008	0.005	0.005	0.005	0.003	<0.001	0.002	0.003	0.003	0.003
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	1090	1010	1070	1010	1020	1005	1125
pH (Field)	-	--	--	7.2	7.2	7.3	7.2	7.3	7.9	8	7.7	7.6	7.8	7.6	7.2
Temperature (Field)	deg c	--	15 [7]	8	6	8	8	6	10	7	9.4	6.8	9	8	9

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-6D 13-Nov-2012	BR-6D 14-Jun-13	BR-6D 14-Jun-13 Duplicate	BR-6D 28-Oct-13								
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	435	387	384	Not								
Ammonia Nitrogen	mg/l	--	--	2.27	2.42	2.39	Sampled								
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--									
Chloride	mg/l	--	250	91	93	93									
Conductivity	uS/cm	--	--	1140	1080	1090									
Dissolved Organic Carbon	mg/l	--	5	3.8	<0.5	3.1									
Hardness, Calcium Carbonate	mg/l	--	--	365	352	350									
Nitrate	mg/l	-- (11)	--	--	--	--									
Nitrite	mg/l	-- (13)	--	--	--	--									
Nitrogen	mg/l	--	--	--	--	--									
Nitrogen, Total Kjeldahl	mg/l	--	--	--	2.51	2.56									
Phosphate	mg/l	--	--	--	--	--									
Phosphorus	mg/l	--	--	0.06	0.07	0.06									
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01									
Silica	mg/l	--	--	--	--	--									
Sulfate	mg/l	--	500 (6)	53	54	53									
Tannin & Lignin	mg/l	--	--	--	--	--									
Total Dissolved Solids	mg/l	--	500	741	702	708									
Total Organic Carbon	mg/l	--	--	--	--	--									
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--	--	--									
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01									
Arsenic, Dissolved	mg/l	0.025	--	--	--	--									
Barium, Dissolved	mg/l	1	--	0.29	0.27	0.27									
Beryllium, Dissolved	mg/l	--	--	<0.0005	<0.0005	<0.0005									
Boron, Dissolved	mg/l	5	--	0.38	0.3	0.31									
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001									
Calcium, Dissolved	mg/l	--	--	87	85	84									
Chromium, Dissolved	mg/l	0.05	--	0.002	0.003	0.003									
Cobalt, Dissolved	mg/l	--	--	0.0058	0.003	0.003									
Copper, Dissolved	mg/l	--	1	--	<0.001	<0.001									
Iron, Dissolved	mg/l	--	0.3	2.87	2.31	2.26									
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001									
Magnesium, Dissolved	mg/l	--	--	36	34	34									
Manganese, Dissolved	mg/l	--	0.05	0.22	0.13	0.13									
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001									
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005									
Nickel, Dissolved	mg/l	--	--	0.006	<0.005	<0.005									
Potassium, Dissolved	mg/l	--	--	9	10	10									
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001									
Silicon, Dissolved	mg/l	--	--	--	--	--									
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001									
Sodium, Dissolved	mg/l	--	200 (8)	98	88	88									
Strontium, Dissolved	mg/l	--	--	--	--	--									
Sulfur	mg/l	--	--	--	--	--									
Thallium, Dissolved	mg/l	--	--	--	--	--									
Tin, Dissolved	mg/l	--	--	--	--	--									
Titanium, Dissolved	mg/l	--	--	--	--	--									
Vanadium, Dissolved	mg/l	--	--	0.002	0.003	0.003									
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01									
Field Measurements															
Conductivity (Field)	uS/cm	--	--	1090	1061	--									
pH (Field)	-	--	--	7.3	7.6	--									
Temperature (Field)	deg c	--	15 (7)	8	11.8	--									

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-6S 01-Jul-2000	BR-6S 01-Oct-2000	BR-6S 14-Oct-2000	BR-6S 07-Sep-2001	BR-6S 06-Nov-2001	BR-6S 28-May-2002	BR-6S 02-Oct-2002	BR-6S 03-May-2003	BR-6S 03-Nov-2003	BR-6S 04-May-2004	BR-6S 04-Oct-2004	BR-6S 10-Jun-2005
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	436	--	448	445	427	409	413	407	413	393	401	398
Ammonia Nitrogen	mg/l	--	--	0.05	--	0.02	5.03	0.04	<0.02	<0.02	<0.02	<0.02	0.03	0.04	<0.02
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	31	--	26	31	36	29	22	25	32	31	24	25
Conductivity	uS/cm	--	--	878	--	780	1080	899	902	852	855	875	856	833	1200
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	369	503	449.1	455	--	--	--	--	431.1
Nitrate	mg/l	-- (11)	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	0.59	--	0.12	--	--	0.21	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	0.17	0.16	--
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	0.03	--	0.34	0.08	0.12	0.1	--
Phosphorus	mg/l	--	--	0.26	--	--	--	--	0.06	--	<0.005	--	0.06	0.06	0.01
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.09	0.03	--	--	--
Sulfate	mg/l	--	500 (6)	33	--	28	38	32	44	38	39	36	42	41	46
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	560	--	492	632	540	586	554	556	569	556	541	525
Total Organic Carbon	mg/l	--	--	5.6	--	4.5	--	--	3.2	--	5.3	3	2.4	3.7	--
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	0.09	0.24	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.05	--	<0.05	<0.05	<0.05	0.08	<0.01	0.02	<0.01	--	--	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.09	--	0.09	0.37	0.08	0.87	0.09	0.08	0.1	--	--	0.11
Beryllium, Dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	--	--	<0.001
Boron, Dissolved	mg/l	5	--	0.21	--	0.2	0.41	0.19	2.47	0.23	0.25	0.23	0.29	0.27	0.3
Cadmium, Dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	99	--	104	85	104	96	98	213	104	92	92	97
Chromium, Dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.006	0.001	0.001	<0.001	0.011	0.008	0.002	0.001	0.003
Cobalt, Dissolved	mg/l	--	--	<0.01	--	0.0064	0.0114	0.0036	0.0042	0.003	0.0034	0.0042	--	--	0.0027
Copper, Dissolved	mg/l	--	1	<0.01	--	0.002	<0.001	0.001	0.001	0.001	0.001	0.002	<0.001	0.001	--
Iron, Dissolved	mg/l	--	0.3	0.06	--	0.12	4.09	0.09	0.47	0.14	0.14	<0.01	0.03	0.03	<0.03
Lead, Dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	52	--	53	38	59	51	51	50	52	47	46	46
Manganese, Dissolved	mg/l	--	0.05	0.18	--	0.15	0.25	0.12	1.1	0.102	0.108	0.121	0.1	0.12	--
Mercury, Dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	0.02	<0.005	<0.005	<0.005	--	--	<0.005
Nickel, Dissolved	mg/l	--	--	<0.01	--	<0.01	0.01	<0.01	0.02	<0.005	<0.005	0.008	0.007	0.008	0.007
Potassium, Dissolved	mg/l	--	--	3	--	3	12	3	3	3	3	4	4	3	3
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	<0.001
Silicon, Dissolved	mg/l	--	--	3.34	--	3.65	6.95	3.29	26.9	2.6	3.1	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (9)	22	--	25	85	18	20	18	18	19	19	17	16
Strontium, Dissolved	mg/l	--	--	2.46	--	2.51	13.3	2.43	31.1	3.7	3.4	--	--	--	--
Sulfur	mg/l	--	--	12	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	--	<0.01	<0.01	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.01	--	<0.001	0.002	<0.001	<0.001	<0.005	--	--	--	--	0.005
Zinc, Dissolved	mg/l	--	5	<0.01	--	<0.01	<0.01	<0.01	0.02	<0.005	<0.005	--	--	--	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.16	--	7.6	7.36	7.59	7.74	7.72	7.63	7.68	7.34	7.22	6.5
Temperature (Field)	deg c	--	15 (7)	--	--	--	--	--	--	--	--	--	--	--	15.2

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-6S 29-Oct-2005	BR-6S 12-Apr-2006	BR-6S 25-Nov-2006	BR-6S 25-Apr-2007	BR-6S 04-Dec-2007	BR-6S 03-May-2008	BR-6S 27-Nov-2008	BR-6S 28-Apr-2009	BR-6S 29-Nov-2009	BR-6S 19-May-2010	BR-6S 29-Nov-2010	BR-6S 11-May-2011
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	409	394	398	375	398	399	396	414	413	351	421	441
Ammonia Nitrogen	mg/l	--	--	0.14	0.05	<0.02	0.02	0.05	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	24	24	24	28	25	28	28	42	30	38	31	45
Conductivity	uS/cm	--	--	1110	1100	1010	1010	990	815	710	933	903	846	902	951
Dissolved Organic Carbon	mg/l	--	5	--	2.6	2.4	2.7	3.8	2.6	2.2	3	2.7	2.7	2.4	3.4
Hardness, Calcium Carbonate	mg/l	--	--	--	436.1	422	430	411	438	432	468	458	446	489	509
Nitrate	mg/l	-- (11)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.03	0.04	0.05	0.05	0.05	0.03	0.01	0.02	<0.01	0.02	0.03	<0.01
Phosphorus (dissolved reactive)	mg/l	--	--	--	0.03	0.02	0.04	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 (6)	43	41	42	40	41	49	50	49	48	53	48	45
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	722	526	554	533	550	565	564	606	587	550	586	618
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	0.1	0.1	0.1	0.1	0.11	0.11	0.09	0.11	0.11	0.12	0.12
Beryllium, Dissolved	mg/l	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005
Boron, Dissolved	mg/l	5	--	0.28	0.29	0.29	0.3	0.3	0.35	0.34	0.41	0.37	0.31	0.32	0.38
Cadmium, Dissolved	mg/l	0.005	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	--	99	95	98	92	98	97	105	101	98	110	110
Chromium, Dissolved	mg/l	0.05	--	--	0.001	<0.001	0.002	0.003	0.002	0.002	0.004	0.001	<0.001	<0.001	0.002
Cobalt, Dissolved	mg/l	--	--	--	0.0017	0.0021	0.006	0.0228	0.0017	0.0048	0.0028	0.0026	0.0018	0.0018	0.0029
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	<0.03	<0.03	<0.03	<0.03	0.07	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, Dissolved	mg/l	0.01	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	--	46	45	45	44	47	46	50	50	49	52	57
Manganese, Dissolved	mg/l	--	0.05	--	0.06	0.07	0.08	0.42	0.07	0.14	0.09	0.09	0.06	0.06	0.08
Mercury, Dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	0.009	0.007	0.005	0.006	0.011	0.006	0.007	0.007	0.007	0.005	0.005	0.008
Potassium, Dissolved	mg/l	--	--	--	3	4	4	3	4	3	4	4	4	5	5
Selenium, Dissolved	mg/l	0.01	--	--	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (9)	--	18	18	17	16	18	16	19	16	16	17	19
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	--	0.002	0.001	0.005	0.007	0.004	0.005	0.006	0.002	<0.001	0.003	0.003
Zinc, Dissolved	mg/l	--	5	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	930	900	960	965	860
pH (Field)	-	--	--	6.7	6.8	6.7	6.7	6.8	6.8	6.9	7.7	7.5	7.7	7.6	7.7
Temperature (Field)	deg c	--	15 (7)	12	6	5	5	5	8	6	10	3	9.6	7.4	11

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-6S 29-Nov-2011	BR-6S 20-May-2012	BR-6S 13-Nov-2012	BR-6S 14-Jun-13	BR-6S 28-Oct-13							
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	410	411	432	420								
Ammonia Nitrogen	mg/l	--	--	0.04	0.07	0.06	<0.02								
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--								
Chloride	mg/l	--	250	24	28	30	38								
Conductivity	uS/cm	--	--	858	866	892	927								
Dissolved Organic Carbon	mg/l	--	5	2.1	2.2	2.3	2.9								
Hardness, Calcium Carbonate	mg/l	--	--	437	338	427	477								
Nitrate	mg/l	-- [11]	--	--	--	--	--								
Nitrite	mg/l	-- [13]	--	--	--	--	--								
Nitrogen	mg/l	--	--	--	--	--	--								
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	0.12								
Phosphate	mg/l	--	--	--	--	--	--								
Phosphorus	mg/l	--	--	<0.01	<0.01	0.02	<0.01								
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01								
Silica	mg/l	--	--	--	--	--	--								
Sulfate	mg/l	--	500 [6]	42	45	44	48								
Tannin & Lignin	mg/l	--	--	--	--	--	--								
Total Dissolved Solids	mg/l	--	500	558	563	580	603	Not							
Total Organic Carbon	mg/l	--	--	--	--	--	--	sampled							
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--								
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01								
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--								
Barium, Dissolved	mg/l	1	--	0.13	0.12	0.13	0.13								
Beryllium, Dissolved	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005								
Boron, Dissolved	mg/l	5	--	0.34	0.28	0.32	0.35								
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001								
Calcium, Dissolved	mg/l	--	--	96	71	98	102								
Chromium, Dissolved	mg/l	0.05	--	0.001	0.003	0.001	0.003								
Cobalt, Dissolved	mg/l	--	--	0.0024	0.002	0.0026	0.0027								
Copper, Dissolved	mg/l	--	1	--	--	--	<0.001								
Iron, Dissolved	mg/l	--	0.3	0.04	<0.03	0.15	<0.03								
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001								
Magnesium, Dissolved	mg/l	--	--	48	39	51	54								
Manganese, Dissolved	mg/l	--	0.05	0.07	0.07	0.07	0.08								
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001								
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005								
Nickel, Dissolved	mg/l	--	--	0.005	0.005	0.006	0.006								
Potassium, Dissolved	mg/l	--	--	5	4	5	5								
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001								
Silicon, Dissolved	mg/l	--	--	--	--	--	--								
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001								
Sodium, Dissolved	mg/l	--	200 [8]	18	12	17	19								
Strontium, Dissolved	mg/l	--	--	--	--	--	--								
Sulfur	mg/l	--	--	--	--	--	--								
Thallium, Dissolved	mg/l	--	--	--	--	--	--								
Tin, Dissolved	mg/l	--	--	--	--	--	--								
Titanium, Dissolved	mg/l	--	--	--	--	--	--								
Vanadium, Dissolved	mg/l	--	--	0.004	0.003	0.002	0.004								
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01								
Field Measurements															
Conductivity (Field)	uS/cm	--	--	810	860	825	890								
pH (Field)	-	--	--	7.6	7.2	7.2	7.6								
Temperature (Field)	deg c	--	15 [7]	9	10	7	11.3								

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-7 01-Sep-1993	BR-7 01-Nov-1993	BR-7 01-Aug-1994	BR-7 01-Dec-1994	BR-7 01-Apr-1996	BR-7 01-Sep-1996	BR-7 01-Jun-1997	BR-7 01-Aug-1997	BR-7 22-Nov-1998	BR-7 15-Jul-1999	BR-7 16-Oct-1999
General Chemistry														
Alkalinity (Total as CaCO3)	mg/l	--	--	350	347	320	325	379	360	374	365	393	418	392
Ammonia Nitrogen	mg/l	--	--	<0.1	<0.1	0.34	0.22	0.08	0.06	0.06	0.06	0.11	0.12	0.07
Bicarbonate	mg/l	--	--											
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	54	92.2	75	50	80	66	89	82	96	106	89
Conductivity	uS/cm	--	--	827	881	808	902	992	939	1034	983	1035	983	10113
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate	mg/l	-- [11]	--	<0.1	0.23	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-- (12)	<0.1	<0.01
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	<0.1	0.28	<0.1	1.3	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	<0.1	<0.1	<0.1	--	<0.03	<0.03	<0.03	<0.03	-- (12)	<0.03	<0.03
Phosphorus	mg/l	--	--	--	--	--	<0.1	--	--	--	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	0.232	<0.1	0.19	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	58.2	78.3	42.8	56.6	56	53	53	53	62	54	55
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	538	504	460	516	584	564	636	600	620	740	628
Total Organic Carbon	mg/l	--	--	1.2	1.47	1.2	1.7	2.1	1.7	1.8	1.9	1.3	1.2	1.7
pH		--	--											
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--
Metals														
Aluminum, Dissolved	mg/l	--	--	--	--	--	--	0.15	0.27	0.04	0.04	0.12	0.15	<0.03
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	--	--	--	0.17	0.15	0.16	0.15	0.16	0.17	0.72
Beryllium, Dissolved	mg/l	--	--	--	--	--	--	<0.01	<0.01	<0.01	<0.01	-- (12)	<0.01	<0.01
Boron, Dissolved	mg/l	5	--	0.32	0.33	0.3	0.4	0.26	0.3	0.26	0.27	0.27	0.25	0.37
Cadmium, Dissolved	mg/l	0.005	--	0.1	<0.01	<0.0001	<0.0001	<0.005	<0.005	<0.005	<0.005	-- (12)	<0.005	<0.01
Calcium, Dissolved	mg/l	--	--	93	98	68	59.5	112	106	109	104	130	138	119
Chromium, Dissolved	mg/l	0.05	--	<0.01	0.11	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	-- (12)	<0.01	<0.01
Cobalt, Dissolved	mg/l	--	--	--	--	--	--	<0.01	<0.01	<0.01	<0.01	-- (12)	<0.01	<0.01
Copper, Dissolved	mg/l	--	1	<0.01	<0.01	<0.01	<0.01	0.01	0.007	0.017	0.008	-- (12)	<0.005	<0.01
Iron, Dissolved	mg/l	--	0.3	2.25	35.29	0.6	2.4	0.33	0.07	0.26	0.6	1.02	0.81	0.43
Lead, Dissolved	mg/l	0.01	--	0.002	0.005	0.016	0.0007	<0.01	<0.002	<0.002	<0.002	-- (12)	<0.002	<0.002
Magnesium, Dissolved	mg/l	--	--	33.6	36	32	25.2	36	38	35	37	42	42	36
Manganese, Dissolved	mg/l	--	0.05	0.135	0.116	115	0.121	0.18	0.14	0.17	0.15	0.16	0.16	0.15
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	-- (12)	<0.0002	<0.0002
Molybdenum, Dissolved	mg/l	--	--	--	--	--	--	<0.01	0.04	<0.03	<0.03	-- (12)	<0.01	<0.01
Nickel, Dissolved	mg/l	--	--	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	-- (12)	<0.01	<0.01
Potassium, Dissolved	mg/l	--	--	6.56	6.58	8.8	6.7	6	6	5	7	5	6	5
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	--	--	--	--	4.6	3.8	3.8	3.7	4.2	4.7	4.3
Silver, Dissolved	mg/l	--	--	<0.01	<0.02	<0.02	<0.01	<0.01	<0.0012	<0.001	<0.01	-- (12)	<0.01	<0.01
Sodium, Dissolved	mg/l	--	200 [8]	42.6	43.1	41.5	36	44	47	44	52	50	56	55
Strontium, Dissolved	mg/l	--	--	--	--	--	--	6.63	7.21	6.49	6.21	8.7	7.46	7.34
Sulfur	mg/l	--	--	--	--	--	--	19	17	17	17	18	17	17
Thallium, Dissolved	mg/l	--	--	--	--	--	--	<0.2	<0.2	<0.2	<0.2	-- (12)	<0.2	<0.2
Tin, Dissolved	mg/l	--	--	--	--	--	--	<0.05	<0.05	<0.05	<0.05	-- (12)	<0.05	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	<0.01	0.01	<0.01	<0.01	-- (12)	<0.01	<0.01
Vanadium, Dissolved	mg/l	--	--	--	--	--	--	<0.01	<0.01	<0.01	<0.01	-- (12)	<0.01	<0.01
Zinc, Dissolved	mg/l	--	5	--	--	--	--	<0.01	0.02	0.01	<0.01	-- (12)	<0.01	0.12
Field Measurements														
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.39	8.24	7.8	7.39	7.31	7.7	7.27	7.18	7.61	6.8	7.41
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-7D 01-Jul-2000	BR-7D 01-Oct-2000	BR-7D 14-Oct-2000	BR-7D 07-Sep-2001	BR-7D 06-Nov-2001	BR-7D 28-May-2002	BR-7D 02-Oct-2002	BR-7D 03-May-2003	BR-7D 03-Nov-2003	BR-7D 04-May-2004	BR-7D 04-Oct-2004	BR-7D 10-Jun-2005
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	376	--	354	362	358	399	413	418	351	351	490	397
Ammonia Nitrogen	mg/l	--	--	0.11	--	0.15	0.14	0.04	0.04	0.02	0.08	0.07	0.05	<0.02	0.03
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	105	--	92	85	93	105	115	131	96	101	113	107
Conductivity	uS/cm	--	--	--	--	846	995	1010	1190	1150	1210	1030	1050	1240	1400
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	368	397	476.5	499	--	--	--	--	440.3
Nitrate	mg/l	-- (11)	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.23	--
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	0.72	--	0.27	--	--	0.13	--	0.13	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	0.18	0.06	--
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	<0.03	--	0.34	0.11	0.14	0.27	--
Phosphorus	mg/l	--	--	1	--	--	--	--	0.13	--	<0.005	--	0.05	--	0.04
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.12	0.05	--	--	--
Sulfate	mg/l	--	500 (6)	65	--	71	63	57	58	43	54	60	58	36	49
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	668	--	516	640	616	774	748	787	670	683	806	709
Total Organic Carbon	mg/l	--	--	1.9	--	2.7	--	--	1.6	--	1.4	1	0.6	0.9	--
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--	0.2	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	0.39	--	0.63	<0.05	<0.05	<0.05	<0.01	0.08	<0.01	--	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.15	--	0.15	0.15	0.12	0.16	0.15	0.16	0.16	--	0.19	0.17
Beryllium, Dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	--	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.25	--	0.31	0.34	0.29	0.24	0.3	0.28	0.33	0.31	0.12	0.24
Cadmium, Dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	109	--	104	88	101	125	134	126	106	99	142	122
Chromium, Dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.003	0.001	<0.001	<0.001	0.012	0.002	0.002	--	0.004
Cobalt, Dissolved	mg/l	--	--	<0.01	--	0.0027	<0.0002	0.0003	0.0008	0.0004	0.0012	0.0004	--	0.0011	0.0019
Copper, Dissolved	mg/l	--	1	<0.01	--	0.006	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.001	--
Iron, Dissolved	mg/l	--	0.3	2.52	--	7.15	4.89	2.98	1.87	5.06	1.84	3.37	1.64	<0.01	0.17
Lead, Dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	35	--	36	36	35	40	40	44	36	34	40	33
Manganese, Dissolved	mg/l	--	0.05	0.2	--	0.15	0.1	0.09	0.12	0.118	0.12	0.083	0.08	0.09	--
Mercury, Dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	--	<0.01	0.02	<0.01	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	0.005	0.005
Potassium, Dissolved	mg/l	--	--	5	--	7	6	6	6	6	6	8	7	4	5
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	<0.001
Silicon, Dissolved	mg/l	--	--	4.62	--	5.4	4.43	4.27	3.78	3.6	4.6	--	--	5.4	--
Silver, Dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (9)	68	--	56	62	51	51	57	58	59	60	46	52
Strontium, Dissolved	mg/l	--	--	8.9	--	8.75	16	8.37	3.78	13.7	4.03	--	--	2.34	--
Sulfur	mg/l	--	--	21	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	<0.001	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	0.02	--	0.04	<0.01	<0.01	--	<0.01	<0.01	--	--	<0.01	--
Vanadium, Dissolved	mg/l	--	--	<0.01	--	<0.001	<0.001	<0.001	<0.001	<0.005	--	--	--	0.002	0.007
Zinc, Dissolved	mg/l	--	5	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	0.003	--	--	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.06	--	7.53	7.38	7.81	7.66	7.74	7.51	7.73	7.34	7.19	6.7
Temperature (Field)	deg c	--	15 (7)	--	--	--	--	--	--	--	--	--	--	--	17.8

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-7D 29-Oct-2005	BR-7D 12-Apr-2006	BR-7D 24-Nov-2006	BR-7D 25-Apr-2007	BR-7D 04-Dec-2007	BR-7D 03-May-2008	BR-7D 27-Nov-2008	BR-7D 28-Apr-2009	BR-7D 28-Nov-2009	BR-7D 19-May-2010	BR-7D 29-Nov-2010	BR-7D 11-May-2011
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	373	381	362	467	359	356	363	370	377	335	395	393
Ammonia Nitrogen	mg/l	--	--	0.04	0.07	0.03	<0.02	0.04	<0.02	<0.02	0.02	<0.02	0.03	<0.02	0.05
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	89	115	96	111	78	102	86	92	83	88	89	89
Conductivity	uS/cm	--	--	960	925	855	905	880	825	800	1050	1030	1000	1060	1040
Dissolved Organic Carbon	mg/l	--	5	--	1.8	1.5	1.9	1.9	1.9	1.4	1.8	1.9	1.7	1.6	2
Hardness, Calcium Carbonate	mg/l	--	--	--	443.3	411	552	362	401	378	378	400	409	438	423
Nitrate	mg/l	-- (11)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.04	0.04	0.05	0.12	0.06	0.04	0.02	0.02	0.02	0.03	0.01	0.02
Phosphorus (dissolved reactive)	mg/l	--	--	--	0.06	0.06	0.06	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 (6)	52	62	57	44	58	58	55	55	53	56	48	46
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	624	722	689	825	647	689	663	683	670	650	689	676
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	0.16	0.13	0.18	0.14	0.16	0.15	0.14	0.13	0.15	0.13	0.14
Beryllium, Dissolved	mg/l	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005
Boron, Dissolved	mg/l	5	--	0.32	0.32	0.42	0.12	0.28	0.37	0.34	0.37	0.38	0.33	0.28	0.26
Cadmium, Dissolved	mg/l	0.005	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	--	115	107	155	92	103	97	97	104	106	116	110
Chromium, Dissolved	mg/l	0.05	--	--	0.003	0.002	0.003	0.007	0.004	0.002	0.003	0.002	<0.001	0.002	0.002
Cobalt, Dissolved	mg/l	--	--	--	0.0003	0.0004	0.0007	0.0005	0.0006	0.0007	0.0008	0.0011	0.0009	0.0008	0.001
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	2.08	2.35	2.13	<0.03	1.1	1.11	0.95	1.11	1.02	1.6	2.64	1.88
Lead, Dissolved	mg/l	0.01	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	--	38	35	40	32	35	33	33	34	35	36	36
Manganese, Dissolved	mg/l	--	0.05	--	0.09	0.09	0.03	0.08	0.09	0.08	0.07	0.08	0.08	0.08	0.1
Mercury, Dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	--	7	7	4	6	6	6	6	7	7	7	6
Selenium, Dissolved	mg/l	0.01	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (9)	--	65	59	60	55	59	54	56	63	64	62	57
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	--	<0.001	<0.001	0.004	0.003	0.004	0.004	0.005	0.002	<0.001	0.002	0.002
Zinc, Dissolved	mg/l	--	5	0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	1125	1100	990	965	905
pH (Field)	-	--	--	6.8	6.9	6.9	6.8	6.8	6.9	7	7.8	7.6	7.6	7.7	7.4
Temperature (Field)	deg c	--	15 (7)	10	5	7	6	8	9	7	10	5	10	7	10

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-7D 29-Nov-2011	BR-7D 20-May-2012	BR-7D 13-Nov-2012	BR-7D 14-Jun-13	BR-7D 25-Oct-13							
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	371	368	484	390	390							
Ammonia Nitrogen	mg/l	--	--	0.03	0.06	<0.02	<0.02	<0.02							
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--								
Chloride	mg/l	--	250	81	93	96	108	99							
Conductivity	uS/cm	--	--	1010	1030	1200	1100	1080							
Dissolved Organic Carbon	mg/l	--	5	1.4	1	1.8	1.7	1.5							
Hardness, Calcium Carbonate	mg/l	--	--	381	308	501	451	432							
Nitrate	mg/l	-- [11]	--	--	--	--	--								
Nitrite	mg/l	-- [13]	--	--	--	--	--								
Nitrogen	mg/l	--	--	--	--	--	--								
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	<0.10	<0.10							
Phosphate	mg/l	--	--	--	--	--	--								
Phosphorus	mg/l	--	--	<0.01	0.01	0.04	0.11	0.04							
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01							
Silica	mg/l	--	--	--	--	--	--								
Sulfate	mg/l	--	500 [6]	54	51	39	44	48							
Tannin & Lignin	mg/l	--	--	--	--	--	--								
Total Dissolved Solids	mg/l	--	500	656	670	780	715	702							
Total Organic Carbon	mg/l	--	--	--	--	--	--								
pH		--	--					7.85							
Turbidity	ntu	--	5 [14] [7]	--	--	--	--								
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	0.15	0.03							
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--								
Barium, Dissolved	mg/l	1	--	0.14	0.13	0.17	0.16	0.14							
Beryllium, Dissolved	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005							
Boron, Dissolved	mg/l	5	--	0.34	0.26	0.27	0.2	0.24							
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001							
Calcium, Dissolved	mg/l	--	--	100	79	133	123	117							
Chromium, Dissolved	mg/l	0.05	--	0.002	0.003	0.003	0.004	0.003							
Cobalt, Dissolved	mg/l	--	--	0.0007	0.0009	0.0018	0.0023	0.0018							
Copper, Dissolved	mg/l	--	1	--	--	--	0.002	<0.001							
Iron, Dissolved	mg/l	--	0.3	1.94	0.42	0.28	0.22	0.09							
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001							
Magnesium, Dissolved	mg/l	--	--	32	27	41	35	34							
Manganese, Dissolved	mg/l	--	0.05	0.09	0.07	0.1	0.07	0.07							
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001							
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005							
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005							
Potassium, Dissolved	mg/l	--	--	6	5	6	6	5							
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001							
Silicon, Dissolved	mg/l	--	--	--	--	--	--								
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001							
Sodium, Dissolved	mg/l	--	200 [9]	61	45	61	60	58							
Strontium, Dissolved	mg/l	--	--	--	--	--	--								
Sulfur	mg/l	--	--	--	--	--	--								
Thallium, Dissolved	mg/l	--	--	--	--	--	--								
Tin, Dissolved	mg/l	--	--	--	--	--	--								
Titanium, Dissolved	mg/l	--	--	--	--	--	--								
Vanadium, Dissolved	mg/l	--	--	0.004	0.002	0.004	0.004	0.001							
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01							
Field Measurements															
Conductivity (Field)	uS/cm	--	--	910	1067	1060	1061	1000							
pH (Field)	-	--	--	7.5	7.5	7.6	7.5	7.3							
Temperature (Field)	deg c	--	15 [7]	7	10	9	8.9	7.9							

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-7M 01-Jul-2000	BR-7M 03-May-2003										
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	415	487										
Ammonia Nitrogen	mg/l	--	--	0.12	0.09										
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--										
Chloride	mg/l	--	250	95	150										
Conductivity	uS/cm	--	--	1110	1330										
Dissolved Organic Carbon	mg/l	--	5	--	--										
Hardness, Calcium Carbonate	mg/l	--	--	--	--										
Nitrate	mg/l	-- [11]	--	0.12	<0.1										
Nitrite	mg/l	-- [13]	--	--	--										
Nitrogen	mg/l	--	--	0.66	0.09										
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--										
Phosphate	mg/l	--	--	<0.03	0.74										
Phosphorus	mg/l	--	--	0.47	<0.005										
Phosphorus (dissolved reactive)	mg/l	--	--	--	--										
Silica	mg/l	--	--	--	0.34										
Sulfate	mg/l	--	500 [6]	60	51										
Tannin & Lignin	mg/l	--	--	--	--										
Total Dissolved Solids	mg/l	--	500	696	865										
Total Organic Carbon	mg/l	--	--	1.8	1.4										
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--										
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.05	<0.01										
Arsenic, Dissolved	mg/l	0.025	--	--	--										
Barium, Dissolved	mg/l	1	--	0.15	0.18										
Beryllium, Dissolved	mg/l	--	--	<0.002	<0.001										
Boron, Dissolved	mg/l	5	--	0.19	0.14										
Cadmium, Dissolved	mg/l	0.005	--	<0.005	<0.0001										
Calcium, Dissolved	mg/l	--	--	128	174										
Chromium, Dissolved	mg/l	0.05	--	<0.01	0.014										
Cobalt, Dissolved	mg/l	--	--	<0.01	0.0034										
Copper, Dissolved	mg/l	--	1	<0.01	0.001										
Iron, Dissolved	mg/l	--	0.3	0.26	0.05										
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001										
Magnesium, Dissolved	mg/l	--	--	37	46										
Manganese, Dissolved	mg/l	--	0.05	0.36	0.254										
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001										
Molybdenum, Dissolved	mg/l	--	--	<0.01	<0.005										
Nickel, Dissolved	mg/l	--	--	<0.01	<0.005										
Potassium, Dissolved	mg/l	--	--	5	4										
Selenium, Dissolved	mg/l	0.01	--	--	--										
Silicon, Dissolved	mg/l	--	--	4.43	4.6										
Silver, Dissolved	mg/l	--	--	<0.01	<0.0001										
Sodium, Dissolved	mg/l	--	200 [8]	66	56										
Strontium, Dissolved	mg/l	--	--	4.12	4.03										
Sulfur	mg/l	--	--	21	--										
Thallium, Dissolved	mg/l	--	--	<0.2	<0.001										
Tin, Dissolved	mg/l	--	--	--	--										
Titanium, Dissolved	mg/l	--	--	<0.01	<0.01										
Vanadium, Dissolved	mg/l	--	--	<0.01	--										
Zinc, Dissolved	mg/l	--	5	<0.01	0.004										
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--										
pH (Field)	-	--	--	7.06	7.51										
Temperature (Field)	deg c	--	15 [7]	--	--										

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-7S 01-Jul-2000	BR-7S 01-Oct-2000	BR-7S 14-Oct-2000	BR-7S 07-Sep-2001	BR-7S 06-Nov-2001	BR-7S 28-May-2002	BR-7S 02-Oct-2002	BR-7S 03-May-2003	BR-7S 03-Nov-2003	BR-7S 04-May-2004	BR-7S 04-Oct-2004	BR-7S 09-Jun-2005
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	374	--	442	467	531	455	487	503	492	458	363	458
Ammonia Nitrogen	mg/l	--	--	0.11	--	0.13	<0.02	0.02	0.05	<0.02	0.07	0.16	0.1	--	<0.02
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	88	--	106	109	115	113	102	139	109	108	105	103
Conductivity	uS/cm	--	--	1070	--	973	1130	1270	1270	1210	1330	1250	1200	1060	1600
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	544	582	544	572	--	--	--	--	605.6
Nitrate	mg/l	-- (11)	--	0.36	--	<0.1	<0.1	<0.1	0.13	0.19	<0.1	0.19	<0.1	--	--
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	0.59	--	0.23	--	--	0.31	--	1.3	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	0.38	--	--
Phosphate	mg/l	--	--	<0.03	--	<0.03	--	--	<0.03	--	0.42	0.09	0.13	--	--
Phosphorus	mg/l	--	--	0.29	--	--	--	--	0.06	--	<0.005	<0.01	0.06	--	0.06
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	0.15	0.05	--	--	--
Sulfate	mg/l	--	500 (6)	75	--	59	47	36	58	36	52	38	40	--	45
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	628	--	648	756	812	826	787	865	813	780	689	741
Total Organic Carbon	mg/l	--	--	1.7	--	2.1	--	--	1.7	--	1.3	1.2	<0.5	1.6	--
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--	0.4	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.05	--	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	--	--	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.15	--	0.17	0.19	0.15	0.19	0.16	0.18	0.21	--	--	0.21
Beryllium, Dissolved	mg/l	--	--	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	--	--	<0.001
Boron, Dissolved	mg/l	5	--	0.2	--	0.2	0.13	0.09	0.14	0.1	0.13	0.14	0.13	0.3	0.19
Cadmium, Dissolved	mg/l	0.005	--	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.14	<0.0001	--	<0.0001
Calcium, Dissolved	mg/l	--	--	101	--	130	147	162	152	160	179	168	141	--	175
Chromium, Dissolved	mg/l	0.05	--	<0.01	--	<0.01	0.004	<0.001	<0.001	<0.001	0.011	0.004	0.002	--	0.004
Cobalt, Dissolved	mg/l	--	--	<0.01	--	0.0075	0.0003	0.0005	0.0037	0.0017	0.0033	0.0037	--	--	0.0033
Copper, Dissolved	mg/l	--	1	<0.01	--	0.004	<0.001	0.005	0.001	0.002	0.001	0.001	0.001	--	--
Iron, Dissolved	mg/l	--	0.3	0.3	--	3.15	2.22	1.26	0.16	0.01	0.05	0.03	<0.01	--	<0.03
Lead, Dissolved	mg/l	0.01	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001
Magnesium, Dissolved	mg/l	--	--	32	--	41	43	43	40	42	49	44	39	--	41
Manganese, Dissolved	mg/l	--	0.05	0.36	--	0.38	0.11	0.1	0.25	0.098	0.249	0.244	0.14	--	--
Mercury, Dissolved	mg/l	0.001	--	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	--	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	--	<0.01	0.03	<0.01	<0.01	<0.005	<0.005	<0.005	--	--	<0.005
Nickel, Dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	0.007	0.005	--	0.007
Potassium, Dissolved	mg/l	--	--	5	--	5	4	4	4	4	4	5	4	--	4
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	<0.001
Silicon, Dissolved	mg/l	--	--	4.35	--	4.92	4.89	4.65	3.88	3.7	4.6	4.8	--	--	--
Silver, Dissolved	mg/l	--	--	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	--	<0.0001
Sodium, Dissolved	mg/l	--	200 (9)	85	--	55	47	42	48	47	59	52	51	--	57
Strontium, Dissolved	mg/l	--	--	4.19	--	5.93	3.35	2.6	3.78	3.59	4.03	3.03	--	--	--
Sulfur	mg/l	--	--	21	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	--	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.01	--	<0.001	0.001	<0.001	<0.001	<0.005	--	--	--	--	0.008
Zinc, Dissolved	mg/l	--	5	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	0.004	0.001	--	--	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.05	--	7.46	7.29	7.37	7.65	7.52	7.55	7.6	7.25	--	6.8
Temperature (Field)	deg c	--	15 (7)	--	--	--	--	--	--	--	--	--	--	--	20

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-7S 29-Oct-2005	BR-7S 12-Apr-2006	BR-7S 24-Nov-2006	BR-7S 25-Apr-2007	BR-7S 04-Dec-2007	BR-7S 03-May-2008	BR-7S 27-Nov-2008	BR-7S 28-Apr-2009	BR-7S 28-Nov-2009	BR-7S 19-May-2010	BR-7S 29-Nov-2010	BR-7S 11-May-2011
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	480	493	475	359	510	490	476	477	478	443	480	453
Ammonia Nitrogen	mg/l	--	--	0.05	0.1	0.04	<0.02	0.08	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	112	118	116	83	120	113	107	111	102	103	102	98
Conductivity	uS/cm	--	--	1500	1410	1295	1300	1310	1240	1075	1250	1220	1070	1200	1130
Dissolved Organic Carbon	mg/l	--	5	--	1.2	2.1	2	2	1.6	1.3	1.8	1.7	1.6	1.5	1.9
Hardness, Calcium Carbonate	mg/l	--	--	--	588.8	577.2	388	573	554	509	502	531	517	547	488
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.16	0.04	0.06	0.05	0.03	0.05	0.03	0.04	0.02	0.02	0.02	0.01
Phosphorus (dissolved reactive)	mg/l	--	--	--	0.04	0.07	0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	61	61	40	57	39	41	39	41	35	41	39	39
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	975	825	839	663	858	825	806	813	793	696	780	734
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	0.21	0.17	0.13	0.2	0.21	0.2	0.19	0.19	0.17	0.19	0.17
Beryllium, Dissolved	mg/l	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005
Boron, Dissolved	mg/l	5	--	0.18	0.17	0.12	0.34	0.15	0.14	0.11	0.15	0.15	0.12	0.11	0.1
Cadmium, Dissolved	mg/l	0.005	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	--	165	162	101	162	156	143	140	150	146	158	136
Chromium, Dissolved	mg/l	0.05	--	--	0.003	0.002	0.003	0.005	0.005	0.003	0.004	0.003	<0.001	<0.001	0.003
Cobalt, Dissolved	mg/l	--	--	--	0.001	0.0009	0.0004	0.0073	0.0007	0.0007	0.001	0.0011	0.0004	0.0022	0.0003
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	<0.03	<0.03	<0.03	1.46	0.77	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, Dissolved	mg/l	0.01	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	--	43	42	33	41	40	37	37	38	37	37	36
Manganese, Dissolved	mg/l	--	0.05	--	0.06	0.12	0.09	0.3	0.03	0.06	0.07	0.09	0.02	0.15	<0.01
Mercury, Dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	0.006	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	--	4	4	7	4	3	3	3	4	3	3	3
Selenium, Dissolved	mg/l	0.01	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [9]	--	65	54	56	55	59	54	55	59	60	61	56
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	--	0.002	0.001	0.004	0.006	0.005	0.006	0.008	0.006	<0.001	0.003	0.002
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	7.4	1125	1090	1045	1060
pH (Field)	-	--	--	7	7.1	7	7.2	7	7.2	7.3	1200	7.3	7.5	7.4	7.4
Temperature (Field)	deg c	--	15 [7]	11	6	5	6	8	8	6	10	6	9.8	7.2	11

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-7S 29-Nov-2011	BR-7S 20-May-2012	BR-7S 13-Nov-2012	BR-7S 14-Jun-13	BR-7S 25-Oct-13							
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	455	447	477	417	427							
Ammonia Nitrogen	mg/l	--	--	<0.02	0.04	0.24	<0.02	<0.02							
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--							
Chloride	mg/l	--	250	94	95	100	102	109							
Conductivity	uS/cm	--	--	1150	1140	1200	1130	1140							
Dissolved Organic Carbon	mg/l	--	5	1.5	1.3	1.4	1.6	1.4							
Hardness, Calcium Carbonate	mg/l	--	--	518	352	491	470	491							
Nitrate	mg/l	-- [11]	--	--	--	--	--	--							
Nitrite	mg/l	-- [13]	--	--	--	--	--	--							
Nitrogen	mg/l	--	--	--	--	--	--	--							
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	<0.10	<0.10							
Phosphate	mg/l	--	--	--	--	--	--	--							
Phosphorus	mg/l	--	--	0.02	0.01	0.02	0.01	0.03							
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	0.02							
Silica	mg/l	--	--	--	--	--	--	--							
Sulfate	mg/l	--	500 [6]	36	34	48	40	35							
Tannin & Lignin	mg/l	--	--	--	--	--	--	--							
Total Dissolved Solids	mg/l	--	500	748	741	780	734	741							
Total Organic Carbon	mg/l	--	--	--	--	--	--	--							
pH		--	--					7.76							
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--							
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	0.06	0.02							
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--							
Barium, Dissolved	mg/l	1	--	0.18	0.17	0.18	0.19	0.19							
Beryllium, Dissolved	mg/l	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005							
Boron, Dissolved	mg/l	5	--	0.12	0.1	0.11	0.16	0.14							
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001							
Calcium, Dissolved	mg/l	--	--	148	98	139	132	139							
Chromium, Dissolved	mg/l	0.05	--	0.003	0.004	0.003	0.004	0.004							
Cobalt, Dissolved	mg/l	--	--	0.0008	0.0004	0.0006	0.0027	0.0026							
Copper, Dissolved	mg/l	--	1	--	--	--	0.002	0.001							
Iron, Dissolved	mg/l	--	0.3	<0.03	<0.03	<0.03	<0.03	<0.03							
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001							
Magnesium, Dissolved	mg/l	--	--	36	26	35	34	35							
Manganese, Dissolved	mg/l	--	0.05	0.05	0.02	0.05	0.18	0.19							
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001							
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005							
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005							
Potassium, Dissolved	mg/l	--	--	3	2	3	4	4							
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001							
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--							
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001							
Sodium, Dissolved	mg/l	--	200 [9]	56	42	50	60	57							
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--							
Sulfur	mg/l	--	--	--	--	--	--	--							
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--							
Tin, Dissolved	mg/l	--	--	--	--	--	--	--							
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--							
Vanadium, Dissolved	mg/l	--	--	0.006	0.005	0.004	0.004	0.002							
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01							
Field Measurements															
Conductivity (Field)	uS/cm	--	--	1040	1180	1120	1104	1080							
pH (Field)	-	--	--	7.3	7.15	7.2	7.7	7.6							
Temperature (Field)	deg c	--	15 [7]	8	9	7	9.2	8.4							

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-8D 22-Nov-1998	BR-8D 15-Jul-1999	BR-8D 16-Oct-1999	BR-8D 01-Jul-2000	BR-8D 01-Oct-2000	BR-8D 14-Oct-2000	BR-8D 06-Sep-2001	BR-8D 06-Nov-2001	BR-8D 28-May-2002	BR-8D 02-Oct-2002	BR-8D 03-May-2003	BR-8D 03-Nov-2003
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	531	545	555	552	--	563	551	564	538	543	550	546
Ammonia Nitrogen	mg/l	--	--	0.14	0.15	0.13	0.16	--	0.15	0.19	0.15	0.26	0.19	0.14	0.26
Bicarbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	11	7	8	8	--	11	9	7	8	8	12	11
Conductivity	uS/cm	--	--	906	811	914	971	--	852	936	959	975	950	979	963
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	521	496	511.4	557	--	--
Nitrate	mg/l	-- [11]	--	-- (12)	<0.1	<0.01	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	0.95	--	0.42	--	--	0.56	--	0.48	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	-- (12)	<0.03	<0.03	<0.03	--	<0.03	--	--	<0.03	--	0.24	0.09
Phosphorus	mg/l	--	--	--	--	--	0.26	--	--	--	--	0.07	--	<0.005	<0.01
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	0.11	0.05
Sulfate	mg/l	--	500 [6]	3	<3	<3	3	--	2	<1	2	3	2	3	4
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	548	512	604	584	--	588	572	584	634	618	636	626
Total Organic Carbon	mg/l	--	--	20	11.5	23.3	20.8	--	19.6	--	--	20.3	--	17.8	22.2
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	0.58
Metals															
Aluminum, Dissolved	mg/l	--	--	0.07	0.1	0.04	<0.05	--	<0.05	<0.05	<0.05	0.08	<0.01	<0.01	0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.17	0.21	0.47	0.3	--	0.28	0.34	0.3	3.15	0.34	0.3	0.38
Beryllium, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.3	0.41	0.34	0.41	--	0.52	0.41	0.32	5.69	0.42	0.63	0.57
Cadmium, Dissolved	mg/l	0.005	--	-- (12)	<0.005	<0.01	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	123	124	131	124	--	124	118	116	116	129	125	128
Chromium, Dissolved	mg/l	0.05	--	-- (12)	<0.01	<0.01	<0.01	--	<0.01	0.01	0.003	0.001	0.002	0.014	0.006
Cobalt, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.01	--	0.0009	<0.0002	0.0003	0.0002	0.0002	<0.0002	0.0003
Copper, Dissolved	mg/l	--	1	-- (12)	<0.005	<0.01	<0.01	--	0.002	<0.001	<0.001	<0.001	0.001	<0.001	<0.001
Iron, Dissolved	mg/l	--	0.3	5.93	6.11	7.12	5.88	--	4.86	6.52	6.32	46.1	5.13	4.43	5.3
Lead, Dissolved	mg/l	0.01	--	-- (12)	<0.002	<0.002	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	59	59	55	58	--	59	55	50	54	57	60	60
Manganese, Dissolved	mg/l	--	0.05	0.13	0.16	0.2	0.15	--	0.1	0.16	0.16	0.99	0.12	0.09	0.11
Mercury, Dissolved	mg/l	0.001	--	-- (12)	<0.0002	<0.0002	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.01	--	<0.01	0.01	<0.01	<0.01	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	3	5	4	4	--	5	5	5	5	5	6	7
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	4.3	5.1	5.1	5.47	--	5.64	5.67	5.48	44.7	4.4	5.1	5.8
Silver, Dissolved	mg/l	--	--	-- (12)	<0.01	0.01	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [9]	4	8	8	8	--	8	7	7	7	6	7	8
Strontium, Dissolved	mg/l	--	--	7.05	8.93	7.71	11.4	--	11.8	13	7.57	134	14	13.9	12.3
Sulfur	mg/l	--	--	-- (12)	<3	<3	1	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	-- (12)	<0.2	<0.2	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tin, Dissolved	mg/l	--	--	-- (12)	<0.05	--	--	--	<0.01	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.01	--	<0.001	0.003	0.001	<0.001	<0.005	--	--
Zinc, Dissolved	mg/l	--	5	-- (12)	<0.01	0.04	<0.01	--	<0.01	<0.01	<0.01	0.01	<0.005	<0.005	0.002
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.52	6.73	6.98	7	--	7.19	7.08	7.06	7.54	7.39	7.43	7.36
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-8D 04-May-2004	BR-8D 04-Oct-2004	BR-8D 14-Jun-2005	BR-8D 29-Oct-2005	BR-8D 12-Apr-2006	BR-8D 24-Nov-2006	BR-8D 25-Apr-2007	BR-8D 04-Dec-2007	BR-8D 03-May-2008	BR-8D 27-Nov-2008	BR-8D 28-Apr-2009	BR-8D 29-Nov-2009
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	525	544	540	539	536	603	510	521	505	520	514	529
Ammonia Nitrogen	mg/l	--	--	0.27	0.28	0.17	0.26	0.2	1.83	0.15	0.23	0.19	0.21	0.23	0.23
Bicarbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	9	9	11	13	7	16	10	10	9	9	7	6
Conductivity	uS/cm	--	--	933	948	1400	1320	1410	995	1320	990	965	945	905	929
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	19	48.4	19.2	24.8	18.9	24.7	22.9	30.4
Hardness, Calcium Carbonate	mg/l	--	--	--	--	523.2	--	524.8	561.6	505	481	483	515	498	467
Nitrate	mg/l	-- [11]	--	<0.1	<0.1	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	0.85	0.63	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	0.14	0.14	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.42	0.37	0.02	0.03	0.03	0.18	0.04	0.01	0.02	0.22	0.02	0.27
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	0.06	0.19	0.06	<0.01	<0.01	<0.01	<0.01	0.02
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	4	3	2	2	3	3	<1	2	<1	<1	<1	<1
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	0.7	0.8	0.9	2.4	1	1.2
Total Dissolved Solids	mg/l	--	500	606	616	910	858	587	708	601	605	581	610	588	604
Total Organic Carbon	mg/l	--	--	21	30.2	--	--	--	--	--	--	--	--	--	--
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	--	--	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	0.05	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	--	0.42	--	0.37	0.1	0.4	0.44	0.46	0.57	0.47	0.53
Beryllium, Dissolved	mg/l	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.66	0.52	0.6	0.61	0.76	0.37	0.73	0.86	0.9	0.67	0.72	0.52
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0008	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	107	120	124	--	123	141	118	110	111	122	117	113
Chromium, Dissolved	mg/l	0.05	--	0.002	0.001	0.003	--	0.001	0.003	0.002	0.004	0.004	0.003	0.004	0.004
Cobalt, Dissolved	mg/l	--	--	--	--	0.0002	--	0.0002	0.0009	0.0019	0.0004	0.0003	0.0003	0.0003	0.0003
Copper, Dissolved	mg/l	--	1	<0.001	<0.001	--	--	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	4.06	4.9	4.45	4.02	3.45	7.33	3.81	3.42	3.34	4.27	4	4.29
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	53	51	52	--	53	51	51	50	50	51	50	45
Manganese, Dissolved	mg/l	--	0.05	0.1	0.12	--	--	0.07	0.7	0.1	0.1	0.08	0.11	0.09	0.1
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--	--	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	0.005	<0.005	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	7	5	6	--	7	8	6	6	7	6	7	6
Selenium, Dissolved	mg/l	0.01	--	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [8]	8	7	8	--	8	19	8	7	9	7	7	6
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	--	--	0.01	--	0.002	0.005	0.005	0.011	0.009	0.008	0.01	0.011
Zinc, Dissolved	mg/l	--	5	--	--	<0.01	0.02	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	940	965
pH (Field)	-	--	--	7.13	6.89	7.03	6.8	7.1	7	7.2	7.1	7.2	7.3	7.4	7.5
Temperature (Field)	deg c	--	15 [7]	--	--	-- (15)	9	6	5	5	7	8	6	11	7

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-8D 19-May-2010	BR-8D 29-Nov-2010	BR-8D 11-May-2011	BR-8D 30-Nov-2011	BR-8D 20-May-2012 (9	BR-8D 13-Nov-2012	BR-8D 17-Jun-13	BR-8D 29-Oct-13				
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	581	518	510	528	516	557	532	556				
Ammonia Nitrogen	mg/l	--	--	1.57	0.23	0.21	0.08	0.30	0.24	0.23	0.17				
Bicarbonate	mg/l	--	--	--	--	--	--	--	--	--	556				
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--				
Chloride	mg/l	--	250	13	13	13	56	15	20	16	27				
Conductivity	uS/cm	--	--	1040	920	870	1090	929	985	945	1020				
Dissolved Organic Carbon	mg/l	--	5	41.1	20.1	17.6	5.8	22.7	21	17.3	16.6				
Hardness, Calcium Carbonate	mg/l	--	--	548	524	483	572	369	501	572	550				
Nitrate	mg/l	-- (11)	--	--	--	--	--	--	--	--	--				
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--				
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--				
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	0.53	0.52				
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--				
Phosphorus	mg/l	--	--	0.04	<0.01	0.34	0.1	0.02	0.02	0.31	1.18				
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02				
Silica	mg/l	--	--	--	--	--	--	--	--	--	--				
Sulfate	mg/l	--	500 (6)	<1	3	1	4	<1	<3	4	<3				
Tannin & Lignin	mg/l	--	--	1.8	0.5	0.4	0.3	1	0.8	0.9	0.4				
Total Dissolved Solids	mg/l	--	500	676	598	566	708	604	640	614	663				
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--				
pH		--	--	--	--	--	--	--	--	--	7.51				
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--				
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.12	0.11				
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--				
Barium, Dissolved	mg/l	1	--	0.08	0.56	0.52	0.32	0.6	0.61	0.6	0.55				
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005				
Boron, Dissolved	mg/l	5	--	0.23	0.75	0.74	1.4	0.92	0.93	1	1.0				
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Calcium, Dissolved	mg/l	--	--	137	124	111	127	85	126	130	123				
Chromium, Dissolved	mg/l	0.05	--	<0.001	<0.001	0.002	0.009	0.004	0.002	<0.001	0.003				
Cobalt, Dissolved	mg/l	--	--	0.0008	0.0002	0.0003	0.0002	0.0002	0.0003	0.0004	0.0028				
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	<0.001	<0.001				
Iron, Dissolved	mg/l	--	0.3	6.26	3.52	3.12	0.17	3.38	3.04	2.82	2.99				
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001				
Magnesium, Dissolved	mg/l	--	--	50	52	50	62	38	56	60	59				
Manganese, Dissolved	mg/l	--	0.05	0.6	0.08	0.07	0.01	0.08	0.07	0.07	0.08				
Mercury, Dissolved	mg/l	0.001	--	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				
Nickel, Dissolved	mg/l	--	--	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				
Potassium, Dissolved	mg/l	--	--	7	8	7	10	5	7	8	8				
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001				
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Sodium, Dissolved	mg/l	--	200 (8)	12	6	8	32	5	6	6	8				
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--				
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Vanadium, Dissolved	mg/l	--	--	0.005	0.003	0.005	0.003	<0.005	0.005	0.003	0.003				
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
Field Measurements															
Conductivity (Field)	uS/cm	--	--	940	760	1010	995	1035	1050	896	1019				
pH (Field)	-	--	--	6.93	6.8	6.8	6.8	6.8	6.7	7.3	7.0				
Temperature (Field)	deg c	--	15 (7)	22	20.1	18	11	17	15	21.9	21.7				

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-8S 22-Nov-1998	BR-8S 15-Jul-1999	BR-8S 16-Oct-1999	BR-8S 01-Jul-2000	BR-8S 01-Oct-2000	BR-8S 14-Oct-2000	BR-8S 06-Sep-2001	BR-8S 06-Nov-2001	BR-8S 28-May-2002	BR-8S 02-Oct-2002	BR-8S 03-May-2003	BR-8S 03-Nov-2003
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	680	638	634	570	--	569	608	612	595	430	631	615
Ammonia Nitrogen	mg/l	--	--	0.78	0.8	0.98	1.87	--	0.87	0.98	1.07	2.22	0.08	1.75	2.24
Bicarbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	5	5	6	5	--	3	11	9	9	13	59	28
Conductivity	uS/cm	--	--	1063	907	1027	979	--	930	1030	1060	1080	812	1270	1150
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	556	562	601	421	--	--
Nitrate	mg/l	-- [11]	--	-- (12)	0.13	<0.01	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	2.29	--	1.41	--	--	2.46	--	2.72	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	-- (12)	<0.03	<0.03	<0.03	--	0.06	--	--	<0.03	--	0.76	0.11
Phosphorus	mg/l	--	--	--	--	--	0.29	--	--	--	--	0.21	--	<0.005	<0.01
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	0.26	0.06
Sulfate	mg/l	--	500 [6]	13	<3	10	3	--	2	2	7	6	12	3	4
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	656	712	704	672	--	624	676	748	702	528	825	748
Total Organic Carbon	mg/l	--	--	36	26.4	48.1	33.9	--	51.4	--	--	44.4	--	43.7	42.9
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	2.78
Metals															
Aluminum, Dissolved	mg/l	--	--	0.12	0.03	0.03	<0.05	--	0.14	<0.05	<0.05	0.14	<0.01	0.02	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.05	0.06	0.4	0.06	--	0.06	0.07	0.06	0.72	0.11	0.08	0.11
Beryllium, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.35	0.29	0.31	0.2	--	0.3	0.4	0.27	2	0.82	0.22	0.3
Cadmium, Dissolved	mg/l	0.005	--	-- (12)	<0.005	<0.01	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	159	153	149	140	--	146	127	136	142	83	169	164
Chromium, Dissolved	mg/l	0.05	--	-- (12)	<0.01	<0.01	<0.01	--	<0.01	0.015	0.011	0.022	<0.001	<0.005	0.006
Cobalt, Dissolved	mg/l	--	--	0.02	0.02	<0.01	<0.01	--	0.0078	0.0023	0.0043	0.0035	0.0003	<0.005	0.0053
Copper, Dissolved	mg/l	--	1	-- (12)	<0.005	<0.01	<0.01	--	0.001	<0.001	<0.001	0.001	0.002	<0.005	0.003
Iron, Dissolved	mg/l	--	0.3	5.67	4.57	4.66	6.41	--	5.7	4.62	5.25	51.8	0.09	7.84	7.96
Lead, Dissolved	mg/l	0.01	--	-- (12)	<0.002	<0.002	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	68	66	59	56	--	57	58	54	60	52	67	60
Manganese, Dissolved	mg/l	--	0.05	0.76	0.86	1.04	1.2	--	0.81	0.76	0.83	9.46	<0.005	0.937	0.946
Mercury, Dissolved	mg/l	0.001	--	-- (12)	<0.0002	<0.0002	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.01	--	<0.01	0.01	<0.01	0.01	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	0.03	--	0.02	0.02	0.01	0.07	<0.005	0.007	0.026
Potassium, Dissolved	mg/l	--	--	4	7	5	4	--	6	7	8	5	8	7	8
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	7.9	7.2	7.2	6.57	--	7.57	7.61	7.72	61.2	3.5	7.3	7.8
Silver, Dissolved	mg/l	--	--	-- (12)	<0.01	0.01	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [8]	18	14	12	6	--	10	9	13	9	11	22	21
Strontium, Dissolved	mg/l	--	--	8.56	8.44	5.21	1.96	--	7.14	20.3	5.91	33	11.2	5.14	3.02
Sulfur	mg/l	--	--	5	<3	<3	2	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	-- (12)	<0.2	<0.2	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tin, Dissolved	mg/l	--	--	-- (12)	<0.05	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.01	--	<0.001	0.006	0.005	0.002	<0.005	--	--
Zinc, Dissolved	mg/l	--	5	-- (12)	<0.01	0.07	<0.01	--	<0.01	<0.01	<0.01	0.02	<0.005	<0.005	0.004
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	8	6.55	6.84	7.18	--	7.03	6.85	6.93	--	7.7	7.03	7.29
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-8S 04-May-2004	BR-8S 04-Oct-2004	BR-8S 14-Jun-2005	BR-8S 29-Oct-2005	BR-8S 12-Apr-2006	BR-8S 24-Nov-2006	BR-8S 25-Apr-2007	BR-8S 04-Dec-2007	BR-8S 03-May-2008	BR-8S 27-Nov-2008	BR-8S 28-Apr-2009	BR-8S 29-Nov-2009
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	583	600	591	624	601	522	572	634	573	581	506	582
Ammonia Nitrogen	mg/l	--	--	1.87	2.11	1.7	1.76	2.06	0.18	1.79	2.47	1.3	2.15	1.58	1.56
Bicarbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	15	13	14	26	21	10	15	1	27	21	4	9
Conductivity	uS/cm	--	--	1050	1050	900	920	1005	945	900	1005	1100	--	884	1020
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	41.3	21.9	45.7	45.2	44.4	46.1	59.7	47.2
Hardness, Calcium Carbonate	mg/l	--	--	--	--	565	--	612.3	499.1	578	624	564	538	497	543
Nitrate	mg/l	-- (11)	--	<0.1	<0.1	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	3.78	2.46	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	0.18	0.2	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.6	0.08	0.09	0.04	0.24	0.06	0.27	0.02	0.05	0.03	0.04	0.03
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	0.11	0.02	0.1	<0.01	0.01	<0.01	0.02	0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 (6)	3	5	3	3	9	2	1	2	<1	<1	<1	<1
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	2.2	2.7	2.8	3.1	5.3	3.1
Total Dissolved Solids	mg/l	--	500	683	683	585	598	689	606	689	800	702	696	575	663
Total Organic Carbon	mg/l	--	--	48.6	50.7	--	--	--	--	--	--	--	--	--	--
pH		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	--	0.1	--	0.11	0.41	0.1	0.12	0.1	0.11	0.07	0.09
Beryllium, Dissolved	mg/l	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.23	0.38	0.33	0.32	0.24	0.88	0.24	0.32	0.28	0.26	0.25	0.32
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	135	131	144	--	158	116	149	161	145	138	125	135
Chromium, Dissolved	mg/l	0.05	--	0.003	0.004	0.005	--	0.003	0.001	0.005	0.008	0.007	0.006	0.006	0.006
Cobalt, Dissolved	mg/l	--	--	--	--	0.0034	--	0.001	0.0003	0.001	0.0014	0.0008	0.0009	0.0009	0.0007
Copper, Dissolved	mg/l	--	1	<0.001	<0.001	--	--	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	4.06	6.37	4.79	7.31	8.24	3.67	8.53	8.58	7.55	7.52	6.13	5.15
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	54	52	50	--	53	51	50	54	49	47	45	50
Manganese, Dissolved	mg/l	--	0.05	0.97	0.56	--	--	0.77	0.09	0.77	0.78	0.72	0.64	0.59	0.47
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--	--	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	0.025	0.013	0.017	0.017	0.011	<0.005	0.006	0.01	0.006	0.006	0.006	<0.005
Potassium, Dissolved	mg/l	--	--	6	7	6	--	6	7	7	8	5	7	5	7
Selenium, Dissolved	mg/l	0.01	--	--	--	<0.001	--	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (8)	18	22	18	--	19	8	16	17	16	17	7	13
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	--	--	0.013	--	0.006	0.002	0.013	0.015	0.015	0.014	0.015	0.014
Zinc, Dissolved	mg/l	--	5	--	--	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	745	685
pH (Field)	-	--	--	7.25	6.65	7.1	6.9	7.1	7.1	7.3	7	7.1	--	7.6	7.5
Temperature (Field)	deg c	--	15 (7)	--	--	-- (15)	9	6	5	5	7	9	--	10	6

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-8S 19-May-2010	BR-8S 29-Nov-2010	BR-8S 11-May-2011	BR-8S 30-Nov-2011	BR-8S 20-May-2012 (9	BR-8S 13-Nov-2012	BR-8S 17-Jun-13	BR-8S 29-Oct-13				
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	492	580	590	477	563	591	582	611				
Ammonia Nitrogen	mg/l	--	--	0.25	1.50	1.51	0.20	1.67	1.46	1.49	1.51				
Bicarbonate	mg/l	--	--	--	--	--	--	--	--	--	611				
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--				
Chloride	mg/l	--	250	9	15	19	48	16	24	23	50				
Conductivity	uS/cm	--	--	878	1030	1010	979	1010	1060	1060	1160				
Dissolved Organic Carbon	mg/l	--	5	23.4	35.5	42.4	7	35.3	30.6	32	28.4				
Hardness, Calcium Carbonate	mg/l	--	--	430	611	562	485	397	527	584	627				
Nitrate	mg/l	-- (11)	--	--	--	--	--	--	--	--	--				
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--				
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--				
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	2.01	2.11				
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--				
Phosphorus	mg/l	--	--	<0.01	0.04	0.02	0.43	0.03	0.09	0.18	0.25				
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02				
Silica	mg/l	--	--	--	--	--	--	--	--	--	--				
Sulfate	mg/l	--	500 (6)	1	<1	<1	2	<1	<3	12	5				
Tannin & Lignin	mg/l	--	--	0.7	1.6	1.7	0.2	2.2	1.5	2.1	0.9				
Total Dissolved Solids	mg/l	--	500	571	670	656	636	656	689	689	754				
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--				
pH		--	--	--	--	--	--	--	--	--	7.83				
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--				
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01				
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--				
Barium, Dissolved	mg/l	1	--	0.53	0.09	0.08	0.22	0.08	0.1	0.08	0.08				
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005				
Boron, Dissolved	mg/l	5	--	0.56	0.28	0.26	0.78	0.28	0.37	0.39	0.60				
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Calcium, Dissolved	mg/l	--	--	120	159	141	107	98	132	148	157				
Chromium, Dissolved	mg/l	0.05	--	<0.001	<0.001	0.003	0.006	0.006	0.003	<0.001	0.003				
Cobalt, Dissolved	mg/l	--	--	0.0002	0.0007	0.0008	<0.0002	0.0006	0.0006	0.0068	0.0030				
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	<0.001	<0.001				
Iron, Dissolved	mg/l	--	0.3	3.67	5.89	5.9	0.15	5.38	4.36	1.71	0.49				
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001				
Magnesium, Dissolved	mg/l	--	--	45	52	51	53	37	48	52	57				
Manganese, Dissolved	mg/l	--	0.05	0.08	0.54	0.54	0.01	0.52	0.39	0.56	0.48				
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				
Nickel, Dissolved	mg/l	--	--	<0.005	0.005	0.005	<0.005	<0.005	<0.005	0.007	0.008				
Potassium, Dissolved	mg/l	--	--	6	8	7	8	5	7	6	6				
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001				
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Sodium, Dissolved	mg/l	--	200 (8)	6	10	12	22	7	13	12	16				
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--				
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Vanadium, Dissolved	mg/l	--	--	0.002	0.007	0.008	0.003	<0.005	0.006	0.003	0.002				
Zinc, Dissolved	mg/l	--	5	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
Field Measurements															
Conductivity (Field)	uS/cm	--	--	670	580	760	770	805	870	965	1175				
pH (Field)	-	--	--	7.33	6.6	7.1	7.2	7.1	7	7.6	7.3				
Temperature (Field)	deg c	--	15 (7)	23	22	17	11	15	14	22	21.3				

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-9D 22-Nov-1998	BR-9D 15-Jul-1999	BR-9D 16-Oct-1999	BR-9D 01-Jul-2000	BR-9D 01-Oct-2000	BR-9D 14-Oct-2000	BR-9D 06-Sep-2001	BR-9D 06-Nov-2001	BR-9D 28-May-2002	BR-9D 02-Oct-2002	BR-9D 03-May-2003	BR-9D 03-Nov-2003
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	398	410	414	448	--	490	524	527	396	606	374	387
Ammonia Nitrogen	mg/l	--	--	0.16	0.06	0.04	0.15	--	0.15	0.1	0.09	0.19	1.03	0.29	0.17
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	13	16	20	13	--	7	5	3	25	8	15	19
Conductivity	uS/cm	--	--	736	674	817	831	--	754	907	921	868	1060	727	768
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	497	498	411.4	637	--	--
Nitrate	mg/l	-- (11)	--	-- (12)	<0.1	<0.01	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	<0.1	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	0.59	--	0.38	--	--	0.37	--	0.5	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	-- (12)	<0.03	<0.03	<0.03	--	<0.03	--	--	<0.03	--	0.36	0.08
Phosphorus	mg/l	--	--	--	--	--	0.04	--	--	--	--	0.02	--	<0.005	<0.01
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	0.12	0.04
Sulfate	mg/l	--	500 (6)	30	17	38	16	--	10	8	11	40	5	14	21
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	464	408	500	540	--	476	552	654	564	689	473	499
Total Organic Carbon	mg/l	--	--	7.3	19.5	5.2	9.2	--	19.7	--	--	4.7	--	4.1	5.2
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--	--	--	--	0.25
Metals															
Aluminum, Dissolved	mg/l	--	--	-- (12)	<0.03	<0.03	<0.05	--	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.12	0.11	0.97	0.24	--	0.38	0.1	0.1	0.18	0.07	0.12	0.15
Beryllium, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.002	--	<0.002	<0.002	<0.002	<0.002	0.001	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.78	0.9	0.99	0.73	--	0.78	0.63	0.61	0.94	0.34	0.96	1
Cadmium, Dissolved	mg/l	0.005	--	-- (12)	<0.005	<0.01	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	70	72	85	89	--	105	105	107	76	153	71	77
Chromium, Dissolved	mg/l	0.05	--	-- (12)	<0.01	<0.01	<0.01	--	<0.01	0.007	<0.001	<0.001	0.002	0.009	<0.001
Cobalt, Dissolved	mg/l	--	--	-- (12)	0.01	<0.01	<0.01	--	0.0014	0.0008	0.0081	0.0006	0.0014	0.0006	0.0007
Copper, Dissolved	mg/l	--	1	-- (12)	<0.005	<0.01	<0.01	--	0.002	0.002	0.001	<0.001	0.002	<0.001	<0.001
Iron, Dissolved	mg/l	--	0.3	2.51	5.31	0.11	1.57	--	0.72	0.12	0.5	0.67	4.7	0.59	0.27
Lead, Dissolved	mg/l	0.01	--	-- (12)	<0.002	<0.002	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	64	60	51	58	--	60	57	56	54	62	48	50
Manganese, Dissolved	mg/l	--	0.05	0.07	0.09	0.02	0.03	--	0.03	0.02	0.1	<0.0001	0.63	0.018	0.02
Mercury, Dissolved	mg/l	0.001	--	-- (12)	<0.0002	<0.0002	<0.0001	--	<0.0001	--	--	<0.01	--	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.1	<0.01	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.01	--	<0.01	0.01	<0.01	--	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	10	9	9	8	--	7	7	7	9	8	8	10
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	3.1	4	4	4.32	--	4.68	5.12	5	3.51	5.7	4	4.3
Silver, Dissolved	mg/l	--	--	-- (12)	<0.01	0.01	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (8)	7	12	15	9	--	5	2	-- (15)	16	10	11	14
Strontium, Dissolved	mg/l	--	--	12.3	10.2	10.4	12.1	--	8.59	10.4	6.24	12.2	13.1	11	10.5
Sulfur	mg/l	--	--	10	6	12	7	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	-- (12)	<0.2	<0.2	<0.2	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tin, Dissolved	mg/l	--	--	-- (12)	<0.05	--	--	--	<0.01	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.01	--	<0.001	0.002	<0.001	<0.001	<0.005	--	--
Zinc, Dissolved	mg/l	--	5	-- (12)	<0.01	0.17	<0.01	--	0.1	<0.01	<0.01	<0.01	<0.005	0.003	<0.001
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	8.11	7.13	7.55	7.21	--	7.4	7.41	7.53	7.8	6.99	7.52	7.77
Temperature (Field)	deg c	--	15 (7)	--	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-9D 04-May-2004	BR-9D 04-Oct-2004	BR-9D 14-Jun-2005	BR-9D 29-Oct-2005	BR-9D 12-Apr-2006	BR-9D 25-Nov-2006	BR-9D 25-Apr-2007	BR-9D 04-Dec-2007	BR-9D 03-May-2008	BR-9D 28-Nov-2008	BR-9D 28-Apr-2009	BR-9D 29-Nov-2009
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	471	446	405	472	499	391	408	453	515	475	478	497
Ammonia Nitrogen	mg/l	--	--	0.21	0.18	0.09	0.1	0.13	0.14	0.13	<0.02	0.38	0.14	0.14	0.15
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	10	7	50	15	8	15	28	14	5	23	26	17
Conductivity	uS/cm	--	--	842	784	920	885	915	840	900	920	840	785	946	928
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	14.9	4.9	8.4	13.8	21.2	8.2	11.4	15.1
Hardness, Calcium Carbonate	mg/l	--	--	--	--	420	--	501.2	372	431	428	530	440	478	458
Nitrate	mg/l	-- (11)	--	<0.1	<0.1	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	0.7	0.55	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	0.19	0.15	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.06	0.16	0.03	0.04	0.03	0.06	0.04	<0.01	0.39	0.05	0.01	0.01
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	0.05	0.06	0.05	<0.01	0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 (6)	13	8	52	21	13	7	10	9	6	21	24	12
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	0.4	0.2	3.2	0.6	0.5	0.6
Total Dissolved Solids	mg/l	--	500	547	510	598	575	567	489	538	549	593	610	615	603
Total Organic Carbon	mg/l	--	--	11.4	14.3	--	--	--	--	--	--	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	0.12	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	--	0.17	--	0.13	0.13	0.12	0.12	0.18	0.16	0.14	0.14
Beryllium, Dissolved	mg/l	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.84	0.9	0.79	0.81	0.88	1.22	1.09	1.11	0.22	1.06	1.02	0.87
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	91	84	86	--	107	75	90	89	120	92	99	96
Chromium, Dissolved	mg/l	0.05	--	0.001	0.001	0.008	--	0.001	0.001	0.002	0.003	0.004	0.003	0.003	0.002
Cobalt, Dissolved	mg/l	--	--	--	--	0.0016	--	0.0123	0.001	0.0031	0.0003	0.0042	0.001	0.0015	0.001
Copper, Dissolved	mg/l	--	1	<0.001	0.001	--	--	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	0.79	0.13	0.4	<0.03	0.33	0.61	1.36	<0.03	3.54	1.64	1.03	0.64
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	55	49	50	--	57	45	50	50	56	51	56	53
Manganese, Dissolved	mg/l	--	0.05	0.03	<0.01	--	--	0.12	0.02	0.03	<0.01	0.64	0.02	0.03	0.02
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--	--	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.005	0.007	<0.005	0.01	0.011	<0.005	<0.005	<0.005	0.014	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	9	8	9	--	9	10	10	10	4	9	9	9
Selenium, Dissolved	mg/l	0.01	--	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (9)	9	5	22	--	8	8	9	6	6	13	15	8
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	--	--	0.006	--	0.002	<0.001	0.005	0.006	0.009	0.007	0.008	0.005
Zinc, Dissolved	mg/l	--	5	--	--	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	800	825
pH (Field)	-	--	--	6.99	7.26	7.56	6.8	6.9	6.8	6.8	6.8	6.7	6.8	6.9	6.7
Temperature (Field)	deg c	--	15 (7)	--	--	-- (15)	12	6	7	5	8	9	7	9	6

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-9D 19-May-2010	BR-9D 29-Nov-2010	BR-9D 11-May-2011	BR-9D 30-Nov-2011	BR-9D 20-May-2012	BR-9D 13-Nov-2012	BR-9D 17-Jun-13	BR-9D 28-Oct-13				
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	434	489	480	472	486	491	493	484				
Ammonia Nitrogen	mg/l	--	--	0.14	0.06	0.12	0.10	0.08	0.07	0.08	0.08				
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--				
Chloride	mg/l	--	250	54	24	43	41	13	44	65	60				
Conductivity	uS/cm	--	--	1010	938	975	994	885	1020	1100	1120				
Dissolved Organic Carbon	mg/l	--	5	6	11.3	6.7	5.8	12.7	6.1	4.4	3.7				
Hardness, Calcium Carbonate	mg/l	--	--	490	524	479	506	344	491	564	502				
Nitrate	mg/l	-- (11)	--	--	--	--	--	--	--	--	--				
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--				
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--				
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	0.32	<0.10				
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--				
Phosphorus	mg/l	--	--	0.02	0.02	0.02	<0.01	<0.01	0.02	0.05	0.06				
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01				
Silica	mg/l	--	--	--	--	--	--	--	--	--	--				
Sulfate	mg/l	--	500 (6)	45	20	33	34	11	36	47	44				
Tannin & Lignin	mg/l	--	--	0.3	0.2	<0.1	0.1	<0.1	<0.1	0.4	0.9				
Total Dissolved Solids	mg/l	--	500	657	610	634	646	575	663	715	728				
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--				
pH		--	--								7.89				
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--				
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--				
Barium, Dissolved	mg/l	1	--	0.18	0.12	0.15	0.15	0.12	0.15	0.16	0.16				
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005				
Boron, Dissolved	mg/l	5	--	0.88	0.73	0.84	0.76	0.73	0.91	0.91	1.3				
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Calcium, Dissolved	mg/l	--	--	99	114	98	107	70	101	117	102				
Chromium, Dissolved	mg/l	0.05	--	<0.001	0.002	0.002	0.007	0.003	0.002	<0.01	0.002				
Cobalt, Dissolved	mg/l	--	--	0.0004	0.0023	0.0006	0.0005	0.0005	0.0006	0.0069	0.0025				
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	<0.001	<0.001				
Iron, Dissolved	mg/l	--	0.3	0.75	0.09	0.83	0.2	0.4	0.72	0.17	0.69				
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001				
Magnesium, Dissolved	mg/l	--	--	59	58	57	58	41	58	66	60				
Manganese, Dissolved	mg/l	--	0.05	0.02	0.03	0.02	<0.01	<0.01	0.01	0.03	0.02				
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	0.005				
Potassium, Dissolved	mg/l	--	--	11	11	10	10	7	9	11	10				
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001				
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Sodium, Dissolved	mg/l	--	200 (9)	29	13	21	20	6	25	37	36				
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--				
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Vanadium, Dissolved	mg/l	--	--	<0.001	0.002	0.003	0.002	0.007	0.003	0.002	0.001				
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
Field Measurements															
Conductivity (Field)	uS/cm	--	--	970	960	950	965	955	950	958	927				
pH (Field)	-	--	--	7.4	7.3	7.3	7.3	7.4	7.3	7.7	7.7				
Temperature (Field)	deg c	--	15 (7)	16	20	15	12	16	16	14.8	13.4				

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-9S 22-Nov-1998	BR-9S 15-Jul-1999	BR-9S 16-Oct-1999	BR-9S 01-Jul-2000	BR-9S 01-Oct-2000	BR-9S 14-Oct-2000	BR-9S 23-Sep-2001	BR-9S 16-Nov-2001	BR-9S 28-May-2002	BR-9S 02-Oct-2002	BR-9S 03-May-2003	BR-9S 03-Nov-2003
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	604	590	598	563	--	576	583	579	557	543	564	572
Ammonia Nitrogen	mg/l	--	--	0.3	0.27	0.17	0.38	--	0.37	0.33	0.32	0.46	0.44	0.83	0.52
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	3	2	4	2	--	4	3	2	2	3	7	5
Conductivity	uS/cm	--	--	968	840	964	964	--	827	982	984	996	969	994	977
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	536	553.5	619	--	--
Nitrate	mg/l	-- [11]	--	-- (12)	<0.1	<0.01	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	<0.1	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	1.53	--	0.8	--	--	0.81	--	1	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	0.36	<0.03	<0.03	<0.03	--	<0.03	--	--	<0.03	--	0.74	0.23
Phosphorus	mg/l	--	--	--	--	--	0.38	--	--	--	--	0.34	--	<0.005	<0.01
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	1.32	0.12
Sulfate	mg/l	--	500 [6]	3	3	9	4	--	4	2	6	9	13	5	4
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	592	520	588	644	--	556	640	592	647	630	646	635
Total Organic Carbon	mg/l	--	--	30	16.6	24.9	23.5	--	28.4	--	--	20.7	--	22.6	29.4
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	0.97
Metals															
Aluminum, Dissolved	mg/l	--	--	0.07	<0.03	<0.03	<0.05	--	0.13	<0.05	<0.05	0.15	<0.01	<0.01	0.02
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.14	0.15	0.74	0.15	--	0.16	0.17	0.15	1.68	0.17	0.15	0.19
Beryllium, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.002	--	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.2	0.19	0.41	0.2	--	0.2	0.22	0.2	1.7	0.18	0.19	0.22
Cadmium, Dissolved	mg/l	0.005	--	-- (12)	<0.005	<0.01	<0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	143	140	136	131	--	129	117	119	123	139	126	137
Chromium, Dissolved	mg/l	0.05	--	-- (12)	0.76	<0.01	<0.01	--	<0.01	0.01	0.003	0.002	0.002	0.015	0.009
Cobalt, Dissolved	mg/l	--	--	0.03	0.01	<0.01	<0.01	--	0.0187	0.0087	0.0103	0.0093	0.0091	0.0062	0.0075
Copper, Dissolved	mg/l	--	1	-- (12)	<0.005	<0.01	<0.01	--	0.002	<0.001	<0.001	0.001	0.002	<0.001	0.005
Iron, Dissolved	mg/l	--	0.3	2.18	2.59	1.95	3.26	--	4.09	--	2.68	40	2.68	4.43	3.33
Lead, Dissolved	mg/l	0.01	--	-- (12)	<0.002	<0.002	<0.001	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	70	67	65	62	--	61	--	58	60	66	68	66
Manganese, Dissolved	mg/l	--	0.05	0.89	0.84	0.8	0.64	--	0.92	0.86	0.78	6.84	0.721	0.665	0.754
Mercury, Dissolved	mg/l	0.001	--	-- (12)	<0.0002	<0.0002	<0.0001	--	<0.0001	--	--	<0.0001	--	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.01	--	<0.01	0.01	<0.01	0.01	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	0.06	0.02	<0.01	0.02	--	0.04	0.03	0.03	0.14	0.012	<0.005	0.024
Potassium, Dissolved	mg/l	--	--	2	3	2	3	--	3	3	3	3	3	3	5
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	5	5.5	5.5	4.9	--	6.36	6.05	6.06	45.7	4.7	5.3	6.1
Silver, Dissolved	mg/l	--	--	-- (12)	<0.01	0.01	<0.01	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [8]	3	7	7	6	--	6	3	4	5	5	5	7
Strontium, Dissolved	mg/l	--	--	1.24	1.91	1.35	1.7	--	1.17	1.37	1.08	17.9	1.9	1.84	1.36
Sulfur	mg/l	--	--	-- (12)	<3	<3	2	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	-- (12)	<0.2	<0.2	0.3	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tin, Dissolved	mg/l	--	--	-- (12)	<0.05	--	--	--	<0.01	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	-- (12)	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium, Dissolved	mg/l	--	--	0.01	<0.01	<0.01	<0.01	--	<0.001	0.003	0.001	<0.001	<0.005	--	--
Zinc, Dissolved	mg/l	--	5	-- (12)	<0.01	34	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	0.005	0.003
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	8.1	6.64	6.98	6.84	--	7.03	7.09	7.12	7.54	7.26	7.08	7.27
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-9S 04-May-2004	BR-9S 04-Oct-2004	BR-9S 14-Jun-2005	BR-9S 29-Oct-2005	BR-9S 12-Apr-2006	BR-9S 25-Nov-2006	BR-9S 25-Apr-2007	BR-9S 04-Dec-2007	BR-9S 03-May-2008	BR-9S 28-Nov-2008	BR-9S 28-Apr-2009	BR-9S 29-Nov-2009
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	540	550	532	557	559	545	517	537	492	526	525	537
Ammonia Nitrogen	mg/l	--	--	0.45	0.74	0.44	0.44	0.28	0.45	0.33	0.43	0.13	0.44	0.35	0.48
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	3	4	5	6	3	4	5	10	11	4	4	3
Conductivity	uS/cm	--	--	898	924	900	875	830	890	805	895	780	740	909	930
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	18.9	20	21.8	30.5	14.2	16.8	21.8	19.7
Hardness, Calcium Carbonate	mg/l	--	--	--	--	533.7	--	549.4	530.5	525	496	479	473	520	477
Nitrate	mg/l	-- (11)	--	<0.1	<0.1	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	1.21	0.84	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	0.17	0.18	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	1.04	0.09	0.42	0.06	0.62	0.24	0.8	0.65	0.02	0.7	0.51	0.25
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	0.1	0.11	0.09	<0.01	<0.01	<0.01	<0.01	0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 (6)	6	4	5	4	8	5	4	5	8	5	5	5
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	0.9	1.3	0.3	4.2	0.9	1.1
Total Dissolved Solids	mg/l	--	500	584	601	585	569	610	624	600	616	584	603	591	605
Total Organic Carbon	mg/l	--	--	20.1	25.5	--	--	--	--	--	--	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	--	--	<0.01	<0.01	<0.01	<0.01	0.06	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	--	0.19	--	0.21	0.16	0.15	0.18	0.14	0.18	0.16	0.17
Beryllium, Dissolved	mg/l	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.19	0.23	0.18	0.23	0.25	0.21	0.19	0.23	1.1	0.22	0.18	0.22
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	112	116	120	--	123	122	121	113	101	107	116	107
Chromium, Dissolved	mg/l	0.05	--	0.003	0.002	0.004	--	0.002	0.002	0.003	0.004	0.003	0.006	0.004	0.002
Cobalt, Dissolved	mg/l	--	--	--	--	0.0058	--	0.004	0.005	0.0086	0.0045	0.0038	0.004	0.0031	0.0029
Copper, Dissolved	mg/l	--	1	<0.001	<0.001	--	--	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	4.52	3.02	3.34	2.99	3.73	3.09	3.69	6.94	0.85	4	2.77	3.17
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	59	57	57	--	59	55	54	52	55	50	56	51
Manganese, Dissolved	mg/l	--	0.05	0.73	0.63	--	--	0.55	0.7	0.7	0.64	0.04	0.67	0.52	0.54
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--	--	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	0.018	0.02	0.02	0.02	0.018	0.015	0.012	0.017	0.005	0.013	0.01	0.009
Potassium, Dissolved	mg/l	--	--	4	4	4	--	4	5	4	4	9	4	4	4
Selenium, Dissolved	mg/l	0.01	--	--	--	<0.001	--	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (8)	6	6	5	--	5	6	5	5	7	4	4	3
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	--	--	0.01	--	0.003	0.003	0.008	0.009	0.007	0.015	0.01	0.005
Zinc, Dissolved	mg/l	--	5	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	752	735
pH (Field)	-	--	--	6.71	6.75	7.07	7	7.2	7.1	7.1	7	7.1	7.2	7.3	7.4
Temperature (Field)	deg c	--	15 (7)	--	--	-- (15)	11	6	8	6	7	8	6	8	6

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-9S 19-May-2010	BR-9S 29-Nov-2010	BR-9S 11-May-2011	BR-9S 30-Nov-2011	BR-9S 20-May-2012	BR-9S 13-Nov-2012	BR-9S 17-Jun-13	BR-9S 28-Oct-13				
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	479	534	521	524	516	550	531	544				
Ammonia Nitrogen	mg/l	--	--	0.38	0.44	0.33	0.40	0.35	0.37	0.42	0.44				
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--				
Chloride	mg/l	--	250	4	3	5	6	4	5	3	7				
Conductivity	uS/cm	--	--	852	919	886	923	900	937	911	954				
Dissolved Organic Carbon	mg/l	--	5	18.4	19.6	20.6	5.5	19.3	16.6	19.1	21.6				
Hardness, Calcium Carbonate	mg/l	--	--	529	550	495	541	369	504	590	548				
Nitrate	mg/l	-- (11)	--	--	--	--	--	--	--	--	--				
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--				
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--				
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	0.74	0.76				
Phosphate	mg/l	--	--	--	--	--	--	--	--	--					
Phosphorus	mg/l	--	--	0.44	0.48	0.03	0.2	0.08	0.2	0.11	0.08				
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02				
Silica	mg/l	--	--	--	--	--	--	--	--	--	--				
Sulfate	mg/l	--	500 (6)	7	7	6	2	11	7	17	4				
Tannin & Lignin	mg/l	--	--	0.4	0.4	0.5	0.9	1	0.6	1.2	0.1				
Total Dissolved Solids	mg/l	--	500	554	597	576	600	585	609	592	620				
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--				
pH		--	--								7.67				
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--				
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.06	0.04				
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--				
Barium, Dissolved	mg/l	1	--	0.16	0.18	0.14	0.16	0.14	0.16	0.15	0.15				
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005				
Boron, Dissolved	mg/l	5	--	0.14	0.16	0.14	0.14	0.15	0.18	0.15	0.18				
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Calcium, Dissolved	mg/l	--	--	116	128	111	126	80	116	134	124				
Chromium, Dissolved	mg/l	0.05	--	<0.001	<0.001	0.002	<0.005	0.004	0.002	<0.001	0.001				
Cobalt, Dissolved	mg/l	--	--	0.0022	0.0025	0.0024	0.002	0.002	0.0016	0.0045	0.0045				
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	<0.001	<0.001				
Iron, Dissolved	mg/l	--	0.3	2.99	5.91	3.2	3.65	3.01	5.82	3.74	4.25				
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001				
Magnesium, Dissolved	mg/l	--	--	58	56	53	55	41	52	62	58				
Manganese, Dissolved	mg/l	--	0.05	0.49	0.61	0.55	0.55	0.54	0.5	0.53	0.52				
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				
Nickel, Dissolved	mg/l	--	--	0.008	0.008	0.007	0.007	0.006	0.005	0.006	0.005				
Potassium, Dissolved	mg/l	--	--	4	4	3	4	2	3	5	4				
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001				
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Sodium, Dissolved	mg/l	--	200 (9)	4	3	5	5	3	3	3	4				
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--				
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--				
Vanadium, Dissolved	mg/l	--	--	0.002	0.005	0.005	0.005	<0.005	0.005	0.003	0.002				
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
Field Measurements															
Conductivity (Field)	uS/cm	--	--	828	840	770	735	785	800	870	857				
pH (Field)	-	--	--	7.14	7	7.2	7.2	7.4	7.3	7.1	7.0				
Temperature (Field)	deg c	--	15 (7)	16	19	16	11	16	15	15.5	15.2				

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-10 16-Nov-2001	BR-10 28-May-2002	BR-10 03-May-2003	BR-10 03-Nov-2003	BR-10 04-May-2004	BR-10 04-Oct-2004	BR-10 10-Jun-2005	BR-10 29-Oct-2005	BR-10 12-Apr-2006	BR-10 24-Nov-2006	BR-10 25-Apr-2007	BR-10 04-Dec-2007
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	474	477	490	523	482	538	464	491	460	459	437	483
Ammonia Nitrogen	mg/l	--	--	1.06	0.95	1.09	1.05	1.05	--	1.06	1.08	0.77	0.87	0.64	0.8
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	74	73	80	85	83	87	79	83	78	84	77	93
Conductivity	uS/cm	--	--	1030	1140	1110	1170	1110	1220	1300	1005	990	875	710	815
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	3.6	4.2	3.5	4.5
Hardness, Calcium Carbonate	mg/l	--	--	489	--	--	--	--	--	455.1	--	479.9	474.9	457	508
Nitrate	mg/l	-- (11)	--	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--	--	--	--
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	1.42	1.45	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	1.53	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	<0.03	0.43	0.09	1.2	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	0.56	<0.005	<0.01	0.48	--	0.32	0.22	0.22	0.24	0.78	0.16
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	0.07	0.05	0.05	<0.01
Silica	mg/l	--	--	--	--	0.39	0.23	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 (6)	17	17	8	6	9	--	12	25	24	15	21	10
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	608	741	722	761	722	793	663	653	663	715	689	741
Total Organic Carbon	mg/l	--	--	--	6	6.4	7.4	5.2	7.7	--	--	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--	--	--	1.63	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.05	0.44	<0.01	<0.01	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.17	0.22	0.2	0.25	--	--	0.23	--	0.22	0.22	0.2	0.25
Beryllium, Dissolved	mg/l	--	--	<0.002	<0.002	<0.001	<0.001	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.53	0.46	0.43	0.43	0.48	0.47	0.55	0.6	0.56	0.66	0.64	0.57
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	125	127	141	150	123	--	123	--	128	126	122	134
Chromium, Dissolved	mg/l	0.05	--	<0.001	0.005	0.011	0.004	0.003	--	0.006	--	0.002	0.002	0.003	0.008
Cobalt, Dissolved	mg/l	--	--	0.018	0.119	0.0006	0.0011	--	--	0.0004	--	0.0018	0.0101	0.0011	0.0006
Copper, Dissolved	mg/l	--	1	<0.001	0.003	<0.001	<0.001	<0.001	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	1.6	3.51	1.98	2.01	2.04	--	1.55	1.64	1.4	1.52	1.49	2.16
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	--	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	43	42	42	44	39	--	36	--	39	39	37	42
Manganese, Dissolved	mg/l	--	0.05	0.04	0.7	0.096	0.104	0.1	--	--	--	0.06	0.06	0.06	0.06
Mercury, Dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.005	<0.005	--	--	<0.005	--	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.01	<0.01	<0.005	<0.005	<0.005	--	<0.005	0.013	0.006	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	4	4	4	6	5	--	4	--	4	5	4	4
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001	0.001
Silicon, Dissolved	mg/l	--	--	4.5	4.8	4.9	5.7	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (9)	41	46	47	48	48	--	48	--	45	46	47	43
Strontium, Dissolved	mg/l	--	--	4.55	5.87	5.8	5.25	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	0.02	<0.01	<0.01	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.001	0.002	--	--	--	--	0.009	--	0.002	0.002	0.006	0.005
Zinc, Dissolved	mg/l	--	5	<0.001	<0.01	0.004	0.002	--	--	<0.01	0.01	<0.01	<0.01	0.03	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.47	7.74	7.22	7.5	7.21	--	6.6	6.8	6.9	6.8	7.2	6.9
Temperature (Field)	deg c	--	15 (7)	--	--	--	--	--	--	12	11	6	5	5	6

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-10 03-May-2008	BR-10 27-Nov-2008	BR-10 28-Apr-2009	BR-10 28-Nov-2009	BR-10 19-May-2010	BR-10 29-Nov-2010	BR-10 11-May-2011	BR-10 29-Nov-2011	BR-10 20-May-2012	BR-10 14-Nov-2012	BR-10 13-Jun-13	BR-10 25-Oct-13
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	407	466	429	479	375	272	409	455	431	479	411	453
Ammonia Nitrogen	mg/l	--	--	0.66	0.71	0.64	0.72	0.60	0.18	0.60	0.64	0.61	0.65	0.42	0.58
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	74	89	74	89	78	14	76	86	79	89	77	84
Conductivity	uS/cm	--	--	780	700	1030	1140	976	542	977	1100	1040	1160	995	1090
Dissolved Organic Carbon	mg/l	--	5	2.6	2.6	2.7	3.5	2.4	5.6	3.4	2.6	1.5	2.7	1.8	3.3
Hardness, Calcium Carbonate	mg/l	--	--	412	479	448	496	404	289	405	450	325	516	432	468
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	0.64	0.67
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.1	0.1	0.16	0.16	0.1	0.13	0.13	0.09	0.09	0.07	1.26	0.07
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	25	17	23	18	25	7	28	18	26	22	27	29
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	639	741	670	741	634	352	635	715	676	754	647	708
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--												7.77
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.2	0.25	0.2	0.22	0.2	0.09	0.2	0.22	0.21	0.25	<0.01	0.23
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron, Dissolved	mg/l	5	--	0.7	0.75	0.75	0.84	0.66	0.15	0.62	0.64	0.6	0.8	<0.01	0.63
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	109	126	120	131	104	81	106	121	84	134	112	123
Chromium, Dissolved	mg/l	0.05	--	0.004	0.003	0.004	0.003	<0.001	<0.001	0.002	0.002	0.003	0.003	<0.001	0.003
Cobalt, Dissolved	mg/l	--	--	0.001	0.0006	0.0002	0.0003	<0.0002	0.0004	0.0003	0.0006	0.0003	0.0003	<0.0002	0.0033
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	<0.001	<0.001
Iron, Dissolved	mg/l	--	0.3	1.33	1.99	1.63	1.94	1.57	0.07	1.48	1.4	1.49	1.31	0.25	1.36
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	34	40	36	41	35	21	34	36	28	44	37	39
Manganese, Dissolved	mg/l	--	0.05	0.06	0.06	0.05	0.07	0.05	0.03	0.05	0.07	0.05	0.05	<0.01	0.05
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	3	4	3	5	4	4	4	4	2	5	4	4
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [9]	48	48	49	50	52	10	48	45	38	50	55	46
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	0.005	0.007	0.008	0.004	<0.001	0.003	0.003	0.004	0.004	0.006	<0.001	0.003
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	720	480	990	980	1020	1035	1088	1060	1020	988
pH (Field)	-	--	--	7	7.1	7.4	7.4	7.3	7.4	7.1	7.2	7.4	7.4	7.5	7.2
Temperature (Field)	deg c	--	15 [7]	7	6	9	6	8.2	6.8	9	7	8.5	8	9.5	9.7

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-11 16-Nov-2001	BR-11 28-May-2002	BR-11 03-May-2003	BR-11 03-Nov-2003	BR-11 04-May-2004	BR-11 04-Oct-2004	BR-11 10-Jun-2005	BR-11 29-Oct-2005	BR-11 12-Apr-2006	BR-11 24-Nov-2006	BR-11 25-Apr-2007	BR-11 04-Dec-2007
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	392	346	362	411	373	512	531	399	259	403	293	409
Ammonia Nitrogen	mg/l	--	--	0.11	0.11	0.05	0.11	0.04	--	<0.02	0.03	0.08	0.11	<0.02	0.04
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	5	4	5	7	<1	5	5	8	1	8	3	6
Conductivity	uS/cm	--	--	741	679	671	761	678	910	900	785	810	845	790	805
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	2	3.8	2.3	5.6
Hardness, Calcium Carbonate	mg/l	--	--	433	--	--	--	--	--	538.7	--	273	399.3	284	393
Nitrate	mg/l	-- [11]	--	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	0.31	0.15	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	0.15	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	<0.03	0.4	0.09	0.09	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	0.36	<0.005	--	0.2	--	0.22	0.21	0.13	0.19	0.81	0.1
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	0.06	0.07	0.02	<0.01
Silica	mg/l	--	--	--	--	0.24	0.1	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	32	25	15	14	11	--	6	17	13	14	9	14
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	456	441	436	495	441	592	570	510	303	491	362	489
Total Organic Carbon	mg/l	--	--	--	3.8	4.1	4.9	4.4	15.6	--	--	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	0.28	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.05	<0.05	0.06	<0.01	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.04	0.04	0.03	0.03	--	--	0.02	--	<0.01	0.04	0.03	0.02
Beryllium, Dissolved	mg/l	--	--	<0.002	<0.002	<0.001	<0.001	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.27	0.35	0.34	0.49	0.29	0.27	0.22	0.43	0.11	0.82	0.33	0.46
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	81	71	75	89	76	--	122	--	60	81	61	83
Chromium, Dissolved	mg/l	0.05	--	<0.001	0.001	0.008	0.003	0.002	--	0.004	--	<0.001	<0.001	0.001	0.002
Cobalt, Dissolved	mg/l	--	--	0.0012	0.0029	0.0028	0.0028	--	--	0.0046	--	0.0014	0.0025	0.0011	0.0021
Copper, Dissolved	mg/l	--	1	<0.001	0.001	<0.001	0.007	0.001	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	0.02	0.02	0.17	0.04	0.03	--	0.04	<0.03	<0.03	0.13	<0.03	<0.03
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	--	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	56	44	46	53	42	--	57	--	30	48	32	45
Manganese, Dissolved	mg/l	--	0.05	0.06	0.03	0.033	0.031	0.03	--	--	--	<0.01	0.03	<0.01	0.06
Mercury, Dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	0.01	<0.01	<0.005	<0.005	--	--	<0.005	--	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.01	<0.01	<0.005	0.009	0.019	--	0.019	0.009	0.019	0.007	0.008	0.009
Potassium, Dissolved	mg/l	--	--	5	--	4	7	2	--	2	--	2	8	2	5
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	3.9	2.59	3	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [8]	4	<2	3	4	4	--	5	--	<2	4	2	4
Strontium, Dissolved	mg/l	--	--	2.39	5.34	4.27	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	0.002	<0.001	--	--	--	--	0.01	--	<0.001	0.001	0.004	0.003
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	0.003	--	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.86	7.98	7.55	7.74	7.31	--	6.7	6.8	6.7	6.8	6.8	6.9
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	18.4	12	6	6	6	6

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-11 03-May-2008	BR-11 27-Nov-2008	BR-11 28-Apr-2009	BR-11 28-Nov-2009 (5	BR-11 19-May-2010	BR-11 29-Nov-2010	BR-11 11-May-2011	BR-11 29-Nov-2011	BR-11 20-May-2012	BR-11 13-Nov-2012	BR-11 13-Jun-13	BR-11 25-Oct-13
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	333	396	289	271	443	200	340	277	341	422	380	345
Ammonia Nitrogen	mg/l	--	--	0.03	0.06	0.03	0.03	0.05	<0.02	0.11	<0.02	0.06	0.06	0.08	0.05
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	2	5	2	1	2	1	6	<1	4	5	5	4
Conductivity	uS/cm	--	--	830	800	534	502	795	372	607	522	620	733	692	640
Dissolved Organic Carbon	mg/l	--	5	4.5	3.6	2.5	3.2	18.1	1.6	1.9	1.4	2.2	3.5	3.2	2.8
Hardness, Calcium Carbonate	mg/l	--	--	328	365	289	263	425	191	355	304	274	385	391	376
Nitrate	mg/l	-- (11)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- (13)	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	0.19	<0.10
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.1	0.05	0.17	0.31	0.3	0.12	0.1	0.11	0.23	0.14	0.02	0.03
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 (6)	8	13	10	9	4	6	10	12	11	9	12	12
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	393	479	347	326	517	242	395	339	403	476	450	416
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--												7.92
Turbidity	ntu	--	5 (14) (7)	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.03	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	<0.01	0.04	<0.01	<0.01	0.01	<0.01	<0.01	0.01	<0.01	0.02	0.07	0.04
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron, Dissolved	mg/l	5	--	0.13	0.54	0.1	0.08	0.17	0.04	0.08	0.13	0.07	0.3	0.53	0.47
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	72	77	63	59	91	42	78	69	57	80	79	78
Chromium, Dissolved	mg/l	0.05	--	0.003	0.002	0.002	<0.001	<0.001	<0.001	0.019	<0.001	0.002	0.001	0.003	0.002
Cobalt, Dissolved	mg/l	--	--	0.0002	0.0024	0.0008	0.0002	0.0016	<0.0002	0.0004	0.0011	<0.0002	0.0016	0.0091	0.0031
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	<0.001	<0.001
Iron, Dissolved	mg/l	--	0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.81	0.12	<0.03
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	36	42	32	28	48	21	39	32	32	45	47	44
Manganese, Dissolved	mg/l	--	0.05	<0.01	0.04	<0.01	<0.01	0.05	<0.01	<0.01	0.02	<0.01	0.08	0.04	0.03
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.005	0.011	0.011	<0.005	0.006	<0.005	0.005	<0.005	<0.005	<0.005	0.015	0.011
Potassium, Dissolved	mg/l	--	--	1	5	2	2	2	<1	3	2	2	5	6	6
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (9)	<2	2	<2	3	3	<2	<2	3	<2	2	<2	<2
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	0.005	0.004	0.004	0.001	0.002	<0.001	<0.001	0.002	0.002	0.002	0.002	0.001
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	540	580	480	485	515	505	615	605	698	562
pH (Field)	-	--	--	6.8	6.8	8.1	7.9	8.1	8	7.8	7.7	7.5	7.4	7.7	7.5
Temperature (Field)	deg c	--	15 (7)	8	6	10	5	9.8	7.4	9	7	10	8	10.4	11.0

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-12 16-Nov-2001	BR-12 28-May-2002	BR-12 03-Nov-2003	BR-12 04-May-2004	BR-12 04-Oct-2004	BR-12 14-Jun-2005	BR-12 29-Oct-2005	BR-12 12-Apr-2006	BR-12 25-Nov-2006	BR-12 25-Apr-2007	BR-12 04-Dec-2007	BR-12 03-May-2008
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	535	334	452	336	477	413	519	272	301	264	466	302
Ammonia Nitrogen	mg/l	--	--	0.93	1.1	0.96	0.9	--	1.07	1.24	0.44	0.33	0.26	0.63	0.18
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	1	2	3	4	3	8	4	47	3	4	3	5
Conductivity	uS/cm	--	--	909	636	804	615	847	750	1045	985	610	860	630	590
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	45.5	58.9	41.9	17.2	47.9
Hardness, Calcium Carbonate	mg/l	--	--	529	--	--	--	--	462.1	--	302.7	301.1	294	452	314
Nitrate	mg/l	-- [11]	--	<0.1	<0.1	<0.1	<0.1	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	2.15	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	2.92	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	0.05	0.3	0.52	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	1.05	--	0.59	--	0.19	0.12	0.37	0.78	2.02	0.63	0.31
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	0.06	0.05	0.06	<0.01	0.04
Silica	mg/l	--	--	--	--	0.53	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	51	6	6	2	--	4	12	12	6	3	23	4
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	604	413	523	400	551	488	679	328	367	330	555	363
Total Organic Carbon	mg/l	--	--	--	58.3	49.6	55.7	35.4	--	--	--	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	2.39	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.05	0.08	0.03	--	--	0.04	<0.01	0.04	0.04	0.06	<0.01	0.09
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.06	0.06	0.08	--	--	0.07	--	0.03	0.05	0.03	0.06	0.04
Beryllium, Dissolved	mg/l	--	--	<0.002	<0.002	<0.001	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.13	0.09	0.11	0.08	0.11	0.1	0.15	0.08	0.08	0.06	0.09	0.07
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	139	97	136	94	--	134	--	85	86	83	120	86
Chromium, Dissolved	mg/l	0.05	--	0.002	0.003	0.009	0.003	--	0.004	--	0.001	0.002	0.002	0.007	0.002
Cobalt, Dissolved	mg/l	--	--	0.0167	0.0171	0.0138	--	--	0.0109	--	0.0068	0.006	0.0089	0.0096	0.0069
Copper, Dissolved	mg/l	--	1	<0.001	0.001	0.004	0.002	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	8.88	13.1	8.74	14.1	--	10.1	5.86	0.6	0.52	1.41	3.11	1.87
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	44	25	36	21	--	31	--	22	21	21	37	24
Manganese, Dissolved	mg/l	--	0.05	1.11	1.76	1.93	2.1	--	--	--	1.97	1.88	1.64	0.93	2
Mercury, Dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.005	--	--	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	0.02	0.04	0.034	0.035	--	0.03	0.014	0.039	0.026	0.021	0.023	0.028
Potassium, Dissolved	mg/l	--	--	7	8	8	6	--	6	--	5	5	4	4	3
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	6.1	5.33	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [9]	3	<2	4	5	--	4	--	<2	2	<2	3	<2
Strontium, Dissolved	mg/l	--	--	0.312	0.175	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.001	<0.001	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	<0.01	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.001	0.006	--	--	--	0.014	--	0.003	0.003	0.006	0.005	0.009
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	--	--	--	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.02	7.36	7.1	6.8	--	6.5	7.1	7.2	7.2	7.3	7.3	7.4
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	15.2	9	5	5	5	6	7

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-12 27-Nov-2008	BR-12 28-Apr-2009	BR-12 28-Nov-2009	BR-12 19-May-2010	BR-12 29-Nov-2010	BR-12 11-May-2011	BR-12 29-Nov-2011	BR-12 20-May-2012	BR-12 13-Nov-2012	BR-12 14-Jun-13	BR-12 25-Oct-13
General Chemistry														
Alkalinity (Total as CaCO3)	mg/l	--	--	427	295	408	417	330	286	429	396	469	396	412
Ammonia Nitrogen	mg/l	--	--	0.39	0.20	0.43	0.45	0.18	2.64	0.31	0.38	0.48	0.32	0.34
Bicarbonate	mg/l	--	--											
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	1	2	1	3	2	3	3	4	3	1	5
Conductivity	uS/cm	--	--	605	539	729	737	595	509	773	711	824	714	836
Dissolved Organic Carbon	mg/l	--	5	17	51	22.4	26.6	40.4	47.6	14.5	28.4	22.8	38.8	15.2
Hardness, Calcium Carbonate	mg/l	--	--	425	318	394	403	368	284	430	309	449	431	472
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	0.96	0.62
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.49	0.27	0.68	0.43	0.23	0.15	0.14	0.24	0.2	0.11	0.08
Phosphorus (dissolved reactive)	mg/l	--	--	0.02	0.01	<0.01	<0.01	<0.01	0.02	0.02	<0.01	<0.01	<0.01	0.02
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	10	<1	8	7	4	<1	12	7	17	5	60
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	503	350	474	479	387	331	502	462	536	464	543
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--											7.67
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--
Metals														
Aluminum, Dissolved	mg/l	--	--	<0.01	0.04	<0.01	0.01	0.02	0.09	<0.01	0.02	<0.01	0.06	0.02
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.04	0.03	0.03	0.04	0.03	0.03	0.04	0.04	0.04	0.04	0.04
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron, Dissolved	mg/l	5	--	0.07	0.06	0.08	0.07	0.05	0.04	0.09	0.05	0.07	0.05	0.07
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001
Calcium, Dissolved	mg/l	--	--	114	86	105	107	103	76	116	81	122	115	128
Chromium, Dissolved	mg/l	0.05	--	0.002	0.002	0.002	<0.001	<0.001	0.002	0.002	0.003	0.002	0.003	
Cobalt, Dissolved	mg/l	--	--	0.008	0.0053	0.0044	0.0057	0.0034	0.0045	0.0038	0.0041	0.0055	0.0150	<0.001
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	0.005	0.006
Iron, Dissolved	mg/l	--	0.3	1.44	0.78	0.94	1.45	0.12	1.96	2.29	1.03	2.17	0.52	0.16
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	34	25	32	33	27	23	34	26	35	35	37
Manganese, Dissolved	mg/l	--	0.05	1.47	1.48	0.78	1.13	1.38	1.34	1.1	0.87	1.11	1.41	1.18
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	0.018	0.023	0.011	0.017	0.014	0.018	0.007	0.012	0.011	0.026	0.095
Potassium, Dissolved	mg/l	--	--	4	4	4	4	4	3	3	3	3	4	5
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [8]	<2	<2	2	<2	<2	<2	<2	2	<2	<2	<2
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	0.005	0.007	0.004	0.002	0.004	0.005	0.005	0.005	0.004	0.007	0.003
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements														
Conductivity (Field)	uS/cm	--	--	--	560	520	710	725	680	695	761	745	681	766
pH (Field)	-	--	--	7.4	7.9	7.7	7.26	7.3	7.2	7.3	7.6	7.5	7.4	7.1
Temperature (Field)	deg c	--	15 [7]	5	10	6	13	7.1	12	9	10	8	11.9	11.6

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-12D 03-May-2003											
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	387											
Ammonia Nitrogen	mg/l	--	--	0.64											
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--											
Chloride	mg/l	--	250	2											
Conductivity	uS/cm	--	--	697											
Dissolved Organic Carbon	mg/l	--	5	--											
Hardness, Calcium Carbonate	mg/l	--	--	--											
Nitrate	mg/l	-- (11)	--	<0.1											
Nitrite	mg/l	-- (13)	--	--											
Nitrogen	mg/l	--	--	1.99											
Nitrogen, Total Kjeldahl	mg/l	--	--	--											
Phosphate	mg/l	--	--	0.99											
Phosphorus	mg/l	--	--	<0.005											
Phosphorus (dissolved reactive)	mg/l	--	--	--											
Silica	mg/l	--	--	0.44											
Sulfate	mg/l	--	500 (6)	3											
Tannin & Lignin	mg/l	--	--	--											
Total Dissolved Solids	mg/l	--	500	453											
Total Organic Carbon	mg/l	--	--	67.2											
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--											
Metals															
Aluminum, Dissolved	mg/l	--	--	0.07											
Arsenic, Dissolved	mg/l	0.025	--	--											
Barium, Dissolved	mg/l	1	--	0.06											
Beryllium, Dissolved	mg/l	--	--	<0.001											
Boron, Dissolved	mg/l	5	--	0.1											
Cadmium, Dissolved	mg/l	0.005	--	<0.0001											
Calcium, Dissolved	mg/l	--	--	115											
Chromium, Dissolved	mg/l	0.05	--	0.017											
Cobalt, Dissolved	mg/l	--	--	0.0225											
Copper, Dissolved	mg/l	--	1	0.004											
Iron, Dissolved	mg/l	--	0.3	6.74											
Lead, Dissolved	mg/l	0.01	--	<0.001											
Magnesium, Dissolved	mg/l	--	--	26											
Manganese, Dissolved	mg/l	--	0.05	3.34											
Mercury, Dissolved	mg/l	0.001	--	<0.0001											
Molybdenum, Dissolved	mg/l	--	--	<0.005											
Nickel, Dissolved	mg/l	--	--	0.064											
Potassium, Dissolved	mg/l	--	--	7											
Selenium, Dissolved	mg/l	0.01	--	--											
Silicon, Dissolved	mg/l	--	--	6											
Silver, Dissolved	mg/l	--	--	<0.0001											
Sodium, Dissolved	mg/l	--	200 (8)	2											
Strontium, Dissolved	mg/l	--	--	0.204											
Sulfur	mg/l	--	--	--											
Thallium, Dissolved	mg/l	--	--	<0.001											
Tin, Dissolved	mg/l	--	--	--											
Titanium, Dissolved	mg/l	--	--	<0.01											
Vanadium, Dissolved	mg/l	--	--	--											
Zinc, Dissolved	mg/l	--	5	0.011											
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--											
pH (Field)	-	--	--	6.89											
Temperature (Field)	deg c	--	15 (7)	--											

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-12S 03-May-2003											
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	388											
Ammonia Nitrogen	mg/l	--	--	0.98											
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--											
Chloride	mg/l	--	250	2											
Conductivity	uS/cm	--	--	696											
Dissolved Organic Carbon	mg/l	--	5	--											
Hardness, Calcium Carbonate	mg/l	--	--	--											
Nitrate	mg/l	-- (11)	--	<0.1											
Nitrite	mg/l	-- (13)	--	--											
Nitrogen	mg/l	--	--	1.95											
Nitrogen, Total Kjeldahl	mg/l	--	--	--											
Phosphate	mg/l	--	--	0.53											
Phosphorus	mg/l	--	--	<0.005											
Phosphorus (dissolved reactive)	mg/l	--	--	--											
Silica	mg/l	--	--	0.49											
Sulfate	mg/l	--	500 (6)	3											
Tannin & Lignin	mg/l	--	--	--											
Total Dissolved Solids	mg/l	--	500	452											
Total Organic Carbon	mg/l	--	--	65											
pH		--	--												
Turbidity	ntu	--	5 (14) (7)	--											
Metals															
Aluminum, Dissolved	mg/l	--	--	0.08											
Arsenic, Dissolved	mg/l	0.025	--	--											
Barium, Dissolved	mg/l	1	--	0.06											
Beryllium, Dissolved	mg/l	--	--	<0.001											
Boron, Dissolved	mg/l	5	--	0.11											
Cadmium, Dissolved	mg/l	0.005	--	<0.0001											
Calcium, Dissolved	mg/l	--	--	116											
Chromium, Dissolved	mg/l	0.05	--	0.015											
Cobalt, Dissolved	mg/l	--	--	0.0217											
Copper, Dissolved	mg/l	--	1	0.003											
Iron, Dissolved	mg/l	--	0.3	6.75											
Lead, Dissolved	mg/l	0.01	--	<0.001											
Magnesium, Dissolved	mg/l	--	--	27											
Manganese, Dissolved	mg/l	--	0.05	3.32											
Mercury, Dissolved	mg/l	0.001	--	<0.0001											
Molybdenum, Dissolved	mg/l	--	--	<0.006											
Nickel, Dissolved	mg/l	--	--	<0.005											
Potassium, Dissolved	mg/l	--	--	8											
Selenium, Dissolved	mg/l	0.01	--	--											
Silicon, Dissolved	mg/l	--	--	6											
Silver, Dissolved	mg/l	--	--	<0.0001											
Sodium, Dissolved	mg/l	--	200 (8)	2											
Strontium, Dissolved	mg/l	--	--	0.204											
Sulfur	mg/l	--	--	--											
Thallium, Dissolved	mg/l	--	--	<0.001											
Tin, Dissolved	mg/l	--	--	--											
Titanium, Dissolved	mg/l	--	--	<0.01											
Vanadium, Dissolved	mg/l	--	--	--											
Zinc, Dissolved	mg/l	--	5	0.011											
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--											
pH (Field)	-	--	--	6.74											
Temperature (Field)	deg c	--	15 (7)	--											

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-13D 16-Nov-2001	BR-13D 04-Mar-2002	BR-13D 28-May-2002	BR-13D 09-Oct-2002	BR-13D 03-May-2003	BR-13D 03-Nov-2003	BR-13D 04-May-2004	BR-13D 04-Oct-2004	BR-13D 14-Jun-2005	BR-13D 29-Oct-2005	BR-13D 12-Apr-2006	BR-13D 24-Nov-2006
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	316	295	332	272	303	309	312	273	323	261	305	315
Ammonia Nitrogen	mg/l	--	--	0.03	0.12	0.03	<0.02	0.09	0.39	0.11	0.38	<0.02	0.18	0.23	0.02
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	52	6	39	35	20	30	58	56	54	49	42	69
Conductivity	uS/cm	--	--	793	601	794	670	648	701	829	769	760	645	310	380
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	2	1.3
Hardness, Calcium Carbonate	mg/l	--	--	350	277	--	267	--	--	--	--	375.5	--	365.3	359.6
Nitrate	mg/l	-- [11]	--	2.57	0.12	0.65	0.33	<0.1	<0.1	<0.1	<0.1	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	0.48	--	0.23	0.39	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	0.25	0.46	--	--	--	--
Phosphate	mg/l	--	--	--	--	<0.03	--	0.09	<0.03	0.11	0.12	--	--	--	--
Phosphorus	mg/l	--	--	--	--	0.2	--	<0.005	0.02	0.05	--	0.01	0.02	0.03	0.06
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	0.04	0.06
Silica	mg/l	--	--	--	--	--	--	0.05	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	28	31	36	34	27	29	54	58	47	41	26	62
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	472	391	516	--	421	456	539	500	494	419	465	588
Total Organic Carbon	mg/l	--	--	--	--	2.2	--	1.6	1.2	<0.5	3	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.05	<0.05	<0.05	<0.01	<0.01	0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	<0.002	0.06	0.08	0.09	0.1	0.05	--	0.19	0.2	--	0.09	0.17
Beryllium, Dissolved	mg/l	--	--	--	<0.002	<0.002	<0.001	<0.001	<0.001	--	<0.001	<0.001	--	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.07	0.17	0.2	0.2	0.22	0.49	0.23	0.25	0.19	0.15	0.21	0.28
Cadmium, Dissolved	mg/l	0.005	--	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	97	58	90	59	67	72	82	64	101	--	92	93
Chromium, Dissolved	mg/l	0.05	--	0.001	0.002	<0.001	<0.001	0.007	0.001	0.001	0.001	0.003	--	0.002	0.002
Cobalt, Dissolved	mg/l	--	--	0.0012	0.0002	0.0011	<0.0002	0.0005	0.0006	--	<0.0002	0.0022	--	0.0002	0.0003
Copper, Dissolved	mg/l	--	1	<0.001	<0.001	0.001	<0.001	<0.0001	<0.001	<0.001	0.001	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	0.04	0.05	--	0.01	0.4	0.17	0.3	0.01	<0.03	<0.03	0.04	0.12
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	26	32	34	29	39	38	30	28	30	--	33	31
Manganese, Dissolved	mg/l	--	0.05	0.01	<0.01	0.02	<0.005	0.008	<0.005	0.07	<0.01	--	--	<0.01	0.16
Mercury, Dissolved	mg/l	0.001	--	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.005	<0.005	<0.05	--	<0.005	<0.005	--	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	3	9	5	6	10	10	7	6	5	--	6	7
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	<0.001	--	<0.001	0.002
Silicon, Dissolved	mg/l	--	--	4.74	3.5	3.72	3.6	4.1	3.7	--	7.8	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [9]	23	12	22	32	8	17	40	38	41	--	20	43
Strontium, Dissolved	mg/l	--	--	0.7	2.3	3.19	4.54	4.83	6.75	--	0.174	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	--	<0.01	<0.01	--	<0.01	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	--	--	<0.001	--	<0.001	0.004	--	<0.001	0.001
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	--	0.002	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.81	7.72	7.94	7.94	7.44	7.84	7.49	7.74	7.65	7.2	7.3	7.2
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	-- (15)	10	6	6

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-13D 25-Apr-2007	BR-13D 06-Dec-2007	BR-13D 04-May-2008	BR-13D 29-Nov-2008	BR-13D 29-Apr-2009	BR-13D 29-Nov-2009	BR-13D 20-May-2010	BR-13D 29-Nov-2010	BR-13D 10-May-2011	BR-13D 30-Nov-2011 (9	BR-13D 20-May-2012 (9	BR-13D 14-Nov-2012
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	322	323	324	325	328	326	311	345	350	327	327	355
Ammonia Nitrogen	mg/l	--	--	0.24	<0.02	0.05	0.02	0.08	<0.02	<0.02	<0.02	0.12	0.09	0.06	0.07
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	56	57	71	53	53	50	51	55	58	53	53	54
Conductivity	uS/cm	--	--	360	395	380	365	857	843	814	855	839	836	832	893
Dissolved Organic Carbon	mg/l	--	5	1.7	2.2	1.3	1.5	1.9	2.2	1.8	1.6	2	1.6	1.5	2.2
Hardness, Calcium Carbonate	mg/l	--	--	357	338	363	325	348	318	323	389	348	358	262	371
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.06	0.01	0.04	0.01	0.02	0.07	0.01	<0.01	0.02	0.03	0.02	0.03
Phosphorus (dissolved reactive)	mg/l	--	--	0.1	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	57	59	33	54	55	52	53	44	49	48	49	49
Tannin & Lignin	mg/l	--	--	0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1
Total Dissolved Solids	mg/l	--	500	565	564	574	556	557	548	529	556	545	543	541	580
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.2	0.18	0.16	0.23	0.22	0.21	0.19	0.22	0.21	0.21	0.21	0.2
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005
Boron, Dissolved	mg/l	5	--	0.2	0.24	0.18	0.33	0.22	0.21	0.2	0.19	0.2	0.18	0.22	0.23
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	92	86	96	84	90	83	83	103	90	94	67	96
Chromium, Dissolved	mg/l	0.05	--	0.001	0.004	0.003	0.003	0.002	0.001	<0.001	<0.001	0.002	0.008	0.003	0.001
Cobalt, Dissolved	mg/l	--	--	0.0063	0.0002	0.0017	0.002	0.0007	0.0004	0.0006	0.0003	0.0006	0.0004	0.0006	0.0013
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	0.05	<0.03	1	0.1	0.28	0.12	<0.03	0.14	0.3	0.16	0.16	<0.03
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	31	30	30	28	30	27	28	32	30	30	23	32
Manganese, Dissolved	mg/l	--	0.05	0.06	<0.01	0.41	0.07	0.06	0.02	0.02	0.03	0.05	0.04	0.04	0.02
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005
Potassium, Dissolved	mg/l	--	--	7	7	5	6	6	6	6	7	7	6	4	6
Selenium, Dissolved	mg/l	0.01	--	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [8]	41	40	38	40	41	36	42	44	39	43	28	43
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	0.001	0.005	0.002	0.006	0.004	0.002	0.001	0.002	0.002	0.001	0.004	0.003
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	390	365	10	380	370	365	400	405
pH (Field)	-	--	--	7.3	7.4	7.5	7.5	7.7	7.8	7.6	7.5	7.5	7.4	7.6	7.4
Temperature (Field)	deg c	--	15 [7]	5	7	7	7	9	6	385	8	9	9	9	8

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	BR-13D 13-Jun-13	BR-13D 25-Oct-13										
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	312	334										
Ammonia Nitrogen	mg/l	--	--	<0.02	<0.02										
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--										
Chloride	mg/l	--	250	57	64										
Conductivity	uS/cm	--	--	806	865										
Dissolved Organic Carbon	mg/l	--	5	1.5	1.3										
Hardness, Calcium Carbonate	mg/l	--	--	351	359										
Nitrate	mg/l	-- (11)	--	--	--										
Nitrite	mg/l	-- (13)	--	--	--										
Nitrogen	mg/l	--	--	--	--										
Nitrogen, Total Kjeldahl	mg/l	--	--	<0.10	<0.10										
Phosphate	mg/l	--	--	--	--										
Phosphorus	mg/l	--	--	<0.01	<0.01										
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	0.02										
Silica	mg/l	--	--	--	--										
Sulfate	mg/l	--	500 (6)	50	39										
Tannin & Lignin	mg/l	--	--	<0.1	0.2										
Total Dissolved Solids	mg/l	--	500	524	562										
Total Organic Carbon	mg/l	--	--	--	--										
pH		--	--		7.96										
Turbidity	ntu	--	5 (14) (7)	--	--										
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01										
Arsenic, Dissolved	mg/l	0.025	--	--	--										
Barium, Dissolved	mg/l	1	--	0.17	0.15										
Beryllium, Dissolved	mg/l	--	--	<0.0005	<0.0005										
Boron, Dissolved	mg/l	5	--	0.22	0.12										
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001										
Calcium, Dissolved	mg/l	--	--	91	96										
Chromium, Dissolved	mg/l	0.05	--	0.003	0.002										
Cobalt, Dissolved	mg/l	--	--	0.0021	0.0004										
Copper, Dissolved	mg/l	--	1	0.001	<0.001										
Iron, Dissolved	mg/l	--	0.3	<0.03	<0.03										
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001										
Magnesium, Dissolved	mg/l	--	--	30	29										
Manganese, Dissolved	mg/l	--	0.05	0.03	<0.01										
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001										
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005										
Nickel, Dissolved	mg/l	--	--	0.007	<0.005										
Potassium, Dissolved	mg/l	--	--	6	5										
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.01										
Silicon, Dissolved	mg/l	--	--	--	--										
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001										
Sodium, Dissolved	mg/l	--	200 (9)	41	38										
Strontium, Dissolved	mg/l	--	--	--	--										
Sulfur	mg/l	--	--	--	--										
Thallium, Dissolved	mg/l	--	--	--	--										
Tin, Dissolved	mg/l	--	--	--	--										
Titanium, Dissolved	mg/l	--	--	--	--										
Vanadium, Dissolved	mg/l	--	--	0.002	<0.001										
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01										
Field Measurements															
Conductivity (Field)	uS/cm	--	--	819	792										
pH (Field)	-	--	--	7.7	7.3										
Temperature (Field)	deg c	--	15 (7)	10.4	7.8										

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-13S 16-Nov-2001	BR-13S 18-Mar-2002	BR-13S 28-May-2002	BR-13S 09-Oct-2002	BR-13S 03-May-2003	BR-13S 03-Nov-2003	BR-13S 04-May-2004	BR-13S 04-Oct-2004	BR-13S 14-Jun-2005	BR-13S 29-Oct-2005	BR-13S 08-Apr-2006	BR-13S 24-Nov-2006
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	222	309	321	243	324	319	319	226	323	319	327	319
Ammonia Nitrogen	mg/l	--	--	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	--	<0.02	0.25	0.03	<0.02
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	8	56	71	68	75	78	85	75	81	83	79	75
Conductivity	uS/cm	--	--	506	781	896	741	870	887	905	752	830	715	680	295
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	0.7	0.6
Hardness, Calcium Carbonate	mg/l	--	--	205	323	--	--	--	--	--	--	430.7	--	379.1	383.2
Nitrate	mg/l	-- [11]	--	0.95	2.76	3.38	3.32	1.78	3.29	3.7	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	0.55	0.15	--	0.23	0.08	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	0.11	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	<0.03	--	0.56	0.007	0.14	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	0.21	--	<0.005	0.04	0.52	--	0.27	0.05	0.11	0.05
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	0.07	0.02
Silica	mg/l	--	--	--	--	--	--	0.34	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	25	25	29	27	29	28	28	--	29	31	28	27
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	284	508	582	--	565	577	588	489	540	465	569	579
Total Organic Carbon	mg/l	--	--	--	--	1.9	--	2.2	1.1	<0.5	1.5	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	--	--	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	<0.002	0.08	0.08	0.08	0.12	0.1	--	--	0.09	--	0.09	0.07
Beryllium, Dissolved	mg/l	--	--	--	<0.002	<0.002	<0.001	<0.001	<0.001	--	--	<0.001	--	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.08	<0.05	<0.05	<0.05	<0.05	0.05	0.05	0.01	0.08	0.06	0.03	0.06
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	54	93	107	74	107	116	104	--	128	--	109	109
Chromium, Dissolved	mg/l	0.05	--	<0.001	0.004	0.001	<0.001	0.009	0.001	0.002	--	<0.005	--	0.002	0.002
Cobalt, Dissolved	mg/l	--	--	0.0069	<0.0002	0.0002	<0.0002	0.002	0.0013	--	--	0.0003	--	<0.0002	<0.0002
Copper, Dissolved	mg/l	--	1	0.001	<0.001	0.01	<0.001	<0.0001	0.007	<0.001	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	0.42	<0.01	0.01	--	0.52	0.03	<0.01	--	<0.03	<0.03	<0.03	<0.03
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	--	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	17	22	28	27	27	26	26	--	27	--	26	27
Manganese, Dissolved	mg/l	--	0.05	0.17	<0.01	<0.01	<0.005	0.025	0.008	<0.01	--	--	--	<0.01	<0.01
Mercury, Dissolved	mg/l	0.001	--	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	--	--	<0.005	--	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.01	--	<0.01	--	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	3	2	3	3	3	4	3	--	3	--	3	3
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	<0.001	--	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	5.91	3.88	3.68	3.5	4.4	4.6	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	--	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [9]	15	27	32	34	37	36	38	--	35	--	33	35
Strontium, Dissolved	mg/l	--	--	0.261	0.851	0.82	1.02	0.893	0.836	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	--	<0.01	<0.01	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.001	0.001	<0.001	--	--	<0.001	--	--	0.004	--	<0.001	<0.001
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	--	0.003	0.01	--	--	<0.01	0.02	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.8	7.81	7.9	7.89	7.8	7.74	7.44	--	7.58	7.4	7.3	7
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	-- (15)	9	6	6

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-13S 25-Apr-2007	BR-13S 06-Dec-2007	BR-13S 04-May-2008	BR-13S 29-Nov-2008	BR-13S 29-Apr-2009	BR-13S 29-Nov-2009	BR-13S 20-May-2010	BR-13S 29-Nov-2010	BR-13S 10-May-2011	BR-13S 30-Nov-2011	BR-13S 20-May-2012	BR-13S 14-Nov-2012
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	270	322	318	322	320	323	310	327	320	325	327	340
Ammonia Nitrogen	mg/l	--	--	0.11	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	0.02	0.02	<0.02	<0.02
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	38	76	77	64	64	63	61	67	66	62	64	65
Conductivity	uS/cm	--	--	590	360	380	400	849	868	828	850	807	840	844	876
Dissolved Organic Carbon	mg/l	--	5	0.9	1.7	1.1	1.4	1.5	1.8	1.5	1.2	1.5	1.4	1.3	1.5
Hardness, Calcium Carbonate	mg/l	--	--	305	385	383	353	362	329	353	398	376	382	282	397
Nitrate	mg/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	mg/l	-- [13]	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	mg/l	--	--	0.12	0.29	0.09	0.07	0.08	0.26	0.06	0.06	0.06	0.04	0.13	0.1
Phosphorus (dissolved reactive)	mg/l	--	--	0.09	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Silica	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	mg/l	--	500 [6]	25	28	28	28	28	27	29	25	25	28	27	26
Tannin & Lignin	mg/l	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	0.1	<0.1
Total Dissolved Solids	mg/l	--	500	387	578	576	560	552	564	538	553	525	546	549	569
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH		--	--												
Turbidity	ntu	--	5 [14] [7]	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.07	0.08	0.09	0.09	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005
Boron, Dissolved	mg/l	5	--	0.07	0.06	0.06	0.09	0.04	0.04	0.05	0.05	0.04	0.04	0.04	0.04
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	76	113	109	100	102	94	100	115	106	110	80	113
Chromium, Dissolved	mg/l	0.05	--	0.002	0.005	0.004	0.003	0.002	0.002	<0.001	0.002	0.002	0.004	0.004	0.002
Cobalt, Dissolved	mg/l	--	--	0.0033	0.0002	<0.0002	<0.0002	0.0002	<0.0002	0.0003	<0.0002	<0.0002	0.0002	<0.0002	<0.0002
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	28	25	27	25	26	23	25	27	27	26	20	28
Manganese, Dissolved	mg/l	--	0.05	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	3	4	3	3	3	2	3	3	3	3	2	3
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [8]	16	34	36	34	35	29	35	36	34	35	25	38
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	0.002	0.004	0.003	0.006	0.003	0.003	0.001	0.001	0.002	0.001	0.004	0.003
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements															
Conductivity (Field)	uS/cm	--	--	--	--	--	--	420	435	440	395	420	405	410	390
pH (Field)	-	--	--	7.1	7.2	7.3	7.4	7.6	7.4	7.5	7.5	7.4	7.4	7.3	7.4
Temperature (Field)	deg c	--	15 [7]	5	6	8	6	8	7	10	8	9	8	10	9

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	BR-13S 13-Jun-13	BR-13S 25-Oct-13		Median S&D								
General Chemistry															
Alkalinity (Total as CaCO3)	mg/l	--	--	317	322		320	320							
Ammonia Nitrogen	mg/l	--	--	<0.02	<0.02		0								
Bicarbonate	mg/l	--	--												
Chemical Oxygen Demand	mg/l	--	--	--	--										
Chloride	mg/l	--	250	73	65		58								
Conductivity	uS/cm	--	--	853	840		794								
Dissolved Organic Carbon	mg/l	--	5	1	1.1		2								
Hardness, Calcium Carbonate	mg/l	--	--	379	365		358								
Nitrate	mg/l	-- [11]	--	--	--		3								
Nitrite	mg/l	-- [13]	--	--	--										
Nitrogen	mg/l	--	--	--	--		0.23								
Nitrogen, Total Kjeldahl	mg/l	--	--	<0.1	<0.1		0.25								
Phosphate	mg/l	--	--	--	--		0.12								
Phosphorus	mg/l	--	--	<0.01	<0.01		0.06								
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	0.01		0.04								
Silica	mg/l	--	--	--	--		0.20								
Sulfate	mg/l	--	500 [6]	26	26		29								
Tannin & Lignin	mg/l	--	--	<0.1	<0.1		0								
Total Dissolved Solids	mg/l	--	500	554	546		548								
Total Organic Carbon	mg/l	--	--	--	--		2								
pH		--	--		7.89										
Turbidity	ntu	--	5 [14] [7]	--	--										
Metals															
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01		<0.01								
Arsenic, Dissolved	mg/l	0.025	--	--	--										
Barium, Dissolved	mg/l	1	--	0.08	0.08		0.09								
Beryllium, Dissolved	mg/l	--	--	<0.0005	<0.0005		<0.001								
Boron, Dissolved	mg/l	5	--	0.04	0.03		0.15								
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001		<0.0001								
Calcium, Dissolved	mg/l	--	--	109	105		94								
Chromium, Dissolved	mg/l	0.05	--	0.003	0.002		0.002								
Cobalt, Dissolved	mg/l	--	--	0.0007	0.0002		0.0006								
Copper, Dissolved	mg/l	--	1	<0.001	<0.001		0.001								
Iron, Dissolved	mg/l	--	0.3	<0.03	<0.03		0.12								
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001		0.001								
Magnesium, Dissolved	mg/l	--	--	26	25		28								
Manganese, Dissolved	mg/l	--	0.05	<0.01	<0.01		0.03								
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001		0.0004								
Molybdenum, Dissolved	mg/l	--	--	<0.05	<0.005		<0.005								
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005		0.006								
Potassium, Dissolved	mg/l	--	--	3	3		4								
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001		0.001								
Silicon, Dissolved	mg/l	--	--	--	--		3.88								
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001		<0.0001								
Sodium, Dissolved	mg/l	--	200 [8]	36	35		35.5								
Strontium, Dissolved	mg/l	--	--	--	--		0.893								
Sulfur	mg/l	--	--	--	--										
Thallium, Dissolved	mg/l	--	--	--	--										
Tin, Dissolved	mg/l	--	--	--	--										
Titanium, Dissolved	mg/l	--	--	--	--										
Vanadium, Dissolved	mg/l	--	--	0.002	<0.001		0.002								
Zinc, Dissolved	mg/l	--	5	<0.1	<0.01		0.0065								
Field Measurements															
Conductivity (Field)	uS/cm	--	--	856	780										
pH (Field)	-	--	--	7.8	7.4										
Temperature (Field)	deg c	--	15 [7]	10.1	7.6										

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	
General Chemistry				
Alkalinity (Total as CaCO3)	mg/l	--	--	
Ammonia Nitrogen	mg/l	--	--	
Bicarbonate	mg/l	--	--	
Chemical Oxygen Demand	mg/l	--	--	
Chloride	mg/l	--	250	
Conductivity	uS/cm	--	--	
Dissolved Organic Carbon	mg/l	--	5	
Hardness, Calcium Carbonate	mg/l	--	--	
Nitrate	mg/l	-- [11]	--	
Nitrite	mg/l	-- [13]	--	
Nitrogen	mg/l	--	--	
Nitrogen, Total Kjeldahl	mg/l	--	--	
Phosphate	mg/l	--	--	
Phosphorus	mg/l	--	--	
Phosphorus (dissolved reactive)	mg/l	--	--	
Silica	mg/l	--	--	
Sulfate	mg/l	--	500 [6]	
Tannin & Lignin	mg/l	--	--	
Total Dissolved Solids	mg/l	--	500	
Total Organic Carbon	mg/l	--	--	
pH		--	--	
Turbidity	ntu	--	5 [14] [7]	
Metals				
Aluminum, Dissolved	mg/l	--	--	
Arsenic, Dissolved	mg/l	0.025	--	
Barium, Dissolved	mg/l	1	--	
Beryllium, Dissolved	mg/l	--	--	
Boron, Dissolved	mg/l	5	--	
Cadmium, Dissolved	mg/l	0.005	--	
Calcium, Dissolved	mg/l	--	--	
Chromium, Dissolved	mg/l	0.05	--	
Cobalt, Dissolved	mg/l	--	--	
Copper, Dissolved	mg/l	--	1	
Iron, Dissolved	mg/l	--	0.3	
Lead, Dissolved	mg/l	0.01	--	
Magnesium, Dissolved	mg/l	--	--	
Manganese, Dissolved	mg/l	--	0.05	
Mercury, Dissolved	mg/l	0.001	--	
Molybdenum, Dissolved	mg/l	--	--	
Nickel, Dissolved	mg/l	--	--	
Potassium, Dissolved	mg/l	--	--	
Selenium, Dissolved	mg/l	0.01	--	
Silicon, Dissolved	mg/l	--	--	
Silver, Dissolved	mg/l	--	--	
Sodium, Dissolved	mg/l	--	200 [8]	
Strontium, Dissolved	mg/l	--	--	
Sulfur	mg/l	--	--	
Thallium, Dissolved	mg/l	--	--	
Tin, Dissolved	mg/l	--	--	
Titanium, Dissolved	mg/l	--	--	
Vanadium, Dissolved	mg/l	--	--	
Zinc, Dissolved	mg/l	--	5	
Field Measurements				
Conductivity (Field)	uS/cm	--	--	
pH (Field)	-	--	--	
Temperature (Field)	deg c	--	15 [7]	

Exceeds ODWSO/OG
Detection Limit Exceeds ODWSO/OG

Parameter	Unit	[2] [1] ODWQS (169/03) Health	[4] [3] ODWQS AO	Field Blank (BR-15) 14-Jun-2013	Field Blank (BR-1) 29-Oct-2013							
General Chemistry												
Alkalinity (Total as CaCO3)	mg/l	--	--	<5	<6							
Ammonia Nitrogen	mg/l	--	--	<0.02	<0.03							
Bicarbonate	mg/l	--	--	--	<1							
Chemical Oxygen Demand	mg/l	--	--	--	--							
Chloride	mg/l	--	250	<1	<1							
Conductivity	uS/cm	--	--	<5	<5							
Dissolved Organic Carbon	mg/l	--	5	<0.5	<0.6							
Hardness, Calcium Carbonate	mg/l	--	--	<1	<2							
Nitrate	mg/l	-- [11]	--	--	--							
Nitrite	mg/l	-- [13]	--	--	--							
Nitrogen	mg/l	--	--	--	--							
Nitrogen, Total Kjeldahl	mg/l	--	--	<0.10	<0.11							
Phosphate	mg/l	--	--	--	--							
Phosphorus	mg/l	--	--	<0.01	<0.01							
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	0.02							
Silica	mg/l	--	--	--	--							
Sulfate	mg/l	--	500 [6]	<3	<4							
Tannin & Lignin	mg/l	--	--	--	--							
Total Dissolved Solids	mg/l	--	500	<1	<2							
Total Organic Carbon	mg/l	--	--	--	--							
pH		--	--	--	6.17							
Turbidity	ntu	--	5 [14] [7]	--	--							
Metals												
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.02							
Arsenic, Dissolved	mg/l	0.025	--	--	--							
Barium, Dissolved	mg/l	1	--	<0.01	<0.01							
Beryllium, Dissolved	mg/l	--	--	<0.0005	<0.0005							
Boron, Dissolved	mg/l	5	--	<0.01	<0.01							
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001							
Calcium, Dissolved	mg/l	--	--	<1	<2							
Chromium, Dissolved	mg/l	0.05	--	<0.001	<0.001							
Cobalt, Dissolved	mg/l	--	--	<0.0002	<0.0002							
Copper, Dissolved	mg/l	--	1	<0.001	<0.001							
Iron, Dissolved	mg/l	--	0.3	<0.03	<0.03							
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001							
Magnesium, Dissolved	mg/l	--	--	<1	<2							
Manganese, Dissolved	mg/l	--	0.05	<0.01	<0.01							
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001							
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005							
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005							
Potassium, Dissolved	mg/l	--	--	<1	<2							
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.002							
Silicon, Dissolved	mg/l	--	--	--	--							
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0002							
Sodium, Dissolved	mg/l	--	200 [8]	<2	<3							
Strontium, Dissolved	mg/l	--	--	--	--							
Sulfur	mg/l	--	--	--	--							
Thallium, Dissolved	mg/l	--	--	--	--							
Tin, Dissolved	mg/l	--	--	--	--							
Titanium, Dissolved	mg/l	--	--	--	--							
Vanadium, Dissolved	mg/l	--	--	<0.001	<0.001							
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01							
Field Measurements												
Conductivity (Field)	uS/cm	--	--	--	--							
pH (Field)	-	--	--	--	--							
Temperature (Field)	deg c	--	15 [7]	--	--							

Exceeds ODWSO/OG

Footnotes:
Tables should be read in conjunction with the accompanying document.
< value = Indicates parameter not detected above laboratory method detection limit
> value = Indicates parameter detected above equipment analytical range
-- Chemical not analyzed or criteria not defined
(1) Ontario Drinking Water Quality Standards - Health Based Standards
(2) Bold = Parameter concentration greater than ODWQS(169/03)-Health
(3) Ontario Drinking Water Quality Standards - Aesthetic Objectives. Aesthetic Objectives are established for parameters that may impair the taste, odour or colour of water or which may interfere with good water quality control practices. For certain parameters, both aesthetic objectives and health-related MACs have been derived.
(4) Underline = Parameter concentration greater than ODWQS-AO
(5) TP MRL elevated due to matrix interference.
(6) There may be a laxative effect in some individuals when sulphate levels exceed 500 mg/L.
(7) Reporting units and Guideline units are not convertible into each other.
(8) The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.
(9) Selenium MRL elevated due to matrix interference.
(10) Selenium MRL elevated due to matrix interference (dilution was done).
(11) Criteria exist for Nitrate as N
(12) Parameter was not detected above the laboratory detection limit.
(13) Criteria exist for Nitrite as N
(14) Applicable for all waters at the point of consumption.
(15) No result(s) available.
(16) Metals MRL elevated due to matrix interference.
(17) Selenium MRL elevated due to matrix interference. N-NH3 was analysed at SGS.
(18) Metals MRL elevated due to matrix interference. N-NH3 was analysed at SGS.
(19) Sediment was not included in mercury analysis. Selenium MRL elevated due to matrix interference.

Adapted from Golder Associates 2012

Overburden Groundwater

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GROUNDWATER MONITORS INORGANIC

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-2 01-Apr-1988	OV-2 01-Nov-1988	OV-2 01-Nov-1990	OV-2 01-Oct-1991	OV-2 01-Dec-1991	OV-2 01-Dec-1992	OV-2 01-Feb-1993	OV-2 01-May-1995	OV-2 01-Apr-1996	OV-2 01-Jun-1997	OV-2 22-Nov-1998	OV-2 16-Oct-1999	OV-2 01-Jul-2000	OV-2 14-Oct-2000	OV-2 28-May-2002
General Chemistry																		
Alkalinity (Total as CaCO3)	mg/l	--	--	652	--	730	730	970	1200	1131	886	724	953	990	897	1350	1550	889
Ammonia Nitrogen	mg/l	--	--	5.8	--	--	--	--	--	--	2.13	5.5	2.7	1.87	0.93	4.09	7.58	2.01
Bicarbonate	mg/l	--	--															
Biologic Oxygen Demand, Five Day	mg/l	--	--	45	20	<1	--	4	14	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	140	194	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	151	156	113	1113	248	330	264	111	111	151	250	358	220	346	166
Conductivity	uS/cm	--	--	1700	--	1562	3380	--	--	--	1744	1582	1970	2266	2730	2830	2440	2130
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	mg/l	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate	mg/l	-- (6)	--	0.6	--	--	--	--	--	--	<0.1	<0.1	0.11	-- (7)	3.84	<0.1	<0.1	0.16
Nitrite	mg/l	-- (12)	--	<0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.32	10.4	3.53
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	0.09	<0.03	<0.03	-- (7)	<0.03	<0.03	<0.03	<0.03
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.26	--	0.07
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	<0.1	--	<0.1	0.05	--	<0.1	--	--	--	--	--	--	--
pH																		
Sulfate	mg/l	--	500 (8)	--	--	--	--	24	19	11	5	38	12	88	431	3	5	78
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	1105	1352	916	2380	1270	1720	1520	1040	952	1212	1392	1908	2040	2060	1380
Total Organic Carbon	mg/l	--	--	--	40	--	--	--	44	--	19.8	21.8	26.9	24	27.9	137	53.2	25.4
Metals																		
Aluminum, Dissolved	mg/l	--	--	--	--	<0.03	--	<0.03	<0.03	--	<0.03	<0.03	0.1	0.05	0.09	<0.05	<0.05	0.05
Arsenic, Dissolved	mg/l	0.025	--	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	1.58	0.22	--	0.45	0.46	--	0.22	0.36	0.32	0.29	0.41	0.51	0.68	0.29
Beryllium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	0.1	<0.01	-- (7)	<0.01	<0.002	<0.002	<0.002
Boron, Dissolved	mg/l	5	--	--	--	0.15	--	0.42	0.33	--	0.44	0.37	0.4	0.84	1.28	0.69	0.72	0.59
Cadmium, Dissolved	mg/l	0.005	--	--	0.004	<0.002	<0.002	<0.002	<0.01	--	<0.005	<0.005	<0.005	-- (7)	<0.01	<0.005	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	--	--	219	--	290	290	--	204	206	234	271	257	347	385	228
Chromium, Dissolved	mg/l	0.05	--	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	-- (7)	<0.01	<0.01	<0.01	0.002
Cobalt, Dissolved	mg/l	--	--	--	--	<0.02	--	<0.01	<0.01	--	<0.01	0.02	<0.01	-- (7)	<0.01	<0.01	0.0119	0.0042
Copper, Dissolved	mg/l	--	1	--	--	<0.01	<0.01	0.01	<0.01	--	<0.005	0.007	<0.005	-- (7)	<0.01	0.04	0.003	0.003
Iron, Dissolved	mg/l	--	0.3	7.2	25.54	<0.01	5.69	0.04	<0.01	--	9.16	24.4	10.3	6.55	8.15	30.2	33.7	14.4
Lead, Dissolved	mg/l	0.01	--	--	0.06	<0.002	0.006	0.015	<0.05	--	0.002	<0.002	<0.002	-- (7)	<0.002	0.002	<0.001	0.001
Magnesium, Dissolved	mg/l	--	--	--	--	40	--	75	100	--	60	42	60	76	82	75	98	62
Manganese, Dissolved	mg/l	--	0.05	--	--	0.45	6.07	3.1	1.63	--	1.2	2.06	2.36	2.64	2.3	4.25	2.69	3.68
Mercury, Dissolved	mg/l	0.001	--	--	<0.001	--	0.001	--	--	--	<0.0002	<0.0002	<0.0002	-- (7)	<0.0002	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--	--	0.02	--	<0.01	<0.01	--	<0.01	<0.01	<0.03	-- (7)	<0.01	<0.01	<0.01	<0.01
Nickel, Dissolved	mg/l	--	--	--	--	<0.01	--	--	0.02	--	0.01	0.02	0.02	-- (7)	<0.01	0.01	0.03	<0.01
Potassium, Dissolved	mg/l	--	--	--	--	13	--	10	18	--	8	11	14	7	10	13	16	27
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	--	--	4.8	--	7.5	7.3	--	6.3	6.7	5	5.1	5.4	9.79	10.4	4.98
Silver, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	0.01	--	<0.01	<0.01	<0.01	-- (7)	0.01	<0.01	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (10)	--	--	69	--	206	247	--	110	91	126	213	328	272	309	171
Strontium, Dissolved	mg/l	--	--	--	--	0.59	--	0.86	0.83	--	0.707	0.762	0.71	0.737	0.81	1.24	1.09	0.713
Sulfur	mg/l	--	--	--	--	19	--	10	3	--	<3	13	5	29	138	5	--	--
Thallium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.05	<0.05	--	<0.01	<0.2	<0.2	-- (7)	<0.2	<0.2	<0.001	<0.001
Tin, Dissolved	mg/l	--	--	--	--	<0.05	--	<0.05	<0.05	--	<0.05	<0.01	<0.05	-- (7)	--	--	<0.01	--
Titanium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.05	<0.01	<0.01	-- (7)	<0.01	<0.01	<0.01	<0.01
Vanadium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	0.02	<0.01	-- (7)	<0.01	<0.01	0.003	0.001
Zinc, Dissolved	mg/l	--	5	--	0.14	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	0.01	-- (7)	0.17	0.02	<0.01	<0.01
Field Measurements																		
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.6	7.1	--	<0.002	--	--	--	7.31	7.22	751	7.57	7.4	6.99	7.17	7.71
Temperature (Field)	deg c	--	15 (7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GROUNDWATER MONITORS INORGANIC

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-2 03-May-2003	OV-2 04-May-2004	OV-2 04-Oct-2004
General Chemistry						
Alkalinity (Total as CaCO3)	mg/l	--	--	961	582	1400
Ammonia Nitrogen	mg/l	--	--	2.29	1.2	13.5
Bicarbonate	mg/l	--	--			
Biologic Oxygen Demand, Five Day	mg/l	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--
Chloride	mg/l	--	250	154	55	624
Conductivity	uS/cm	--	--	2280	1190	4200
Dissolved Organic Carbon	mg/l	--	5	--	--	--
Fluoride	mg/l	1.5	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--
Nitrate	mg/l	-- (6)	--	<0.1	<0.1	<0.1
Nitrite	mg/l	-- (12)	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	3.53	2.17	15.1
Phosphate	mg/l	--	--	0.59	0.15	0.37
Phosphorus	mg/l	--	--	0.2	0.08	0.19
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--
pH						
Sulfate	mg/l	--	500 (8)	154	35	198
Tannin & Lignin	mg/l	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	1480	774	2730
Total Organic Carbon	mg/l	--	--	25.2	12.3	48.1
Metals						
Aluminum, Dissolved	mg/l	--	--	0.01	--	--
Arsenic, Dissolved	mg/l	0.025	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.21	--	--
Beryllium, Dissolved	mg/l	--	--	<0.001	--	--
Boron, Dissolved	mg/l	5	--	0.76	0.81	1.67
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	231	130	289
Chromium, Dissolved	mg/l	0.05	--	0.031	0.002	0.012
Cobalt, Dissolved	mg/l	--	--	0.0053	--	--
Copper, Dissolved	mg/l	--	1	0.002	0.001	0.012
Iron, Dissolved	mg/l	--	0.3	6.98	4.84	23
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	0.001
Magnesium, Dissolved	mg/l	--	--	77	34	115
Manganese, Dissolved	mg/l	--	0.05	2.51	1.33	1.74
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.005	--	--
Nickel, Dissolved	mg/l	--	--	0.01	0.012	0.08
Potassium, Dissolved	mg/l	--	--	27	32	47
Selenium, Dissolved	mg/l	0.01	--	--	--	--
Silicon, Dissolved	mg/l	--	--	3.9	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (10)	199	81	424
Strontium, Dissolved	mg/l	--	--	0.7	--	--
Sulfur	mg/l	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.001	--	--
Tin, Dissolved	mg/l	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	--	--
Vanadium, Dissolved	mg/l	--	--	0.01	--	--
Zinc, Dissolved	mg/l	--	5	<0.005	--	--
Field Measurements						
Conductivity (Field)	uS/cm	--	--	--	--	--
pH (Field)	-	--	--	7.45	6.97	7.06
Temperature (Field)	deg c	--	15 (7)	--	--	--

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GROUNDWATER MONITORS INORGANIC

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-4 13-Jun-13 Well Damaged
General Chemistry				
Alkalinity (Total as CaCO3)	mg/l	--	--	--
Ammonia Nitrogen	mg/l	--	--	--
Bicarbonate	mg/l	--	--	
Biologic Oxygen Demand, Five Day	mg/l	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--
Chloride	mg/l	--	250	--
Conductivity	uS/cm	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--
Fluoride	mg/l	1.5	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--
Nitrate	mg/l	-- (6)	--	--
Nitrite	mg/l	-- (12)	--	--
Nitrogen	mg/l	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--
Phosphate	mg/l	--	--	--
Phosphorus	mg/l	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--
pH				
Sulfate	mg/l	--	500 (8)	--
Tannin & Lignin	mg/l	--	--	--
Total Dissolved Solids	mg/l	--	500	--
Total Organic Carbon	mg/l	--	--	--
Metals				
Aluminum, Dissolved	mg/l	--	--	--
Arsenic, Dissolved	mg/l	0.025	--	--
Barium, Dissolved	mg/l	1	--	--
Beryllium, Dissolved	mg/l	--	--	--
Boron, Dissolved	mg/l	5	--	--
Cadmium, Dissolved	mg/l	0.005	--	--
Calcium, Dissolved	mg/l	--	--	--
Chromium, Dissolved	mg/l	0.05	--	--
Cobalt, Dissolved	mg/l	--	--	--
Copper, Dissolved	mg/l	--	1	--
Iron, Dissolved	mg/l	--	0.3	--
Lead, Dissolved	mg/l	0.01	--	--
Magnesium, Dissolved	mg/l	--	--	--
Manganese, Dissolved	mg/l	--	0.05	--
Mercury, Dissolved	mg/l	0.001	--	--
Molybdenum, Dissolved	mg/l	--	--	--
Nickel, Dissolved	mg/l	--	--	--
Potassium, Dissolved	mg/l	--	--	--
Selenium, Dissolved	mg/l	0.01	--	--
Silicon, Dissolved	mg/l	--	--	--
Silver, Dissolved	mg/l	--	--	--
Sodium, Dissolved	mg/l	--	200 (10)	--
Strontium, Dissolved	mg/l	--	--	--
Sulfur	mg/l	--	--	--
Thallium, Dissolved	mg/l	--	--	--
Tin, Dissolved	mg/l	--	--	--
Titanium, Dissolved	mg/l	--	--	--
Vanadium, Dissolved	mg/l	--	--	--
Zinc, Dissolved	mg/l	--	5	--
Field Measurements				
Conductivity (Field)	uS/cm	--	--	--
pH (Field)	-	--	--	--
Temperature (Field)	deg c	--	15 (7)	--

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GROUNDWATER MONITORS INORGANIC

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-5 01-Apr-1988	OV-5 01-Nov-1988	OV-5 01-Nov-1990	OV-5 01-Oct-1991	OV-5 01-Dec-1991	OV-5 01-Dec-1992	OV-5 01-Feb-1993	OV-5 01-Sep-1996	OV-5 22-Nov-1998	OV-5 15-Jul-1999	OV-5 01-Jul-2000	OV-5 14-Oct-2000	OV-5 06-Sep-2001	OV-5 06-Nov-2001	OV-5 28-May-2002
General Chemistry																		
Alkalinity (Total as CaCO3)	mg/l	--	--	333	--	270	358	314	276	290	286	422	--	327	349	311	330	331
Ammonia Nitrogen	mg/l	--	--	0.08	--	--	--	--	--	--	0.02	0.04	0.03	0.22	0.11	0.32	0.02	0.02
Bicarbonate	mg/l	--	--															
Biologic Oxygen Demand, Five Day	mg/l	--	--	<2	2	<1	--	5	2	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	25	12	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	22.2	27	24	39	34	52	49	47	61	--	28	51	42	61	45
Conductivity	uS/cm	--	--	720	--	659	670	--	--	--	730	832	--	688	718	725	806	839
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	mg/l	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	341	407	--
Nitrate	mg/l	-- [6]	--	2.48	--	--	--	--	--	--	3.29	2.76	--	1.65	<0.1	4.28	1.38	5.4
Nitrite	mg/l	-- [12]	--	0.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	0.22	0.14	--	--	0.21
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	<0.03	-- [7]	--	<0.02	<0.03	--	--	--
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	0.17	--	--	--	0.1
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	<0.1	--	<0.1	<0.1	--	--	--	--	--	--	--	--	--
pH																		
Sulfate	mg/l	--	500 [8]	--	--	--	--	45	26	33	25	27	--	17	22	20	43	24
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	--	439	376	404	360	470	500	448	500	--	380	448	448	500	545
Total Organic Carbon	mg/l	--	--	--	<0.5	--	--	--	1.7	--	2.3	1.8	0.4	0.4	1.3	--	--	1.5
Metals																		
Aluminum, Dissolved	mg/l	--	--	--	--	<0.03	--	<0.03	<0.03	--	0.31	-- [7]	--	<0.05	0.08	<0.05	<0.05	0.11
Arsenic, Dissolved	mg/l	0.025	--	--	<0.01	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	--	0.15	0.07	--	0.1	0.09	--	0.07	0.08	--	0.06	0.08	0.08	0.07	0.08
Beryllium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	-- [7]	--	<0.002	<0.002	<0.002	<0.002	<0.002
Boron, Dissolved	mg/l	5	--	--	--	0.03	--	0.01	0.05	--	0.05	0.03	--	0.03	0.03	0.03	<0.05	<0.05
Cadmium, Dissolved	mg/l	0.005	--	--	<0.002	<0.002	<0.002	<0.002	<0.002	--	<0.005	-- [7]	--	<0.005	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	--	--	115	--	125	95	--	109	116	--	96	123	97	115	111
Chromium, Dissolved	mg/l	0.05	--	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	<0.01	-- [7]	--	<0.01	<0.01	0.004	0.004	0.001
Cobalt, Dissolved	mg/l	--	--	--	--	<0.02	--	<0.01	<0.01	--	<0.01	-- [7]	--	<0.01	0.0005	<0.0002	<0.0002	0.0014
Copper, Dissolved	mg/l	--	1	--	--	<0.01	<0.01	<0.01	<0.01	--	0.016	-- [7]	--	<0.01	0.003	<0.001	<0.001	0.003
Iron, Dissolved	mg/l	--	0.3	0.5	4.9	<0.01	23.2	0.27	<0.01	--	0.07	0.28	--	0.04	0.16	<0.01	<0.01	0.5
Lead, Dissolved	mg/l	0.01	--	--	<0.05	0.008	0.003	<0.002	<0.05	--	<0.002	-- [7]	--	<0.001	<0.001	<0.001	<0.001	0.002
Magnesium, Dissolved	mg/l	--	--	--	--	27	--	29	35	--	28	32	--	23	29	24	29	27
Manganese, Dissolved	mg/l	--	0.05	--	--	<0.01	0.62	0.04	<0.01	--	<0.01	-- [7]	--	<0.01	<0.01	<0.01	<0.01	0.04
Mercury, Dissolved	mg/l	0.001	--	--	<0.001	--	<0.001	--	--	--	<0.0002	-- [7]	--	<0.001	<0.0001	--	--	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.03	-- [7]	--	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	-- [7]	--	<0.01	<0.01	<0.01	<0.01	<0.01
Potassium, Dissolved	mg/l	--	--	--	--	3	--	2	132	--	2	2	--	2	2	2	2	2
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	--	--	5.3	--	7.3	6.4	--	4.7	5.4	--	5.36	6.24	5.7	5.88	4.7
Silver, Dissolved	mg/l	--	--	--	--	<0.01	--	0.01	<0.01	--	<0.0012	-- [7]	--	<0.01	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 [10]	--	--	10	--	12	13	--	13	22	--	20	19	17	19	21
Strontium, Dissolved	mg/l	--	--	--	--	0.64	--	0.81	0.65	--	0.59	0.619	--	0.519	0.629	0.647	0.549	0.632
Sulfur	mg/l	--	--	--	--	8	--	16	9	--	7	9	--	6	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.05	<0.05	--	<0.2	-- [7]	--	<0.2	<0.001	<0.001	<0.001	<0.001
Tin, Dissolved	mg/l	--	--	--	--	<0.05	--	<0.05	<0.05	--	<0.05	-- [7]	--	--	<0.01	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	-- [7]	--	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium, Dissolved	mg/l	--	--	--	--	<0.01	--	<0.01	<0.01	--	<0.01	-- [7]	--	<0.01	<0.001	0.001	0.001	0.001
Zinc, Dissolved	mg/l	--	5	--	0.03	<0.01	0.01	<0.01	<0.01	--	0.01	-- [7]	--	0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements																		
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.5	7.4	--	--	--	--	--	7.48	7.82	--	6.98	7.6	7.58	7.71	7.8
Temperature (Field)	deg c	--	15 [7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GROUNDWATER MONITORS INORGANIC

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-5 02-Oct-2002	OV-5 03-May-2003	OV-5 01-Nov-2003	OV-5 04-May-2004	OV-5 04-Oct-2004	OV-5 13-Jun-13
									Well Damaged
General Chemistry									
Alkalinity (Total as CaCO3)	mg/l	--	--	340	347	333	246	260	--
Ammonia Nitrogen	mg/l	--	--	0.04	<0.02	0.13	0.02	0.16	--
Bicarbonate	mg/l	--	--						
Biologic Oxygen Demand, Five Day	mg/l	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	45	58	62	24	28	--
Conductivity	uS/cm	--	--	829	866	868	581	619	--
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--
Fluoride	mg/l	1.5	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	401	--	--	--	--	--
Nitrate	mg/l	-- (6)	--	5.93	3.46	3.58	--	2.24	--
Nitrite	mg/l	-- (12)	--	--	--	--	2.83	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	0.09	0.66	0.19	0.22	--
Phosphate	mg/l	--	--	--	0.44	0.1	0.16	0.11	--
Phosphorus	mg/l	--	--	--	0.16	0.05	0.21	0.23	--
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--
pH									
Sulfate	mg/l	--	500 (8)	24	24	24	23	17	--
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	539	563	564	378	402	--
Total Organic Carbon	mg/l	--	--	--	1.1	1.4	1.1	2.4	--
Metals									
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	0.06	--	--	--
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.09	0.08	0.09	--	--	--
Beryllium, Dissolved	mg/l	--	--	<0.0001	<0.001	<0.001	--	--	--
Boron, Dissolved	mg/l	5	--	<0.05	0.05	0.03	0.06	0.05	--
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	--
Calcium, Dissolved	mg/l	--	--	116	108	123	81	82	--
Chromium, Dissolved	mg/l	0.05	--	<0.001	0.009	0.037	<0.001	0.008	--
Cobalt, Dissolved	mg/l	--	--	0.0009	<0.0002	0.002	--	--	--
Copper, Dissolved	mg/l	--	1	0.002	0.002	--	0.001	0.002	--
Iron, Dissolved	mg/l	--	0.3	0.5	<0.01	<0.01	0.04	0.01	--
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	--
Magnesium, Dissolved	mg/l	--	--	27	29	27	19	19	--
Manganese, Dissolved	mg/l	--	0.05	0.028	<0.005	<0.005	<0.01	<0.01	--
Mercury, Dissolved	mg/l	0.001	--	--	<0.0001	<0.0001	<0.0001	<0.0001	--
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.0005	<0.005	--	--	--
Nickel, Dissolved	mg/l	--	--	<0.005	--	<0.005	<0.005	<0.005	--
Potassium, Dissolved	mg/l	--	--	2	2	3	2	2	--
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--
Silicon, Dissolved	mg/l	--	--	5	5.1	5.7	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	--
Sodium, Dissolved	mg/l	--	200 (10)	24	24	24	9	12	--
Strontium, Dissolved	mg/l	--	--	0.679	0.631	0.692	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	0.01	<0.01	<0.01	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.005	0.003	<0.001	--	--	--
Zinc, Dissolved	mg/l	--	5	>0.005	--	<0.001	--	--	--
Field Measurements									
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.71	7.63	7.69	7.47	7.53	--
Temperature (Field)	deg c	--	15 (7)	--	--	--	--	--	--

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-7 17-Jun-13	OV-7 29-Oct-13
General Chemistry					
Alkalinity (Total as CaCO3)	mg/l	--	--	1440	1820
Ammonia Nitrogen	mg/l	--	--	64.3	83.8
Bicarbonate	mg/l	--	--	--	1820
Biologic Oxygen Demand, Five Day	mg/l	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--
Chloride	mg/l	--	250	128	236
Conductivity	uS/cm	--	--	2770	3560
Dissolved Organic Carbon	mg/l	--	5	43.3	65.5
Fluoride	mg/l	1.5	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	915	1150
Nitrate	mg/l	-- (6)	--	--	--
Nitrite	mg/l	-- (12)	--	--	--
Nitrogen	mg/l	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	78	110
Phosphate	mg/l	--	--	--	--
Phosphorus	mg/l	--	--	1	0.98
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	0.02
pH					6.86
Sulfate	mg/l	--	500 (8)	<3	<3
Tannin & Lignin	mg/l	--	--	--	--
Total Dissolved Solids	mg/l	--	500	1800	2310
Total Organic Carbon	mg/l	--	--	--	--
Metals					
Aluminum, Dissolved	mg/l	--	--	0.02	0.02
Arsenic, Dissolved	mg/l	0.025	--	--	--
Barium, Dissolved	mg/l	1	--	0.56	0.81
Beryllium, Dissolved	mg/l	--	--	<0.0005	<0.0005
Boron, Dissolved	mg/l	5	--	1.5	1.7
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	269	351
Chromium, Dissolved	mg/l	0.05	--	0.008	0.008
Cobalt, Dissolved	mg/l	--	--	0.0153	0.0110
Copper, Dissolved	mg/l	--	1	<0.001	<0.001
Iron, Dissolved	mg/l	--	0.3	56.2	56.6
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	59	66
Manganese, Dissolved	mg/l	--	0.05	1.12	1.13
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	0.015	0.026
Potassium, Dissolved	mg/l	--	--	60	69
Selenium, Dissolved	mg/l	0.01	--	<0.01	<0.01
Silicon, Dissolved	mg/l	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (10)	169	234
Strontium, Dissolved	mg/l	--	--	--	--
Sulfur	mg/l	--	--	--	--
Thallium, Dissolved	mg/l	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--
Titanium, Dissolved	mg/l	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.005	0.006
Zinc, Dissolved	mg/l	--	5	0.01	<0.01
Field Measurements					
Conductivity (Field)	uS/cm	--	--	2690	3790
pH (Field)	-	--	--	6.9	6.7
Temperature (Field)	deg c	--	15 (7)	9.5	10.5

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GROUNDWATER MONITORS INORGANIC

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-8 13-Jun-13 Not Located
General Chemistry				
Alkalinity (Total as CaCO3)	mg/l	--	--	--
Ammonia Nitrogen	mg/l	--	--	--
Bicarbonate	mg/l	--	--	
Biologic Oxygen Demand, Five Day	mg/l	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--
Chloride	mg/l	--	250	--
Conductivity	uS/cm	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--
Fluoride	mg/l	1.5	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--
Nitrate	mg/l	-- (6)	--	--
Nitrite	mg/l	-- (12)	--	--
Nitrogen	mg/l	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--
Phosphate	mg/l	--	--	--
Phosphorus	mg/l	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	--
pH				
Sulfate	mg/l	--	500 (8)	--
Tannin & Lignin	mg/l	--	--	--
Total Dissolved Solids	mg/l	--	500	--
Total Organic Carbon	mg/l	--	--	--
Metals				
Aluminum, Dissolved	mg/l	--	--	--
Arsenic, Dissolved	mg/l	0.025	--	--
Barium, Dissolved	mg/l	1	--	--
Beryllium, Dissolved	mg/l	--	--	--
Boron, Dissolved	mg/l	5	--	--
Cadmium, Dissolved	mg/l	0.005	--	--
Calcium, Dissolved	mg/l	--	--	--
Chromium, Dissolved	mg/l	0.05	--	--
Cobalt, Dissolved	mg/l	--	--	--
Copper, Dissolved	mg/l	--	1	--
Iron, Dissolved	mg/l	--	0.3	--
Lead, Dissolved	mg/l	0.01	--	--
Magnesium, Dissolved	mg/l	--	--	--
Manganese, Dissolved	mg/l	--	0.05	--
Mercury, Dissolved	mg/l	0.001	--	--
Molybdenum, Dissolved	mg/l	--	--	--
Nickel, Dissolved	mg/l	--	--	--
Potassium, Dissolved	mg/l	--	--	--
Selenium, Dissolved	mg/l	0.01	--	--
Silicon, Dissolved	mg/l	--	--	--
Silver, Dissolved	mg/l	--	--	--
Sodium, Dissolved	mg/l	--	200 (10)	--
Strontium, Dissolved	mg/l	--	--	--
Sulfur	mg/l	--	--	--
Thallium, Dissolved	mg/l	--	--	--
Tin, Dissolved	mg/l	--	--	--
Titanium, Dissolved	mg/l	--	--	--
Vanadium, Dissolved	mg/l	--	--	--
Zinc, Dissolved	mg/l	--	5	--
Field Measurements				
Conductivity (Field)	uS/cm	--	--	--
pH (Field)	-	--	--	--
Temperature (Field)	deg c	--	15 (7)	--

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GROUNDWATER MONITORS INORGANIC

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-9 01-Dec-1992	OV-9 01-May-1995	OV-9 01-Oct-1995	OV-9 01-Apr-1996	OV-9 01-Jun-1997	OV-9 01-Jul-1999	OV-9 16-Oct-1999	OV-9 01-Jul-2000	OV-9 14-Oct-2000	OV-9 28-May-2002	OV-9 04-May-2004	OV-9 09-Jun-2005	OV-9 29-Oct-2005	OV-9 08-Apr-2006	OV-9 24-Nov-2006
General Chemistry																		
Alkalinity (Total as CaCO3)	mg/l	--	--	246	331	346	273	262	331	361	290	259	291	332	274	301	236	379
Ammonia Nitrogen	mg/l	--	--	--	<0.01	0.02	0.01	0.04	0.08	0.02	0.06	<0.02	0.03	0.04	0.08	0.03	0.05	<0.02
Bicarbonate	mg/l	--	--															
Biologic Oxygen Demand, Five Day	mg/l	--	--	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	37	45	46	29	27	44	53	37	20	35	30	36	15	52	61
Conductivity	uS/cm	--	--	--	799	822	639	613	719	782	672	549	705	858	1200	1175	360	895
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--	--	7.3	8.5
Fluoride	mg/l	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	378.4	--	361.8	480.5
Nitrate	mg/l	-- (6)	--	--	1.37	1.62	0.48	0.3	1.08	1.38	0.31	<0.1	0.5	4.29	--	--	--	--
Nitrite	mg/l	-- (12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	0.52	0.31	0.07	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	0.66	--	--	--	--
Phosphate	mg/l	--	--	--	--	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.07	<0.03	0.18	--	--	--	--
Phosphorus	mg/l	--	--	--	--	--	--	--	--	--	1.79	--	0.53	0.83	5.26	0.13	2.93	1.08
Phosphorus (dissolved reactive)	mg/l	--	--	<0.1	<0.1	<0.1	--	--	--	--	--	--	--	--	--	--	0.07	0.12
pH																		
Sulfate	mg/l	--	500 (8)	34	33	34	26	25	24	33	25	46	23	88	81	37	106	50
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	390	476	492	388	388	432	476	392	348	458	558	780	764	498	625
Total Organic Carbon	mg/l	--	--	6.2	2.5	2.1	1.4	1.2	0.4	1.4	1.2	5.9	2	7.4	--	--	--	--
Metals																		
Aluminum, Dissolved	mg/l	--	--	<0.03	0.03	<0.03	<0.03	0.03	--	0.03	0.14	0.24	<0.05	--	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.13	0.12	0.11	0.09	0.08	--	0.35	0.09	0.17	0.09	--	0.19	--	0.17	0.25
Beryllium, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	--	0.01	<0.002	<0.002	<0.002	--	<0.001	--	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.08	0.05	0.04	0.05	0.03	--	0.26	0.04	0.12	<0.05	0.2	0.11	0.15	0.1	0.16
Cadmium, Dissolved	mg/l	0.005	--	<0.01	<0.005	<0.005	<0.005	<0.005	--	<0.01	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	81	115	107	86	77	--	116	90	91	87	128	112	--	107	143
Chromium, Dissolved	mg/l	0.05	--	<0.01	<0.01	<0.01	0.01	<0.01	--	<0.01	<0.01	<0.01	0.003	0.001	0.001	--	0.002	0.002
Cobalt, Dissolved	mg/l	--	--	<0.02	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	0.0009	0.0008	--	0.0016	--	0.0005	0.0007
Copper, Dissolved	mg/l	--	1	<0.01	<0.005	<0.005	0.011	0.017	--	<0.01	<0.01	0.02	<0.001	0.003	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	0.03	0.08	0.06	0.12	0.36	--	0.56	0.29	0.62	0.25	0.01	<0.03	<0.03	<0.03	<0.03
Lead, Dissolved	mg/l	0.01	--	<0.05	<0.002	<0.002	<0.002	<0.002	--	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	21	27	27	23	22	--	29	23	--	24	26	24	--	23	30
Manganese, Dissolved	mg/l	--	0.05	0.04	0.02	0.04	0.05	0.04	--	0.03	0.03	21	0.06	0.5	--	--	0.31	0.55
Mercury, Dissolved	mg/l	0.001	--	--	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.03	--	<0.01	<0.01	<0.01	<0.01	--	<0.005	--	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	0.006	0.005	<0.005
Potassium, Dissolved	mg/l	--	--	2	3	3	3	2	--	3	3	2	3	2	2	--	2	2
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	--	<0.001	--	<0.001	0.001
Silicon, Dissolved	mg/l	--	--	3.9	6.3	5.8	5.3	4.3	--	5.5	5.3	4.06	4.45	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.001	--	0.01	<0.01	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (10)	14	13	14	12	11	--	18	17	15	16	20	14	--	18	19
Strontium, Dissolved	mg/l	--	--	0.55	0.895	0.741	0.642	0.55	--	0.7	0.563	0.706	0.605	--	--	--	--	--
Sulfur	mg/l	--	--	12	11	11	10	8	--	9	9	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.05	<0.05	<0.05	<0.2	<0.2	--	<0.2	<0.2	<0.001	<0.001	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	<0.05	<0.05	<0.05	<0.05	<0.05	--	--	--	<0.01	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.001	0.001	--	0.003	--	0.002	0.004
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	0.01	--	0.24	<0.01	<0.01	<0.01	--	<0.01	0.02	<0.01	<0.01
Field Measurements																		
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	--	7.33	7.78	7.55	7.56	7.22	7.51	6.8	7.55	7.86	7.36	6.7	6.8	7.3	6.8
Temperature (Field)	deg c	--	15 (7)	--	--	--	--	--	--	--	--	--	--	--	16.8	10	5	5

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GROUNDWATER MONITORS INORGANIC

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-9 25-Apr-2007	OV-9 06-Dec-2007	OV-9 03-May-2008	OV-9 28-Nov-2008	OV-9 29-Apr-2009 A-25	OV-9 28-Nov-2009 A-9	OV-9 20-May-2010 A-24	OV-9 29-Nov-2010 A - 11	OV-9 10-May-2011 S-11	OV-9 30-Nov-2011 (5) S - 21	OV-9 20-May-2012 S-28	OV-9 14-Nov-2012 (18) A-18	OV-9 13-Jun-13	OV-9 25-Oct-13
General Chemistry																	
Alkalinity (Total as CaCO3)	mg/l	--	--	341	275	337	334	374	313	380	306	340	219	309	219	274	No
Ammonia Nitrogen	mg/l	--	--	0.11	0.02	0.1	0.03	0.03	<0.02	0.09	<0.02	0.04	0.04	0.10	0.06	0.05	Water
Bicarbonate	mg/l	--	--														To
Biologic Oxygen Demand, Five Day	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Sample
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Chloride	mg/l	--	250	57	31	82	73	68	32	107	82	60	40	88	88	28	
Conductivity	uS/cm	--	--	350	780	685	610	949	699	1070	853	797	577	885	752	617	
Dissolved Organic Carbon	mg/l	--	5	8.3	7.8	1.5	1.1	8.4	6.4	8.2	5.9	6.7	4.2	5.6	5.8	5.4	
Fluoride	mg/l	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Hardness, Calcium Carbonate	mg/l	--	--	404	277	421	399	432	330	468	376	361	271	283	325	266	
Nitrate	mg/l	-- (6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Nitrite	mg/l	-- (12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.69	
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Phosphorus	mg/l	--	--	0.75	1.61	0.44	0.35	3.51	0.96	1.32	0.25	1.13	0.26	1.00	1.10	8.39	
Phosphorus (dissolved reactive)	mg/l	--	--	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
pH																	
Sulfate	mg/l	--	500 (8)	35	18	30	31	35	17	36	32	19	26	26	35	23	
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Total Dissolved Solids	mg/l	--	500	558	412	598	583	617	454	696	554	518	375	575	489	401	
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Metals																	
Aluminum, Dissolved	mg/l	--	--	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.28	
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Barium, Dissolved	mg/l	1	--	0.16	0.16	0.15	0.14	0.21	0.16	0.25	0.13	0.17	0.12	0.17	0.12	0.11	
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Boron, Dissolved	mg/l	5	--	0.12	0.14	0.04	0.04	0.14	0.13	0.16	0.11	0.13	0.10	0.14	0.17	0.17	
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	
Calcium, Dissolved	mg/l	--	--	119	83	119	112	125	96	138	111	105	77	82	94	77	
Chromium, Dissolved	mg/l	0.05	--	0.002	0.003	0.003	0.003	0.002	0.001	<0.001	0.003	0.003	0.004	0.003	0.003	0.003	
Cobalt, Dissolved	mg/l	--	--	0.0121	0.0017	0.0008	0.0007	0.0012	0.0013	0.0014	0.0006	0.0008	0.0003	0.0009	0.0006	0.0129	
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	--	0.006	
Iron, Dissolved	mg/l	--	0.3	0.06	<0.03	0.34	0.32	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.25	
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Magnesium, Dissolved	mg/l	--	--	26	17	30	29	29	22	30	24	24	19	19	22	18	
Manganese, Dissolved	mg/l	--	0.05	0.41	0.28	0.09	0.07	0.50	0.17	0.51	0.03	0.44	<0.01	0.81	<0.01	0.03	
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	
Potassium, Dissolved	mg/l	--	--	1	2	3	3	2	2	2	1	1	<1	1	<1	1	
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.001	
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Sodium, Dissolved	mg/l	--	200 (10)	20	19	32	28	30	22	44	38	36	29	27	39	36	
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Vanadium, Dissolved	mg/l	--	--	0.002	0.004	0.002	0.006	0.005	0.002	0.003	0.002	0.002	0.001	0.004	0.003	0.002	
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Field Measurements																	
Conductivity (Field)	uS/cm	--	--	--	--	--	--	920	965	11	890	920	875	940	915	263	
pH (Field)	-	--	--	7.2	7.2	7.3	7.1	7.8	7.6	7.7	7.5	7.6	7.6	7.5	7.4	8.1	
Temperature (Field)	deg c	--	15 (7)	5	6	8	6	11	7	908	9	10.0	7	11	8	16.5	

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GROUNDWATER MONITORS INORGANIC

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-10 01-Dec-1992	OV-10 01-Feb-1993	OV-10 01-Nov-1998	OV-10 28-Jul-2000	OV-10 14-Oct-2000	OV-10 06-Nov-2001	OV-10 03-May-2003	OV-10 01-Nov-2003	OV-10 04-May-2004	OV-10 01-Oct-2004	OV-10 09-Jun-2005	OV-10 29-Oct-2005	OV-10 08-Apr-2006	OV-10 24-Nov-2006	OV-10 25-Apr-2007
General Chemistry																		
Alkalinity (Total as CaCO3)	mg/l	--	--	320	370	321	249	304	267	307	332	205	266	332	324	346	320	321
Ammonia Nitrogen	mg/l	--	--	--	--	0.03	0.26	<0.02	0.08	0.03	0.03	0.22	0.1	0.07	0.04	0.06	0.03	0.05
Bicarbonate	mg/l	--	--															
Biologic Oxygen Demand, Five Day	mg/l	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	44	38	50	23	39	18	41	56	32	17	57	55	67	59	51
Conductivity	uS/cm	--	--	--	--	772	620	620	606	727	831	494	613	820	770	310	580	325
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	--	0.9	<0.5	1.4
Fluoride	mg/l	1.5	--	--	--	--	<0.01	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--	--	--	--	319	--	--	--	--	399.8	--	397.3	389.8	373
Nitrate	mg/l	-- (6)	--	--	--	1.63	<0.1	0.7	1.55	0.83	1.66	0.24	0.29	--	--	--	--	--
Nitrite	mg/l	-- (12)	--															
Nitrogen	mg/l	--	--	--	--	--	456	0.14	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	0.07	0.08	0.22	0.57	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	-- (7)	<0.03	0.04	--	0.62	0.11	0.1	0.11	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	--	3.16	--	--	0.42	0.05	0.79	2.65	0.14	0.22	0.17	0.77	0.44
Phosphorus (dissolved reactive)	mg/l	--	--	<0.1	--	--	--	--	--	--	--	--	--	--	--	0.05	0.08	0.11
pH																		
Sulfate	mg/l	--	500 (8)	25	23	27	53	24	59	24	28	13	39	29	26	29	26	34
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	mg/l	--	500	470	470	464	423	428	384	473	540	321	398	512	501	563	540	525
Total Organic Carbon	mg/l	--	--	1.6	--	0.8	1.96	1.6	--	1	1.3	0.5	6.2	--	--	--	--	--
Metals																		
Aluminum, Dissolved	mg/l	--	--	<0.03	--	-- (7)	0.2	<0.05	<0.05	<0.01	0.04	--	--	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.1	--	0.09	0.17	0.09	0.12	0.09	0.12	--	--	0.13	--	0.12	0.11	0.11
Beryllium, Dissolved	mg/l	--	--	<0.01	--	-- (7)	<0.002	<0.002	<0.002	<0.001	<0.001	--	--	<0.001	--	<0.001	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	0.05	--	0.03	0.11	0.03	<0.05	0.07	0.04	0.04	0.14	0.04	0.04	0.04	0.04	0.04
Cadmium, Dissolved	mg/l	0.005	--	<0.01	--	-- (7)	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	99	--	119	95	99	93	90	117	61	88	114	--	113	110	105
Chromium, Dissolved	mg/l	0.05	--	<0.01	--	-- (7)	<0.01	<0.01	0.002	0.01	0.001	<0.001	0.001	0.004	--	0.003	<0.001	0.002
Cobalt, Dissolved	mg/l	--	--	<0.01	--	-- (7)	<0.01	0.0013	0.0004	0.0007	0.0008	--	--	0.0007	--	0.0007	0.0005	0.0035
Copper, Dissolved	mg/l	--	1	0.02	--	-- (7)	<0.01	0.002	0.002	<0.001	0.001	<0.001	0.004	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	0.05	--	0.41	0.28	0.41	0.01	0.23	0.24	0.15	0.03	0.5	0.35	0.22	0.27	0.38
Lead, Dissolved	mg/l	0.01	--	<0.05	--	-- (7)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	31	--	31	21	26	21	26	29	16	18	28	--	28	28	27
Manganese, Dissolved	mg/l	--	0.05	0.2	--	0.04	0.69	0.05	0.23	0.052	0.056	0.06	0.12	--	--	0.06	0.06	0.07
Mercury, Dissolved	mg/l	0.001	--	--	--	-- (7)	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	--	-- (7)	<0.01	<0.01	<0.01	<0.005	<0.005	--	--	<0.005	--	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.01	--	-- (7)	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	3	--	2	2	3	2	3	4	3	2	3	--	3	3	3
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	--	0.001	--	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	5.9	--	4.7	4.48	5.72	--	5.1	5.5	--	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.01	--	-- (7)	<0.01	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (10)	13	--	13	17	18	8	18	21	15	10	22	--	26	24	22
Strontium, Dissolved	mg/l	--	--	0.69	--	0.667	0.746	0.589	0.506	0.621	0.744	--	--	--	--	--	--	--
Sulfur	mg/l	--	--	9	--	10	20	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.05	--	-- (7)	<0.2	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	<0.05	--	-- (7)	--	<0.01	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	--	-- (7)	0.01	<0.01	<0.01	<0.01	0.08	--	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.01	--	-- (7)	<0.01	<0.001	<0.001	0.003	<0.001	--	--	0.004	--	0.003	0.003	0.002
Zinc, Dissolved	mg/l	--	5	0.01	--	-- (7)	<0.01	<0.01	<0.01	<0.005	<0.01	--	--	<0.01	0.01	<0.01	<0.01	<0.01
Field Measurements																		
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	--	--	7.85	7.13	7.51	7.58	7.63	7.7	7.31	7.27	6.9	6.7	7.3	7	7.2
Temperature (Field)	deg c	--	15 (7)	--	--	--	--	--	--	--	--	--	--	11.9	10	5	5	5

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

OVERBURDEN GROUNDWATER MONITORS INORGANIC

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-10 06-Dec-2007	OV-10 03-May-2008	OV-10 28-Nov-2008	OV-10 29-Apr-2009 A-24	OV-10 28-Nov-2009 A-8	OV-10 20-May-2010 A-23	OV-10 29-Nov-2010 A - 10	OV-10 10-May-2011 S-10	OV-10 30-Nov-2011 (5) S - 20	OV-10 20-May-2012 S-29	OV-10 14-Nov-2012 A-17	OV-10 17-Jun-13	OV-10 25-Oct-13		
General Chemistry																		
Alkalinity (Total as CaCO3)	mg/l	--	--	339	381	372	334	340	333	378	360	347	353	365	380	364		
Ammonia Nitrogen	mg/l	--	--	0.04	0.04	<0.02	0.04	0.05	<0.02	<0.02	0.04	0.08	0.14	0.07	0.04	0.1		
Bicarbonate	mg/l	--	--															
Biologic Oxygen Demand, Five Day	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Chloride	mg/l	--	250	77	99	59	60	70	77	75	71	71	73	71	69	68		
Conductivity	uS/cm	--	--	600	610	585	854	890	903	937	873	901	910	932	922	919		
Dissolved Organic Carbon	mg/l	--	5	1.8	8.8	6.3	1.6	1.5	1.6	1.2	1.5	1.2	1.5	1.4	1.4	1.4		
Fluoride	mg/l	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--			
Hardness, Calcium Carbonate	mg/l	--	--	407	476	404	390	388	442	443	381	417	296	412	446	410		
Nitrate	mg/l	-- (6)	--	--	--	--	--	--	--	--	--	--	--	--	--			
Nitrite	mg/l	-- (12)	--												--			
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	0.23		
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Phosphorus	mg/l	--	--	0.08	1.53	1.25	0.42	0.75	0.07	0.44	0.42	0.42	0.86	1.56	0.02	7.15		
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01		
pH																7.83		
Sulfate	mg/l	--	500 (8)	28	44	33	31	28	33	30	28	30	32	31	32	30		
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Total Dissolved Solids	mg/l	--	500	595	683	592	555	579	587	609	567	586	592	606	599	597		
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Metals																		
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04		
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--			
Barium, Dissolved	mg/l	1	--	0.14	0.27	0.23	0.13	0.12	0.13	0.13	0.13	0.13	0.14	0.14	0.16	0.2		
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
Boron, Dissolved	mg/l	5	--	0.06	0.13	0.18	0.04	0.06	0.06	0.04	0.05	0.04	0.05	0.04	0.05	0.03		
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
Calcium, Dissolved	mg/l	--	--	115	138	119	110	111	126	128	108	121	84	117	129	118		
Chromium, Dissolved	mg/l	0.05	--	0.004	0.004	0.003	0.002	0.002	<0.001	0.003	0.003	0.005	0.004	0.003	<0.001	0.003		
Cobalt, Dissolved	mg/l	--	--	0.0007	0.0015	0.0016	0.0006	0.0005	0.0005	0.0007	0.0006	0.0004	0.0006	0.0006	0.0078	0.0021		
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	--	0.001	0.003		
Iron, Dissolved	mg/l	--	0.3	0.45	<0.03	<0.03	0.28	0.23	0.18	0.35	0.25	0.20	0.30	0.23	0.51	1.12		
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
Magnesium, Dissolved	mg/l	--	--	29	32	26	28	27	31	30	27	28	21	29	30	28		
Manganese, Dissolved	mg/l	--	0.05	0.08	0.56	0.35	0.07	0.05	0.05	0.08	0.06	0.05	0.06	0.05	0.12	0.15		
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		
Nickel, Dissolved	mg/l	--	--	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		
Potassium, Dissolved	mg/l	--	--	3	2	2	3	3	4	3	3	3	2	3	3	3		
Selenium, Dissolved	mg/l	0.01	--	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001		
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
Sodium, Dissolved	mg/l	--	200 (10)	26	38	32	30	28	37	37	33	36	24	36	40	35		
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Vanadium, Dissolved	mg/l	--	--	0.005	0.004	0.006	0.004	0.003	0.002	0.002	0.002	0.002	0.005	0.005	0.001	0.001		
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Field Measurements																		
Conductivity (Field)	uS/cm	--	--	--	--	--	860	825	11	822	895	880	913	900	895	841		
pH (Field)	-	--	--	6.9	6.9	6.9	8.1	7.9	8	7.3	7.9	7.8	7.8	7.9	7.6	7.4		
Temperature (Field)	deg c	--	15 (7)	5	6	6	10	5	870	7	10.0	8	11	7	9.6	8.1		

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-11 01-Dec-1992	OV-11 01-Feb-1993
General Chemistry					
Alkalinity (Total as CaCO3)	mg/l	--	--	354	630
Ammonia Nitrogen	mg/l	--	--	--	--
Bicarbonate	mg/l	--	--		
Biologic Oxygen Demand, Five Day	mg/l	--	--	2	--
Chemical Oxygen Demand	mg/l	--	--	--	--
Chloride	mg/l	--	250	66	102
Conductivity	uS/cm	--	--	--	--
Dissolved Organic Carbon	mg/l	--	5	--	--
Fluoride	mg/l	1.5	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--	--
Nitrate	mg/l	-- (6)	--	--	--
Nitrite	mg/l	-- (12)	--	--	--
Nitrogen	mg/l	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--
Phosphate	mg/l	--	--	--	--
Phosphorus	mg/l	--	--	--	--
Phosphorus (dissolved reactive)	mg/l	--	--	<0.1	--
pH					
Sulfate	mg/l	--	500 (8)	120	121
Tannin & Lignin	mg/l	--	--	--	--
Total Dissolved Solids	mg/l	--	500	700	930
Total Organic Carbon	mg/l	--	--	8.3	--
Metals					
Aluminum, Dissolved	mg/l	--	--	<0.03	--
Arsenic, Dissolved	mg/l	0.025	--	--	--
Barium, Dissolved	mg/l	1	--	<0.01	--
Beryllium, Dissolved	mg/l	--	--	<0.01	--
Boron, Dissolved	mg/l	5	--	0.27	--
Cadmium, Dissolved	mg/l	0.005	--	<0.01	--
Calcium, Dissolved	mg/l	--	--	117	--
Chromium, Dissolved	mg/l	0.05	--	<0.01	--
Cobalt, Dissolved	mg/l	--	--	<0.01	--
Copper, Dissolved	mg/l	--	1	0.02	--
Iron, Dissolved	mg/l	--	0.3	<0.01	--
Lead, Dissolved	mg/l	0.01	--	<0.05	--
Magnesium, Dissolved	mg/l	--	--	43	--
Manganese, Dissolved	mg/l	--	0.05	0.35	--
Mercury, Dissolved	mg/l	0.001	--	--	--
Molybdenum, Dissolved	mg/l	--	--	<0.01	--
Nickel, Dissolved	mg/l	--	--	<0.01	--
Potassium, Dissolved	mg/l	--	--	5	--
Selenium, Dissolved	mg/l	0.01	--	--	--
Silicon, Dissolved	mg/l	--	--	5.2	--
Silver, Dissolved	mg/l	--	--	<0.01	--
Sodium, Dissolved	mg/l	--	200 (10)	38	--
Strontium, Dissolved	mg/l	--	--	0.41	--
Sulfur	mg/l	--	--	40	--
Thallium, Dissolved	mg/l	--	--	<0.05	--
Tin, Dissolved	mg/l	--	--	<0.05	--
Titanium, Dissolved	mg/l	--	--	<0.01	--
Vanadium, Dissolved	mg/l	--	--	<0.01	--
Zinc, Dissolved	mg/l	--	5	<0.01	--
Field Measurements					
Conductivity (Field)	uS/cm	--	--	--	--
pH (Field)	-	--	--	--	--
Temperature (Field)	deg c	--	15 (7)	--	--

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GROUNDWATER MONITORS INORGANIC

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-13 07-Nov-2001	OV-13 30-Jan-2002	OV-13 11-Mar-2002	OV-13 28-May-2002	OV-13 02-Oct-2002	OV-13 01-May-2003	OV-13 01-Nov-2003	OV-13 04-May-2004	OV-13 04-Oct-2004	OV-13 14-Jun-2005	OV-13 24-Nov-2005	OV-13 08-Apr-2006	OV-13 24-Nov-2006	OV-13 25-Apr-2007	OV-13 04-Dec-2007
General Chemistry																		
Alkalinity (Total as CaCO3)	mg/l	--	--	312	--	268	330	234	356	234	336	253	328	232	367	349	349	226
Ammonia Nitrogen	mg/l	--	--	<0.02	-- (7)	0.08	0.07	<0.02	--	0.04	0.05	0.09	0.05	0.03	<0.02	0.09	<0.02	<0.02
Bicarbonate	mg/l	--	--															
Biologic Oxygen Demand, Five Day	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	mg/l	--	250	36	25	9	31	5	37	2	56	27	53	3	30	38	45	3
Conductivity	uS/cm	--	--	738	736	536	769	457	788	445	834	594	840	380	880	305	385	441
Dissolved Organic Carbon	mg/l	--	5	--	--	--	--	--	--	--	--	--	--	--	0.8	0.6	1.1	1.6
Fluoride	mg/l	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	mg/l	--	--	338	362	253	--	213	--	--	--	--	423.7	--	370.5	388.7	393	213
Nitrate	mg/l	-- (6)	--	1.63	0.68	0.67	1.02	0.73	--	0.47	2.04	1.28	--	--	--	--	--	--
Nitrite	mg/l	-- (12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	mg/l	--	--	--	--	--	0.13	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	0.08	0.51	1.86	0.15	--	--	--	--	--	--
Phosphate	mg/l	--	--	--	--	--	<0.03	--	0.37	0.12	0.16	0.21	--	--	--	--	--	--
Phosphorus	mg/l	--	--	--	--	--	0.29	--	0.12	0.09	0.26	--	0.23	0.05	0.1	0.11	0.15	0.07
Phosphorus (dissolved reactive)	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	0.07	0.09	0.09	<0.01
pH																		
Sulfate	mg/l	--	500 (8)	27	32	15	29	11	29	11	24	16	22	10	28	28	30	10
Tannin & Lignin	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.1
Total Dissolved Solids	mg/l	--	500	440	478	348	500	297	512	289	542	386	546	247	495	523	545	287
Total Organic Carbon	mg/l	--	--	--	--	--	1.2	--	0.9	1.6	<0.5	1.2	--	--	--	--	--	--
Metals																		
Aluminum, Dissolved	mg/l	--	--	<0.05	-- (7)	-- (7)	<0.05	<0.01	<0.01	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium, Dissolved	mg/l	1	--	0.08	0.09	0.1	0.1	0.1	0.17	0.11	--	0.12	0.16	--	0.24	0.14	0.16	0.13
Beryllium, Dissolved	mg/l	--	--	<0.002	--	-- (7)	<0.002	<0.001	<0.001	<0.001	--	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001
Boron, Dissolved	mg/l	5	--	<0.05	<0.01 (7)	<0.01 (7)	<0.05	<0.05	<0.05	0.04	0.05	0.01	0.03	0.02	0.03	0.05	0.04	<0.01
Cadmium, Dissolved	mg/l	0.005	--	0.0002	-- (7)	-- (7)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001
Calcium, Dissolved	mg/l	--	--	89	102	65	102	54	100	58	100	57	117	--	99	103	103	54
Chromium, Dissolved	mg/l	0.05	--	0.001	-- (7)	0.171	0.001	0.002	0.018	0.003	0.002	0.003	<0.005	--	0.001	0.002	0.002	0.004
Cobalt, Dissolved	mg/l	--	--	0.002	0.0008	-- (7)	0.0011	<0.0002	0.0002	<0.0002	--	<0.0002	0.0005	--	<0.0002	<0.0002	0.0052	<0.0002
Copper, Dissolved	mg/l	--	1	<0.001	-- (7)	-- (7)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--
Iron, Dissolved	mg/l	--	0.3	0.01	1.83	0.07	0.24	0.02	0.07	0.05	0.12	0.04	0.1	0.07	<0.03	<0.03	0.05	0.08
Lead, Dissolved	mg/l	0.01	--	<0.001	-- (7)	-- (7)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	<0.001	<0.001	<0.001	<0.001
Magnesium, Dissolved	mg/l	--	--	28	26	22	33	19	32	17	32	23	32	--	30	32	33	19
Manganese, Dissolved	mg/l	--	0.05	0.03	0.06	0.02	0.03	<0.005	0.035	<0.005	0.17	<0.01	--	--	0.02	<0.01	0.01	<0.01
Mercury, Dissolved	mg/l	0.001	--	--	--	--	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01	-- (7)	-- (7)	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005
Nickel, Dissolved	mg/l	--	--	<0.01	-- (7)	-- (7)	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Potassium, Dissolved	mg/l	--	--	4	3	3	3	4	3	4	4	4	3	--	4	4	4	4
Selenium, Dissolved	mg/l	0.01	--	--	--	--	--	--	--	--	--	--	<0.001	--	<0.001	<0.001	<0.001	<0.001
Silicon, Dissolved	mg/l	--	--	4.72	4.17	5.96	4.78	5.6	5.8	6.7	--	7.8	--	--	--	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001	-- (7)	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	--	<0.0001	<0.0001	<0.0001	<0.0001
Sodium, Dissolved	mg/l	--	200 (10)	21	20	9	19	12	18	9	23	16	19	--	20	21	22	9
Strontium, Dissolved	mg/l	--	--	0.882	0.544	0.149	0.682	0.176	0.605	0.142	--	0.174	--	--	--	--	--	--
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.001	-- (7)	-- (7)	<0.001	<0.001	<0.001	<0.001	--	<0.001	--	--	--	--	--	--
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01	-- (7)	--	<0.01	<0.01	<0.01	<0.01	--	<0.01	--	--	--	--	--	--
Vanadium, Dissolved	mg/l	--	--	<0.001	-- (7)	-- (7)	--	<0.005	0.002	<0.001	--	<0.001	0.003	--	<0.001	<0.001	0.002	0.003
Zinc, Dissolved	mg/l	--	5	<0.01	-- (7)	-- (7)	<0.01	<0.005	<0.005	<0.01	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Field Measurements																		
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	--	--	7.8	7.78	7.92	7.81	7.87	7.59	7.92	7.47	7.6	7.6	7.5	7.3	7.2	7.2	7.3
Temperature (Field)	deg c	--	15 (7)	--	--	--	--	--	--	--	--	--	-- (11)	5	5	6	5	6

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GROUNDWATER MONITORS INORGANIC

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-13 04-May-2008	OV-13 29-Nov-2008	OV-13 29-Apr-2009 A-30	OV-13 29-Nov-2009 A-21	OV-13 20-May-2010 A-27	OV-13 29-Nov-2010 A - 20	OV-13 10-May-2011 S-14	OV-13 30-Nov-2011 S - 26	OV-13 20-May-2012 S-21	OV-13 14-Nov-2012 A-28	OV-13 13-Jun-13	OV-13 13-Jun-13 (Duplicate)	OV-13 25-Oct-13		
General Chemistry																		
Alkalinity (Total as CaCO3)	mg/l	--	--	362	231	364	233	241	237	360	255	318	232	326	327	272		
Ammonia Nitrogen	mg/l	--	--	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.05	<0.02	<0.02	<0.02		
Bicarbonate	mg/l	--	--															
Biologic Oxygen Demand, Five Day	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		--	--		
Chemical Oxygen Demand	mg/l	--	--	--	--	--	--	--	--	--	--	--	--		--	--		
Chloride	mg/l	--	250	33	4	35	4	11	5	44	13	33	1	54	56	19		
Conductivity	uS/cm	--	--	1110	1080	814	461	511	463	794	532	713	445	797	800	578		
Dissolved Organic Carbon	mg/l	--	5	1.9	0.9	2.1	1.5	1.1	1.1	1.4	1.1	1.0	1.1	0.9	1	0.9		
Fluoride	mg/l	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Hardness, Calcium Carbonate	mg/l	--	--	388	245	365	316	256	255	405	275	266	221	400	400	291		
Nitrate	mg/l	-- (6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Nitrite	mg/l	-- (12)	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Nitrogen	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Nitrogen, Total Kjeldahl	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10		
Phosphate	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Phosphorus	mg/l	--	--	0.08	0.12	0.23	0.08	0.30	0.12	0.09	0.08	0.12	0.06	0.14	0.1	0.19		
Phosphorus (dissolved reactive)	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
pH																8		
Sulfate	mg/l	--	500 (8)	30	11	31	11	15	12	28	16	24	10	24	25	18		
Tannin & Lignin	mg/l	--	--	--	<0.1	--	--	--	--	--	--	--	--	--	--	--		
Total Dissolved Solids	mg/l	--	500	523	299	529	300	332	301	516	346	463	289	518	520	376		
Total Organic Carbon	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Metals																		
Aluminum, Dissolved	mg/l	--	--	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	0.01	0.02		
Arsenic, Dissolved	mg/l	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Barium, Dissolved	mg/l	1	--	0.21	0.14	0.16	0.14	0.14	0.14	0.18	0.15	0.14	0.14	0.14	0.14	0.13		
Beryllium, Dissolved	mg/l	--	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005		
Boron, Dissolved	mg/l	5	--	0.06	0.03	0.04	0.01	0.03	0.02	0.04	0.02	0.04	0.01	0.04	0.04	0.02		
Cadmium, Dissolved	mg/l	0.005	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
Calcium, Dissolved	mg/l	--	--	101	53	95	52	64	66	101	69	67	57	99	99	72		
Chromium, Dissolved	mg/l	0.05	--	0.003	0.004	0.002	0.004	<0.001	0.004	0.003	0.005	0.003	0.003	0.003	0.003	0.002		
Cobalt, Dissolved	mg/l	--	--	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	0.0011	<0.0002		
Copper, Dissolved	mg/l	--	1	--	--	--	--	--	--	--	--	--	--	<0.001	<0.001	<0.001		
Iron, Dissolved	mg/l	--	0.3	0.03	0.03	0.03	0.03	0.07	0.03	0.03	0.03	0.48	0.03	0.11	0.08	0.06		
Lead, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
Magnesium, Dissolved	mg/l	--	--	33	20	31	21	24	22	37	25	24	19	37	37	27		
Manganese, Dissolved	mg/l	--	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.01	0.08	0.03	0.03		
Mercury, Dissolved	mg/l	0.001	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
Molybdenum, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		
Nickel, Dissolved	mg/l	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		
Potassium, Dissolved	mg/l	--	--	3	4	4	4	4	4	4	4	3	3	4	4	4		
Selenium, Dissolved	mg/l	0.01	--	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
Silicon, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Silver, Dissolved	mg/l	--	--	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
Sodium, Dissolved	mg/l	--	200 (10)	21	10	20	10	14	10	20	13	14	8	23	21	16		
Strontium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Sulfur	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Thallium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Tin, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Titanium, Dissolved	mg/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Vanadium, Dissolved	mg/l	--	--	0.003	0.003	0.004	0.002	<0.001	<0.001	0.003	0.001	0.004	0.002	0.002	0.001	<0.001		
Zinc, Dissolved	mg/l	--	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
Field Measurements																		
Conductivity (Field)	uS/cm	--	--	--	--	1020	980	1050	990	1100	1050	1085	1055	811	--	538		
pH (Field)	-	--	--	6.7	6.8	6.9	7	6	6.9	6.9	6.9	7.0	7.1	7.7	--	7.7		
Temperature (Field)	deg c	--	15 (7)	8	6	10	--	12	10	11.0	10	9	8	10.6	--	7.9		

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-14 04-May-2004
General Chemistry				
Alkalinity (Total as CaCO3)	mg/l	--	--	1510
Ammonia Nitrogen	mg/l	--	--	91
Bicarbonate	mg/l	--	--	
Biologic Oxygen Demand, Five Day	mg/l	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--
Chloride	mg/l	--	250	207
Conductivity	uS/cm	--	--	3320
Dissolved Organic Carbon	mg/l	--	5	--
Fluoride	mg/l	1.5	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--
Nitrate	mg/l	-- (6)	--	<0.1
Nitrite	mg/l	-- (12)	--	--
Nitrogen	mg/l	--	--	--
Nitrogen, Total Kjeldahl	mg/l	--	--	103
Phosphate	mg/l	--	--	0.6
Phosphorus	mg/l	--	--	2.03
Phosphorus (dissolved reactive)	mg/l	--	--	--
pH				
Sulfate	mg/l	--	500 (8)	3
Tannin & Lignin	mg/l	--	--	--
Total Dissolved Solids	mg/l	--	500	2160
Total Organic Carbon	mg/l	--	--	81.9
Metals				
Aluminum, Dissolved	mg/l	--	--	--
Arsenic, Dissolved	mg/l	0.025	--	--
Barium, Dissolved	mg/l	1	--	--
Beryllium, Dissolved	mg/l	--	--	--
Boron, Dissolved	mg/l	5	--	1.51
Cadmium, Dissolved	mg/l	0.005	--	<0.0001
Calcium, Dissolved	mg/l	--	--	270
Chromium, Dissolved	mg/l	0.05	--	0.012
Cobalt, Dissolved	mg/l	--	--	--
Copper, Dissolved	mg/l	--	1	<0.001
Iron, Dissolved	mg/l	--	0.3	62.6
Lead, Dissolved	mg/l	0.01	--	<0.001
Magnesium, Dissolved	mg/l	--	--	75
Manganese, Dissolved	mg/l	--	0.05	1.2
Mercury, Dissolved	mg/l	0.001	--	<0.0001
Molybdenum, Dissolved	mg/l	--	--	--
Nickel, Dissolved	mg/l	--	--	0.027
Potassium, Dissolved	mg/l	--	--	80
Selenium, Dissolved	mg/l	0.01	--	--
Silicon, Dissolved	mg/l	--	--	--
Silver, Dissolved	mg/l	--	--	<0.0001
Sodium, Dissolved	mg/l	--	200 (10)	201
Strontium, Dissolved	mg/l	--	--	--
Sulfur	mg/l	--	--	--
Thallium, Dissolved	mg/l	--	--	--
Tin, Dissolved	mg/l	--	--	--
Titanium, Dissolved	mg/l	--	--	--
Vanadium, Dissolved	mg/l	--	--	--
Zinc, Dissolved	mg/l	--	5	--
Field Measurements				
Conductivity (Field)	uS/cm	--	--	--
pH (Field)	-	--	--	6.6
Temperature (Field)	deg c	--	15 (7)	--

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

ARNPRIOR WASTE DISPOSAL SITE
OVERBURDEN GROUNDWATER MONITORS INORGANIC

Parameter	Unit	(2) (1) ODWQS (169/03) Health	(4) (3) ODWQS AO	OV-18 28-May-2002
General Chemistry				
Alkalinity (Total as CaCO3)	mg/l	--	--	457
Ammonia Nitrogen	mg/l	--	--	1.02
Bicarbonate	mg/l	--	--	
Biologic Oxygen Demand, Five Day	mg/l	--	--	--
Chemical Oxygen Demand	mg/l	--	--	--
Chloride	mg/l	--	250	73
Conductivity	uS/cm	--	--	1100
Dissolved Organic Carbon	mg/l	--	5	--
Fluoride	mg/l	1.5	--	--
Hardness, Calcium Carbonate	mg/l	--	--	--
Nitrate	mg/l	-- (6)	--	<0.1
Nitrite	mg/l	-- (12)	--	--
Nitrogen	mg/l	--	--	1.36
Nitrogen, Total Kjeldahl	mg/l	--	--	--
Phosphate	mg/l	--	--	<0.03
Phosphorus	mg/l	--	--	0.81
Phosphorus (dissolved reactive)	mg/l	--	--	--
pH				
Sulfate	mg/l	--	500 (8)	14
Tannin & Lignin	mg/l	--	--	--
Total Dissolved Solids	mg/l	--	500	715
Total Organic Carbon	mg/l	--	--	6.9
Metals				
Aluminum, Dissolved	mg/l	--	--	<0.05
Arsenic, Dissolved	mg/l	0.025	--	--
Barium, Dissolved	mg/l	1	--	0.19
Beryllium, Dissolved	mg/l	--	--	<0.002
Boron, Dissolved	mg/l	5	--	0.51
Cadmium, Dissolved	mg/l	0.005	--	<0.0001
Calcium, Dissolved	mg/l	--	--	122
Chromium, Dissolved	mg/l	0.05	--	0.003
Cobalt, Dissolved	mg/l	--	--	0.0051
Copper, Dissolved	mg/l	--	1	<0.001
Iron, Dissolved	mg/l	--	0.3	1.41
Lead, Dissolved	mg/l	0.01	--	<0.001
Magnesium, Dissolved	mg/l	--	--	40
Manganese, Dissolved	mg/l	--	0.05	0.06
Mercury, Dissolved	mg/l	0.001	--	<0.0001
Molybdenum, Dissolved	mg/l	--	--	<0.01
Nickel, Dissolved	mg/l	--	--	<0.01
Potassium, Dissolved	mg/l	--	--	4
Selenium, Dissolved	mg/l	0.01	--	--
Silicon, Dissolved	mg/l	--	--	3.79
Silver, Dissolved	mg/l	--	--	<0.0001
Sodium, Dissolved	mg/l	--	200 (10)	44
Strontium, Dissolved	mg/l	--	--	6.13
Sulfur	mg/l	--	--	--
Thallium, Dissolved	mg/l	--	--	<0.001
Tin, Dissolved	mg/l	--	--	--
Titanium, Dissolved	mg/l	--	--	<0.01
Vanadium, Dissolved	mg/l	--	--	0.001
Zinc, Dissolved	mg/l	--	5	<0.01
Field Measurements				
Conductivity (Field)	uS/cm	--	--	--
pH (Field)	-	--	--	7.24
Temperature (Field)	deg c	--	15 (7)	--

Exceeds ODWSO/OG

Detection Limit Exceeds ODWSO/OG

Footnotes:
Tables should be read in conjunction with the accompanying document.
< value = Indicates parameter not detected above laboratory method detection limit
> value = Indicates parameter detected above equipment analytical range
-- Chemical not analyzed or criteria not defined
(1) Ontario Drinking Water Quality Standards - Health Based Standards
(2) Bold = Parameter concentration greater than ODWQS(169/03)-Health
(3) Ontario Drinking Water Quality Standards - Aesthetic Objectives. Aesthetic Objectives are established for parameters that may impair the taste, odour or colour of water or which may interfere with good water quality control practices. For certain parameters, both aesthetic objectives and health-related MACs have been derived.
(4) Underline = Parameter concentration greater than ODWQS-AO
(5) Selenium MRL elevated due to matrix interference.
(6) Criteria exist for Nitrate as N
(7) Parameter was not detected above the laboratory detection limit.
(8) There may be a laxative effect in some individuals when sulphate levels exceed 500 mg/L.
(9) Reporting units and Guideline units are not convertible into each other.
(10) The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.
(11) No result(s) available.
(12) Criteria exist for Nitrite as N
(13) Metals MRL elevated due to matrix interference.
(14) Metals MRL elevated due to matrix interference. N-NH3 was analysed at SGS.
(15) Sediment was not included in mercury analysis. Metals MRL elevated due to matrix interference.
(16) Metals MRL elevated due to matrix interference (10x dilution was done).
(17) Applicable for all waters at the point of consumption.
(18) Selenium MRL elevated due to matrix interference (dilution was done).

Adapted from Golder Associates 2013

Surface Water

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	[2] [1] PWQO	SW-1 01-Dec-1988	SW-1 01-Nov-1990	SW-1 01-Oct-1991	SW-1 01-Dec-1991	SW-1 01-Dec-1992	SW-1 01-Feb-1993	SW-1 01-Aug-1993	SW-1 01-Sep-1993	SW-1 01-Nov-1993	SW-1 01-Jun-1994	SW-1 01-Aug-1994	SW-1 01-Oct-1994	SW-1 01-Dec-1994	SW-1 01-May-1995	SW-1 01-Jul-1995	SW-1 01-Sep-1995	SW-1 01-May-1996
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	210	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	4	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	440	--	2400	200	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	240	--	1700	470	--	--	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	--	424000	480000	462000	520000	617000	484000	--	370000	436000	494000	--	426000	405000	438000	515000	350000
Ammonia, unionized	ug/l	20	--	--	--	--	<20	<20	<100	--	<100	<100	<100	--	--	30	40	<20	<20
Ammonia Nitrogen	ug/l	--	--	--	--	--	20	3000	790	--	1130	150	1960	--	1330	2200	1010	1110	370
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	2000	2000	<1000	<1000	2000	3000	1300	--	3100	4200	25000	--	4900	2000	2000	9000	1000
Chemical Oxygen Demand	ug/l	--	29000	--	--	--	35000	23000	28000	26900	18700	47000	1040000	--	34700	25000	42000	44000	24000
Chloride	ug/l	--	68000	82000	106000	96000	121000	123000	98500	--	136000	125000	90000	--	88000	83000	83000	94000	44000
Color	color unit	--	--	--	--	--	13	--	29	--	16	14	23	--	16.8	22	19	36	9
Conductivity	uS/cm	--	--	1116	970	--	1364	1410	1093	--	1020	1003	1130	--	--	1042	1157	1200	784
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	465000	613000	549000	--	429000	458000	478000	--	401000	433000	468000	571000	371000
Nitrate	ug/l	--	--	--	--	--	<100	130	>100	--	<100	<100	<100	--	<100	<100	<100	<100	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	<100	<100	<100	--	<100	<100	<100	--	<100	<100	<100	<100	<100
Nitrogen	ug/l	--	--	--	--	--	1600	3000	3080	--	2050	1960	43120	--	1920	2630	1430	2000	940
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [8]	--	<100	--	<100	50	--	50	--	<100	190	1660	--	<10	70	90	150	50
Silica	ug/l	--																	
Sulfate	ug/l	--	--	--	--	--	23000	--	--	17400	--	--	13500	14300	--	16700	31000	11000	4000	18000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	1610	910	1050	3460	810	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	538000	725000	631000	580000	818000	917000	710000	--	663000	652000	735000	--	--	677000	752000	780000	510000
Total Organic Carbon	ug/l	--	9000	--	--	--	12000	12000	11040	9090	11400	11100	14000	12000	10800	11300	13300	16000	9900
Total Suspended Solids	ug/l	--	--	--	--	--	39000	114000	5000	--	1000	130000	6150000	--	7000	4000	10000	8000	4000
Turbidity	ntu	-- [10]	--	<0.01	--	<0.01	36	37	1	--	1.9	>40	231	--	2	5	9.7	6.5	8.8
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	--	<30	--	<30	<30	<30	**187**	--	70	**800**	**100**	--	**300**	<30	<30	**170**	<30
Arsenic	ug/l	100	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	190	110	--	170	--	170	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/l	-- [12]	--	<10	--	<10	--	<10	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [13]	--	80	--	60	--	90	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	<2	<0.2	<0.2	<0.2	<0.15	0.25	0.2	--	0.3	**<10**	<0.1	--	<0.1	<0.15	<0.15	<0.15	<0.15
Calcium	ug/l	--	--	135000	--	153000	99000	158000	151000	--	114000	124000	122000	--	104000	119000	128000	156000	99000
Chromium	ug/l	-- [14]	<20	<10	<10	<10	<10	<10	20	--	<10	13	<10	--	<10	<10	<10	<10	<10
Cobalt	ug/l	0.9	--	<20	--	30	--	<10	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	--	<5	<10	<5	<5	<5	3	--	2.9	6	0.8	--	1.6	<5	<5	--	10
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	<50	<10	110	30	<100	3730	793	--	560	5600	650	--	1700	1020	2010	1910	1300
Lead	ug/l	-- [16]	<50	--	--	<2	--	<2	**118**	--	0.7	1	<0.2	--	1.3	<2	<2	<2	<2
Magnesium	ug/l	--	--	41000	--	46000	53000	53000	41800	--	35100	36000	42000	--	33900	33000	36000	44000	30000
Manganese	ug/l	--	<50	90	340	290	<2	2040	358	--	--	700	1800	--	560	--	--	--	--
Mercury, dissolved	ug/l	0.2	<1	--	<1	--	<0.2	0.4	<0.1	--	<0.1	<0.1	<0.1	--	<0.1	<0.2	<0.2	<0.2	<0.2
Molybdenum	ug/l	40	--	<10	--	<10	--	<10	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	<10	--	<10	<10	<10	<20	--	<20	<20	<20	--	<20	<10	<10	<10	20
Potassium	ug/l	--	--	12000	--	11000	11000	10000	11900	--	10400	10200	11200	--	13800	11000	1000	10000	7000
Selenium	ug/l	100	--	--	--	--	--	--	3	--	3	<1	1	--	5	<10	<10	<10	<1
Silicon	ug/l	--	--	6200	--	8000	5500	5600	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	<1	--	<1	<0.1	0.1	0.8	--	3	0.3	1	--	0.4	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	42000	--	53000	63000	55000	60500	--	46900	44700	47400	--	42400	43000	49000	54000	27000
Strontium	ug/l	--	--	850	--	1090	--	990	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	14000	--	12000	--	4000	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	--	<10	--	<50	--	<50	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	<50	--	--	--	<50	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	<10	--	<10	--	<10	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	<20	<10	<10	<50	--	<10	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30	--	--	--	--	<10	<10	893	--	<10	23	<10	--	<10	<10	<10	<10	10
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	3	<2	9	<2	<1	<1	<2	<2	<2	<2	19	--	<1	<1	<1	2	<2
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	-- [6]	--	--	--	--	8800	6700	3500	--	1400	--	--	--	--	6400	5600	4400	6200
pH (Field)	-	8.5	7.4	--	--	--	7.71	7.11	7.01	--	7.91	7.67	7.34	--	7.22	7.63	7.95	7.33	7.67
Temperature (Field)	deg c	-- [9]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [3] [5]	SW-1 01-Sep-1996	SW-1 01-Jun-1997	SW-1 01-Aug-1997	SW-1 01-Sep-1998	SW-1 01-Nov-1998	SW-1 15-Jul-1999	SW-1 16-Oct-1999	SW-1 01-Jul-2000	SW-1 22-Oct-2000	SW-1 16-Dec-2000	SW-1 28-Apr-2001	SW-1 07-Sep-2001	SW-1 06-Nov-2001	SW-1 17-Apr-2002	SW-1 02-Oct-2002	SW-1 01-Apr-2003	SW-1 01-Oct-2003
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	240	17	0	0	1	--	0	290	<10	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	570	--	--	0	--	--	1	--	<10	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	150	--	--	3	--	18	-- [9]	--	10	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [6]	487000	413000	480000	568000	481000	397000	376000	435000	466000	539000	368000	388000	439000	327000	460000	272000	426000
Ammonia, unionized	ug/l	20	--	<20	20	<20	60	<20	<20	<20	<20	<20	--	--	<20	<20	--	20	<20
Ammonia Nitrogen	ug/l	--	640	440	640	1670	1650	1600	470	670	40	1160	1030	700	140	420	810	1660	30
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	1000	2000	3000	12000	1000	1000	6000	6000	2000	10000	3000	2000	1000	<1000	10000	3000	<1000
Chemical Oxygen Demand	ug/l	--	43000	37000	37000	43000	36000	55000	75000	36000	24000	57000	22000	41000	30000	27000	--	25000	54000
Chloride	ug/l	--	109000	84000	109000	114000	115000	90000	95000	93000	128000	111000	7000	98000	107000	43000	98000	51000	4000
Color	color unit	--	20	12	18	12	8	23	28	18	20	11	12	37	36	15	24	13	30
Conductivity	uS/cm	--	1148	939	1104	1238	1197	960	1010	1010	1120	1290	897	951	1240	743	1130	705	750
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	500	--	--	--
Hardness, Calcium Carbonate	ug/l	--	530000	392000	487000	605000	580000	400000	440000	415000	461000	596000	349000	376000	474000	286000	439000	291000	478000
Nitrate	ug/l	--	<100	<100	<100	<100	<100	100	<100	<100	<100	<100	180	<100	<100	<100	<100	<100	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Nitrogen	ug/l	--	--	1000	1330	2670	2250	--	--	1270	760	2120	1620	1290	810	840	8130	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2050	560
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [8]	30	90	210	--	230	50	190	120	40	500	30	40	20	120	2320	130	20
Silica	ug/l	--																	
Sulfate	ug/l	--	<3000	<3000	<3000	<3000	<3000	<3000	7000	--	--	--	--	2000	--	12000	8000	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	1100	900	400	500	--	700	100	--	300	500
Total Dissolved Solids	ug/l	--	746000	610000	718000	805000	778000	624000	657000	657000	728000	839000	583000	618000	806000	483000	735000	458000	488000
Total Organic Carbon	ug/l	--	16400	12000	13700	16000	12000	14800	14900	13300	11100	16300	9400	14100	11500	9200	20000	9100	21700
Total Suspended Solids	ug/l	--	503000	15000	26000	400000	61000	--	23000	32000	12000	339000	8000	3000	<2000	4000	1300000	41000	3000
Turbidity	ntu	-- [10]	32	51	45	>100	>100	4.2	8.7	36.6	2.9	31	10.2	1.7	2.7	5	>100	17	0.8
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	**460**	<30	<30	**80**	30	<30	60	<50	<50	<50	<50	<50	<50	<50	**540**	20	<10
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	130	--	--	110	--	--	110	60	60	50	420	100	20
Beryllium	ug/l	-- [12]	--	--	--	--	<10	--	--	<2	--	--	<2	<2	<2	<2	<1	<1	<1
Boron	ug/l	200 [13]	--	--	--	--	100	--	--	200	--	--	140	160	120	<50	190	200	100
Cadmium	ug/l	0.2 [13]	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1
Calcium	ug/l	--	128000	101000	124000	163000	153000	99000	120000	105000	120000	156000	95000	91000	119000	75000	108000	82000	119000
Chromium	ug/l	-- [14]	<10	20	<10	<10	<10	10	<10	<10	<10	<10	33	2	1	1	<1	<5	11
Cobalt	ug/l	0.9	--	--	--	--	<0.4	--	--	0.5	--	--	10.7	0.4	1.1	1.1	8.4	1.3	0.3
Copper	ug/l	5	12	<5	8	<5	<5	<5	<5	<1	<1	3	3	1	<1	6	4	<5	1
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	980	6900	5380	25900	12800	550	1080	4450	610	20900	2460	340	260	1220	38200	5160	60
Lead	ug/l	-- [16]	<2	<2	<2	<2	<2	<2	<2	<1	--	--	<1	<1	<1	<1	5	4	<1
Magnesium	ug/l	--	51000	34000	43000	48000	48000	37000	34000	37000	39000	50000	27000	36000	43000	24000	41000	21000	44000
Manganese	ug/l	--	--	--	--	--	2040	--	--	1190	--	--	530	90	700	790	3760	596	34
Mercury, dissolved	ug/l	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	<10	--	--	<10	--	--	<10	20	<10	<10	<5	<5	<5
Nickel	ug/l	25	<10	<10	<10	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5	<5	<5
Potassium	ug/l	--	11000	9000	13000	12000	10000	14000	13000	11000	--	--	10000	12000	10000	7000	11000	10000	6000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<0.1	<1	<1	<1	<1	4	--	<1	<1	--	<1	<1
Silicon	ug/l	--	--	--	--	--	5700	--	--	4740	--	--	3520	840	4360	2550	5700	2900	3800
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	60000	43000	61000	61000	58000	57000	53000	56000	57000	60000	41000	52000	61000	30000	75000	37000	4000
Strontium	ug/l	--	--	--	--	--	900	--	--	679	--	--	612	673	653	431	1010	505	195
Sulfur	ug/l	--	--	--	--	--	3000	--	--	2000	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	--	--	--	--	<10	--	--	<1	--	--	<1	<1	<1	<1	<1	<1	<10
Tin	ug/l	--	--	--	--	--	<50	--	--	--	--	--	--	--	--	10	--	--	--
Titanium	ug/l	--	--	--	--	--	<10	--	--	<10	--	--	10	<10	<10	<10	<10	<10	<1
Vanadium	ug/l	6	--	--	--	--	<10	--	--	3	--	--	9	<1	<1	<1	4	<5	3
Zinc	ug/l	30	20	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	20	25	<5	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	<10	<1	1	<1	<1	<1	<1	2	--	--	<1	<1	<1	<1	<1	<1	<1
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	-- [8]	--	3400	2400	1200	<1000	5700	2900	1700	11500	14100	8800	--	10400	--	--	--	6900
pH (Field)	-	8.5	7.79	8.13	7.71	6.98	8.05	7.44	7.72	7.2	7.98	7.43	7.93	8.22	8.1	8.15	7.89	7.44	7.9
Temperature (Field)	deg c	-- [9]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [3] [5]	SW-1 01-Dec-2003	SW-1 04-Jun-2004 [18]	SW-1 04-Jul-2004	SW-1 04-Oct-2004	SW-1 13-Jun-2005	SW-1 31-Aug-2005	SW-1 30-Oct-2005	SW-1 31-Dec-2005 [25]	SW-1 08-Apr-2006	SW-1 15-Aug-2006	SW-1 25-Nov-2006	SW-1 22-Apr-2007	SW-1 31-Aug-2007	SW-1 26-Nov-2007	SW-1 04-May-2008	SW-1 14-Aug-2008	SW-1 28-Nov-2008
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	<10	--	--	40	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	970	--	--	--	--	--	--	--	--	--	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	342000	--	436000	456000	440000	499000	462000	--	373000	505000	428000	375000	488000	425000	345000	423000	449000
Ammonia, unionized	ug/l	20	<20	--	<20	<20	2	0	1	--	11	5	1	3	3	0	1	1	1
Ammonia Nitrogen	ug/l	--	30	--	240	1540	1570	1040	700	--	2840	820	770	1790	500	100	450	140	550
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	<1000	--	12000	<1000	5000	13000	<1000	--	1000	2000	2000	2000	5000	<1000	1000	5000	<1000
Chemical Oxygen Demand	ug/l	--	106000	--	83000	27000	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	<1000	--	<1000	109000	96000	213000	152000	--	79000	114000	103000	82000	138000	118000	73000	98000	114000
Color	color unit	--	74	--	34	22	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	600	--	769	1130	1200	1200	380	--	510	1260	580	395	510	470	600	680	605
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	7000	13700	8000	7600	10300	13200	7000	10600	6100
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	362000	--	438000	439000	--	--	--	--	383200	488500	438700	402300	538300	431200	358000	429000	456000
Nitrate	ug/l	--	<100	--	160	<100	<100	<100	<100	--	340	<100	390	760	<100	<100	330	<100	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	--	<100	<100	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	1040	--	8710	1640	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [6]	20	--	3100	170	80	1130	40	--	30	30	100	50	50	30	10	10	<10
Silica	ug/l	--																	
Sulfate	ug/l	--	--	--	--	--	12000	22000	67000	--	45000	5000	27000	27000	4000	15000	23000	1000	19000
Tannin & Lignin	ug/l	--	1600	--	500	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	390000	--	450000	614000	780000	780000	247000	--	646000	819000	741000	644000	825000	754000	588000	696000	780000
Total Organic Carbon	ug/l	--	39800	--	38000	13400	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	--	3700000	83000	5000	1340000	4000	--	3000	5000	<2000	<2000	<2000	<2000	<2000	3000	<2000
Turbidity	ntu	-- [10]	1.6	--	>100	33	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	20	--	**450**	<10	<10	**3430**	<10	--	<10	<10	<10	<10	10	10	<10	<10	<10
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	20	--	--	--	160	--	200	--	120	220	130	120	230	120	130	170	150
Beryllium	ug/l	-- [12]	<1	--	--	--	<1	--	<1	--	<1	<1	<1	<1	<1	<1	<1	<1	<1
Boron	ug/l	200 [13]	70	--	--	--	180	480	200	--	200	320	230	170	310	130	220	220	130
Cadmium	ug/l	0.2 [13]	<0.1	--	0.2	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	94000	--	103000	113000	--	--	--	--	109000	138000	123000	115000	153000	120000	102000	124000	128000
Chromium	ug/l	-- [14]	3	--	8	2	9	--	5	--	4	4	2	3	5	2	3	3	5
Cobalt	ug/l	0.9	0.7	--	--	--	0.8	--	0.7	--	0.5	1	0.6	0.6	0.7	1	0.6	0.8	0.5
Copper	ug/l	5	3	--	12	<1	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	280	--	34100	5660	650	5350	290	--	200	440	220	160	210	430	130	510	290
Lead	ug/l	-- [16]	<1	--	**11**	<1	<1	--	<1	--	<1	<1	<1	<1	<1	<1	<1	<1	<1
Magnesium	ug/l	--	31000	--	44000	38000	--	--	--	--	27000	35000	32000	28000	38000	32000	25000	29000	33000
Manganese	ug/l	--	130	--	--	--	--	--	--	--	160	440	250	150	280	460	120	350	310
Mercury, dissolved	ug/l	0.2	<0.1	--	<0.1	<0.14	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1
Molybdenum	ug/l	40	<5	--	--	--	<5	--	<5	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	10	--	29	<5	<5	<5	6	--	6	6	<5	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	5000	--	<1000	10000	--	--	--	--	9000	10000	12000	10000	9000	8000	9000	7000	11000
Selenium	ug/l	100	<1	--	<1	<1	1	--	8	--	<1	<1	<1	<1	1	<1	<1	<1	1
Silicon	ug/l	--	4800	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	--	<0.1	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	3000	--	4000	62000	--	--	--	--	49000	63000	58000	52000	72000	55000	47000	57000	64000
Strontium	ug/l	--	152	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	1	--	--	--	6	--	6	--	5	5	<1	6	8	2	3	<1	9
Zinc	ug/l	30	<10	--	10	<10	<10	50	<10	--	<10	<10	<10	<10	<10	<10	<10	<10	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	<1	--	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	-- [6]	--	--	--	--	**1900**	**2650**	10110	--	12770	8920	11170	10200	10090	10700	**5480**	**4990**	**7140**
pH (Field)	-	8.5	7.81	--	7.49	7.63	6.8	6	7.1	--	7.5	7.2	7.3	7.3	7.3	7.1	7.2	7	7.1
Temperature (Field)	deg c	-- [9]	--	--	--	--	11.3	18	7	--	5	20	2	2	18	2	7	19	2
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [3] [5]	SW-1 24-Apr-2009	SW-1 25-Aug-2009	SW-1 30-Nov-2009	SW-1 17-May-2010	SW-1 21-Aug-2010 [5]	SW-1 27-Nov-2010	SW-1 09-May-2011	SW-1 08-Sep-2011	SW-1 29-Nov-2011 [5]	SW-1 06-May-2012	SW-1 22-Aug-2012 [15]	SW-1 12-Nov-2012	SW-1 12-Jun-2013	SW-1 12-Jun-2013	SW-1 20-Aug-2013	SW-1 24-Oct-2013
Bacterial																		
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
General Chemistry																		
Alkalinity (Total as CaCO3)	ug/l	--[4]	381000	476000	415000	393000	467000	410000	380000	476000	401000	370000	--	422000	354000	358000	--	458000
Ammonia, unionized	ug/l	20	1	1	1	3	2	0	12	5	1	2	--	12	20	<20	--	<20
Ammonia Nitrogen	ug/l	--	170	190	100	320	180	140	740	170	120	200	--	850	540	420	--	180
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	1000	5000	<1000	1000	4000	1000	<1000	6000	1000	1000	--	5000	1000	1000	--	10000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	80000	102000	101000	91000	95000	95000	75000	104000	114000	91000	--	115000	86000	88000	--	104000
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	969	1160	1090	1010	1130	1030	908	1140	1060	971	--	1170	928	930	--	1140
Dissolved Organic Carbon	ug/l	--	7100	9700	7200	6400	11000	7600	7200	10000	5800	6700	--	8300	9200	9000	--	9900
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	359000	448000	404000	361000	475000	404000	349000	443000	417000	334000	--	447000	367000	367000	--	458000
Nitrate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	960	<100	<100	<100	<100	<100	1080	<100	<100	<100	--	<100	<100	<100	--	<100
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	7.91	7.92	--	7.67
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	--[6]	<10	20	<10	<10	40	<10	10	10	10	<10	--	<10	40	20	--	30
Silica	ug/l	--													--	--		--
Sulfate	ug/l	--	20000	2000	17000	19000	3000	16000	19000	1000	14000	22000	--	50000	13000	13000	--	9000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	630000	754000	708000	657000	735000	670000	590000	741000	689000	631000	--	760000	603000	604000	--	741000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	<2000	<2000	6000	<2000	<2000	<2000	<2000	2000	<2000	--	<2000	6000	<2000	--	9000
Turbidity	ntu	--[10]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																		
Aluminum	ug/l	--[11]	--	--	--	--	--	--	--	--	--	--	--	--	<10	<10	--	<10
Aluminum, dissolved	ug/l	--[11]	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	--	<10	<10	<10	--	<10
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	130	190	130	140	190	130	120	180	150	140	--	160	120	130	--	160
Beryllium	ug/l	--[12]	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	--	<0.5
Boron	ug/l	200[13]	200	300	180	240	290	150	180	230	130	140	--	150	190	200	--	20
Cadmium	ug/l	0.2[13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	--	<0.1
Calcium	ug/l	--	104000	130000	114000	105000	139000	114000	100000	128000	119000	94000	--	128000	104000	104000	--	129000
Chromium	ug/l	--[14]	3	5	5	4	3	2	3	4	3	5	--	3	3	4	--	5
Cobalt	ug/l	0.9	0.6	0.6	0.5	0.7	0.8	0.5	0.5	0.5	0.3	0.5	--	0.4	0.4	0.5	--	0.7
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1[15]	--	--	--	--	<50	<50	<50	<50	<50	<50	--	<50	<0.5	<0.5	--	<10
Iron	ug/l	300	100	560	260	300	630	210	140	430	410	130	--	240	**740**	**510**	--	**420**
Lead	ug/l	--[16]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	--	<1
Magnesium	ug/l	--	24000	30000	29000	24000	31000	29000	24000	30000	29000	24000	--	31000	26000	26000	--	33000
Manganese	ug/l	--	100	270	230	120	200	180	80	270	240	130	--	210	160	160	--	250
Mercury, dissolved	ug/l	0.2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	--	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	<5	<5	<5	--	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	<5	<5	<5	--	<5
Potassium	ug/l	--	9000	6000	10000	10000	6000	9000	10000	6000	8000	9000	--	7000	10000	10000	--	7000
Selenium	ug/l	100	<1	4	1	<1	<10	<1	<1	<1	<5	<1	--	<10	<1	<1	--	<10
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	--	<0.1
Sodium	ug/l	--	50000	63000	58000	57000	59000	57000	47000	58000	60000	52000	--	60000	57000	57000	--	67000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3[17]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	4	8	8	6	4	4	4	5	5	4	--	4	3	3	--	6
Zinc	ug/l	30	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	--	<10	<10	<10	--	<10
Phenols																		
Phenolics, Total Recoverable	ug/l	1[18]	--	--	--	--	--	--	--	--	--	--	--	--			--	
Field Measurements																		
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Conductivity (Field)	uS/cm	--	905	640	890	944	968	960	694	705	1070	945	--	704	918		--	1082
Dissolved Oxygen (Field)	ug/l	--[8]	7910	6210	**6950**	**5800**	**3880**	**7290**	**6960**	**4790**	**6820**	--[7]	--	**5990**	930		--	1490
pH (Field)	-	8.5	7.8	7	7.7	7.7	7.4	7.5	8	7.9	7.53	7.8	--	8	7.6		--	7.4
Temperature (Field)	deg c	--[9]	5	18	4	10	24	3	9	20.5	5	5	--	7	10		--	9.8
Discharge	(L/s)														4			1.1

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	(2) (1) PWQO	SW-2 01-Dec-1988	SW-2 01-Nov-1990	SW-2 01-Dec-1991	SW-2 01-Aug-1993	SW-2 01-Sep-1993	SW-2 01-Nov-1993	SW-2 01-Aug-1994	SW-2 01-Oct-1994	SW-2 01-Dec-1994	SW-2 01-May-1995	SW-2 01-Jul-1995	SW-2 01-Sep-1995	SW-2 01-May-1996	SW-2 01-Sep-1996	SW-2 01-Jun-1997	SW-2 01-Aug-1997	SW-2 01-Sep-1998
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	240	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	550	--	2600	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	220	--	2500	--	--	--	--	--	--	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	--(4)	--	580000	630000	494000	--	556000	443000	--	452000	464000	478000	501000	429000	553000	456000	506000	524000
Ammonia, unionized	ug/l	20	--	--	--	<100	--	180	<100	--	--	170	230	300	130	230	180	230	240
Ammonia Nitrogen	ug/l	--	--	--	--	1400	--	8080	1820	--	2170	4550	6040	5590	3300	5950	4670	6070	6330
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	4000	3000	9000	19000	--	6100	21500	--	2000	1000	10000	4000	18000	5000	4000	6000	6000
Chemical Oxygen Demand	ug/l	--	41000	--	--	89000	24000	40600	42600	17500	23000	15000	28000	18000	45000	24000	14000	31000	19000
Chloride	ug/l	--	89000	104000	141000	112500	--	183000	142000	--	104000	106000	113000	112000	82000	140000	114000	140000	138000
Color	color unit	--	--	--	--	18	--	13	10	--	8.1	8	11	12	6	10	5	8	7
Conductivity	uS/cm	--	--	1444	--	1175	--	1408	1139	--	--	1217	1388	1289	1075	1420	1173	1327	1315
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	539000	--	601000	464000	--	449000	510000	554000	553000	503000	607000	483000	555000	613000
Nitrate	ug/l	--	--	--	--	1400	--	<100	2100	--	1740	1600	930	1110	460	1200	990	2540	760
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	<100	--	560	360	--	<100	<100	<100	<100	<10	<10	<100	240	<100
Nitrogen	ug/l	--	--	--	--	9520	--	9890	3400	--	3360	4610	6820	6600	5200	6640	5080	6910	6330
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	--(8)	--	<100	<100	30	--	<100	100	--	<10	<10	80	60	30	50	<10	90	40
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	--	--	36000	23000	--	--	30100	--	40300	39000	33000	27000	38000	26000	29000	23000	20000
Tannin & Lignin	ug/l	--	--	--	--	--	990	810	680	310	--	100	--	200	--	--	--	--	--
Total Dissolved Solids	ug/l	--	683000	842000	920000	767000	--	915000	740000	--	--	791000	902000	838000	699000	923000	762000	863000	855000
Total Organic Carbon	ug/l	--	--	--	--	7100	9210	18900	6100	8200	4100	6700	8700	8700	18000	10300	6000	8900	7600
Total Suspended Solids	ug/l	--	--	--	--	1214000	--	31000	141000	--	16000	2000	16000	10000	9000	41000	5000	296000	15000
Turbidity	ntu	--(10)	--	--	--	>999	--	20.3	173	--	1.6	1.5	7	8	13	13	5	>100	11
Metals																			
Aluminum	ug/l	--(11)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	--(11)	--	<30	<30	210	--	**160**	75	--	**400**	<30	<30	<30	<30	**550**	<30	<30	<30
Arsenic	ug/l	100	<10	--	--	--	--	--	--	--	0.5	--	--	--	--	--	--	--	--
Barium	ug/l	--	440	220	460	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/l	--(12)	--	<10	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200(13)	--	170	220	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/l	0.2(13)	<2	<0.2	0.4	0.2	--	0.5	<0.1	--	<0.1	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Calcium	ug/l	--	--	120000	203000	146000	--	161000	127000	--	121000	148000	159000	157000	150000	167000	139000	153000	176000
Chromium	ug/l	--(14)	<20	<10	<10	17	--	<10	<10	--	<10	<10	<10	<10	<10	30	20	<10	<10
Cobalt	ug/l	0.9	--	<20	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	--	<5	<5	4	--	4	0.6	--	6	<5	<5	<5	8	<5	15	<5	--
Hexavalent Chromium	ug/l	1(15)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	290	<10	130	1448	--	2500	790	--	1600	150	670	1100	2370	1860	620	2460	1690
Lead	ug/l	--(16)	<50	<2	6	**99**	--	2	<0.2	--	0.3	<2	<2	<2	<2	<2	<2	<2	<2
Magnesium	ug/l	--	--	50000	64000	42400	--	48300	35600	--	35100	34000	38000	39000	31000	46000	33000	42000	42000
Manganese	ug/l	--	<50	190	1480	294	--	--	228	--	230000	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2	<1	--	--	<0.1	--	<0.1	<0.1	--	<100	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Molybdenum	ug/l	40	--	<10	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	<10	<10	<200	--	<20	<20	--	<20	<10	<10	<10	10	<10	<10	<10	<10
Potassium	ug/l	--	--	21000	25000	16000	--	21700	12500	--	12100	12000	1000	16000	9000	18000	12000	20000	16000
Selenium	ug/l	100	--	--	--	3	--	2	<1	--	5	<1	<1	<1	<1	<0.1	<1	<1	<1
Silicon	ug/l	--	--	7300	9700	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	<1	<1	0.7	--	2	0.8	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	60000	96000	61300	--	84600	47000	--	42800	45000	58000	60000	46000	70000	49000	75000	70000
Strontium	ug/l	--	--	880	1310	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	11000	12000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3(17)	--	<10	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	<50	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	<10	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30	<20	<10	<10	385	--	<10	<10	--	<10	<10	<10	<10	10	20	<10	<10	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1(18)	<2	<2	<2	<2	<2	6	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	--(6)	--	--	--	11100	--	10000	--	--	--	9100	8100	8500	7800	--	8200	6600	8600
pH (Field)	-	8.5	7.75	--	--	--	--	8.28	7.78	--	7.97	8.16	8.06	7.95	7.76	7.81	8.16	7.7	7.82
Temperature (Field)	deg c	--(9)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [2] [3]	SW-2 01-Nov-1998	SW-2 15-Jul-1999	SW-2 16-Oct-1999	SW-2 01-Jul-2000	SW-2 22-Oct-2000	SW-2 16-Dec-2000	SW-2 28-Apr-2001	SW-2 07-Sep-2001	SW-2 09-Nov-2001	SW-2 17-Apr-2002	SW-2 02-Oct-2002	SW-2 01-Apr-2003	SW-2 01-Oct-2003	SW-2 01-Dec-2003 [25]	SW-2 04-Jun-2004 [18]	SW-2 04-Jul-2004 [19]	SW-2 04-Oct-2004
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	230	3	2	0	--	--	1	10	<10	--	--	--	--	60
Fecal Coliform	cfu/100ml	--	--	--	--	230	--	--	2	--	--	2	--	<10	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	250	--	--	2	--	--	--[3]	--	<10	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	--[4]	472000	500000	492000	462000	527000	530000	431000	476000	468000	409000	473000	470000	353000	--	--	--	424000
Ammonia, unionized	ug/l	20	<20	60	220	<20	170	240	110	<20	<20	70	20	210	20	--	--	--	<20
Ammonia Nitrogen	ug/l	--	8570	5040	5100	1820	5260	6960	2220	320	450	2030	410	5480	450	--	--	--	70
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	3000	9000	18000	8000	4000	30000	2000	5000	2000	1000	3000	<1000	3000	--	--	--	<1000
Chemical Oxygen Demand	ug/l	--	13000	20000	19000	15000	35000	30000	11000	32000	22000	12000	9000	19000	38000	--	--	--	16000
Chloride	ug/l	--	150000	129000	143000	123000	174000	141000	105000	--	125000	95000	--	106000	112000	--	--	--	85000
Color	color unit	--	6	7	13	8	8	8	7	20	8	8	12	9	33	--	--	--	13
Conductivity	uS/cm	--	1312	1241	1290	1180	1350	1420	1110	1270	1260	1110	1280	1260	949	--	--	--	1050
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	500	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	628000	576000	544000	433000	601000	635000	462000	521000	556000	489000	561000	522000	393000	--	--	--	441000
Nitrate	ug/l	--	740	2380	1420	2260	1520	1790	1270	<100	1280	800	510	1060	<100	--	--	--	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	280	270	330	<100	<100	<100	<100	<100	<100	<100	<100	<100	--	--	--	<100
Nitrogen	ug/l	--	8730	--	--	1320	7260	8160	2570	920	1240	2220	990	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	5850	210	--	--	--	1480
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	--[8]	<10	20	30	80	30	--	<10	30	10	30	120	40	100	--	--	--	240
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	28000	20000	34000	--	--	--	--	18000	--	40000	27000	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	--	--	400	300	200	--	--	200	200	--	300	1100	--	--	--	--
Total Dissolved Solids	ug/l	--	853000	807000	839000	767000	878000	923000	722000	826000	819000	722000	832000	819000	617000	--	--	--	683000
Total Organic Carbon	ug/l	--	7000	5100	9000	5700	6300	7100	4600	13000	4400	4700	6100	8300	10100	--	--	--	9200
Total Suspended Solids	ug/l	--	5000	--	3000	6000	28000	114000	<2000	12000	2000	2000	49000	8000	6000	--	--	--	870000
Turbidity	ntu	--[10]	7.5	12	6.4	7	2.2	19	1.3	5.8	1.6	1.4	8.8	4.5	1.7	--	--	--	>100
Metals																			
Aluminum	ug/l	--[11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	--[11]	<30	<30	<30	<50	<50	<50	<50	<50	<50	<50	<10	<10	<10	--	--	--	50
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	280	--	--	270	--	--	190	270	150	160	190	200	130	--	--	--	--
Beryllium	ug/l	--[12]	<10	--	--	<2	--	--	<2	<2	<2	<2	<1	<1	<1	--	--	--	--
Boron	ug/l	200[13]	130	--	--	160	--	--	90	130	<50	<50	80	250	110	--	--	--	--
Cadmium	ug/l	0.2[13]	<0.15	<0.15	<0.15	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	<0.1
Calcium	ug/l	--	177000	166000	155000	119000	173000	185000	142000	149000	158000	153000	157000	153000	108000	--	--	--	127000
Chromium	ug/l	--[14]	<10	10	<10	<10	<10	<10	4	6	7	<1	<1	<5	9	--	--	--	2
Cobalt	ug/l	0.9	<0.4	--	--	0.6	--	--	1.2	0.8	0.8	0.4	0.7	1	0.4	--	--	--	--
Copper	ug/l	5	<5	<5	<5	1	<1	3	2	1	1	3	2	<5	<1	--	--	--	3
Hexavalent Chromium	ug/l	1[15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	1360	140	530	760	430	5240	250	1550	610	300	590	550	120	--	--	--	5570
Lead	ug/l	--[16]	<2	<2	<2	<1	--	--	<1	<1	<1	<1	<1	<1	<1	--	--	--	1
Magnesium	ug/l	--	45000	39000	38000	33000	41000	42000	26000	36000	39000	26000	41000	34000	30000	--	--	--	30000
Manganese	ug/l	--	410	--	--	280	--	--	150	1340	270	110	764	208	203	--	--	--	--
Mercury, dissolved	ug/l	0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	--	<0.1	<0.1	--	--	--	<0.1
Molybdenum	ug/l	40	<10	--	--	<10	--	--	<10	20	<10	<10	<5	<5	<5	--	--	--	--
Nickel	ug/l	25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5	<5	<5	--	--	--	<5
Potassium	ug/l	--	16000	16000	17000	13000	--	--	8000	12000	11000	7000	11000	16000	14000	--	--	--	9000
Selenium	ug/l	100	<1	<0.1	<1	<1	<1	<1	<1	--	<1	<1	--	<1	<1	--	--	--	<1
Silicon	ug/l	--	7600	--	--	7750	--	--	5910	7770	6370	4980	5600	6400	5300	--	--	--	--
Silver	ug/l	0.1	0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	<0.1
Sodium	ug/l	--	67000	70000	72000	56000	63000	66000	47000	57000	59000	45000	65000	68000	54000	--	--	--	49000
Strontium	ug/l	--	1000	--	--	923	--	--	865	1050	714	782	34	802	698	--	--	--	--
Sulfur	ug/l	--	9000	--	--	9000	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3[17]	<10	--	--	<1	--	--	200	<1	<1	<1	<1	<1	<10	--	--	--	--
Tin	ug/l	--	<50	--	--	--	--	--	--	--	--	<10	--	--	--	--	--	--	--
Titanium	ug/l	--	<10	--	--	<10	--	--	<1	<10	<10	<10	<10	<10	<1	--	--	--	--
Vanadium	ug/l	6	<10	--	--	2	--	--	3	2	2	<1	<1	<5	3	--	--	--	--
Zinc	ug/l	30	<10	<10	<10	<10	<10	20	<10	50	<10	<10	6	<5	<10	--	--	--	20
Phenols																			
Phenolics, Total Recoverable	ug/l	1[18]	<1	<1	<1	<1	--	--	<1	12	<1	<1	<1	<1	<1	--	--	--	<1
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	--[6]	10200	6600	6800	4700	12200	11800	11200	--	11300	--	--	--	5500	--	--	--	--
pH (Field)	-	8.5	8.01	7.45	7.85	7.34	7.99	7.95	8.1	7.8	7.97	8.18	7.94	7.76	7.79	--	--	--	7.18
Temperature (Field)	deg c	--[9]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	(2) (1) PWQO	SW-2 13-Jun-2005 [19]	SW-2 31-Aug-2005 [19]	SW-2 30-Oct-2005	SW-2 31-Dec-2005 [19]	SW-2 08-Apr-2006	SW-2 15-Aug-2006 [19]	SW-2 25-Nov-2006	SW-2 22-Apr-2007	SW-2 31-Aug-2007	SW-2 26-Nov-2007	SW-2 04-May-2008	SW-2 14-Aug-2008	SW-2 28-Nov-2008	SW-2 24-Apr-2009	SW-2 25-Aug-2009	SW-2 30-Nov-2009	SW-2 17-May-2010
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	--[4]	--	--	532000	--	475000	--	461000	364000	466000	470000	423000	463000	571000	403000	468000	589000	476000
Ammonia, unionized	ug/l	20	--	--	7	--	11	--	3	1	28	7	9	3	11	2	24	19	33
Ammonia Nitrogen	ug/l	--	--	--	5730	--	6140	--	3310	990	4620	7100	5370	740	9380	220	4460	9620	6160
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	--	--	<1000	--	<1000	--	<1000	2000	2000	8000	1000	8000	4000	2000	7000	14000	8000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	162000	--	96000	--	109000	67000	137000	133000	87000	93000	124000	94000	77000	119000	105000
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	--	590	--	610	--	705	605	755	670	1250	895	1090	1040	1080	1450	1200
Dissolved Organic Carbon	ug/l	--	--	--	--	--	8600	--	7900	10700	6000	8300	6700	7500	9200	4400	6300	10700	7200
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	460500	--	499400	373900	518500	482800	435000	480000	514000	437000	432000	529000	417000
Nitrate	ug/l	--	--	--	1020	--	650	--	550	320	1300	1730	710	190	960	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	250	<100	1020	1360
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	--[8]	--	--	60	--	30	--	110	110	90	30	<10	30	30	<10	50	20	10
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	--	--	26000	--	39000	--	28000	12000	20000	22000	24000	4000	20000	18000	6000	17000	18000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	384000	--	774000	--	800000	561000	858000	845000	702000	683000	936000	676000	702000	943000	780000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	22000	--	4000	--	12000	6000	<2000	5000	<2000	14000	43000	5000	57000	18000	13000
Turbidity	ntu	--[10]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																			
Aluminum	ug/l	--[11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	--[11]	--	--	<10	--	<10	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	280	--	170	--	220	80	330	130	200	310	250	120	260	230	210
Beryllium	ug/l	--[12]	--	--	<1	--	<1	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Boron	ug/l	200[13]	--	--	160	--	260	--	300	80	170	130	280	220	300	90	220	400	300
Cadmium	ug/l	0.2[13]	--	--	0.3	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	--	--	--	--	135000	--	144000	102000	150000	139000	128000	141000	148000	129000	130000	154000	124000
Chromium	ug/l	--[14]	--	--	5	--	5	--	3	1	6	2	5	4	7	2	5	5	4
Cobalt	ug/l	0.9	--	--	1	--	1.1	--	1.4	2.3	0.9	0.6	1	2	1.7	0.3	1	1.6	1.4
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1[15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	650	--	1320	--	5430	4410	1000	310	410	7850	3280	90	710	690	560
Lead	ug/l	--[16]	--	--	<1	--	<1	--	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Magnesium	ug/l	--	--	--	--	--	30000	--	34000	29000	35000	33000	28000	31000	35000	28000	26000	35000	26000
Manganese	ug/l	--	--	--	--	--	230	--	570	970	280	220	170	690	530	80	370	420	350
Mercury, dissolved	ug/l	0.2	--	--	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	<5	--	<5	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	--	--	8	--	8	--	8	5	<5	<5	<5	<5	5	<5	<5	6	<5
Potassium	ug/l	--	--	--	--	--	11000	--	13000	8000	13000	13000	10000	12000	15000	7000	6000	19000	12000
Selenium	ug/l	100	--	--	<1	--	<1	--	<1	<1	<1	<1	<1	<1	<1	1	<1	1	<1
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	--	--	--	58000	--	64000	39000	76000	71000	57000	62000	75000	53000	42000	83000	67000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3[17]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	8	--	6	--	2	2	8	2	6	3	14	2	7	7	4
Zinc	ug/l	30	--	--	<10	--	<10	--	10	<10	10	10	<10	<10	<10	<10	<10	<10	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1[18]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	955	1120	1205	1015
Dissolved Oxygen (Field)	ug/l	--[6]	--	--	9710	--	11040	--	10910	10100	7440	10080	5010	5990	7440	6280	6880	6480	5880
pH (Field)	-	8.5	--	--	6.9	--	7.2	--	7	7	7.1	7	7	7	7.1	7.8	7.1	7.2	7.3
Temperature (Field)	deg c	--[9]	--	--	8	--	4	--	2	3	23	2	8	18	2	9	21	5	15
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [3] [5]	SW-2 21-Aug-2010 [6]	SW-2 27-Nov-2010	SW-2 09-May-2011	SW-2 08-Sep-2011 [16]	SW-2 29-Nov-2011	SW-2 06-May-2012	SW-2 22-Aug-2012 [18]	SW-2 12-Nov-2012 [24]	SW-2 12-Jun-2013	SW-2 20-Aug-2013	SW-2 24-Oct-2013
Bacterial													
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--
General Chemistry													
Alkalinity (Total as CaCO3)	ug/l	-- [4]	437000	599000	450000	458000	465000	435000	--	524000	404000	426000	449000
Ammonia, unionized	ug/l	20	4	122	26	1	23	13	--	0	100	30	<20
Ammonia Nitrogen	ug/l	--	410	10700	4430	110	3470	2070	--	50	2530	820	320
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	6000	3000	5000	7000	6000	5000	--	2000	9000	3000	2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	113000	117000	86000	123000	125000	96000	--	124000	94000	119000	121000
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	1160	1450	1050	1210	1220	1120	--	1320	1060	1150	1180
Dissolved Organic Carbon	ug/l	--	6300	9500	6800	6100	4300	6100	--	6200	7100	5400	5000
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	467000	521000	395000	455000	412000	402000	--	486000	412000	397000	451000
Nitrate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	470	1140	1350	480	1480	2960	--	990	1950	210	720
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	7.98	7.78	8
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [8]	20	10	10	60	30	10	--	80	10	90	30
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	12000	28000	22000	16000	21000	22000	--	26000	16000	8000	12000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	754000	943000	682000	786000	793000	728000	--	858000	689000	748000	767000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	52000	9000	15000	198000	18000	2000	--	<2000	9000	<2000	2000
Turbidity	ntu	-- [10]	--	--	--	--	--	--	--	--	--	--	--
Metals													
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	<10	<10	<10
Aluminum, dissolved	ug/l	-- [11]	<10	<10	<10	<10	<10	<10	--	<10	<10	<10	<10
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	230	230	180	180	210	220	--	160	190	230	180
Beryllium	ug/l	-- [12]	<1	<1	<0.5	<10	<0.5	<0.5	--	<10	<0.5	<0.5	<0.5
Boron	ug/l	200 [13]	140	310	230	200	150	170	--	200	270	200	100
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<10	<0.1	<0.1	--	<10	<0.1	<0.1	<0.1
Calcium	ug/l	--	139000	151000	117000	136000	122000	118000	--	150000	119000	108000	128000
Chromium	ug/l	-- [14]	3	4	4	<50	4	6	--	<50	3	6	9
Cobalt	ug/l	0.9	0.9	1.7	1	<10	0.9	1.1	--	<10	0.7	1.4	0.8
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [15]	<50	<50	<50	<50	<50	<50	--	<50	<0.5	<0.5	<10
Iron	ug/l	300	960	1690	530	5000	1550	1530	--	4700	630	670	650
Lead	ug/l	-- [16]	<1	<1	<1	<10	<1	<1	--	<10	<1	<10	<10
Magnesium	ug/l	--	29000	35000	25000	28000	26000	26000	--	34000	28000	31000	32000
Manganese	ug/l	--	640	630	240	640	350	340	--	510	240	1020	380
Mercury, dissolved	ug/l	0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<10	<5	<5	--	<10	<5	<5	<5
Nickel	ug/l	25	<5	5	<5	10	<5	<5	--	<10	<5	<5	<5
Potassium	ug/l	--	10000	16000	10000	13000	10000	11000	--	13000	12000	9000	9000
Selenium	ug/l	100	<10	<1	<1	<50	<1	<1	--	<50	<1	<1	<10
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<10	<0.1	<0.1	--	<10	<0.1	<0.1	<0.1
Sodium	ug/l	--	63000	75000	53000	69000	66000	64000	--	78000	66000	70000	71000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	4	6	4	<50	7	5	--	<50	2	5	3
Zinc	ug/l	30	<10	<10	<10	<50	<10	<10	--	<50	<10	<10	<10
Phenols													
Phenolics, Total Recoverable	ug/l	1 [18]	--	--	--	--	--	--	--	--			
Field Measurements													
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	1100	1130	1050	1120	1070	1040	--	600	1027	1068	1095
Dissolved Oxygen (Field)	ug/l	-- [8]	4950	8610	6010	4980	5970	6140	--	5050	3350	1950	4670
pH (Field)	-	8.5	7.2	8	7.5	7.4	7.7	7.5	--	7.6	7.7	7.5	7.9
Temperature (Field)	deg c	-- [9]	26	4	10	22	6	11	--	7	15.9	17.6	9.7
Discharge	(L/s)											0.1	1.0

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [2] [3]	SW-3 01-Dec-1988	SW-3 01-Nov-1990	SW-3 01-Oct-1991	SW-3 01-Dec-1991	SW-3 01-Dec-1992	SW-3 01-Feb-1993	SW-3 01-Aug-1993	SW-3 01-Aug-1994	SW-3 01-Oct-1994	SW-3 01-Dec-1994	SW-3 01-May-1995	SW-3 22-Oct-2000	SW-3 09-Nov-2001
Bacterial															
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	770	--	--	--	11	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	0	4	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	0	36	--	--	--	--	--	--	--
General Chemistry															
Alkalinity (Total as CaCO3)	ug/l	-- [4]	--	600000	500000	740000	908000	836000	568000	600000	--	610000	596000	469000	606000
Ammonia, unionized	ug/l	20	--	--	--	--	70	90	<100	<100	--	--	210	<20	530
Ammonia Nitrogen	ug/l	--	--	--	--	--	18600	21600	26110	8240	--	14800	17300	60	13900
Bicarbonate	ug/l	--	--	--	--	--	907000	835000	--	--	--	532000	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	5000	4000	4000	14000	13000	18000	94500	252000	--	4800	--	2000	6000
Chemical Oxygen Demand	ug/l	--	52000	--	--	--	73000	73000	278000	1015000	49700	63000	--	21000	40000
Chloride	ug/l	--	101000	110000	138000	174000	201000	174000	200000	161000	--	123000	132000	119000	137000
Color	color unit	--	--	--	--	--	26	--	11	25	--	6.5	10	18	10
Conductivity	uS/cm	--	--	1361	1210	--	2170	2120	1466	1517	--	--	1552	1110	1560
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	713000	737000	536000	521000	--	488000	541000	485000	586000
Nitrate	ug/l	--	--	--	--	--	<100	<100	450	<100	--	480	<100	3000	260
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	<100	<100	<100	<100	--	<100	<100	<100	<100
Nitrogen	ug/l	--	--	--	--	--	19900	24400	11500	13440	--	14000	18900	710	22700
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [8]	--	<100	--	<100	80	--	1330	2850	--	<10	130	40	100
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	--	--	--	24000	--	--	18300	15700	--	33000	51000	--	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	7520	710	--	700	1000	900
Total Dissolved Solids	ug/l	--	810000	736000	716000	990000	1411000	1378000	953000	986000	--	--	1009000	722000	1014000
Total Organic Carbon	ug/l	--	27000	--	--	--	29000	23000	13900	18200	15700	11000	--	12300	18600
Total Suspended Solids	ug/l	--	--	--	--	--	102000	67000	6793000	9680000	--	20000	1854000	<10	28000
Turbidity	ntu	-- [10]	--	--	--	--	61	55	>999	>400	--	301	30	2.5	86
Metals															
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	--	<30	--	<30	<30	<30	**6607**	**195**	--	**450**	**190**	<50	60
Arsenic	ug/l	100	<10	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	520	290	--	560	--	540	--	--	--	--	--	--	780
Beryllium	ug/l	-- [12]	--	<10	--	<10	--	<10	--	--	--	--	--	--	<2
Boron	ug/l	200 [13]	--	130	--	290	--	290	--	--	--	--	--	--	100
Cadmium	ug/l	0.2 [13]	<2	<0.2	0.4	1.1	<0.15	0.57	0.6	<0.1	--	<0.1	<0.15	<0.1	0.4
Calcium	ug/l	--	--	140000	--	224000	167000	191000	160000	140000	--	131000	162000	125000	167000
Chromium	ug/l	-- [14]	<20	<10	<10	<10	<10	<10	15	<10	--	<10	<10	<10	9
Cobalt	ug/l	0.9	--	<20	--	<10	--	<10	--	--	--	--	--	--	4
Copper	ug/l	5	--	<5	<10	<5	<5	<5	17	6600	--	16	<5	<1	10
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	500	<50	2960	20	230	5070	77700	9900	--	3900	23200	610	26900
Lead	ug/l	-- [16]	<50	<2	5	11	<2	<2	**39**	<0.2	--	0.8	3	--	2
Magnesium	ug/l	--	--	47000	--	75000	72000	63000	47800	41500	--	38000	33000	42000	41000
Manganese	ug/l	--	<50	470	530	480	--	1390	2780	2800	--	600	--	--	7550
Mercury, dissolved	ug/l	0.2	<1	--	--	--	<0.2	0.3	<0.1	<0.1	--	<0.1	<0.2	<0.1	<0.1
Molybdenum	ug/l	40	--	<10	--	<10	--	<10	--	--	--	--	--	--	<10
Nickel	ug/l	25	--	<10	--	30	20	<10	22	<20	--	<20	<10	<10	<10
Potassium	ug/l	--	--	28000	--	34000	36000	27000	31600	26600	--	20000	27000	--	15000
Selenium	ug/l	100	--	--	--	--	--	--	6	1	--	6	<1	<1	1
Silicon	ug/l	--	--	5900	--	10300	8700	7600	--	--	--	--	--	--	11900
Silver	ug/l	0.1	--	<1	--	<1	<0.1	<0.1	0.6	700	--	0.7	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	67000	--	114000	126000	96000	28100	65600	--	55000	82000	56000	79000
Strontium	ug/l	--	--	660	--	1190	--	880	--	--	--	--	--	--	876
Sulfur	ug/l	--	--	4000	--	8000	--	5000	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	--	<10	--	<50	--	<50	--	--	--	--	--	--	<1
Tin	ug/l	--	--	<50	--	<10	--	<50	--	--	--	--	--	--	--
Titanium	ug/l	--	--	<10	--	<10	--	<10	--	--	--	--	--	--	<10
Vanadium	ug/l	6	--	<10	--	<10	--	<10	--	--	--	--	--	--	2
Zinc	ug/l	30	<20	<10	--	<10	<10	<10	94	<10	--	25	50	<10	30
Phenols															
Phenolics, Total Recoverable	ug/l	1 [18]	<2	<2	6	<2	<1	5	16	80	6	4	--	--	<1
Field Measurements															
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	-- [6]	--	--	--	--	4700	5000	--	--	--	--	5700	12400	9000
pH (Field)	-	8.5	7.5	--	--	--	6.95	6.86	7.07	7.35	--	7.59	7.32	8.06	7.79
Temperature (Field)	deg c	-- [9]													
Discharge	(L/s)														

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	(2) (c) PWQO	SW-4 01-Oct-1983	SW-4 01-Mar-1988	SW-4 01-Dec-1988	SW-4 01-Oct-1990	SW-4 01-Oct-1991	SW-4 01-Dec-1991	SW-4 01-Aug-1993	SW-4 01-Sep-1993	SW-4 01-Oct-1993	SW-4 01-Aug-1994	SW-4 01-Oct-1994	SW-4 01-Dec-1994	SW-4 09-Nov-2001
Bacterial															
Coliform	cfu/100ml	--	8400	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	10	--	--	--
Fecal Coliform	cfu/100ml	--	100	--	--	--	--	--	12000	--	100	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	3100	--	54	--	--	--	--
General Chemistry															
Alkalinity (Total as CaCO3)	ug/l	--(4)	622000	--	--	510000	402000	810000	572000	--	306000	484000	--	688000	573000
Ammonia, unionized	ug/l	20	--	--	--	--	--	--	<100	--	110	<100	--	--	280
Ammonia Nitrogen	ug/l	--	--	3400	--	--	--	--	10200	--	7020	8280	--	17860	7260
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	--	1200	4000	4000	15000	15000	253000	--	4300	56900	--	10900	11000
Chemical Oxygen Demand	ug/l	--	80000	35000	78000	--	--	--	2674000	362000	61400	874000	--	80000	64000
Chloride	ug/l	--	90000	77000	45000	70000	99000	118000	117500	--	98000	55000	--	125000	155000
Color	color unit	--	--	--	--	--	--	--	70	--	23	44	--	25	18
Conductivity	uS/cm	--	1270	1060	--	1236	880	--	1372	--	786	1057	--	--	1600
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	655000	--	--	--	--	--	449000	--	281000	404000	--	511000	550000
Nitrate	ug/l	--	--	12	--	--	--	--	<100	--	<100	<100	--	<100	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	510	--	--	--	--	<100	--	160	<100	--	<100	<100
Nitrogen	ug/l	--	--	--	--	--	--	--	65000	--	7470	12320	--	21650	13000
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	--(8)	--	--	--	<100	--	<100	1670	--	140	3970	--	230	800
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	--	--	--	--	--	15000	3500	--	--	16900	--	20900	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	3020	2110	3310	2190	--	700
Total Dissolved Solids	ug/l	--	826000	689000	610000	722000	526000	1000000	892000	--	511000	687000	--	--	1040000
Total Organic Carbon	ug/l	--	--	--	19000	--	--	--	51200	36700	17100	30400	22800	20000	23000
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	5970000	--	17000	898000	--	38000	142000
Turbidity	ntu	--(10)	--	--	--	--	--	--	>999	--	11.7	105	--	4.7	>100
Metals															
Aluminum	ug/l	--(11)	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	--(11)	--	--	--	<30	--	<30	**6883**	--	**254**	67	--	**460**	**110**
Arsenic	ug/l	100	--	--	<10	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	290	210	--	390	--	--	--	--	--	--	300
Beryllium	ug/l	--(12)	--	--	--	<10	--	<10	--	--	--	--	--	--	<2
Boron	ug/l	200(13)	--	--	--	90	--	130	--	--	--	--	--	--	310
Cadmium	ug/l	0.2(13)	--	--	<2	3	<0.2	0.5	1.6	--	0.24	<0.1	--	<0.1	0.1
Calcium	ug/l	--	--	--	--	134000	--	224000	118000	--	68000	95000	--	123000	151000
Chromium	ug/l	--(14)	--	--	<20	<10	<10	<10	83	--	<10	<10	--	<10	10
Cobalt	ug/l	0.9	--	--	--	<20	--	<10	--	--	--	--	--	--	2
Copper	ug/l	5	--	--	--	<5	<10	<5	5	--	3	1.7	--	4	13
Hexavalent Chromium	ug/l	1(15)	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	1900	1200	480	40	3630	40	--	--	449	4500	--	13800	35500
Lead	ug/l	--(16)	--	--	<50	<2	4	4	236	--	1	5.2	--	<0.2	3
Magnesium	ug/l	--	--	--	--	53000	--	76000	37600	--	26800	40300	--	48000	42000
Manganese	ug/l	--	--	--	<50	1880	1650	2350	5340	--	--	1800	--	1500	430
Mercury, dissolved	ug/l	0.2	--	--	<1	--	<1	--	<0.1	--	<0.1	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	<10	--	<10	--	--	--	--	--	--	<10
Nickel	ug/l	25	--	--	--	<10	--	<10	90	--	<20	<20	--	<20	<10
Potassium	ug/l	--	--	--	--	44000	--	48000	46400	--	21800	27100	--	31000	25000
Selenium	ug/l	100	--	--	--	--	--	--	10	--	3	1	--	6	2
Silicon	ug/l	--	--	--	--	7600	--	12000	--	--	--	--	--	--	7400
Silver	ug/l	0.1	--	--	--	<1	--	<1	1.2	--	2	0.6	--	1.5	<0.1
Sodium	ug/l	--	--	--	--	54000	--	83000	87900	--	37700	42300	--	82000	109000
Strontium	ug/l	--	--	--	--	480	--	760	--	--	--	--	--	--	565
Sulfur	ug/l	--	--	--	--	7000	--	5000	--	--	--	--	--	--	--
Thallium	ug/l	0.3(17)	--	--	--	<10	--	<50	--	--	--	--	--	--	<1
Tin	ug/l	--	--	--	--	<50	--	<50	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	<10	--	<10	--	--	--	--	--	--	<10
Vanadium	ug/l	6	--	--	--	<10	--	<10	--	--	--	--	--	--	4
Zinc	ug/l	30	--	--	<20	30	20	<10	1338	--	<100	15	--	<10	20
Phenols															
Phenolics, Total Recoverable	ug/l	1(18)	6.5	--	<2	<2	4	<2	<2	<2	9	37	--	<3	<1
Field Measurements															
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	--(6)	--	--	--	--	--	--	<1000	--	6400	--	--	--	9700
pH (Field)	-	8.5	7.4	7.9	7.35	--	--	--	7.18	--	8.14	7.28	--	7.22	7.86
Temperature (Field)	deg c	--(9)	--	--	--	--	--	--	--	--	--	--	--	--	--
Discharge	(L/s)														

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	[3] [5] PWQO	SW-5 01-Nov-1982	SW-5 01-Oct-1983	SW-5 01-Dec-1988	SW-5 01-Nov-1990	SW-5 01-Oct-1991	SW-5 01-Dec-1991	SW-5 01-Jun-1994	SW-5 01-Oct-1994	SW-5 01-Dec-1994	SW-5 01-May-1995	SW-5 01-Sep-1995	SW-5 09-Nov-2001
Bacterial														
Coliform	cfu/100ml	--	75	100	--	--	--	--	54	--	--	55	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	52	--	--	--	--
Fecal Coliform	cfu/100ml	--	45	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	3100	--	--	--	--	--	--	--
General Chemistry														
Alkalinity (Total as CaCO3)	ug/l	--[4]	357800	252000	--	670000	510000	1010000	352000	--	773000	505000	402000	683000
Ammonia, unionized	ug/l	20	--	--	--	--	--	--	<100	--	--	490	220	370
Ammonia Nitrogen	ug/l	--	<100	--	--	--	--	--	5140	--	23400	12900	4050	9660
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	2900	--	4000	10000	9000	17000	23600	--	17400	--	--	8000
Chemical Oxygen Demand	ug/l	--	24000	27000	49000	--	--	--	226000	--	166000	--	--	71000
Chloride	ug/l	--	37000	54000	96000	170000	184000	301000	132000	--	150000	147000	182000	157000
Color	color unit	--	11	--	--	--	--	--	32	--	14.9	21	38	36
Conductivity	uS/cm	--	641	630	--	1624	1220	--	1020	--	--	1395	1443	1720
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	304000	318000	--	--	--	--	285000	--	759000	386000	366000	554000
Nitrate	ug/l	--	300	--	--	--	--	--	<100	--	<100	<100	<100	150
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	--	--	--	--	--	<100	--	<100	<100	<100	<100
Nitrogen	ug/l	--	1000	--	--	--	--	--	11200	--	27720	15300	7450	14400
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	<20	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	--[6]	770	--	--	<100	--	<100	3090	--	1010	120	850	230
Silica	ug/l	--	2300	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	28000	--	--	--	--	12000	3300	--	14300	16000	47000	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	3910	830	--	800	1800	1500
Total Dissolved Solids	ug/l	--	417000	793000	696000	975000	730000	1350000	663000	--	--	907000	938000	1118000
Total Organic Carbon	ug/l	--	--	--	21000	--	--	--	34700	21700	17400	--	--	23900
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	2580000	--	836000	--	342000	124000
Turbidity	ntu	--[10]	250	--	--	--	--	--	>400	--	4.7	30	90	75
Metals														
Aluminum	ug/l	--[11]	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	--[11]	**2100**	--	--	<30	--	<30	**460**	--	**12000**	40	**910**	**330**
Arsenic	ug/l	100	--	--	<10	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	340	160	--	350	--	--	--	--	--	220
Beryllium	ug/l	--[12]	--	--	--	<10	--	<10	--	--	--	--	--	<2
Boron	ug/l	200[13]	--	--	--	130	--	220	--	--	--	--	--	370
Cadmium	ug/l	0.2[13]	<2	--	<2	<0.2	2.1	3.1	<0.1	--	0.7	<0.15	<0.15	<0.1
Calcium	ug/l	--	90000	--	--	138000	--	282000	62000	--	207000	67000	59000	141000
Chromium	ug/l	--[14]	9	--	30	<10	<10	<10	<10	--	37	<10	<10	8
Cobalt	ug/l	0.9	20	--	--	<20	--	<10	--	--	--	--	--	3.3
Copper	ug/l	5	52	--	--	<5	<10	<5	3	--	65	<5	<5	8
Hexavalent Chromium	ug/l	1[15]	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	4500	100	1130	150	840	90	1500	--	43000	2240	3190	2610
Lead	ug/l	--[16]	17	--	<50	<2	10	5	2.6	--	560	<2	2	4
Magnesium	ug/l	--	19000	--	--	57000	--	105000	31700	--	58000	53000	53000	49000
Manganese	ug/l	--	740	--	<50	160	1560	3530	2300	--	2200	--	--	570
Mercury, dissolved	ug/l	0.2	--	--	<1	--	<1	--	<100	--	<0.1	<0.2	<0.2	<0.1
Molybdenum	ug/l	40	--	--	--	40	--	<10	--	--	--	--	--	<10
Nickel	ug/l	25	8	--	--	<10	--	<10	<20	--	48	<10	<10	<10
Potassium	ug/l	--	4000	--	--	26000	--	29000	26900	--	35000	30000	32000	39000
Selenium	ug/l	100	--	--	--	--	--	--	<1	--	7	<1	<1	1
Silicon	ug/l	--	--	--	--	4800	--	9400	--	--	--	--	--	7150
Silver	ug/l	0.1	--	--	--	<1	--	<1	0.5	--	2	<0.1	<0.1	<0.1
Sodium	ug/l	--	17000	--	--	102000	--	199000	86000	--	97000	119000	167000	136000
Strontium	ug/l	--	--	--	--	530	--	1030	--	--	--	--	--	675
Sulfur	ug/l	--	--	--	--	4000	--	4000	--	--	--	--	--	--
Thallium	ug/l	0.3[17]	--	--	--	<10	--	<50	--	--	--	--	--	<1
Tin	ug/l	--	--	--	--	<50	--	<50	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	<10	--	<10	--	--	--	--	--	<10
Vanadium	ug/l	6	--	--	--	--	--	<10	--	--	--	--	--	3
Zinc	ug/l	30	26	--	<20	<10	<10	<10	<10	--	140	<10	20	<10
Phenols														
Phenolics, Total Recoverable	ug/l	1[18]	--	2	<2	<2	6	<2	40	--	2	--	<1	4
Field Measurements														
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	--[6]	--	--	--	--	--	--	--	--	--	8600	200	8900
pH (Field)	-	8.5	8.1	8	7.65	--	--	--	7.45	--	7.16	7.99	7.71	8.13
Temperature (Field)	deg c	--[9]												
Discharge	(L/s)													

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	[3] [5] PWQO	SW-6 01-Nov-1982	SW-6 01-Mar-1988	SW-6 01-Dec-1988	SW-6 01-Nov-1990	SW-6 01-Oct-1991	SW-6 01-Dec-1991	SW-6 01-Dec-1992
Bacterial									
Coliform	cfu/100ml	--	25000	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	240	--	--	--	--	--	6
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	48
General Chemistry									
Alkalinity (Total as CaCO3)	ug/l	--[4]	905000	419000	--	750000	474000	860000	814000
Ammonia, unionized	ug/l	20	--	--	--	--	--	--	350
Ammonia Nitrogen	ug/l	--	28000	4300	--	--	--	--	29400
Bicarbonate	ug/l	--	--	--	--	--	--	--	812000
Biologic Oxygen Demand, Five Day	ug/l	--	57000	1000	5000	6000	26000	6000	6000
Chemical Oxygen Demand	ug/l	--	222000	65000	72000	--	--	--	73000
Chloride	ug/l	--	121000	73200	131000	141000	447000	216000	215000
Color	color unit	--	44.3	--	--	--	--	--	26
Conductivity	uS/cm	--	1855	1010	--	1679	1860	--	2390
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	8
Hardness, Calcium Carbonate	ug/l	--	238000	--	--	--	--	--	664000
Nitrate	ug/l	--	27000	120	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	--	50	--	--	--	--	--
Nitrogen	ug/l	--	28000	--	--	--	--	--	33600
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--
Phosphate	ug/l	--	<40	--	--	--	--	--	--
Phosphorus	ug/l	--[6]	2920	--	--	<100	--	<100	70
Silica	ug/l	--	10800	--	--	--	--	--	--
Sulfate	ug/l	--	10500	--	--	--	--	72000	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	1206000	657000	1027000	994000	1220000	1180000	1554000
Total Organic Carbon	ug/l	--	--	--	25000	--	--	--	30000
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	65000
Turbidity	ntu	--[10]	150	--	--	--	--	--	7.1
Metals									
Aluminum	ug/l	--[11]	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	--[11]	**<100**	--	--	<30	--	<30	<30
Arsenic	ug/l	100	--	--	<10	--	--	--	--
Barium	ug/l	--	--	--	460	160	--	240	--
Beryllium	ug/l	--[12]	--	--	--	<10	--	<10	--
Boron	ug/l	200[13]	--	--	--	<140	--	<520	--
Cadmium	ug/l	0.2[13]	<10	--	<2	<0.2	6	<1.6	<0.15
Calcium	ug/l	--	71000	--	--	170000	--	263000	152000
Chromium	ug/l	--[14]	50	--	<20	<10	<10	<10	<10
Cobalt	ug/l	0.9	14	--	--	<20	--	<10	--
Copper	ug/l	5	34	--	--	<10	<10	<5	<5
Hexavalent Chromium	ug/l	1[15]	--	--	--	--	--	--	--
Iron	ug/l	300	1100	2400	1560	<10	<9660	110	--
Lead	ug/l	--[16]	<60	--	<50	<2	31	9	<2
Magnesium	ug/l	--	15000	--	--	47000	--	61000	69000
Manganese	ug/l	--	2900	--	<50	2250	3360	3220	--
Mercury, dissolved	ug/l	0.2	--	--	<1	--	--	--	<0.2
Molybdenum	ug/l	40	--	--	--	<10	--	<10	--
Nickel	ug/l	25	<10	--	--	<10	--	<10	<10
Potassium	ug/l	--	32000	--	--	26000	--	17000	31000
Selenium	ug/l	100	--	--	--	--	--	--	--
Silicon	ug/l	--	--	--	--	5100	--	9700	10600
Silver	ug/l	0.1	--	--	--	<1	--	<1	<0.1
Sodium	ug/l	--	104000	--	--	99000	--	150000	131000
Strontium	ug/l	--	--	--	--	530	--	820	--
Sulfur	ug/l	--	--	--	--	11000	--	27000	--
Thallium	ug/l	0.3[17]	--	--	--	<10	--	<50	--
Tin	ug/l	--	--	--	--	50	--	50	--
Titanium	ug/l	--	--	--	--	<10	--	<10	--
Vanadium	ug/l	6	--	--	--	<10	--	<10	--
Zinc	ug/l	30	98	--	<20	--	--	<10	<10
Phenols									
Phenolics, Total Recoverable	ug/l	1[18]	9	--	<2	--	9	<2	<1
Field Measurements									
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	--[8]	--	--	--	--	--	--	7600
pH (Field)	-	8.5	7.6	7.7	7.2	--	--	--	7.38
Temperature (Field)	deg c	--[9]	--	--	--	--	--	--	--
Discharge	(L/s)								

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [3] [5]	SW-8 01-Mar-1983	SW-8 01-Nov-1990	SW-8 01-Oct-1991	SW-8 01-Dec-1991	SW-8 01-Dec-1992		SW-9 01-Dec-1992										
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--		--										
Escherichia coli	cfu/100ml	--	--	--	--	--	--		--										
Fecal Coliform	cfu/100ml	--	--	--	--	--	0		51										
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	0		6										
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	--	<5000	18000	--	<2000		34000										
Ammonia, unionized	ug/l	20	--	--	--	--	<20		<20										
Ammonia Nitrogen	ug/l	--	60	--	--	--	80		30										
Bicarbonate	ug/l	--	--	--	--	--	8000		34000										
Biologic Oxygen Demand, Five Day	ug/l	--	200	<1000	3000	--	<1000		1000										
Chemical Oxygen Demand	ug/l	--	35000	--	--	--	<3000		19000										
Chloride	ug/l	--	5200	2000	<1000	--	<1000		<1000										
Color	color unit	--	--	--	--	--	<2		43										
Conductivity	uS/cm	--	92	10	50	--	4		77										
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--		--										
Fluoride	ug/l	--	--	--	--	--	--		--										
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	<2000		28000										
Nitrate	ug/l	--	4	--	--	--	<100		190										
Nitrate as N	ug/l	--	--	--	--	--	--		--										
Nitrite	ug/l	--	240	--	--	--	<100		<100										
Nitrogen	ug/l	--	--	--	--	--	100		260										
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--		--										
pH	-	8.5	--	--	--	--	--		--										
Phosphate	ug/l	--	--	--	--	--	--		--										
Phosphorus	ug/l	-- [9]	--	<100	--	<100	<30		<30										
Silica	ug/l	--	--	--	--	--	--		--										
Sulfate	ug/l	--	--	--	--	--	--		--										
Tannin & Lignin	ug/l	--	--	--	--	--	--		--										
Total Dissolved Solids	ug/l	--	60000	6000	30000	--	3000		50000										
Total Organic Carbon	ug/l	--	--	--	--	--	700		7600										
Total Suspended Solids	ug/l	--	--	--	--	--	<2000		<2000										
Turbidity	ntu	-- [10]	--	--	--	--	<1		1.6										
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--		--										
Aluminum, dissolved	ug/l	-- [11]	--	<30	--	450	<30		**180**										
Arsenic	ug/l	100	--	--	--	--	--		--										
Barium	ug/l	--	--	<10	--	20	--		--										
Beryllium	ug/l	-- [12]	--	<10	--	<10	--		--										
Boron	ug/l	200 [13]	--	10	--	<10	--		--										
Cadmium	ug/l	0.2 [13]	--	<0.2	<0.2	<0.2	<0.15		<0.15										
Calcium	ug/l	--	--	<1000	--	22000	<1000		8000										
Chromium	ug/l	-- [14]	--	<10	<10	<10	<10		<10										
Cobalt	ug/l	0.9	--	<20	--	<10	--		--										
Copper	ug/l	5	--	<10	<10	<5	<5		<5										
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--		--										
Iron	ug/l	300	400	<10	110	420	<10		170										
Lead	ug/l	-- [16]	--	<2	3	<2	<2		**<2**										
Magnesium	ug/l	--	--	<1000	--	4000	<1000		2000										
Manganese	ug/l	--	--	<10	10	<10	--		--										
Mercury, dissolved	ug/l	0.2	--	--	<1	--	<0.2		<0.2										
Molybdenum	ug/l	40	--	<10	--	<10	--		--										
Nickel	ug/l	25	--	<10	--	<10	<10		<10										
Potassium	ug/l	--	--	<1000	--	<1000	<1000		1000										
Selenium	ug/l	100	--	--	--	--	--		--										
Silicon	ug/l	--	--	1700	--	3200	<100		2500										
Silver	ug/l	0.1	--	<1	--	<10	<0.1		0.1										
Sodium	ug/l	--	--	2000	--	2000	<1000		4000										
Strontium	ug/l	--	--	<10	--	70	--		--										
Sulfur	ug/l	--	--	<3000	--	4000	--		--										
Thallium	ug/l	0.3 [17]	--	<10	--	<50	--		--										
Tin	ug/l	--	--	<50	--	<50	--		--										
Titanium	ug/l	--	--	<10	--	<10	--		--										
Vanadium	ug/l	6	--	<10	--	<10	--		--										
Zinc	ug/l	30	--	<10	20	<10	<10		<10										
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	--	<2	<2	--	<1		<1										
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--		--										
Conductivity (Field)	uS/cm	--	--	--	--	--	--		--										
Dissolved Oxygen (Field)	ug/l	-- [6]	--	--	--	--	9800		11000										
pH (Field)	-	8.5	7.2	--	--	--	7.8		7.2										
Temperature (Field)	deg c	-- [9]	--	--	--	--	--		--										
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [2] [3]	SW-10 01-Mar-1988	SW-10 01-Sep-1993	SW-10 01-Nov-1993	SW-10 01-Oct-1994	SW-10 01-May-1995	SW-10 01-May-1996	SW-10 28-Apr-2001	SW-10 17-Apr-2002	SW-10 01-Apr-2003	SW-10 01-Oct-2003	SW-10 01-Dec-2003	SW-10 04-Jun-2004	SW-10 04-Jul-2004	SW-10 04-Oct-2004 [15]	SW-10 13-Jun-2005 [18]	SW-10 31-Aug-2005 [19]	SW-10 30-Oct-2005 [19]
Bacterial																			
Coliform	cfu/100ml	--	--	--	800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	0	12	480	--	60	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	51	--	--	--	--	--	0	17	570	--	--	170	440	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	6	--	--	--	--	--	49	-- [9]	80	--	--	140	460	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	--	--	129000	--	256000	118000	280000	170000	175000	235000	236000	224000	211000	--	--	--	--
Ammonia, unionized	ug/l	20	--	--	2000	--	<20	<20	<20	<20	<20	<20	<20	<20	<20	--	--	--	--
Ammonia Nitrogen	ug/l	--	220	--	280	--	40	50	<20	100	90	40	40	70	190	--	--	--	--
Bicarbonate	ug/l	--	34000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	1600	--	1300	--	1000	2000	7000	<1000	<1000	20	10	<1000	<1000	--	--	--	--
Chemical Oxygen Demand	ug/l	--	40000	46100	48900	58900	15000	11000	14000	14000	22000	14000	18000	<5000	21000	--	--	--	--
Chloride	ug/l	--	10700	--	67000	--	254000	54000	191000	81000	174000	96000	54000	36000	35000	--	--	--	--
Color	color unit	--	--	--	33	--	8	27	17	39	23	24	13	25	28	--	--	--	--
Conductivity	uS/cm	--	250	--	428	--	1296	422	1090	614	983	786	649	528	512	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	570	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	155000	--	432000	143000	338000	184000	298000	309000	270000	215000	199000	--	--	--	--
Nitrate	ug/l	--	6	--	1440	--	420	170	260	140	310	<100	<100	<100	<100	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<20	--	<100	--	<100	<10	<100	<100	<100	<100	<100	<10	<100	--	--	--	--
Nitrogen	ug/l	--	--	--	3450	--	600	1080	510	1050	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	620	600	370	470	770	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [8]	--	--	190	--	1010	70	60	90	80	190	80	260	280	--	--	--	--
Silica	ug/l	--	--	--	10100	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	--	--	--	--	28000	16000	--	18000	--	--	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	--	490	1250	1830	--	--	300	1700	300	500	300	400	400	--	--	--	--
Total Dissolved Solids	ug/l	--	163000	--	278000	--	842000	274000	709000	399000	639000	511000	422000	343000	333000	--	--	--	--
Total Organic Carbon	ug/l	--	--	9890	7900	10700	7200	10900	6300	8500	6100	5500	4700	7200	8500	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	15800000	--	237000	12000	181000	<2000	3000	19000	13000	47000	43000	--	--	--	--
Turbidity	ntu	-- [10]	--	--	38.6	--	125	20	77	16.3	5	32.5	15.5	53.6	81.7	--	--	--	--
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	--	--	**135**	--	**600**	**1330**	**240**	**900**	**210**	**420**	**280**	**560**	**860**	--	--	--	--
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	30	40	30	60	40	--	--	--	--	--	--
Beryllium	ug/l	-- [12]	--	--	--	--	--	--	<2	<2	<1	<1	<1	--	--	--	--	--	--
Boron	ug/l	200 [13]	--	--	--	--	--	--	<10	<50	<50	20	10	--	--	--	--	--	--
Cadmium	ug/l	0.2 [13]	--	--	0.3	--	<0.15	<0.15	0.3	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--
Calcium	ug/l	--	--	--	40000	--	125000	34000	89000	49000	83000	84000	75000	58000	55000	--	--	--	--
Chromium	ug/l	-- [14]	--	--	<10	--	<10	<10	3	1	<5	4	3	4	6	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	0.8	0.2	<0.2	0.4	0.4	--	--	--	--	--	--
Copper	ug/l	5	--	--	11	--	<5	0.9	3	4	<5	2	2	3	2	--	--	--	--
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	900	--	1900	--	760	730	130	390	70	540	320	740	760	--	--	--	--
Lead	ug/l	-- [16]	--	--	34	--	<2	<2	<1	<1	<1	<1	<1	<1	<1	--	--	--	--
Magnesium	ug/l	--	--	--	13100	--	125000	14000	28000	<0.1	22000	24000	20000	17000	15000	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	--	30	--	<5	24	20	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2	--	--	<0.1	--	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	--	--	<10	<10	<5	<5	<5	--	--	--	--	--	--
Nickel	ug/l	25	--	--	<20	--	<10	<10	<10	<10	<5	<5	<5	<5	<5	--	--	--	--
Potassium	ug/l	--	--	--	5600	--	6000	4000	3000	4000	6000	7000	4000	3000	3000	--	--	--	--
Selenium	ug/l	100	--	--	2	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--	--	--
Silicon	ug/l	--	--	--	--	--	--	--	3360	4110	5400	6000	6700	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	1.9	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--
Sodium	ug/l	--	--	--	24100	--	87000	28000	468	40000	75000	50000	31000	24000	23000	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--	--	--	212	349	711	521	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	--	--	--	--	--	--	<1	<1	<1	<1	<1	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	<10	30	<10	30	20	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	<1	2	<5	4	3	--	--	--	--	--	--
Zinc	ug/l	30	--	--	<10	--	30	30	160	60	42	<10	<10	<10	<10	--	--	--	--
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	--	<2	<2	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	-- [6]	--	--	20000	--	9100	10800	10500	--	--	8900	--	--	--	--	--	--	--
pH (Field)	-	8.5	7.7	--	8.2	--	7.78	8.98	8	8.29	7.77	8.01	8.04	7.74	7.67	--	--	--	--
Temperature (Field)	deg c	-- [9]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	(2) (c) PWQO	SW-10 31-Dec-2005 (20)	SW-10 08-Apr-2006	SW-10 15-Aug-2006 (19)	SW-10 25-Nov-2006	SW-10 22-Apr-2007	SW-10 31-Aug-2007 (13)	SW-10 26-Nov-2007 (20)	SW-10 04-May-2008	SW-10 14-Aug-2008	SW-10 28-Nov-2008	SW-10 24-Apr-2009	SW-10 25-Aug-2009 (19)	SW-10 30-Nov-2009	SW-10 21-Aug-2010 (19)	SW-10 27-Nov-2010 (19)	SW-10 09-May-2011	SW-10 08-Sep-2011 (19)
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	--(4)	--	127000	--	222000	253000	--	--	261000	335000	270000	255000	--	182000	--	--	280000	--
Ammonia, unionized	ug/l	20	--	0	--	0	0	--	--	0	0	0	1	--	0	--	--	0	--
Ammonia Nitrogen	ug/l	--	--	50	--	20	<20	--	--	40	40	20	50	--	30	--	--	30	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	--	<1000	--	<1000	1000	--	--	<1000	3000	1000	2000	--	<1000	--	--	1000	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	--	74000	--	63000	120000	--	--	194000	124000	147000	148000	--	64000	--	--	119000	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	610	--	410	510	--	--	505	320	380	978	--	589	--	--	934	--
Dissolved Organic Carbon	ug/l	--	--	7000	--	4000	5600	--	--	5900	10200	4900	7000	--	9500	--	--	7500	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	160800	--	252700	307500	--	--	359000	348000	303000	286000	--	185000	--	--	307000	--
Nitrate	ug/l	--	--	870	--	1020	<100	--	--	200	<100	980	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	460	--	600	--	--	140	--
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	--(9)	--	60.00	--	80.00	60.00	--	--	80.00	110.00	420.00	120.00	--	320.00	--	--	160.00	--
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	--	15000	--	18000	21000	--	--	18000	6000	22000	21000	--	17000	--	--	13000	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	341000	--	426000	549000	--	--	741000	663000	663000	636000	--	383000	--	--	607000	--
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	2000	--	4000	<2000	--	--	28000	8000	92000	18000	--	19000	--	--	<2000	--
Turbidity	ntu	--(10)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																			
Aluminum	ug/l	--(11)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	--(11)	--	40	--	30	40	--	--	10	**110**	10	<10	--	**80**	--	--	<10	--
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	30	--	30	30	--	--	40	20	50	30	--	40	--	--	30	--
Beryllium	ug/l	--(12)	--	<1	--	<1	<1	--	--	<1	<1	<1	<1	--	<1	--	--	<0.5	--
Boron	ug/l	200(13)	--	10	--	20	10	--	--	20	20	30	20	--	40	--	--	20	--
Cadmium	ug/l	0.2(13)	--	<0.1	--	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	--	<0.1	--
Calcium	ug/l	--	--	43000	--	65000	82000	--	--	96000	93000	77000	75000	--	46000	--	--	80000	--
Chromium	ug/l	--(14)	--	4	--	2	3	--	--	7	2	6	4	--	5	--	--	4	--
Cobalt	ug/l	0.9	--	0.2	--	0.2	0.2	--	--	0.4	0.4	1	0.3	--	0.8	--	--	0.3	--
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1(15)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<50	--
Iron	ug/l	300	--	290	--	190	90	--	--	270	200	940	270	--	1130	--	--	60	--
Lead	ug/l	--(16)	--	<1	--	<1	<1	--	--	<1	<1	2	<1	--	1	--	--	<1	--
Magnesium	ug/l	--	--	13000	--	22000	25000	--	--	29000	28000	27000	24000	--	17000	--	--	26000	--
Manganese	ug/l	--	--	<10	--	20	<10	--	--	20	80	160	40	--	70	--	--	20	--
Mercury, dissolved	ug/l	0.2	--	<0.1	--	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	--	<0.1	--
Molybdenum	ug/l	40	--	<5	--	<5	<5	--	--	<5	<5	<5	<5	--	<5	--	--	<5	--
Nickel	ug/l	25	--	<5	--	<5	<5	--	--	<5	<5	<5	<5	--	<5	--	--	<5	--
Potassium	ug/l	--	--	3000	--	3000	4000	--	--	5000	5000	5000	3000	--	5000	--	--	4000	--
Selenium	ug/l	100	--	<1	--	<1	<1	--	--	<1	<1	<1	<1	--	<1	--	--	<1	--
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	<0.1	--	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	--	<0.1	--
Sodium	ug/l	--	--	38000	--	38000	55000	--	--	85000	84000	77000	75000	--	47000	--	--	70000	--
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3(17)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	4	--	2	7	--	--	3	2	8	3	--	8	--	--	3	--
Zinc	ug/l	30	--	20	--	20	10	--	--	10	<10	20	10	--	40	--	--	<10	--
Phenols																			
Phenolics, Total Recoverable	ug/l	1(18)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	930	--	885	--	--	590	--
Dissolved Oxygen (Field)	ug/l	--(6)	--	11020	--	8110	9820	--	--	4040	8410	5120	5390	--	5990	--	--	7810	--
pH (Field)	-	8.5	--	7.4	--	7.3	7.4	--	--	7.2	7.3	7.4	8.1	--	7.9	--	--	7.8	--
Temperature (Field)	deg c	--(9)	--	6	--	2	3	--	--	8	17	2	7.5	--	5	--	--	9	--
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	(2) (1) PWQO	SW-10 29-Nov-2011 [18]	SW-10 06-May-2012	SW-10 22-Aug-2012 [15]	SW-10 12-Nov-2012	SW-10 10-June-2013	SW-10 20-Aug-2013	SW-10 24-Oct-2013		SW-10 75th %	SW-10 75th %							
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--													
Escherichia coli	cfu/100ml	--	--	--	--	--													
Fecal Coliform	cfu/100ml	--	--	--	--	--													
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--													
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	--[4]	--	302000	--	315000	298000	No	No		275000	275							
Ammonia, unionized	ug/l	20	--	0	--	0	<20	Water	Water										
Ammonia Nitrogen	ug/l	--	--	<20	--	30	30	to	to										
Bicarbonate	ug/l	--	--	--	--	--		Sample	Sample										
Biologic Oxygen Demand, Five Day	ug/l	--	--	1000	--	1000	<1000												
Chemical Oxygen Demand	ug/l	--	--	--	--	--													
Chloride	ug/l	--	--	207000	--	422000	176000												
Color	color unit	--	--	--	--	--													
Conductivity	uS/cm	--	--	1230	--	1990	1130												
Dissolved Organic Carbon	ug/l	--	--	7500	--	6100	1280												
Fluoride	ug/l	--	--	--	--	--													
Hardness, Calcium Carbonate	ug/l	--	--	361000	--	448000	337000												
Nitrate	ug/l	--	--	--	--	--													
Nitrate as N	ug/l	--	--	200	--	890	<100												
Nitrite	ug/l	--	--	--	--	--													
Nitrogen	ug/l	--	--	--	--	--													
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--													
pH	-	8.5	--	--	--	--	8.15												
Phosphate	ug/l	--	--	--	--	--													
Phosphorus	ug/l	--[9]	--	150.00	--	100.00	310.00				225	0.23							
Silica	ug/l	--	--	--	--	--													
Sulfate	ug/l	--	--	26000	--	47000	14000												
Tannin & Lignin	ug/l	--	--	--	--	--													
Total Dissolved Solids	ug/l	--	--	800000	--	1290000	734000												
Total Organic Carbon	ug/l	--	--	--	--	--													
Total Suspended Solids	ug/l	--	--	9000	--	9000	4000												
Turbidity	ntu	--[10]	--	--	--	--													
Metals																			
Aluminum	ug/l	--[11]	--	--	--	--	260												
Aluminum, dissolved	ug/l	--[11]	--	--	--	<10	30												
Arsenic	ug/l	100	--	--	--	--													
Barium	ug/l	--	--	60	--	50	40				47.5	0.0475							
Beryllium	ug/l	--[12]	--	<0.5	--	<0.5	<0.5												
Boron	ug/l	200[13]	--	40	--	10	30				25	0.025							
Cadmium	ug/l	0.2[13]	--	<0.1	--	<0.1	<0.1												
Calcium	ug/l	--	--	95000	--	130000	92000												
Chromium	ug/l	--[14]	--	10	--	6	5												
Cobalt	ug/l	0.9	--	0.5	--	0.3	0.2												
Copper	ug/l	5	--	--	--	--													
Hexavalent Chromium	ug/l	1[15]	--	<50	--	<50	<0.5												
Iron	ug/l	300	--	200	--	60	240				760	0.76							
Lead	ug/l	--[16]	--	<1	--	<1	<1												
Magnesium	ug/l	--	--	30000	--	30000	26000												
Manganese	ug/l	--	--	30	--	50	20												
Mercury, dissolved	ug/l	0.2	--	<0.1	--	<0.1	<0.1												
Molybdenum	ug/l	40	--	<5	--	<5	<5												
Nickel	ug/l	25	--	<5	--	<5	<5												
Potassium	ug/l	--	--	5000	--	5000	5000												
Selenium	ug/l	100	--	<1	--	<1	<1												
Silicon	ug/l	--	--	--	--	--													
Silver	ug/l	0.1	--	<0.1	--	<0.1	<0.1												
Sodium	ug/l	--	--	101000	--	206000	103000												
Strontium	ug/l	--	--	--	--	--													
Sulfur	ug/l	--	--	--	--	--													
Thallium	ug/l	0.3[17]	--	--	--	--													
Tin	ug/l	--	--	--	--	--													
Titanium	ug/l	--	--	--	--	--													
Vanadium	ug/l	6	--	6	--	4	4												
Zinc	ug/l	30	--	10	--	10	<10												
Phenols																			
Phenolics, Total Recoverable	ug/l	1[18]	--	--	--	--													
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--													
Conductivity (Field)	uS/cm	--	--	1180	--	565	1114												
Dissolved Oxygen (Field)	ug/l	--[8]	--	7440	--	4010	2470												
pH (Field)	-	8.5	--	7.8	--	7.7	8.2												
Temperature (Field)	deg c	--[9]	--	8	--	8	18												
Discharge	(L/s)						0.3												

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [3] [5]	SW-11 01-Aug-1993	SW-11 01-Sep-1993	SW-11 01-Nov-1993	SW-11 01-Aug-1994	SW-11 01-Oct-1994	SW-11 01-Dec-1994	SW-11 01-May-1995	SW-11 01-Sep-1995	SW-11 01-Jun-1996	SW-11 01-Sep-1996	SW-11 01-Jun-1997	SW-11 01-Aug-1997	SW-11 01-Sep-1998	SW-11 01-Nov-1998	SW-11 15-Jul-1999	SW-11 16-Oct-1999	SW-11 01-Jul-2000
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	196	--	--	--	--	--	--	--	--	--	--	340
Fecal Coliform	cfu/100ml	--	100	--	6500	--	--	--	--	--	--	--	--	--	--	--	--	--	360
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	180	290	--	--	--	--	--	--	--	--	--	--	--	--	--	840
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	244000	--	221000	246000	--	239000	229000	237000	224000	231000	235000	231000	250000	258000	259000	255000	251000
Ammonia, unionized	ug/l	20	<100	--	3	100	--	--	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<100	--	100	<100	--	32290	10	30	20	<20	20	40	<20	<100	40	<20	60
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	3400	--	<1000	<1000	--	<1000	<1000	<1000	<1000	<1000	<1000	2000	<1000	<1000	4000	2000	2000
Chemical Oxygen Demand	ug/l	--	18000	60500	2100	4900	2800	7800	7000	8000	<3000	5000	--	5000	<3000	<3000	10000	8000	10000
Chloride	ug/l	--	19000	--	44000	37000	--	23300	23000	22000	23000	20000	24000	24000	25000	24000	26000	24000	39000
Color	color unit	--	7	--	8	5	--	2.9	5	14	5	<2	3	4	2	2	3	5	5
Conductivity	uS/cm	--	520	--	526	591	--	--	528	527	509	501	507	520	548	576	539	546	574
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	275000	--	247000	261000	--	204000	245000	277000	254000	253000	232000	247000	242000	306000	273000	269000	262000
Nitrate	ug/l	--	320	--	720	1440	--	1300	680	300	620	150	130	130	180	280	270	260	140
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	--	<100	<100	--	<100	<100	<100	<100	<10	<100	<100	<100	<100	<100	<100	<100
Nitrogen	ug/l	--	560	--	190	560	--	670	160	330	--	150	370	180	170	130	--	--	680
Nitrogen, Total Kjeldahl	ug/l	--	710	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [6]	60	--	100	70	--	<10	10	40	40	30	40	30	20	<100	30	90	80
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	11700	--	--	16300	--	19000	14000	14000	13000	10000	11000	10000	12000	18000	11000	16000	--
Tannin & Lignin	ug/l	--	--	200	840	450	320	--	--	--	--	--	--	--	--	--	--	--	<100
Total Dissolved Solids	ug/l	--	--	338000	341900	384150	--	--	343200	342550	330850	325650	329550	338000	356200	374400	350350	354900	373100
Total Organic Carbon	ug/l	--	1500	1770	4500	3300	1800	1500	2800	4000	3500	2300	2700	2500	2500	1500	1600	2700	2500
Total Suspended Solids	ug/l	--	214000	--	6000	2000	--	<1000	2000	15000	5000	21000	32000	112000	3000	<2000	--	<2000	27000
Turbidity	ntu	-- [10]	40.5	--	5.7	5	--	0.7	0.7	2.3	1.6	1.9	4.4	10	0.9	0.6	46	1.4	8
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	**416**	--	**6060**	60	--	**420**	<30	**580**	70	**190**	**140**	70	<30	<30	60	**80**	**590**
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	70	--	--	80
Beryllium	ug/l	-- [12]	--	--	--	--	--	--	--	--	--	--	--	--	--	<10	--	--	<2
Boron	ug/l	200 [13]	--	--	--	--	--	--	--	--	--	--	--	--	--	<10	--	--	20
Cadmium	ug/l	0.2 [13]	0.1	--	0.2	<0.1	--	0.1	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.1
Calcium	ug/l	--	79400	--	70000	73	--	57000	70000	78000	72000	70000	63000	69000	69000	86000	78000	78000	75000
Chromium	ug/l	-- [14]	12	--	12	<10	--	<10	<10	<10	<10	30	<10	<10	<10	<10	10	<10	2
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.4	--	--	0.6
Copper	ug/l	5	6	--	3	1	--	5	<5	5	8	<5	16	<5	<5	<5	<5	<5	--
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	1628	--	5960	359	--	350	120	4470	110	180	450	330	320	320	300	280	1620
Lead	ug/l	-- [16]	114	--	1	<0.2	--	<0.2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1
Magnesium	ug/l	--	18600	--	--	18900	--	14800	17000	20000	18000	19000	18000	18000	17000	22000	19000	18000	18000
Manganese	ug/l	--	116	--	--	30	--	<10	--	--	--	--	--	--	--	<10	--	--	160
Mercury, dissolved	ug/l	0.2	<0.1	--	<0.1	<0.1	--	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	<10	--	--	<10
Nickel	ug/l	25	<20	--	--	<20	--	<20	<10	<10	20	<10	<10	<10	<10	<10	<10	<10	<10
Potassium	ug/l	--	2810	--	--	4900	--	3500	4000	6000	3000	3000	2000	3000	2000	2000	4000	3000	3000
Selenium	ug/l	100	2	--	3	1	--	6	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4500	--	--	5650
Silver	ug/l	0.1	0.5	--	1.8	0.6	--	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	11400	--	--	11800	--	11000	15000	14000	13000	14000	12000	13000	12000	13000	18000	15000	15000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	397	--	--	365
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6000	--	--	4000
Thallium	ug/l	0.3 [17]	--	--	--	--	--	--	--	--	--	--	--	--	--	<10	--	--	<1
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<50	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<10	--	--	20
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	<10	--	--	1
Zinc	ug/l	30	237	--	--	<10	--	<10	<10	<10	<10	20	10	<10	<10	<10	<10	<10	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	<2	<2	<2	18	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	-- [6]	13900	--	8200	--	--	--	10400	8800	9200	--	9300	8700	9200	12900	8300	8200	8600
pH (Field)	-	8.5	7.61	--	8.55	7.99	--	8.12	8.24	8.08	8.09	8.06	8.27	8.02	--	8.21	7.26	7.94	7.04
Temperature (Field)	deg c	-- [9]	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [2] [3]	SW-11 22-Oct-2000	SW-11 01-Dec-2000	SW-11 28-Apr-2001	SW-11 09-Nov-2001	SW-11 17-Apr-2002	SW-11 01-Apr-2003	SW-11 01-Dec-2003	SW-11 04-Jun-2004	SW-11 04-Jul-2004	SW-11 04-Oct-2004	SW-11 13-Jun-2005 [15]	SW-11 31-Aug-2005 [16]	SW-11 30-Oct-2005	SW-11 31-Dec-2005 [25]	SW-11 08-Apr-2006	SW-11 15-Aug-2006 [19]	SW-11 25-Nov-2006
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	11	22	7	--	0	<10	100	--	--	10	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	13	--	0	<10	--	40	240	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	188	--	-- [3]	<10	--	70	240	--	--	--	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	242000	254000	248000	249000	248000	243000	245000	227000	216000	227000	--	--	256000	--	258000	--	266000
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	--	--	0	--	0	--	0
Ammonia Nitrogen	ug/l	--	<20	<20	<20	30	40	<20	<20	60	150	30	--	--	<20	--	30	--	<20
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	<1000	<1000	<1000	2000	<1000	<1000	<1000	<1000	<1000	<1000	--	--	<1000	--	<1000	--	<1000
Chemical Oxygen Demand	ug/l	--	21000	5000	<5000	15000	<5000	<5000	19000	<5000	19000	<5000	--	--	--	--	--	--	--
Chloride	ug/l	--	36000	26000	28000	32000	29000	35000	62000	39000	36000	35000	--	--	46000	--	32000	--	41000
Color	color unit	--	4	5	6	4	9	9	18	24	27	6	--	--	--	--	--	--	--
Conductivity	uS/cm	--	556	562	545	565	553	574	683	550	526	527	--	--	295	--	310	--	620
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3900	--	1700
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	251000	259000	242000	272000	242000	266000	279000	221000	206000	229000	--	--	--	--	272900	--	301100
Nitrate	ug/l	--	<100	150	170	170	230	190	<100	<100	<100	<100	--	--	170	--	520	--	980
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	--	--	--	--	--	--	--
Nitrogen	ug/l	--	210	190	120	360	270	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	250	400	710	730	130	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [8]	10	10	10	90	50	30	560	130	230	40	--	--	30	--	30	--	50
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	--	--	--	--	20000	--	--	--	--	--	--	--	14000	--	20000	--	16000
Tannin & Lignin	ug/l	--	<100	200	<100	200	400	100	400	400	400	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	361400	365300	354250	367250	359450	373100	443950	357500	341900	--	--	--	192000	--	389000	--	424000
Total Organic Carbon	ug/l	--	2100	2100	2700	3600	2800	--	6800	6900	8100	2000	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	3000	25000	4000	282000	3000	2000	219000	37000	31000	2000	--	--	2000	--	5000	--	3000
Turbidity	ntu	-- [10]	0.3	1.8	1.2	30	0.4	0.4	>100	33.1	62.8	0.4	--	--	--	--	--	--	--
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	<50	<50	<50	**290**	<50	<10	**1380**	**490**	**650**	<10	--	--	<10	--	<10	--	<10
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	60	70	50	60	60	--	--	--	--	--	80	--	70	--	70
Beryllium	ug/l	-- [12]	--	--	<2	<2	<2	<1	<1	--	--	--	--	--	<1	--	<1	--	<1
Boron	ug/l	200 [13]	--	--	10	<50	<50	<50	20	--	--	--	--	--	20	--	30	--	40
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	--	--	0.7	--	<0.1	--	<0.1
Calcium	ug/l	--	74000	74000	69000	79000	69000	77000	77000	59000	56000	67000	--	--	--	--	78000	--	86000
Chromium	ug/l	-- [14]	<10	<10	8	2	<1	<5	4	1	6	<1	--	--	1	--	2	--	1
Cobalt	ug/l	0.9	--	--	3	0.8	<0.2	<0.2	1.9	--	--	--	--	--	<0.2	--	0.2	--	0.2
Copper	ug/l	5	<1	1	11	3	2	<5	5	2	2	<1	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	80	270	60	2160	90	40	1920	580	570	60	--	--	140	--	130	--	70
Lead	ug/l	-- [16]	--	--	<1	<1	<1	<1	2	<1	<1	<1	--	--	<1	--	<1	--	<1
Magnesium	ug/l	--	16000	18000	17000	18000	17000	18000	21000	18000	16000	15000	--	--	--	--	19000	--	21000
Manganese	ug/l	--	--	--	10	110	10	13	100	--	--	--	--	--	--	--	20	--	30
Mercury, dissolved	ug/l	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	<0.1	--	<0.1	--	<0.1
Molybdenum	ug/l	40	--	--	<10	<10	<10	<5	<5	--	--	--	--	--	<5	--	<5	--	<5
Nickel	ug/l	25	<10	<10	<10	<10	<10	<5	<5	<5	<5	<5	--	--	<5	--	<5	--	<5
Potassium	ug/l	--	--	--	3000	3000	3000	4000	5000	3000	3000	3000	--	--	--	--	3000	--	4000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--	<1	--	<1	--	<1
Silicon	ug/l	--	--	--	3050	5080	3150	3900	8600	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	<0.1	--	<0.1	--	<0.1
Sodium	ug/l	--	15000	19000	17000	15000	17000	25000	36000	26000	24000	17000	--	--	--	--	18000	--	20000
Strontium	ug/l	--	--	--	320	290	300	331	469	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	--	--	<1	<1	<1	<1	<1	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	<10	10	--	<10	30	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	1	3	<1	<5	7	--	--	--	--	--	2	--	4	--	1
Zinc	ug/l	30	<10	<10	<10	<10	<10	<5	10	<10	<10	<10	--	--	<10	--	<10	--	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	--	--	<1	<1	<1	<1	<1	<1	<1	<1	--	--	--	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	-- [6]	12500	14300	11200	11500	--	--	--	--	--	--	--	--	10020	--	12910	--	11210
pH (Field)	-	8.5	7.87	8.01	8.15	8.05	8.55	7.98	8.12	7.85	7.8	7.86	--	--	7.1	--	7.5	--	7.3
Temperature (Field)	deg c	-- [9]	--	--	--	--	--	--	--	--	--	--	--	--	8	--	4	--	2
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [2] [3]	SW-11 22-Apr-2007	SW-11 31-Aug-2007	SW-11 26-Nov-2007	SW-11 04-May-2008	SW-11 14-Aug-2008	SW-11 28-Nov-2008	SW-11 24-Apr-2009	SW-11 25-Aug-2009	SW-11 30-Nov-2009	SW-11 17-May-2010	SW-11 21-Aug-2010 [5]	SW-11 27-Nov-2010	SW-11 09-May-2011	SW-11 08-Sep-2011	SW-11 29-Nov-2011	SW-11 06-May-2012	SW-11 22-Aug-2012
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	272000	285000	260000	240000	239000	282000	262000	277000	289000	251000	290000	292000	240000	295000	290000	308000	299000
Ammonia, unionized	ug/l	20	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0
Ammonia Nitrogen	ug/l	--	<20	40	<20	60	<20	20	<20	<20	<20	<20	<20	<20	<20	<20	30	<20	<20
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	1000	<1000	<1000	1000	2000	2000	<1000	2000	<1000	2000	<1000	<1000	1000	<1000	1000	2000	<1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	38000	39000	35000	31000	37000	39000	38000	42000	37000	47000	41000	111000	68000	84000	60000	47000	51000
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	400	465	265	405	310	380	616	667	677	633	687	940	662	819	751	724	722
Dissolved Organic Carbon	ug/l	--	3600	2700	2400	2400	2400	1700	2500	2700	2400	2500	1900	2000	2900	2200	2600	2900	1900
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	288600	328400	269500	273000	277000	284000	274000	285000	307000	261000	309000	363000	270000	351000	323000	303000	301000
Nitrate	ug/l	--	470	570	950	910	560	680	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	630	440	620	380	310	820	440	270	370	410	270
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [6]	60	40	<10	90	<10	<10	<10	60	10	<10	10	<10	20	<10	20	<10	<10
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	19000	23000	21000	18000	18000	18000	18000	18000	21000	17000	18000	26000	17000	20000	21000	23000	22000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	414000	447000	410000	376000	391000	431000	400000	434000	440000	411000	447000	611000	430000	532000	488000	471000	469000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	7000	5000	<2000	7000	<2000	<2000	<2000	34000	4000	5000	6000	3000	<2000	<2000	11000	<2000	4000
Turbidity	ntu	-- [10]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	<10	10	<10	10	20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	70	110	80	80	80	90	80	90	90	40	40	60	50	60	80	90	60
Beryllium	ug/l	-- [12]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	ug/l	200 [13]	30	40	30	20	20	20	30	30	30	30	30	30	20	30	40	30	30
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	81000	92000	75000	73000	78000	79000	75000	81000	85000	73000	89000	104000	75000	101000	93000	85000	86000
Chromium	ug/l	-- [14]	2	2	<1	2	1	2	2	3	2	2	2	2	3	3	2	4	2
Cobalt	ug/l	0.9	0.2	0.2	<0.2	0.3	0.2	<0.2	0.2	0.3	0.2	<0.2	0.2	0.2	0.2	<0.2	0.4	0.3	<0.2
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	<50	<50	<50	<50	<50	<50	<50
Iron	ug/l	300	90	100	<30	100	60	<30	30	200	40	<30	<30	<30	30	<30	320	70	60
Lead	ug/l	-- [16]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Magnesium	ug/l	--	21000	24000	20000	22000	20000	21000	21000	20000	23000	19000	21000	25000	20000	24000	22000	22000	21000
Manganese	ug/l	--	40	40	10	20	30	10	20	50	20	<10	20	<10	20	10	80	60	<10
Mercury, dissolved	ug/l	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	3000	4000	3000	4000	5000	4000	3000	4000	4000	4000	4000	5000	4000	5000	4000	3000	4000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	19000	22000	20000	21000	21000	22000	20000	22000	23000	26000	23000	56000	36000	46000	36000	26000	33000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	5	4	1	3	<1	6	2	5	3	4	4	2	2	3	4	3	3
Zinc	ug/l	30	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	560	400	485	605	580	560	655	630	660	620	720
Dissolved Oxygen (Field)	ug/l	-- [6]	11380	11910	11220	11110	11010	13010	10280	12030	10890	8330	7210	10780	11010	9820	10880	10620	4100
pH (Field)	-	8.5	7.4	7.3	7.6	7.4	7.3	7.4	8.3	7.3	8.2	8.2	8	8	7.7	7.8	7.8	7.8	7.6
Temperature (Field)	deg c	-- [9]	3	17	3	6	14	2	7	18	5	11	23	3	8	20	6	9	22
Discharge	(L/s)																		3.8

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	(3) (5) PWQO	SW-11 12-Nov-2012 (21)	SW-11 12-Jun-2013	SW-11 20-Aug-2013	SW-11 24-Oct-2013												
Bacterial																		
Coliform	cfu/100ml	--	--	--	--	--												
Escherichia coli	cfu/100ml	--	--	--	--	--												
Fecal Coliform	cfu/100ml	--	--	--	--	--												
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--												
General Chemistry																		
Alkalinity (Total as CaCO3)	ug/l	--(4)	318000	258000	262000	301000												
Ammonia, unionized	ug/l	20	0	<20	<20	<20												
Ammonia Nitrogen	ug/l	--	<20	200	30	50												
Bicarbonate	ug/l	--	--															
Biologic Oxygen Demand, Five Day	ug/l	--	4000	<1000	1000	<1000												
Chemical Oxygen Demand	ug/l	--	--															
Chloride	ug/l	--	87000	54000	42000	41000												
Color	color unit	--	--															
Conductivity	uS/cm	--	863	666	644	676												
Dissolved Organic Carbon	ug/l	--	1500	2500	2100	1700												
Fluoride	ug/l	--	--															
Hardness, Calcium Carbonate	ug/l	--	339000	279000	255000	306000												
Nitrate	ug/l	--	--															
Nitrate as N	ug/l	--	450	350	310	440												
Nitrite	ug/l	--	--															
Nitrogen	ug/l	--	--															
Nitrogen, Total Kjeldahl	ug/l	--	--															
pH	-	8.5	--	8.23	8.16	8.17												
Phosphate	ug/l	--	--															
Phosphorus	ug/l	--(6)	<10	<10	13	<10												
Silica	ug/l	--	--															
Sulfate	ug/l	--	25000	20000	21000	22000												
Tannin & Lignin	ug/l	--	--															
Total Dissolved Solids	ug/l	--	561000	433000	419000	439000												
Total Organic Carbon	ug/l	--	--															
Total Suspended Solids	ug/l	--	<2000	<2000	<2000	<2000												
Turbidity	ntu	--(10)	--															
Metals																		
Aluminum	ug/l	--(11)	--	40	30	10												
Aluminum, dissolved	ug/l	--(11)	<10	<10	<10	<10												
Arsenic	ug/l	100	--															
Barium	ug/l	--	90	60	60	70												
Beryllium	ug/l	--(12)	<0.5	<0.5	<0.5	<0.5												
Boron	ug/l	200(13)	30	20	30	30												
Cadmium	ug/l	0.2(13)	<0.1	<0.1	<0.1	<0.1												
Calcium	ug/l	--	96000	77000	64000	83000												
Chromium	ug/l	--(14)	4	3	4	8												
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	<0.2												
Copper	ug/l	5	--															
Hexavalent Chromium	ug/l	1(15)	<50	<0.5	<0.5	<10												
Iron	ug/l	300	<30	0.09	80	50												
Lead	ug/l	--(16)	<1	<1	<1	<1												
Magnesium	ug/l	--	24000	21000	23000	24000												
Manganese	ug/l	--	<10	20	<10	<10												
Mercury, dissolved	ug/l	0.2	<0.1	<0.1	<0.1	<0.1												
Molybdenum	ug/l	40	<5	<5	<5	<5												
Nickel	ug/l	25	<5	<5	<5	<5												
Potassium	ug/l	--	4000	3000	4000	4000												
Selenium	ug/l	100	<10	<1	<1	<10												
Silicon	ug/l	--	--															
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1												
Sodium	ug/l	--	41000		29000	27000												
Strontium	ug/l	--	--															
Sulfur	ug/l	--	--															
Thallium	ug/l	0.3(17)	--															
Tin	ug/l	--	--															
Titanium	ug/l	--	--															
Vanadium	ug/l	6	3	2	4	3												
Zinc	ug/l	30	<10	<10	<10	<10												
Phenols																		
Phenolics, Total Recoverable	ug/l	1(18)	--															
Field Measurements																		
Ammonia, unionized (Field)	ug/l	20	--															
Conductivity (Field)	uS/cm	--	600	648	604	648												
Dissolved Oxygen (Field)	ug/l	--(8)	10880	3150	7010	10040												
pH (Field)	-	8.5	7.8	8.3	8.2	8.0												
Temperature (Field)	deg c	--(9)	7	19.3	18.8	8.5												
Discharge	(L/s)		1	3.8	1.0	2.0												

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [2] [3]	SW-12 01-Aug-1993	SW-12 01-Sep-1993	SW-12 01-Nov-1993	SW-12 01-Jun-1994	SW-12 01-Aug-1994	SW-12 01-Oct-1994	SW-12 01-Dec-1994	SW-12 01-May-1995	SW-12 01-Sep-1995	SW-12 01-May-1996	SW-12 01-Sep-1996	SW-12 01-Jun-1997	SW-12 01-Aug-1997	SW-12 01-Sep-1998	SW-12 01-Nov-1998	SW-12 16-Oct-1999	SW-12 01-Jul-2000
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	150	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	152	--	--	--	--	--	--	--	--	--	--	--	70
Fecal Coliform	cfu/100ml	--	890	--	3400	140	--	--	--	--	--	--	--	--	--	--	--	--	170
Fecal Streptococci, Kf Agar	cfu/100ml	--	240	--	320	150	--	--	--	--	--	--	--	--	--	--	--	--	1040
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	280000	267000	249000	282000	285000	--	285000	277000	282000	258000	273000	279000	270000	383000	280000	288000	297000
Ammonia, unionized	ug/l	20	<100	<20	<100	<100	<100	--	--	<20	<20	<2	<20	<20	<20	<20	30	<20	<20
Ammonia Nitrogen	ug/l	--	<100	200	<100	<100	<100	--	<100	<10	20	60	20	<100	130	<20	<100	<20	110
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	<1000	<1000	<1000	<1000	<1000	--	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	1000
Chemical Oxygen Demand	ug/l	--	24000	<5000	18700	6700	4900	3700	14000	5000	5000	21000	5000	9000	11000	<3000	5000	11000	10000
Chloride	ug/l	--	23000	31000	31000	39000	47000	--	25100	24000	25000	26000	24000	31000	53000	31000	28000	29000	37000
Color	color unit	--	4	6	6	3	4	--	6.2	5	4	7	2	3	4	2	2	6	4
Conductivity	uS/cm	--	585	595	580	651	636	--	--	611	627	585	615	621	608	624	638	624	651
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	317000	271000	288000	333000	297000	--	264000	304000	330000	316000	318000	290000	297000	340000	340000	341000	316000
Nitrate	ug/l	--	480	200	600	800	780	--	840	510	460	450	390	270	340	<330	410	340	250
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	180	--	<100	<100	<100	<100	<10	<100	<100	<100	<100	<100	<100
Nitrogen	ug/l	--	840	--	<100	370	280	--	930	300	200	300	230	250	270	200	250	--	480
Nitrogen, Total Kjeldahl	ug/l	--	--	570	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [8]	40	60	<100	<10	60	--	<10	<10	10	20	50	20	50	20	30	40	50
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	1600	--	--	24300	23500	--	27500	23000	22000	24000	19000	21000	19000	20000	25000	20000	--
Tannin & Lignin	ug/l	--	--	220	600	180	510	120	--	--	--	--	--	--	--	--	--	--	<100
Total Dissolved Solids	ug/l	--	380250	386750	377000	423150	413400	--	--	397150	407550	380250	399750	403650	395200	405600	414700	405600	423150
Total Organic Carbon	ug/l	--	1800	2200	3800	2300	2800	2100	1900	2900	2600	4600	2900	3000	2700	2600	1800	3300	3000
Total Suspended Solids	ug/l	--	13000	2000	6000	7000	57000	--	6000	<2000	5000	8000	13000	3000	31000	4000	<2000	13000	9000
Turbidity	ntu	-- [10]	1	0.4	3.9	4	32	--	0.5	0.7	1.3	2	1.7	4.7	4.3	1	0.5	1.6	6.5
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	**357**	--	**100**	**220**	**300**	--	**500**	<30	<30	**100**	**240**	50	**100**	<30	<30	<30	**170**
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	80	--	90
Beryllium	ug/l	-- [12]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<10	--	<2
Boron	ug/l	200 [13]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20	--	40
Cadmium	ug/l	0.2 [13]	0.1	<10	0.27	<10	<0.1	--	0.2	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.1
Calcium	ug/l	--	89900	77000	80000	94000	81000	--	73000	86000	91000	90000	86000	78000	81000	95000	95000	97000	87000
Chromium	ug/l	-- [14]	15	<0.1	<10	<10	<10	--	<10	<10	<10	<10	20	10	<10	<10	<10	<10	<10
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.4	--	<0.4
Copper	ug/l	5	**8**	<1	3	1.9	1.5	--	5	<5	<5	8	18	<5	<5	<5	<5	<5	1
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	983	50	830	900	802	--	950	80	180	140	270	140	360	200	160	110	530
Lead	ug/l	-- [16]	124	<1	1	0.7	<0.2	--	<0.2	<2	<2	<2	<2	<2	<2	<2	<2	<2	**<10**
Magnesium	ug/l	--	22500	19000	21100	23900	23000	--	19700	21000	25000	22000	25000	23000	23000	25000	25000	24000	24000
Manganese	ug/l	--	100	--	--	77000	102	--	102000	--	--	--	--	--	--	--	40	--	80
Mercury, dissolved	ug/l	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<10	--	<10
Nickel	ug/l	25	<20	<5	<20	<20	<20	--	<20	<10	<10	30	<10	10	<10	<10	<10	<10	<10
Potassium	ug/l	--	3110	3000	3800	3300	3800	--	3360	4000	3000	3000	3000	3000	3000	2000	2000	4000	3000
Selenium	ug/l	100	2	<1	3	<1	<1	--	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5200	--	5950
Silver	ug/l	0.1	0.4	<0.1	3	0.2	0.6	--	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	11300	17000	12000	13600	11600	--	10500	12000	13000	13000	14000	13000	14000	15000	13000	18000	17000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	465	--	454
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8000	--	7000
Thallium	ug/l	0.3 [17]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<10	--	<1
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<50	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<10	--	<10
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<10	--	<1
Zinc	ug/l	30	279	<10	<10	22	<10	--	<10	<10	<10	<10	20	10	<10	<10	<10	<10	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	<2	<1	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	-- [6]	12200	--	10300	--	--	--	--	9700	8900	9600	--	9500	8300	10000	14000	8700	9300
pH (Field)	-	8.5	7.66	8.02	8.28	8.22	8.04	--	8.2	8.14	8.28	7.99	8.11	8.23	8.07	8.06	8.31	7.99	7.23
Temperature (Field)	deg c	-- [9]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	[2] [1] PWQO	SW-12 22-Oct-2000	SW-12 01-Dec-2000	SW-12 28-Apr-2001	SW-12 07-Sep-2001	SW-12 06-Nov-2001	SW-12 17-Apr-2002	SW-12 02-Oct-2002	SW-12 01-Apr-2003	SW-12 01-Oct-2003	SW-12 01-Dec-2003	SW-12 04-Jun-2004	SW-12 04-Jul-2004	SW-12 04-Oct-2004	SW-12 13-Jun-2005	SW-12 31-Aug-2005	SW-12 30-Oct-2005	SW-12 31-Dec-2005 [20]
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	7	4	0	68	30	0	--	<10	--	90	--	--	40	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	0	--	50	3	--	<10	--	--	130	220	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	11	--	26	-- [3]	67	10	--	--	70	370	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	287000	280000	283000	281000	277000	274000	277000	273000	208000	217000	226000	220000	267000	298000	272000	289000	--
Ammonia, unionized	ug/l	20	<20	<20	<20	<20	<20	<20	0	<20	<20	<20	<20	<20	<20	0	0	0	--
Ammonia Nitrogen	ug/l	--	<20	<20	<20	<20	<20	<20	<20	<20	20	<20	60	180	200	20	50	90	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	<1000	<1000	<1000	<1000	2000	<1000	3000	<1000	2000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	--
Chemical Oxygen Demand	ug/l	--	24000	<4000	<5000	5000	5000	17000	<5000	<5000	15000	9000	7000	16000	<5000	--	--	--	--
Chloride	ug/l	--	40000	31000	30000	--	29000	31000	--	32000	78000	52000	40000	37000	31000	38000	37000	39000	--
Color	color unit	--	3	5	8	--	19	16	6	9	26	15	26	26	6	--	--	--	--
Conductivity	uS/cm	--	637	630	619	--	632	618	628	630	707	602	545	534	595	700	600	285	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	315000	281000	281000	284000	284000	283000	285000	313000	270000	246000	219000	208000	271000	--	--	--	--
Nitrate	ug/l	--	160	270	240	220	190	330	140	310	<100	<100	<100	100	200	400	290	330	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	--	--	--	--
Nitrogen	ug/l	--	160	190	200	180	1030	390	150	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	400	310	620	370	660	940	570	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [6]	10	10	<10	40	180	50	--	36	220	200	170	290	60	60	200	40	--
Silica	ug/l	--	--	--	--	--	--	--	<20	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	--	--	--	19000	--	29000	18000	--	--	--	--	--	--	19000	19000	20000	--
Tannin & Lignin	ug/l	--	<100	<100	100	--	200	100	--	<100	500	300	400	300	--	--	--	--	--
Total Dissolved Solids	ug/l	--	414050	409500	402350	--	410800	401700	408200	409500	459550	391300	354250	347100	386750	455000	390000	185000	--
Total Organic Carbon	ug/l	--	2200	2200	3200	2500	3200	4800	3000	3100	6400	5000	6600	7600	2200	--	--	--	--
Total Suspended Solids	ug/l	--	7000	4000	2000	20000	147000	15000	--	6000	29000	54000	36000	48000	2000	8000	127000	<2000	--
Turbidity	ntu	-- [10]	0.3	1.7	0.4	1.1	50	1.2	<0.001	0.6	50	43	32.9	63.2	0.4	--	--	--	--
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	<50	<50	<50	<50	**590**	<50	<10	10	**560**	**530**	**410**	**710**	<10	<10	1080	<10	--
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	80	90	120	70	80	80	50	40	--	--	--	90	--	90	--
Beryllium	ug/l	-- [12]	--	--	<2	<2	<2	<2	<1	<1	<1	<1	--	--	--	<1	--	<1	--
Boron	ug/l	200 [13]	--	--	30	30	<50	<50	<50	<50	20	10	--	--	--	40	70	30	--
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	0.3	--	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	--
Calcium	ug/l	--	88000	76000	81000	79000	79000	82000	78000	89000	75000	69000	58000	57000	77000	--	--	--	--
Chromium	ug/l	-- [14]	<10	<10	7	2	2	<1	<1	<5	5	35	2	6	<1	2	--	1	--
Cobalt	ug/l	0.9	--	--	2.2	--	1.7	0.2	<0.2	<0.2	0.5	0.7	--	--	--	0.2	--	<0.2	--
Copper	ug/l	5	<1	1	10	1	10	2	<1	<5	3	2	2	2	<1	--	--	--	--
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	100	300	60	540	5620	30	60	90	680	700	530	630	50	<30	1210	40	--
Lead	ug/l	-- [16]	--	--	2	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	--
Magnesium	ug/l	--	23000	22000	19000	21000	21000	19000	22000	22000	20000	18000	18000	16000	19000	--	--	--	--
Manganese	ug/l	--	--	--	30	110	270	20	28	30	27	40	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2	<0.1	0.1	10	--	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	--
Molybdenum	ug/l	40	--	--	--	20	<10	<10	<5	<5	<5	<5	<5	--	--	<5	--	<5	--
Nickel	ug/l	25	<10	<10	<10	<10	<10	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--
Potassium	ug/l	--	--	--	3000	3000	3000	3000	3000	4000	7000	4000	4000	3000	3000	--	--	--	--
Selenium	ug/l	100	<1	<1	<1	--	<1	<1	--	<1	<1	<1	<1	<1	<1	<1	--	<1	--
Silicon	ug/l	--	--	--	3980	6110	6300	4210	4600	4500	5700	7000	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	--
Sodium	ug/l	--	13000	16000	15000	17000	18000	14000	15000	23000	47000	31000	28000	24000	17000	--	--	--	--
Strontium	ug/l	--	--	--	428	442	396	405	423	428	506	421	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	--	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	<10	<10	20	--	<10	<10	40	30	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	3	1	5	<1	<5	<5	5	3	--	--	--	5	--	2	--
Zinc	ug/l	30	<10	<10	<10	<10	10	<10	30060	<5	<10	<10	<10	<10	<10	<10	50	<10	--
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	--	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	-- [6]	12800	14200	10800	--	11200	--	--	--	9000	--	--	--	--	8150	7300	11620	--
pH (Field)	-	8.5	8.01	8.07	8.17	8.17	8.1	8.58	8.19	8.05	8.09	8.06	7.79	7.74	8.02	6.6	6.3	7.3	--
Temperature (Field)	deg c	-- [9]	--	--	--	--	--	--	3	--	--	--	--	--	--	12.4	16.7	6	--
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	[3] [5] PWQO	SW-12 08-Apr-2006	SW-12 15-Aug-2006	SW-12 25-Nov-2006	SW-12 22-Apr-2007	SW-12 31-Aug-2007	SW-12 26-Nov-2007	SW-12 04-May-2008	SW-12 14-Aug-2008	SW-12 28-Nov-2008	SW-12 24-Apr-2009	SW-12 25-Aug-2009	SW-12 30-Nov-2009	SW-12 17-May-2010	SW-12 21-Aug-2010	SW-12 27-Nov-2010	SW-12 09-May-2011	SW-12 08-Sep-2011
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	--[4]	246000	294000	289000	271000	285000	281000	263000	270000	295000	275000	302000	294000	277000	299000	308000	290000	322000
Ammonia, unionized	ug/l	20	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	1
Ammonia Nitrogen	ug/l	--	30	30	<20	<20	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	2000	<1000	<1000	1000	<1000	<1000	1000	2000	<1000	2000	1000	<1000	1000	<1000	<1000	<1000	<1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	35000	42000	36000	37000	40000	36000	30000	35000	35000	33000	37000	34000	42000	40000	78000	52000	64000
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	365	695	340	280	480	380	400	340	445	622	681	672	653	694	828	687	790
Dissolved Organic Carbon	ug/l	--	2600	2700	2400	4300	2700	3300	3600	3100	2200	3500	3000	3100	2900	2500	2600	3400	2400
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	261300	294500	328400	293600	330900	291100	288000	305000	295000	267000	296000	299000	285000	323000	341000	296000	329000
Nitrate	ug/l	--	730	470	590	510	570	610	490	470	460	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	370	370	410	310	310	730	310	290
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	--[6]	30	20	60	40	30	20	<10	20	10	<10	20	<10	10	20	<10	20	<10
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	16000	21000	21000	19000	23000	21000	20000	19000	19000	18000	19000	20000	18000	17000	24000	22000	23000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	380000	452000	442000	413000	446000	430000	398000	416000	439000	404000	443000	437000	424000	451000	538000	447000	514000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	2000	3000	24000	36000	11000	<2000	3000	5000	<2000	2000	4000	2000	3000	6000	3000	4000	<2000
Turbidity	ntu	--[10]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																			
Aluminum	ug/l	--[11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	--[11]	<10	30	30	<10	10	<10	10	50	<10	<10	<10	<10	<10	<10	<10	<10	<10
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	50	110	80	70	110	90	80	80	90	80	90	80	70	70	80	60	70
Beryllium	ug/l	--[12]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<0.5
Boron	ug/l	200[13]	20	40	40	30	40	30	30	30	40	30	40	40	40	30	30	30	30
Cadmium	ug/l	0.2[13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	75000	85000	92000	83000	93000	82000	79000	86000	82000	74000	84000	82000	81000	93000	97000	84000	92000
Chromium	ug/l	--[14]	3	2	1	2	3	<1	2	1	3	2	2	1	2	<1	3	2	3
Cobalt	ug/l	0.9	<0.2	<0.2	0.3	0.2	0.2	<0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1[15]	--	--	--	--	--	--	--	--	--	--	--	--	--	<50	<50	<50	<50
Iron	ug/l	300	<30	<30	180	110	100	50	80	150	180	80	140	80	80	140	100	60	60
Lead	ug/l	--[16]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Magnesium	ug/l	--	18000	20000	24000	21000	24000	21000	22000	22000	22000	20000	21000	23000	20000	22000	24000	21000	24000
Manganese	ug/l	--	10	30	40	40	40	30	40	60	70	40	60	30	40	60	40	40	30
Mercury, dissolved	ug/l	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	3000	3000	3000	3000	4000	3000	3000	4000	3000	3000	3000	3000	4000	4000	4000	3000	4000
Selenium	ug/l	100	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	20000	19000	20000	20000	22000	18000	20000	20000	20000	18000	20000	19000	23000	21000	37000	28000	33000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3[17]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	5	2	2	6	4	1	4	<1	7	2	4	2	4	2	3	2	3
Zinc	ug/l	30	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1[18]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	570	405	555	6.11	550	605	530	580
Dissolved Oxygen (Field)	ug/l	--[6]	12120	10890	11010	12880	12020	11800	10780	12030	13710	10420	12610	11090	10010	7440	13050	12040	9930
pH (Field)	-	8.5	7.5	7.3	7.3	7.5	7.4	7.3	7.3	7.4	7.3	8.3	7.4	8.1	8.3	8	8.1	8	7.9
Temperature (Field)	deg c	--[9]	4	14	2	2	16	2	7	16	3	9	17	5	14	23	3	9	20
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	[2] [1] PWQO	SW-12 29-Nov-2011	SW-12 06-May-2012	SW-12 22-Aug-2012	SW-12 12-Nov-2012	SW-12 12-Jun-2013	SW-12 20-Aug-2013	SW-12 20-Aug-2013	SW-12 24-Oct-2013									
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--									
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--									
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--									
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--									
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	291000	308000	324000	334000	289000	309000	313000	330000									
Ammonia, unionized	ug/l	20	0	0	1	0	<20	<20	<20	<20									
Ammonia Nitrogen	ug/l	--	20	<20	60	<20	<20	<20	20	30									
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--									
Biologic Oxygen Demand, Five Day	ug/l	--	1000	1000	<1000	1000	1000	3000	1000	<1000									
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--									
Chloride	ug/l	--	61000	47000	44000	66000	46000	39000	39000	38000									
Color	color unit	--	--	--	--	--	--	--	--	--									
Conductivity	uS/cm	--	753	719	741	824	702	708	714	725									
Dissolved Organic Carbon	ug/l	--	2400	2800	2200	2100	3100	2300	2300	2300									
Fluoride	ug/l	--	--	--	--	--	--	--	--	--									
Hardness, Calcium Carbonate	ug/l	--	325000	329000	327000	353000	324000	304000	302000	339000									
Nitrate	ug/l	--	--	--	--	--	--	--	--	--									
Nitrate as N	ug/l	--	360	470	280	430	340	280	280	340									
Nitrite	ug/l	--	--	--	--	--	--	--	--	--									
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--									
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--									
pH	-	8.5	--	--	--	--	8.2	8.19	8.2	8.11									
Phosphate	ug/l	--	--	--	--	--	--	--	--	--									
Phosphorus	ug/l	-- [6]	10	<10	<10	<10	<10	20	20	10									
Silica	ug/l	--	--	--	--	--	--	--	--	--									
Sulfate	ug/l	--	22000	23000	24000	27000	24000	24000	24000	24000									
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--									
Total Dissolved Solids	ug/l	--	489000	467000	482000	536000	456000	460000	464000	471000									
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--									
Total Suspended Solids	ug/l	--	12000	<2000	<2000	<2000	<2000	5000	4000	<2000									
Turbidity	ntu	-- [10]	--	--	--	--	--	--	--	--									
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	30	40	40	<10									
Aluminum, dissolved	ug/l	-- [11]	<10	<10	20	<10	<10	<10	<10	<10									
Arsenic	ug/l	100	--	--	--	--	--	--	--	--									
Barium	ug/l	--	80	90	80	100	90	90	90	80									
Beryllium	ug/l	-- [12]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5									
Boron	ug/l	200 [13]	40	30	50	30	40	40	40	30									
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1									
Calcium	ug/l	--	94000	92000	93000	100000	90000	79000	78000	93000									
Chromium	ug/l	-- [14]	2	4	2	2	3	4	4	8									
Cobalt	ug/l	0.9	0.3	0.4	0.3	<0.2	<0.2	0.3	0.3	<0.2									
Copper	ug/l	5	--	--	--	--	--	--	--	--									
Hexavalent Chromium	ug/l	1 [15]	<50	<50	<50	<50	<0.5	<0.5	<0.5	<10									
Iron	ug/l	300	180	70	100	<30	90	140	160	40									
Lead	ug/l	-- [16]	<1	<1	<1	<1	<1	<1	<!	<1									
Magnesium	ug/l	--	22000	24000	23000	25000	24000	26000	26000	26000									
Manganese	ug/l	--	60	50	50	30	30	60	60	30									
Mercury, dissolved	ug/l	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1									
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5	<5	<5									
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5	<5	<5									
Potassium	ug/l	--	4000	3000	4000	4000	3000	3000	3000	4000									
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1	<1	<10									
Silicon	ug/l	--	--	--	--	--	--	--	--	--									
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1									
Sodium	ug/l	--	36000	27000	28000	32000	28000	25000	25000	25000									
Strontium	ug/l	--	--	--	--	--	--	--	--	--									
Sulfur	ug/l	--	--	--	--	--	--	--	--	--									
Thallium	ug/l	0.3 [17]	--	--	--	--	--	--	--	--									
Tin	ug/l	--	--	--	--	--	--	--	--	--									
Titanium	ug/l	--	--	--	--	--	--	--	--	--									
Vanadium	ug/l	6	3	4	3	2	2	3	3	3									
Zinc	ug/l	30	<10	<10	<10	<10	<10	<10	<10	<10									
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	--	--	--	--													
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--													
Conductivity (Field)	uS/cm	--	505	711	700	510	690	670		684									
Dissolved Oxygen (Field)	ug/l	-- [8]	10020	10800	6100	11110	2920	7170		9660									
pH (Field)	-	8.5	7.9	8	7.7	8.1	8.2	8.2		7.9									
Temperature (Field)	deg c	-- [9]	5	8	21	7	15.5	13.9		8.0									
Discharge	(L/s)					1.9	6.1	1.9		2.3									

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [3] [5]	SW-13 01-Nov-1982	SW-13 01-Oct-1983	SW-13 01-Dec-2000
Bacterial					
Coliform	cfu/100ml	--	10000	--	--
Escherichia coli	cfu/100ml	--	--	--	3
Fecal Coliform	cfu/100ml	--	4200	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--
General Chemistry					
Alkalinity (Total as CaCO3)	ug/l	-- [4]	288000	153000	278000
Ammonia, unionized	ug/l	20	--	--	<20
Ammonia Nitrogen	ug/l	--	17400	--	<20
Bicarbonate	ug/l	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	53000	--	<1000
Chemical Oxygen Demand	ug/l	--	352000	82000	5000
Chloride	ug/l	--	22000	14000	29000
Color	color unit	--	159	--	5
Conductivity	uS/cm	--	272	385	599
Dissolved Organic Carbon	ug/l	--	--	--	--
Fluoride	ug/l	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	161000	140000	307000
Nitrate	ug/l	--	<100	--	270
Nitrate as N	ug/l	--	--	--	--
Nitrite	ug/l	--	--	--	<100
Nitrogen	ug/l	--	43500	--	260
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--
pH	-	8.5	--	--	--
Phosphate	ug/l	--	100	--	--
Phosphorus	ug/l	-- [6]	13300	--	20
Silica	ug/l	--	2000	--	--
Sulfate	ug/l	--	23000	--	--
Tannin & Lignin	ug/l	--	--	--	<100
Total Dissolved Solids	ug/l	--	176800	250250	389350
Total Organic Carbon	ug/l	--	--	--	2000
Total Suspended Solids	ug/l	--	--	--	2000
Turbidity	ntu	-- [10]	--	--	1.8
Metals					
Aluminum	ug/l	-- [11]	--	--	--
Aluminum, dissolved	ug/l	-- [11]	**13000**	--	<50
Arsenic	ug/l	100	--	--	--
Barium	ug/l	--	--	--	--
Beryllium	ug/l	-- [12]	--	--	--
Boron	ug/l	200 [13]	--	--	--
Cadmium	ug/l	0.2 [13]	<10	--	<0.1
Calcium	ug/l	--	51000	--	85000
Chromium	ug/l	-- [14]	18	--	<10
Cobalt	ug/l	0.9	30	--	--
Copper	ug/l	5	20	--	1
Hexavalent Chromium	ug/l	1 [15]	--	--	--
Iron	ug/l	300	6100	--	110
Lead	ug/l	-- [16]	27	--	--
Magnesium	ug/l	--	9000	--	23000
Manganese	ug/l	--	2700	--	--
Mercury, dissolved	ug/l	0.2	--	--	<0.1
Molybdenum	ug/l	40	--	--	--
Nickel	ug/l	25	6	--	<10
Potassium	ug/l	--	80000	--	--
Selenium	ug/l	100	--	--	<1
Silicon	ug/l	--	--	--	--
Silver	ug/l	0.1	--	--	<0.1
Sodium	ug/l	--	7000	--	16000
Strontium	ug/l	--	--	--	--
Sulfur	ug/l	--	--	--	--
Thallium	ug/l	0.3 [17]	--	--	--
Tin	ug/l	--	--	--	--
Titanium	ug/l	--	--	--	--
Vanadium	ug/l	6	--	--	--
Zinc	ug/l	30	61	--	<10
Phenols					
Phenolics, Total Recoverable	ug/l	1 [18]	--	--	--
Field Measurements					
Ammonia, unionized (Field)	ug/l	20	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--
Dissolved Oxygen (Field)	ug/l	-- [8]	--	--	14200
pH (Field)	-	8.5	7.5	7.5	8.01
Temperature (Field)	deg c	-- [9]	--	--	--
Discharge	(L/s)				

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	[2] [1] PWQO	SW-14 01-Nov-1982	SW-14 01-Oct-1983	SW-14 01-Mar-1988
Bacterial					
Coliform	cfu/100ml	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--
General Chemistry					
Alkalinity (Total as CaCO3)	ug/l	--[4]	20200	14000	--
Ammonia, unionized	ug/l	20	39400	--	--
Ammonia Nitrogen	ug/l	--	<100	--	4700
Bicarbonate	ug/l	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	29000	--	800
Chemical Oxygen Demand	ug/l	--	350000	459000	100000
Chloride	ug/l	--	75000	133000	323000
Color	color unit	--	108	--	--
Conductivity	uS/cm	--	342	520	1900
Dissolved Organic Carbon	ug/l	--	--	--	--
Fluoride	ug/l	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	182000	215000	--
Nitrate	ug/l	--	<100	--	200
Nitrate as N	ug/l	--	--	--	--
Nitrite	ug/l	--	--	--	46300
Nitrogen	ug/l	--	3500	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--
pH	-	8.5	--	--	--
Phosphate	ug/l	--	180	--	--
Phosphorus	ug/l	--[9]	660	--	--
Silica	ug/l	--	404000	--	--
Sulfate	ug/l	--	13000	--	--
Tannin & Lignin	ug/l	--	--	--	--
Total Dissolved Solids	ug/l	--	222300	--	338000
Total Organic Carbon	ug/l	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--
Turbidity	ntu	--[10]	19	--	--
Metals					
Aluminum	ug/l	--[11]	--	--	--
Aluminum, dissolved	ug/l	--[11]	270	--	--
Arsenic	ug/l	100	--	--	--
Barium	ug/l	--	--	--	--
Beryllium	ug/l	--[12]	--	--	--
Boron	ug/l	200[13]	--	--	--
Cadmium	ug/l	0.2[13]	<2	--	--
Calcium	ug/l	--	54000	--	--
Chromium	ug/l	--[14]	8	--	--
Cobalt	ug/l	0.9	3	--	--
Copper	ug/l	5	68	--	--
Hexavalent Chromium	ug/l	1[15]	--	--	--
Iron	ug/l	300	700	--	250
Lead	ug/l	--[16]	23	--	--
Magnesium	ug/l	--	12000	--	--
Manganese	ug/l	--	250	--	--
Mercury, dissolved	ug/l	0.2	--	--	--
Molybdenum	ug/l	40	--	--	--
Nickel	ug/l	25	93	--	--
Potassium	ug/l	--	5000	--	--
Selenium	ug/l	100	--	--	--
Silicon	ug/l	--	--	--	--
Silver	ug/l	0.1	--	--	--
Sodium	ug/l	--	3000	--	--
Strontium	ug/l	--	--	--	--
Sulfur	ug/l	--	--	--	--
Thallium	ug/l	0.3[17]	--	--	--
Tin	ug/l	--	--	--	--
Titanium	ug/l	--	--	--	--
Vanadium	ug/l	6	--	--	--
Zinc	ug/l	30	95	--	--
Phenols					
Phenolics, Total Recoverable	ug/l	1[18]	44	55	--
Field Measurements					
Ammonia, unionized (Field)	ug/l	20	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--
Dissolved Oxygen (Field)	ug/l	--[8]	600	--	--
pH (Field)	-	8.5	6.1	5.7	7.2
Temperature (Field)	deg c	--[9]	--	--	--
Discharge	(L/s)				

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	[3] [1] PWQO	SW-16 01-Nov-1982																	
Bacterial																				
Coliform	cfu/100ml	--	--																	
Escherichia coli	cfu/100ml	--	--																	
Fecal Coliform	cfu/100ml	--	1800																	
Fecal Streptococci, Kf Agar	cfu/100ml	--	125																	
General Chemistry			--																	
Alkalinity (Total as CaCO3)	ug/l	-- [4]	291800																	
Ammonia, unionized	ug/l	20	--																	
Ammonia Nitrogen	ug/l	--	<100																	
Bicarbonate	ug/l	--	--																	
Biologic Oxygen Demand, Five Day	ug/l	--	7200																	
Chemical Oxygen Demand	ug/l	--	64000																	
Chloride	ug/l	--	22000																	
Color	color unit	--	46.2																	
Conductivity	uS/cm	--	652																	
Dissolved Organic Carbon	ug/l	--	--																	
Fluoride	ug/l	--	--																	
Hardness, Calcium Carbonate	ug/l	--	304000																	
Nitrate	ug/l	--	100																	
Nitrate as N	ug/l	--	--																	
Nitrite	ug/l	--	--																	
Nitrogen	ug/l	--	2400																	
Nitrogen, Total Kjeldahl	ug/l	--	--																	
pH	-	8.5	--																	
Phosphate	ug/l	--	<20																	
Phosphorus	ug/l	-- [8]	460																	
Silica	ug/l	--	--																	
Sulfate	ug/l	--	40500																	
Tannin & Lignin	ug/l	--	--																	
Total Dissolved Solids	ug/l	--	423800																	
Total Organic Carbon	ug/l	--	--																	
Total Suspended Solids	ug/l	--	--																	
Turbidity	ntu	-- [10]	160																	
Metals																				
Aluminum	ug/l	-- [11]	--																	
Aluminum, dissolved	ug/l	-- [11]	**2700**																	
Arsenic	ug/l	100	--																	
Barium	ug/l	--	--																	
Beryllium	ug/l	-- [12]	--																	
Boron	ug/l	200 [13]	--																	
Cadmium	ug/l	0.2 [13]	<10																	
Calcium	ug/l	--	91000																	
Chromium	ug/l	-- [14]	<50																	
Cobalt	ug/l	0.9	13																	
Copper	ug/l	5	48																	
Hexavalent Chromium	ug/l	1 [15]	--																	
Iron	ug/l	300	2600																	
Lead	ug/l	-- [16]	91																	
Magnesium	ug/l	--	19000																	
Manganese	ug/l	--	480																	
Mercury, dissolved	ug/l	0.2	--																	
Molybdenum	ug/l	40	--																	
Nickel	ug/l	25	<10																	
Potassium	ug/l	--	5000																	
Selenium	ug/l	100	--																	
Silicon	ug/l	--	3000																	
Silver	ug/l	0.1	--																	
Sodium	ug/l	--	22000																	
Strontium	ug/l	--	--																	
Sulfur	ug/l	--	--																	
Thallium	ug/l	0.3 [17]	--																	
Tin	ug/l	--	--																	
Titanium	ug/l	--	--																	
Vanadium	ug/l	6	--																	
Zinc	ug/l	30	61																	
Phenols																				
Phenolics, Total Recoverable	ug/l	1 [18]	0.4																	
Field Measurements																				
Ammonia, unionized (Field)	ug/l	20	--																	
Conductivity (Field)	uS/cm	--	--																	
Dissolved Oxygen (Field)	ug/l	-- [6]	--																	
pH (Field)	-	8.5	8																	
Temperature (Field)	deg c	-- [9]	--																	
Discharge	(L/s)																			

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	[3] [5] PWQO	SW-17 01-Jun-1994	SW-17 01-Oct-1994															
Bacterial																			
Coliform	cfu/100ml	--	190	--															
Escherichia coli	cfu/100ml	--	--	--															
Fecal Coliform	cfu/100ml	--	180	--															
Fecal Streptococci, Kf Agar	cfu/100ml	--	50	--															
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	396000	--															
Ammonia, unionized	ug/l	20	<100	--															
Ammonia Nitrogen	ug/l	--	<100	--															
Bicarbonate	ug/l	--	--	--															
Biologic Oxygen Demand, Five Day	ug/l	--	2800	--															
Chemical Oxygen Demand	ug/l	--	37000	19800															
Chloride	ug/l	--	115000	--															
Color	color unit	--	19	--															
Conductivity	uS/cm	--	893	--															
Dissolved Organic Carbon	ug/l	--	--	--															
Fluoride	ug/l	--	--	--															
Hardness, Calcium Carbonate	ug/l	--	369000	--															
Nitrate	ug/l	--	<100	--															
Nitrate as N	ug/l	--	--	--															
Nitrite	ug/l	--	<100	--															
Nitrogen	ug/l	--	700	--															
Nitrogen, Total Kjeldahl	ug/l	--	--	--															
pH	-	8.5	--	--															
Phosphate	ug/l	--	--	--															
Phosphorus	ug/l	-- [6]	<10	--															
Silica	ug/l	--	--	--															
Sulfate	ug/l	--	11100	--															
Tannin & Lignin	ug/l	--	1040	440															
Total Dissolved Solids	ug/l	--	580450	--															
Total Organic Carbon	ug/l	--	10800	9700															
Total Suspended Solids	ug/l	--	6000	--															
Turbidity	ntu	-- [10]	3	--															
Metals																			
Aluminum	ug/l	-- [11]	--	--															
Aluminum, dissolved	ug/l	-- [11]	**164**	--															
Arsenic	ug/l	100	--	--															
Barium	ug/l	--	--	--															
Beryllium	ug/l	-- [12]	--	--															
Boron	ug/l	200 [13]	--	--															
Cadmium	ug/l	0.2 [13]	<10	--															
Calcium	ug/l	--	102000	--															
Chromium	ug/l	-- [14]	<10	--															
Cobalt	ug/l	0.9	--	--															
Copper	ug/l	5	2	--															
Hexavalent Chromium	ug/l	1 [15]	--	--															
Iron	ug/l	300	800	--															
Lead	ug/l	-- [16]	0.2	--															
Magnesium	ug/l	--	27800	--															
Manganese	ug/l	--	260	--															
Mercury, dissolved	ug/l	0.2	<0.1	--															
Molybdenum	ug/l	40	--	--															
Nickel	ug/l	25	<20	--															
Potassium	ug/l	--	11100	--															
Selenium	ug/l	100	<1	--															
Silicon	ug/l	--	--	--															
Silver	ug/l	0.1	0.5	--															
Sodium	ug/l	--	41800	--															
Strontium	ug/l	--	--	--															
Sulfur	ug/l	--	--	--															
Thallium	ug/l	0.3 [17]	--	--															
Tin	ug/l	--	--	--															
Titanium	ug/l	--	--	--															
Vanadium	ug/l	6	--	--															
Zinc	ug/l	30	23	--															
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	<2	<1															
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--															
Conductivity (Field)	uS/cm	--	--	--															
Dissolved Oxygen (Field)	ug/l	-- [8]	--	--															
pH (Field)	-	8.5	8.19	--															
Temperature (Field)	deg c	-- [9]	--	--															
Discharge	(L/s)																	--	--

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [2] [3]	SW-18 01-Jun-1994	SW-18 01-Aug-1994	SW-18 01-Oct-1994	SW-18 01-Dec-1994	SW-18 01-May-1995	SW-18 01-Sep-1995	SW-18 28-Apr-2001	SW-18 07-Sep-2001	SW-18 06-Nov-2001	SW-18 17-Apr-2002	SW-18 01-Apr-2003	SW-18 01-Oct-2003	SW-18 01-Dec-2003	SW-18 04-Jun-2004	SW-18 04-Jul-2004	SW-18 04-Oct-2004	SW-18 13-Jun-2005
Bacterial																			
Coliform	cfu/100ml	--	40	--	--	--	--	--	--	--	--	--	--	--	--	10	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	9	30	<10	2	2	--	4	<10	--	630	--	--	<10	--
Fecal Coliform	cfu/100ml	--	<10	--	--	--	30	<10	2	--	8	5	<10	--	--	50	10	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	<10	9	--	--	--	--	8	--	14	--[3]	<10	--	--	--	110	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	--[4]	6000	8000	--	76000	--	--	42000	20000	29000	26000	27000	45000	459000	17000	21000	22000	19000
Ammonia, unionized	ug/l	20	<100	<100	--	--	--	--	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	0
Ammonia Nitrogen	ug/l	--	<100	<100	--	<100	--	--	<20	20	<20	70	30	140	740	<20	80	280	30
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	1700	<1000	--	<1000	--	--	2000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Chemical Oxygen Demand	ug/l	--	20200	13200	10600	21200	--	--	11000	19000	20000	22000	18000	17000	61000	5000	14000	10000	--
Chloride	ug/l	--	4000	3000	--	2300	--	--	11000	--	2000	3000	3000	8000	96000	2000	4000	2000	4000
Color	color unit	--	20	17	--	21.6	25	17	25	28	34	36	34	37	14	39	39	36	--
Conductivity	uS/cm	--	67	66	--	--	92	70	138	62	78	81	78	121	1100	56	61	68	82
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	24000	23000	--	25000	--	--	54000	19000	30000	33000	28000	45000	453000	17000	17000	21000	--
Nitrate	ug/l	--	300	160	--	--	--	--	290	<100	180	220	220	<100	<100	130	170	150	130
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	--	360	--	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	--
Nitrogen	ug/l	--	470	1400	--	750	--	--	360	280	280	350	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	390	300	1760	310	370	290	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	--[8]	10	20	--	<10	--	--	30	<10	20	20	30	50	5720	20	250	10	20
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	8700	8100	--	9800	--	--	--	7000	--	45	--	--	--	--	--	--	7000
Tannin & Lignin	ug/l	--	830	960	770	--	--	--	1300	--	1300	1600	1000	1200	600	900	900	--	--
Total Dissolved Solids	ug/l	--	43550	42900	--	--	59800	45500	89700	40300	50700	52650	50700	78650	715000	36400	39650	44200	53000
Total Organic Carbon	ug/l	--	6800	7300	6700	6700	--	--	7200	6100	6900	7000	6900	7000	20100	6700	7300	7700	--
Total Suspended Solids	ug/l	--	5000	<1000	--	3000	6000	2000	17000	2000	9000	2000	4000	9000	2720000	4000	7000	<2000	4000
Turbidity	ntu	--[10]	4	3	--	2.3	4.5	0.7	4.2	1.2	3.9	5	6.5	5.3	>100	2.7	3.6	2.5	--
Metals																			
Aluminum	ug/l	--[11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	--[11]	**280**	**83**	--	**400**	**100**	50	**260**	<50	**90**	**240**	**170**	**110**	**640**	**130**	**170**	**80**	50
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	20	20	10	20	20	20	1810	--	--	--	10
Beryllium	ug/l	--[12]	--	--	--	--	--	--	<2	<2	<2	<2	<1	<1	<1	--	--	--	<1
Boron	ug/l	200[13]	--	--	--	--	--	--	<10	<10	<50	20	<50	<10	140	--	--	--	10
Cadmium	ug/l	0.2[13]	<10	<0.1	--	0.3	<0.15	<0.15	0.3	<0.1	<0.1	0.1	<0.1	<0.1	3	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	7000	6000	--	7000	--	--	15000	6000	7000	10000	8000	13000	112000	5000	5000	5000	--
Chromium	ug/l	--[14]	14	<10	--	<10	<10	<10	6	3	3	<1	<5	2	40	<1	2	<1	<1
Cobalt	ug/l	0.9	--	--	--	--	--	--	2.6	<0.2	<0.2	<0.2	<0.2	<0.2	14.3	--	--	--	<0.2
Copper	ug/l	5	2	1.9	--	3	<5	<5	8	1	1	2	<5	1	6	1	<1	1	--
Hexavalent Chromium	ug/l	1[15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	600	120	--	300	250	80	250	170	190	--	240	240	61600	180	180	160	100
Lead	ug/l	--[16]	0.4	0.2	--	<0.2	<2	<2	2	<1	<1	<1	<1	<1	5	<1	<1	<1	<1
Magnesium	ug/l	--	1800	1800	--	1750	--	--	4000	1000	3000	2000	2000	3000	42000	1000	1000	2000	--
Manganese	ug/l	--	10	13	--	16	20	10	30	20	10	10	19	23	6300	--	--	--	--
Mercury, dissolved	ug/l	0.2	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	<10	20	<10	<10	<5	<5	<5	--	--	--	<5
Nickel	ug/l	25	20	<20	--	<20	<10	<10	<10	<10	<10	<10	<5	<5	39	<5	<5	<5	<5
Potassium	ug/l	--	1000	800	--	950	--	--	1000	<1000	<1000	<1000	1000	1000	12000	<1000	<1000	<1000	--
Selenium	ug/l	100	<1	<1	--	5	<1	<1	<1	--	<1	<1	<1	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--	2170	1570	2040	2360	2300	1900	9900	--	--	--	--
Silver	ug/l	0.1	0.4	0.5	--	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.1
Sodium	ug/l	--	2500	2100	--	2580	--	--	6000	<2000	3000	<2000	2000	5000	66000	2000	3000	2000	--
Strontium	ug/l	--	--	--	--	--	--	--	191	37	38	45	41	66	1370	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3[17]	--	--	--	--	--	--	<1	<1	<1	<1	<1	<1	<1	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	<10	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	<10	<10	<10	<10	<10	<10	<10	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	5	1	<1	<1	<5	<1	34	--	--	--	<1
Zinc	ug/l	30	18	<10	--	<10	<10	<10	<10	<10	<10	<10	<5	<10	50	<10	<10	<10	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1[18]	<2	9	<1	<1	--	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	--[6]	--	--	--	--	--	--	11700	--	12300	--	--	6100	--	--	--	--	8050
pH (Field)	-	8.5	6.86	6.95	--	7.18	7.47	6.56	7.28	6.86	7.34	7.59	6.71	7.02	7.62	6.86	6.94	7.22	5.7
Temperature (Field)	deg c	--[9]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	23.8
Discharge	(L/s)		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [2] [3]	SW-18 31-Aug-2005	SW-18 30-Oct-2005	SW-18 31-Dec-2005 [25]	SW-18 08-Apr-2006	SW-18 15-Aug-2006	SW-18 25-Nov-2006	SW-18 22-Apr-2007	SW-18 31-Aug-2007	SW-18 26-Nov-2007	SW-18 04-May-2008	SW-18 14-Aug-2008	SW-18 28-Nov-2008	SW-18 24-Apr-2009	SW-18 25-Aug-2009	SW-18 30-Nov-2009	SW-18 17-May-2010	SW-18 17-May-2010
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	33000	33000	--	36000	27000	51000	53000	25000	33000	29000	28000	52000	25000	30000	96000	41000	--
Ammonia, unionized	ug/l	20	0	1	--	0	0	0	0	0	0	0	0	0	0	1	1	3	--
Ammonia Nitrogen	ug/l	--	20	190	--	60	<20	40	30	30	60	50	<20	<20	<20	20	30	<20	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	<1000	<1000	--	<1000	<1000	<1000	2000	2000	<1000	1000	1000	<1000	<1000	<1000	<1000	3000	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	5000	5000	--	6000	5000	10000	8000	2000	4000	4000	5000	9000	3000	3000	20000	7000	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	80	195	--	235	80	315	195	67	295	480	400	410	75	78	268	111	--
Dissolved Organic Carbon	ug/l	--	--	--	--	6700	7000	7300	7600	7500	8200	6500	8100	6800	7400	7200	7900	6800	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	39800	28200	60500	68000	25700	37300	33000	28000	61000	28000	28000	94000	42000	--
Nitrate	ug/l	--	<100	<100	--	230	<100	160	130	<100	160	150	110	170	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	180	120	130	<100	--
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [6]	40	30	--	30	40	60	20	<20	10	30	40	10	<10	30	20	30	--
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	8000	8000	--	8000	7000	8000	5000	7000	8000	6000	6000	7000	6000	5000	6000	6000	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	52000	127000	--	70000	52000	96000	92000	44000	64000	56000	51000	96000	49000	51000	174000	72000	--
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	19000	4000	--	3000	42000	2000	<2000	<2000	8000	4000	34000	<2000	<2000	3000	4000	5000	--
Turbidity	ntu	-- [10]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	50	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	**190**	20	--	40	60	**80**	50	50	40	**90**	**160**	**90**	--	50	30	40	--
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	20	--	20	20	20	20	20	20	20	20	20	20	10	20	20	--
Beryllium	ug/l	-- [12]	--	<1	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--
Boron	ug/l	200 [13]	20	10	--	20	<10	30	<10	<10	10	<10	<10	10	10	<10	30	20	--
Cadmium	ug/l	0.2 [13]	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Calcium	ug/l	--	--	--	--	11000	8000	16000	19000	7000	10000	10000	8000	16000	8000	8000	26000	12000	--
Chromium	ug/l	-- [14]	--	<1	--	1	<1	1	<1	<1	<1	1	<1	3	1	<1	<1	1	--
Cobalt	ug/l	0.9	--	<0.2	--	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	170	140	--	310	440	290	230	120	200	240	330	170	200	170	200	190	--
Lead	ug/l	-- [16]	--	<1	--	<1	**2**	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	--
Magnesium	ug/l	--	--	--	--	3000	2000	5000	5000	2000	3000	2000	2000	5000	2000	2000	7000	3000	--
Manganese	ug/l	--	--	--	--	20	110	60	10	10	30	20	50	10	20	10	10	10	--
Mercury, dissolved	ug/l	0.2	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Molybdenum	ug/l	40	--	<5	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--
Nickel	ug/l	25	<5	<5	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--
Potassium	ug/l	--	--	--	--	<1000	<1000	1000	1000	<1000	<1000	<1000	<1000	1000	<1000	<1000	2000	1000	--
Selenium	ug/l	100	--	<1	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Sodium	ug/l	--	--	--	--	4000	3000	8000	7000	2000	4000	4000	<2000	7000	<2000	<2000	13000	4000	--
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	<1	--	<1	1	<1	1	<1	<1	<1	<1	1	<1	<1	<1	1	--
Zinc	ug/l	30	<10	<10	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	--
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	270	71	280	150	--
Dissolved Oxygen (Field)	ug/l	-- [6]	6400	11400	--	12910	11620	11440	11880	12660	13190	13100	13810	14200	12110	12400	13800	13720	--
pH (Field)	-	8.5	6.6	7.4	--	7.6	7.5	7.5	7.4	7.4	7.5	7.5	7.4	7.6	8.2	8.2	8.3	8.7	--
Temperature (Field)	deg c	-- [9]	20.3	5	--	2	19	1	4	20	3	7	19	3	6	22	4	17	--
Discharge	(L/s)		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [3] [5]	SW-18 17-May-2010	SW-18 21-Aug-2010	SW-18 27-Nov-2010	SW-18 09-May-2011	SW-18 08-Sep-2011	SW-18 29-Nov-2011	SW-18 06-May-2012	SW-18 22-Aug-2012 [22]	SW-18 12-Nov-2012	SW-18 12-Jun-2013	SW-18 20-Aug-2013	SW-18 24-Oct-2013
Bacterial														
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--
General Chemistry														
Alkalinity (Total as CaCO3)	ug/l	-- [4]	--	23000	37000	30000	68000	41000	32000	24000	28000	30000	2300	24000
Ammonia, unionized	ug/l	20	--	3	1	1	1	0	1	5	0	<20	<20	<20
Ammonia Nitrogen	ug/l	--	--	<20	<20	<20	<20	<20	<20	130	<20	20	<20	30
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	--	<1000	<1000	<1000	1000	1000	1000	2000	1000	<1000	<1000	<1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	--	2000	4000	4000	11000	8000	5000	2000	3000	4000	2000	3000
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	65	99	86	170	115	91	64	76	83	62	64
Dissolved Organic Carbon	ug/l	--	--	6700	7400	8200	7500	5700	7900	6200	7600	8100	7300	8400
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	26000	42000	33000	68000	47000	28000	26000	28000	33000	23000	26000
Nitrate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	<100	180	160	<100	170	170	<100	140	100	130	110
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	6.95	--	7.05	6.86	6.63
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [6]	--	30	<10	<10	10	20	<10	10	<10	20	<10	20
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	--	6000	6000	6000	5000	6000	6000	6000	7000	6000	6000	6000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	42000	64000	56000	110000	75000	59000	42000	49000	54000	40000	42000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	<2000	3000	<2000	<2000	2000	<2000	2000	<2000	<2000	<2000	<2000
Turbidity	ntu	-- [10]	--	--	--	--	--	--	--	--	--	--	--	--
Metals														
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	150	130	110
Aluminum, dissolved	ug/l	-- [11]	--	40	30	**80**	30	30	**110**	**100**	60	**100**	70	70
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	10	20	20	30	20	20	10	10	20	10	10
Beryllium	ug/l	-- [12]	--	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	ug/l	200 [13]	--	10	<10	10	20	10	<10	<10	<10	<10	10	<10
Cadmium	ug/l	0.2 [13]	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	--	7000	12000	10000	19000	14000	8000	7000	8000	10000	6000	7000
Chromium	ug/l	-- [14]	--	<1	<1	1	1	<1	1	<1	<1	<1	<1	<1
Cobalt	ug/l	0.9	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [15]	--	<50	<50	<50	<50	<50	<50	<50	<50	<0.5	<0.5	<10
Iron	ug/l	300	--	150	170	200	140	210	190	140	170	200	140	210
Lead	ug/l	-- [16]	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Magnesium	ug/l	--	--	2000	3000	2000	5000	3000	2000	2000	2000	2000	2000	2000
Manganese	ug/l	--	--	10	10	30	20	20	10	10	<10	20	<10	10
Mercury, dissolved	ug/l	0.2	--	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	--	<1000	<1000	<1000	1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Selenium	ug/l	100	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	3000	4000	4000	8000	6000	6000	3000	3000	3000	<2000	3000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	ug/l	30	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Phenols														
Phenolics, Total Recoverable	ug/l	1 [18]	--	--	--	--	--	--	--	--	--	--		
Field Measurements														
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	143	154	90	105	94	95	140	115	84	59	60
Dissolved Oxygen (Field)	ug/l	-- [6]	--	13800	14410	13910	10040	13990	13800	8990	12640	2070	7650	9890
pH (Field)	-	8.5	--	8.5	8.4	8.2	8	8.3	8.2	7.9	8.1	6.7	7.3	7.2
Temperature (Field)	deg c	-- [9]	--	22	4	9	22.5	5	9	22	8	16.2	23.2	11.8
Discharge	(L/s)		--	--	--	--	--	--	--	--	--	--		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [2] [3]	SW-19 01-Aug-1994	SW-19 01-Oct-1994	SW-19 01-Dec-1994	SW-19 28-Apr-2001	SW-19 01-Apr-2003	SW-19 01-Oct-2003	SW-19 01-Dec-2003	SW-19 04-Jun-2004	SW-19 04-Jul-2004	SW-19 04-Oct-2004	SW-19 13-Jun-2005	SW-19 31-Aug-2005	SW-19 30-Oct-2005	SW-19 31-Dec-2005 [25]	SW-19 08-Apr-2006	SW-19 15-Aug-2006 [19]	SW-19 25-Nov-2006
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	30	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	64	--	--	0	<10	--	20	--	--	<10	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	<1	--	--	0	<10	--	--	110	30	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	77	<10	--	--	--	500	--	--	--	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	24000	31000	59000	354000	320000	41000	61000	19000	24000	31000	42000	26000	375000	--	367000	--	415000
Ammonia, unionized	ug/l	20	<100	<20	--	<20	<20	<20	<20	<20	<20	<20	0	0	0	--	7	--	1
Ammonia Nitrogen	ug/l	--	<100	<20	<100	230	60	50	50	<20	60	<20	<20	<20	50	--	2530	--	450
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	<1000	<1000	<1000	1000	<1000	<1000	<1000	<1000	<1000	<1000	2000	<1000	<1000	--	<1000	--	<1000
Chemical Oxygen Demand	ug/l	--	14200	14000	20500	17000	23000	18000	28000	6000	14000	14000	--	--	--	--	--	--	--
Chloride	ug/l	--	4000	4000	9500	68000	60000	4000	3000	5000	4000	4000	8000	5000	113000	--	78000	--	101000
Color	color unit	--	19	37	20	16	21	40	50	39	40	37	--	--	--	--	--	--	--
Conductivity	uS/cm	--	82	81	--	843	765	101	137	60	68	18	180	80	300	--	480	--	530
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8300	--	8700
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	30000	26000	81000	329000	325000	37000	56000	17000	23000	26000	--	--	--	--	380700	--	424600
Nitrate	ug/l	--	<100	130	360	540	<100	<100	180	170	170	130	<100	130	<100	--	520	--	370
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	--	--	--	--	--	--	--
Nitrogen	ug/l	--	2800	--	360	570	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	260	--	--	310	390	370	430	440	260	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [6]	40	12	<10	30	60	30	40	20	40	20	50	70	40	--	20	--	70
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	7900	--	9700	--	--	--	--	--	--	--	7000	7000	49000	--	46000	--	26000
Tannin & Lignin	ug/l	--	950	930	--	545	300	1200	1300	1100	1100	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	53300	52650	--	547950	497250	65650	89050	39000	44200	11700	117000	52000	195000	--	632000	--	708000
Total Organic Carbon	ug/l	--	7300	7500	7100	9600	8200	7300	10700	7000	7900	7500	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	<2000	2000	<2000	<2000	5000	5000	5000	22000	<2000	45000	60000	<2000	--	2000	--	<2000
Turbidity	ntu	-- [10]	5	2	9.8	1.4	0.3	2.4	4.2	3.6	5.3	2	--	--	--	--	--	--	--
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	**95**	**80**	**300**	<50	<10	**170**	**140**	**130**	**190**	**<80**	30	**900**	<10	--	<10	--	<10
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	60	40	20	20	--	--	--	20	--	90	--	100	--	120
Beryllium	ug/l	-- [12]	--	--	--	<1	<1	<1	<1	--	--	--	<1	--	<1	--	<1	--	<1
Boron	ug/l	200 [13]	--	--	--	110	60	<10	20	--	--	--	20	20	200	--	180	--	220
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	0.3	0.3	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	<0.1	--	<0.1
Calcium	ug/l	--	8000	7000	21000	87000	84000	10000	14000	5000	6000	7000	--	--	--	--	108000	--	119000
Chromium	ug/l	-- [14]	<10	<1	<10	4	<5	<1	2	<1	1	<1	3	--	4	--	4	--	3
Cobalt	ug/l	0.9	--	--	--	1	<0.2	<0.2	<0.2	--	--	--	<0.2	--	0.3	--	0.5	--	0.7
Copper	ug/l	5	1.7	2	2	3	<5	3	2	2	<1	2	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	360	140	320	190	130	150	1050	190	210	140	80	1020	<30	--	100	--	360
Lead	ug/l	-- [16]	0.2	<1	<0.2	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	--	<1	--	<1
Magnesium	ug/l	--	2400	2000	6850	27000	28000	3000	5000	1000	2000	2000	--	--	--	--	27000	--	31000
Manganese	ug/l	--	49	--	320	100	35	14	70	--	--	--	--	--	--	--	100	--	360
Mercury, dissolved	ug/l	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	<0.1	--	<0.1
Molybdenum	ug/l	40	--	--	--	10	<5	<5	<5	--	--	--	<5	--	<5	--	<5	--	<5
Nickel	ug/l	25	<200	<5	<20	<10	<5	<5	<5	<5	<5	<5	<5	<5	6	--	6	--	<5
Potassium	ug/l	--	900	<1000	2590	9000	8000	<1000	1000	<1000	<1000	<1000	--	--	--	--	9000	--	11000
Selenium	ug/l	100	<1	<1	5	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	--	<1	--	<1
Silicon	ug/l	--	--	--	--	3740	3600	2000	3300	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	0.6	<0.1	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	<0.1	--	<0.1
Sodium	ug/l	--	2600	3000	9830	38000	43000	4000	3000	2000	3000	3000	--	--	--	--	48000	--	57000
Strontium	ug/l	--	--	--	--	--	409	46	66	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	--	--	--	400	<1	<1	<1	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	<1	<10	<10	<10	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	<1	<5	<1	1	--	--	--	<1	--	6	--	5	--	1
Zinc	ug/l	30	<10	<10	<10	<10	<5	60	<10	<10	<10	<10	10	140	<10	--	<10	--	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--	--	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	-- [6]	--	--	--	10700	--	6200	--	--	--	--	8400	6710	11500	--	12880	--	10140
pH (Field)	-	8.5	7.02	7.42	7.67	8.15	7.8	6.85	6.92	6.92	7.12	7.42	6.8	6.7	7.5	--	7.4	--	7.4
Temperature (Field)	deg c	-- [9]	--	--	--	--	--	--	--	--	--	--	23.5	20.9	6	--	4	--	1
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	[3] [5] PWQO	SW-19 22-Apr-2007	SW-19 26-Nov-2007	SW-19 04-May-2008	SW-19 14-Aug-2008	SW-19 28-Nov-2008	SW-19 24-Apr-2009	SW-19 25-Aug-2009	SW-19 30-Nov-2009	SW-19 17-May-2010	SW-19 21-Aug-2010 [23]	SW-19 27-Nov-2010	SW-19 09-May-2011	SW-19 08-Sep-2011	SW-19 29-Nov-2011	SW-19 06-May-2012	SW-19 22-Aug-2012 [19]	SW-19 12-Nov-2012
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	--[6]	371000	428000	346000	410000	438000	378000	482000	415000	385000	456000	410000	370000	473000	397000	370000	--	377000
Ammonia, unionized	ug/l	20	2	0	0	0	1	3	0	0	1	1	0	2	0	0	0	--	0
Ammonia Nitrogen	ug/l	--	1030	60	110	20	260	250	30	30	<20	<20	30	340	<20	<20	30	--	<20
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	1000	<1000	1000	4000	<1000	2000	1000	<1000	2000	<1000	<1000	<1000	1000	<1000	1000	--	1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	80000	128000	72000	93000	117000	80000	100000	103000	89000	88000	92000	<1000	105000	106000	87000	--	117000
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	410	480	566	1030	505	955	1140	1090	979	1090	1020	888	1110	1040	954	--	1130
Dissolved Organic Carbon	ug/l	--	7900	8200	7400	11500	6200	7300	10100	7700	6800	11500	8000	7800	12100	6300	7200	--	10900
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	359100	455300	348000	452000	420000	354000	429000	437000	365000	456000	425000	250000	476000	421000	343000	--	421000
Nitrate	ug/l	--	1040	<100	390	<100	<100	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	1100	<100	<100	180	<100	<100	1170	<100	<100	180	--	<100
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	--[8]	360	100	<10	20	60	<10	40	30	<10	40	10	<10	20	10	<10	--	10
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	26000	13000	22000	1000	18000	20000	1000	16000	17000	3000	14000	<1000	1000	11000	21000	--	70000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	633000	767000	582000	670000	754000	621000	741000	708000	636000	708000	663000	577000	722000	676000	620000	--	734000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	<2000	2000	3000	6000	<2000	5000	<2000	5000	5000	36000	<2000	2000	<2000	<2000	--	<2000
Turbidity	ntu	--[10]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																			
Aluminum	ug/l	--[11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	--[11]	<10	20	20	<10	<10	<10	<10	<10	30	<10	<10	<10	<10	<10	<10	--	<10
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	100	130	120	170	170	120	180	130	130	180	120	110	180	140	130	--	100
Beryllium	ug/l	--[12]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	--	<0.5
Boron	ug/l	200[13]	170	150	220	230	130	190	260	160	230	290	130	180	230	140	130	--	210
Cadmium	ug/l	0.2[13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1
Calcium	ug/l	--	101000	128000	98000	130000	117000	102000	124000	124000	105000	133000	119000	54000	138000	119000	96000	--	119000
Chromium	ug/l	--[14]	2	2	3	2	5	3	4	3	3	2	2	2	4	2	5	--	3
Cobalt	ug/l	0.9	0.6	0.6	0.6	1	0.7	0.5	0.9	0.4	0.7	1.4	0.5	0.5	0.7	0.4	0.4	--	0.4
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1[15]	--	--	--	--	--	--	--	--	--	<50	<50	<50	<50	<50	<50	--	<50
Iron	ug/l	300	150	410	130	570	2290	90	450	270	100	950	170	100	380	260	80	--	60
Lead	ug/l	--[16]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1
Magnesium	ug/l	--	26000	33000	25000	31000	31000	24000	29000	31000	25000	30000	31000	28000	32000	30000	25000	--	30000
Manganese	ug/l	--	110	350	80	690	750	80	400	250	60	1030	150	70	470	250	70	--	40
Mercury, dissolved	ug/l	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	<5
Potassium	ug/l	--	9000	8000	9000	7000	10000	9000	6000	11000	10000	7000	9000	10000	6000	8000	9000	--	7000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	--	<1
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1
Sodium	ug/l	--	49000	62000	47000	57000	58000	49000	58000	64000	56000	54000	58000	53000	62000	61000	53000	--	57000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3[17]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	3	2	3	<1	8	3	8	4	6	3	3	2	4	3	4	--	4
Zinc	ug/l	30	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	--	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1[18]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	920	1075	915	922	903	930	870	900	880	930	--	1000
Dissolved Oxygen (Field)	ug/l	--[6]	10040	11040	12210	12110	12910	9880	4280	10830	9620	8430	11040	9810	5400	9970	9790	--	10090
pH (Field)	-	8.5	7.3	7.3	7.3	7.1	7.4	8	7.6	7.8	8.1	8	7.8	7.5	7.5	7.4	7.9	--	7.3
Temperature (Field)	deg c	--[9]	3	2	6	18	2	5	18	5	14.2	21	2.8	7	17.8	4	6	--	7
Discharge	(L/s)																	1.74	

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	[3] [5] PWQO	SW-19 12-Jun-2013	SW-19 20-Aug-2013	SW-19 24-Oct-2013			SW-20 01-Aug-1994	SW-20 01-Oct-1994	SW-20 01-Dec-1994									
Bacterial																			
Coliform	cfu/100ml	--	--	--	--														
Escherichia coli	cfu/100ml	--	--	--	--			260	--	--									
Fecal Coliform	cfu/100ml	--	--	--	--			91	--	--									
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--														
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	--[4]	380000		445000			512000	--	439000									
Ammonia, unionized	ug/l	20	<20	--	<20			<100	--	--									
Ammonia Nitrogen	ug/l	--	220	--	40			590	--	1110									
Bicarbonate	ug/l	--		--	--			--	--	--									
Biologic Oxygen Demand, Five Day	ug/l	--	1000	--	1000			4200	--	101000									
Chemical Oxygen Demand	ug/l	--		--	--			132000	58000	29700									
Chloride	ug/l	--	82000	--	98000			127000	--	88000									
Color	color unit	--		--	--			44	--	16									
Conductivity	uS/cm	--	940	--	1120			1196	--	--									
Dissolved Organic Carbon	ug/l	--	10200	--	10600														
Fluoride	ug/l	--		--	--			--	--	--									
Hardness, Calcium Carbonate	ug/l	--	383000	--	451000			490000	--	374000									
Nitrate	ug/l	--		--	--			<100	--	<100									
Nitrate as N	ug/l	--	<100	--	<100			--	--	--									
Nitrite	ug/l	--		--	--			<100	--	<100									
Nitrogen	ug/l	--		--	--			3080	--	560									
Nitrogen, Total Kjeldahl	ug/l	--		--	--														
pH	-	8.5	7.88	--	7.39			--	--	--									
Phosphate	ug/l	--		--	--			--	--	--									
Phosphorus	ug/l	--[8]	10	--	30			670	--	<10									
Silica	ug/l	--		--	--			--	--	--									
Sulfate	ug/l	--	9000	--	17000			3100	--	15900									
Tannin & Lignin	ug/l	--		--	--			2710	1520	--									
Total Dissolved Solids	ug/l	--	611000	--	728000			777400	--	--									
Total Organic Carbon	ug/l	--		--	--			21300	15300	10800									
Total Suspended Solids	ug/l	--	2000	--	<2000			--	--	<1000									
Turbidity	ntu	--[10]			--			44	--	2.9									
Metals																			
Aluminum	ug/l	--[11]	<10		<10			--	--	--									
Aluminum, dissolved	ug/l	--[11]	<10	--	<10			**238**	--	47									
Arsenic	ug/l	100		--	--			--	--	--									
Barium	ug/l	--	110	--	140														
Beryllium	ug/l	--[12]	<0.5	--	<0.5														
Boron	ug/l	200[13]	200	--	290														
Cadmium	ug/l	0.2[13]	<0.1	--	<0.1			<0.1	--	<0.1									
Calcium	ug/l	--	109000	--	128000			122000	--	89000									
Chromium	ug/l	--[14]	3	--	4			<10	--	<10									
Cobalt	ug/l	0.9	0.6	--	1.3														
Copper	ug/l	5		--	--			2	--	0.6									
Hexavalent Chromium	ug/l	1[15]	<0.5	--	<10														
Iron	ug/l	300	610	--	150			5300	--	860									
Lead	ug/l	--[16]	<1	--	<1			1	--	<0.2									
Magnesium	ug/l	--	27000	--	32000			44600	--	36400									
Manganese	ug/l	--	190	--	140			2100	--	367									
Mercury, dissolved	ug/l	0.2	<0.1	--	<0.1			<0.1	--	<0.1									
Molybdenum	ug/l	40	<5	--	<5														
Nickel	ug/l	25	<5	--	<5			<20	--	<20									
Potassium	ug/l	--	10000	--	8000			7800	--	13100									
Selenium	ug/l	100	<1	--	<1			<1	--	6									
Silicon	ug/l	--	--	--	--														
Silver	ug/l	0.1	<0.1	--	<0.1			0.7	--	1									
Sodium	ug/l	--	55000	--	64000			62700	--	49000									
Strontium	ug/l	--	--	--	--														
Sulfur	ug/l	--	--	--	--			--	--	--									
Thallium	ug/l	0.3[17]	--	--	--														
Tin	ug/l	--	--	--	--			--	--	--									
Titanium	ug/l	--	--	--	--														
Vanadium	ug/l	6	4		6														
Zinc	ug/l	30	<10		10			12	--	<10									
Phenols																			
Phenolics, Total Recoverable	ug/l	1[18]						5	4	<1									
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20		--				--	--	--									
Conductivity (Field)	uS/cm	--	926	--	1035			--	--	--									
Dissolved Oxygen (Field)	ug/l	--[6]	1330	--	3650			7.24	--	7.91									
pH (Field)	-	8.5	7.1	--	7.0			--	--	--									
Temperature (Field)	deg c	--[9]	11.3	--	11.5			--	--	--									
Discharge	(L/s)		1.7		1.1														

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	[2] [1] PWQO	SW-21 01-Jul-1995	SW-21 01-Sep-1995	SW-21 01-May-1996	SW-21 01-Jun-1997	SW-21 01-Sep-1998	SW-21 01-Nov-1998	SW-21 15-Jul-1999	SW-21 16-Oct-1999	SW-21 01-Jul-2000	SW-21 22-Oct-2000	SW-21 01-Dec-2000	SW-21 28-Apr-2001	SW-21 17-Apr-2002	SW-21 01-Apr-2003	SW-21 13-Jun-2005	SW-21 31-Aug-2005	SW-21 30-Oct-2005
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	260	--	--	--	--	--	--	--	260	600	17	102	2	10	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	520	--	--	154	4	10	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	26500	--	--	119	-- [3]	90	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	520000	574000	416000	585000	623000	422000	417000	424000	315000	455000	371000	429000	276000	386000	435000	441000	476000
Ammonia, unionized	ug/l	20	150	250	<20	160	50	<20	<20	<20	--	<20	<20	40	<20	80	1	1	1
Ammonia Nitrogen	ug/l	--	3890	4700	120	4210	4660	700	960	20	<20	360	50	980	260	2160	1640	2510	700
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	5000	18000	<1000	18000	17000	<1000	21000	<1000	<1000	4000	2000	1000	<1000	<1000	9000	14000	<1000
Chemical Oxygen Demand	ug/l	--	39000	81000	53000	76000	67000	8000	85000	22000	21000	12000	11000	22000	18000	19000	--	--	--
Chloride	ug/l	--	102000	106000	42000	99000	125000	136000	75000	127000	63000	132000	76000	95000	53000	95000	102000	105000	155000
Color	color unit	--	15	34	18	26	29	5	84	13	14	16	7	16	15	16	--	--	--
Conductivity	uS/cm	--	1426	1334	935	1312	1380	1121	946	1140	773	1160	922	1060	706	1020	1400	1300	370
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	565000	543000	432000	506000	599000	561000	499000	487000	342000	537000	441000	403000	307000	432000	--	--	--
Nitrate	ug/l	--	790	810	2640	3100	740	170	270	650	<100	210	<100	670	120	280	<100	180	<100
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	130	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	--	--	--
Nitrogen	ug/l	--	4170	6200	1330	6470	5670	900	--	--	570	970	2100	2040	900	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3200	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [8]	20	130	20	240	100	<10	1050	<10	30	30	90	40	50	60	90	1120	120
Silica	ug/l	--	--	--	--	--	--	--	--	--	<20	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	30000	<3000	40000	<3000	<3000	25000	21000	26000	--	--	--	--	26000	--	11000	83000	50000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	500	800	<100	400	200	500	--	--	--
Total Dissolved Solids	ug/l	--	926900	867100	607750	852800	897000	728650	614900	741000	502450	754000	599300	689000	458900	663000	910000	845000	241000
Total Organic Carbon	ug/l	--	13000	31800	20000	28000	26000	4100	23400	7300	5300	6500	3800	8900	5400	7600	--	--	--
Total Suspended Solids	ug/l	--	18000	139000	7000	104000	64000	13000	--	3000	9000	16000	62000	12000	6000	19000	26000	13900000	17000
Turbidity	ntu	-- [10]	6	60	0.7	14	28	2.3	>100	1.4	3.5	9.5	13	3.1	2.7	3.9	--	--	--
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	<30	<30	<30	50	<30	<30	30	<30	<50	<50	<50	<50	<50	<10	<10	**8860**	<10
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	150	--	--	110	--	--	210	70	130	170	--	210
Beryllium	ug/l	-- [12]	--	--	--	--	--	<10	--	--	<2	--	--	<2	<2	<1	<1	--	<1
Boron	ug/l	200 [13]	--	--	--	--	--	80	--	--	80	--	--	130	<50	110	180	340	200
Cadmium	ug/l	0.2 [13]	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	--	<0.1
Calcium	ug/l	--	157000	135000	115000	130000	154000	165000	142000	137000	99000	159000	132000	115000	90000	122000	--	--	--
Chromium	ug/l	-- [14]	<10	<10	<10	20	<10	<10	10	<10	<10	<10	<10	3	2	<5	5	--	4
Cobalt	ug/l	0.9	--	--	--	--	--	<0.4	--	--	<0.4	--	--	2.4	0.5	0.7	0.7	--	0.5
Copper	ug/l	5	<5	<5	9	12	<5	<10	<5	<5	<1	<1	1	2	1	<5	--	--	--
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	920	--	90	1540	830	180	3010	200	390	1350	3770	960	640	510	630	16200	550
Lead	ug/l	-- [16]	<2	<2	<2	<2	<2	<2	<2	<2	<1	--	--	<1	<1	--	<1	--	<1
Magnesium	ug/l	--	--	--	50000	35000	44000	52000	36000	35000	35000	23000	34000	27000	28000	20000	31000	--	--	--
Manganese	ug/l	--	42000	--	--	--	--	90	--	--	210	--	--	70	220	102	--	--	--
Mercury, dissolved	ug/l	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	<10	--	--	10	--	--	<10	<10	<5	<5	--	<5
Nickel	ug/l	25	<10	<10	10	<10	<10	<10	20	<10	<10	<10	<10	<10	<10	<5	<5	12	6
Potassium	ug/l	--	2000	30000	19000	23000	26000	6000	1000	12000	<1000	--	--	9000	4000	12000	--	--	--
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1	<0.1	<1	<1	<1	<1	<1	<1	<1	1	--	11
Silicon	ug/l	--	--	--	--	--	--	4900	--	--	4330	--	--	4770	3110	4600	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1
Sodium	ug/l	--	66000	84000	43000	80000	100000	47000	40000	61000	29000	46000	36000	46000	22000	54000	--	--	--
Strontium	ug/l	--	--	--	--	--	--	1110	--	--	899	--	--	892	646	738	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	8000	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	--	--	--	--	--	<10	--	--	<1	--	--	<1	<1	<1	--	--	--
Tin	ug/l	--	--	--	--	--	--	<50	--	--	--	--	--	--	<10	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	<10	--	--	<10	--	--	<10	<10	<10	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	<10	--	--	<1	--	--	<1	<1	<5	8	--	5
Zinc	ug/l	30	<10	<10	10	10	<10	<10	30	<10	<10	<10	<10	70	<10	<5	<10	140	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	<1	<1	<1	<1	<1	<1	2	<1	<1	--	--	<1	<1	<1	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	-- [6]	5900	5900	8400	5500	3500	6000	2700	4900	3500	12600	14000	8700	--	--	340	400	10410
pH (Field)	-	8.5	7.99	7.86	8.1	7.94	7.58	8.11	6.99	7.72	6.79	7.63	7.27	7.97	8.08	7.75	6.3	6	7.1
Temperature (Field)	deg c	-- [9]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	11.2	19.4	7
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	(2) (1) PWQO	SW-21 31-Dec-2005 (25)	SW-21 08-Apr-2006	SW-21 15-Aug-2006	SW-21 25-Nov-2006	SW-21 22-Apr-2007	SW-21 31-Aug-2007	SW-21 26-Nov-2007	SW-21 04-May-2008	SW-21 14-Aug-2008	SW-21 28-Nov-2008	SW-21 24-Apr-2009	SW-21 25-Aug-2009	SW-21 30-Nov-2009	SW-21 17-May-2010	SW-21 21-Aug-2010 (6)	SW-21 27-Nov-2010	SW-21 09-May-2011
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	--(4)	--	381000	504000	395000	384000	489000	442000	346000	402000	451000	383000	480000	414000	391000	467000	410000	380000
Ammonia, unionized	ug/l	20	--	9	7	1	3	5	0	1	1	1	1	1	1	6	4	1	7
Ammonia Nitrogen	ug/l	--	--	3220	810	560	1790	460	200	440	160	550	180	190	100	300	190	150	750
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	--	2000	4000	1000	2000	4000	1000	<1000	4000	<1000	3000	2000	<1000	1000	2000	2000	<1000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	--	82000	117000	48000	85000	122000	136000	73000	90000	115000	87000	101000	109000	91000	94000	97000	76000
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	--	445	1250	510	445	510	485	906	730	515	977	1170	1120	1000	1140	1050	909
Dissolved Organic Carbon	ug/l	--	--	7900	13400	13400	7700	10300	8100	6800	8200	5600	7100	9500	6300	6600	10600	7200	7200
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	380700	488500	378700	418900	524200	488500	369000	467000	470000	361000	453000	419000	361000	463000	392000	329000
Nitrate	ug/l	--	--	360	<100	<100	740	<100	<100	330	<100	<100	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	1040	<100	<100	<100	<100	<100	1140
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	--(8)	--	20	40	60	50	50	<10	20	120	<10	<10	20	<10	<10	20	10	20
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	--	46000	5000	12000	27000	4000	14000	24000	2000	20000	22000	2000	19000	19000	3000	16000	19000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	657000	813000	565000	663000	813000	806000	589000	663000	787000	635000	761000	728000	650000	741000	683000	591000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	2000	10000	4000	<2000	<2000	<2000	<2000	29000	<2000	<2000	<2000	2000	<2000	<2000	<2000	2000
Turbidity	ntu	--(10)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																			
Aluminum	ug/l	--(11)	--	--	--	--	--	--	--	--	--	--	<10	--	--	--	--	--	--
Aluminum, dissolved	ug/l	--(11)	--	<10	20	<10	<10	<10	30	<10	20	<10	<10	<10	<10	<10	<10	<10	<10
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	120	210	80	120	220	160	130	270	150	130	190	140	140	200	130	120
Beryllium	ug/l	--(12)	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5
Boron	ug/l	200(13)	--	210	320	160	190	350	160	200	170	150	200	280	180	240	290	140	190
Cadmium	ug/l	0.2(13)	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	--	108000	138000	99000	120000	149000	138000	105000	141000	132000	105000	132000	120000	105000	136000	111000	92000
Chromium	ug/l	--(14)	--	4	4	2	4	7	2	3	2	6	4	5	3	3	2	2	3
Cobalt	ug/l	0.9	--	0.5	1	2.7	0.7	0.7	0.5	0.6	1.2	0.4	0.6	0.7	0.4	0.6	0.7	0.4	0.5
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1(15)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<50	<50	<50
Iron	ug/l	300	--	150	400	2560	310	190	320	110	8760	260	60	510	220	310	590	170	90
Lead	ug/l	--(16)	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Magnesium	ug/l	--	--	27000	35000	32000	29000	37000	35000	26000	28000	34000	24000	30000	29000	24000	30000	28000	24000
Manganese	ug/l	--	--	130	440	1210	150	290	300	120	640	290	80	240	200	120	200	150	80
Mercury, dissolved	ug/l	0.2	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1
Molybdenum	ug/l	40	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	--	6	6	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	--	9000	10000	7000	10000	9000	10000	10000	7000	11000	10000	6000	11000	11000	6000	9000	9000
Selenium	ug/l	100	--	<1	1	<1	<1	2	2	<1	<1	1	<1	7	<1	1	<10	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	48000	64000	33000	54000	70000	69000	49000	49000	66000	51000	64000	65000	58000	57000	56000	55000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3(17)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	6	6	1	8	10	3	3	1	10	5	8	4	5	4	3	4
Zinc	ug/l	30	--	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1(18)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	1020	555	1040	920	928	905	930
Dissolved Oxygen (Field)	ug/l	--(6)	--	10920	9800	9180	10040	8190	8920	6040	6110	7620	6210	7090	6710	6040	4210	7880	6310
pH (Field)	-	8.5	--	7.4	7.3	7.1	7.2	7.3	7.1	7.2	7.1	7.2	7.6	7.3	7.7	7.8	7.6	7.7	7.7
Temperature (Field)	deg c	--(9)	--	4	21	1	2	24	1	7	22	2	7	19	3	17	25	3	10
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	(2) (1) PWQO	SW-21 08-Sep-2011	SW-21 29-Nov-2011 [9]	SW-21 06-May-2012	SW-21 22-Aug-2012 [20]	SW-21 12-Nov-2012	SW-21 12-June-2013	SW-21 20-Aug-2013	SW-21 24-Oct-2013								
Bacterial																		
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--								
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--								
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--								
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--								
General Chemistry																		
Alkalinity (Total as CaCO3)	ug/l	-- [4]	473000	404000	371000	525000	424000	344000	--	456000								
Ammonia, unionized	ug/l	20	4	1	1	4	1	<20	--	<20								
Ammonia Nitrogen	ug/l	--	190	130	200	260	150	160	--	260								
Bicarbonate	ug/l	--	--	--	--	--	--	--	--									
Biologic Oxygen Demand, Five Day	ug/l	--	2000	3000	1000	1000	1000	1000	--	2000								
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--									
Chloride	ug/l	--	103000	119000	90000	93000	115000	85000	--	106000								
Color	color unit	--	--	--	--	--	--	--	--	--								
Conductivity	uS/cm	--	1140	1080	978	1320	1170	919	--	1150								
Dissolved Organic Carbon	ug/l	--	10200	5200	6200	11500	8100	8200	--	10300								
Fluoride	ug/l	--	--	--	--	--	--	--	--									
Hardness, Calcium Carbonate	ug/l	--	441000	436000	345000	564000	450000	356000	--	458000								
Nitrate	ug/l	--	--	--	--	--	--	--	--									
Nitrate as N	ug/l	--	<100	<100	<100	<100	<100	<100	--	<100								
Nitrite	ug/l	--	--	--	--	--	--	--	--									
Nitrogen	ug/l	--	--	--	--	--	--	--	--									
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--									
pH	-	8.5	--	--	--	--	--	7.85	--	7.59								
Phosphate	ug/l	--	--	--	--	--	--	--	--									
Phosphorus	ug/l	-- [8]	20	<10	<10	70	10	40	--	30								
Silica	ug/l	--	--	--	--	--	--	--	--									
Sulfate	ug/l	--	1000	16000	23000	87000	50000	14000	--	8000								
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--									
Total Dissolved Solids	ug/l	--	741000	702000	636000	858000	760000	597000	--	748000								
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--									
Total Suspended Solids	ug/l	--	8000	<2000	<2000	90000	<2000	<2000	--	10000								
Turbidity	ntu	-- [10]	--	--	--	--	--	--	--									
Metals																		
Aluminum	ug/l	-- [11]	--	--	--	--	--	<10	--	10								
Aluminum, dissolved	ug/l	-- [11]	<10	<10	<10	<10	<10	<10	--	<10								
Arsenic	ug/l	100	--	--	--	--	--	--	--									
Barium	ug/l	--	190	150	140	170	160	120	--	160								
Beryllium	ug/l	-- [12]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5								
Boron	ug/l	200 [13]	250	140	130	280	150	180	--	190								
Cadmium	ug/l	0.2 [13]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1								
Calcium	ug/l	--	127000	125000	97000	163000	129000	103000	--	129000								
Chromium	ug/l	-- [14]	4	3	5	3	3	2	--	6								
Cobalt	ug/l	0.9	0.5	0.3	0.4	1.3	0.4	0.4	--	0.5								
Copper	ug/l	5	--	--	--	--	--	--	--									
Hexavalent Chromium	ug/l	1 [15]	<50	<50	<50	<50	<50	<0.5	--	<10								
Iron	ug/l	300	560	340	100	1320	260	**1060**	--	240								
Lead	ug/l	-- [16]	<1	<1	<1	<1	<1	<1	--	<1								
Magnesium	ug/l	--	30000	30000	25000	38000	31000	24000	--	33000								
Manganese	ug/l	--	270	210	120	840	200	120	--	200								
Mercury, dissolved	ug/l	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1								
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5	--	<5								
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5	--	<5								
Potassium	ug/l	--	5000	8000	9000	10000	7000	9000	--	6000								
Selenium	ug/l	100	<1	<5	<1	<1	<10	<1	--	<10								
Silicon	ug/l	--	--	--	--	--	--		--									
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1								
Sodium	ug/l	--	58000	66000	54000	70000	60000	56000	--	69000								
Strontium	ug/l	--	--	--	--	--	--	--	--									
Sulfur	ug/l	--	--	--	--	--	--	--	--									
Thallium	ug/l	0.3 [17]	--	--	--	--	--	--	--									
Tin	ug/l	--	--	--	--	--	--	--	--									
Titanium	ug/l	--	--	--	--	--	--	--	--									
Vanadium	ug/l	6	5	4	4	6	4	2	--	6								
Zinc	ug/l	30	<10	<10	<10	<10	<10	<10	--	<10								
Phenols																		
Phenolics, Total Recoverable	ug/l	1 [18]	--	--	--	--	--		--									
Field Measurements																		
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--									
Conductivity (Field)	uS/cm	--	945	905	940	965	915	885	--	1066								
Dissolved Oxygen (Field)	ug/l	-- [6]	4100	6990	6200	960	4080	890	--	53								
pH (Field)	-	8.5	7.6	7.8	7.6	7.4	7.6	7.5	--	7.2								
Temperature (Field)	deg c	-- [9]	23	6	9	26	8	11.5	--	10.1								
Discharge	(L/s)					--		--	--	--								

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	PWQO [2] [3]	SW-22 01-Jul-1995	SW-22 01-Sep-1995	SW-22 01-May-1996	SW-22 01-Sep-1996	SW-22 01-Jun-1997	SW-22 01-Sep-1998	SW-22 01-Nov-1998	SW-22 16-Oct-1999	SW-22 22-Oct-2000	SW-22 28-Apr-2001	SW-22 09-Nov-2001	SW-22 17-Apr-2002	SW-22 01-Apr-2003	SW-22 13-Jun-2005 [33]	SW-22 31-Aug-2005 [33]	SW-22 30-Oct-2005	SW-22 31-Dec-2005 [33]
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	260	--	--	--	--	--	--	--	18	0	--	1	<10	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	0	--	1	<10	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	--	16	--	-- [4]	20	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [6]	490000	474000	390000	442000	293000	455000	546000	501000	633000	622000	523000	525000	570000	--	--	529000	--
Ammonia, unionized	ug/l	20	<10	<20	60	<20	<20	20	120	<20	<20	170	<20	90	150	--	--	7	--
Ammonia Nitrogen	ug/l	--	500	250	1700	190	20	2000	3190	730	3620	4650	140	2390	3970	--	--	4670	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	4000	4000	20000	4000	9000	3000	10000	<1000	18000	19000	2000	10000	<1000	--	--	1000	--
Chemical Oxygen Demand	ug/l	--	31000	26000	61000	32000	25000	24000	51000	53000	88000	64000	27000	45000	42000	--	--	--	--
Chloride	ug/l	--	88000	100000	72000	105000	59000	52000	<10	128000	153000	84000	168000	81000	104000	--	--	161000	--
Color	color unit	--	16	25	7	21	13	19	16	21	37	29	22	27	25	--	--	--	--
Conductivity	uS/cm	--	1284	1149	967	1135	733	1148	1397	1360	1450	1310	1630	1270	1350	--	--	405	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	580000	531000	434000	537000	331000	437000	599000	529000	569000	562000	574000	478000	530000	--	--	--	--
Nitrate	ug/l	--	<100	<100	<100	<10	<100	<100	3120	990	1830	1330	3770	1610	220	--	--	820	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<10	<100	<100	<100	<100	<100	<100	<100	<100	<100	--	--	--	--
Nitrogen	ug/l	--	1000	750	3090	--	800	2830	5240	--	5930	5930	2060	6030	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	4680	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [8]	50	50	30	110	40	100	260	<10	30	30	50	140	30	--	--	40	--
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	21000	11000	36000	15000	17000	8000	6000	71000	--	--	--	47000	--	--	--	25000	--
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	1100	1000	800	800	500	--	--	--	--
Total Dissolved Solids	ug/l	--	834600	746850	628550	737750	476450	746200	908050	884000	942500	851500	1059500	825500	877500	--	--	263000	--
Total Organic Carbon	ug/l	--	11300	11100	23000	12200	7800	10500	21000	18800	23300	24500	15200	17200	19400	--	--	--	--
Total Suspended Solids	ug/l	--	26000	24000	4000	203000	43000	14000	26000	5000	140000	46000	44000	10000	7000	--	--	38000	--
Turbidity	ntu	-- [10]	8.8	10	3.8	32	9.7	4.2	13	1.8	2.8	9.9	9.8	4.4	3	--	--	--	--
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	<30	<30	30	**450**	**130**	<30	<30	<30	<50	<50	<50	<50	<10	--	--	<10	--
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	150	--	--	230	130	160	170	--	--	260	--
Beryllium	ug/l	-- [12]	--	--	--	--	--	--	<10	--	--	<2	<2	<2	<1	--	--	<1	--
Boron	ug/l	200 [13]	--	--	--	--	--	--	200	--	--	350	260	330	220	--	--	170	--
Cadmium	ug/l	0.2 [13]	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.1	0.3	<0.1	0.1	<0.1	--	--	0.1	--
Calcium	ug/l	--	166000	150000	129000	149000	88000	109000	149000	136000	142000	139000	144000	124000	128000	--	--	--	--
Chromium	ug/l	-- [14]	<10	<50	<10	20	20	<10	--	<10	<10	4	8	<1	<5	--	--	4	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	1.5	--	--	0.9	1.7	1.2	2.2	--	--	0.9	--
Copper	ug/l	5	<5	<5	9	0.7	<5	<5	<5	<5	<1	11	2	2	<5	--	--	--	--
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	1290	1940	610	510	750	590	880	170	950	1240	600	120	640	--	--	600	--
Lead	ug/l	-- [16]	<2	<2	<2	<2	<2	<2	<2	<2	--	2	<1	<1	<1	--	--	<1	--
Magnesium	ug/l	--	40000	38000	27000	40000	22000	40000	55000	46000	52000	52000	52000	41000	51000	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	--	1310	--	--	440	380	310	861	--	--	--	--
Mercury, dissolved	ug/l	0.2	<0.2	<0.2	<0.2	<0.2	3000	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	<0.1	--
Molybdenum	ug/l	40	--	--	--	--	--	--	<10	--	--	<10	<10	<10	<5	--	--	<5	--
Nickel	ug/l	25	<10	<10	<10	10	<10	<10	<100	<10	<10	<10	<10	<10	<5	--	--	7	--
Potassium	ug/l	--	4000	6000	--	4000	--	9000	25000	27000	--	21000	26000	24000	28000	--	--	--	--
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1	<1	<1	<1	4	1	<1	1	--	--	<1	--
Silicon	ug/l	--	--	--	--	--	--	--	5000	--	--	6140	4150	4140	5000	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	--	--	--	<0.1	--
Sodium	ug/l	--	46000	48000	39000	48000	24000	55000	102000	97000	105000	76000	115000	74000	88000	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--	--	500	--	--	650	510	486	496	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	3000	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	--	--	--	--	--	--	<10	--	--	<1	--	<1	<1	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	<50	--	--	--	--	<10	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	<10	--	--	<10	--	<10	<10	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	<10	--	--	<1	3	<1	<5	--	--	4	--
Zinc	ug/l	30	20	<10	10	20	20	<100	<10	<10	<10	<10	<10	<10	<5	--	--	<10	--
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	-- [6]	1700	4500	4700	--	6200	1800	5100	2900	11500	9400	--	--	--	--	--	10030	--
pH (Field)	-	8.5	7.91	7.46	7.79	7.48	7.97	7.37	7.98	7.66	8.08	8.1	8.07	8.22	7.91	--	--	7	--
Temperature (Field)	deg c	-- [9]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7	--
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	(2) (1) PWQO	SW-22 08-Apr-2006	SW-22 15-Aug-2006 [19]	SW-22 25-Nov-2006	SW-22 22-Apr-2007	SW-22 31-Aug-2007	SW-22 26-Nov-2007	SW-22 04-May-2008	SW-22 14-Aug-2008	SW-22 28-Nov-2008	SW-22 24-Apr-2009	SW-22 25-Aug-2009	SW-22 30-Nov-2009	SW-22 17-May-2010	SW-22 21-Aug-2010 [5]	SW-22 27-Nov-2010	SW-22 09-May-2011	SW-22 08-Sep-2011
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	414000	--	428000	379000	463000	377000	388000	429000	455000	431000	455000	422000	475000	446000	513000	450000	463000
Ammonia, unionized	ug/l	20	6	--	1	2	38	0	3	1	0	1	1	0	104	0	2	68	4
Ammonia Nitrogen	ug/l	--	3160	--	930	1530	4620	90	1920	150	140	310	270	40	6160	<20	590	4300	140
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	<1000	--	1000	2000	2000	1000	1000	4000	2000	3000	8000	<1000	12000	<1000	2000	3000	6000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	81000	--	104000	83000	137000	104000	78000	99000	109000	93000	77000	93000	104000	109000	101000	85000	120000
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	515	--	605	550	750	555	600	800	680	1100	1070	1070	1190	1150	1250	1050	1200
Dissolved Organic Carbon	ug/l	--	7400	--	7800	7800	9800	5900	6000	10400	8100	7800	8100	5500	7500	5600	6400	7100	5300
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	418200	--	433700	390700	514400	396600	412000	445000	514000	437000	434000	406000	436000	449000	512000	426000	479000
Nitrate	ug/l	--	330	--	390	800	1090	<100	470	<100	140	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	890	470	240	1510	130	2930	1370	500
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [6]	30	--	60	190	50	30	10	20	70	10	60	20	20	40	30	30	60
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	30000	--	27000	27000	18000	15000	19000	1000	19000	21000	13000	15000	18000	10000	21000	22000	12000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	670000	--	735000	649000	845000	670000	637000	702000	754000	715000	696000	696000	774000	748000	813000	682000	780000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	14000	--	2000	<2000	2000	9000	2000	<2000	92000	2000	92000	19000	27000	8000	7000	10000	177000
Turbidity	ntu	-- [10]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																			
Aluminum	ug/l	-- [11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	-- [11]	<10	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	160	--	130	120	310	130	190	180	170	190	240	140	210	180	160	190	140
Beryllium	ug/l	-- [12]	<1	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<0.5
Boron	ug/l	200 [13]	190	--	230	180	190	100	170	230	150	240	170	170	230	170	140	220	150
Cadmium	ug/l	0.2 [13]	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	123000	--	121000	112000	150000	116000	122000	127000	153000	129000	131000	123000	130000	137000	149000	126000	144000
Chromium	ug/l	-- [14]	4	--	3	3	71	2	4	3	5	3	4	3	2	3	3	3	4
Cobalt	ug/l	0.9	0.8	--	0.6	0.6	0.9	0.4	0.7	0.8	0.7	1	1.3	0.6	1.2	0.9	0.9	0.9	0.9
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [15]	--	--	--	--	--	--	--	--	--	--	--	--	--	<50	<50	<50	<50
Iron	ug/l	300	760	--	170	110	420	980	780	490	2510	480	7690	920	610	230	40	1560	460
Lead	ug/l	-- [16]	<1	--	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1
Magnesium	ug/l	--	27000	--	32000	27000	34000	26000	26000	31000	32000	28000	26000	24000	27000	26000	34000	27000	29000
Manganese	ug/l	--	250	--	240	140	220	260	200	310	250	240	630	150	340	280	140	250	240
Mercury, dissolved	ug/l	0.2	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	7	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	8000	--	12000	10000	13000	9000	8000	8000	9000	10000	6000	8000	13000	10000	12000	10000	14000
Selenium	ug/l	100	<1	--	<1	<1	<1	<1	<1	<1	<1	<1	1	1	<1	<10	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	45000	--	58000	53000	75000	49000	45000	62000	54000	61000	42000	48000	71000	58000	68000	57000	72000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [17]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	6	--	1	6	6	2	3	<1	10	3	7	6	1	4	5	4	5
Zinc	ug/l	30	<10	--	<10	<10	10	<10	<10	<10	30	<10	<10	20	<10	<10	<10	<10	<10
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	<20	--	--	40	<20	<20	70	<20
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	1120	685	965	1000	1020	1055	825	1190
Dissolved Oxygen (Field)	ug/l	-- [6]	11880	--	10440	10040	7330	9880	5100	5110	7390	6610	7070	6390	6010	4810	8990	5880	3880
pH (Field)	-	8.5	7.3	--	7.1	7.2	7.2	7	7	7.1	7.2	7.3	7.1	7.6	7.8	7.3	7.5	7.9	7.7
Temperature (Field)	deg c	-- [9]	1	--	1	2	24	2	8	19	1	8	20	4	15	25	3	11	24
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	(3) (1) PWQO	SW-22 29-Nov-2011	SW-22 06-May-2012 [25]	SW-22 22-Aug-2012 [25]	SW-22 12-Nov-2012	SW-22 12-June-2013	SW-22 20-Aug-2013	SW-22 20-Aug-2013										
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--												
Escherichia coli	cfu/100ml	--	--	--	--	--	--												
Fecal Coliform	cfu/100ml	--	--	--	--	--	--												
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--												
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	--[4]	462000	437000	527000	522000	423000												
Ammonia, unionized	ug/l	20	25	10	6	28	<20												
Ammonia Nitrogen	ug/l	--	3170	770	350	5580	30												
Bicarbonate	ug/l	--	--	--	--	--	--												
Biologic Oxygen Demand, Five Day	ug/l	--	4000	4000	1000	2000	2000												
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--												
Chloride	ug/l	--	118000	93000	97000	122000	87000												
Color	color unit	--	--	--	--	--	--												
Conductivity	uS/cm	--	1200	1110	1380	1320	1040												
Dissolved Organic Carbon	ug/l	--	4300	6600	12200	6300	10000												
Fluoride	ug/l	--	--	--	--	--	--												
Hardness, Calcium Carbonate	ug/l	--	440000	415000	578000	484000	403000												
Nitrate	ug/l	--	--	--	--	--	--												
Nitrate as N	ug/l	--	1420	3910	<100	970	890												
Nitrite	ug/l	--	--	--	--	--	--												
Nitrogen	ug/l	--	--	--	--	--	--												
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--												
pH	-	8.5	--	--	--	--	7.99												
Phosphate	ug/l	--	--	--	--	--	--												
Phosphorus	ug/l	--[6]	20	190	130	20	10												
Silica	ug/l	--	--	--	--	--	--												
Sulfate	ug/l	--	21000	21000	112000	26000	7000												
Tannin & Lignin	ug/l	--	--	--	--	--	--												
Total Dissolved Solids	ug/l	--	780000	722000	897000	858000	676000												
Total Organic Carbon	ug/l	--	--	--	--	--	--												
Total Suspended Solids	ug/l	--	14000	32000	15000	4000	8000												
Turbidity	ntu	--[10]	--	--	--	--	--												
Metals																			
Aluminum	ug/l	--[11]	--	--	--	--	<10												
Aluminum, dissolved	ug/l	--[11]	<10	<10	10	<10	<10												
Arsenic	ug/l	100	--	--	--	--	--												
Barium	ug/l	--	210	180	170	220	200												
Beryllium	ug/l	--[12]	<0.5	<0.5	<0.5	<0.5	<0.5												
Boron	ug/l	200[13]	150	190	280	150	280												
Cadmium	ug/l	0.2[13]	<0.1	<0.1	<0.1	<0.1	<0.1												
Calcium	ug/l	--	130000	120000	169000	141000	112000												
Chromium	ug/l	--[14]	4	6	2	4	3												
Cobalt	ug/l	0.9	0.9	1.6	1.4	0.9	0.7												
Copper	ug/l	5	--	--	--	--	--												
Hexavalent Chromium	ug/l	1[15]	<50	<50	<50	<50	<0.5												
Iron	ug/l	300	1530	1410	1360	540	460												
Lead	ug/l	--[16]	<1	1	<1	<1	<1												
Magnesium	ug/l	--	28000	28000	38000	32000	30000												
Manganese	ug/l	--	340	830	960	270	210												
Mercury, dissolved	ug/l	0.2	<0.1	<0.1	<0.1	<0.1	<0.1												
Molybdenum	ug/l	40	<5	<5	<5	<5	<5												
Nickel	ug/l	25	<5	<5	<5	<5	<5												
Potassium	ug/l	--	10000	12000	10000	11000	12000												
Selenium	ug/l	100	<1	<1	<1	<1	<1												
Silicon	ug/l	--	--	--	--	--	--												
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1												
Sodium	ug/l	--	69000	62000	71000	67000	66000												
Strontium	ug/l	--	--	--	--	--	--												
Sulfur	ug/l	--	--	--	--	--	--												
Thallium	ug/l	0.3[17]	--	--	--	--	--												
Tin	ug/l	--	--	--	--	--	--												
Titanium	ug/l	--	--	--	--	--	--												
Vanadium	ug/l	6	7	6	4	4	2												
Zinc	ug/l	30	<10	10	<10	<10	<10												
Phenols																			
Phenolics, Total Recoverable	ug/l	1[18]	--	--	--	--													
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	30	--	--	--	--												
Conductivity (Field)	uS/cm	--	815	815	880	965	996												
Dissolved Oxygen (Field)	ug/l	--[8]	4910	5380	1080	3920	1170												
pH (Field)	-	8.5	7.8	7.8	7.5	7.5	7.7												
Temperature (Field)	deg c	--[9]	5	12	25	8	16												
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	[2] [1] PWQO	SW-23 28-Apr-2001	SW-23 09-Nov-2001	SW-23 17-Apr-2002	SW-23 01-Apr-2003	SW-23 01-Oct-2003	SW-23 01-Dec-2003	SW-23 04-Jun-2004	SW-23 04-Jul-2004	SW-23 04-Oct-2004 [18]	SW-23 13-Jun-2005 [19]	SW-23 31-Aug-2005 [13]	SW-23 30-Oct-2005 [18]	SW-23 31-Dec-2005 [20]	SW-23 08-Apr-2006 [13]	SW-23 15-Aug-2006 [18]	SW-23 25-Nov-2006 [19]	SW-23 31-Aug-2007 [18]
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	700	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	0	--	0	<10	--	10	--	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	0	--	1	<10	--	--	820	2460	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	14	--	--[3]	<10	--	--	--	250	--	--	--	--	--	--	--	--	--
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	--[4]	352000	437000	235000	365000	375000	38000	397000	444000	--	--	--	--	--	--	--	--	--
Ammonia, unionized	ug/l	20	<20	<20	20	50	30	<20	<20	<20	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	350	70	580	1220	780	<20	1250	1430	--	--	--	--	--	--	--	--	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	3000	2000	<1000	<1000	2000	<1000	17000	5000	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	17000	26000	18000	8000	29000	21000	42000	29000	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	72000	115000	61000	87000	92000	4000	102000	104000	--	--	--	--	--	--	--	--	--
Color	color unit	--	15	34	16	12	18	38	28	28	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	863	1220	628	958	957	104	1010	1110	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	353000	469000	251000	405000	395000	31000	357000	402000	--	--	--	--	--	--	--	--	--
Nitrate	ug/l	--	400	<100	440	250	<100	230	<100	<100	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	690	970	1110	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	1580	--	--	9450	2030	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	--[6]	10	20	30	70	230	30	330	120	--	--	--	--	--	--	--	--	--
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	--	--	23000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tannin & Lignin	ug/l	--	400	1100	800	300	1000	1100	1100	900	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	560950	793000	408200	622700	622050	67600	656500	721500	--	--	--	--	--	--	--	--	--
Total Organic Carbon	ug/l	--	8300	11800	5300	7200	11200	7900	16700	13900	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	<2000	10000	2000	5000	25000	2000	1070000	33000	--	--	--	--	--	--	--	--	--
Turbidity	ntu	--[10]	0.5	4.8	0.6	0.6	56.5	4.1	43.6	59.3	--	--	--	--	--	--	--	--	--
Metals																			
Aluminum	ug/l	--[11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aluminum, dissolved	ug/l	--[11]	<50	<50	<50	<10	10	**130**	30	30	--	--	--	--	--	--	--	--	--
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	110	110	80	120	90	20	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/l	--[12]	<2	<2	<2	<1	<1	<1	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200[13]	150	<50	--	130	120	<10	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/l	0.2[13]	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	95000	120000	69000	111000	99000	9000	90000	105000	--	--	--	--	--	--	--	--	--
Chromium	ug/l	--[14]	6	3	11	<5	7	<1	2	8	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.5	0.4	0.2	0.4	1.2	<0.2	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	24	<1	2	<5	<1	2	<1	<1	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1[15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	80	120	90	--	5460	21	8910	5640	--	--	--	--	--	--	--	--	--
Lead	ug/l	--[16]	1	<1	<1	<1	<1	<1	<1	<1	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	28000	41000	19000	31000	36000	2000	32000	34000	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	70	50	50	50	1010	10	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--	--	--	--	--	--
Molybdenum	ug/l	40	<10	<10	<10	<5	<5	<5	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	<10	<10	<10	<5	<5	<5	5	<5	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	10000	13000	6000	12000	11000	1000	13000	11000	--	--	--	--	--	--	--	--	--
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1	<1	<1	--	--	--	--	--	--	--	--	--
Silicon	ug/l	--	4400	6360	2260	4700	4800	2900	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	40000	62000	28000	51000	61000	4000	64000	62000	--	--	--	--	--	--	--	--	--
Strontium	ug/l	--	650	656	433	715	612	68	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3[17]	<1	<1	<1	<1	<1	<1	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	<10	<10	<10	<10	<10	<10	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	<1	1	<1	<5	2	<1	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30	<10	<10	<10	<5	<10	<10	<10	<10	--	--	--	--	--	--	--	--	--
Phenols																			
Phenolics, Total Recoverable	ug/l	1[18]	<1	<1	<1	<1	<1	<1	<1	<1	--	--	--	--	--	--	--	--	--
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (Field)	ug/l	--[6]	10600	10400	--	--	8600	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	8.5	8.13	8.13	8.31	7.84	7.76	6.74	7.35	7.29	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	--[9]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	(2) (1) PWQO	SW-23 26-Nov-2007 [16]	SW-23 04-May-2008 [16]	SW-23 14-Aug-2008 [13]	SW-23 28-Nov-2008 [20]	SW-23 25-Aug-2009 [19]	SW-23 30-Nov-2009 [13]	SW-23 21-Aug-2010 [16]	SW-23 27-Nov-2010 [15]	SW-23 09-May-2011 [19]	SW-23 08-Sep-2011 [19]	SW-23 29-Nov-2011 [13]	SW-23 06-May-2012 [19]	SW-23 22-Aug-2012 [18]	SW-23 12-Nov-2012 [19]			
Bacterial																			
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	--[4]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Ammonia, unionized	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Biologic Oxygen Demand, Five Day	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Chloride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Conductivity	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Nitrate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
pH	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Phosphorus	ug/l	--[9]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Sulfate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Total Dissolved Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Turbidity	ntu	--[10]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Metals																			
Aluminum	ug/l	--[11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Aluminum, dissolved	ug/l	--[11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Barium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Beryllium	ug/l	--[12]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Boron	ug/l	200[13]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Cadmium	ug/l	0.2[13]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Calcium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Chromium	ug/l	--[14]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Hexavalent Chromium	ug/l	1[15]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Iron	ug/l	300	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Lead	ug/l	--[16]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Magnesium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Manganese	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Mercury, dissolved	ug/l	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Potassium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Selenium	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Sodium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Thallium	ug/l	0.3[17]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Zinc	ug/l	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Phenols																			
Phenolics, Total Recoverable	ug/l	1[18]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Dissolved Oxygen (Field)	ug/l	--[6]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
pH (Field)	-	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Temperature (Field)	deg c	--[9]	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	[3] [1] PWQO	SW-24 01-Apr-2003																
Bacterial																			
Coliform	cfu/100ml	--	--																
Escherichia coli	cfu/100ml	--	<10																
Fecal Coliform	cfu/100ml	--	<10																
Fecal Streptococci, Kf Agar	cfu/100ml	--	<10																
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	-- [4]	274000																
Ammonia, unionized	ug/l	20	<20																
Ammonia Nitrogen	ug/l	--	<20																
Bicarbonate	ug/l	--	--																
Biologic Oxygen Demand, Five Day	ug/l	--	<1000																
Chemical Oxygen Demand	ug/l	--	<5000																
Chloride	ug/l	--	32000																
Color	color unit	--	8																
Conductivity	uS/cm	--	631																
Dissolved Organic Carbon	ug/l	--	--																
Fluoride	ug/l	--	--																
Hardness, Calcium Carbonate	ug/l	--	313000																
Nitrate	ug/l	--	340																
Nitrate as N	ug/l	--	--																
Nitrite	ug/l	--	<100																
Nitrogen	ug/l	--	--																
Nitrogen, Total Kjeldahl	ug/l	--	330																
pH	-	8.5	--																
Phosphate	ug/l	--	--																
Phosphorus	ug/l	-- [8]	40																
Silica	ug/l	--	--																
Sulfate	ug/l	--	--																
Tannin & Lignin	ug/l	--	<100																
Total Dissolved Solids	ug/l	--	410150																
Total Organic Carbon	ug/l	--	3300																
Total Suspended Solids	ug/l	--	4000																
Turbidity	ntu	-- [10]	0.6																
Metals																			
Aluminum	ug/l	-- [11]	--																
Aluminum, dissolved	ug/l	-- [11]	20																
Arsenic	ug/l	100	--																
Barium	ug/l	--	80																
Beryllium	ug/l	-- [12]	<1																
Boron	ug/l	200 [13]	<50																
Cadmium	ug/l	0.2 [13]	<0.1																
Calcium	ug/l	--	89000																
Chromium	ug/l	-- [14]	<5																
Cobalt	ug/l	0.9	<0.2																
Copper	ug/l	5	<5																
Hexavalent Chromium	ug/l	1 [15]	--																
Iron	ug/l	300	90																
Lead	ug/l	-- [16]	<1																
Magnesium	ug/l	--	22000																
Manganese	ug/l	--	30																
Mercury, dissolved	ug/l	0.2	<0.1																
Molybdenum	ug/l	40	<5																
Nickel	ug/l	25	<5																
Potassium	ug/l	--	4000																
Selenium	ug/l	100	<0.1																
Silicon	ug/l	--	4500																
Silver	ug/l	0.1	<0.1																
Sodium	ug/l	--	23000																
Strontium	ug/l	--	425																
Sulfur	ug/l	--	--																
Thallium	ug/l	0.3 [17]	<1																
Tin	ug/l	--	--																
Titanium	ug/l	--	<10																
Vanadium	ug/l	6	<5																
Zinc	ug/l	30	<5																
Phenols																			
Phenolics, Total Recoverable	ug/l	1 [18]	<1																
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--																
Conductivity (Field)	uS/cm	--	--																
Dissolved Oxygen (Field)	ug/l	-- [6]	--																
pH (Field)	-	8.5	8.06																
Temperature (Field)	deg c	-- [9]	--																
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	(2) (1) PWQO	SW-25 17-Apr-2002																
Bacterial																			
Coliform	cfu/100ml	--	--																
Escherichia coli	cfu/100ml	--	0																
Fecal Coliform	cfu/100ml	--	1																
Fecal Streptococci, Kf Agar	cfu/100ml	--	--(9)																
General Chemistry																			
Alkalinity (Total as CaCO3)	ug/l	--(4)	238000																
Ammonia, unionized	ug/l	20	20																
Ammonia Nitrogen	ug/l	--	550																
Bicarbonate	ug/l	--	--																
Biologic Oxygen Demand, Five Day	ug/l	--	<1000																
Chemical Oxygen Demand	ug/l	--	25000																
Chloride	ug/l	--	45000																
Color	color unit	--	50																
Conductivity	uS/cm	--	630																
Dissolved Organic Carbon	ug/l	--	--																
Fluoride	ug/l	--	--																
Hardness, Calcium Carbonate	ug/l	--	235000																
Nitrate	ug/l	--	470																
Nitrate as N	ug/l	--	--																
Nitrite	ug/l	--	<100																
Nitrogen	ug/l	--	1030																
Nitrogen, Total Kjeldahl	ug/l	--	--																
pH	-	8.5	--																
Phosphate	ug/l	--	--																
Phosphorus	ug/l	--(8)	30																
Silica	ug/l	--	--																
Sulfate	ug/l	--	24000																
Tannin & Lignin	ug/l	--	900																
Total Dissolved Solids	ug/l	--	409500																
Total Organic Carbon	ug/l	--	5800																
Total Suspended Solids	ug/l	--	3000																
Turbidity	ntu	--(10)	0.8																
Metals																			
Aluminum	ug/l	--(11)	--																
Aluminum, dissolved	ug/l	--(11)	<50																
Arsenic	ug/l	100	--																
Barium	ug/l	--	80																
Beryllium	ug/l	--(12)	<2																
Boron	ug/l	200(13)	--																
Cadmium	ug/l	0.2(13)	<0.1																
Calcium	ug/l	--	66000																
Chromium	ug/l	--(14)	<1																
Cobalt	ug/l	0.9	0.3																
Copper	ug/l	5	2																
Hexavalent Chromium	ug/l	1(15)	--																
Iron	ug/l	300	100																
Lead	ug/l	--(16)	<1																
Magnesium	ug/l	--	17000																
Manganese	ug/l	--	50																
Mercury, dissolved	ug/l	0.2	<0.1																
Molybdenum	ug/l	40	<10																
Nickel	ug/l	25	<10																
Potassium	ug/l	--	6000																
Selenium	ug/l	100	<1																
Silicon	ug/l	--	2270																
Silver	ug/l	0.1	<0.1																
Sodium	ug/l	--	27000																
Strontium	ug/l	--	432																
Sulfur	ug/l	--	--																
Thallium	ug/l	0.3(17)	<1																
Tin	ug/l	--	<10																
Titanium	ug/l	--	<10																
Vanadium	ug/l	6	<1																
Zinc	ug/l	30	<10																
Phenols																			
Phenolics, Total Recoverable	ug/l	1(18)	<1																
Field Measurements																			
Ammonia, unionized (Field)	ug/l	20	--																
Conductivity (Field)	uS/cm	--	--																
Dissolved Oxygen (Field)	ug/l	--(6)	--																
pH (Field)	-	8.5	8.38																
Temperature (Field)	deg c	--(9)	--																
Discharge	(L/s)																		

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Parameter	Unit	(2) (1) PWQO	SW-26 17-Jun-2010	SW-26 21-Aug-2010	SW-26 27-Nov-2010	SW-26 09-May-2011	SW-26 08-Sep-2011	SW-26 29-Nov-2011	SW-26 06-May-2012	SW-26 22-Aug-2012	SW-26 12-Nov-2012	SW-26 12-June-2013	SW-26 20-Aug-2013	SW-26 24-Oct-2013
Bacterial														
Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--
Escherichia coli	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Coliform	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--
Fecal Streptococci, Kf Agar	cfu/100ml	--	--	--	--	--	--	--	--	--	--	--	--	--
General Chemistry														
Alkalinity (Total as CaCO3)	ug/l	--(4)	24000	23000	31000	30000	35000	30000	23000	22000	35000	26000	24000	26000
Ammonia, unionized	ug/l	20	1	2	0	0	1	1	0	8	0	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<20	<20	<20	20	<20	<20	<20	240	<20	<20	30	20
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Biologic Oxygen Demand, Five Day	ug/l	--	<1000	<1000	<1000	<1000	1000	<1000	<1000	1000	1000	1000	<1000	2000
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	4000	4000	3000	5000	5000	5000	3000	2000	5000	6000	2000	2000
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity	uS/cm	--	72	69	82	86	93	83	64	60	93	83	65	67
Dissolved Organic Carbon	ug/l	--	6600	6300	7200	7800	6700	5600	7900	5800	7600	8100	7300	8300
Fluoride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	26000	26000	31000	31000	33000	31000	21000	26000	31000	31000	23000	28000
Nitrate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	<100	<100	230	150	120	150	190	<100	160	140	<100	120
Nitrite	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
pH	-	8.5	--	--	--	--	--	--	--	--	--	6.98	6.83	6.71
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	--(8)	50	30	<10	30	10	20	10	20	10	20	10	40
Silica	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	ug/l	--	6000	6000	6000	6000	7000	6000	6000	6000	7000	6000	6000	6000
Tannin & Lignin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	47000	45000	53000	56000	60000	54000	42000	39000	60000	54000	42000	44000
Total Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	8000	<2000	<2000	19000	3000	<2000	<2000	<2000	<2000	<2000	<2000	18000
Turbidity	ntu	--(10)	--	--	--	--	--	--	--	--	--	--	--	--
Metals														
Aluminum	ug/l	--(11)	--	--	--	--	--	--	--	--	--	160	**120**	**160**
Aluminum, dissolved	ug/l	--(11)	**200**	30	40	**100**	40	40	**130**	**100**	50	**90**	**100**	**80**
Arsenic	ug/l	100	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	10	10	10	10	10	10	10	10	10	10	10	10
Beryllium	ug/l	--(12)	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	ug/l	200(13)	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10
Cadmium	ug/l	0.2(13)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	7000	7000	9000	9000	10000	9000	5000	7000	9000	9000	6000	8000
Chromium	ug/l	--(14)	<1	<1	<1	<1	1	<1	2	<1	<1	1	<1	2
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1(15)	<50	<50	<50	<50	<50	<50	<50	<50	<50	<0.5	<0.5	<10
Iron	ug/l	300	240	130	170	220	160	190	200	160	130	20	140	260
Lead	ug/l	--(16)	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	2
Magnesium	ug/l	--	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Manganese	ug/l	--	20	10	<10	20	10	<10	10	20	<10	<10	<10	50
Mercury, dissolved	ug/l	0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Selenium	ug/l	100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	<2000	3000	4000	4000	5000	4000	3000	2000	4000	6000	<2000	3000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3(17)	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	ug/l	30	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Phenols														
Phenolics, Total Recoverable	ug/l	1(18)	--	--	--	--	--	--	--	--	--			
Field Measurements														
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--		--	--
Conductivity (Field)	uS/cm	--	204	130	188	78	110	82	125	135	110	90	62	60
Dissolved Oxygen (Field)	ug/l	--(6)	13920	13960	14880	13810	11400	14040	12420	9620	12440	2050	8010	9520
pH (Field)	-	8.5	7.9	8.5	7.8	8	8	8.5	8	7.9	8.1	6.7	7.6	7.6
Temperature (Field)	deg c	--(9)	19	21	3	9	22	5	9	22	8	15.8	23.3	12.2
Discharge	(L/s)									--	--			

ARNPRIOR WASTE DISPOSAL SITE
SURFACE WATER SAMPLING

Footnotes:
Tables should be read in conjunction with the accompanying document.
< value = Indicates parameter not detected above laboratory method detection limit.
> value = Indicates parameter detected above equipment analytical range.
-- Chemical not analyzed or criteria not defined.
(1) Provincial Water Quality Objectives
(2) Underlined Font = Parameter concentration greater than PWQO
(3) No result(s) available.
(4) Alkalinity should not be decreased by more than 25% of the natural concentration.
(5) Selenium MRL elevated due to matrix interference.
(6) Objective depends on water temperature and biota. Dissolved oxygen concentrations should not be less than the values specified in the PWQO document for cold water biota (e.g. salmonid fish communities) and warm water biota (e.g. centrarchid fish communities).
(7) This parameter was not measured.
(8) Current scientific evidence is insufficient to develop a firm Objective at this time. Accordingly, the following phosphorus concentrations should be considered as general guidelines which should be supplemented by site-specific studies: To avoid nuisance concentrations of algae in lakes, average total phosphorus concentrations for the ice-free period should not exceed 20 ug/L; A high level of protection against aesthetic deterioration will be provided by a total phosphorus concentration for the ice-free period of 10 ug/L or less. This should apply to all lakes naturally below this value; Excessive plant growth in rivers and streams should be eliminated at a total phosphorus concentration below 30 ug/L.
(9) (1) General: The natural thermal regime of any body of water shall not be altered so as to impair the quality of the natural environment. In particular, the diversity, distribution and abundance of plant and animal life shall not be significantly changed. (2) Waste Heat Discharge: (a) Ambient Temperature Changes: The temperature at the edge of a mixing zone shall not exceed the natural ambient water temperature at a representative control location by more than 10°C (18°F). However, in special circumstances, local conditions may require a significantly lower temperature difference than 10°C (18°F). Potential dischargers are to apply to the MOEE for guidance as to the allowable temperature rise for each thermal discharge. This ministry will also specify the nature of the mixing zone and the procedure for the establishment of a representative control location for temperature recording on a case-by-case basis. (b) Discharge Temperature Permitted: The maximum temperature of the receiving body of water, at any point in the thermal plume outside a mixing zone, shall not exceed 30°C (86°F) or the temperature of a representative control location plus 10°C (18°F) or the allowed temperature difference, which ever is the lesser temperature. These maximum temperatures are to be measured on a mean daily basis from continuous records. (c) Taking and Discharging of Cooling Water: Users of cooling water shall meet both the Objectives for temperature outlined above and the "Procedures for the Taking and Discharge of Cooling Water" as outlined in the MOEE publication Deriving Receiving-Water Based, Point-Source Effluent Requirements for Ontario Waters(1994).
(10) Suspended matter should not be added to surface water in concentrations that will change the natural Secchi disc reading by more than 10 percent.

(11) At pH 4.5 to 5.5 the Interim PWQO is 15 µg/L based on inorganic monomeric aluminum measure in clay-free samples; At pH > 5.5 to 6.5, no condition should be permitted which would increase the acid soluble inorganic aluminum concentration in clay-free samples to more than 10% above natural background concentrations for waters representative of that geological area of the Province that are unaffected by man-made inputs. At pH > 6.5 to 9.0, the Interim PWQO is 75 µg/L based on total aluminum measured in clay-free samples. If natural background aluminum concentrations in water bodies unaffected by man-made inputs are greater than the numerical Interim PWQO (above), no condition is permitted that would increase the aluminum concentration in clay-free samples by more than 10% of the natural background level. Note: pH values of < 6.5 and > 8.5 are outside the range considered acceptable by the PWQO for pH. See the Scientific Criteria Document for Development of Provincial Water Quality Objectives and Guidelines - Aluminum for a discussion of analytical procedures.
(12) If hardness as CaCO3 < 75 mg/L, PWQO = 11 µg/L; if hardness as CaCO3 > 75 mg/L, PWQO = 1100 µg/L.
(13) See Section 1.2.3. of PWQO. This Interim PWQO was set for emergency purposes based on the best information readily available. Employ due caution when applying this value.
(14) PWQO values exist for Cr(III) and Cr(VI)
(15) Adopted Canadian Water Quality Guidelines.
(16) If Alkalinity as CaCO3 < 20 mg/L, PWQO = 5 µg/L; if alkalinity as CaCO3 from 20 to 40 mg/L, PWQO = 10 µg/L; if alkalinity as CaCO3 from 40 to 80 mg/L, PWQO = 20 µg/L; if alkalinity as CaCO3 > 80 mg/L, PWQO = 25 ug/L.

(17) See Section 1.2.2. of PWQO. This Interim PWQO is currently under development. The value is subject to change upon publication by MOEE.
(18) Determined by the total reactive phenols test - the 4-AAP (4-amino-antipyrine) test. This objective should be used primarily as a screening tool. The isomer specific PWQOs for various phenolics should be employed where possible.
(19) Monitoring location was dry during this sampling event. No sample was collected.
(20) Monitoring location was frozen during this sampling event. No sample was collected.
(21) Selenium MRL elevated due to matrix interference (dilution was done).
(22) Holding time for Cr(VI) analysis was exceeded for the entire report.
(23) Selenium MRL elevated due to matrix interference. All mercury results for this report were analysed at Exova Pointe Claire.
(24) Metals analysis performed on aqua-regia digest of sample material except for Boron.
(25) Cr(VI) sample was filtered prior to analysis.

Adapted from Golder Associates 2012.

APPENDIX D

Graphs of Groundwater Monitoring and Surface Water Sampling Locations

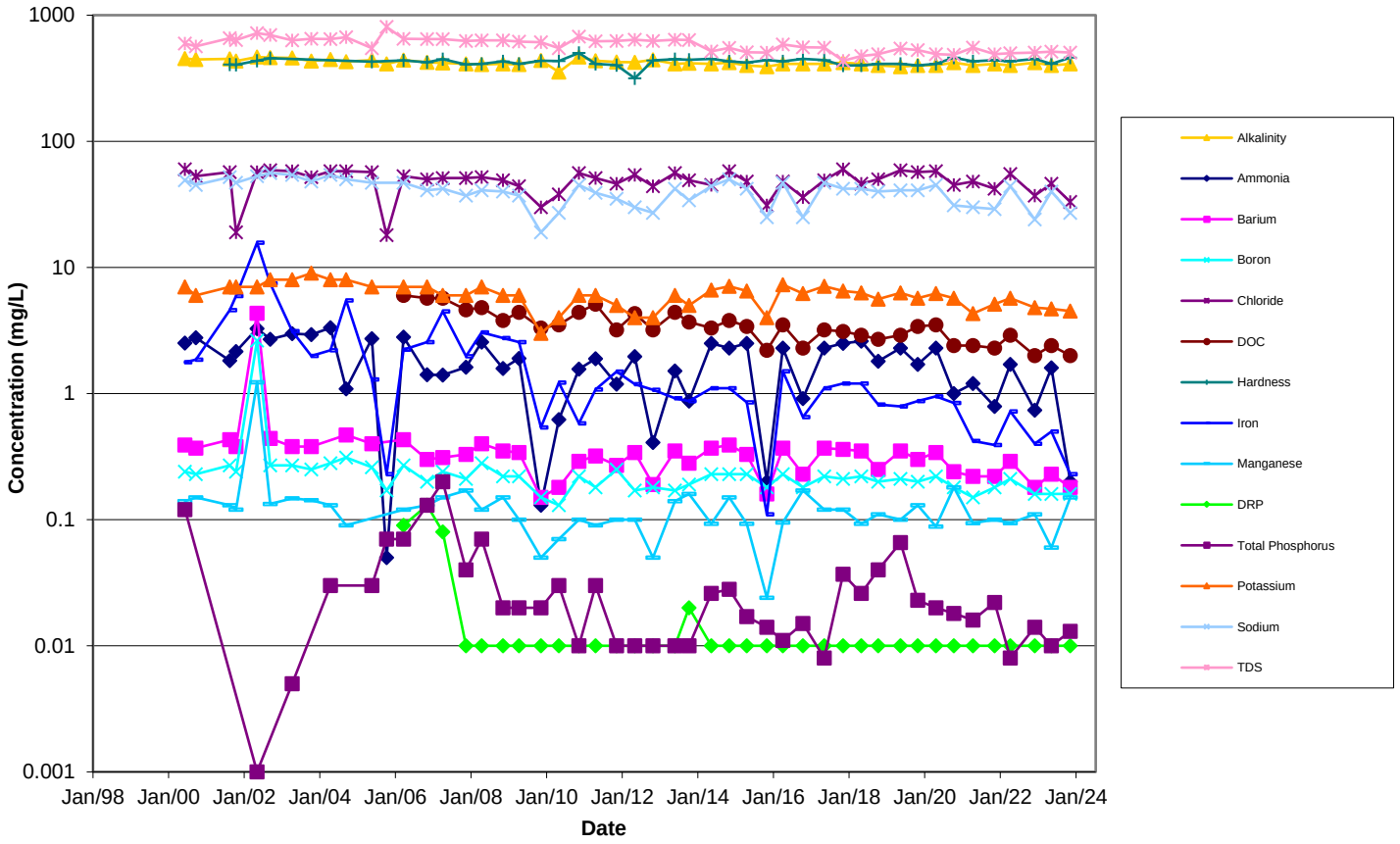


FIGURE D-I 1

Town of Arnprior

Waste Disposal Site

OV-7

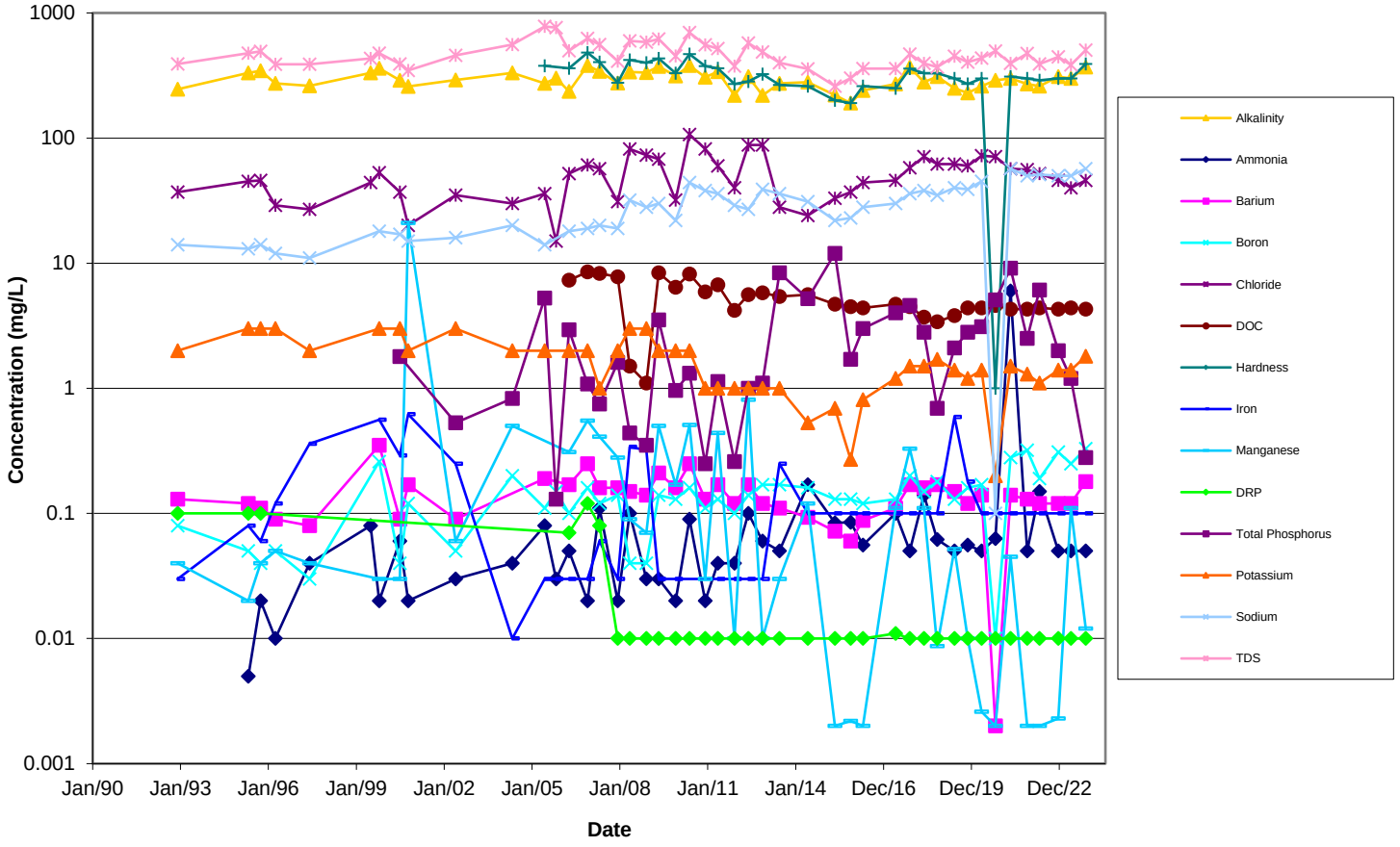


FIGURE D-I 2

Town of Arnprior

Waste Disposal Site

OV-9

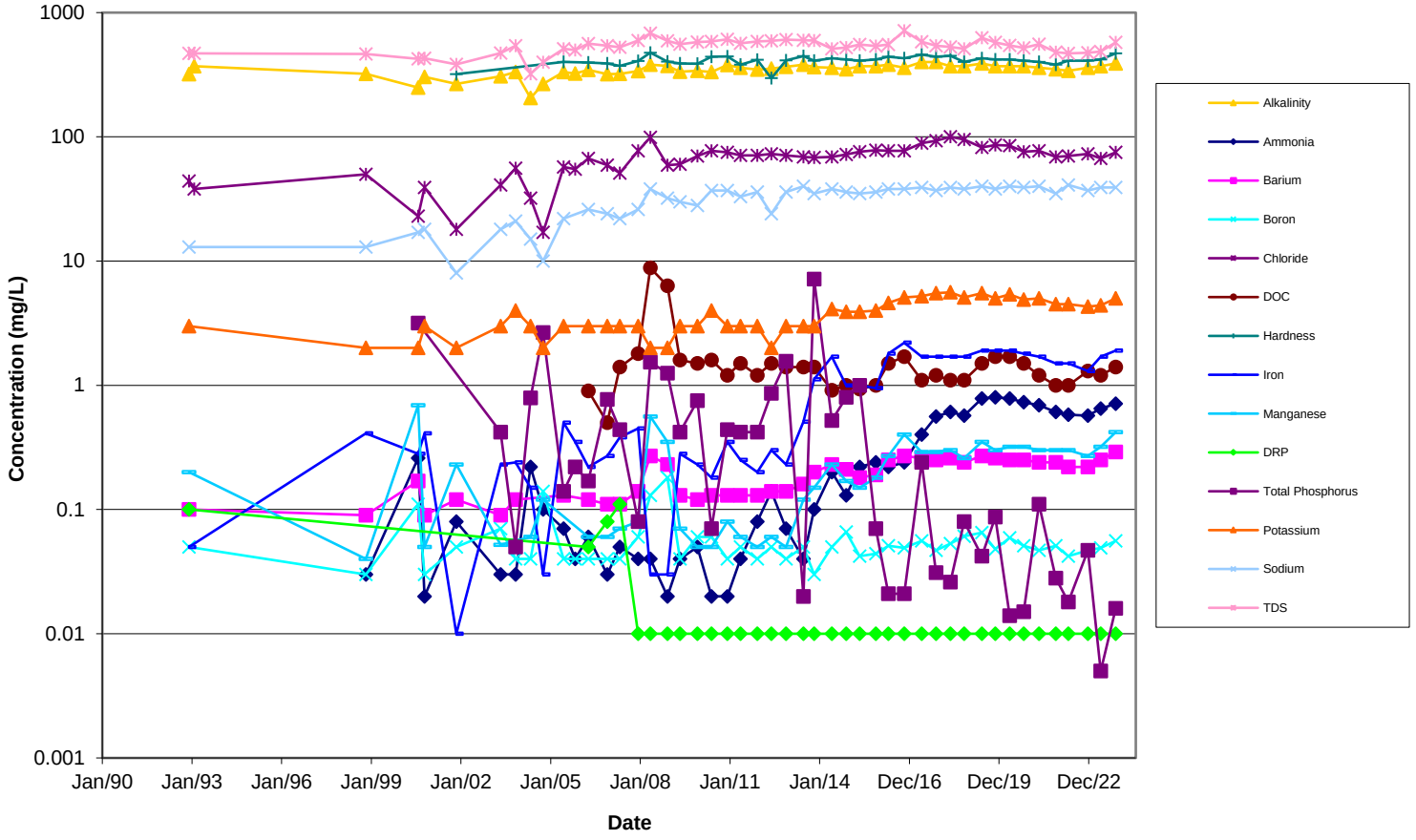


FIGURE D-I 3

Town of Arnprior

Waste Disposal Site

OV-10

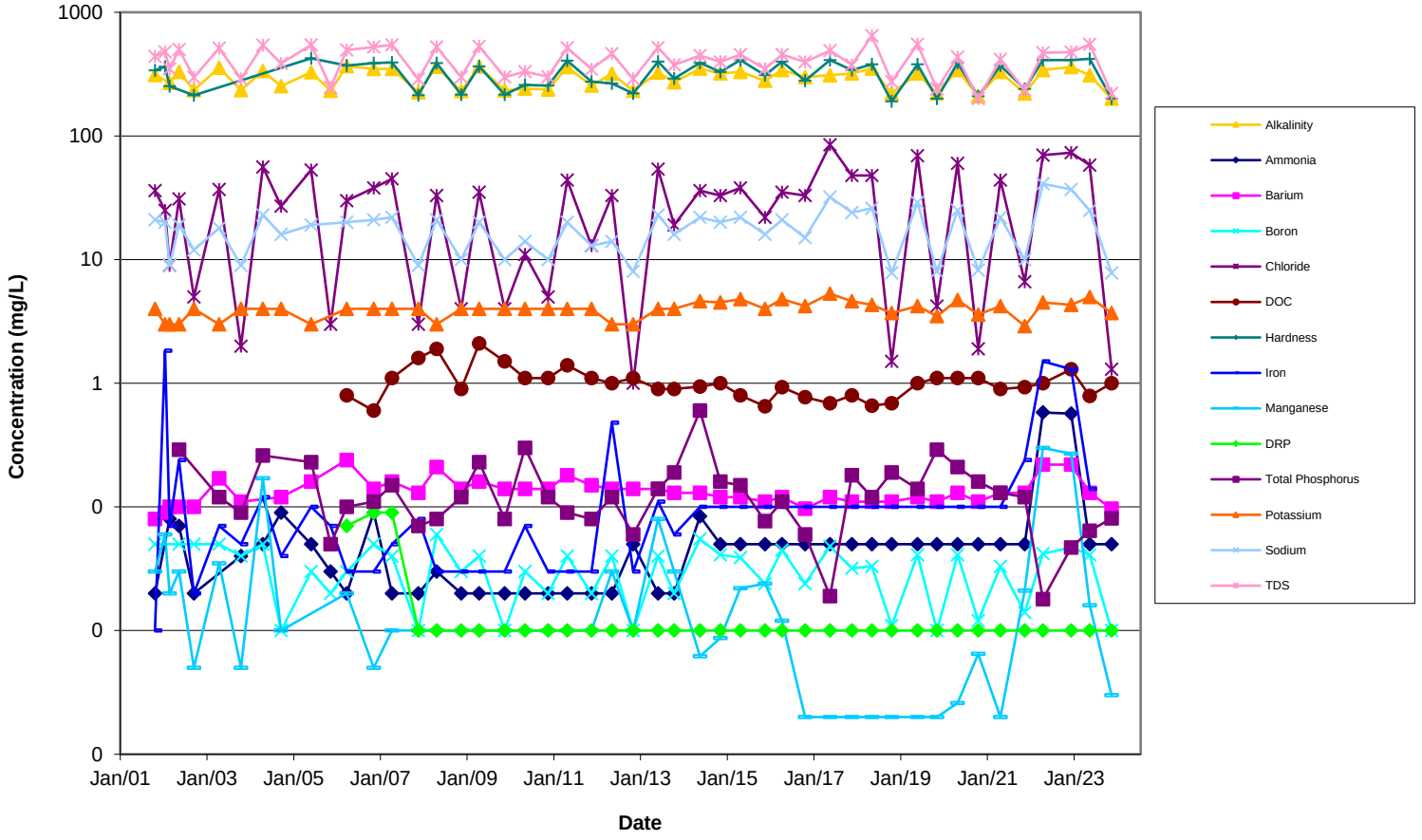


FIGURE D-I 4

Town of Arnprior

Waste Disposal Site

OV-13

GOLDER

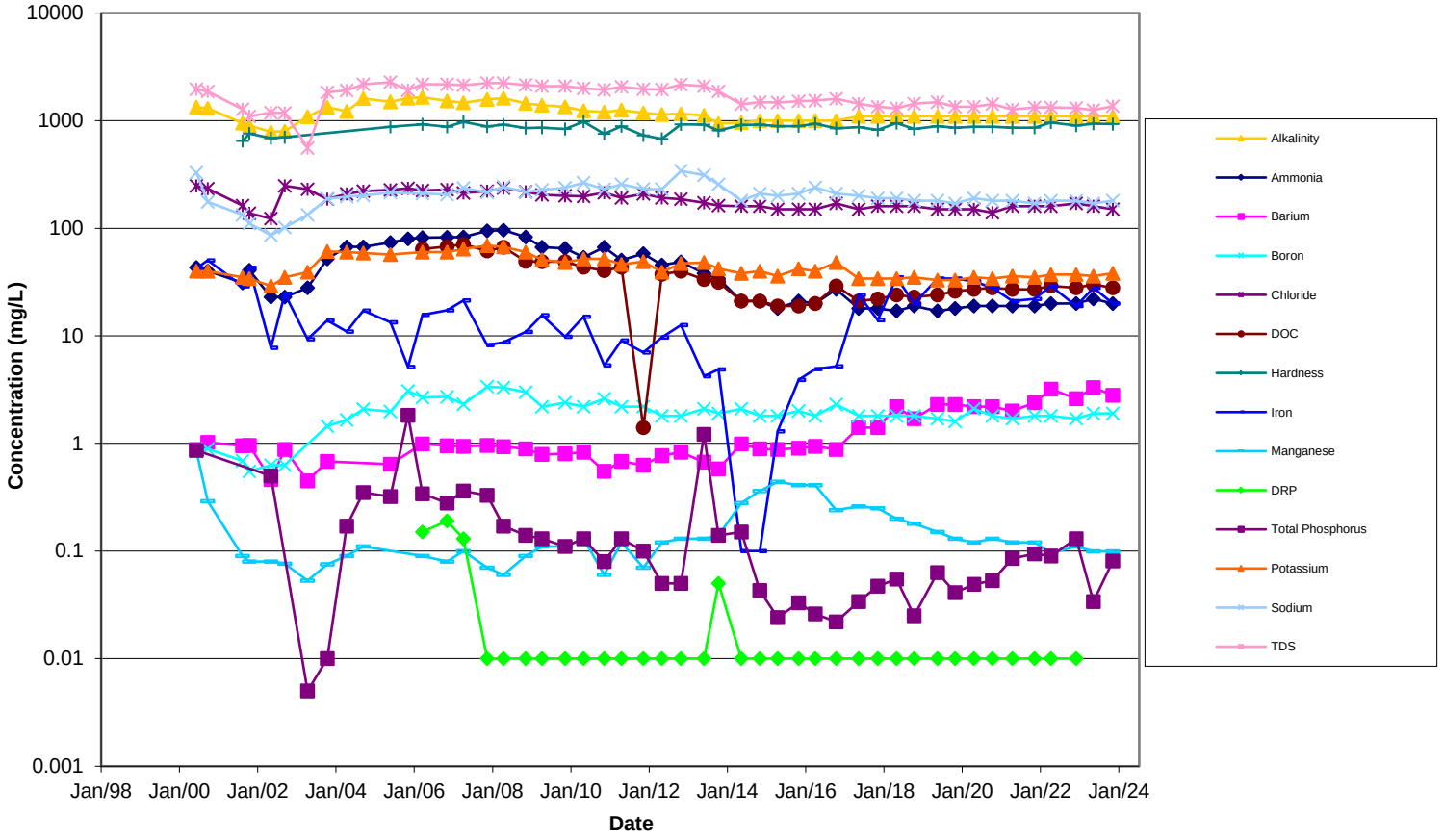


FIGURE D-I 5

Town of Arnprior

Waste Disposal Site

BR-1D

GOLDER

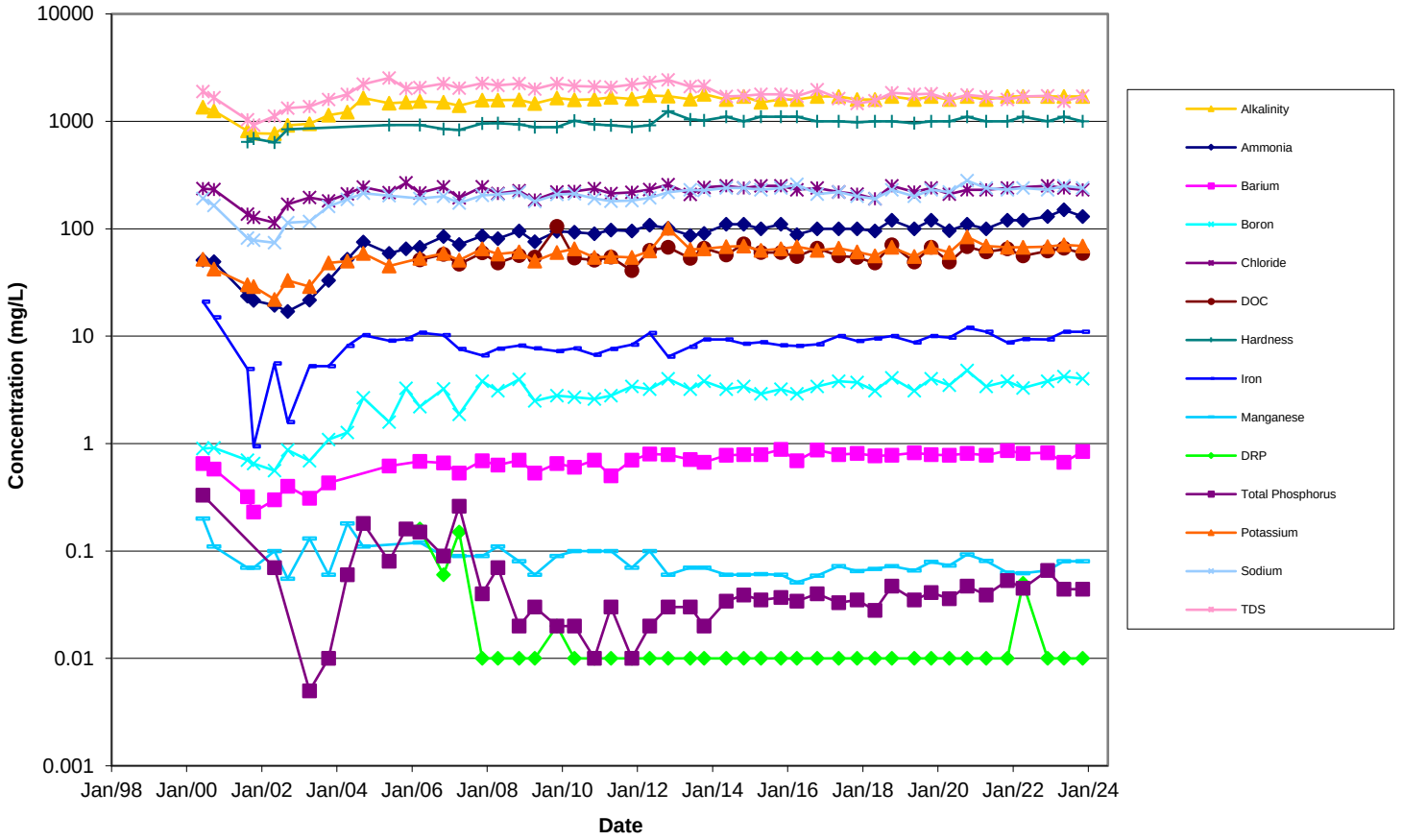


FIGURE D-I 6

Town of Arnprior

Waste Disposal Site

BR-1S

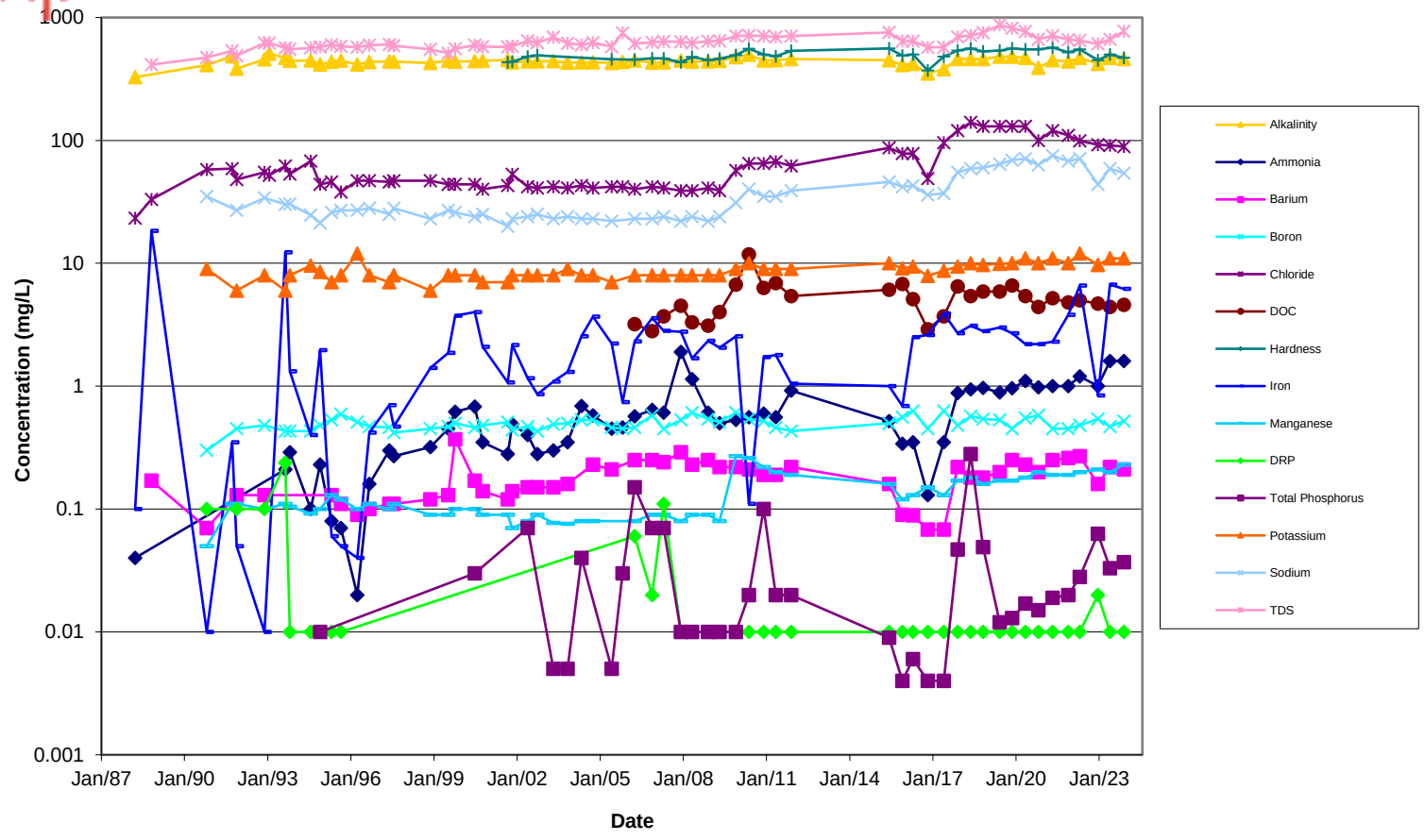


FIGURE D-I 7

Town of Arnprior

Waste Disposal Site

BR-3

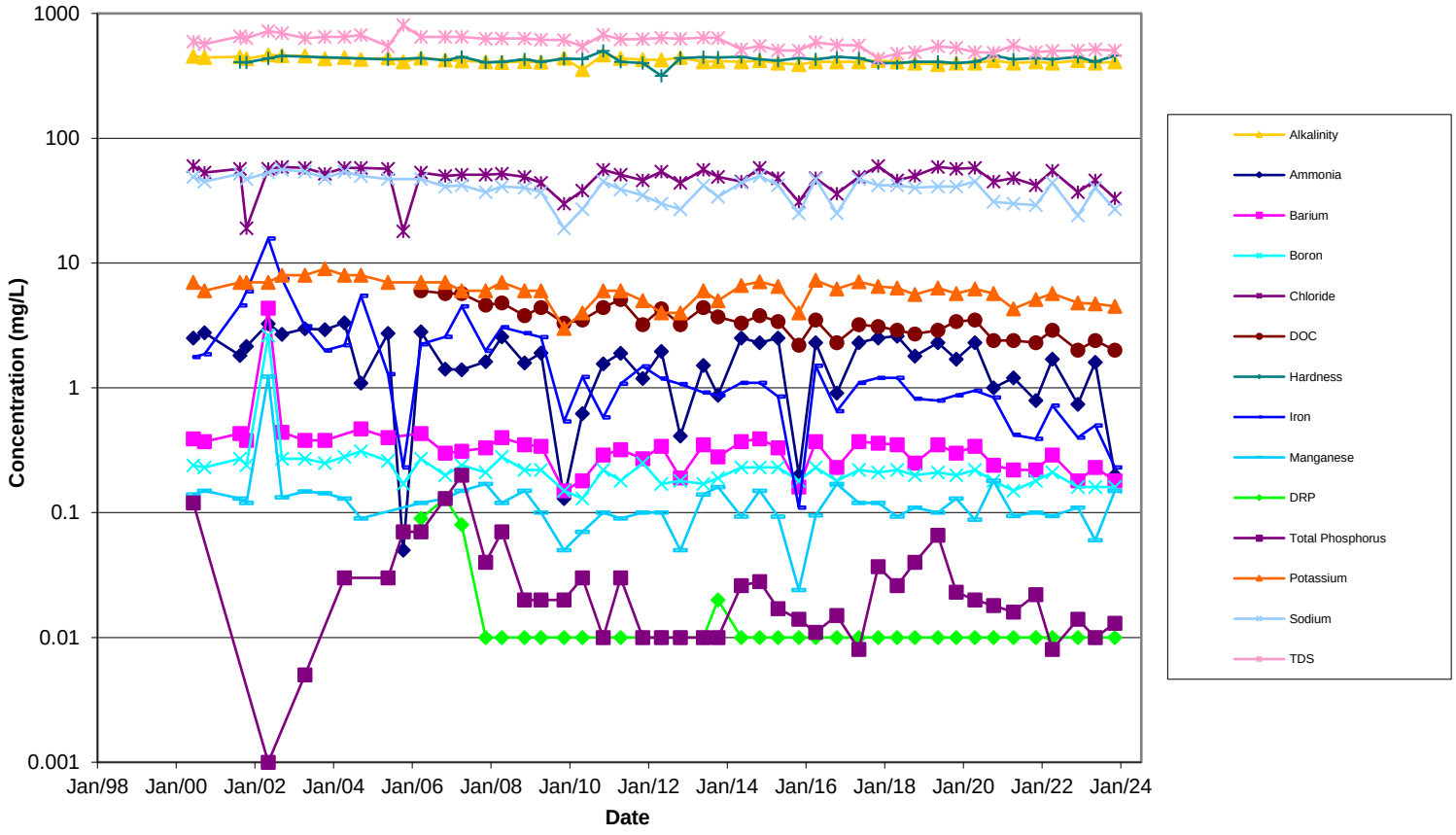


FIGURE D-I 8

Town of Arnprior

Waste Disposal Site

BR-5D

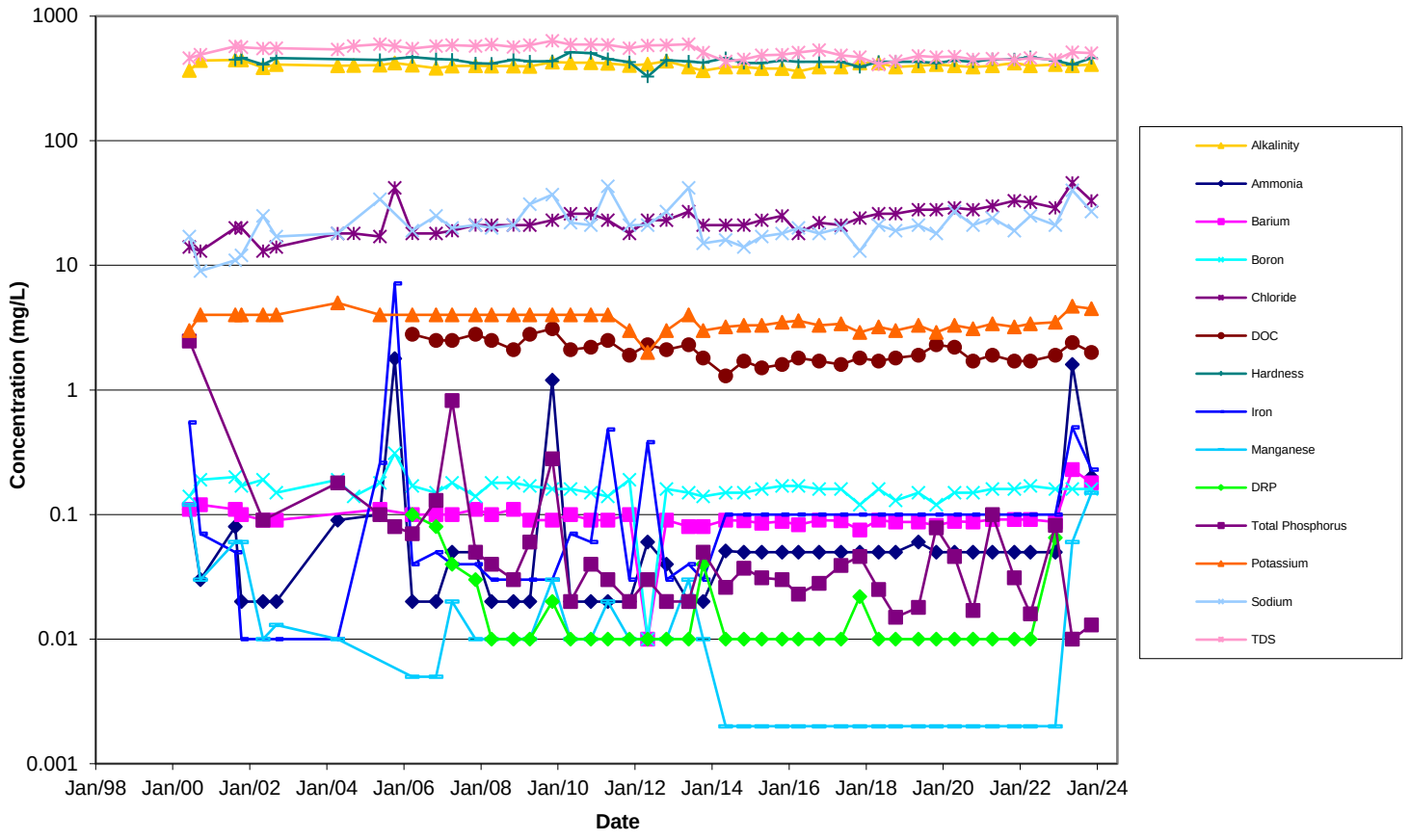


FIGURE D-I 9

Town of Arnprior

Waste Disposal Site

BR-5S

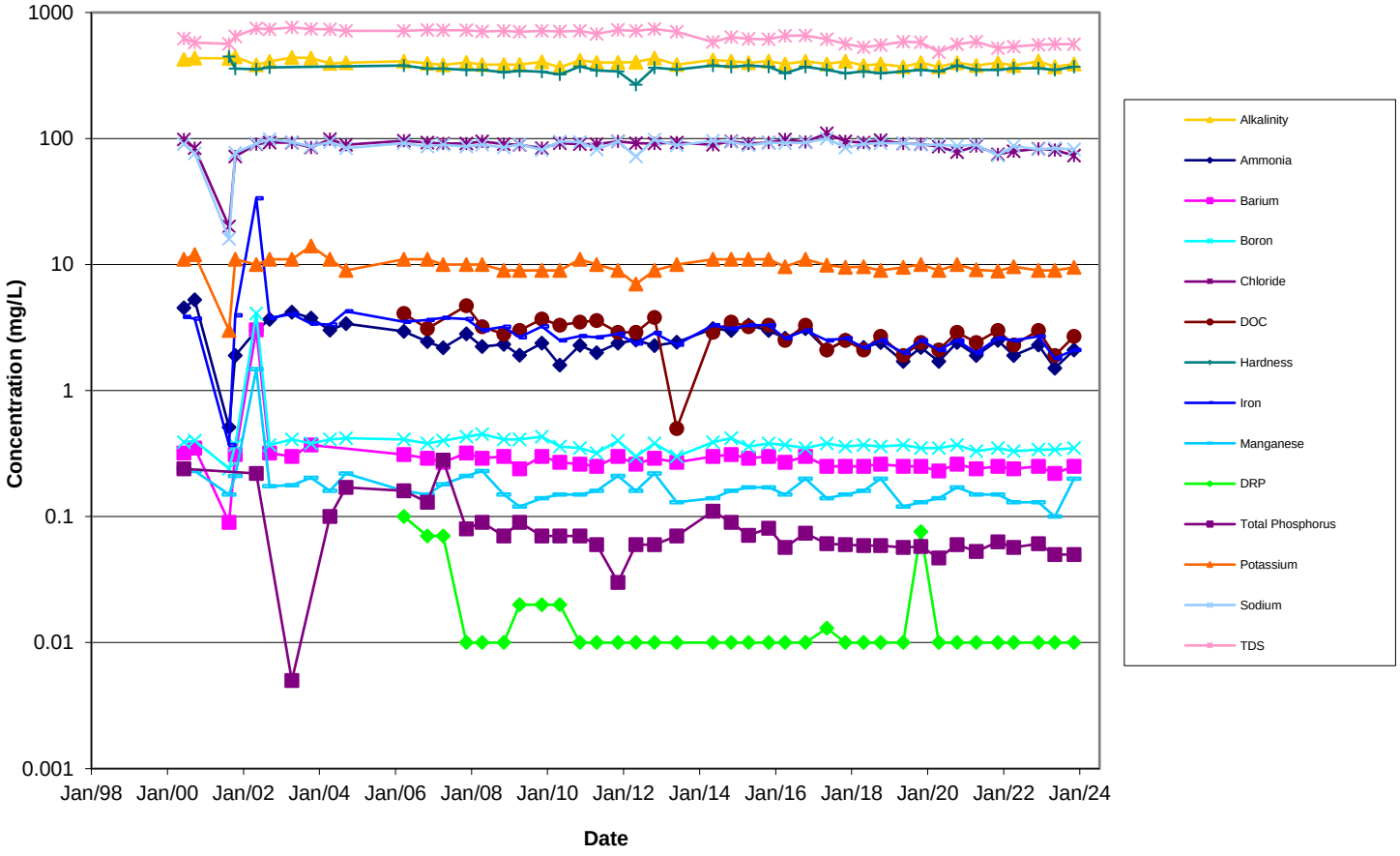


FIGURE D-I 10

Town of Arnprior

Waste Disposal Site

BR-6D

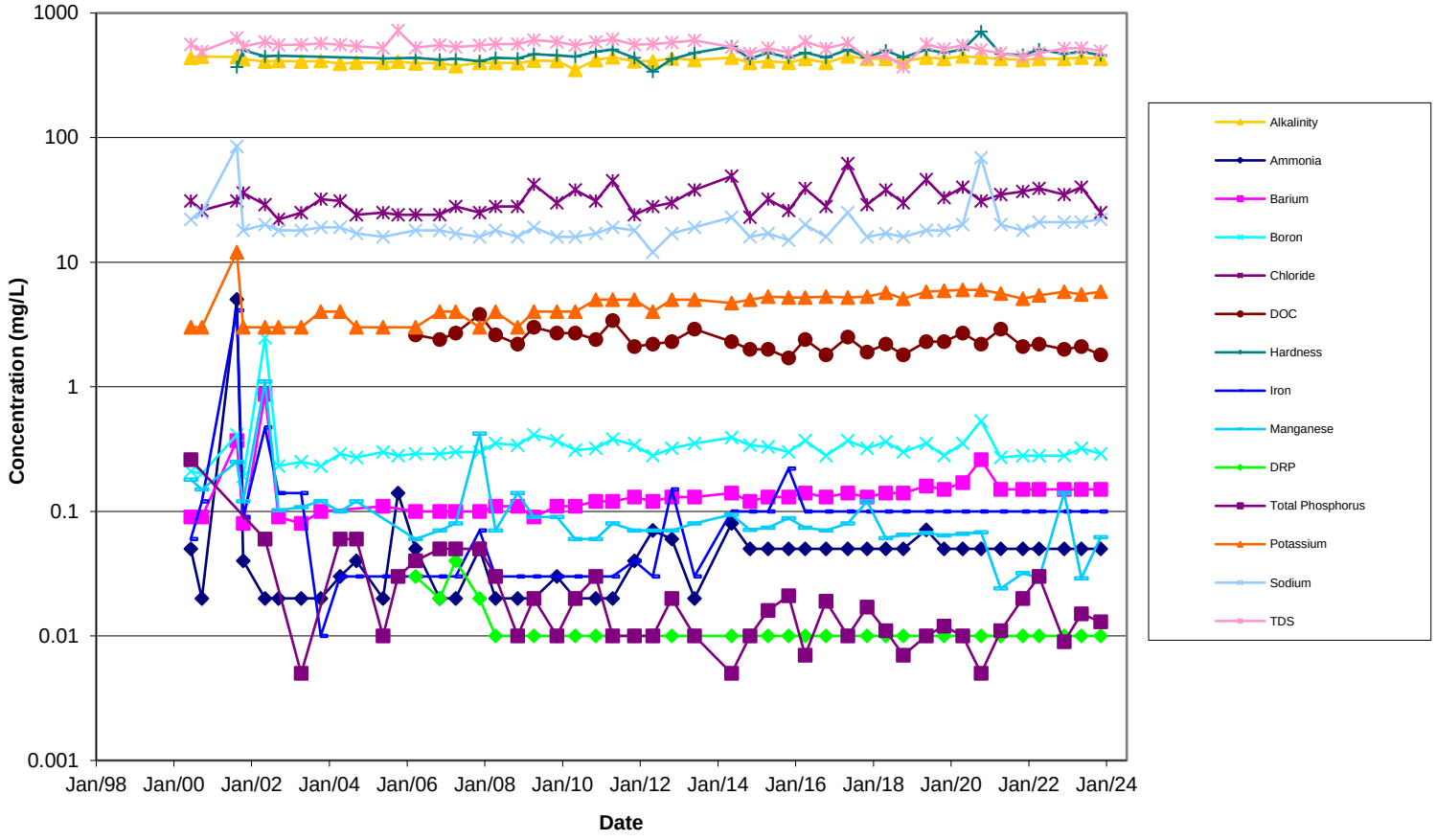


FIGURE D-I 11

Town of Arnprior

Waste Disposal Site

BR-6S

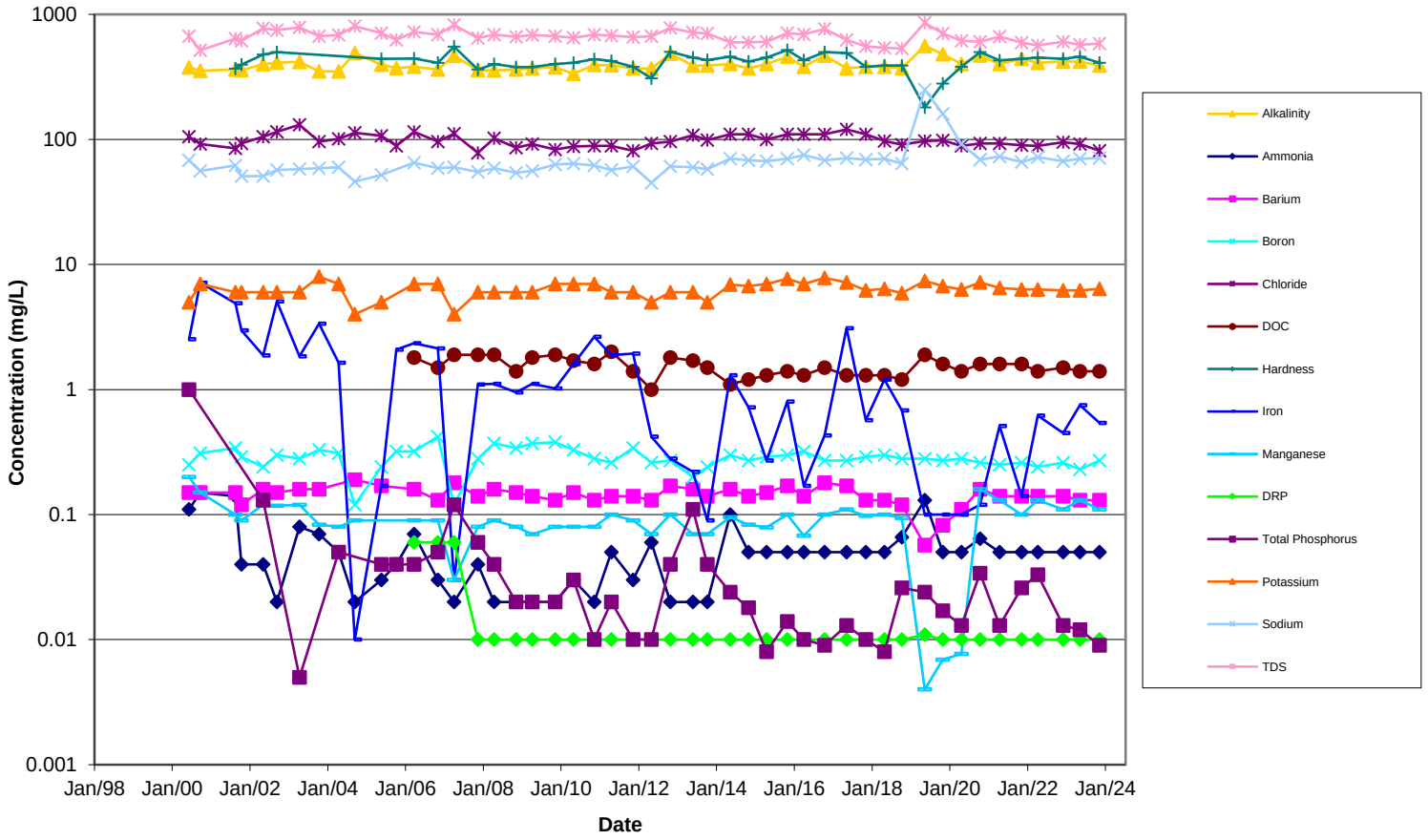


FIGURE D-I 12

Town of Arnprior

Waste Disposal Site

BR-7D

FIGURE D-I 13

Town of Arnprior

Waste Disposal Site

BR-7S

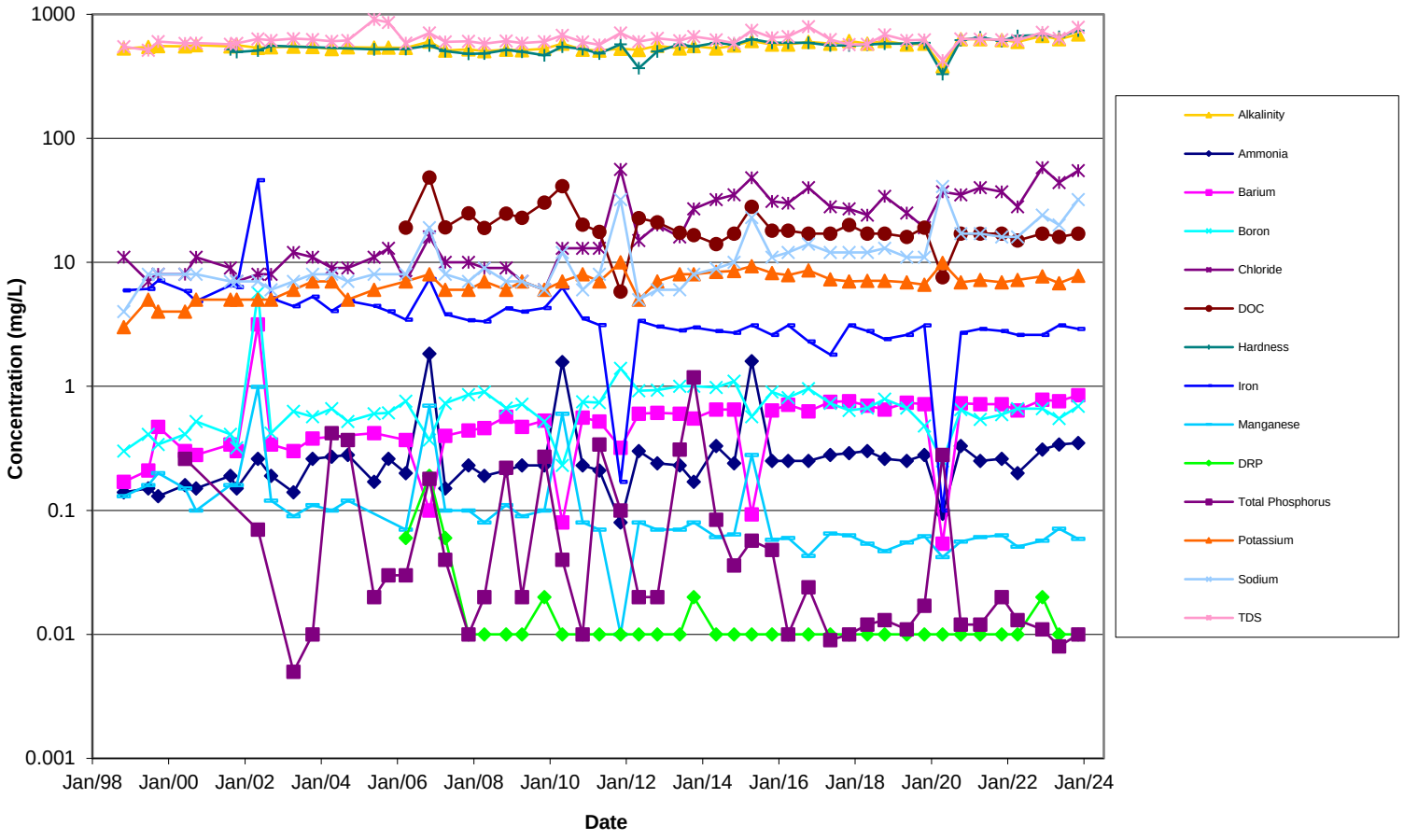


FIGURE D-I 14

Town of Arnprior

Waste Disposal Site

BR-8D

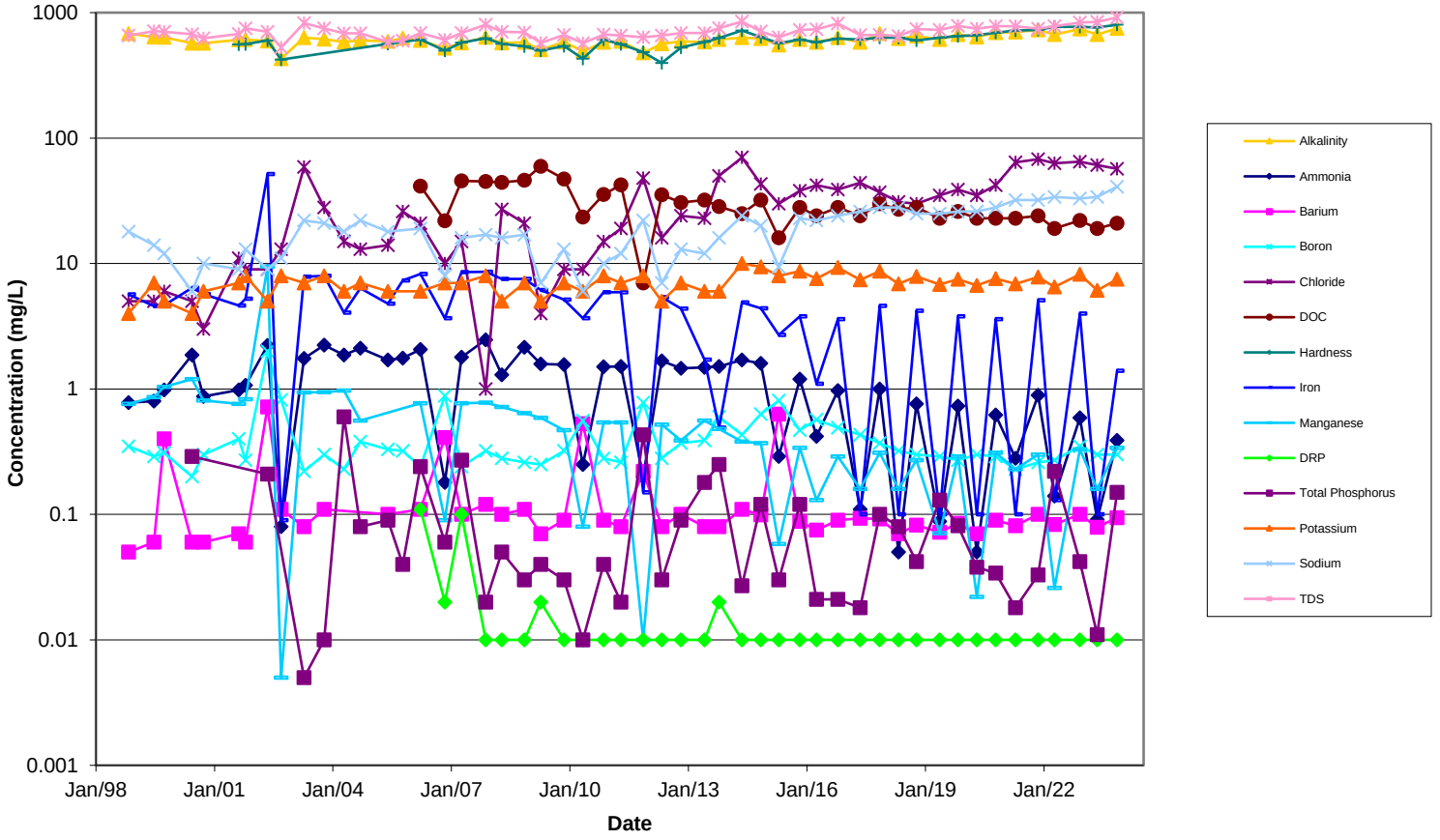


FIGURE D-I 15

Town of Arnprior

Waste Disposal Site

BR-8S

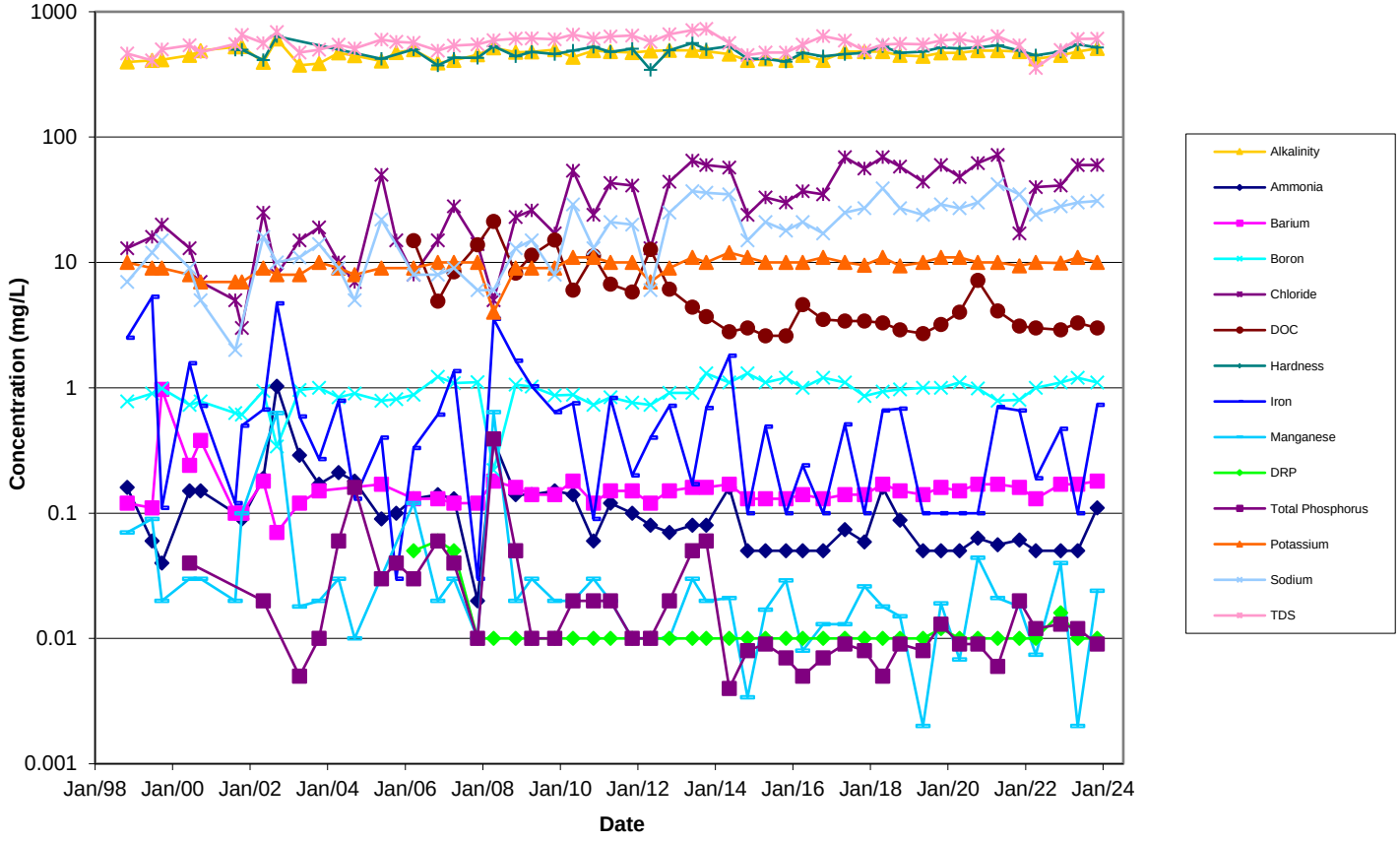


FIGURE D-I 16

Town of Arnprior

Waste Disposal Site

BR-9D

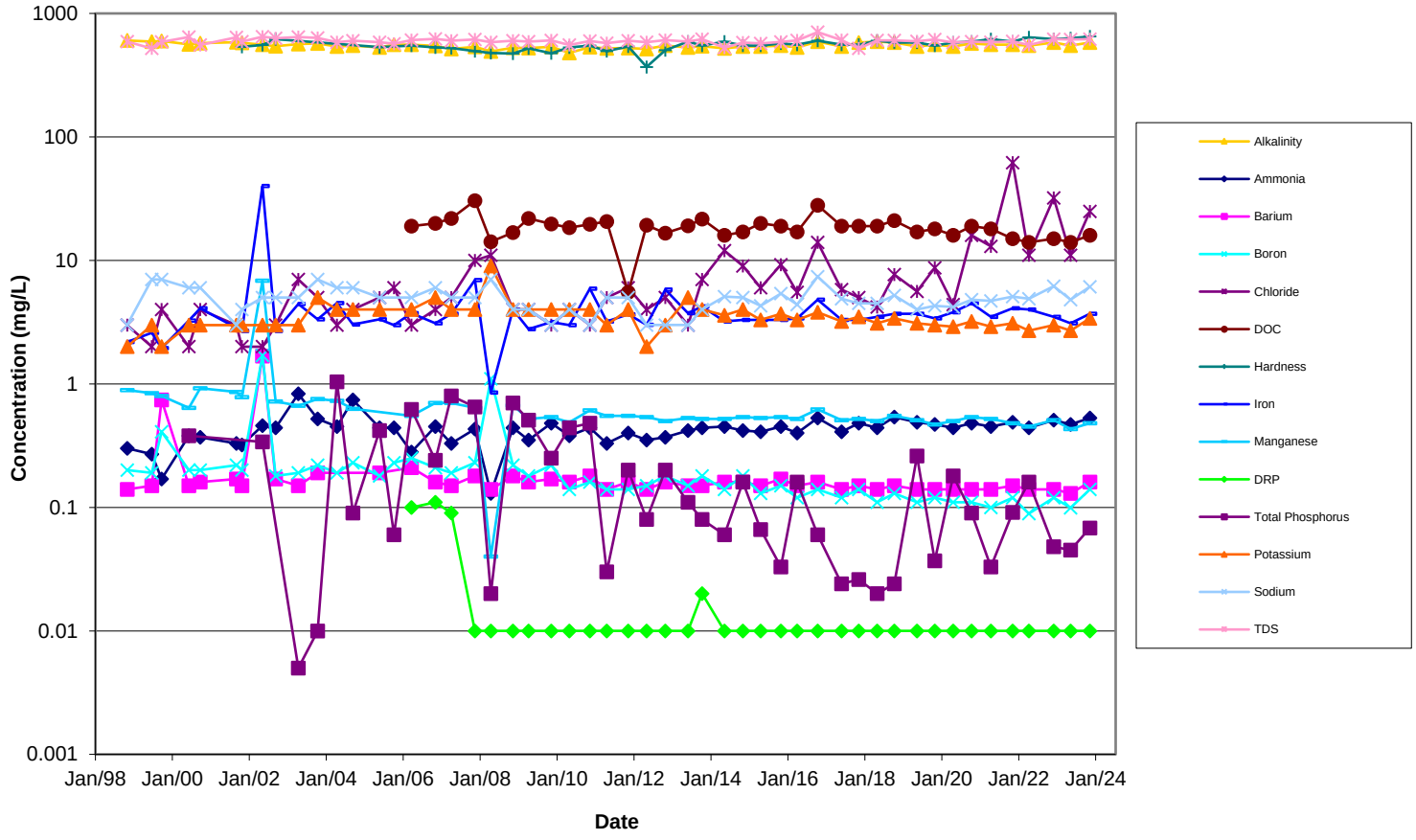


FIGURE D-I 17

Town of Arnprior

Waste Disposal Site

BR-9S

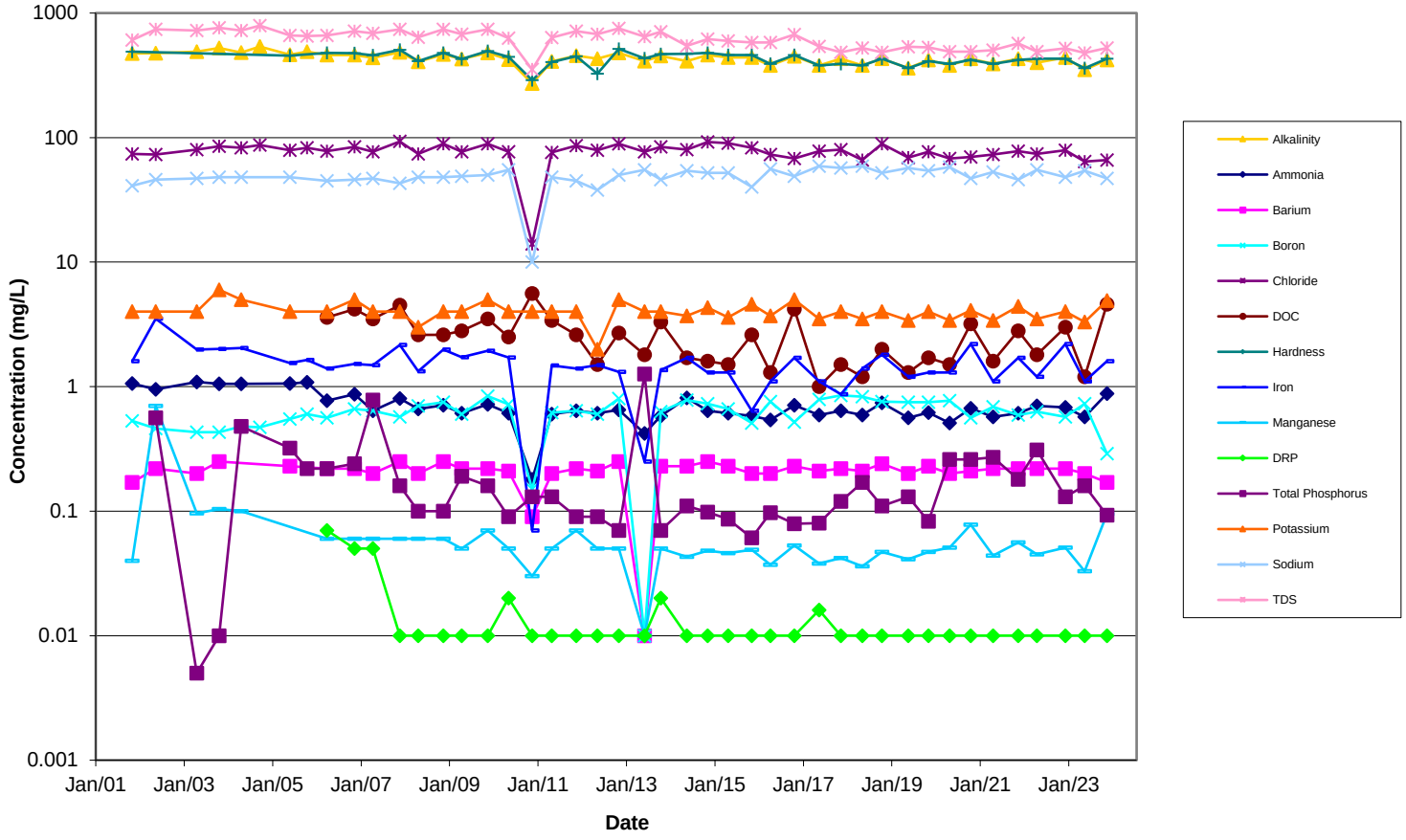


FIGURE D-I 18

Town of Arnprior

Waste Disposal Site

BR-10

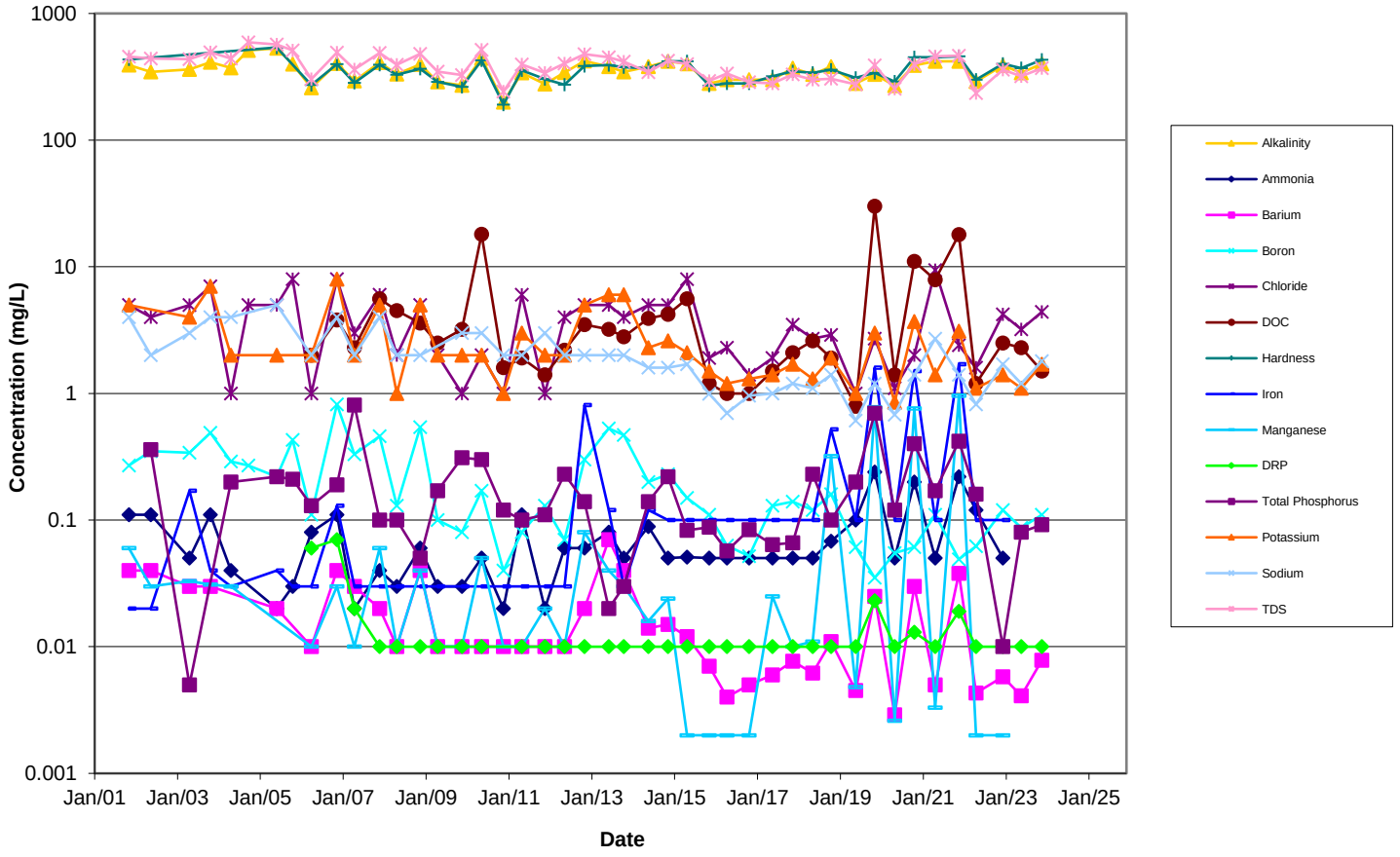


FIGURE D-I 19

Town of Arnprior

Waste Disposal Site

BR-11

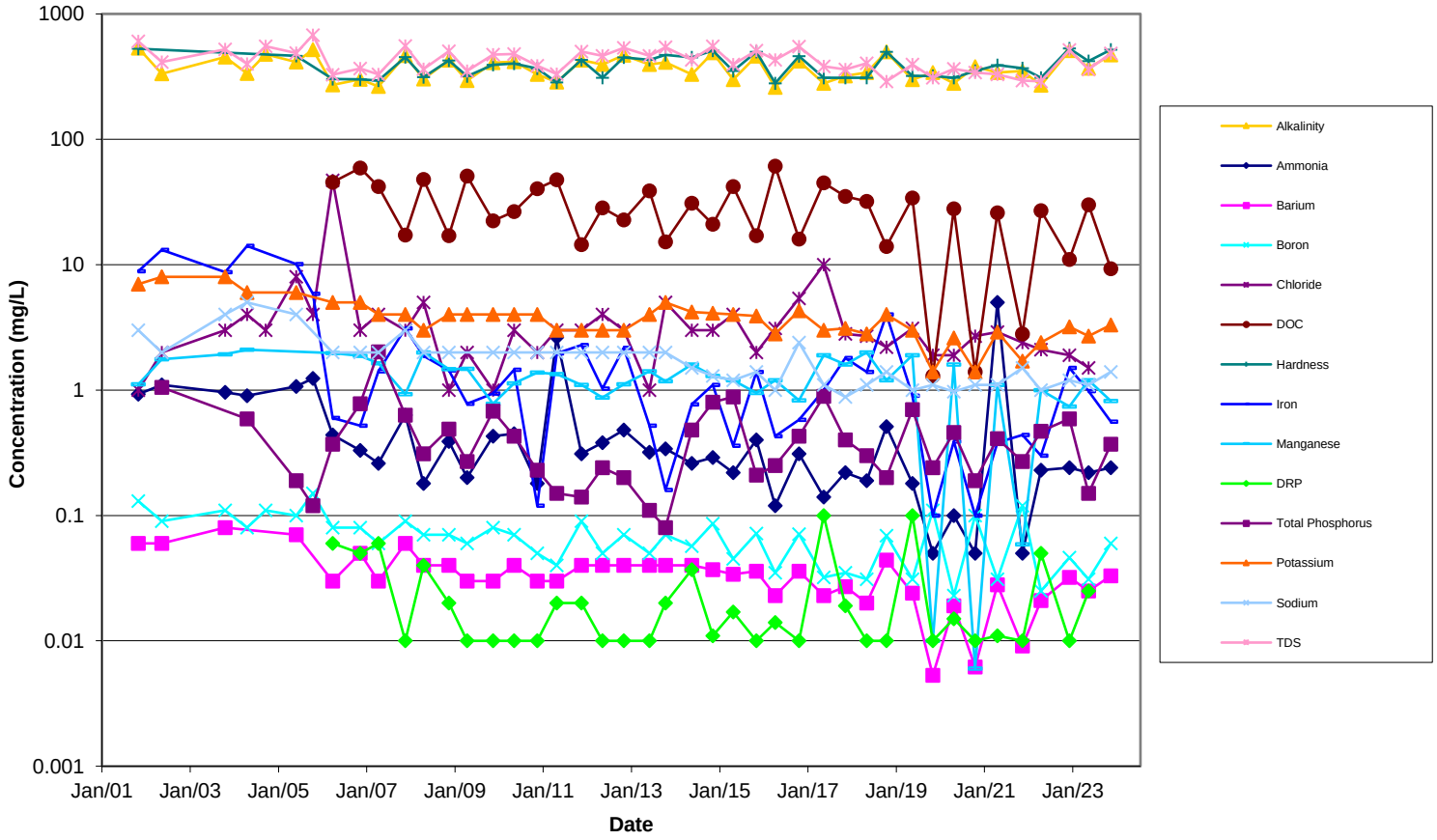


FIGURE D-I 20

Town of Arnprior

Waste Disposal Site

BR-12

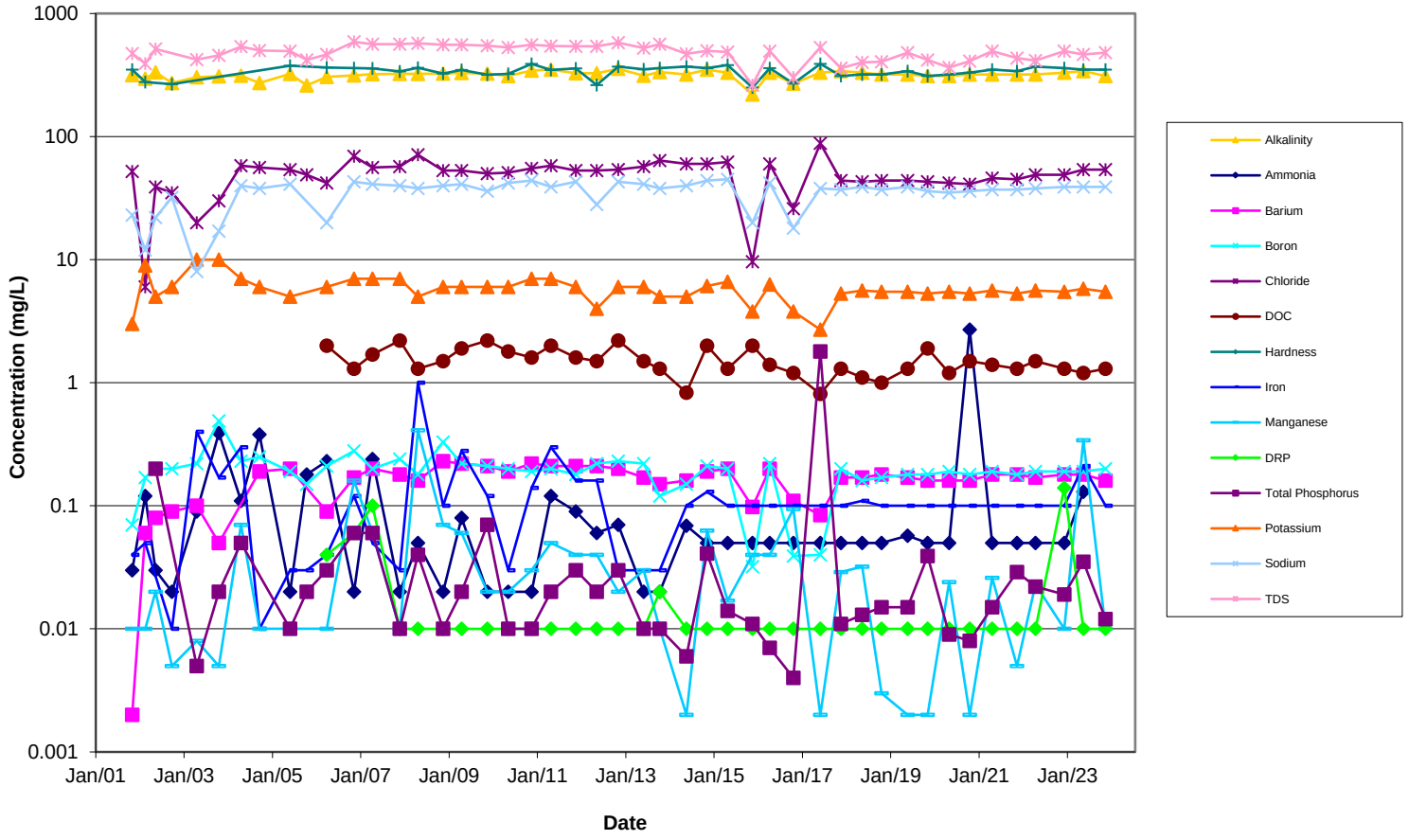


FIGURE D-I 21

Town of Arnprior

Waste Disposal Site

BR-13D

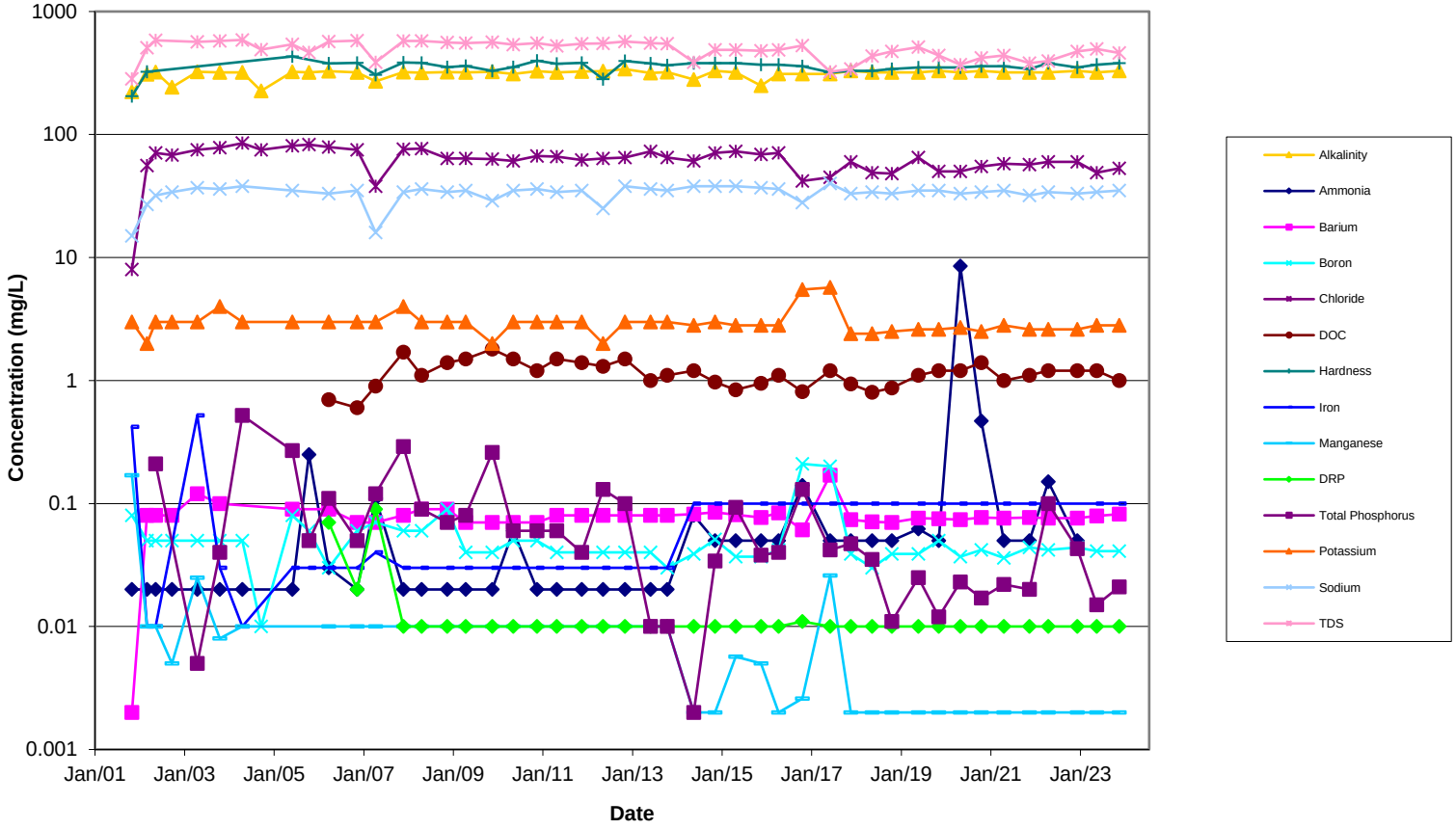


FIGURE D-I 22

Town of Arnprior

Waste Disposal Site

BR-13S

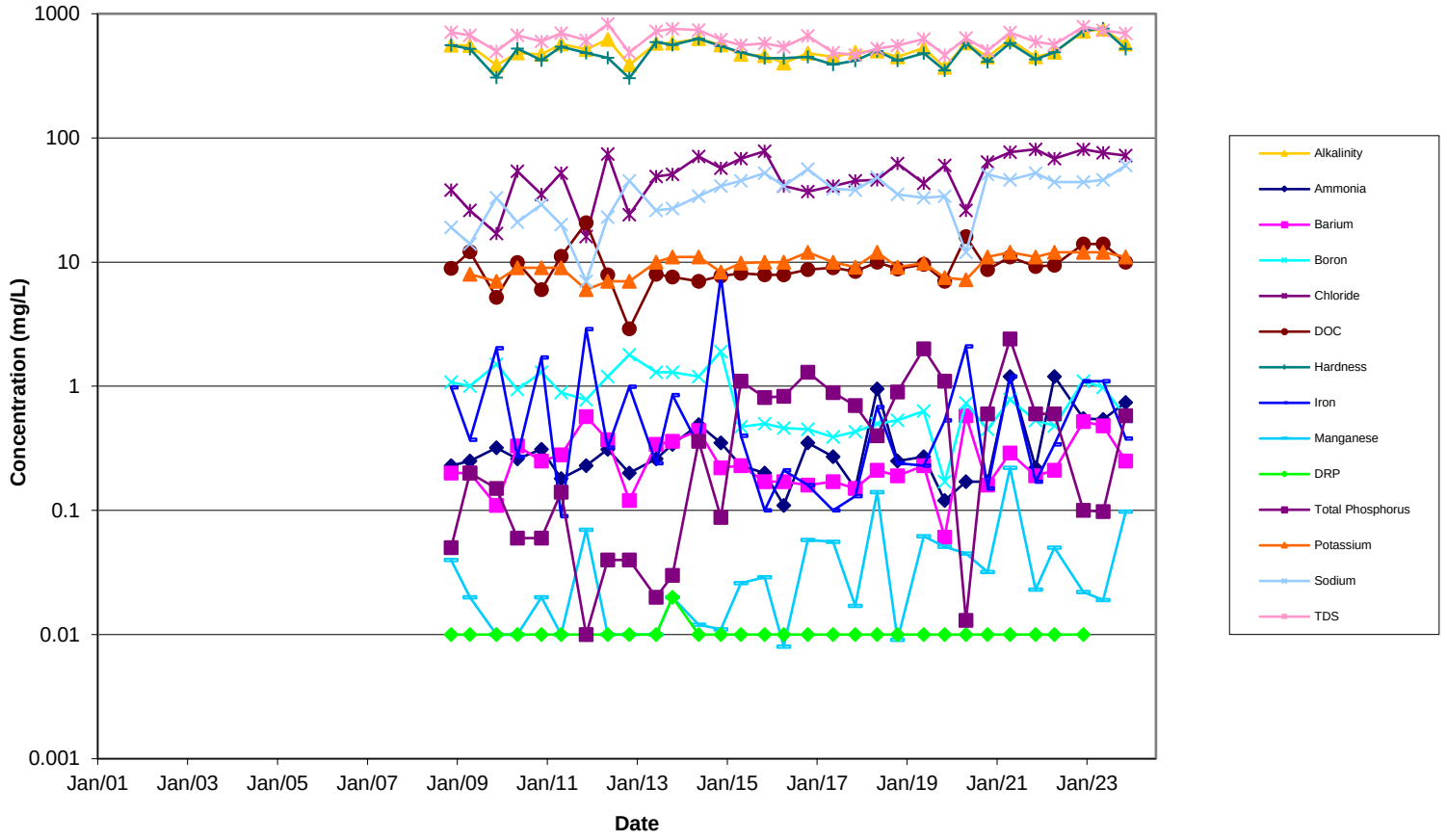


FIGURE D-I 23

Town of Arnprior

Waste Disposal Site

BR 08-1D

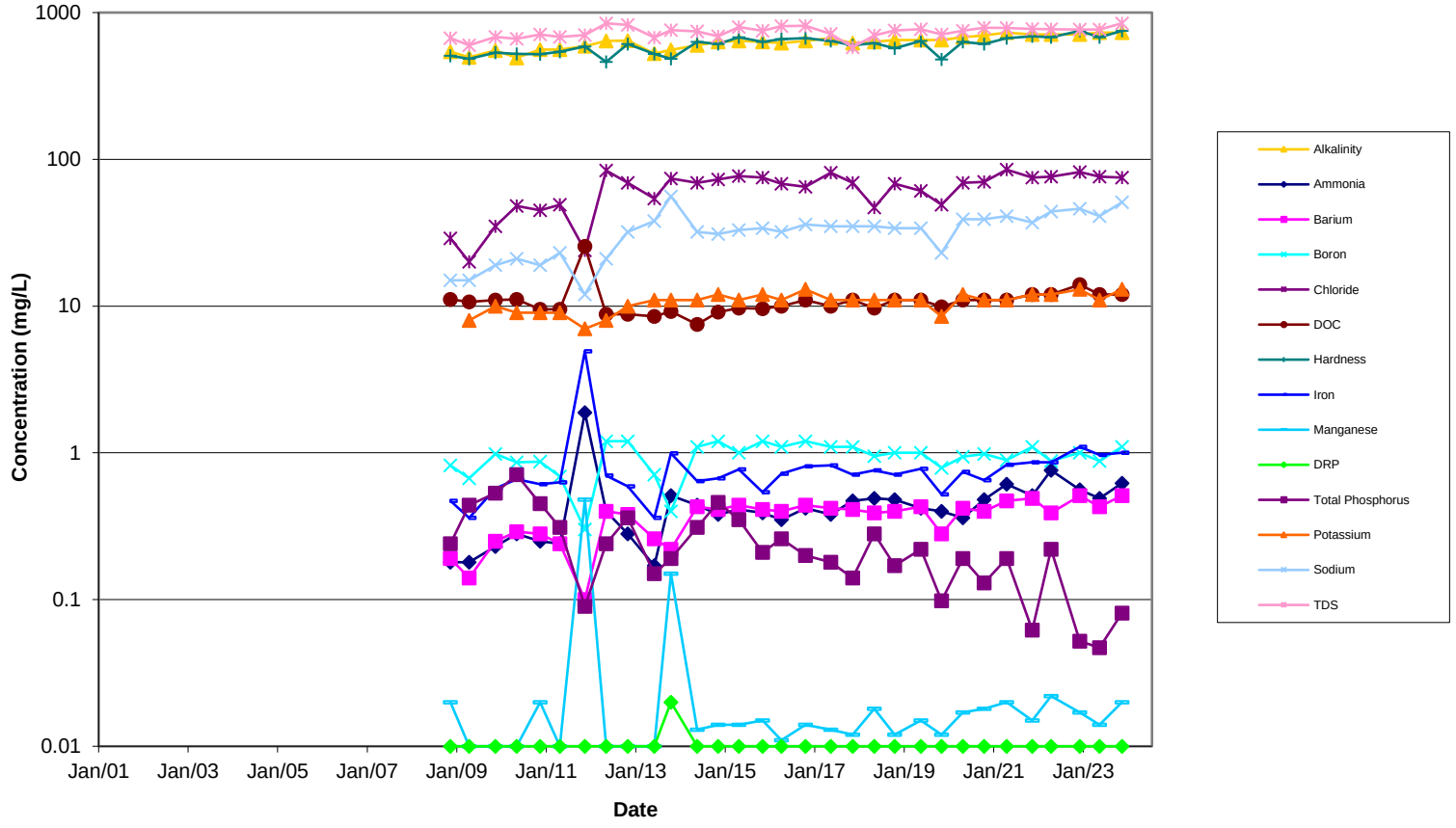


FIGURE D-I 24

Town of Arnprior

Waste Disposal Site

BR 08-1S

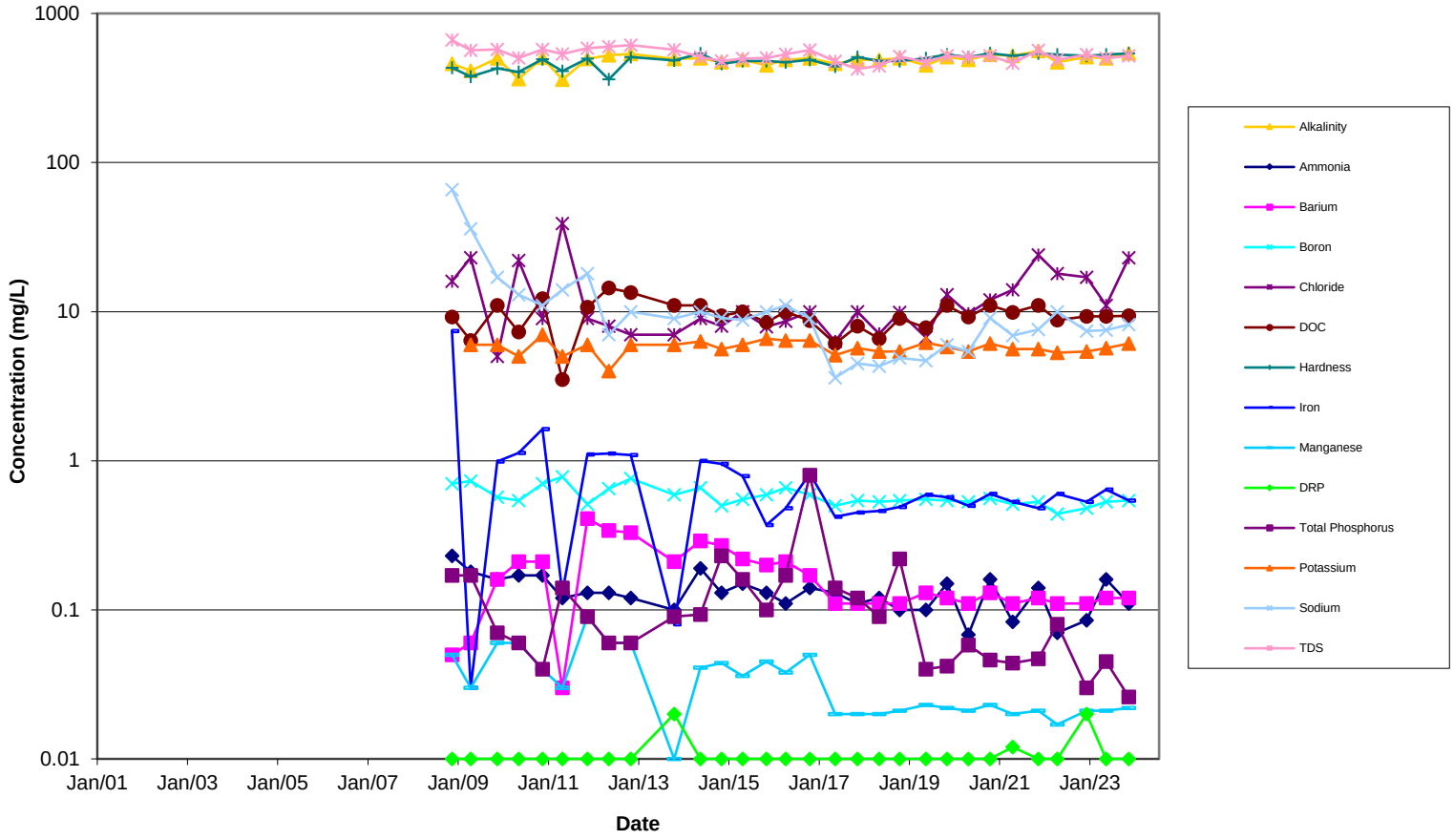


FIGURE D-I 25

Town of Arnprior

Waste Disposal Site

BR 08-2D

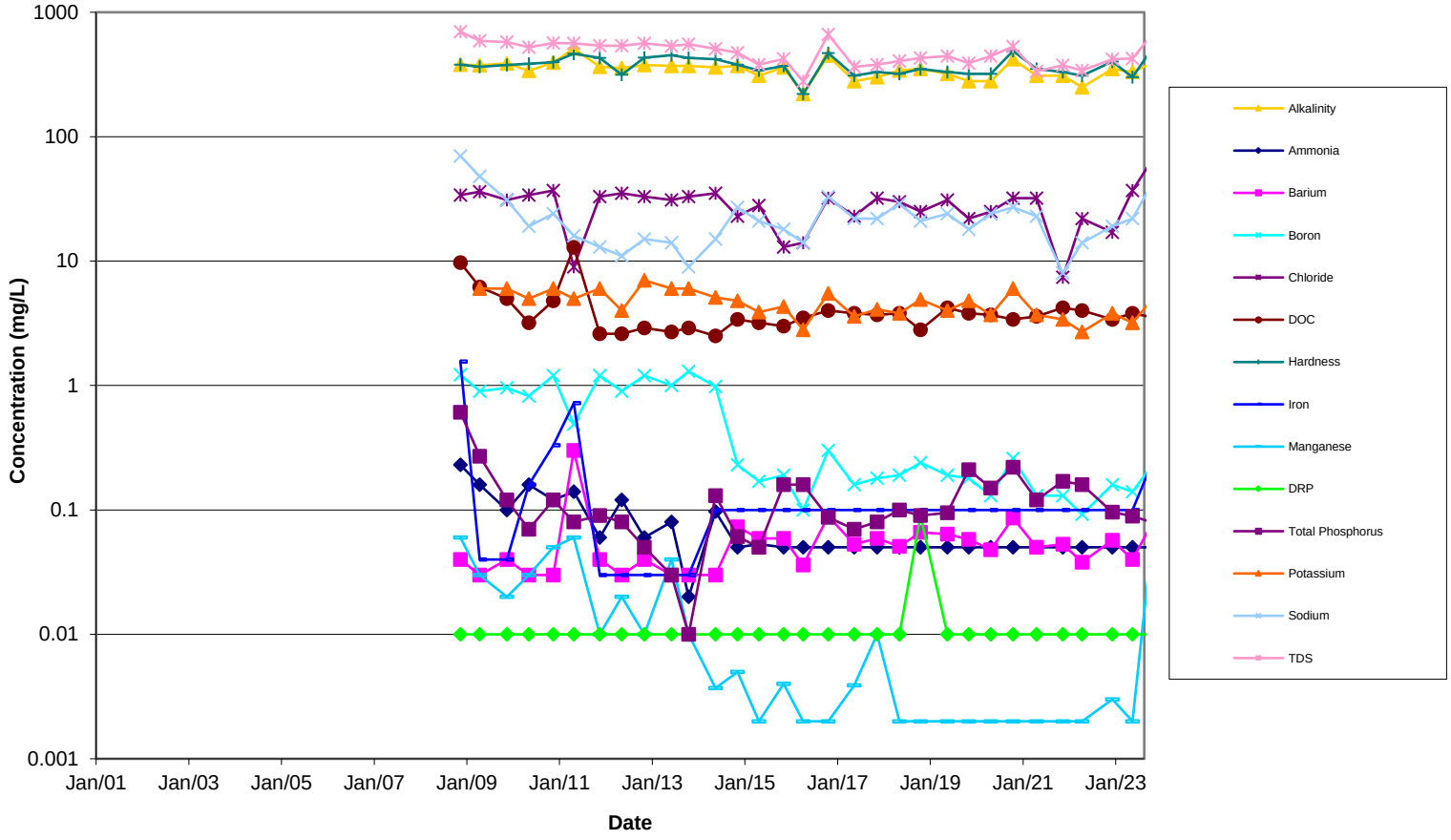


FIGURE D-I 26

Town of Arnprior

Waste Disposal Site

BR 08-2S

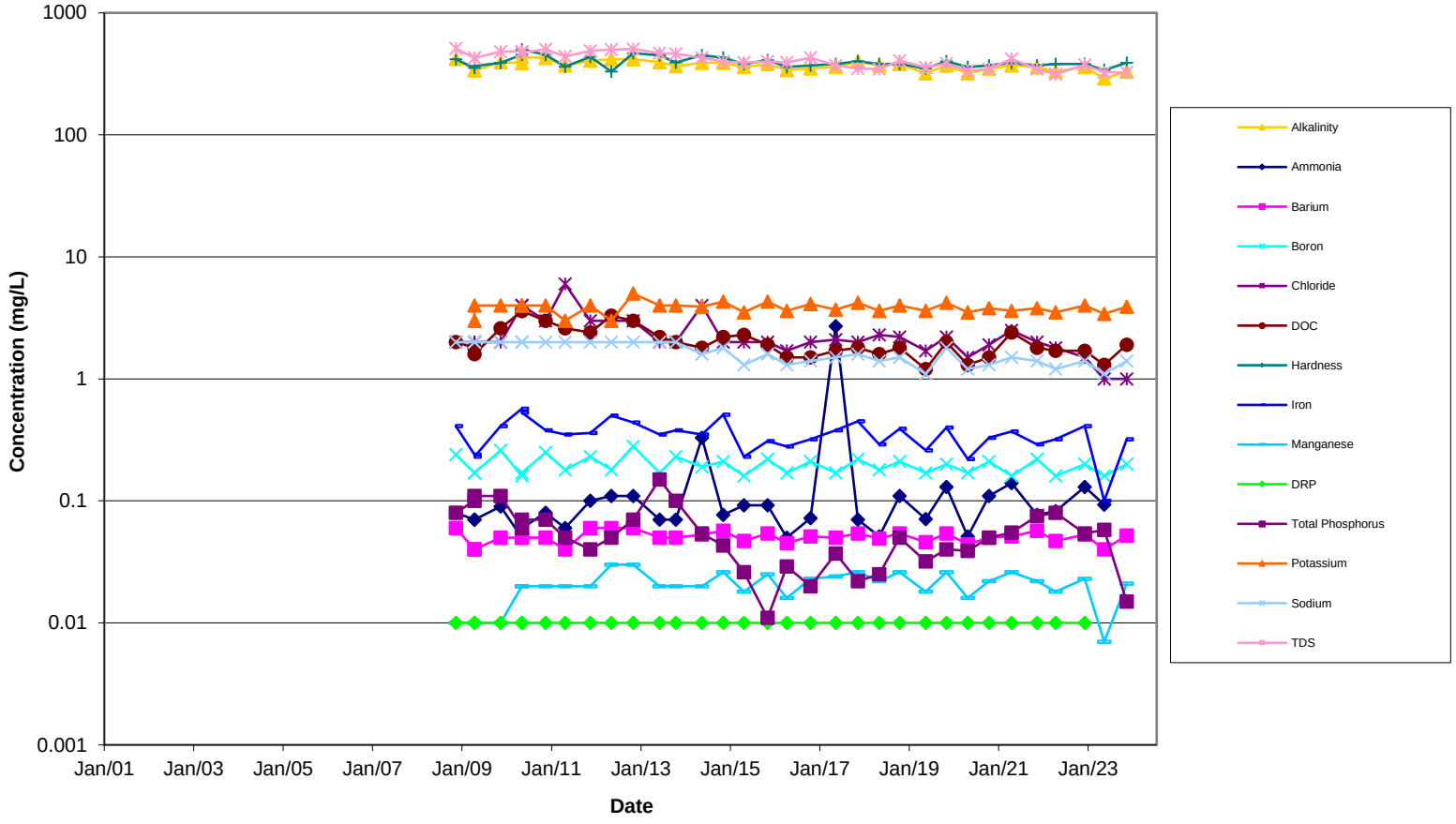


FIGURE D-I 27

Town of Arnprior

Waste Disposal Site

BR 08-3D

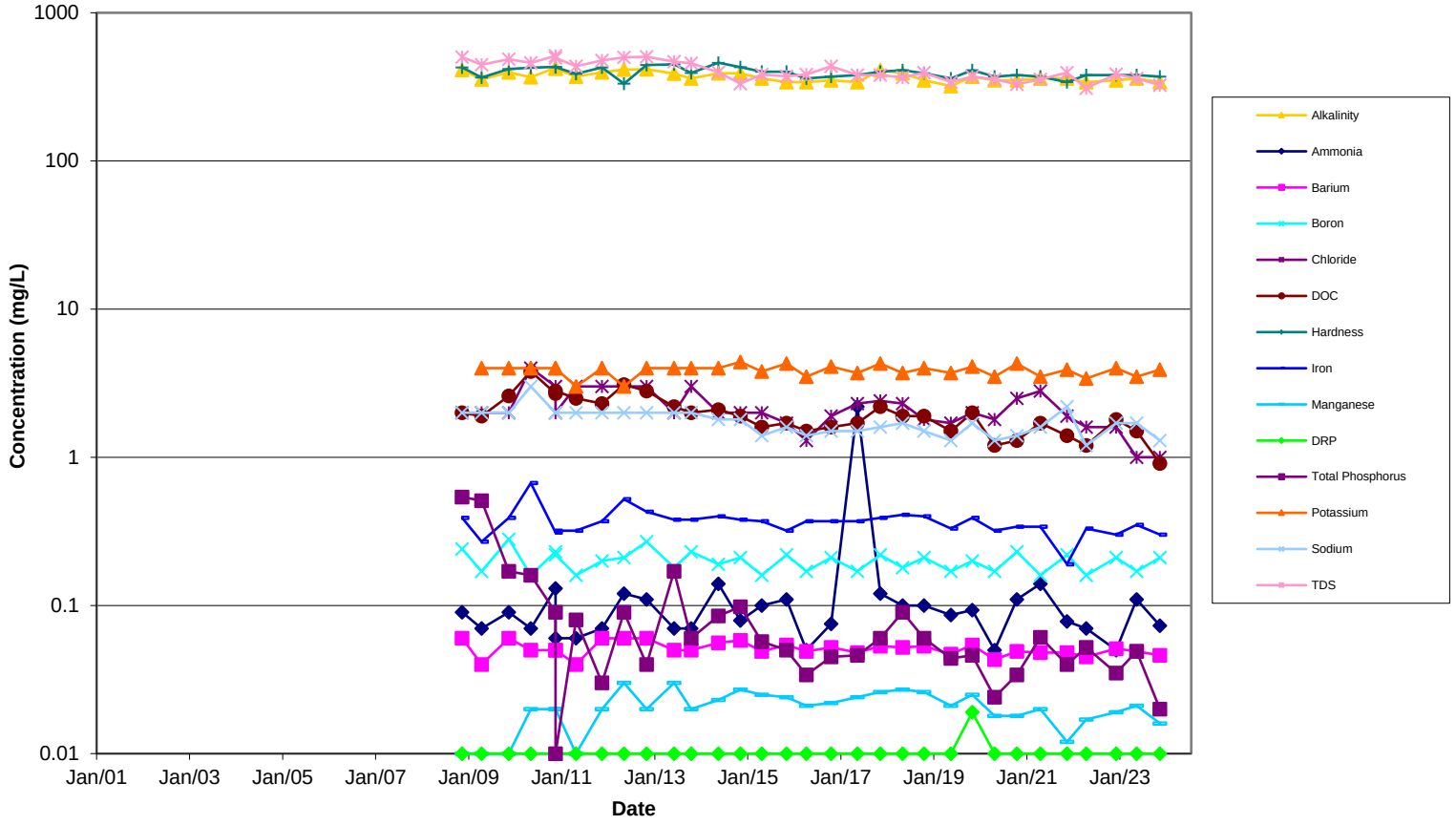


FIGURE D-I 28

Town of Arnprior

Waste Disposal Site

BR 08-3S

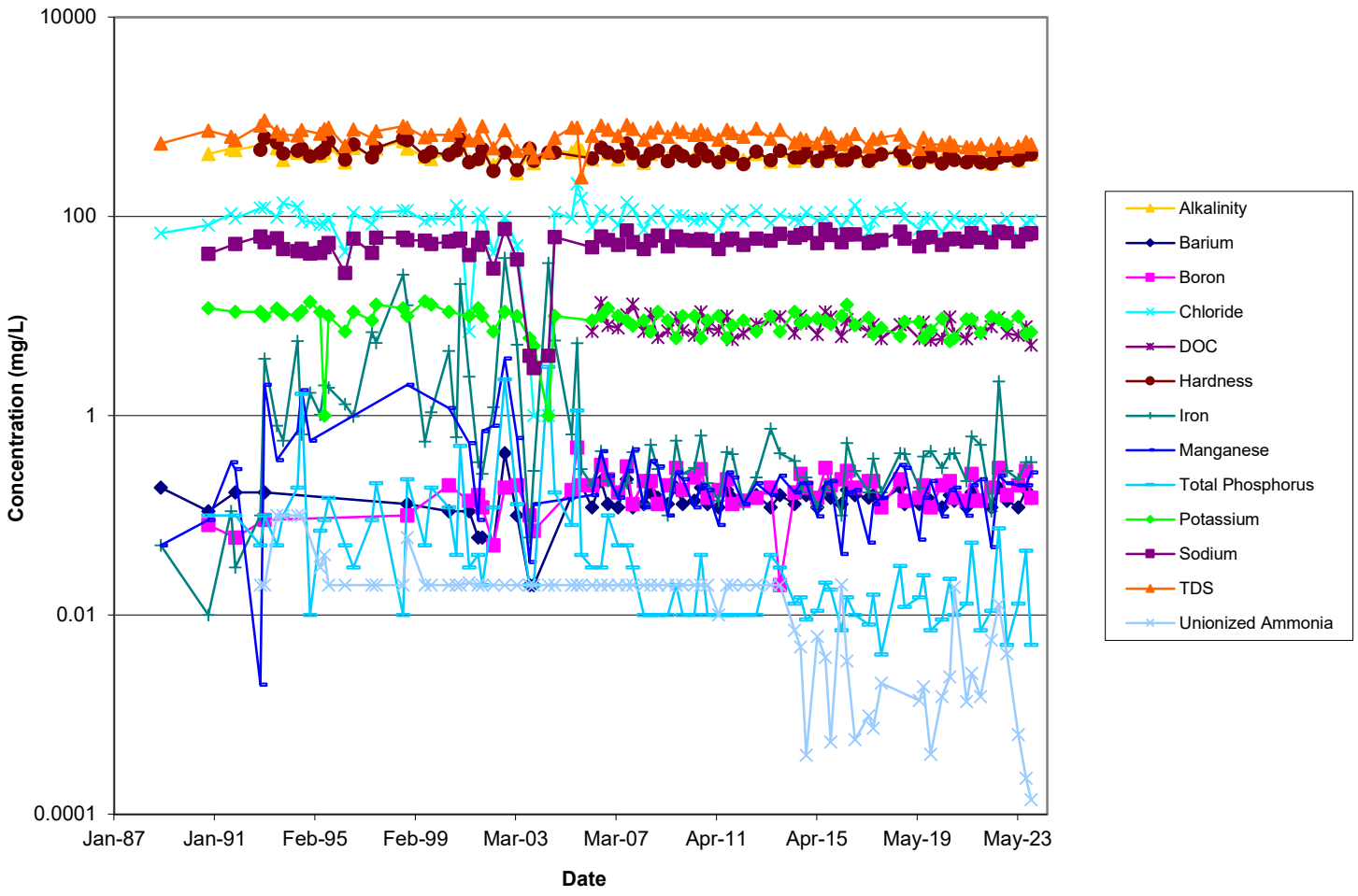


FIGURE D-II 1

Town of Arnprior

Waste Disposal Site

SW-1

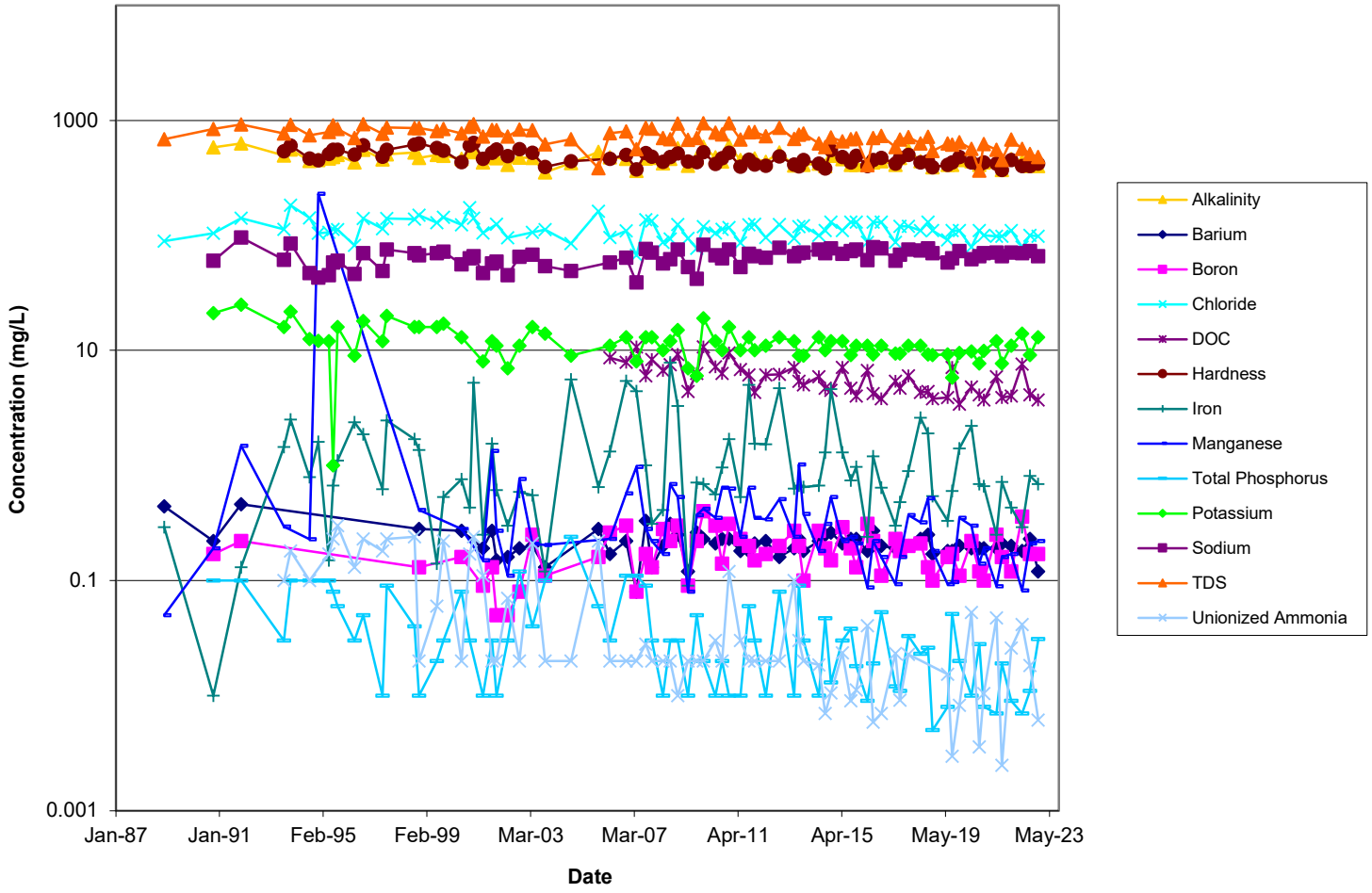


FIGURE D-II 2

Town of Arnprior

Waste Disposal Site

SW-2

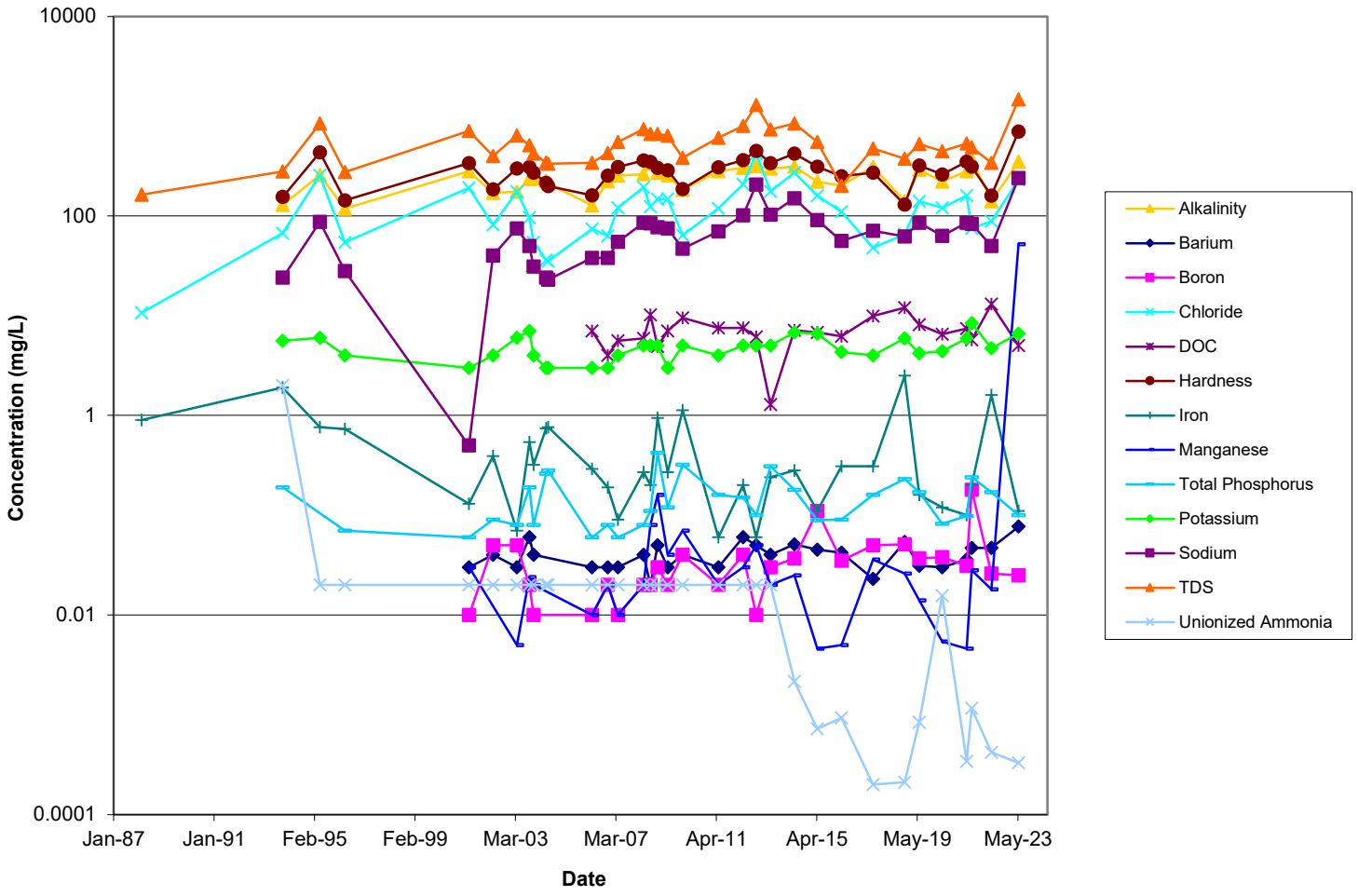


FIGURE D-II 3

Town of Arnprior

Waste Disposal Site

SW-10

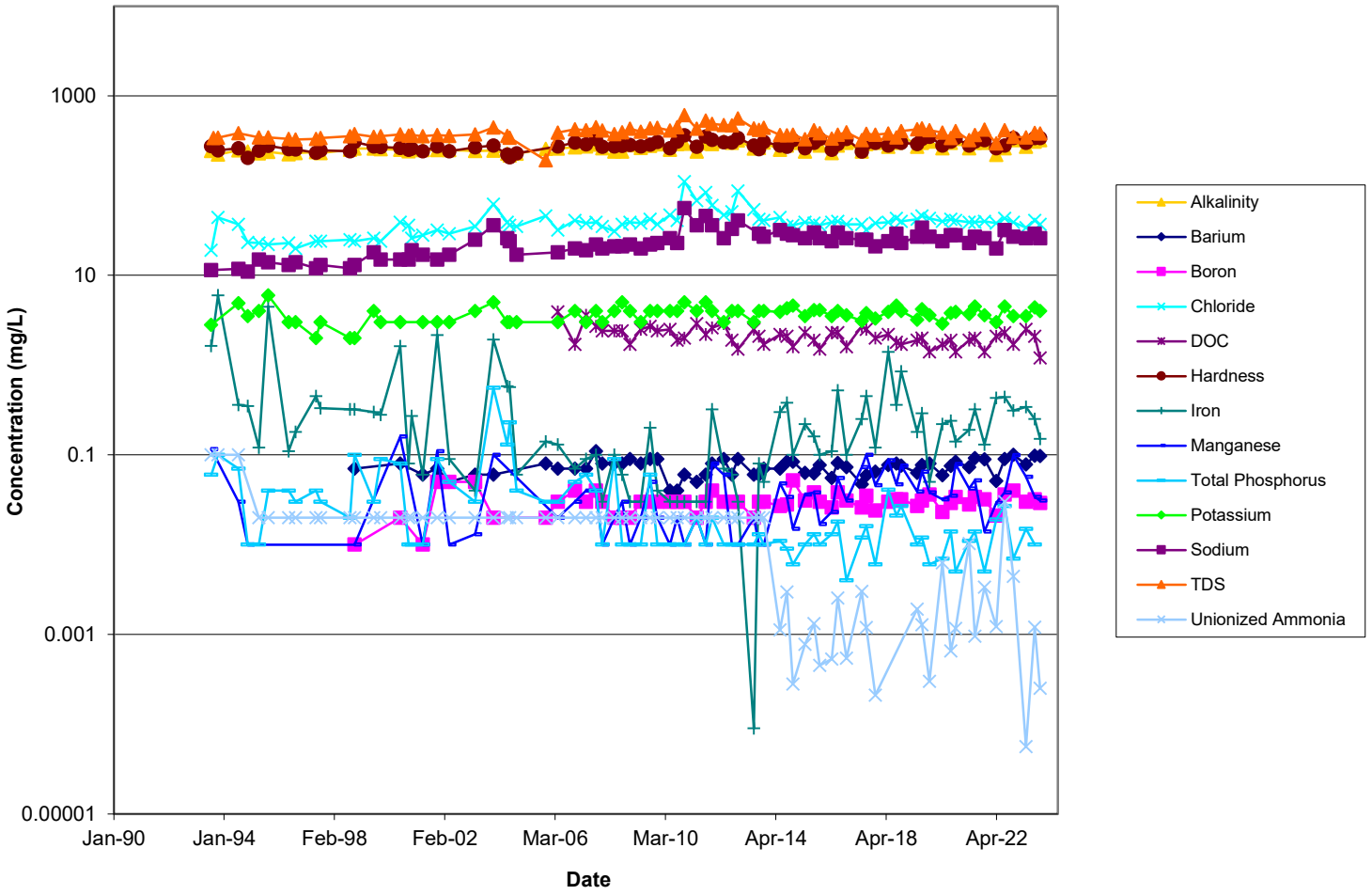


FIGURE D-II 4

Town of Arnprior

Waste Disposal Site

SW-11

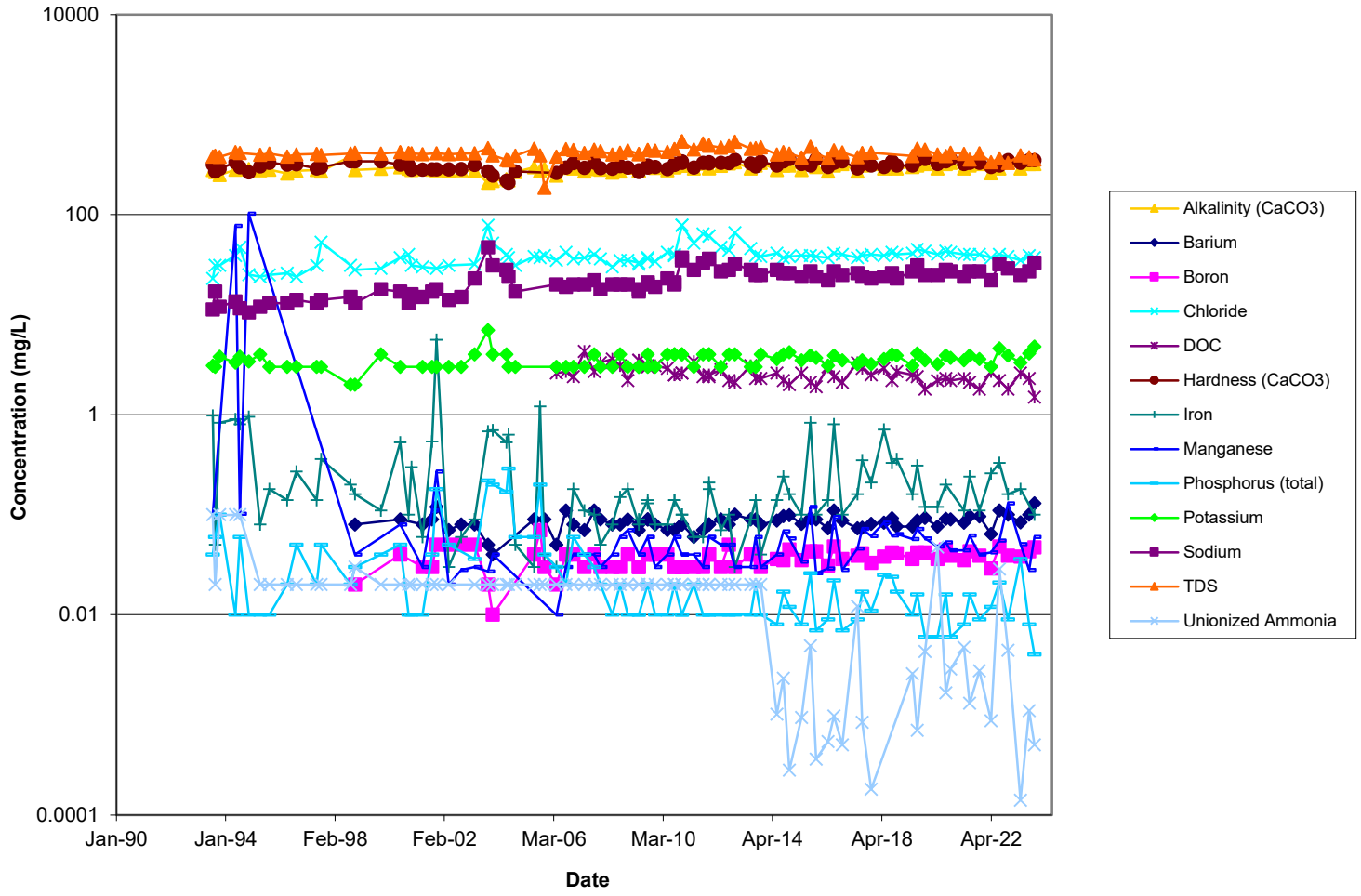


FIGURE D-II 5

Town of Arnprior

Waste Disposal Site

SW-12

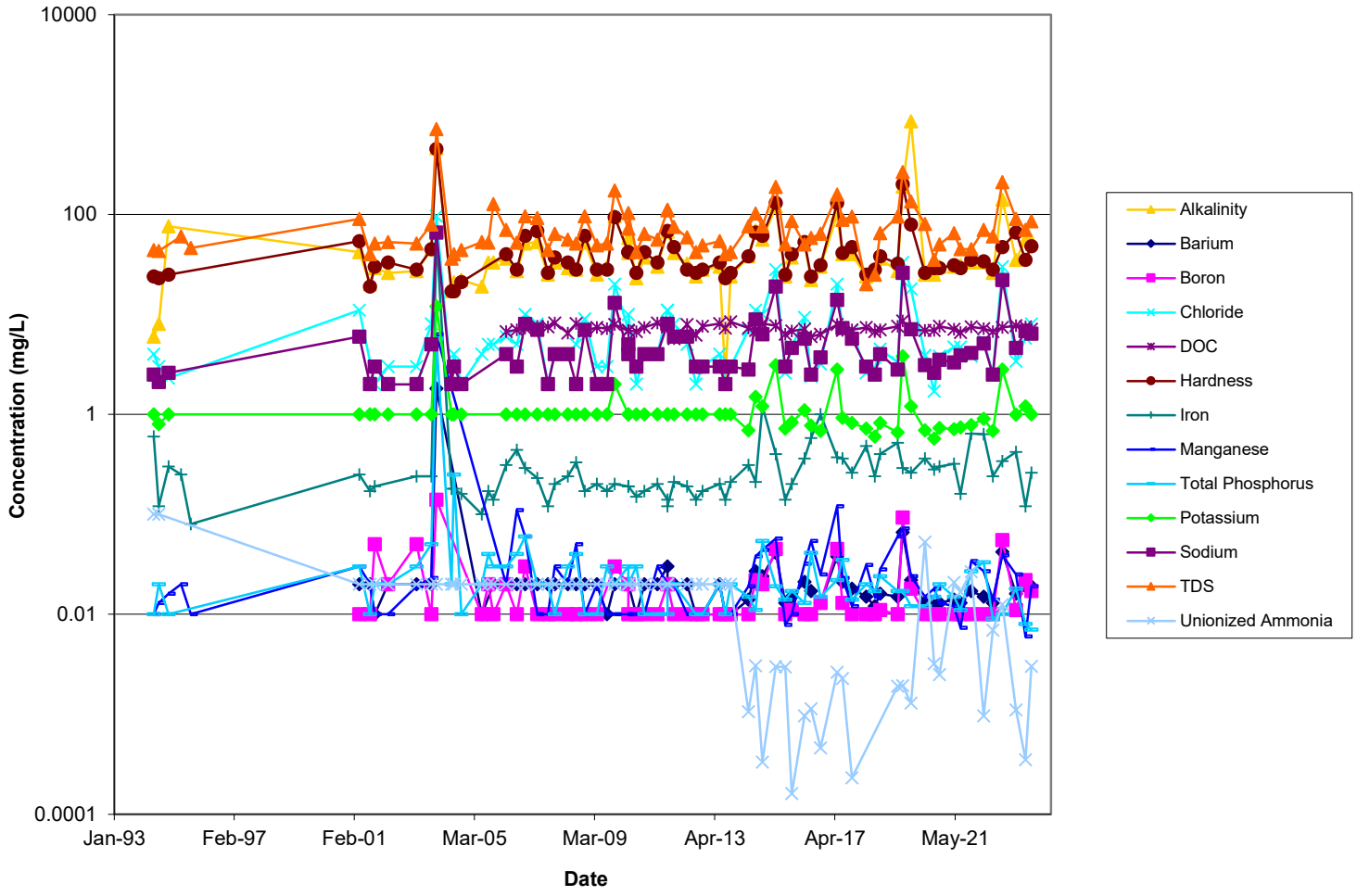


FIGURE D-II 6

Town of Arnprior

Waste Disposal Site

SW-18

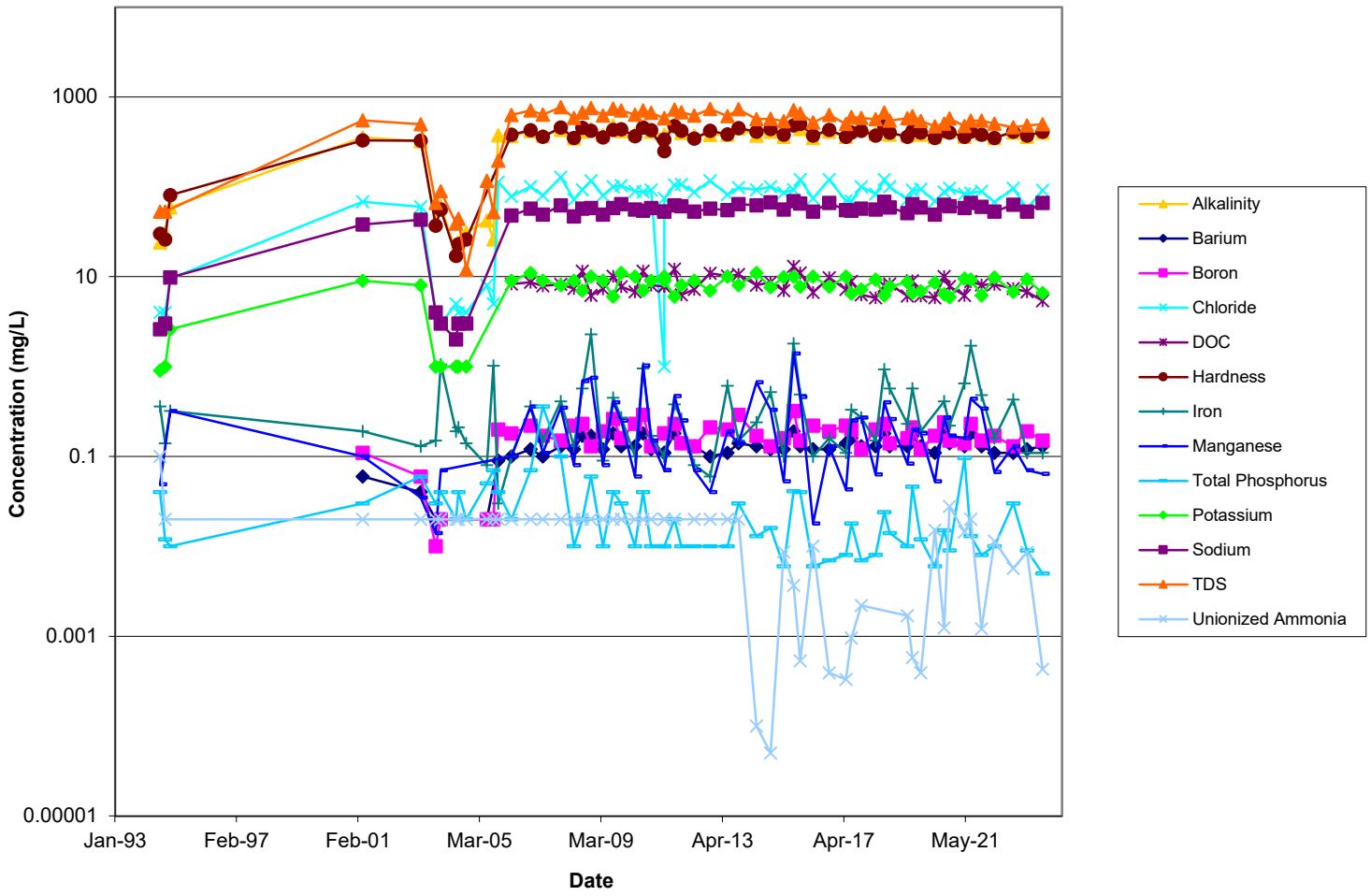


FIGURE D-II 7

Town of Arnprior

Waste Disposal Site

SW-19

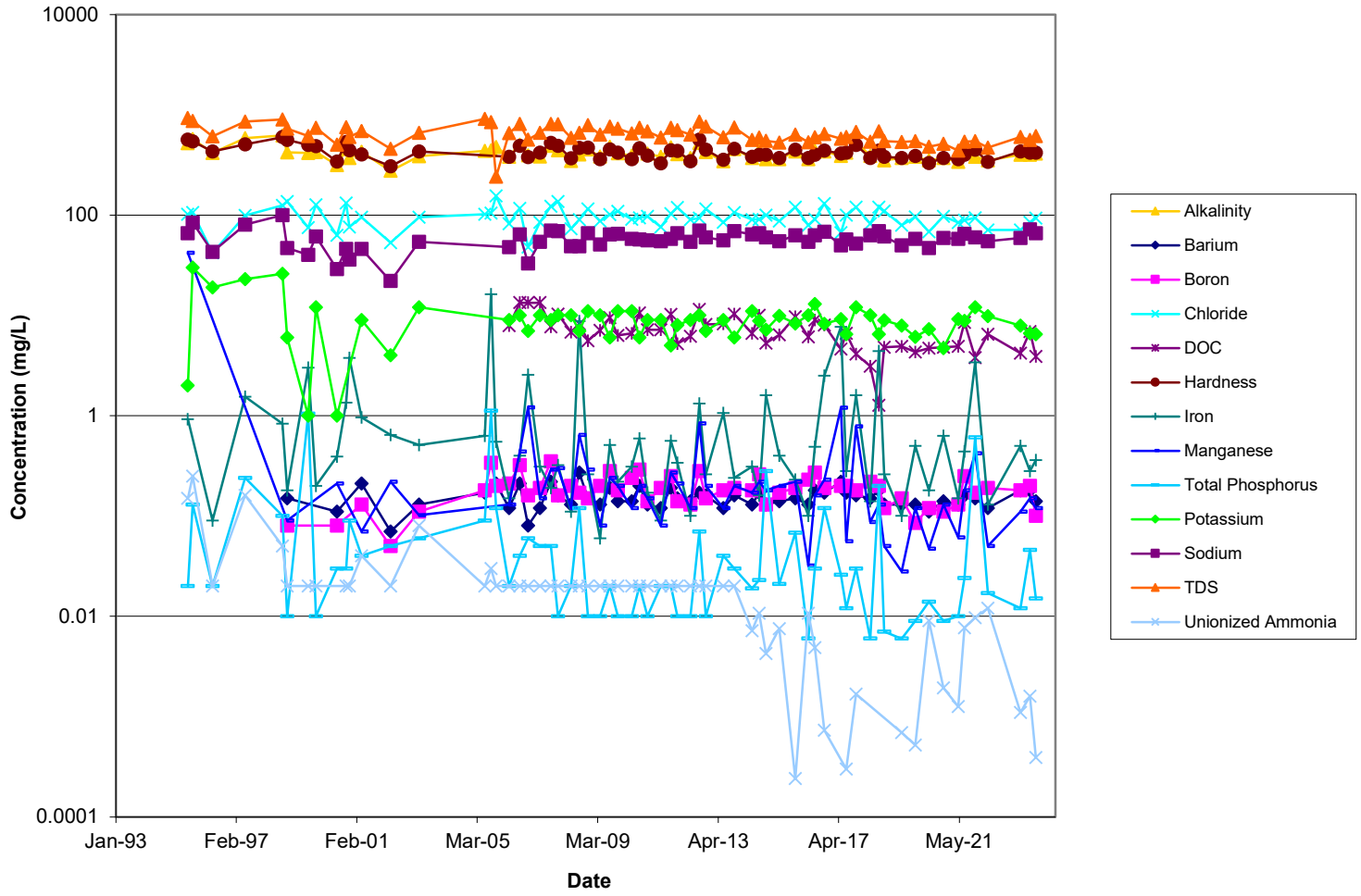


FIGURE D-II 8

Town of Arnprior

Waste Disposal Site

SW-21

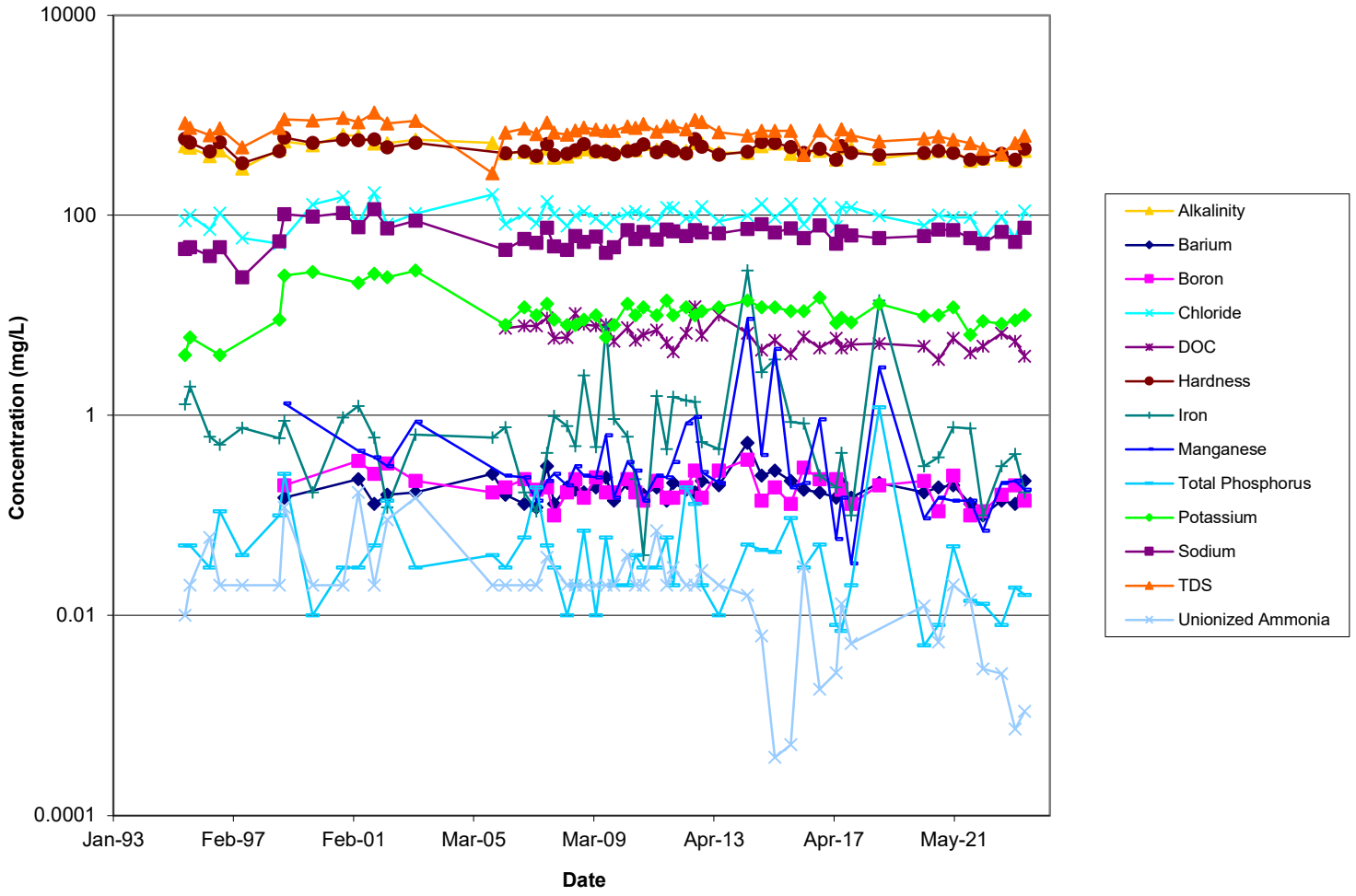


FIGURE D-II 9

Town of Arnprior

Waste Disposal Site

SW-22

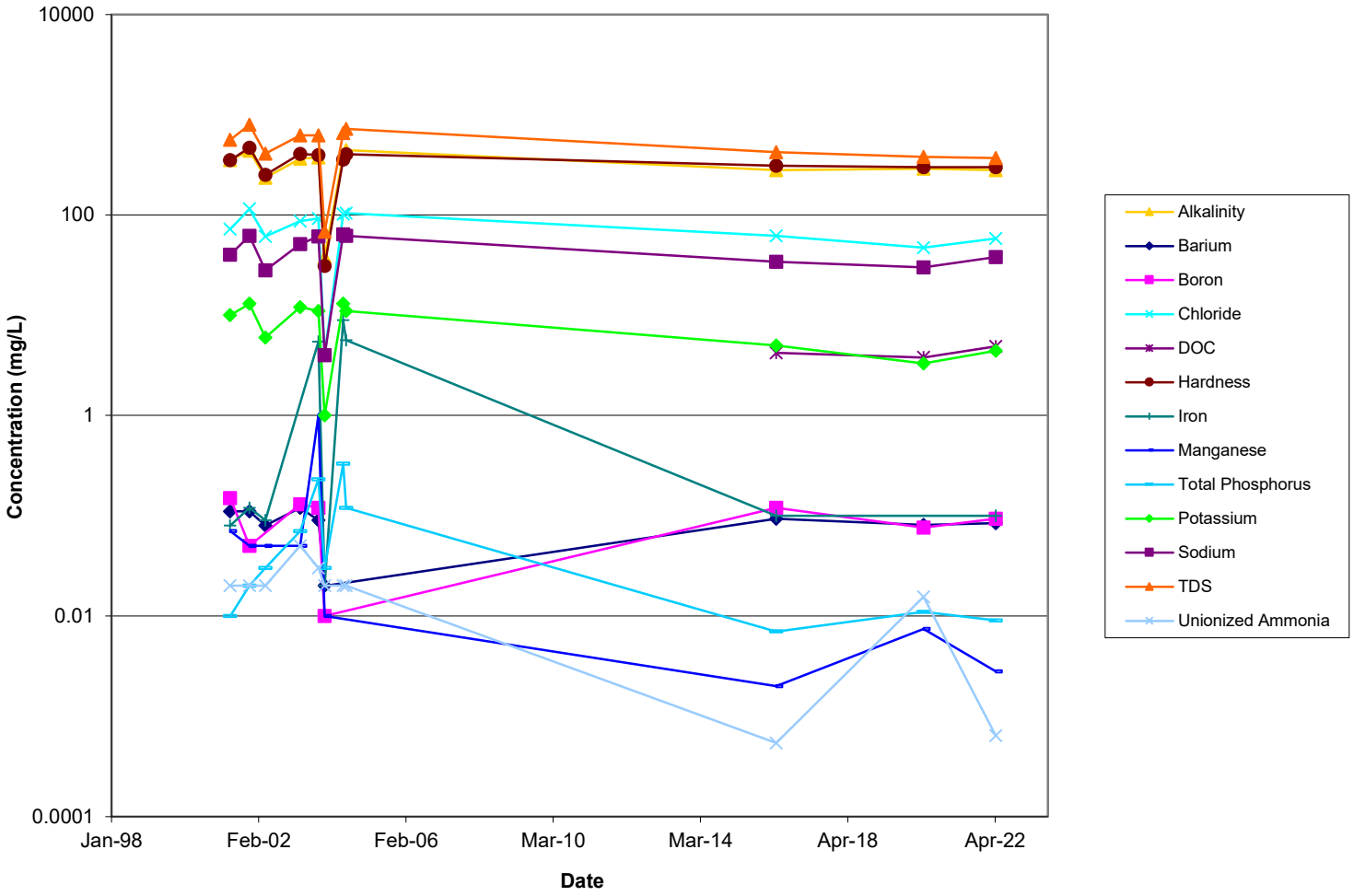


FIGURE D-II 10

Town of Arnprior

Waste Disposal Site

SW-23

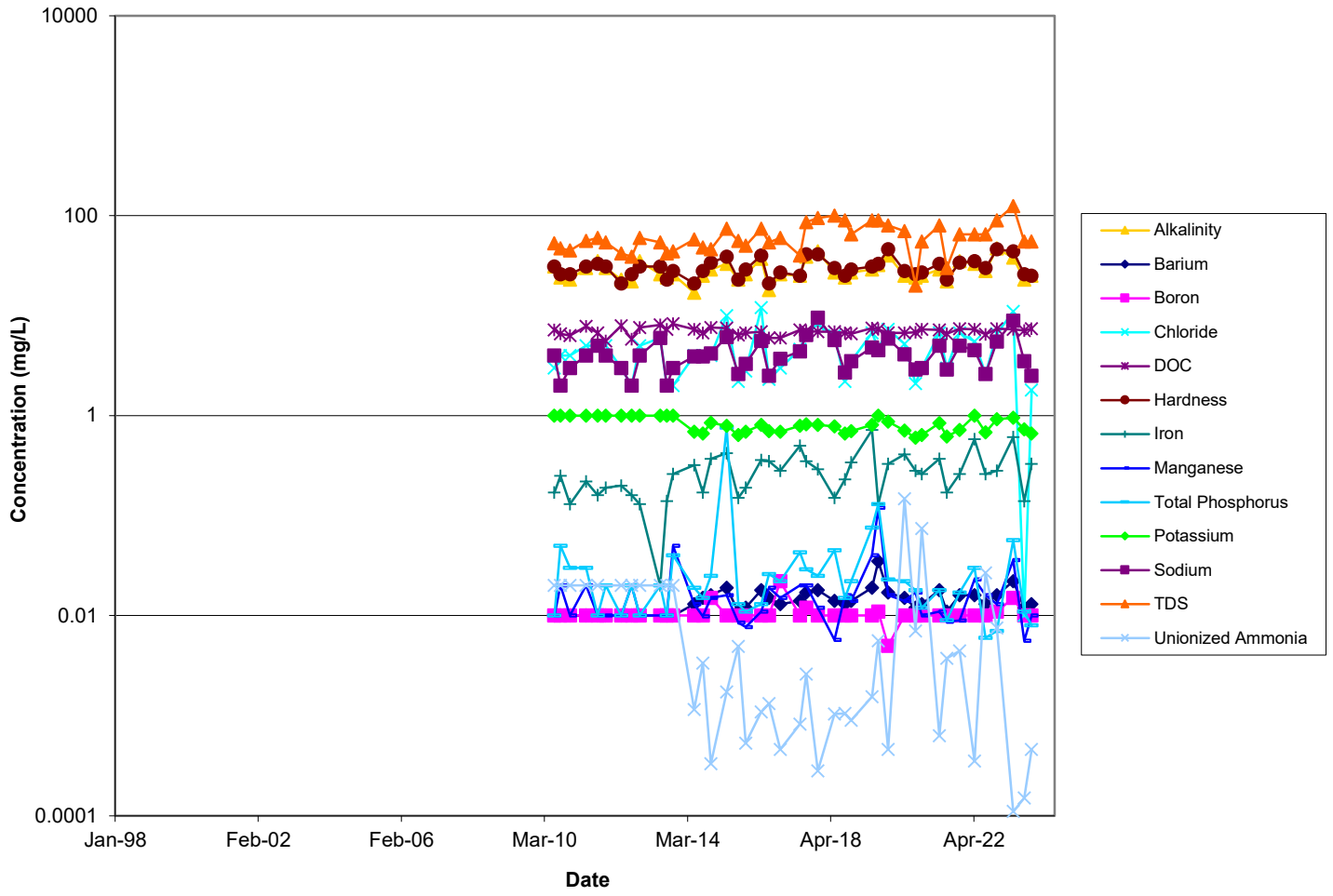


FIGURE D-II 11

Town of Arnprior

Waste Disposal Site

SW-26

APPENDIX E

Photographs of Surface Water Sampling Locations

SPRING SESSION

Photograph of SW-1 taken in May 2023

Photograph of SW-1 culvert taken in May 2023

APPENDIX E
Photographs of Surface Water Sampling Stations and Beaver Activity

Photographs of SW-2 taken in May 2023

Photograph of SW-10 taken in May 2023

APPENDIX E
Photographs of Surface Water Sampling Stations and Beaver Activity

Photographs of SW-10 taken in May 2023 (left: downstream, right: upstream)

Photographs of SW-11 taken in May 2023 (left: wide view, right: sampling location)

APPENDIX E
Photographs of Surface Water Sampling Stations and Beaver Activity

Photographs of SW-12 taken in May 2023 (left: wide view, right: sampling location)

Photographs of SW-19 taken in May 2023 (left: sampling location, right: downstream)

Photograph of SW-21 taken in May 2023

Photograph of SW-21 taken in May 2023

APPENDIX E
Photographs of Surface Water Sampling Stations and Beaver Activity

Photographs of SW-22 taken in May 2023

Photographs of SW-23 (dry) taken in May 2023 (left: upstream, right: sampling location)

Photograph of SW-18 taken in May 2023

Photograph of upstream of SW-18 taken in May 2023

Photograph of SW-26 taken in May 2023

Photograph of upstream of SW-26 taken in May 2023

Photograph of downstream of SW-26 taken in May 2023

SUMMER SESSION

Photographs of SW-1 taken in September 2023 (left: Upstream, right: sampling location)

Photograph of SW-2 taken in September 2023

Photographs of SW-10 (dry) taken in September 2023 (left: sampling location, right: downstream)

APPENDIX E
Photographs of Surface Water Sampling Stations and Beaver Activity

Photographs of SW-11 taken in September 2023 (left: upstream, right: downstream)

Photograph of SW-11 taken in September 2023

APPENDIX E
Photographs of Surface Water Sampling Stations and Beaver Activity

Photographs of SW-12 taken in September 2023

Photographs of SW-19 (dry) taken in September 2023 (left: upstream, right, sampling location)

APPENDIX E
Photographs of Surface Water Sampling Stations and Beaver Activity

Photographs of SW-21 during the September 2023 monitoring session

APPENDIX E
Photographs of Surface Water Sampling Stations and Beaver Activity

Photographs of SW-22 during the September 2023 monitoring session

Photographs of SW-23 (dry) taken in September 2023

Photograph of SW-26 taken in September 2023

APPENDIX E
Photographs of Surface Water Sampling Stations and Beaver Activity

Photograph of upriver of SW-26 taken in September 2023

Photograph of downriver of SW-26 taken in September 2023

Photograph of SW-18 taken in September 2023

Photograph of SW-18 taken in September 2023 (upstream)

Photograph of SW-18 taken in September 2023 (downstream)

FALL SESSION

Photographs of SW-1 taken in December 2023

Photographs of SW-2 taken in December 2023

Photograph of SW-10 (dry) taken in December 2023

Photographs of SW-10 (dry) taken in December 2023 (left: upstream, right: downstream)

Photograph of SW-11 taken in December 2023

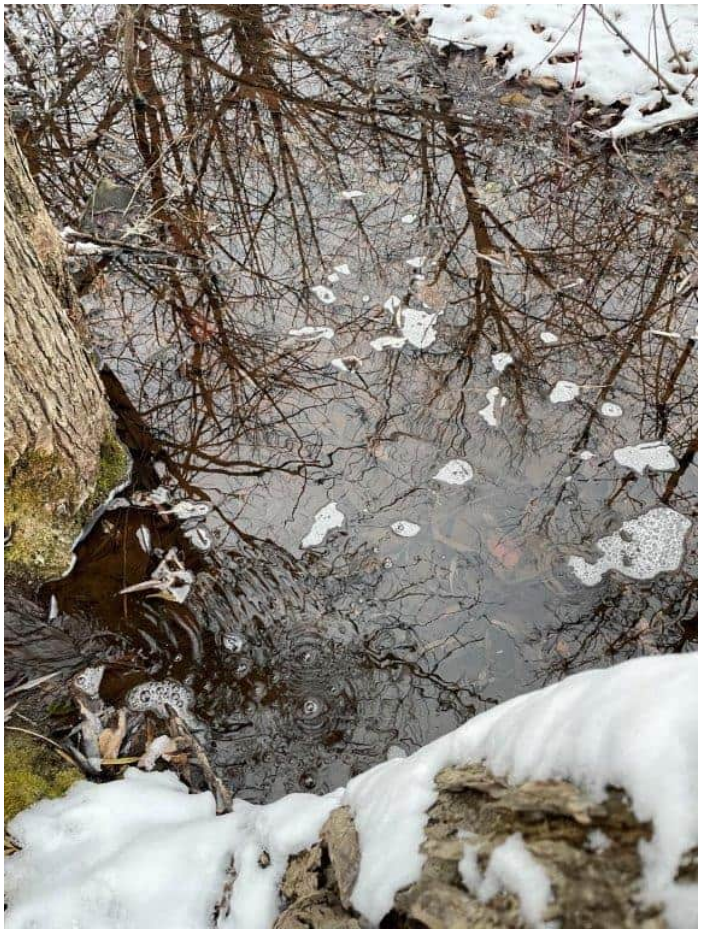
APPENDIX E
Photographs of Surface Water Sampling Stations and Beaver Activity

Photographs of SW-11 taken in December 2023 (left; upstream right: downstream)

Photographs of SW-12 taken in December 2023

Photograph looking upriver from SW-18 taken in December 2023

Photograph looking downriver from SW-18 taken in December 2023



Photograph of SW-19 taken in December 2023

Photographs of SW-19 taken in December 2023 (left: upstream, right: downstream)

APPENDIX E
Photographs of Surface Water Sampling Stations and Beaver Activity

Photograph of SW-21 taken in December 2023

Photograph of SW-21 taken in December 2023

APPENDIX E
Photographs of Surface Water Sampling Stations and Beaver Activity

Photographs of SW-22 taken in December 2023

Photographs of SW-23 (dry) taken in December 2023

APPENDIX E
Photographs of Surface Water Sampling Stations and Beaver Activity

Photograph of SW-26 taken in December 2023

Photograph upstream of SW-26 taken in December 2023

Photograph downstream of SW-26 taken in December 2023

APPENDIX F

MECP Correspondence

December 3, 2020 Project No. 19134510

District Manager
Ministry of the Environment, Conservation and Parks
Ottawa District Office
2430 Don Reid Dr, Unit 103
Ottawa, ON
K1H 1E1

ARNPRIOR WASTE DISPOSAL SITE – GROUNDWATER COMPLIANCE CONTINGENCY PLAN

Dear District Manager,

Golder Associates Ltd. (Golder) is submitting this letter on behalf of the Town of Arnprior (Town). The purpose of this letter is to fulfill the requirements of Condition 28.1 of Environmental Compliance Approval (ECA) No. A412603 for the Arnprior Waste Disposal Site. Condition 28.1 states:

> *By no later than June 30, 2020, the Owner shall submit to the District Manager contingency measures to address groundwater compliance at the Site.*

It is noted that a request for pandemic related temporary regulatory relief was submitted to the Ministry of the Environment, Conservation and Parks (MECP) requesting a six month extension to the requirements of Condition 28.1. The request for pandemic related temporary regulatory relief is provided in Attachment A.

An Options Assessment was prepared by Golder to present and compare possible contingency options that the Town could consider to address the groundwater compliance issue identified by the MECP Groundwater Reviewer in March 23, 2018 comments on the 2016 Annual Monitoring Report for the Site. The Options Assessment is provided in Attachment B.

Following a review of the options assessment, the Town's municipal council resolved that the Town would further investigate Option 1 as described in the Options Assessment (Attachment B) as the preferred contingency option to bring the Arnprior Waste Disposal Site back into compliance with respect to groundwater.

As required by Condition 28.2 of ECA No. A412603, an amendment application to the ECA providing details of the contingency plan to be implemented and the proposed deadline for an update to the trigger mechanism shall be submitted within six months of receiving approval of the proposed contingency measure from the District Manager.

Golder Associates Ltd.
1931 Robertson Road, Ottawa, Ontario, K2H 5B7, Canada T: +1 613 592 9600 F: +1 613 592 9601

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We trust that this letter and its attachments satisfy the requirements of Condition 28.1 of ECA No. A412603. Should you have any questions, please do not hesitate to contact the undersigned.

Golder Associates Ltd.

Andria Caletti, P.Eng.
Environmental Engineer

Trish Edmond, M.E.Sc., P.Eng.
Principal

ALC/PLE/sg
https://golderassociates.sharepoint.com/sites/119264/project files/5 technical work/mecp submission/19134510-l-awds gw compliance contingency plan.docx

CC: Deanna Nicholson, Town of Arnprior
Thandeka Ponalo, Environmental Officer, MECP

Attachments: Attachment A – Request for Pandemic Related Temporary Regulatory Relief
Attachment B – Options Assessment

ATTACHMENT A

Request for Pandemic Related Temporary Regulatory Relief

Ontario

Ministry of the Environment, Conservation and Parks

Request for Pandemic Related Temporary Regulatory Relief (Alternate Arrangement) for Waste Disposal Sites and Waste Management System

General Information and Instructions

General

Information requested in this form is collected under the authority of the *Environmental Protection Act,* R.S.O. 1990, c. E.19 (EPA) and the *Environmental Bill of Rights*,*1993*, S.O. 1993, c. 28, (EBR) and will be used to evaluate requests for relief regarding environmental compliance approvals (ECA) issued under Part II.1 of the EPA.

This form may **only** be used for requesting temporary relief (alternate arrangements) with the Ministry of the Environment, Conservation and Parks (ministry) for waste disposal site and waste management system ECAs during a pandemic event. If the ministry determines the activities requested are not related to operational activities resulting fom the COVID-19 emergency, the request will be returned.

Questions regarding the preparation or submission of this form or about the ministry's collection of information related to applying for an ECA, contact the Client Services and Permissions Branch by phone at 416-314-8001 or 1-800-461-6290 (toll free) or by e-mail at enviropermissions@ontario.ca.

Instructions

1. Applicants are responsible for ensuring that they complete the appropriate form for their request. Information about the required supporting documentation and technical requirements are available from the Client Services and Permissions Branch and from the local district office. You can find the local district office online at https://www.ontario.ca/environment-and-energy/ministry-environment-district-locator.
2. A complete request consists of:
   - A completed and signed request form
   - All required supporting documents and technical requirements identified in section 5 of this form, ministry guidance and the applications for Environmental Compliance Approvals regulation.
3. Submit a complete electronic copy of this request to enviropermissions@ontario.ca with the subject heading "PANDEMIC RELIEF ECA REQUEST – WASTE"
4. The applicant must also submit a copy of the request to the local ministry district office.

Information collected by the ministry is subject to the *Freedom Information and Protection of Privacy Act*, R.S.O. 1990, c. F.31. If the applicant is of the view that any part of the request is confidential on the grounds that such information constitutes a trade secret or scientific, technical, commercial, financial or labour relations information, please make this known now. Otherwise, the ministry may make the information available to the public without further notice to the applicant. It is an offence under the EPA to provide false or misleading information in this application and/or accompanying documents.

1. Applicant Information

1.1 Applicant Type

☐ Corporation ☐ Individual ☐ Federal Government ☒ Municipal Government
☐ Partnership ☐ Sole Proprietor ☐ Provincial Government ☐ Other _____

1.2 Applicant Name and Business

Applicant Name (legal name of individual or organization as evidenced by legal documents)
Corporation of the Town of Arnprior

Business Name ☒ same as legal name above

Primary North American Industry Classification System (NAICS) Code	Other NAICS Code
91391	

Business Activity Description
Lower Tier Muncipality

1.3 Applicant Physical Address

Unit Number	Street Number	Street Name
	105	Elgin St W

Concession/Rural Route	PO Box

City/Town	Province	Country	Postal Code
Arnprior	ON, Canada		K7S0A8

1.4 Applicant Mailing Address

▬ same as Applicant physical address above

Unit Number	Street Number	Street Name

Concession/Rural Route	PO Box

City/Town	Province	Country	Postal Code

1.5 Applicant Contact Name

Last Name	First Name	Title
Steckly	John	General Manager, Operations

Telephone Number	Mobile Number	Email Address
613-623-4231 ext 1831	613-314-7333	jsteckly@arnprior.ca

2. Technical Contact Information

2.1 Primary Technical Contact

☐ same as Applicant contact name above

Last Name	First Name
Nicholson	Deanna

Title	Company Name
Environmental Engineering Officer	Town of Arnprior

Telephone Number	Mobile Number	Email Address
613-623-4231 ext 1832		dnicholson@arnprior.ca

2.2 Secondary Technical Contact

Last Name	First Name
Caletti	Andria

Title	Company Name
Environmental Engineer	Golder Associates Ltd.

Telephone Number	Mobile Number	Email Address
613-592-9600 ext 3285		Andria_Caletti@golder.com

3. Project Site Address

☐ Mobile ☐ Truck Storage Yard Location ☐ Multi-Site Note: Provide site location(s) in a separate attachment, if necessary

Unit Number	Street Number	Street Name
	658	River Road

Municipality/Unorganized Township	County/District
McNab/Braeside	Renfrew

Concession and/or Rural Route	Ministry District Office (use the online district locator to find your local district office)
	Ottawa

4. Project Information

4.1.a. Project Type – Waste Disposal Site (check all that apply)

- ☒ Landfill Site
- ☐ Processing Site
- ☐ Thermal Treatment Site
- ☐ Transfer Site
- ☐ Composting Site

4.1.b. Project Type – Waste Management Systems (check all that apply)

- ☐ Liquid Industrial Waste and Hazardous Management System
- ☐ Hauled Sewage (Septage)
- ☐ Mobile Waste Processing

4.2 Name and Description

Project Name

ECA Condition 28.1 - Contingency Measures to address groundwater compliance.

Rationale for Relief Request - note, if the ministry determines the requested activities are not related to operational activities resulting fom the COVID-19 emergency, the request will be returned.

The Town of Arnprior has been operating under reduced capacity, including the closure of Arnprior Town Hall, since mid March due to Covid-19 restrictions. As such there were significant delays in the initiation and undertaking of this task (preparation of Contingency Measures report) due to Covid-19. The preparation of an Options Assessment report to identify and evaluate the contingency measures available to address groundwater compliance has since been initiated and significant progress has been made to date. However, it has been identified that consultation with affected parties and some additional engineering work is required before the report can be responsibly provided to the Town of Arnprior Council and MECP.

Summary Description of Relief Services - please use the table in section 4.3 of this form to summarize proposed changes to conditions of current approvals (or use the table as a separate attachment)

The Town requests a 6 month extension to the deadline stated in condition 28.1, to submit contingency measures. The current deadline is June 30, 2020. The Town requests a new deadline of December 31, 2020.

4.2 Request Type

- ☐ New ECA
- ☒ Amendment to existing ECA

4.3 Existing Approvals and Conditions (if amendment)

Separate list attached? ☐ Yes ▣ No

Current ECAs that may be amended by this request - only complete fields applicable to request

ECA Number	Date of Issuance (yyyy/mm/dd)	Condition No.	Description of Proposed Changes to Current Condition
A412603	2020/03/10	28.1	Extension of deadline to submit Contingency Measures from June 30, 2020 to December 31, 2020.

5. Checklist of Supporting Documentation

5.a. Waste Disposal Sites

For waste disposal sites, please ensure the following documentation is included with your request for relief activities:

- ☐ Proof of legal name
- ☒ List of current ECAs that may be amended
- ☒ Clear description of changes to conditions of current approval(s) [table in 4.3 of request form may be provided as a separate attachment]
- ☒ Concise Design and Operations Report to include the following information:
  - ☐ Clear description of processes (for each site, if multiple sites)
  - ☐ Clear description of relief activities requiring ministry approval
  - ☐ Site plan where waste will be handled, stored and/or processed
  - ☐ Description of mitigation measures to manage the waste (e.g. mandatory cleaning schedules for waste storage areas and equipment, covered leak proof containers to prevent off-site impacts), staff training
- ☐ Contingency plan that will be used to ensure relief activities are managed effectively to minimize adverse effects (e.g. spill, fire, other emergency situations)
- ☐ Complaint response protocols that will be used during temporary period/operation of relief activities

5.b. Waste Management Systems

For waste management systems, please ensure the following documentation is included with your request for relief activities:

- ☐ Proof of legal name
- ☐ List of current ECAs that may be amended
- ☐ List of waste types and classes to be hauled
- ☐ Clear description of changes to conditions of current approval(s) [table in 4.3 of request form may be provided as a separate attachment]
- ☐ Truck storage yard location(s)
- ☐ Letter of consent from land owner (if the applicant is not the owner of the truck storage location)
- ☐ Vehicle insurance
- ☐ Vehicle ownership

Please note: No fees are required in connection with this request.

6. Authorization

6.1 Statement of the Applicant

I am authorized and have legal authority to prepare and submit this request for the subject pandemic relief. I have reviewed the complete request and I have made all inquiries that are necessary to declare to the best of my knowledge, information and belief:

- The activities proposed in this request is considered a pandemic related relief activity.
- The information contained in this request is complete and accurate.
- The technical contact identified in this request has/have been authorized to prepare certain technical material, and act on behalf of the applicant to discuss this request with the ministry and to provide additional information about this request to the ministry on request.
- The information provided to Technical Contact in relation to the request is complete and accurate.

Name of Signing Authority

Last Name	First Name	
Steckly	John	
Title		**Email Address**
General Manager, Operations		jsteckly@arnprior.ca
Telephone Number	**Mobile Number**	
613-623-4231 ext 1831	613-314-7333	
Signature		**Date (yyyy/mm/dd)**
		2020/06/15

6.2 Statement of Technical Contacts

I have been authorized by the applicant to prepare the technical materials for the area(s) of responsibility identified in section 5 that are included in this request. I have reviewed those technical materials and I have made all inquiries that are necessary to declare to the best of my knowledge, information and belief:

- The technical materials contained in this request in respect of the area(s) of responsibility identified in section 5 are complete and accurate.
- I have the relevant education and experience necessary to provide this certification.

Name of Technical Contact

Last Name	First Name	
Nicholson	Deanna	
Title		**Email Address**
Environmental Engineering Officer		dnicholson@arnprior.ca
Telephone Number	**Mobile Number**	
613-623-4231 ext 1832		
Signature		**Date (yyyy/mm/dd)**
Deanna Nicholson Digitally signed by Deanna Nicholson Date: 2020.06.15 13:51:52 -04'00'		2020/06/15

ATTACHMENT B

Options Assessment

TECHNICAL MEMORANDUM

DATE December 3, 2020 **Project No.** 19134510

TO Ms. Deanna Nicholson
Town of Arnprior

FROM Andria Caletti, P.Eng. **EMAIL** andria_caletti@golder.com

OPTIONS ASSESSMENT FOR THE TOWN OF ARNPRIOR WASTE DISPOSAL SITE COMPLIANCE ISSUE

1.0 INTRODUCTION

The Corporation of the Town of Arnprior (Town) owns and operates the Arnprior Waste Disposal Site (Site) under Environmental Compliance Approval (ECA) No. A412603. A revision to ECA No. A412603 was issued for the Site on March 10, 2020. As per Condition 28.1 of this ECA, the Town is required to submit contingency measures to address an existing and historic groundwater compliance issue at the Site prior to June 30, 2020. A request for pandemic related temporary regulatory relief was submitted to the MECP requesting a six month extension to this deadline. This memorandum will present and compare possible contingency options that the Town can consider to alleviate or remove entirely the groundwater compliance issue at the Site.

2.0 BACKGROUND

Comments on the 2016 Annual Monitoring Report for the Site dated March 23, 2018 were received from the Ministry of the Environment, Conservation and Parks (MECP) which addressed a non-compliance issue in regard to the Reasonable Use Guideline B-7 (MECP, 1994) at the northern boundary of the Site. Under Guideline B-7, groundwater quality on an adjacent property must not be degraded beyond 50 percent of the difference between background concentrations and established water quality criteria for aesthetic related parameters and 25 percent of the difference between background concentrations and established water quality criteria for health related parameters. The reasonable use performance objectives (RUPO) for the Site are based on the noted calculations using established background water quality and the Ontario Drinking Water Quality Standards (ODWQS). Generally, trigger levels are established for the Site which are based on 75 percent of the RUPO. The trigger concentrations are slightly lower than the RUPO to allow time to take action or implement contingencies if exceedances of the RUPO are anticipated. As identified in the March 23, 2018 comments, the Site is out of compliance with Guideline B-7 due to exceedances of the RUPO at some compliance monitoring wells located within bedrock at the northern Site property boundary. The Site compliance issue had previously been attributed to historical impacts on former Tembec Inc. property now owned by the Town (i.e., the existing contaminant attenuation zone) comingled with possible landfill related impacts, but not solely landfill related impacts

A subsequent meeting was held on June 22, 2018 between the Town, MECP and Golder to discuss the non-compliance issue. At that time, it was recommended by MECP that the Town should consider purchasing the downgradient groundwater rights to alleviate and remove the groundwater compliance issue. As an alternative to purchasing the downgradient groundwater rights, the establishment of a new background well was also discussed to help better understand the potential impact from historic activity on the former Tembec Inc. property versus the landfill and possibly substantively identify the former Tembec Inc. property as the source of (or significant

Golder Associates Ltd.
1931 Robertson Road, Ottawa, Ontario, K2H 5B7, Canada T: +1 613 592 9600 F: +1 613 592 9601

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contributor to) the groundwater compliance issue. Two background wells (BR-18S and BR18-D) were subsequently drilled in an area expected to be upgradient of the landfill and in an area believed to be impacted by historical activities to help discern the differences between landfill impacts and historical impacts that could be contributing to groundwater quality at the Site boundary. Groundwater levels were obtained at the new background monitoring wells from October 2018 to August 2019, and sampling and analysis of groundwater from the new wells also occurred during this time period.

As discussed in the technical memorandum by Golder dated September 18, 2019, it was determined that using BR-18 as a background well was not effective in reducing or eliminating the Site compliance issue as it did not provide data that excluded the landfill as a potential source of the groundwater compliance issue. Golder subsequently discussed with the Town possible contingency options available to alleviate or remove the groundwater compliance issue through the undertaking of an options assessment. Further to a phone call held between the Town, Golder, and the MECP (District Office and Technical Support) on November 27, 2019, the MECP expressed their concurrence with the proposed undertaking of an options assessment. On March 10, 2020, ECA No. A412603 was re-issued and included Condition 28.1 requiring the Town to submit contingency measures to address the groundwater compliance issue at the Site to the MECP District Manager. The purpose of this options assessment is to provide a review of possible contingency measures to alleviate or remove the Site groundwater non-compliance for consideration by the Town in determining the contingency measures to be presented to the MECP District Manager per Condition 28.1.

3.0 POSSIBLE CONTINGENCY MEASURES TO ALLEVIATE OR REMOVE THE GROUNDWATER COMPLIANCE ISSUE

The possible contingency measures identified below provide a wide range of possible options to address the groundwater compliance issue at the Site. Some contingency measures have been removed from further detailed consideration based on general ability of the contingency measure to alleviate the compliance issue and/or the identification of significant concerns with the requirements for implementation. Contingency measures that are considered more likely to alleviate or remove the groundwater compliance issue and that could reasonably be implemented have been carried forward, developed with some additional details and assessed using a comparison matrix presented in Section 4.0.

The proposed contingency measures that have been considered include:

1) Extend the contaminant attenuation zone (through purchase of downgradient property and/or groundwater rights)
2) Pump and treat leachate-impacted groundwater
3) Early closure of the Site
4) Progressive installation of low permeability cover
5) Dig and dump waste and/or soil
6) Engineering of the base of the landfill for leachate collection
7) Tree system
8) Leachate recirculation
9) Construction of a physical barrier

3.1 Extend the Contaminant Attenuation Zone

Guideline B-7 (MECP, 1994) describes that the purpose of a contaminant attenuation zone (CAZ) is to allow the limited impairment of use of off-site property by means of easements or other methods without imposing the severe restrictions on land use which apply to the disposal site. In the CAZ, it is intended that contaminants will be naturally attenuated to levels compatible with the reasonable use of the adjacent property.

The Site already has four owned CAZ areas (Area A, B, C and D) comprising an area of approximately 31 hectares. The location of the CAZ areas are shown in Figure 1. The contingency option being considered could involve the purchasing of downgradient property or groundwater rights on the lands (or some portion of them) located to the north, east and northeast between the Site and the Ottawa River, presently privately owned. As Golder is aware that this land may have some potential for re-development it is suggested that purchasing the groundwater rights on the lands, by way of a groundwater easement, may be more affordable and palatable to the current owner than outright property purchase. Purchasing the groundwater rights allows the land to continue to be used for other purposes and does not fully sterilize the land. By purchasing the rights, the use of groundwater would be restricted for present and future property owners between the Site and the Ottawa River. By removing any potential for downgradient groundwater users, the Site would no longer be required to assess groundwater compliance based on impacts to groundwater at the current property boundary (i.e., groundwater quality at the point where it discharges off of the Site). Site compliance would instead be assessed in surface water in the Ottawa River, as agreed by the MECP during the June 22, 2018 meeting. This option may be costly depending on the development value of the land.

Groundwater quality on the privately owned downgradient property and impacts from historic activity on that property are not known to the Town, however it is known that a lumber mill and yard and associated activities was historically operated on the property.

Extending the CAZ via purchase of the groundwater rights was originally suggested by the MECP during early discussions about the groundwater compliance issue. This option will completely remove the groundwater compliance issue at the Site, and therefore has been carried forward to the comparison matrix.

A variation on this contingency option involves the initiation of a legal agreement with the current property owner that would give the Town the first right of refusal to purchase the groundwater rights in the event that the property were to be put up for sale, this could be considered as an alternative to immediately purchasing the downgradient land or groundwater rights. It is envisioned that compensation to the land owner would be required to secure this agreement. This variation on the option is discussed further in Section 4.1.

3.2 Pump and Treat Leachate-impacted Groundwater

Purge wells are a relatively common method to remove impacted water from the ground before it leaves a site and then subsequently treat the impacted water. Purge wells are most commonly used in locations where the impact to groundwater is in the overburden soils and can be more easily captured and controlled. Purge wells in bedrock, such as the rock at the Arnprior Landfill Site, are less favourable as fractures in the rock control groundwater flow and there is less certainty that the location (distal and depth) of individual purge wells are targeting the best location for groundwater capture. Further, to appropriately design a purge well system several test wells would need to be installed to identify the expected groundwater capture area and thus understand the number and spacing of wells required. To complete this options assessment Golder has relied upon existing Site information to conceptually project the requirements of a purge well system, noting that there is a fair amount of uncertainty in the projection unless or until test wells are completed. This contingency option is expected to

involve the installation of a series of purge wells (approximately 2 to 11 wells) to remove leachate-impacted groundwater for treatment. The purge wells would be installed within the existing CAZ in a configuration to capture the extent of the landfill leachate plume in the bedrock groundwater. It is conceived that this would consist of purge wells installed near the northern edge of the landfill (i.e., near to the source of contamination) and not at the property boundary (i.e., the compliance location) so as to reduce the amount of groundwater intercepted by the well from the off-Site privately owned downgradient property and/or the Ottawa River. It is acknowledged that potential impacts to the groundwater from historic activities not related to the landfill on the former Tembec Inc. property (now the existing CAZ owned by the Town) could also be collected by the purge well system.

Leachate-impacted groundwater that is pumped could be treated on-site or off-site. On-site treatment would require the development of a treatment facility and groundwater would need to be treated such that it could be released to the natural environment. It is Golder's experience that the level of treatment to achieve the required natural environment discharge quality can often be hard to achieve and expensive in on-site treatment facilities. Alternatively, the extracted leachate-impacted groundwater can be collected in a holding pond or tank, and transported off-site to a wastewater treatment facility for disposal. It is Golder's experience that this is typically more affordable than on-Site treatment noting that pre-treatment of impacted groundwater may be required to be accepted at the wastewater treatment plant. Also, the management of leachate-impacted groundwater may require a Municipal Class Environmental Assessment study.

This option may take several years before improvements in groundwater quality are observed at the property boundary that would relieve the groundwater compliance issue. As noted above, purge wells in bedrock may not alleviate the groundwater compliance issue at the property boundary if leachate-impacted groundwater is not fully captured due to fracture flow.

Further, this option at the Arnprior Landfill Site is complicated in that the off-Site groundwater on the privately owned downgradient property may also be impacted by historic activities. It is expected that the zone of influence of the purge well system will pull some groundwater from this property and the current groundwater quality on the neighbouring property is not presently known.

Costs associated with this contingency option include engineering design of the purge well system and possibly treatment or pre-treatment, capital installation costs of the purge wells, possibly capital costs of on-site treatment construction or holding tank construction and likely a Municipal Class Environmental Assessment for evaluation of options to manage groundwater impacted by leachate. Operational costs include ongoing pumping and treatment or transport for off-site treatment of groundwater. Ongoing pumping and treatment of impacted groundwater would be an operational cost for the contaminating lifespan of the landfill, which would conceivably be the current remaining capacity of the site (24 years) and an additional 25 to 50 years post-closure of the Site. Note that the contaminating lifespan is the time at which engineering support is no longer required and the leachate-impacted groundwater would not need to be pumped and could be left in the bedrock and not cause a groundwater compliance issue.

This option has been carried forward to the comparison matrix as it represents a feasible option with some potential for success to alleviate the groundwater compliance issue.

3.3 Early Closure of the Site

This contingency would consider the early closure of the Site. No additional waste would be accepted for landfilling at the Site, and closure would include the installation of either a permeable (soil) or low permeability (compacted clay, geosynthetic clay liner (GCL) or geomembrane) final cover over the landfill. Early site closure would require the preparation of a Closure Plan as required by Condition 29 in the ECA.

Capital costs would include engineering services for preparation of the Closure Plan and design of the final cover and construction costs for the final cover system estimated at several hundreds of thousands of dollars. Operational costs for the landfill would be significantly lower, reduced to the cost to continuing groundwater and surface water monitoring and occasional inspection and possible maintenance of the final cover system. Groundwater and surface water monitoring would likely be required for 20 to 50 years post closure based on preliminary contaminating lifespan estimates. The Town would need to find an alternate means of managing the waste generated by the Town that is received at the Site and an alternate waste management site will charge a tipping fee for disposal of the Town's waste.

This contingency option does not actively address the existing groundwater compliance issue. Based on Golder's experience, this is a long-term strategy that would take years, if not decades, before an improvement to groundwater quality at the property boundary would be observed. Early closure of the Site is, however, technically feasible to undertake and long-term could be a contingency measure acceptable to the MECP, or could be combined with a more immediate solution to achieve groundwater compliance if the downgradient lands are considered for groundwater use in the future. Therefore, this option has been carried forward to the comparison matrix.

3.4 Progressive Installation of Low Permeability Cover

This contingency option involves the progressive installation of a low permeability final cover as described in Section 3.3, however would not include closing the Site early; the final cover would be installed progressively over areas of the landfill that have reached capacity. As landfilling activities are progressed, the low permeability cover will be installed in phases as designated areas reach final approved elevations. It is noted that there is currently one small area located at the eastern edge of the landfill footprint at the Site that has reached capacity.

Capital costs would be similar to those described in Section 3.3, however the Town could continue to manage residential waste through disposal at the Site.

As with the approach described in Section 3.3, this contingency option does not actively address the existing groundwater compliance issue. This is a long-term strategy that would likely take decades before an improvement to groundwater quality at the property boundary would be observed. Therefore, this option has not been carried forward to the comparison matrix.

3.5 Dig and Dump Impacted Waste and/or Soil

The term "dig and dump" is an industry term for remediation projects whereby impacted material is dug up, removed and/or treated and dumped back in the same location following treatment or dumped at a new location if not treated. Generally speaking, if the material is not treated the dug up material is "dumped" at a landfill. This contingency option would involve the excavation of impacted soil from the existing CAZ and/or waste from the landfill, removal from the Site and disposal of the material at another licenced facility expected to be a landfill. Removal of waste as described would remove the source of leachate impacting groundwater but would not immediately affect groundwater quality at the property boundary (though improvements could be expected more

quickly than with an impermeable final cover and/or early closure of the Site, as the source of the leachate would be completely eliminated). However realistically this makes little sense to dig up a landfill to take the material to another landfill. The excavation and hauling of waste from the landfill would be expected to produce significant odours for the duration of the activity that could impact nearby residents and would require careful operational practices to mitigate. Other potential operational challenges with excavation of waste include issues with vermin due to exposed waste, and management of perched leachate if encountered. The Arnprior Waste Disposal Site is an older landfill and disposed materials, regulations as well as public perception have changed over time. All material unearthed would need to be disposed of appropriately in accordance with current regulations.

Removal of soil above the bedrock in the CAZ near the north property boundary could provide some improvement to groundwater quality, however would be a temporary solution without also removing the waste, since waste would continue to generate leachate that would over a longer period of time re-contaminate the groundwater. Further, the groundwater compliance issue has been observed in the bedrock at the property boundary; removal of the overburden soil at the property boundary is thus not expected to alleviate the groundwater compliance issue.

The capital costs associated with this contingency option include construction costs to excavate the waste, costs associated with hauling off-site, and the tipping fees at the licenced waste disposal facility. Tipping fees may be expensive. The Town would need to find an alternate means of managing the waste generated by the Town that is received at the Site. Although this option could alleviate compliance concerns more quickly than the options discussed in Section 3.3 and 3.4, it may still need to be combined with a more immediate option to achieve groundwater compliance if the downgradient lands are considered for groundwater use in the future. Due to the expense and logistical challenges associated, this contingency measure has not been included in the comparison matrix.

3.6 Engineering of the Base of the Landfill for Leachate Collection

The existing landfill at the Site is a natural attenuation landfill, meaning that it does not have any engineered features including engineered low permeability base or liner for leachate containment, nor a leachate collection system to remove leachate generated by the waste. With a natural attenuation landfill leachate is released to groundwater to be attenuated by natural process and/or dilution such that the RUPO is achieved prior to leachate-impacted groundwater reaching the property boundary. The Town could consider excavating the existing waste and building an engineered liner and leachate collection system at the base of the landfill. Leachate generated by future waste or re-landfilled existing waste would be captured by the leachate collection system rather than released to the groundwater.

This option would require systematic excavation of existing waste from the landfill in phases, and would involve similar logistical challenges such as odour, vermin, perched leachate management and disposal of waste materials as discussed in Section 3.5. Typically, the addition of engineering of landfill cells is an undertaking that is more easily adopted at landfill sites with undeveloped landfill cells where the excavated historic waste can be re-landfilled in a new, undeveloped landfill cell to allow the addition of a liner and leachate collection system. The Site does not have any undeveloped cells that could accept the excavated waste, and so a lateral area for waste processing would require approval from the MECP which would be challenging to get approved, if even possible. Alternatively some portion of landfilled waste from the Site would need to be hauled off-site to a licensed waste disposal facility to create the undeveloped cell area that could then be engineered with a liner and leachate collection system and start to move waste around in the landfill. Constraints with sending waste to another landfill are similar to the option discussed in Section 3.5.

Once the engineered liner and leachate collection system is installed, leachate that is generated from the re-landfilling of existing waste or landfilling of new waste would be collected through the leachate collection system. From there, the leachate would need to be treated prior to discharge to the natural environment. Treatment could occur on-site through the construction of an on-site treatment facility, or the leachate could be collected, hauled, and disposed at a wastewater treatment facility. Leachate treatment and collection would occur at minimum for the contaminating lifespan of the Site meaning until such time as the leachate could be released to the groundwater without exceeding the RUPO which is estimated to be 25 to 50 years post closure in this case. Considerations regarding on-Site and off-Site leachate treatment are presented in Section 3.2.

The capital costs associated with this contingency option include an engineering design for the liner and leachate collection system, engineering design of leachate treatment, pre-treatment and/or holding tanks or ponds, an ECA amendment, possibly a municipal class Environmental Assessment on leachate-impacted groundwater treatment and specialized construction of the designed components including the excavation of landfilled waste. There would be costs for hauling and disposal of some of the excavated waste at a licenced waste disposal facility to create the undeveloped landfill cell. Tipping fees may be expensive. Ongoing operation and maintenance costs associated with collection and treatment of leachate would be an operational cost for the contaminating lifespan of the landfill, which would be decades post-closure of the Site.

Although this option could alleviate compliance concerns more quickly than the options discussed in Section 3.3 and 3.4, it may still need to be combined with a more immediate option to achieve groundwater compliance if the downgradient lands are considered for groundwater use in the future. Due to logistical challenges associated with the engineering and the excessive anticipated capital and operational costs, this contingency measure has not been included in the comparison matrix.

3.7 Tree System

A passive installation of trees could be considered at the Site boundary where the groundwater compliance issue exists whereby a series of trees would be planted to uptake leachate-impacted groundwater. It is noted that such a planting would require appropriate soil to support tree growth. Sufficient land would need to be available to plant enough trees to accept the volume of groundwater requiring treatment. This system would not operate during the winter dormant period of the vegetation, and impacted groundwater would need to be otherwise managed. It is anticipated that this method would only be able to treat impacted groundwater in the overburden, leaving groundwater in the bedrock continuing to be impacted. Therefore, this contingency is not carried forward to the comparison matrix.

3.8 Leachate Recirculation

This contingency option involves the collection of leachate from the landfill or leachate-impacted groundwater from the downgradient groundwater and placing it within (typically at the top of) the landfill. This process increases the rate of waste decomposition thereby reducing the contaminating lifespan of the Site. There are many issues associated with leachate recirculation including odour issues and infrastructure and operational issues. This action would require the design and installation of a collection system for leachate, with the same issues associated with engineering and installation of a landfill liner and leachate collection system as outlined in Section 3.6 or alternatively collection of leachate-impacted groundwater as outlined in Section 3.2. Leachate recirculation has been undertaken in the Province of Ontario historically, but is currently not looked upon favorably by the MECP and would likely not be approved; Golder is not aware that this practice is currently being approved in the Province at this time other than on an emergency basis. Presently any approval by the MECP for leachate recirculation seems to be for short term, site specific situations and not longer term contingency or operational options. This option has not been carried forward to the comparison matrix.

3.9 Construction of a Physical Barrier

This contingency option would involve the construction of a physical barrier to minimize the migration of leachate-impacted groundwater. Groundwater flow at the Site is interpreted to be towards the Ottawa River, to the north, northeast and east. Thus, a physical barrier would need to be installed to restrict the groundwater movement in these directions. Physical barriers are typically installed in overburden soil often using geosynthetic clay liners. In bedrock, the only way to produce a physical barrier is to attempt to grout the fractures within the bedrock to lower the permeability of the bedrock. Given the highly fractured nature of the bedrock at the Arnprior Landfill Site and the proximity to the Ottawa River, creating a physical barrier in bedrock is not considered feasible. As the groundwater compliance issue is in the bedrock, a physical barrier is not a contingency option at this Site and this option is not carried forward to the comparison matrix.

3.10 Other Considerations

3.10.1 Combination of Options

Many of the options presented above could be implemented in combination although not all are considered viable when combined. For example, the Town could consider progressively placing low permeability cover while also implementing a purge well system to achieve groundwater compliance more efficiently. Trees could also be planted as a complementary measure. Should the Town wish to consider a combination of the above options, this can be further evaluated, however for the purpose of this assessment only those options considered individually viable and reasonably feasible are carried forward to the comparison matrix.

3.10.2 Change to Floodplain Elevation

Historic high floods from the Ottawa River were experienced in the spring of 2017 and 2019. While it is unknown what affect flooding had on the privately owned lands downgradient of the Site located along the Ottawa River, it is possible that continued flood occurrences could result in development restrictions on these lands (if the Township of McNab/Braeside were to raise the elevation of the floodplain) or could make development of these lands less desirable. It is understood that the Township of McNab/Braeside is not presently intending to raise the elevation of the flood plain. Should development ever be restricted due to a change in the elevation of the flood plain, it is recommended that the MECP be consulted to determine if this negates the need to implement a contingency measure as this could inherently restrict the ability to use the groundwater on the downgradient privately owned lands.

3.10.3 Alleviate or Remove Groundwater Compliance Issue

It is noted that purchasing downgradient groundwater rights will not improve the groundwater quality at the property boundary. However, only an acquisition of groundwater rights or purchase of property adjacent to the landfill will completely resolve and remove the existing groundwater compliance issue at the current property boundary. None of the other options presented remove the groundwater compliance issue but alleviate it.

4.0 COMPARISON OF OPTIONS

The three contingency options that have been carried forward for further description and to be evaluated in the comparison matrix include the purchase of downgradient groundwater rights or agreement to do so, the installation of purge wells for the collection and treatment of leachate-impacted groundwater, and the early closure of the Site as discussed in sections 3.1, 3.2 and 3.3, respectively. A more detailed assessment of these options is provided below. For each option an estimate of the capital costs has been provided where possible noting that in some instances there is just not sufficient information to provide this information. These cost estimates should not be used for budgeting purposes, but rather as “ballpark” estimates to compare financial implications of each option presented in this memorandum. Some thoughts on operation costs have also been identified again noting that in many instances there is insufficient information to provide this information.

On August 27, 2020, a call between the Town, Golder and the MECP (District Office and Groundwater Technical Reviewers) was held to discuss the three options. The purpose of this call was to solicit feedback from the MECP on the three potential contingency options so that initial comments from the MECP could be considered as part of this options assessment. General comments on the three options as discussed during the August 27, 2020 call are provided below.

4.1 Extend the Contaminant Attenuation Zone via Groundwater Easement

There is currently CAZ owned by the Town that is located downgradient of the landfill Site as shown on Figure 1, but not beyond Usborne Street. Purchasing the downgradient groundwater rights would extend the current CAZ areas north, northeast and east, between the current property boundary at Usborne Street and the Ottawa River. The land between Usborne Street and the Ottawa River is privately owned. As discussed in Section 3.1, by removing any potential for downgradient groundwater users, the Site would no longer be required to assess groundwater compliance based on impacts to groundwater at the property boundary (i.e., groundwater quality at the point where it discharges off of the Site) per MECP Guideline B-7. This contingency option would immediately resolve the groundwater compliance issue upon acquisition of the groundwater rights. The MECP has said that Site compliance would be assessed in the Ottawa River for this type of contingency; due to the large volume of the Ottawa River, it is generally considered that contaminant loading to the Ottawa River from the landfill Site would have minimal impact and future contingency measures would likely not be required. Removal of the requirement for groundwater compliance may result in a reduction to the groundwater monitoring program for the Site, and likely a slight increase in surface water monitoring requirements.

There is a large portion of land that is privately owned that fronts the Ottawa River, and the property has previously been the subject of interest for development opportunities in the last decade. Due to the desirability of this waterfront land, downgradient groundwater rights could be costly. Restricting development opportunities through acquisition of the groundwater rights (the property is not municipally serviced by the Township of McNab/Braeside) could become a political issue or an issue of public interest for the Town and the Township of McNab/Braeside. It is noted that parts of the privately owned property are interpreted to be hydrogeologically cross-gradient from the landfill, and groundwater in these areas are therefore considered to be unlikely to have been impacted by landfill leachate. It is considered that the groundwater rights on the entirety of the privately owned property may not need to be acquired in order to address the groundwater compliance issue. Thus, severing of the land such that groundwater rights can be acquired only in the areas considered to be potentially impacted by landfill leachate may be favorable to the Town and to the property owner.

The industrial activities historically carried out on the privately owned downgradient property included a lumber mill and lumber storage. Groundwater quality on the privately owned downgradient property and potential impacts from historic activity on this property are not known to the Town. It is possible that by purchasing the downgradient groundwater rights on the privately owned downgradient property, the Town of Arnprior may assume responsibility for impacts to groundwater resulting from historic contamination not related to the landfill; this could affect Site compliance if groundwater discharging to the Ottawa River is significantly impacted although again the large volume of the Ottawa River would be expected to mitigate this groundwater discharge. Monitoring of groundwater or surface water on the privately owned downgradient property prior to purchase of a groundwater easement has been discussed historically so that the Town could understand what they are purchasing and ensure it is a viable solution. Historically the Town has been told that monitoring could be conducted but results would need to remain private. Given the Town is a Municipal entity information collected by the Town, or by its consultants on behalf of the Town can always be requested under the Freedom of Information Act. This complicates understanding exactly what the Town would be purchasing.

This contingency option and the concerns noted above were generally discussed with the MECP during the call on August 27, 2020. It was generally acknowledged that this contingency option would alleviate groundwater compliance issues as described.

During the call, the Town and Golder inquired about a variation on the option to purchase the downgradient property or groundwater easement, specifically if a legal agreement with the current property owner of the downgradient land giving the Town first right of refusal to purchase the groundwater rights could be considered as an alternative to immediately purchasing the downgradient groundwater rights. It is envisioned that compensation to secure this type of agreement would be required. The MECP expressed that while a first right of refusal type agreement has not been used for this purpose before to their knowledge, this would meet the same intent as purchasing groundwater rights of limiting the use of downgradient groundwater. It was acknowledged by all that this could result in the required future purchase of the groundwater rights by the Town, however would delay the requirement to do so and is reasonable given that there are currently no groundwater users downgradient from the Site. The MECP agreed to discuss internally and advise the Town on whether such an agreement in principle would be acceptable, noting that there are details that would have to be considered on implementation. Subsequently, in an email dated October 6, 2020, the MECP Environmental Officer for the Site indicated that a review of this variation on the contingency option concluded that obtaining a right of first refusal to purchase the groundwater rights may comply with the requirements in Guideline B-7. They noted that before this were to be approved, the MECP will require a detailed proposal which includes the legal instruments to be used to obtain these rights so that they could review the legality of the option and provide a definite response.

At this time the cost of purchasing the downgradient groundwater rights on the downgradient property are unknown. The cost to secure a first right of refusal on the purchase of groundwater rights is also unknown.

4.2 Pump and Treat Leachate-Impacted Groundwater

As discussed in Section 3.2, this contingency option would involve the installation of purge wells to extract leachate-impacted groundwater for treatment. The goal of the purge well system would be to capture leachate-impacted groundwater from the fractured bedrock, creating an inward gradient towards the wells, thereby controlling and reducing the migration of leachate-impacted groundwater to the property boundary and beyond off the CAZ. Extracted leachate-impacted groundwater would be treated either on-site or off-site.

The option to collect and treat impacted groundwater to lower concentrations of parameters of concern at the property boundary was discussed with the MECP during the call held on August 27, 2020. It was discussed that this option would not provide an immediate solution (requiring time to implement (design and construct) and time before a decrease in concentrations at the property boundary would be observed). The MECP indicated that, because there are no existing groundwater users on the downgradient property, the time required to achieve compliance concentrations is less urgent than if there were existing downgradient groundwater users.
As discussed in greater detail in the following sections, Golder also noted to the MECP that the hydrogeological conditions (fractured bedrock and proximity to the Ottawa River) mean that this could not be guaranteed as a solution. Further, Golder noted to the MECP that the option to pump and treat would be a long-term and costly requirement for the Town, and that before this could even be pursued, additional studies would be required to assess the potential effectiveness. It was generally acknowledged that this long-term solution may require further action in the future should downgradient groundwater use be proposed (i.e., purchase of downgradient groundwater rights).

4.2.1 Purge Well Network

The design of this contingency would require a pumping test program with a computer model simulation to design the well arrangement in terms of spacing, radius of influence, and zone of capture and to estimate the volume of leachate-impacted groundwater to be collected. Conceptually, the purge wells would be installed in the upper bedrock, and, if placed near the northern edge of the waste, would have a higher likelihood of capturing leachate-impacted groundwater close to its source before it has migrated (horizontally and vertically) through the fractured bedrock network. Placement of the wells near the edge of the waste would also capture leachate from beneath the waste. Collected leachate-impacted groundwater would be transported to a treatment location, either off-site at a municipal wastewater treatment facility or private facility, or on-site. Treatment options are discussed in Section 4.2.2.

The purge wells should avoid drawing down the groundwater level so much as to draw in surface water from the Ottawa River. The average river elevation measured at the Lac des Chats measurement station upstream of the Site in the Ottawa River is 74.18 metres above sea level between 1950 and 2019 (ORRPB, 2020), about 1.4 metres below the average groundwater elevations at monitoring wells BR-6 and BR-7. The goal of the purge well system would therefore be to draw down the groundwater levels at monitoring wells BR-6 and BR-7 by no more than 1.4 metres. For the purposes of cost estimates for this contingency approach, the purge well system can be conceptualized to be located immediately downgradient of the CP Rail line and aligned parallel to it. The system would be located approximately 230 metres upgradient of monitoring well BR-6, and be distributed along a length of approximately 460 metres, which is the approximate width of the landfill on the northern side. Due to the lack of existing information on the depths and distribution of fracture zones within the bedrock, it has been assumed that a purge well depth of 10 metres will be sufficient to capture leachate-impacted groundwater from the shallow bedrock.

It should be noted that the purge wells are being conceptually designed to not capture water from the Ottawa River as this would be too much water to manage and would make this contingency unreasonable, but there is the possibility that the system may not capture all of the leachate-impacted groundwater either based on this limitation. A test well and computer modelling of results may be able to bring some greater certainty around this option and if what percentage is expected to be captured should positively influence compliance. Fractured flow in the bedrock also causes uncertainty regarding the reliability of this option.

No hydraulic conductivity, aquifer transmissivity or storativity information has been collected from the bedrock at the Site. As mentioned, a more detailed design of this contingency would require a pumping test program with a computer model simulation to design the well arrangement in terms of spacing, radius of influence, and zone of capture and to estimate the volume of leachate-impacted groundwater to be collected. Published geological mapping and borehole records from the Site monitoring wells suggest that dolostone of the Oxford Formation is present within the CAZ. Based on Golder's experience with wells installed in the Oxford Formation at other locations in Eastern Ontario, the transmissivity of this bedrock formation can range from approximately $6x10^{-5}$ m^2/s to $9x10^{-3}$ m^2/s.

This information was used to estimate the potential range in pumping rates required to capture leachate-impacted groundwater with a target amount of no more than 1.4 metres of cumulative drawdown at the evaluation point (monitoring well BR-6). The cumulative drawdown was calculated using the Cooper and Jacob equation using the range of aquifer transmissivity for the Oxford Formation, a storativity of $1x10^{-5}$ (general estimate for bedrock), and an estimated time of 6 months to achieve steady state conditions. Two scenarios were considered, for 2 and 11 equally-spaced purge wells, with the pumping rate varied to achieve no more than 1.4 metres of cumulative drawdown at the evaluation point. The estimated pumping rates required to achieve a drawdown of 1.4 m at the evaluation point (BR-6) under the high and low transmissivity scenarios is provided in Table 1, for a configuration with 2 and 11 wells.

Table 1: Pumping Rate required to achieve 1.4 m drawdown at BR-6

Number of Purge Wells	Purge Well Spacing (m)	High Transmissivity Scenario Cumulative Pumping Rate (L/day)	Low Transmissivity Scenario Cumulative Pumping Rate (L/day)
2	460	1,080,000	12,000
11	46	1,045,000	11,000

These preliminary estimates indicate that as little as two and up to eleven purge wells could be sufficient to reduce the groundwater elevation in the shallow bedrock such that migration of leachate-impacted groundwater off the CAZ should be minimized. Using the maximum estimate of purge wells would result in a smaller individual well pumping rate and more control over the purge well system. The estimated volume of leachate-impacted groundwater to be pumped ranges from 11 m^3/day to 1,080 m^3/day and is highly dependant on the aquifer transmissivity.

Once a purge well system is installed, it may take several years of monitoring to determine the optimum pumping rate to capture enough leachate-impacted groundwater to improve the groundwater quality at the boundary of the CAZ. This action is flexible in terms of adjusting/adding to the system depending on the results of on-going monitoring. The timeline to achieve a measurable impact would be highly dependant on the hydraulic properties of the shallow bedrock at the Site.

Achieving the maximum acceptable drawdown of 1.4 m at BR-6 would have the most significant effect on groundwater quality at the property boundary. This, however, would also likely draw groundwater from off-site to the north on Usborne Street or from the privately owned downgradient property. Not only does this increase the volume of water to be managed, but off-site impacts to groundwater from Usborne Street or from historic industrial activity on the privately owned downgradient property could also be drawn onto the property and into the vicinity of the compliance monitoring wells. There is a risk that this could worsen the groundwater quality at the compliance monitors and also change the quality of groundwater collected by the purge well requiring treatment, however the groundwater quality on the privately owned downgradient property is not currently known to the Town. To mitigate this risk, the Town could consider reducing the pumping rate to limit the potential to draw impacted groundwater from off-site activities onto the property, however this should be expected to result in a longer time period before the groundwater at the property boundary is compliant with Guideline B-7. This would also decrease the volume of water being extracted.

Approval Requirements and Cost

An opinion of probable cost for the capital expenditure to install 2 to 11 purge wells based on an assumed 460 to 46 metre well spacing along the CP Rail line and extending into the upper 10 metres of bedrock with leachate-impacted water collection into one or two 1,300 m^3 storage tank(s), and some piping or forcemain is approximately $200,000 to $450,000 excluding HST, depending on the pumping rate. Tree clearing costs have not been included. The implementation of the purge well system would require a technical amendment to the ECA for the Site, including hydrogeological studies and system design; associated costs are estimated at $130,000 to $250,000. It is noted that the cost for a test system and computer modelling is not included, as it would be a separate step in the process. It is unclear if a Permit to Take Water will be required, but would be determined during pre-consultation with the MECP; associated costs are not included. This estimate assumes that two phase power is available at the Site but if it isn't then a capital cost to get it to the Site would be required.

Costs to operate the purge well system would include power supply to continuously run the purge wells (highly variable depending on the number of purge wells that would be installed), administrative costs (i.e., Town staff to operate the system), system maintenance and repair, especially of the well screens and pumps handling the corrosive leachate-impacted water. The system would be required to operate for the duration of the landfill site life of approximately 24 years and for the contaminating lifespan of the Site, which would be 25 to 50 years after closure, seven days a week, 365 days a year. Storage capacity and/or a backup power supply would be needed in the event of power outages. Golder generally doesn't operate leachate collection systems but assists with troubleshooting, maintenance and compliance. Leachate-impacted water collection and treatment operational costs are discussed in Section 4.2.2.

4.2.2 Treatment Options

Treatment of leachate impacted groundwater is required before it can be discharged to the natural environment. There are two options to consider for treatment: on-Site or off-Site of the Arnprior Waste Disposal Site. Selection of on-Site or off-Site treatment of the leachate-impacted groundwater is expected to require a Municipal Class Environmental Assessment.

Off-Site Treatment

Golder is unaware of local private wastewater treatment facilities that would be close enough to Arnprior for economical use and receipt of the leachate-impacted groundwater. As such, for purposes of this assessment it is assumed that off-Site treatment means at the Town's wastewater treatment facility. It is noted that the total current capacity of the Town's wastewater treatment facility (the Water Pollution Control Centre, ECA No. 8537-7Y6SGZ) is 9,700 m^3 per day noting that the current available capacity of the wastewater treatment facility is reported by the Town staff to be 4,170 m^3 per day (i.e., 43% of the total capacity). The predicted ranges in pumped leachate-impacted groundwater for the purge well system are 11 m^3/day to 1,080 m^3/day, seven days a week, 365 days a year. Presently Golder has contemplated a small amount of holding capacity on the Site but schedule and availability of the Water Pollution Control Centre will need to be evaluated moving forward, i.e., how often is the facility open and available to receive leachate-impacted water. This would dictate how many truckloads would be required a day as well as on-Site storage capacity requirements in tanks. It is noted at the anticipated high transmissivity of the bedrock approximately 1,080 m^3 of leachate-impacted water per day would require treatment (i.e., 11% of the Town's facility's existing capacity). This is a significant proportion of the existing Water Pollution Control Centre capacity and could make this option not as feasible or undesirable as this capacity needs to be reserved for future Town growth.

If the leachate-impacted groundwater will be treated off-Site at the Town's wastewater treatment facility, the impacted groundwater would need to meet the criteria set out in the Town's sewer-use by-law (Town of Arnprior, bylaw No. 6227-13) unless otherwise agreed and permitted. As discussed in Section 4.2.1, if the purge wells are operated such that the maximum acceptable drawdown of 1.4 m at BR-6 is achieved, groundwater from off-Site to the north on Usborne Street or from the privately owned downgradient property may be drawn onto the Site and extracted through the purge wells for treatment, including groundwater that has been impacted by Usborne Street or from historic industrial activity on the privately owned downgradient property. There is a risk that off-site impacts to groundwater could worsen the groundwater quality being extracted through the purge wells for treatment, however the groundwater quality on the privately owned downgradient property is not currently known to the Town.

Historically there have been some parameters within the leachate monitoring wells at the Site that exceed Schedule A Table 1 of the Town's sewer-use by-law criteria on one or more occasion, namely TKN, cadmium, chromium, cobalt, manganese, benzene, 1,3,5-trimethylbenzene and toluene. Since the purge wells are proposed to be located within 100 m downgradient from the edge of the landfill, they will draw groundwater from within a radius of influence that includes the most leachate-impacted groundwater and it is possible that the groundwater quality will exceed the criteria presently or in the future. Should the purged groundwater not meet the criteria for discharge to the Town's wastewater treatment facility, a pre-treatment system could be constructed on-site such that impacted groundwater could be treated to the point of meeting the applicable criteria prior to being accepted at the wastewater treatment facility. The pre-treatment approach would depend on the parameters of concern to meet the wastewater treatment facility. The on-site pre-treatment system would be required to be operated until groundwater quality improves to within the sewer-use by-law criteria. The wastewater treatment facility may implement or request discharge analysis of the leachate-impacted groundwater, pre-treated or not, to

demonstrate it meets the Town's sewer-use by-law requirements. It is conceivable that the wastewater treatment facility could need this analysis for each day or week, therefore possibly needing the holding tank on Site to be larger to enable more controlled, batch discharge.

On-Site Treatment

Alternatively, discharge to a surface water body may be achievable through on-site treatment. A treatment facility would need to be approved through the Ontario Water Resources Act and constructed to treat leachate-impacted groundwater to acceptable criteria set out by the MECP. Acceptance criteria for discharge to the natural environment would be more stringent than the Town's sewer-use by-law criteria and therefore may require a more robust treatment facility compared to pre-treatment for disposal at the wastewater treatment facility; this is again highly dependent on the parameters of concern, and should be expected to operate through the contaminating lifespan of the landfill (i.e., decades after closure). It is Golder's experience that the level of treatment to achieve the required natural environment discharge quality can often be hard to achieve and expensive in on-site treatment facilities. The process of getting MECP approval for this type of system is also arduous. It can be expected that the MECP would request treated leachate-impacted groundwater to be not acutely toxic and meet provincial water quality objectives for the protection of surface water.

A significantly increased water treatment and surface water monitoring program can be expected as a requirement of this option.

Based on Golder's experience with other landfill sites in Ontario we would always recommend treatment at a municipal wastewater treatment facility over construction of an on-Site facility as it has always proven to be a more easily attained approval with lower capital and operation costs. As such on-Site treatment is not further considered in this memo.

Approval Requirements and Cost

It is anticipated that a Municipal Class Environmental Assessment would be required to assess leachate-impacted groundwater treatment options, but that the end result would be treatment off-Site at the Town's Water Pollution Control Centre. The capital cost of the Municipal Class Environmental Assessment has not been provided but is likely small in comparison to other approvals required. Discharging impacted groundwater directly at the Town's wastewater treatment facility would incur hauling fees for the approximate 5 km distance. Generally, tanker trucks can hold 30,000 L that would mean for the range in bedrock aquifer transmissivity that 1 to over 30 trucks would be required a day assuming operation 365 days per year. One could assume at the higher transmissivity it would advisable that the Town purchase their own tanker trucks; these trucks have their own capital and operational cost that has not been included. There could also be fees related to the cost of discharging to the wastewater treatment facility, a cost that could be negotiated internally by the Town. Based on an assumed fee of $1.00 per cubic metre per Schedule B of the Town's sewer-use by-law, the high transmissivity scenario with well spacing of 460 metres, a total of 1,080 m^3 would require treatment each day compared to the 12 m^3 in the low transmissivity scenario. This could cost in the range of $4,380 to $394,200 of direct disposal fees each year. It is noted that exceedances of the sewer-use by-law by certain parameters maybe incur additionally charges, if even allowed. Should the impacted groundwater exceed the requirement for TKN for instance, it has a discharge premium fee of $5.25 per kg.

At present it is unclear what type of pre-treatment could be required but a capital cost for engineering and design would be required. No MECP approvals of on-Site pre-treatment would be required.

There are significant unknowns regarding the development of this contingency and Golder generally doesn't operate leachate collection systems but assists with troubleshooting, maintenance and compliance. Depending on off-Site leachate-impacted groundwater treatment fees and leachate-impacted groundwater volume, Golder would anticipate that annual operational costs for maintenance, some type pre-treatment, staffing, monitoring, transport and off-Site treatment could range from several hundred thousand dollars a year up to a million dollars a year.

4.3 Early Closure of the Site

This contingency would consider the early closure of the Site. No additional waste would be accepted for landfilling at the Site, and closure would include the installation of either a permeable (soil) or low permeability (compacted clay, geosynthetic clay liner (GCL) or geomembrane) final cover over the landfill. Early site closure would require the preparation of a Closure Plan as required by Condition 29 in the ECA.

Using either a permeable or a low permeability cover, the total volume of leachate generated that could impact groundwater downgradient of the Site over time would be reduced by the application of the cover. Ceasing landfilling operations provides less waste and hence less contaminant mass that can generate leachate from the landfill over time. A permeable cover will allow precipitation to infiltrate into the existing waste; leachate will continue to be generated at a similar but slightly lower rate as it currently is. A low permeability cover will significantly reduce the amount of precipitation that infiltrates into the existing waste, thereby reducing the rate of leachate generation rate and the peak concentration in the groundwater produced, but extending the length of time that the groundwater is impacted. This is likely to mean that post-closure monitoring is required for a longer period of time. As part of this assessment, Golder estimated the contaminating lifespan of the Site with early closure and a permeable soil cover using the POLLUTE model to estimate landfill leachate source concentrations. The POLLUTE model results were calibrated to actual site measured data and input parameters of the model were amended to better match existing conditions. The POLLUTE data were compared to the RUPO to evaluate the site potential contaminating lifespan and was found to be 20 to 50 years (noting that there is a general lack of hydrogeological information, as discussed earlier in this Options Assessment, that limits the accuracy of the model). It could generally be stated that the contaminating lifespan of the Site should a low-permeability cover be installed would be longer.

It is important to note that compliant concentrations of parameters of concern in groundwater at the property boundary would likely be observed prior to the end of the contaminating lifespan, however post-closure monitoring will be required to the end of the contaminating lifespan (as is typical of the environmental monitoring requirements for landfill sites in Ontario) even after compliance concentrations at the property boundary are reached. Even if the early closure of the Site results in compliant concentrations of parameters of concern in groundwater at the property boundary before the contaminating lifespan is reached, it is still expected that early closure represents a long term solution to the groundwater compliance issues. This was discussed with the MECP during the call on August 27, 2020. The MECP noted that, as there are no current downgradient groundwater users, the risk is that the downgradient property be developed in the future and groundwater use pursued before the Site becomes compliant with Guideline B-7. It was generally acknowledged that this long-term solution may require further action in the future should downgradient groundwater use be proposed.

In order to pursue early site closure, preparation of a Closure Plan would be required as per Condition 29 of the ECA. Additional capital costs would include engineering costs for the design of the final cover system, and the cost to construct the final cover system. Generally speaking, both the engineering costs and the construction costs would be expected to be higher should a low-permeability final cover be the preferred option.

Implementation of a low-permeability final cover system would also require an amendment to the design and operations report and the ECA. Capital costs are estimated to range from $700,000 to $1,130,000.

The early closure of the Site would significantly decrease operational costs for the Site, which would then be limited to Town staff time to manage the asset, on-going environmental monitoring and reporting, likely continuing but slowly decreasing in its requirements until the end of the contaminating lifespan (estimated at 25 to 50 years), and some maintenance of the final cover system. With early closure, there will be no further revenue generated from the Site.

Early closure of the Site should be expected to incur costs to otherwise manage the waste generated by the Town. The Site presently has about 24 more years of capacity for landfilling waste. The Town would be required to find an alternate means to manage the waste that would have otherwise been landfilled. This could include hauling the waste to a private or a neighbouring municipality's waste management facility (transfer station or landfill). Potential costs associated would include:

- hauling fees for transport of waste
- tipping fees at the destination site
- re-negotiation of the current arrangement for waste collection and hauling (if a private contract)
- consideration of age of fleet of waste collection vehicles utilized by the Town (owned by the Town or contracted) due to increased hauling distance
- establishment of a transfer station to reduce hauling distance (requiring additional capital costs and environmental approval)

4.4 Comparison Matrix

Table 2 provides a comparison of purchasing downgradient groundwater rights, purge wells for leachate-impacted groundwater collection and off-Site treatment at the Town's Water Pollution Control Centre and early site closure. The comparison matrix considers the expected time frame for implementation and site compliance, the likelihood of achieving site compliance, MECP approvability, probable capital costs, operation and maintenance considerations and costs, and other considerations.

Table 2: Comparison Matrix

Contingency Option	Expected Timeframe	Likelihood of Achieving Site Compliance	Approvability	Probable Capital Costs	Operation and Maintenance Costs	Other Considerations
Option 1: Extend the Contaminant Attenuation Zone via Groundwater Easement	Process to acquire rights could take 2 to 5 years. Will immediately achieve groundwater compliance if groundwater easement purchased. Expected timeframe would be similar for pursuing a legal agreement with the downgradient property owner giving the Town first right of refusal to purchase the land/groundwater rights.	Immediate resolution of groundwater compliance issues if groundwater rights purchased through elimination of potential for downgradient groundwater users. Site compliance would transition to assessing surface water quality within the Ottawa River. Pursuing a legal agreement with the downgradient property owner for first right of refusal to purchase the land/groundwater rights controls the compliance issues potentially to the satisfaction of the MECP.	Approvability of a groundwater easement purchase is relatively simple. Will require an administrative ECA amendment. A legal agreement giving the Town first right of refusal to purchase the land/groundwater rights would require a detailed proposal to the MECP which includes the legal instruments to be used to obtain these rights so that they could review the legality of the option and provide a definite response	Cost to purchase groundwater rights, including legal fees: is presently unknown. If the Town pursues a legal agreement with the owner giving the Town first right of refusal to purchase the land/groundwater rights, these costs would not be incurred immediately but could possibly be expected in the near to long term. Some sort of compensation to secure this agreement is expected and it could be a capital or annual cost. Legal fees would be incurred twice. Cost to conduct an investigation (i.e., drilling, sampling and testing) of groundwater quality to support decision to purchase groundwater easement.	Minimal annual costs for a groundwater easement purchase. Will require some administrative effort and negligible impact to monitoring costs. Pursuit of a legal agreement with the downgradient property owner giving the Town first right of refusal to purchase the land/groundwater rights may be more complicated at the onset and involve ongoing discussion with the downgradient property owner likely including a capital or annual cost.	Acquiring downgradient groundwater rights on waterfront property could be contentious within the communities of Arnprior and McNab/Braeside. Possibility the Town could become responsible for historical groundwater contamination from activities un-related to the landfill. Reduction in annual groundwater monitoring program may be possible as Site would transition to surface water-based site compliance in the Ottawa River. Some additional surface water monitoring likely to be required. While pursuit of a legal agreement with the downgradient property owner giving the Town first right of refusal to purchase the land/groundwater rights delays the capital costs associated with this option, it should only be considered a delay to that capital expenditure at this time.
Option 2: Pump and Treat Leachate-Impacted Groundwater with Treatment at the Water Pollution Control Centre	Process to design, permit and construct system will take 2-3 years. Will take 2-10 years to possibly achieve groundwater Site compliance; the MECP indicated that achieving compliance is not immediately urgent provided that the downgradient groundwater remains unused.	Volume of water required to be treated may be too high to be feasible for the Water Pollution Control Centre and will use up capacity otherwise available for Town growth. Continual optimization of system would be required to achieve and maintain compliance. Fractured bedrock groundwater flow and/or desire to not collect water from the Ottawa River may make this option technically unfeasible such that compliance certainty is reduced. Re-direction of groundwater south toward purge well system could result in off-site groundwater contamination impacting compliance at the property boundary.	Will require technical ECA amendment. Technical information to support the ECA amendment would include hydrogeological studies and purge well system design. May require a Municipal Class EA including supporting technical information and system design details detailing the selection of treatment at the Water Pollution Control Centre. May require a Permit to Take Water.	ECA amendment, including hydrogeological studies and purge well system design: $130K - $250K Install purge wells: $200K - $450K Pre-treatment system engineering design and construction: cost not developed Possible purchase of tanker trucks: cost not developed Municipal Class EA and Permit to Take Water: cost not developed Two phase power assumed to be available at the Site: cost not included	Depending on off-Site leachate treatment fees and leachate-impacted groundwater volume, the annual operational costs for maintenance, some type of pre-treatment, staffing, monitoring, transport and off-Site treatment for the duration of the Site operation (24 years) and for the contaminating lifespan of the landfill (a minimum of 20 to 50 years post closure) in 2020 dollars: $100K -$1,000K	Re-direction of groundwater south toward purge well system could result in off-site groundwater contamination un-related to the landfill being extracted for treatment (quality unknown). If use of the groundwater on the downgradient property is pursued by the current or a future owner before this system improves groundwater quality to meet compliance requirements, the Town may be required to quickly implement option 1.

Contingency Option	Expected Timeframe	Likelihood of Achieving Site Compliance	Approvability	Probable Capital Costs	Operation and Maintenance Costs	Other Considerations
Option 3: Early Closure of the Site	Process to design, permit and construct system will take 2-3 years. Compliance concentrations would not be reached at the property boundary potentially for decades; the MECP indicated that achieving compliance is not immediately urgent provided that the downgradient groundwater remains unused.	A long-term solution that will alleviate compliance concerns over the very long term (decades).	Relatively simple. Early site closure would require the preparation of a Closure Plan as required by Condition 29 in the ECA. Implementation of a low-permeability final cover system would require an amendment to the design and operations report and the ECA.	Engineering services for preparation of the Closure Plan and design of the final cover: $100K - $130K (more for a low-permeability cover) Construction costs for the final cover system: $600K - $1,000K (more for a low-permeability cover)	Minimal. Will require some administrative effort and ongoing monitoring costs to end of contaminating lifespan (20 to 50 years, longer for a low permeability cover). Some maintenance of final cover system may also be required. Operational costs associated with the Site will decrease significantly if not entirely upon closure and capping. The Town would need to find an alternate means of managing the waste generated by the Town that is received at the Site.	The Town would lose in any revenue stream associated with landfill. If use of the groundwater on the downgradient property is pursued by the current or a future owner before this system improves groundwater quality to meet compliance requirements, the Town may be required to quickly implement option 1. Potential additional costs associated with changes to requirements for hauling waste or establishment of a transfer station.

5.0 DISCUSSION

Based on the above comparison matrix, a list of the advantages and disadvantages for pursuing each option are listed below in Table 3.

Table 3: Advantages and Disadvantages of Contingency Options

Contingency Option	Advantages	Disadvantages
Extend the Contaminant Attenuation Zone via Groundwater Easement	■ Groundwater easement immediately resolves groundwater Site compliance ■ Possible reduction in annual groundwater monitoring program as Site would transition to surface water compliance ■ Simple MECP approval process (slightly more complex if pursuing a legal agreement with the downgradient property owner giving the Town first right of refusal to purchase the land/groundwater rights)	■ Expensive up-front costs (immediate or in future) ■ Permanently restricting groundwater use on waterfront property ■ Possibility this is a political and/or contentious undertaking from public's perspective ■ Possibility of acquiring responsibility for historic contamination on downgradient property (currently unknown) ■ No change to groundwater quality
Pump and Treat Leachate-impacted Groundwater with Treatment at the Water Pollution Control Centre	■ Potentially lower initial costs compared to purchase of groundwater rights ■ Positive impact on groundwater quality ■ Legally, development opportunities requiring groundwater utilization may be available on the downgradient privately owned property (depending on existing groundwater quality and impacts from other historic activity)	■ Achieving groundwater compliance is not guaranteed (may have to resort to extending the CAZ in the longer term) ■ Expensive long-term costs, ongoing operation, maintenance and monitoring of the system for contaminating lifespan of the landfill (i.e., after closure of the landfill) ■ More sophisticated landfill staffing will be required to operate and maintain the purge wells and any pre-treatment system ■ Will require more complex MECP approvals; possibly a Municipal Class EA, ECA amendment and possibly a Permit to Take Water. ■ Possibility of extracting/treating off-site groundwater contaminated by activities other than the landfill. ■ May have to resort to extending the CAZ in the longer term if the use of downgradient groundwater is pursued prior to achieving compliance at the site boundary

Contingency Option	Advantages	Disadvantages
Early Closure of the Site	■ Potentially lower initial costs compared to purchase of groundwater rights. ■ Effectively eliminates costs associated with landfill operation (work for Town staff and ongoing environmental monitoring still required). ■ Positive impact on groundwater over the long term (alleviates compliance issues within decades). ■ Legally, development opportunities requiring groundwater utilization may be available on the downgradient privately owned property (depending on existing groundwater quality and impacts from other historic activity). ■ Approval framework is relatively simple.	■ Environmental monitoring required for 25 to 50 years (to end of contaminating lifespan). ■ The Town would need to find an alternate means of managing the waste generated by the Town that is received at the Site (could be costly). ■ The Town would lose in any revenue stream associated with landfill. ■ May have to resort to extending the CAZ in the longer term if the use of downgradient groundwater is pursued prior to achieving compliance at the site boundary.

6.0 LIMITATIONS

Golder Associates Ltd. has relied in good faith on all information provided and does not accept responsibility for any deficiency, misstatements or inaccuracies contained in the memorandum as a result of omissions, misinterpretation, or fraudulent acts of the persons contacted or errors or omissions in the reviewed documentation.

The services performed, as described in this memorandum, were conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

Any use which a third party makes of this memorandum, or any reliance on, or decisions to be made based on it, are the responsibilities of such third parties. Golder Associates Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this memorandum.

The findings and conclusions of this memorandum are valid only as of the date of this memorandum. If new information is discovered in future work, including excavations, borings, or other studies, Golder Associates Ltd. should be requested to re-evaluate the conclusions of this letter and to provide amendments as required.

7.0 CLOSURE

Should you have any questions regarding this memorandum, please contact the undersigned.

Golder Associates Ltd.

Andria Caletti, P.Eng.
Environmental Engineer

Trish Edmond, M.E.Sc., P.Eng.
Geoenvironmental Engineer/ Principal

ETB/ALC/PLE/sg
https://golderassociates.sharepoint.com/sites/119264/project files/5 technical work/options assessment/03_december 2020 revision - mecp/19134510-tm-rev0-options assessment - dec2020.docx

Attachments: Figure 1 – Site Plan

OTTAWA RIVER

TEMBEC

ATTENUATION ZONE

COUNTY ROAD No 3 - USBORNE STREET

TEMBEC
PART 4 PLAN 49R-12219

BM #805168

SW-19

TEMBEC

BR-11

SW-20

BR-7S, BR-7D
TBM #7

CAZ
AREA A

BR-8S, BR-8D

BR-6S, BR-6D
TBM #6

BR-12

BR-5S, BR-5D
TBM #8

SW-12

BR-9S, BR-9D

CAZ
AREA B

BR08-3S, BR08-3D

BR-18S, BR-18D

TEMBEC
REMAINDER PART 1 PLAN 49R-12219

REGISTERED PLAN No. 26

SW-18

300m±

BOAT LAUNCH

SW-17

SW-16

BR-10

SW-21

SW-22

BR08-1S, BR08-1D

SW-4

BR-08-2S, BR08-2D

CANADIAN PACIFIC RAILWAY

SW-11

WETLAND

SW-23

SW-2

SW-3

SW-5

SW-6

TBM #1

TBM #2

TBM #3

OV-2

OV-7

BR-1S, BR-1D

30 m BUFFER

FENCE LINE

OV-9

CAZ
AREA D

OV-10

2019 SURVEY LIMITS

BR-2

ROAD ALLOWANCE BETWEEN LOTS 10 AND 11

CAZ
AREA C

LICENSED LANDFILL

OV-8

30 m BUFFER

FILL
AREA

30m BUFFER ZONE

OV-5

BR-3
TBM #5

30 m BUFFER

LICENSED FILL AREA BOUNDARY

TBM #4

OV-4

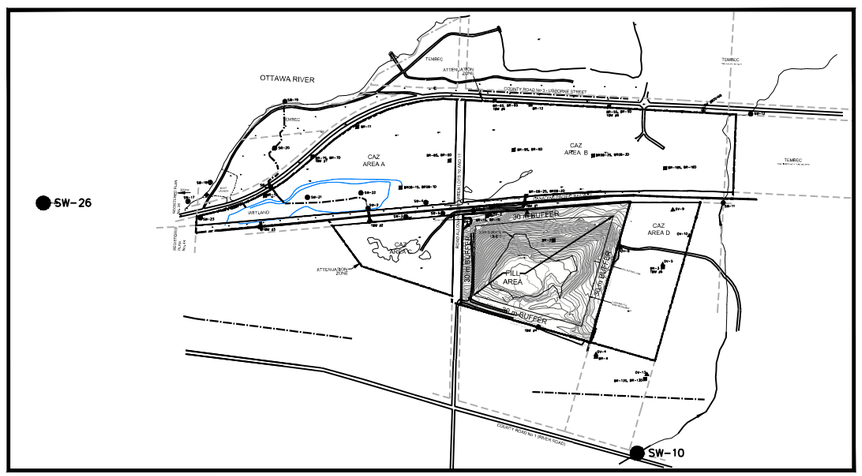
BR-4

OV-13

BR-13S, BR-13D

ATTENUATION ZONE

REGISTERED PLAN No. 44



		AREA (HECTARES)	
		SUBTOTAL	TOTAL
CONTAMINANT ATTENUATION ZONE (CAZ)	AREA A	8.9	30.8
	AREA B	12.8	
	AREA C	3.4	
	AREA D	5.7	
LANDFILLING SITE	BUFFER AREA	3.4	9.6
	FILL AREA	6.2	
TOTAL AREA			40.4

0 100 200
1:4,000 METRES

LEGEND

- BR-1 BEDROCK MONITORING STATION
- SW-6 SURFACE WATER MONITORING STATION
- OV-7 OVERBURDEN MONITORING STATION
- TBM #6 TEMPORARY BENCHMARK
- TOPOGRAPHICAL CONTOURS (2013, 2014, 2015, 2016, 2017, 2018 AND 2019 COMBINED SURVEYS)

REFERENCE(S)

1. BASE PLAN SUPPLIED IN DIGITAL FORMAT BY J.L. RICHARDS
2. TOPOGRAPHICAL CONTOURS BEYOND THE EXTENT OF THE 2014 TO 2019 SURVEYS SUPPLIED IN DIGITAL FORMAT BY JP2G CONSULTANTS INC.
3. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18, VERTICAL DATUM: CGVD28

CLIENT
CORPORATION OF THE TOWN OF ARNPRIOR

CONSULTANT
GOLDER

YYYY-MM-DD	2020-05-29
PREPARED	ABD
DESIGN	ETB
REVIEW	ALC
APPROVED	PLE

PROJECT
TOWN OF ARNPRIOR OPTIONS ASSESSMENT, ARNPRIOR WASTE DISPOSAL SITE

TITLE
SITE PLAN

PROJECT No.	CONTROL	Rev.	FIGURE
19134510	0001	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 25 mm

Path: \\golder.gds\complexdata\ottawa\Active\Spatial_IM\Township_McNabBraeside\Arnprior_Waste_Disposal\99_PROJ\19134510_OptionsAssessment\40_PROD\0001_Waste\ | File Name: 19134510-0001-CO-0001.dwg

8.0 REFERENCES

Cooper, H.H., Jr., and Jacob, C.R., 1946. A generalized graphical method for evaluation formation constants and summarizing well field history. *Transactions, American Geophysical Union*, Vol. 27, No. 4.

Ministry of the Environment and Energy, 1994. Guideline B-7: Incorporation of the Reasonable Use Concept into MOEE Groundwater Management: MOEE Program Development Branch: Ontario Ministry of the Environment and Energy, April 1994, 8 p.

Ottawa River Regulation Planning Board (ORRPB), 2020. Monthly and Annual Mean Water Levels in Metres From 1950 (Chats Lake). http://ottawariver.ca/information/historical-water-level-streamflow-summary/chats-lake-at-arnprior/

Town of Arnprior, By-law No. 6227-13, Sewer Use By-Law.

From:	Ponalo, Thandeka (MECP)
To:	rpaquette@arnprior.ca; John Steckly; Deanna Nicholson; Caletti, Andria
Cc:	Worth, Adam (MECP); Hart, Tracy (MECP); Edmond, Trish
Subject:	Arnprior Waste Disposal Site SW and GW TSS Memos
Date:	May 19, 2021 5:18:33 PM
Attachments:	ftg-tp-2020 AMR and GW Compliance Plan- Arnprior WDS.pdf flf-tp-2020 AMR and GW Contingency.pdf

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EXTERNAL EMAIL

Good afternoon,

The surface water and groundwater unit of the Ministry's Technical Support Section (TSS) has completed a review of the following reports,

- "2020 Site Development, Operations and Environmental Monitoring Report, Arnprior Waste Disposal Site, Township of McNab/Braeside, Ontario", prepared by Golder Associates Ltd. (Golder) and dated March 2021 with Project No. 19131181 (3000); and
- "Arnprior Waste Disposal – Groundwater Compliance Contingency Plan", submitted to District Manager of MECP on December 3, 2020 by Golder Associates Ltd. (Golder).

The reports listed above propose a variation on the option to purchase the downgradient property to groundwater easement, specifically, the Town proposes that a legal agreement be drawn with the current property owner of the downgradient land giving the Town first right of refusal to purchase the groundwater rights. This agreement could be considered as an alternative to immediately purchasing the downgradient rights. As outlined in the attached Ministry TSS memos, the Ministry agrees that obtaining a right of first refusal to purchase the groundwater right may comply with the requirements in the RUG given that there are currently no groundwater users downgradient from the Site. However, we will require a detailed proposal which includes the legal instruments to be used to obtain these rights so that the Ministry could review the legality of the option and provide a definite response.

The Ministry is available for a meeting to discuss the Recommendations and Conclusions in the memorandums, and any questions you may have. In addition, it was also my understanding that the Town has some questions about land use planning, the operation of the waste disposal site and redevelopment of contaminated lands. I am happy to schedule a meeting with our Ministry to discuss these matters.

If you have any questions, I can be reached at 613-858-0695 or Thandeka.Ponalo@Ontario.ca.

Thank you,

Thandeka Ponalo
Senior Environmental Officer
Ontario Ministry of the Environment, Conservation and Parks
Ottawa District Office

2430 Don Reid Drive
Ottawa ON K1H 1E1
Tel: 613-521-858-0695 | Fax: 613-521-5437
Spills Action Centre (SAC): 1-800-268-6060
Thandeka.Ponalo@ontario.ca | www.ene.gov.on.ca

We want to hear from you. How was my service? You can provide feedback at 1-888-745-8888 or ontario.ca/inspectionfeedback

Ministry of the Environment, Conservation and Parks
Eastern Region
1259 Gardiners Road, Unit 3
Kingston ON K7P 3J6
Phone: 613.549.4000
or 1.800.267.0974

Ministère de l'Environnement, de la Protection de la nature et des Parcs
Région de l'Est
1259, rue Gardiners, unité 3
Kingston (Ontario) K7P 3J6
Tél: 613 549-4000
ou 1 800 267-0974

Ontario

M E M O R A N D U M

April 16, 2021

TO: Thandeka Ponalo
Senior Environmental Officer
Ottawa District Office
Eastern Region

FROM: Thomas Guo
Hydrogeologist
Technical Support Section
Eastern Region

RE: 2020 Site Development, Operations and Environmental Monitoring Report and Groundwater Compliance Plan
Arnprior Waste Disposal Site
Part of Lots 9, 10, 11, Concession 13
Township of McNab/Braeside
County of Renfrew

Environmental Compliance Approval (ECA): A412603

I have reviewed the following the documents:

- "2020 Site Development, Operations and Environmental Monitoring Report, Arnprior Waste Disposal Site, Township of McNab/Braeside, Ontario", prepared by Golder Associates Ltd. (Golder) and dated March 2021 with Project No. 19131181 (3000); and
- "Arnprior Waste Disposal – Groundwater Compliance Contingency Plan", submitted to District Manager of MECP on December 3, 2020 by Golder Associates Ltd. (Golder).

The first report was provided on behalf of the Town of Arnprior to document the monitoring results at the site in 2020. The second one was attached a technical memorandum prepared by Golder and dated December 3, 2020 with subject of "Options Assessment for the Town of Arnprior Disposal Site Compliance Issue".

I offer the following comments for your consideration.

Summary

- Reasonable Use Guideline B-7 (RUG) applies to operating waste disposal sites and sites closed post 1986. The landfill site is an active site; thus, the RUG applies to this site;
- Exceedances of the RUG were detected at monitoring wells BR-5D/5S, BR-6D/6S, BR-7S/7D, BR-10, and BR-12 along the northern property boundary. As

such, the site is not in compliance with the RUG along the northern property boundary;

- Golder presented “Options Assessment for the Town of Arnprior Disposal Site Compliance Issue” to the Town and the Town has decided to investigate Option1 – Extend the CAZ via Groundwater Easement as the preferred contingency option to bring the site back into compliance with respect to groundwater;
- The Town and Golder also proposed a variation on the option to purchase the downgradient property to groundwater easement, specifically if a legal agreement with the current property owner of the downgradient land giving the Town first right of refusal to purchase the groundwater rights could be considered as an alternative to immediately purchasing the downgradient rights;
- This Ministry has informed the Town that obtaining a right of first refusal to purchase the groundwater right may comply with the requirements in the RUG given that there are currently on groundwater users downgradient from the Site. However, this Ministry will require a detailed proposal which includes the legal instruments to be used to obtain these rights so that this Ministry could review the legality of the option and provide a definite response; and
- Golder recommends that groundwater monitoring and sampling continue at a frequency of twice per year (spring and fall) with the current parameters list (Table 5). The reporting frequency is to be annual; and
- Golder also recommended that an additional overburden and bedrock monitoring wells be installed in the vicinity of OV-9, near the southern corner of CAZ (contaminant attenuation zone) Area B or the eastern corner of CAZ Area D to discern groundwater flow direction and possible landfill leachate impacts at the southern property boundary. I concur with these recommendations.

Environmental Compliance Approval (ECA)

The Arnprior Waste Disposal Site (WDS) operates under ECA No. A412603 as a domestic, commercial and non-hazardous solid industrial waste and dewatered sewage sludge disposal site. The landfill is located on Part of Lots 9, 10, 11, Concession 13, Geographic Township of McNab. The approved waste disposal area is approximately 9.6 ha within a total approved site area of 40.44 ha. There are no engineering systems in place to control generated leachate and therefore the site operates as a naturally attenuating landfill.

The ECA was originally issued on October 26, 1999, which was amended by Notice on June 20, 2003; April 28, 2008; August 18, 2017; and October 12, 2018. The 2018 amendment was a minor change regarding an updated date for submission of the trigger mechanism. The March 2020 revision of the ECA was initiated by changes to the requirement to submit an updated mechanism.

Golder indicates that Contaminant Attenuation Zone (CAZ) lands located north and northeast of the landfill are covered with wood waste fill and the property was used for lumber industry related activities.

The landfill has been in operation since about 1970 and as of July 1, 2011, the site operations were subcontracted to Tomlinson Environmental Service Inc., Ottawa, Ontario.

Geology

Golder reports that the geology of the site comprises the following:

Overburden

- Major overburden deposits in the area are alluvial sand and glacial sand and/or gravel;
- The alluvial sand has a maximum thickness of 5.5 m at monitoring location OV-5;
- The glacial material occurs at surface or below the alluvial material and has a maximum thickness of 7 metres;
- Overburden thickness varies from less than 1 m to approximately 24 m in the southeastern portion of the site; and
- Overburden located within the CAZ northeast of the rail line ranges from 0.5 to 1.8 m in thickness and consists of topsoil, sawdust fill and/or sand and gravel fill.

Bedrock

- The region is transected by several faults which generally trend in a northwesterly to southeasterly direction;
- A fault is reported to the southwest of the site with the landfill situated on the up-thrown side;
- Paleozoic bedrock geology at the site consists of Gull River Formation, Rockliffe Formation and Oxford-March formation;
- The Rockliffe Formation occurs as outcrops or near surface bedrock in the site area and adjacent properties;
- Test holes primarily encountered limestone bedrock. Bedrock monitors BR-5, BR-6 and BR-7, located north and east of the site, are drilled through the limestone of March-Oxford formation; and
- The base of the Rockliffe formation is believed to be shale encountered in the upper portion of bedrock well BR-6; and
- Limestone and/or shale are encountered in monitors BR08-1 and BR08-3 to depths of 12.14 and 15.85 m, respectively. Monitor BR08-2 consists of approximately 0.76 m of sand and gravel fill underlain by sandstone, followed by layers of limestone, siltstone and shale.

Hydrogeology

The consultant determined the physical hydrogeological characteristics to be:

- Downward vertical gradients (recharging condition) are observed in multi-level bedrock monitors BR-1D/1S, BR-5D/5S, BR-8D/8S, BR-9D/9S and BR-13D/13S, and BR-18D/18S was downward or recharging-level wells BR-6D/6S and BR-7S/7D are located north of the licensed landfill area and in proximity of the Ottawa River and are likely discharging to the river;
- The vertical gradient between the overburden monitor OV-13 and bedrock monitor BR- 13S indicates downward groundwater flow;

- The horizontal hydraulic gradient in overburden from borehole OV-13 to borehole OV-7 was estimated to be 0.014 in both May and October 2020;
- The horizontal hydraulic gradient in the shallow bedrock from monitoring well BR-13S to BR-19S was estimated to be 0.01 in both May and October 2020;
- The horizontal groundwater flow within the overburden unit is interpreted towards the north and east; and
- The horizontal groundwater flow direction within the shallow bedrock unit is interpreted to be north, northeastern and east towards the Ottawa River.

Groundwater Monitoring

The 2020 groundwater monitoring program was the same as the 2019 groundwater monitoring program with the exception of the inclusion of monitoring well BR-18Da and BR-18S.

The groundwater levels in the monitors included in the sampling sessions were measured on May 5, 2020 and October 27, 2020. The spring groundwater monitoring session was conducted on May 5-7 and 27, 2020. The fall groundwater monitoring session was conducted on October 27-29, 2020.

Background Groundwater quality

Prior to 2001, background groundwater conditions were represented by monitor OV-5 for the overburden and several nearby bedrock residential wells. In 2001, monitoring wells OV-13, BR-13S and BR-13D were installed to provide a more suitable background source of water quality at the site.

Overburden Background Quality

Groundwater quality at overburden background monitoring well OV-13 is historically variable with higher leachate indicator parameter concentrations in the spring than in the fall. Water quality from this monitor is characterized by elevated concentrations of manganese and total dissolved solids (TDS) occasionally exceeding Ontario Drinking Water Quality Standards (ODWQS); slightly elevated concentrations of chloride (typically in spring); and low or non-detect concentrations of boron. Iron has historically exceeded the ODWQS twice. Elevated chloride and TDS concentrations are interpreted by road salting activities.

Bedrock Groundwater Quality

Bedrock background quality has been monitored at monitors BR-13S and BR-13D which are characterized by elevated concentrations of TDS and chloride. TDS frequently exceeds the ODWQS and iron and manganese have occasionally exceeded the ODWQS. Groundwater quality within the bedrock is reported to be more mineralized than the overburden.

Leachate

Leachate quality from the waste mound has been characterized at monitoring well OV-7. During May and November 2020, the groundwater quality in this monitor met the ODWQS with the exceptions of dissolved organic carbon (DOC), iron, manganese, sodium and TDS. Golder states that generally parameter concentrations at this location are staying constant or decreasing slightly.

The following parameters have been identified as site-specific leachate indicator parameters (LIPs): alkalinity, ammonia, barium, boron, chloride, iron, hardness, potassium, manganese, sodium, DOC, TDS, and dissolved reactive phosphorous.

Downgradient Water Quality

Golder provides the following interpretations, based on analysis of water quality using the Piper trilinear diagrams:

- Monitoring wells OV-7, BR-1D and BR-1S have been impacted by landfill leachate;
- Monitoring wells BR-5D, BR-5S, BR-6D, BR-6S, BR-8D, BR-8S, BR-9D, BR-9S, BR-12, BR08-1D, BR08-1S, BR08-2D and BR08-2S have been possibly impacted by landfill and wood waste deposited on the CAZ. Golder states that groundwater monitors BR-5D/5S, BR-6D/6S and BR-12 may also be influenced by road salting;
- Monitoring wells BR-7D, BR-7S, BR-10, and BR-11 are interpreted to be impacted by road salt, wood waste, or other industrial activities on CAZ lands, but not by landfill leachate;
- Groundwater monitors BR08-3D and BR08-3S are interpreted to be potentially impacted by landfill leachate, as well as wood waste or other industrial activities in the CAZ lands; and
- Monitoring wells OV-9, OV-10 and BR-3 are interpreted not to be impacted by landfill leachate or wood waste. However, several LIPs have been elevated recent years at monitoring wells OV-10 and BR-3.

VOC Concentrations

Monitoring wells OV-7 and BR-1S, which are located within the northern boundary of the landfill, were sampled for VOCs in June 2019. All VOC parameters were below ODWQS except the following:

- Benzene above ODWQS at OV-7 and BR-1S; and
- 1,4-Dichlorobenzene and chlorobenzene above ODWQS at OV-7.

Golder reports that the analytical results are historically consistent at these locations. The next VOC sampling event is scheduled in the spring of 2024.

Installation of Monitoring Wells BR-18D and BR-18S

In order to help discern the difference between landfill impacts and historical impacts that could be contributing to groundwater quality at the site boundary, monitoring wells BR-18D and BR-18S were installed in the southeast portion of CAZ Area B in October 2018.

Groundwater level measurements, sampling and analytical testing of the groundwater were undertaken from the new wells on October 29, 2018, November 24, 2018, December 15, 2018, January 1, 2019, and January 27, 2019.

Based on an analysis of the data from the above sampling sessions, the new interpreted groundwater flow direction establishes that BR-18 is downgradient of the landfill, and therefore not suitable for use as a background monitor. Therefore, the approach to establish BR-18 as background monitor for assessing compliance was abandoned by the Town.

Groundwater Surface Water Interaction

An on-site wetland is located to the north of the waste disposal area. There is a potential for groundwater to impact on-site surface water.

Guideline B-7

Reasonable Use Guideline B-7 (RUG) applies to operating waste disposal sites and sites closed post 1986. Golder provides the RUG assessment for leachate indicator parameters and compares the RUG limits to the downgradient groundwater quality at bedrock monitors BR-5D, BR-5S, BR-6D, BR-6S, BR-7D, BR-7S, BR-10, BR-11 and BR-12; and overburden monitor OV-10.

The following exceedances of RUG limits and/or trigger levels (75 % of RUG limits) were observed at these monitors:

- OV-10 – alkalinity, iron, manganese and TDS;
- BR-5D – alkalinity, barium, iron, manganese;
- BR-5S – alkalinity;
- BR-6D – alkalinity, iron, manganese, sodium, and TDS;
- BR-6S – alkalinity, manganese, and TDS;
- BR-7D – alkalinity, sodium, and TDS;
- BR-7S – alkalinity, manganese and TDS;
- BR-10 – alkalinity, iron, manganese, and TDS; and
- BR-12 – alkalinity, iron, manganese, DOC.

The Town is taking action to address the non-compliance issue.

Groundwater Compliance Contingency Plan

On December 3, 2020, Golder, on behalf of the Town, submitted a letter with subject of “Arnprior Disposal Site – Groundwater Compliance Contingency Plan” to address the non-compliance issue for the site. This letter is attached a memorandum entitled “Options Assessment for the Town of Arnprior Disposal Site Compliance Issue”.

The options assessment presents and compares possible contingency options that the Town could consider to address the groundwater compliance issue. Following a review of the options assessment, the Town’s municipal council resolved that the Town would further investigate Option1 – Extend the CAZ via Groundwater Easement as the preferred contingency option to bring the site back into compliance with respect to groundwater.

On August 27, 2020, the Town and Golder discussed with this Ministry about a variation on the option to purchase the downgradient property to groundwater easement, specifically if a legal agreement with the current property owner of the downgradient land giving the Town first right of refusal to purchase the groundwater rights could be considered as an alternative to immediately purchasing the downgradient rights.

On October 6, 2020, Sr. Environmental Officer Thandeka Ponalo sent an email to Golder and the Town indicating that a review of this variation on the contingency option

concluded that obtaining a right of first refusal to purchase the groundwater right may comply with the requirements in the RUG given that there are currently on groundwater users downgradient from the Site. Ms. Ponalo also noted that before this were to be approved, this Ministry will require a detailed proposal which includes the legal instruments to be used to obtain these rights so that this Ministry could review the legality of the option and provide a definite response.

Groundwater Monitoring Program

Golder recommends that groundwater monitoring and sampling continue at a frequency of twice per year (spring and fall) with the current parameters list (Table 5). The reporting frequency is to be annual.

Golder also recommended that an additional overburden and bedrock monitoring wells be installed in the vicinity of OV-9, near the southern corner of CAZ Area B or the eastern corner of CAZ Area D to discern groundwater flow direction and possible landfill leachate impacts at the southern property boundary.

I concur with these recommendations.

Thomas Guo, M. Eng, P. Geo.
TG/

ec: Victor Castro, Water Resources Supervisor

cc: Lauren Forrester, Surface Water Specialist
File No. GW RE MC 01 02 C13 (Arnprior WDS -A412603)
TG/ECHO # 1-120406787

Ministry of the Environment, Conservation and Parks
Eastern Region
1259 Gardiners Road, Unit 3
Kingston ON K7P 3J6
Phone: 613.549.4000
or 1.800.267.0974

Ministère de l'Environnement, de la Protection de la nature et des Parcs
Région de l'Est
1259, rue Gardiners, unité 3
Kingston (Ontario) K7P 3J6
Tél: 613 549-4000
ou 1 800 267-0974

Ontario

M E M O R A N D U M

April 23, 2021

TO: Thandeka Ponalo
Senior Environmental Officer
Ottawa District Office
Eastern Region

FROM: Lauren Forrester
Surface Water Specialist
Technical Support Section
Eastern Region

RE: 2020 Annual Monitoring Report and Groundwater Contingency Plan
Arnprior WDS
Part lots 9, 10 and 11, Concession 13
Geographic Township of NcNab/Braeside, Renfrew County
ECA No. A412603

As requested, I have reviewed the pertinent sections of the report titled "2020 Site Development, Operations and Environmental Report, Arnprior Waste Disposal Site, Township of McNab/Braeside, Ontario", prepared by Golder Associates (Golder) and dated March 2021 and "Arnprior Waste Disposal Site – Groundwater Compliance Contingency Plan", dated December 3, 2020 and prepared by Golder. For the purpose of this review, I have also consulted the memorandum prepared by Groundwater reviewer Thomas Guo, dated April 16, 2021.

I offer the following comments with respect to surface water matters.

Background

The site is operated under ECA No. A412603 and functions as a naturally attenuating site. The WDS has been in operation since about 1970. The approval has been amended several times in recent years; mostly recently to update the Site's trigger mechanism. The landfill site currently consists of a 9.6 ha licensed fill area (which includes 30 metre buffer) within a 40.44 hectare Site. Approximately 10,741 cubic metres of waste and cover were placed at the site in 2020. Remaining landfill life was estimated by the consultant as 23 years.

Contaminant Attenuation Zone (CAZ) has historically been to the north and northeast (between a CP Rail Line and Usborne Street) (CAZ Areas A, B and C). It has been reported that property is covered with wood waste fill and the property was used for lumber industry related activities. Berms related to the CP Rail line are of unknown quality. An additional CAZ Area (CAZ Area D) is located to the southwest.

Surface Water Regime

The site is drained by two separate drainage areas, both of which ultimately drain to the Ottawa River. The northern watershed drains most of the landfill area, including CAZ areas A and C, by way of a small intermittent stream through a series of perennial ponds on both sides of the CP railroad tracks and a wetland area north and east of the CPR tracks. Monitoring stations SW-2, SW-21, and SW-22 area intended to capture water quality conditions within CAZ Area A, ponds and wetlands downstream of the landfill area. SW-1 is located just downstream of CAZ Area A.

The southern watershed approaches the southern boundary of the landfill property and is drained by and unnamed ephemeral stream that becomes intermittent downgradient of the bedrock ledge. The southern watershed is captured by monitoring locations SW-10 (background), SW-11, and SW-12.

The Ottawa River is monitored at three locations: SW-26 (Background), Braeside Beach (SW-18) (downgradient of the landfill), and at the outfall from the northern drainage area (SW-19).

Groundwater generally flows to the north, northeast, towards the Ottawa River.

Site specific LIP for surface water include alkalinity, unionized ammonia, barium, boron, chloride, iron, hardness, potassium, manganese, sodium, total dissolved solids (TDS), dissolved organic carbon (DOC), and total phosphorus.

Trigger concentrations for surface water are as follows: Alkalinity (280 mg/L), unionized ammonia (0.02 mg/L), boron (1.5 mg/L), chloride (120 / 640 mg/L), iron (0.74 mg/L), and total phosphorus (0.19 mg/L). CWQG are used for boron and chloride. I support this continued approach.

Results and Discussion

Surface water monitoring was undertaken in May, August and October of 2020. Golder reports that there were no deviations from the prescribed monitoring program, although excessive flows, insufficient flows for measurement or dry conditions were encountered at SW2, SW10 (except May), SW18, SW21, SW22, SW23, and SW26 in 2020.

<u>Northern Drainage Area</u>

All sampling stations within and on the periphery of the wetland (SW1, SW2, SW21, SW22, SW23) had parameters in excess of PWQO, attributable to the landfill, industrial activities (railway / lumber industry), and/or natural wetland conditions.

Water quality at SW-1 and SW-2 was similar, with PWQO non-compliances related to dissolved oxygen, boron, iron and cobalt (SW-2 only). Unionized ammonia also exceeded the PWQO in the spring. With the exception of iron, these are generally minor. Though slightly elevated, neither boron nor chloride exceeded CWQG. Iron was most elevated at SW2 in the spring at 2.2 mg/L.

Water quality at SW-21 and SW-22 was similar and characterized by high hardness and alkalinity, low dissolved oxygen, slightly elevated chloride, boron and iron, and low

unionized ammonia. Concentrations of parameters are generally only slightly outside of PWQO. SW-23 (in the northern-most extent of CAZ Area A), water quality is notably less impacted (lower alkalinity, hardness, chloride).

Golder notes that the previously observed decreasing trend in dissolved oxygen throughout the northern drainage area now appears to be stabilizing or improving.

Generally speaking, water quality within the northern drainage area likely reflects impact from the Site (landfill leachate, industrial activities, wood waste, or some combination thereof). At some monitoring locations, TSS and low flow conditions may contribute to the seasonal trends observed. Significant impacts are not likely at this time.

Southern Drainage Area

Golder concludes that, water quality in the south drainage area is generally consistent and does not suggest impacts from the landfill. This includes SW-10, used to characterize background. This location is frequently dry and the potential for road-related impacts has been noted previously.

Previously identified increasing trends in sodium and chloride in downgradient stations in this area have reportedly stabilized since 2015 (but may again be slightly increasing at SW-11). These observations are likely related to road salting.

Ottawa River

Water quality within the Ottawa River is found to be distinctly different from the on-site ephemeral/intermittent streams, ponds and wetlands characteristic of the Site. Golder concludes that SW-18 and 19 (within or in close proximity to the Ottawa River) are not impacted by landfill leachate, despite concentrations of some parameters in excess of PWQO on some dates in 2020 (i.e. Al, Fe, boron, and unionized ammonia).

As in previous years, concentrations of many leachate indicators at SW-19 are similar to those at SW-1 and SW-2 (determined to be impacted by the Site). While negative impacts are unlikely at this time, leachate cannot be ruled out as influence at SW-19. Trends should continue to be monitored carefully.

Although minor changes are evident at SW-18 (offshore, downgradient of CAZ Area A and up-gradient of the outfall from the northern drainage area), the relative contribution from the landfill cannot be distinguished from other possible sources (i.e. road impacts, upstream Ottawa River). Water quality is generally representative of the Ottawa River.

Trigger and Contingency Assessment

Surface water triggers are established based on PWQO and 75th percentile from background (represented by SW-10), with consideration for CWQG, as described in Section 4.3 of the 2013 Site Development Operations and Environmental Monitoring Report. This includes criteria for review of results exceeding trigger concentrations and for the implementation of Contingency Measures. The response to results exceeding triggers is determined on a case by case basis rather than following a specified number of trigger exceedances.

At both SW-1 and SW-2 (in the North Drainage area), alkalinity consistently exceeds the site-specific trigger concentration in 2020. Although alkalinity appears to be relatively stable over time, this does not appear to be discussed within the report. Boron also exceeded the PWQO trigger in the spring at both SW-1 and SW-2; however, this exceedance was marginal and well below the CWQG. Iron and unionized ammonia exceeded the respective triggers at SW-2 in the spring only. Golder interprets these exceedances to have been within the historical range for these locations and, as such, not representative of site impacts. While I do not agree that site impacts do not contribute, it is unlikely the sole explanation for these results. The parameters exceeding trigger concentrations are unlikely to result in significant impacts to the receiver at this time.

The consultant concludes that the site has not resulted in persistent increases in the concentrations of site-specific trigger parameters. With the exception of iron and alkalinity, this is reasonable. Iron has exceeded the site-specific trigger at SW-2 on several occasions in recent years (including two consecutive monitoring dates Nov 2019 and May 2020). The next annual monitoring report should include an evaluation of the cause of elevated iron concentration in that area and, if justified, recommendations for possible mitigation measures to be undertaken. To support that evaluation, I also recommend that surface water samples be analyzed for both total and dissolved iron, consistent with the approach put forward by the British Columbia Ministry of the Environment and endorsed by the Ontario MECP Standards Development Branch.

Groundwater Compliance Contingency Plan

Because of limitations in the ability to enact the contingency measures set out in the 2013 Site Development, Operations and Environmental Monitoring Report (Jp2g, 2014), the recently amended ECA requires that contingency measures be established to address groundwater compliance issues at the northern site boundary. The Town's preferred contingency option is outlined in the letter dated December 3, 2020, prepared by Golder.

The *Arnprior Waste Disposal Site – Groundwater Compliance Contingency Plan* includes an Options Assessment for resolving groundwater issues. It is my understanding that the Town has resolved to investigate an extension of the CAZ via groundwater easement to achieve groundwater compliance. I defer to the groundwater reviewer for comment on matters relating to groundwater. It is notable that potential groundwater-surface water interactions have been identified in the northern drainage area, with potential for discharge of shallow groundwater to the ephemeral ponds and wetlands within it. Surface water trends should be monitored carefully moving forward to confirm that leachate impacts to surface (via discharge of contaminated groundwater) remain stable / are not intensified.

Conclusions

Based on current monitoring data, the effect of current and historical site activities on surface water is generally minor. While site-related impacts are identified at several locations in the north drainage area, guideline and/or trigger exceedances are generally not expected to be resulting in significant impacts to surface water or downstream

receivers at this time. Ongoing monitoring and careful evaluation of trends is justified. As described above, the next annual report should include further evaluation of iron impacts in the vicinity of SW-2.

If you have any questions about these comments, I would be happy to discuss them with you.

Lauren Forrester, M.Sc.
LF

ec: James Mahoney, Technical Support Section Manager
Victor Castro, Water Resources Unit Supervisor
Thomas Guo, Regional Hydrogeologist
Emily Tieu, Ottawa District Supervisor

c: File SW RE MB 03 06 C13 - Arnprior WDS, Township of McNab-Braeside
File 13 01 07 02 OT – Ottawa River
LF/ECHO 1-20402692

From:	Edmond, Trish
To:	thandeka.ponalo@ontario.ca; emily.tieu@ontario.ca; kyle.stephenson@ontario.ca; thomas.guo@ontario.ca; paul.mcculloch@ontario.ca; rpaquette@arnprior.ca; John Steckly; Ryan Francis; EBlanchard@blg.com
Cc:	Caletti, Andria
Subject:	Arnprior Waste Disposal Site Progress Update November 3 Meeting Summary
Date:	November 18, 2021 1:24:43 PM
Attachments:	20394265-Meeting Summary -3Nov2021.pdf image001.png image002.png

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Good afternoon,

Please find attached a summary of our call held on November 3regarding the Arnprior Waste Disposal Site. If there are any errors or omissions please let us know by November 25 so an updated summary can be prepared.

Thank you,

Trish

Trish Edmond
Principal, Geoenvironmental Engineer

Golder Associates Ltd.
1931 Robertson Road, Ottawa, Ontario, Canada, K2H 5B7
T: +1 613 592 9600 | **D:** +1 613 592-9600 x3246 | **C:** +1 613 799-1960 | **golder.com**
LinkedIn | Instagram | Facebook | Twitter

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GOLDER
MEMBER OF WSP

MEETING SUMMARY

Arnprior Waste Disposal Site Groundwater Compliance

November 3, 2021
1:00 pm

Attendees:	Town of Arnprior	Ryan Francis Robin Paquette John Steckly
	Borden Ladner Gervais LLP	Emma Blanchard
	Ministry of the Environment, Conservation and Parks	Thomas Guo Paul McCulloch Thandeka Ponalo Kyle Stephenson Emily Tieu
	Golder Associates Ltd.	Andria Caletti Trish Edmond

Agenda Items

The following is a summary of the call between the Town of Arnprior (Town), the Town's legal counsel Borden Ladner Gervais LLP (BLG), the Ministry of the Environment, Conservation and Parks (MECP) and Golder Associates Ltd. (Golder) on November 3, 2021 at 1 pm to discuss progress on resolving groundwater compliance concerns at the Arnprior Waste Disposal Site (the Site, or AWDS).

On behalf of the Town, BLG provided the following update on contact with legal counsel for Rayonnier, the owner of the property downgradient of groundwater flow from the Site:

- Rayonnier has stated that it is their current policy not to dispose of lands where historic industrial activity has taken place, in particular for the purpose of future residential development. BLG explained that Rayonnier has indicated that this is their broad corporate policy to mitigate risk on old sites. Legal counsel for Rayonnier was surprised to learn about the development proposal for these lands (i.e., that caused a change to the McNab/Braeside Official Plan in 2018). Rayonnier has offered to sign a letter confirming that they have no plans to sell this property, in particular for the purpose of residential development.
- BLG explained that, while Rayonnier are willing thus far to cooperate, they are generally not interested in this issue. It is BLG's impression that Rayonnier is keen to convey that development of these lands is not part of their corporate strategy in the hopes that this will resolve the issue as they have little interest in speaking to the Town on the matter and it is hard to get their attention.
- BLG has had some preliminary discussions with Rayonnier about other alternatives such as a restrictive covenant or a groundwater easement, but Rayonnier has conveyed that they are hopeful that this letter would be sufficient.

Golder provided a summary of the current status of groundwater compliance at the AWDS that is the reason for these discussions with Rayonnier. The Groundwater Compliance Options Assessment submitted to the MECP in 2020 suggested that a "first right of refusal" type of agreement in the event of sale of the property be sought between the downgradient property owner and the Town in lieu of a groundwater easement to extend the CAZ, since there are no existing groundwater users on the downgradient lands. The MECP provided a response in May 2021 indicating that such an option could be acceptable, but that further detail of the legal mechanism would be required in order to evaluate the proposal. It was acknowledged by Golder and the Town that this possible option is unconventional, but the Town's actions are limited by the intention of the downgradient property owner, and that Town staff are also accountable to Town Council to confirm the course of action.

The MECP's legal representative (Paul McCulloch) stated that the letter proposed by Rayonnier is not an acceptable option; the MECP would be looking for a solution that would involve a registration on title for the lands. The MECP would also like to ensure that Rayonnier is aware that it is in their best interest to do this with respect to contamination from the landfill on the property. It was agreed that the letter would not be pursued further.

The option for the Town to acquire just the groundwater rights to the property was discussed. The Town/BLG/Golder expressed that the site is very large, and not all of it is downgradient of the landfill. Further, historic activity on the site may have caused contamination unrelated to the landfill that the Town does not want to take on the liability of. It was agreed that acquisition of groundwater rights would require testing to delineate the impacts from the landfill and impacts from other potential historic contamination. It was agreed that, as there are currently no groundwater users on the downgradient property, the delineation of landfill impacts to groundwater is not urgent. It was suggested by the MECP that the registration on title to be explored could consider requiring delineation prior to the use of groundwater on the site by the current or future owner.

Action: BLG will provide a list for review by the MECP of possible legal options that would involve registration on title of the property to restrict groundwater use. MECP to review and identify which options would be acceptable before BLG / the Town engage further with Rayonnier on the matter. It was agreed that this is the preferred option so as not to spend time on an option with Rayonnier that is unacceptable to the MECP.

Action: Regarding the comments on the Options Assessment received in May 2021, Thandeka will confirm with the Director the interpretation that, since more information and concurrence with the downgradient property owner are required to determine the nature of the legal instrument to resolve groundwater compliance issues, the Town is not required to fulfill the requirement of Condition 28.2 of ECA No. A412603 at this time.

From:	Ponalo, Thandeka (MECP)
To:	rpaquette@arnprior.ca; John Steckly; Ryan Francis
Cc:	Edmond, Trish; Caletti, Andria; Hart, Tracy (MECP); Tieu, Emily (MECP)
Subject:	Condition 28.1 and 28.2 of ECA Number A412603
Date:	November 18, 2021 4:02:35 PM

EXTERNAL EMAIL

Good afternoon,

The Ministry has reviewed Conditions 28.1 and 28.2 of ECA Number A412603 and can confirm that the six month deadline required by Condition 28.2 has not been triggered. The contingency measures have been provided but final comments have not been provided. As soon as the Town is in receipt of final comments on the contingency measures, the Town should ensure that an amendment of the ECA is submitted to the Director.

Thank you,

Thandeka Ponalo
Senior Environmental Officer
Ontario Ministry of the Environment, Conservation and Parks
Ottawa District Office
2430 Don Reid Drive
Ottawa ON K1H 1E1
Tel: 613-858-0695 | Fax: 613-521-5437
Spills Action Centre (SAC): 1-800-268-6060
Thandeka.Ponalo@ontario.ca | www.ene.gov.on.ca

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