

**TOWN OF ARNPRIOR
WALTER E. PRENTICE WATER FILTRATION PLANT
CLASS ENVIRONMENTAL ASSESSMENT**

PHASE 1 REPORT

EXECUTIVE SUMMARY

The Town of Arnprior (Town) has identified that the Arnprior Water Filtration Plant (WFP) is nearing the Certificate of Approval (C of A) limit for treated water production; measures must be taken to ensure adequate capacity exists for future demands and growth in the community. The Town has a current population of 7,871 and a 20-year projected population of 10,626.

In September 2002, the Ontario Ministry of the Environment (MOE) issued a Provincial Officer's Order to the Town, acknowledging operational issues related to water production in excess of the rated capacity. In response, the Town initiated the Municipal Class Environmental Assessment (Class EA) planning process, which is approved under the Environmental Assessment Act and applicable Regulations. It is anticipated that the Class EA will be a Schedule 'C' undertaking, as defined by the Municipal Engineers Association (MEA) Class EA Guidelines. This Report fulfils the requirements of Phase 1 of the process.

A consultation plan was developed for the project. The first public notification was published in a local newspaper and on the Town website on January 20, 2006, and project initiation notification letters were issued to potential project stakeholders on January 10, 2006. A Project Liaison Committee (PLC) was also formed to review key issues relating to the project and includes representatives from the Town's Municipal Services group, Council, WFP Operations Staff, J.L. Richards & Associates Limited and the Local Heritage Committee.

The Arnprior WFP is a direct filtration plant constructed in 1967 and is rated for a capacity of 7,300 m³/day. Until a major upgrade commenced in 2005 to meet changing water quality standards, the plant saw little modification since its original construction. Despite the upgrades, several systems are well beyond their normal service life. In addition, there is no redundancy in major process treatment steps impairing service and compromising reliability.

The raw water source for the Arnprior WFP is the Madawaska River. A review of the raw water quality data (2001 to 2005 inclusive), indicates that seasonal impacts on the River quality are minimal, and the largest changes occur during significant rain events, when the pH decreases, and colour and turbidity increase.

In general, the treated water quality has been adequate, with limited exceedences recorded for turbidity, colour, pH and trihalomethanes (THMs) (2001 to 2005 inclusive). A review of the 2005 microbiological tests indicates that no treated water samples tested positive for faecal, total coliform counts and general bacterial population counts.

Plant flow data were reviewed (2001 to 2005 inclusive) and Table 6 illustrates the increase in the filtered water flow recorded at the WFP over the past five years.

Table 6: Summary of Filtered Flow Data (2001 to 2005)

Flow Data (m³/day)	2001	2002	2003	2004	2005
Average Day Treated Flow	5,502	4,581	4,540	4,852	5,192
Maximum Average Day Treated Flow	6,180	6,083	5,696	6,504	6,716

The Town's water metering records were also reviewed, in an attempt to define the Residential and Industrial, Commercial and Institutional (ICI) average flows. The records suggest that 18 to 27 percent of the WFP production (excluding backwash and WFP internal flows) is unaccounted for relative to treated water flow metered at the plant.

Three projected flow scenarios have been identified for the WFP and are summarized in Table 8. Phase 2 of this Class EA will further evaluate municipal water demands for each of the alternatives, however, it is expected that the recommended increase in WFP treatment capacity will be in the order of 9,000 m³/day and less than 13,600 m³/day.

Table 8: WFP Flow Projections

Scenario	Flow Projection
Original Plant Design Intent (1966)	13,600 m ³ /day
2003 Capacity Assessment Report	9,100 m ³ /day
Current Flow Projection	8,900 m ³ /day

Additional constraints have been identified for this Class EA, notably the facility's age. The WFP is approximately 40 years old and there are a number of plant components and systems in need of replacement or upgrades. In 2005, the Town commenced a major plant upgrade to address some of the required work. Table 10 lists items that were recommended for upgrade or replacement, but not addressed in the 2005 major Plant Upgrades project.

Table 10: Deferred Upgrades or Replacements

DEFERRED UPGRADES
• Replace entire Raw Water Pumping Station
• Extend paving to Raw Water Pumping Station and replace paving in WFP parking area
• Replace and repair exterior brickwork or re-clad exterior walls
• Replace caulking of building envelope
• Replace double glazed windows
• Replace four (4) interior doors and frames
• Replace Vinyl Asbestos Tile (VAT)
• Improve contact tank sludge removal system (some interim measures included in 2005 project)
• Replace polymer and soda ash chemical feed system equipment
• Update chlorine gas storage and feed systems
• Upgrade filter underdrain and media
• Provide contact tank and flash mixer redundancy
• Provide filter redundancy as per applicable Guidelines

The following Problem and Opportunity Statements are proposed to be used as a basis for the WFP Schedule 'C' Class EA planning process:

- Problem Statement: ***“The Town of Arnprior, Walter E. Prentice Water Filtration Plant, requires additional treatment capacity to meet current residential, commercial, industrial and institutional growth projections and potential water demands, in addition to upgrades to continue to meet regulatory requirements.”***
- Problem Statement: ***“The Municipal Class Environmental Assessment planning process provides an opportunity to evaluate existing systems and infrastructure at the Town of Arnprior Walter E. Prentice Water Filtration Plant in the context of meeting current water quality standards, projected demands and long term reliability.”***

A preliminary list of alternatives that may be considered in Phase 2 of the Class EA process includes, but is not limited to:

- Do Nothing;
- New Water System (i.e., construct a new water treatment plant at a different location);
- Expand or Upgrade Existing System (i.e., increase filtration capacity and/or improve redundancy by providing additional filtration capacity);
- Modify Existing Treatment Process (i.e., provide an additional level of treatment, such as enhanced coagulation, and improve filter redundancy);
- Provide New Treatment Process (e.g. microfiltration);
- Increase Treated Water Storage;
- Reduce Water Demand (e.g. distribution system improvements, water demand reduction strategies, etc.);
- Limit Growth; and
- Obtain Water from Another Source.