

Proposal:	P-05-29
Description:	Engineering Services for the Stage 3 Expansion at Duffin Creek WPCP
Closing Date:	Tuesday, April 5, 2005
Closing Time:	1:00 p.m. (Local Time)

4.8 Stage 3 Liquids Process Expansion Project

The Stage 3 Liquids Process Expansion Project is to increase the liquid treatment capacity of the overall facility from 420 MLD to 630 MLD. Therefore, The Stage 3 Liquids Expansion facilities are to treat 210 MLD and will, in general, include the following treatment processes:

- Influent Pumping Station
- Headworks, including Screens and Grit Removal
- Primary Treatment
- Secondary Treatment
- Tertiary Treatment
- Effluent Disinfection
- Other Ancillary Plant Systems

The processes above are subject to change depending upon the effluent criteria that may be imposed upon the design by the Ministry of the Environment.

The current, consolidated certificate of approval issued to the facility for the optimization – capacity upgrades defines the following treatment objectives, guidelines:

<u>Parameter</u>	<u>Compliance Limit</u>	<u>Objective Target</u>
CBOD	25 mg/L (annually)	15 mg/L
Total Suspended Solids	25 mg/L (annually)	15 mg/L
Total Phosphorous	1.0 mg/L monthly	1.0 mg/L
Total Ammonia Nitrogen	NA	16 mg/L
Fecal Coliforms	200 org/100 mls	100 org/100 mls

Initial discussions are currently ongoing with the MOE to determine the exact design effluent criteria, however, the future effluent limits for the facility are expected to be:

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*One parameter the MOE has identified is that the effluent is to be “non-toxic at the end of pipe”.

The Consultants are to include in their proposal for all the necessary requirements of the Stage 3 Liquids Expansion to provide the required effluent to meet the Objective Targets.

4.8.1 Influent Pumping Station

Hydraulic design of the Stage 3 Liquids Process Expansion is to be based on gravity flow through the liquid treatment processes and the outfall discharge. During the Pre-Design Phase, the Consultant will investigate whether an influent pumping station must be provided in order to achieve this objective, given the expected flows into the plant from the main trunk sewer. As a minimum, the Consultant will:

- Review available modelling for YDSS trunk sewer
- Perform a detailed hydraulic analyses of: the existing plant, new Stage 3 expansion, potential Stage 4 expansion and incorporating headwork and disinfection options with/without UV disinfection (in the event that a UV option requires a ‘pumped’ scenario’.
- Review the analysis results with the PM team and make recommendations regarding the need for including an influent pumping station as part of the Stage 3 Expansion.
- Identify potential flow splitting methodologies to insure that flow splitting can be successfully achieved through the stages of the existing plant and the Stage 3 and future Stage 4 expansions.
- Design the pumping station to be capable of handling the current estimate of full ultimate flow conditions, 840 MLD, however, only include in the contract documents the equipment for the current Stage 3 requirements of 630 MLD. Allow for a peaking factor of 2.5.

Should the Regions adopt a recommendation to incorporate an influent pumping station as part of the Stage 3 Expansion, the Consultant will:

- Undertake Pre-Design preparation of equipment pre-purchase documents, and Detailed Design for an influent pumping station, capable of unattended operation, in accordance with the detailed requirements set out herein.