



Memorandum

Project Name: Pangnirtung WWTP	Project #: OTT-00204430-A0/File No: 3.1
To: Nathanael Andoseh	From: Daryl Burke
Date: September 24, 2014	
Subject: Temporary Bypass of Screened Wastewater During Plant Construction and Initial Start-up	
Prepared By: Daryl Burke	
Distribution: Nathanael Andoseh (GN), Stephen Bliss (exp)	

The contents of this memo are intended to provide a description of the temporary bypass of wastewater at the Pangnirtung Wastewater Treatment Plant (WWTP) during construction activities. This document is in response to concerns that may be raised by the NWB that the actual method of temporary bypass differs from the previously submitted method during plant shut down for rehabilitation. To supplement the contents of this document, Figures A thru C have been included which show general process flow diagrams for the facility.

The Pangnirtung WWTP has been severely undersized for some time and work is underway to install an upgraded treatment process. Due to the extent of the construction work required, the plant has been required to bypass the secondary (biological) portion of the treatment plant. Figure A shows a simplified process flow diagram for the existing plant prior to commencing construction activities. The intent of the bypass was that the wastewater would still undergo preliminary fine screening prior to being discharged. It was originally thought that the easiest way to accomplish this would be to provide temporary bypass piping downstream of the fine screen and tie into the existing plant effluent pipe. The planned bypass configuration is shown in the attached figure B.

During construction it was the responsibility of the contractor to provide the temporary bypass piping. The contractor has selected a slightly different method of conveying the partially treated water to the final outfall. Under the actual configuration, the wastewater is screened as originally intended but is then directed to the equalization tank as shown in Figure C. From the equalization tank, temporary bypass piping has been installed to convey the screened wastewater to the gravel pad final outfall outside the building. Directing the screened wastewater through the equalization tank offers no additional treatment nor does it take away from the level of treatment proposed under the original planned temporary bypass configuration. The most important part of the bypass has been upheld and that is maintaining preliminary screening throughout construction. The only difference is the method of conveying the screened wastewater to the final outfall which, in the opinion of **exp**, would not impact on the quality of the bypassed water.

The temporary bypass of screened wastewater at the Pangnirtung WWTP will be required until the new biological treatment system is capable of accepting all of the wastewater. It is anticipated that the initial plant start-up will allow the system to begin accepting a small component of the total wastewater flow. A particular challenge for the Pangnirtung system, and indeed any similar systems in the north, is the

acquisition of viable seed sludge for initial plant start-up. For the Pangnirtung system, a dry seed product will be introduced into the system but will require several weeks of growth before a sufficient and stable biological population can be developed to treat the entire daily flow rate. The system will be slowly ramped up in flow rate over an estimated period of 5-6 weeks. During this period, partial system bypass will still be required. With respect to a specific timeline for the bypass, this will depend heavily on the construction schedule, biological growth rates after initial seed, and potential issues during the first few weeks of operation. However, barring any unforeseen delays or other major issues, an estimate of the work remaining (with estimated completion dates) and the duration of temporary wastewater bypass is as follows:

Activity	Estimated Completion Date	Bypass (% of total daily flow)
Treatment plant construction	mid-October, 2014	100%
System testing (clean water only)	early December, 2014	100%
Reactor seeding and system start-up	early December, 2014	100%
Start Accepting Wastewater	mid-December, 2014	85 – 100%
Ramp-up wastewater flow to reactor (5-6 wks)	mid-January, 2015	20 – 85%
Finish plant start-up	mid/late-January, 2015	0%

Submitted by:

Daryl Burke, M.Sc.E., P.Eng.
 exp Services Inc.

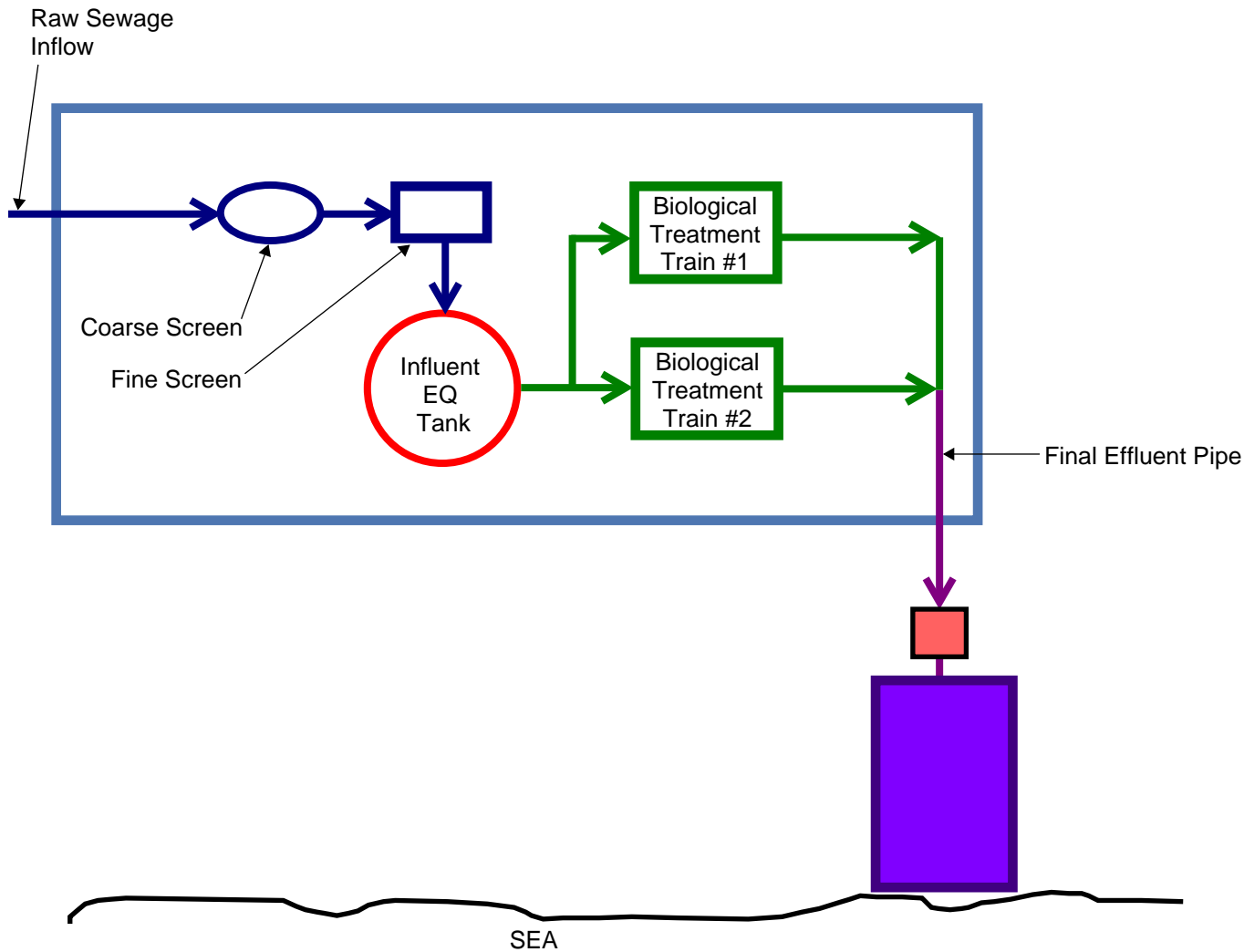
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MODEL: MODELNAME

PLOTTED BY: USER

DATE: DATE

TIME



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Project Title

WASTE WATER
TREATMENT PLANT UPGRADE
PANGNIRTUNG, NU

Dwg. Title

PROCESS FLOW DIAGRAM -
EXISTING WWTP PROCESS
(PRE- CONSTRUCTION)

Drawn By:

DFB

Dwg. Standards
Ckd. By:

Designed By:

SGB

Project No.

OTT-00204430-A0

Dwg. No.

FIGURE A

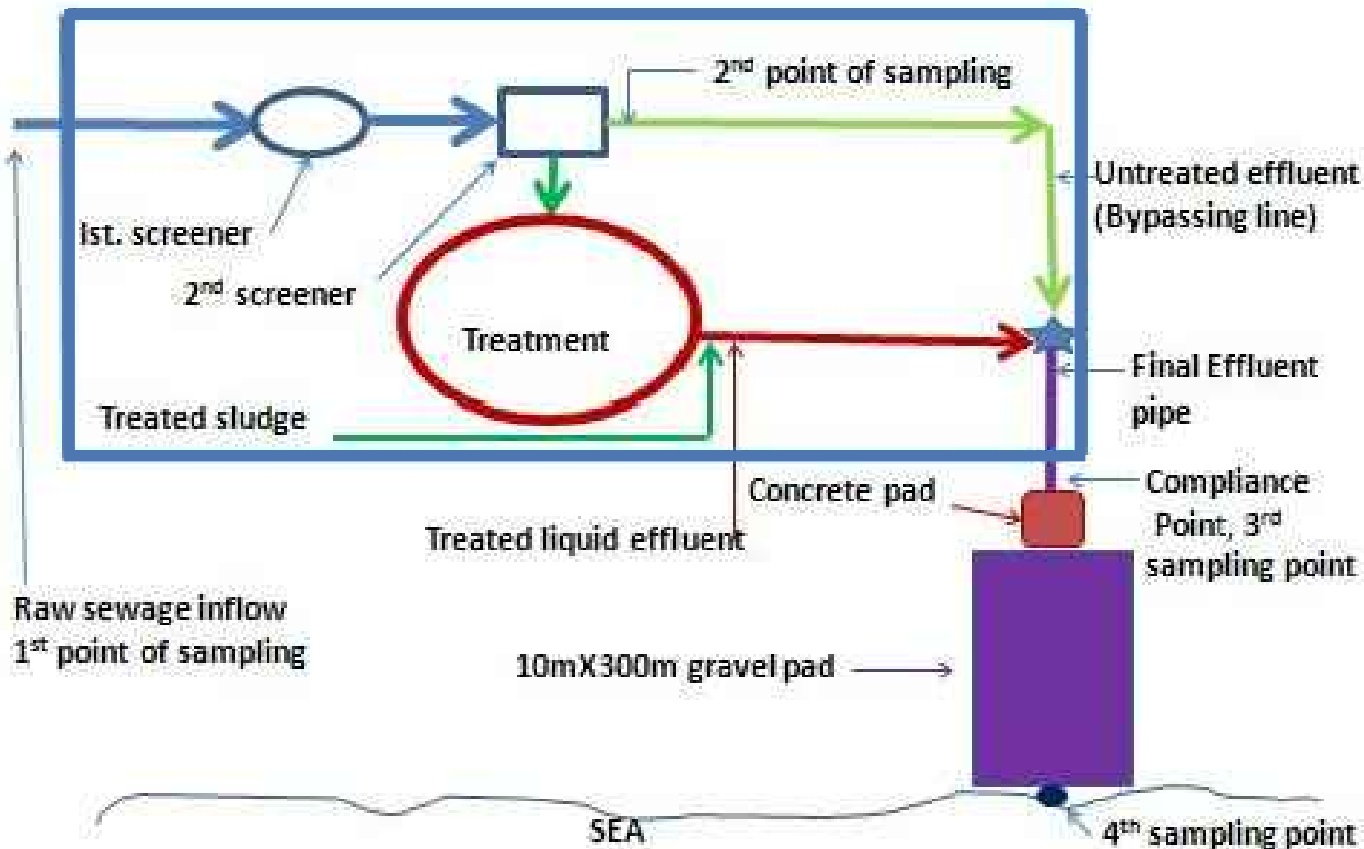
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Rev. No.

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Project Title	WASTE WATER TREATMENT PLANT UPGRADE PANGNIRTUNG, NU
Dwg. Title	PROCESS FLOW DIAGRAM - PLANNED TEMPORARY BYPASS DURING CONSTRUCTION

Drawn By: PD	Project No. OTT-00204430-A0	
Dwg. Standards Ckd. By:	Dwg. No. FIGURE B	
Designed By: SGB	Dwg. Design Ckd. By:	Rev. No. 0

FILE

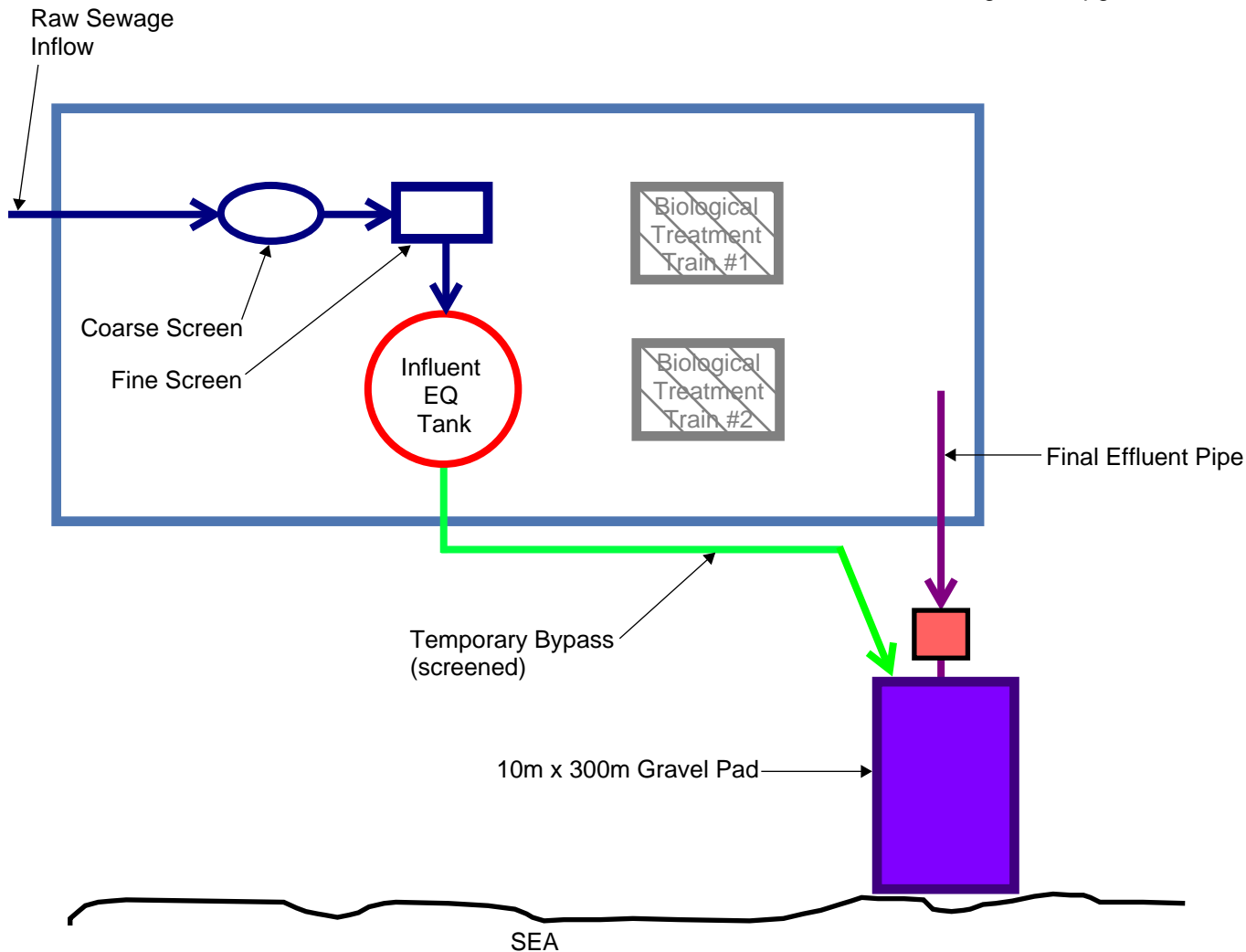
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NOTE: Biological Treatment Trains Being Replaced During Plant Upgrade.



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Project Title	WASTE WATER TREATMENT PLANT UPGRADE PANGNIRTUNG, NU	
Dwg. Title	PROCESS FLOW DIAGRAM - ACTUAL TEMPORARY BYPASS DURING CONSTRUCTION	

Drawn By: DFB	Project No. OTT-00204430-A0	
Dwg. Standards Ckd. By:	Dwg. No. FIGURE C	
Designed By: SGB	Dwg. Design Ckd. By:	Rev. No. 0