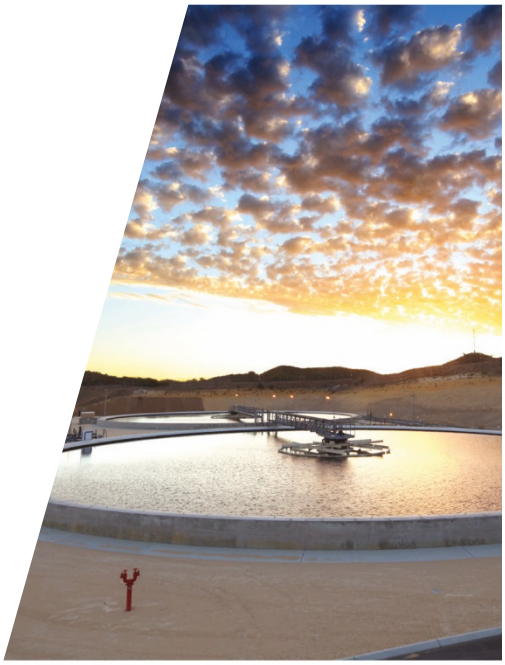
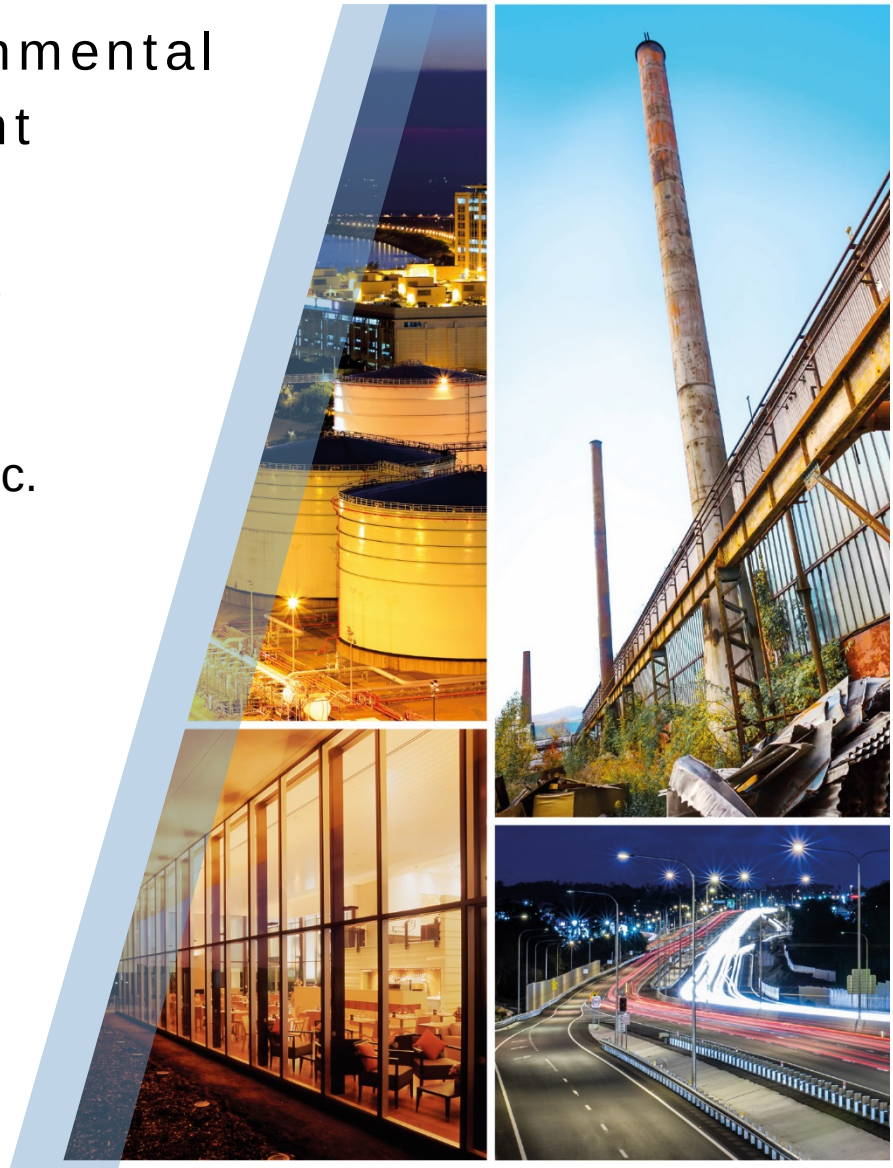


Supplemental Phase 2 Environmental Site Assessment

Boat Harbour Remediation
Planning and Design
Pictou County, Nova Scotia



Nova Scotia Lands Inc.

Executive Summary

Boat Harbour, formerly known as A'se'k in Mi'kmaq, was originally a tidal estuary connected to the Northumberland Strait in Pictou County, Nova Scotia. The Province constructed the Boat Harbour Effluent Treatment Facility (BHETF) in 1967 to treat effluent from industrial sources; a reconstruction in 1972 converted the natural tidal estuary into a closed effluent stabilization lagoon. The Province has committed to ceasing the reception and treatment of new effluent to the BHETF by January 31, 2020, and the subsequent remediation of Boat Harbour (and lands associated with the BHETF) to restore the tidal estuary.

GHD, on behalf of Nova Scotia Lands Inc. (NS Lands) as part of the Boat Harbour Remediation Planning and Design (the Project), conducted a Supplemental Phase 2 Environmental Site Assessment (ESA) of the Boat Harbour Effluent Treatment Facility (BHETF) and associated properties located in Pictou County, Nova Scotia. The purpose of the Supplemental Phase 2 ESA was to further define the nature and extent of environmental concerns at the Site and address data gaps identified in the Phase 2 ESA (GHD June 6, 2018). Based on the results of the Phase 2 ESA, GHD recommended additional sampling for specific Contaminants of Concern (COC), to further delineate sediment, soil, groundwater, and surface water impact identified in several Areas of Potential Environmental Concern (APEC).

The Supplemental Phase 2 ESA was completed in accordance with the Nova Scotia Contaminated Sites Regulations (July 2013) Phase 2 Environmental Site Assessment Protocol, and Canadian Standards Association (CSA) Standard Z769-00 – Phase II Environmental Site Assessment. Laboratory analytical results were compared to applicable Provincial ecological and human health criteria. Where no Provincial criteria were available, applicable Federal criteria were referenced. In addition, Conceptual Site Models (CSM) for human and ecological receptors developed during the Phase 2 ESA to determine potential receptor pathways at the Site were updated based on the results of the Supplemental Phase 2 ESA.

Nineteen sediment samples (plus QA/QC samples) were collected at 10 locations across the Site and at 5 locations from the Northumberland Strait, 2.5 km east of the Estuary, to assess background sediment conditions in a marine environment. Where possible in the wetlands, sediment samples collected for horizontal delineation were also collected for vertical delineation, with samples from both the overlying organic-rich sediment (at depths 0.0 to 0.5 metres below ground surface [mbgs]) and the underlying clay and silt material (at depths 0.5 to 1.0 mbgs) being collected. Sediment samples collected for vertical delineation only were collected from below the previous sample depths, where possible. Various sediment samples collected as part of the Supplemental Phase 2 ESA exceeded the applicable Provincial and/or Federal ecological sediment criteria for metals, Polycyclic Aromatic Hydrocarbons (PAHs), Petroleum Hydrocarbons (PHCs), Volatile Organic Compounds (VOCs), and/or dioxins and furans, and the Provincial human health soil criteria for metals and dioxins and furans. Except where noted in the recommendations table below, both vertical and horizontal delineation of the impacts in sediment were achieved.

A total of 20 surface soil samples were collected from shallow boreholes (advanced by hand using a shovel and a hand auger) and 14 subsurface soil samples were collected from 13 drilled boreholes. Soil samples collected as part of the Supplemental Phase 2 ESA exceeded the applicable Provincial

and/or Federal soil criteria for various metals and general chemistry parameters. Except where noted in the recommendations table below, both vertical and horizontal delineation of the impacts in soil were achieved.

Groundwater samples were collected from 7 newly installed monitoring wells near the Boat Harbour Stabilization Lagoon (BHSL) and the Estuary using low-flow purging and sampling methods where possible. Groundwater samples exceeded the applicable Provincial and/or Federal groundwater criteria for various metals, VOC, and general chemistry parameters. Analytical results for five of the newly installed monitoring wells were consistent with groundwater results from the Phase 2 ESA; however, additional metal (cadmium) and/or VOC (chloroform) exceedances were identified at monitoring wells BHSL-MW-6 and EST-MW-2. These metal and VOC parameters were not identified in any other groundwater samples collected during either the Phase 2 ESA or the Supplemental Phase 2 ESA. As such, additional groundwater sampling is recommended at monitoring wells BHSL-MW-6 and EST-MW-2 to confirm these metal and VOC exceedances, which are noted in the recommendations table below.

One surface water sample was collected from a stream to the east of the sludge disposal cell overflow pond. Analytical results for the surface water sample were reported as below the applicable marine surface water criteria. Five additional background surface water samples were collected from Chance Harbour Lake to confirm the background surface water conditions for the area. Surface water samples collected from Chance Harbour Lake exceeded the applicable freshwater surface water criteria for metals and general chemistry parameters.

Based on the results of the Supplemental Phase 2 ESA, additional sampling may need to be completed at the Site to fully delineate sediment, soil, and groundwater impact, following completion of the human health and ecological risk assessment screening phase, as identified in the recommendations table below.

Additional Sampling Recommendations

Sample Location	Sample Matrix	Delineation Requirement	COC
Boat Harbour Stabilization Lagoon (BHSL)			
BHSL-MW-2	Soil	Horizontal	Arsenic, Copper
BHSL-MW-6	Groundwater	Confirm Results	Cadmium, VOCs (Chloroform)
Estuary (EST)			
EST-MW-2	Groundwater	Confirm Results	VOCs (Chloroform)
Northumberland Strait (NS)			
NS-SED-1 to NS-SED-7	Sediment	Horizontal	PHCs
Former Settling Pond 2 (FSP2)			
FSP2-SED-8	Sediment	Vertical (below 0.9 m)	Metals, PAHs, PHCs, VOCs, Dioxins and Furans
FSP2-SED-9		Vertical (below 0.85 m)	
Former Settling Pond 3 (FSP3)			
FSP3-SED-7	Sediment	Vertical (below 0.9 m)	PAHs (Perylene) Dioxins/Furans
Mill Air Emissions (MAE)			
MAE-SS-1/MAE-SS-11	Soil	Horizontal	Metals

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1. Introduction

1.1 Overview

GHD, on behalf of Nova Scotia Lands Inc. (NS Lands) as part of the Boat Harbour Remediation Planning and Design (the Project), conducted a Supplemental Phase 2 Environmental Site Assessment (ESA) of the Boat Harbour Effluent Treatment Facility (BHETF) and associated properties located in Pictou County, Nova Scotia. A Site Location Map is provided on Figure 1.

The purpose of the Supplemental Phase 2 ESA was to further define the nature and extent of environmental concerns at the Site and address any data gaps identified in the GHD Phase 2 ESA report, dated June 6, 2018 (hereinafter referred to as Phase 2 ESA report). As such, this report should be read in conjunction with the Phase 2 ESA report.

The Supplemental Phase 2 ESA was completed in accordance with the Nova Scotia Contaminated Sites Regulations (July 2013) Phase 2 Environmental Site Assessment Protocol, and Canadian Standards Association (CSA) Standard Z769-00 – Phase II Environmental Site Assessment.

1.2 Site Setting

Boat Harbour, formerly known as A'se'k in Mi'kmaq, was originally a tidal estuary connected to the Northumberland Strait in Pictou County, Nova Scotia. The Province constructed BHETF in 1967 to treat effluent from industrial sources; a reconstruction in 1972 converted the natural tidal estuary into a closed effluent stabilization lagoon. The Province has committed to ceasing the reception and treatment of new effluent to the BHETF by January 31, 2020, and the subsequent remediation of Boat Harbour (and lands associated with the BHETF) to restore the tidal estuary.

The BHETF receives and treats wastewater effluent from the Kraft Pulp Mill (Mill) located at Abercrombie Point. The main components of the BHETF include: the wastewater effluent pipeline (over 3 kilometres (km) in length) that runs from the Kraft Mill (Mill) and extends eastward, below the East River of Pictou (East River), to the BHETF property; twin settling basins and an Aeration Stabilization Basin (ASB) west-southwest of Boat Harbour; a sludge disposal cell south of Boat Harbour; and the Boat Harbour stabilization lagoon (BH, BHSL, or Boat Harbour). Effluent from Boat Harbour discharges through a dam (northeast of Boat Harbour) into an estuary before being released to the Northumberland Strait. Prior to the construction of the twin settling basins and ASB, effluent was routed by open ditch from the pipeline on the east side of Highway 348 to a natural wetland area (Former Ponds 1, 2, and 3) before being discharged into the stabilization lagoon.

A Site Plan, which includes the location of the Mill, BHETF components, dam, and estuary is provided on Figure 2.

Additional details regarding the Site setting and history of the BHETF are provided in the Phase 2 ESA report.

1.3 Phase 2 ESA Findings

GHD conducted a Phase 2 ESA of the BHETF and associated properties between October 2017 and February 2018. The objective of the Phase 2 ESA was to complete sampling of all applicable

media (sediment, soil, groundwater, and surface water) at all areas of potential environmental concern (APEC) identified in the Phase 1 ESA report (GHD October 26, 2017), for analysis of applicable Potential Contaminants of Concern (PCOCs) for the purpose of identification, characterization, and/or delineation of known and/or potential environmental impacts at the Site. Laboratory analytical results were compared to applicable Provincial ecological and human health criteria. Where no Provincial criteria were available, applicable Federal criteria were referenced. A Conceptual Site Model (CSM) for human and ecological receptors was also developed to determine potential receptor pathways at the Site, based on the results of the Phase 2 ESA.

A summary of the Phase 2 ESA findings are provided below:

- Various sediment samples collected across the Site exceeded the applicable Provincial and/or Federal ecological sediment criteria for metals, Polycyclic Aromatic Hydrocarbons (PAHs), Petroleum Hydrocarbons (PHCs), Volatile Organic Compounds (VOCs), Polychlorinated Biphenyls (PCBs), and/or dioxins and furans, and the Provincial human health soil criteria for metals and dioxins and furans. Except where noted in Table 1.1 below, both vertical and horizontal delineation of the impacts in sediment were achieved, with impact generally limited to the overlying organic-rich sediment layer.
- Various soil samples collected across the Site exceeded the applicable Provincial and/or Federal soil criteria for some metals, VOCs, and/or general chemistry parameters. As identified in Table 1.1 below, additional delineation of metals and VOCs (methyl tert butyl ether - MTBE) were recommended at select locations throughout the Site to further delineate soil impact.
- Various groundwater samples exceeded the applicable Provincial and/or Federal groundwater criteria for some metals and/or general chemistry parameters.
- Various surface water samples collected from across the Site, including the raw effluent, exceeded the applicable Provincial or Federal surface water criteria for some metals, PAHs, PHCs, and/or general chemistry parameters. Surface water samples collected from the background sampling area exceeded the applicable surface water criteria for metals and general chemistry parameters. As no human health criteria was available for surface water, the surface water samples were also compared to the Provincial or Federal human health criteria for drinking water. Exceedances of this criteria were identified for metals, phenols, and general chemistry.
- Seven drilled boreholes/monitoring wells planned for the Boat Harbour and the estuary (BHSL-MW-5 to BHSL-MW9, EST-MW-2, and EST-MW-3) were not advanced during the Phase 2 ESA as access agreements could not be negotiated with private land owners in time for the field program.
- Ten drilled boreholes, one hand-augered borehole, and eight sediment samples that were proposed along the pipeline corridor were not advanced or collected due to the risk of damaging the pipeline while the treatment facility is operational. This portion of the pipeline is a separate PID and will be assessed as a separate Site once operation of the pipeline is shut down in January 2020.

Based on the results of the Phase 2 ESA, GHD recommended that additional sampling be completed at the Site to further delineate sediment, soil, groundwater, and surface water impact as identified in Table 1.1 below.

Table 1.1 Phase 2 ESA Additional Sampling Recommendations

Sample Location	Sample Matrix	Delineation Requirement	COC
Background (BKGD)			
Northumberland Strait	Sediment	Background Conditions	All Parameters[1]
Chance Harbour Lake	Surface Water		
Boat Harbour Stabilization Lagoon (BHSL)			
North and south of BHSL	Soil/Groundwater	Horizontal (Install BHSL-MW-5 to BHSL-MW-9)	All Parameters[1]
BHSL-BH-2	Soil	Vertical/Horizontal	Arsenic
BHSL-MW-2			Arsenic, Copper
BHSL-MW-11			Arsenic, MTBE
Estuary (EST)			
West of Estuary	Soil/Groundwater	Horizontal (Install EST-MW-2 and EST-MW-3)	All Parameters[1]
Northumberland Strait (NS)			
NS-SED-1	Sediment	Horizontal	PHCs
NS-SED-2			
West of Estuary			
Former Settling Pond 2 (FSP2)			
North of FSP2	Sediment	Horizontal	All Parameters[1]
FSP2-SED-4	Sediment	Vertical (below 1.0 m depth)	PHCs
FSP2-S-5 (0.31-0.46m)	Soil	Horizontal	MTBE
Former Settling Pond 3 (FSP3)			
East of FSP3	Sediment	Horizontal	All Parameters[1]
FSP3-SED-3	Sediment	Vertical (below 0.7 m depth)	PHCs
FSP3-MW-2 (3.1-3.7m)	Soil	Vertical/Horizontal	MTBE
Mill Air Emissions (MAE)			
MAE-SS-1	Soil	Horizontal	Metals
MAE-SS-3			MTBE
MAE-SS-6			MTBE
MAE-SS-9			MTBE
MAE-SS-10			Arsenic
Sludge Disposal Cell (SDC)			
Downstream in stream adjacent to sludge disposal cell overflow pond	Sediment/ Surface Water	Horizontal	All Parameters[1]
Twin Settling Basins (TSB)			

Table 1.1 Phase 2 ESA Additional Sampling Recommendations

Sample Location	Sample Matrix	Delineation Requirement	COC
TSB-BH-2	Soil	Vertical/Horizontal	Arsenic, Cobalt
TSB-MW-1			

Note:
[1] All contaminants of concern (COC) assessed during Phase 2 ESA per sample matrix

2. Site Activities

2.1 Field Program Summary

GHD completed the following field activities at the Site and at the background assessment areas (Chance Harbour Lake and the Northumberland Strait) from April 4 to April 30, 2018:

- Mobilization of field staff, field equipment, and heavy equipment (such as drilling rigs, barges, and boats) to Site
- Collection of sediment samples at 15 locations using gravity coring, percussion sampling, and grab sampling
- Collection of hand-augered or hand-excavated surface soil samples at 20 locations
- Advancement of 13 boreholes and collection of soil samples
- Instrumentation of 7 monitoring wells and groundwater development, monitoring, and/or sampling at the 7 newly installed monitoring wells
- Collection of surface water samples at 6 locations
- Field investigation support activities such as decontamination of equipment
- Submission of laboratory samples to Maxxam Analytics (Maxxam) located in Bedford, Nova Scotia for analysis

A Sampling Analysis Plan prepared by GHD is presented in Appendix A and is organized by APEC, sample media, and sample location, and includes laboratory analysis, sample depth, and delineation requirements for each APEC. Sampling and/or monitoring locations are presented in Figures 2 through 10, and are organized by APEC for Site location and by area for background assessment areas.

Prior to initiation of the field program, GHD's Health and Safety Plan (HASP) was updated to ensure all potential contaminants of concern and investigative activities to be undertaken as part of the Supplemental Phase 2 ESA were included and assessed. Prior to sampling activities, reconnaissance of the Study Area was completed by senior field staff to document access conditions. In the areas where subsurface infrastructure is known to exist (pipeline corridor and main treatment facility area), underground locates were completed by a third party locator utilizing a combination of electromagnetic (EM) and ground penetrating radar (GPR) techniques. The borehole locations and utility clearances were reviewed with the Property Owners for signoff and acknowledgement.

2.1.1 Deviations from Sampling and Analysis Plan

Several deviations from the original field work program were necessary due to field conditions. Deviations from the Sampling Analysis Plan included:

- To vertically delineate PHCs in the sediment at sediment location FSP3-SED-3, located along the southeastern side of Former Settling Pond 3, GHD recommended that a sample be collected from a depth below 0.7 m at sediment location FSP3-SED-8 (same location as FSP3-SED-3). Due to the density of the underlying sediment at this location a sample could not be collected below 0.7 m.
- The subsurface soil sample (BHSL-S-5) to delineate impact at BHSL-MW-11 was intended to be collected using a shovel and hand auger at a depth of 1.2-1.8 m below ground surface (mbgs); however, the sample depth was adjusted to account for higher terrain and was collected from 1.8-2.4 mbgs using a drill and split spoon.
- Additional surface and subsurface soil samples were collected from monitoring well BHSL-MW-1, located adjacent to monitoring well BHSL-MW-2.

2.2 Methodology

2.2.1 Sediment Sampling

Sediment samples were collected as part of the Supplemental Phase 2 ESA between April 23 and April 30, 2018 using percussion core and grab sampling methodologies, as described in the Phase 2 ESA report. Grab sampling in the Northumberland Strait was completed by dredging with a weighted clam shell-type (Ponar) sampler. Where possible in the wetlands, sediment samples collected for horizontal delineation were also collected for vertical delineation, with samples from both the overlying organic-rich sediment (at depths 0.0 to 0.5 mbgs) and the underlying clay and silt material (at depths 0.5 to 1.0 mbgs) being collected. Sediment samples collected for vertical delineation only were collected from below the previous sample depths, where possible. Decontamination procedures for each method included thorough cleaning of sample tubes, trough, Ponar, and associated tooling using a potable water rinse, scrubbing with a wire brush within a water and phosphate-free laboratory-grade detergent solution rinse, a disposable towel wipe, and final rinse of deionized water.

A total of 19 sediment samples from 15 locations were collected in laboratory supplied bottles in accordance with the laboratory recommended procedures for each PCOC to be analyzed. Sediment samples were then submitted under chain-of-custody protocol to Maxxam for analysis. A sample identification key for sediment samples collected during the Supplemental Phase 2 ESA is presented in Table 1. Sediment analytical results are discussed further in Section 4.0.

Stratigraphic logs for sediment sample locations are provided in Appendix B.

2.2.2 Borehole Advancement and Soil Sampling

Thirteen boreholes were advanced as part of the Supplemental Phase 2 ESA between April 4, and April 26, 2018 to assess the soil quality at specific APECs where the Site access was not available during the Phase 2 ESA (the BHSL and the Estuary), and to delineate areas where guidelines exceedances were identified in the soil during the Phase 2 ESA.

Logan Geotech Inc. (Logan) of Stewiacke, Nova Scotia was contracted to provide drilling services for this project. One rubber track-mounted drill rig equipped with continuous-flight, 108 mm standard hollow stem augers was used to advance all drilled boreholes. Subsurface soil samples were collected on a continuous basis, where feasible, using 76.2 mm diameter split spoons in conjunction with the standard penetration test (SPT). Boreholes advanced varied in depths ranging from 2.40 to 6.10 mbgs.

All drilling activities were supervised by a GHD representative. Decontamination procedures included scrubbing the split spoon with a wire brush in a water and phosphate-free laboratory-grade detergent solution. The drill rigs and all other down hole equipment were decontaminated off-Site prior to initiation of the Site activities.

The subsurface soil samples were logged for geologic detail, according to the Unified Soil Classification System (USCS), with special attention paid to any visual or olfactory evidence of potential environmental impacts. Stratigraphic and Instrumentation logs are provided in Appendix B. In addition, subsurface soil samples were screened using an RKI Eagle multi-gas detector to determine relative concentrations of undifferentiated organic vapors. Organic vapour readings for subsurface soil samples gathered as part of the borehole advancement program ranged from 0 parts per million (ppm) to 11 percent of the lower explosive limit (LEL). Samples selected for laboratory analysis were collected as a discrete sample from the split spoon from specific depths to provide delineation of impacts identified during the Phase 2 ESA, or where the highest level of contamination was suspected based on visual or olfactory evidence of potential environmental impacts, and/or organic vapour headspace screening results. Where there was no evidence of potential environmental impacts, a discrete sample from the wet zone was submitted for analysis.

Shallower soil samples were collected using a combination of shovels, hand-augers, and/or drill. Surface soil samples were collected between April 6 and April 26, 2018 to delineate areas where guidelines exceedances were identified in the surface and subsurface soil during the Phase 2 ESA. One surficial soil sample per location was collected for laboratory analysis. Samples were collected directly from the hand-excavation or borehole just below the ground surface or at specified depths for delineation purposes. Surface soil samples were collected at depths ranging from 0.15 to 2.40 mbgs.

A total of 20 surface soil samples and 14 subsurface soil samples were collected in laboratory supplied bottles in accordance with the laboratory recommended procedures for each PCOC to be analyzed. Soil samples were then submitted under chain-of-custody protocol to Maxxam for analysis. A sample identification key for soil samples collected during the Supplemental Phase 2 ESA is presented in Table 1. Soil analytical results are discussed further in Section 4.0.

2.2.3 Monitoring Well Installation and Development

Seven boreholes advanced as part of the Supplemental Phase 2 ESA were instrumented as monitoring wells. The monitoring wells were constructed with 51 mm diameter polyvinyl chloride (PVC) well screens connected to 51 mm diameter, flush-threaded PVC riser pipe. The well screens were installed to intercept the anticipated groundwater level in the overburden or bedrock, as appropriate. A silica sand pack filter was placed around each well screen to approximately 0.3 m above the top of the screen. The borehole annulus was then backfilled with bentonite pellets, hydrated to ensure proper sealing within the formation. The wells were completed at the surface with

a bentonite seal, above-ground protective casings, and fitted with lockable j-plug devices. Stratigraphic and Instrumentation logs are provided in Appendix B.

The monitoring wells were developed to remove accumulated fines from the well screen and sand pack, reduce groundwater sample turbidity, and to ensure an adequate hydraulic connection between the monitoring well and surrounding formation. Prior to initiating well development, the depth of the water table and the actual construction depths of the monitoring wells were verified using a pre-cleaned Solinst electronic interface probe (Model 122). Monitoring well development was completed using dedicated Waterra™ foot valves and polyethylene tubing to remove three standing well volumes, or until the wells became dry on three successive efforts.

2.2.4 Hydraulic Monitoring

Due to increased tree cover in the areas where the new monitoring wells were installed, the new monitoring wells were not surveyed. Static water levels were recorded to assist with determination of standing well volumes; however, hydraulic gradients could not be determined. Static water levels recorded during the Supplemental Phase 2 ESA are provided in Table 2. For the purposes of the Supplemental Phase 2 ESA, hydraulic gradients, groundwater flow direction, and surface water flow direction are presumed to be similar to those identified in the Phase 2 ESA, and further details are available in the Phase 2 ESA report.

2.2.5 Groundwater Sampling

A total of seven groundwater samples were collected as part of the Phase 2 ESA from April 19 to April 20, 2018 to assess the groundwater quality at specific APECs where the Site access was not available during the Phase 2 ESA (the BHSL and the Estuary).

A Spectra Field Pro II peristaltic pump and dedicated polyethylene tubing was used to collect groundwater samples using low-flow purging and sampling methods in order to minimize entrained sediment in the samples. Field parameters (pH, temperature, conductivity, turbidity, and dissolved oxygen) were monitored throughout purging using a Horiba U-52 water quality analyzer with fitted flow through cell. Well purging and field parameter monitoring was continued until stabilization was achieved for at least three consecutive readings, to ensure that fresh (non-stagnant) formation water was sampled.

Following the stabilization of field parameters, the Horiba flow-through cell was removed to prevent cross-contamination during sampling. Groundwater samples were collected in laboratory supplied bottles, in accordance with the laboratory recommended procedures for each PCOC to be analyzed. Groundwater samples were then submitted under chain-of-custody protocol to Maxxam for analysis. A sample identification key for collected groundwater samples is presented in Table 1. Groundwater analytical results are discussed further in Section 4.0.

2.2.6 Surface Water Sampling

Six surface water samples were collected as part of the Supplemental Phase 2 ESA on April 18, 2018 to assess the surface water quality from Chance Harbour Lake and to delineate surface water impacts east of the sludge disposal cell.

Field parameters (pH, temperature, conductivity, turbidity, and dissolved oxygen) were recorded during sample collection using a Horiba U-52 water quality analyzer. Surface water samples were collected by gently immersing the sample bottles in the surface water body, taking care not to disturb the underlying sediments.

Surface water samples were collected in laboratory supplied bottles, in accordance with the laboratory recommended procedures for each PCOC to be analyzed. Surface water samples were then submitted under chain-of-custody protocol to Maxxam for analysis. A sample key for surface water samples collected as part of the Supplemental Phase 2 ESA is presented in Table 1. Surface water analytical results are discussed further in Section 4.0.

2.2.7 Site Surveying

As noted above in Section 2.2.4, Site-surveying to document the vertical positioning of new monitoring wells could not be completed where forest cover would limit the accuracy of the GPS unit. Horizontal positioning of boreholes, monitoring wells, and sediment, soil, and surface water sample locations was established using data from a handheld GPS unit capable of sub-metre accuracy.

2.3 Laboratory Analytical Program

Soil, groundwater, sediment, and surface water samples collected as part of the Supplemental Phase 2 ESA were analyzed for the PCOCs applicable to the APEC area from which they were obtained where criteria exceedances or data gaps were identified during the Phase 2 ESA. In general, samples from all media were analyzed for dioxins and furans, PCBs, PAHs, VOCs, PHCs, phenols, cyanide, metals, and/or general chemistry parameters.

One of the two samples collected at each sediment sampling location (typically the deeper sample) and surface water samples were further analyzed for indicator parameters which may have an affect on aquatic life, including hydrogen sulphide, and chlorate/chlorite. Surface water samples were also analyzed for resin and fatty acids.

Where sediment and soil samples were rich in organic materials, laboratory analysis for petroleum hydrocarbons included a silica gel cleanup in order to reduce the likelihood of interference from non-petrogenic organic compounds. Fraction of organic carbon (FOC) analyses were completed for all sediment samples, as the NSE guidelines for modified TPH in sediment vary based on the FOC concentration of the sample. Select soil samples were also analyzed for FOC to support the calculation of risk-based site-specific target levels, if required. Grain size analyses were completed for representative soil and sediment samples for characterization. In addition to PCOC analyses, groundwater samples were analyzed for general chemistry to facilitate sample assessment to regulatory guidelines, which may vary based on specific chemical characteristics of the water. A Sampling Analysis Plan which identifies the analytical requirements for the Supplemental Phase 2 ESA is presented in Appendix A.

All sample bottles were supplied by Maxxam. Immediately after collection, samples were placed in coolers and cooled with ice until being submitted to Maxxam using standard Chain-of-Custody (CoC) protocols. Maxxam's Bedford facility is accredited by the Standards Council of Canada (SCC).

2.4 Quality Assurance/Quality Control (QA/QC) Program

A Quality Assurance/Quality Control (QA/QC) program was undertaken as part of the Supplemental Phase 2 ESA. This program involved the collection and analysis of field duplicate samples, as indicated in Table 1, and the evaluation of standard laboratory quality control samples and procedures.

Trip blanks for each media (soil, groundwater, sediment, and surface water) were submitted for analysis of VOC and PHC F1 fractions to assess the potential for contamination due to the sample container or from volatile compounds which may have been present during transportation and storage.

The potential for contamination of samples through field and laboratory procedures is monitored through the analysis of field and laboratory blanks and duplicates samples. The quality control parameters were found to be within acceptable ranges of standard laboratory practice. All data generated as part of the Supplemental Phase 2 ESA are acceptable and are presented in the Data Quality Assessment and Evaluation Memo (Appendix C).

3. Site Characterization

A summary of the Site geology, hydrogeology, and hydrology from the Phase 2 ESA and Supplemental Phase 2 ESA is presented below. Additional Site Characterization details are provided in the Phase 2 ESA report.

3.1 Site Geology

The Site-specific geology was determined through visual examination of samples collected at the Site during the Phase 2 ESA and Supplemental Phase 2 ESA, as well as comparison to Provincial geological maps and previous studies completed at the Site. A detailed description of the geology encountered at each new borehole/monitoring well location is presented in the Stratigraphic and Instrumentation Logs provided in Appendix B.

Geology Maps of the Province of Nova Scotia (Map 92-3 and Map ME 2000-1; Nova Scotia Department of Natural Resources Minerals and Energy Branch) were reviewed as part of the Phase 2 ESA to obtain information on the surficial geology of the Study Area. The surficial geology on the Site is mapped as to consist of Quaternary period Hummocky Ground Moraine composed of till deposits of gravel, sand, and mud of direct glacial origin 2 to 25 metres (m) thick. In the western portion of the Study Area, including the pipeline corridor, the surficial geology consists of Quaternary period Silty Till Plain (Ground Moraine) made up of a silty till with compact material derived from local and distant sources 3 to 30 m thick. The bedrock in the region is mapped as Carboniferous aged rocks of the Cape John Formation, Tatamagouche Formation, and Balfron Formation consisting of a mixture of floodplain mudstone, fluvial sandstone, mudstone, conglomerate, arkosic sandstone, and lacustrine limestone.

Visual observations made during both the Phase 2 ESA and the Supplemental Phase 2 ESA are relatively consistent with the geology maps for the overburden soil and bedrock, and are consistent across the Site. Examination of the borehole stratigraphy logs from the Phase 2 ESA indicated that

the surficial geology across the Site is composed generally of brown and grey silty sand or sandy silt with trace to some gravel, as well as trace to some sandstone rocks, cobbles, and boulders. It was noted during drilling activities that the percentage of sandstone rocks and cobles increased with depth. Clay, in ranging proportions from trace to some, was also observed during the Phase 2 ESA in the western portion of the Study Area, particularly in the area of the Pipeline Corridor, Current Raw Effluent Discharge Ditch, Twin Settling Basins, and Former Settling Ponds 2 and 3. Examination of the borehole stratigraphy logs from the Supplemental Phase 2 ESA indicated that the surficial geology north of the BHSL and west of the estuary is composed generally of brown sand and silty sand with trace gravel, cobble, and organics, underlain by brown clay or clayey sand.

During the Phase 2 ESA, the bedrock was observed to be generally consistent across the Site with the exception of select borehole locations in the Former Raw Effluent Discharge Ditch, Former Settling Ponds 2 and 3, and along the Pipeline Corridor, where mudstone was observed. Generally, the bedrock is composed of brown to grey sandstone. Bedrock was encountered in 20 of the 41 boreholes drilled as part of the Phase 2 ESA and was observed between 1.2 to 7.1 mbgs. Bedrock was not encountered in the boreholes drilled as part of the Supplemental Phase 2 ESA.

During the Phase 2 ESA, GHD noted that sediment in the former raw effluent discharge ditch, former settling ponds 1, 2, and 3 and the associated wetland areas consisted of medium brown to dark brown silty sand or sandy silt. At several locations within the former settling ponds the silty sand layer was overlain by a black loose sediment layer with some organics that was 0.12 to 0.80 m thick. A rootmat was observed overlying the sediment in former settling ponds 2 and 3. In the wetlands surrounding the sludge disposal cell, brown loose sandy silt sediment was observed. Sediment in former setting ponds 2 and 3 was observed during the Supplemental Phase 2 ESA to be consistent with the findings of the Phase 2 ESA,

During the Phase 2 ESA, loose black sediment/sludge was observed in the twin settling basins, the ASB and within the sludge disposal cell. In the BHSL, sediment consisted of a black saturated sediment/sludge layer that ranged in thickness from 0.12 to 0.40 m, underlain by a cohesive gray layer of sandy silt to clayey silt. It is noted in a sediment and Bathymetry survey completed by Acadia University (Spooner, April 2017), that in the area of the former channel in the BHSL, the depth of sediment/sludge has been reported up to 1.0 m thick. Sediment samples were not collected from the twin settling basins, the ASB, the BHSL, or within the sludge disposal cell during the Supplemental Phase 2 ESA. Sediment in the stream east of the sludge disposal cell overflow pond consisted of brown clay with trace sand and gravel.

In the estuary, black saturated sediment/sludge, ranging in thickness from 0.30 to 0.80 m, was observed during the Phase 2 ESA and was underlain by grey silty sand to sand with traces of silt. In the Northumberland Strait, the sediment consisted mainly of brown sand with trace gravel and cobbles followed by grey sand, based on observations during both the Phase 2 ESA and the Supplemental Phase 2 ESA.

3.2 Site Hydrogeology and Hydrology

As detailed in the Phase 2 ESA report, two main hydrogeological units were identified on the Site: the overburden or shallow hydrogeological unit and the bedrock or deep hydrogeological unit. Based on water levels collected on December 12 and 13, 2017, groundwater in the overburden/shallow hydrogeological unit rapidly decreases in elevation between the pipeline corridor and Former

Settling Pond 2. Beyond the Former Settling Pond 2, groundwater elevations begin to level off and are near sea level as they approach BHSL. Similar contours for the bedrock/deep hydrogeological unit were observed, although a more steady decrease in groundwater elevation was noted between the pipeline corridor and BHSL. On-Site groundwater flow in both hydrogeological units is generally in a northeasterly direction toward Boat Harbour from the pipeline corridor to Boat Harbour. Groundwater levels were recorded during the Supplemental Phase 2 ESA for the seven newly installed monitoring wells for the determination of well volumes; however, static water elevations could not be calculated for the new monitoring wells due to surveying limitations (i.e., forest cover limiting the accuracy of the GPS unit).

The Site hydrology was determined by examining topographic mapping for the area such as the Nova Scotia Resource (1:50,000) - New Glasgow (11E/10) and online Google topographic maps, and confirmed during the Phase 2 ESA and the Supplemental Phase 2 ESA. Based on topographic mapping, two general water catchment areas for surface water were identified for the Site and included the BHSL and the estuary/Northumberland Strait. The BHSL catchment area includes forests, wetlands, residential properties, treatments ponds, and small ephemeral freshwater streams located between Pictou Landing Road and Chance Harbour Road. The outflow of the BHSL catchment area is controlled by a hydraulic structure located prior to the estuary and the Northumberland Strait. The estuary/Northumberland Strait catchment area includes residential properties, forests, small ephemeral freshwater streams, and one small lake located 400 m east of the estuary.

4. Analytical Results and Assessment

4.1 Selection of Applicable Environmental Quality Guidelines and Standards

Laboratory analytical results were compared to Provincial guideline standards and criteria for a potable site with coarse-grained soil, based on potable water wells near the Site and Site soil conditions. For parameters where Provincial guidelines were not available, Federal criteria were referenced. In addition and where applicable, the agricultural land use classification was applied to the Site based on the potential for the surrounding land to be used for agricultural purposes in the future.

The sediment, surface water, and groundwater guidelines referenced were the lowest of the human health or ecological based guidelines, where the ecological soil guidelines referenced were more conservative than the human health guidelines, and were therefore considered protective of human health. Both marine and freshwater guidelines were referenced depending on the source of each sample. Marine criteria were referenced for any sample collected from within a marine water body or from within the treatment process, such as sediment and/or surface water collected from the current raw effluent discharge ditch, the twin settling basins, the ASB, the BHSL, and the sludge disposal cell, the estuary, and the Northumberland Strait. Groundwater samples were compared to marine or freshwater criteria depending on their proximity to the nearest surface water body. The applicable guidelines referenced are summarized in Table 4.1 below.

Table 4.1 Summary of Applicable Guidelines

Guidelines	
Sediment	
Provincial Ecological	Nova Scotia Contaminated Sites Regulation Table A1 Reference Tables for Pathway Specific Standards for both marine and freshwater
Provincial Human Health	Nova Scotia Contaminated Sites Regulation Table A4 References for Pathway Specific Standards for agricultural soil (soil contact/ingestion pathway)
Federal Ecological	Canadian Council of Ministers of the Environment (CCME) Sediment Quality Guidelines for the protection of Aquatic Health Probable Effect Levels (PELs)[1]
	Where Provincial or Federal guidelines are not available, guidelines for organic compounds in sediment were developed based on the Equilibrium Partitioning Sediment Benchmarks (ESBs) approach for the protection of benthic organisms (USEPA, 2003; DiToro et. al., 2000; Van Leeuwen and Vermeir, 2007)[2]
Soil	
Provincial Ecological/ Human Health	Nova Scotia Contaminated Sites Regulation Table A4 References for Pathway Specific Standards for coarse-grained agricultural soil on a potable site
Federal Ecological/ Human Health	CCME Soil Quality Guidelines for the protection of Environment and Human Health on an agricultural site
Groundwater	
Provincial Ecological	Nova Scotia Contaminated Sites Regulation Table A3 References for Pathway Specific Standards for both Marine and Freshwater
Provincial Human Health	Nova Scotia Contaminated Sites Regulation Table A3 References for Pathway Specific Standards for agricultural/residential land use and coarse-grained soil
Federal Ecological	CCME Water Quality Guidelines for the protection of Aquatic Life for Freshwater and Marine
Federal Human Health	Canadian Drinking Water Quality Guidelines
Surface Water	
Provincial Ecological	Nova Scotia Contaminated Sites Regulation Table A3 References for Pathway Specific Standards for both marine and freshwater surface water
Provincial Human Health	Nova Scotia Contaminated Sites Regulation Table A3 References for Pathway Specific Standards for agricultural/residential land use and coarse-grained soil
Federal Ecological	CCME Water Quality Guidelines for the protection of Aquatic Life for Freshwater and Marine
Federal Human Health	Canadian Drinking Water Quality Guidelines

Notes:

[1] The CCME Sediment criteria and the Provincial Ecological Criteria list the same criteria values, therefore, for the purposes of this report, only the Provincial Ecological Criteria are referenced

[2] ESBs are referenced where no Provincial or Federal sediment criteria are available and are listed under Federal criteria throughout this report

4.2 Assessment of Background Conditions

4.2.1.1 Analytical Results

To verify the background surface water conditions in the area surrounding the Site determine through the Phase 2 ESA, a background surface water sampling program was completed as part of the Supplemental Phase 2 ESA at Chance Harbour Lake, located approximately 2 km east of the Site boundary, and south of Pictou Landing Road, in the community of Chance Harbour, Nova Scotia (shown on Figures 1 and 9). Chance Harbour Lake and the land surrounding the lake are not expected to have been affected by Mill effluent or air emissions, and was therefore chosen as an appropriate location to assess the background surface water conditions for the area. Background sediment and soil conditions from Chance Harbour Lake were assessed as part of the Phase 2 ESA and the results are detailed in the Phase 2 ESA report.

Five surface water samples (BKGD-SW-6 to BKGD-SW-10) and one duplicate surface water sample were collected from Chance Harbour Lake and were submitted for laboratory analyses of general chemistry, metals, mercury, PAHs, VOCs, PHCs, phenols, cyanide, chlorate and chlorite, resins and fatty acids, and H_2S.

To expand the assessment of background sediment conditions in a marine environment, five sediment samples (BKGD-SED-11 to BKGD-SED-15) were collected as part of the Supplemental Phase 2 ESA from the Northumberland Strait, approximately 2.5 km east of the estuary, and were submitted for laboratory analyses of general chemistry, metals, mercury, PCBs, PAHs, VOCs, PHCs, FOC, phenols, cyanide, dioxins and furans, chlorate and chlorite, and H_2S. One sediment sample, BKGD-SED-11 (0.0-0.2m), was also submitted for grain size analysis.

All analytical results for the background samples are presented in Tables 3 and 8, and the sample locations are presented on Figure 9. Laboratory Certificates of analysis are presented in Appendix D.

Samples collected from the background sampling areas (Chance Harbour Lake and the Northumberland Strait) were compared to Provincial criteria, where available, or Federal criteria where no Provincial criteria exists. Sediment samples collected from the Northumberland Strait were compared to the applicable marine criteria, and surface water samples collected from Chance Harbour Lake were compared to the applicable freshwater criteria. Samples collected during the Supplemental Phase 2 ESA which exceed the Provincial/Federal guidelines are discussed below and are summarized in Table 4.2.

Sediment | No Exceedances

Surface Water | Metals and general chemistry

Table 4.2 Summary of Background Exceedances

Parameter (units)	Provincial Criteria	Federal Criteria	Sample Location	Minimum Exceedance	Maximum Exceedance
Freshwater Surface Water – Chance Harbour Lake					
Metals (µg/L)					

Table 4.2 Summary of Background Exceedances

Parameter (units)	Provincial Criteria	Federal Criteria	Sample Location	Minimum Exceedance	Maximum Exceedance
Aluminum	5[1]	-	BKGD-SW-6 (BKGD-SW-DUP2), BKGD-SW-7, BKGD-SW-8, BKGD-SW-9, BKGD-SW-10	46	49
General Chemistry					
pH	-	6.5-9[2]	BKGD-SW-6, BKGD-SW-7, BKGD-SW-8, BKGD-SW-9, BKGD-SW-10	4.28	5.36

Notes:
[1] Provincial ecological freshwater guideline
[2] Federal ecological freshwater guideline

All other parameters analyzed were reported as either less than the laboratory detection limits or below the applicable criteria.

4.2.1.2 Assessment of Chemicals of Concern

Laboratory analytical results for the five additional background surface water samples collected from Chance Harbour Lake (Table 8) reported exceedances for aluminum and pH, which is consistent with the analytical results for the surface water samples collected in November 2017. Field measured pH levels indicated that the pH in the background surface water was outside (below) the Federal acceptable range of 6.5 to 9 for freshwater; however, the pH levels reported by the laboratory were within the acceptable range.

Laboratory analytical results for the sediment samples collected from the background area of the Northumberland Strait (Table 3) reported concentrations either below the laboratory detection limits, or below the applicable marine criteria for all COCs analysed. These results confirms the conclusion from the GHD's Phase 2 ESA that impacts identified in marine sediment on the Site are likely due to Mill and BHETF operations, including petroleum hydrocarbon impacts identified in the Northumberland Strait at the mouth of the estuary.

Background concentrations for the Site were determined through comparison to published documents, as detailed in the Phase 2 ESA, as well as background samples collected from Chance Harbour Lake and the Northumberland Strait. Concentrations for metals parameters generally considered to be either consistent with background concentrations or naturally occurring due to the local Geology were as follows:

Sediment | Manganese and selenium

Soil | Aluminum, barium, iron, manganese, and sodium

Groundwater | Aluminum, cobalt, iron, manganese, and sodium

Soil | Aluminum, iron, and sodium

4.3 Assessment of Areas of Potential Environmental Concern

Based on the findings of the Phase 1 ESA, the Site was subdivided into several APECs based on current and historical Site operations. The focus of the Supplemental Phase 2 ESA was on APECs in which delineation was recommended or data gaps were identified during the Phase 2 ESA. Sampling was not completed in the following APECs during the Supplemental Phase 2 ESA where sufficient data was previously collected during the Phase 2 ESA to horizontally and vertically delineate impact:

- Aeration Stabilization Basin (ASB)
- Current Raw Effluent Discharge Ditch (CRED)
- Electrical Building and Diesel Generator (EB)
- Former Raw Effluent Discharge Ditch (FRED)
- Former Settling Pond 1 (FSP1)
- Pipeline Corridor Area (PIPE)
- Press Building and Metals Storage Area (PB and MSA)

Sediment, soil, groundwater, and/or surface water samples were collected from each of the remaining APECs during the Supplemental Phase 2 ESA and were analyzed for various potential contaminant groups where criteria exceedances were previously reported, or where data gaps were identified. The following APECs were investigated further during the Supplemental Phase 2 ESA:

- Boat Harbour Stabilization Lagoon (BHSL)
- Estuary and Northumberland Strait (EST and NS)
- Former Settling Pond 2 (FSP2)
- Former Settling Pond 3 (FSP3)
- Mill Air Emissions (MAE)
- Sludge Disposal Cell (SDC)
- Twin Settling Basins (TSB)

The following sections summarize the analytical results from each APEC investigated during the Supplemental Phase 2 ESA relative to the applicable guidelines identified in Section 4.1, as well as compared to applicable Phase 2 ESA data. A sample identification key for samples collected at the Site as part of the Supplemental Phase 2 ESA, including the requested analyses for each sample, is provided on Table 1. A copy of the laboratory certificates of analysis is provided in Appendix D. Analytical results compared to freshwater and marine criteria for sediment, soil, groundwater, and surface water are presented in Tables 3 through 8, respectively. Sample locations for sediment, soil, groundwater, and surface water on the Site are presented on Figures 3 through 8.

4.3.1 Boat Harbour Stabilization Lagoon

4.3.1.1 Analytical Results

Soil and groundwater samples were collected from around the BHSL for characterization purposes and to provide delineation of contaminants (copper, arsenic, and MTBE) identified in the soil during the Phase 2 ESA.

Four drilled boreholes, BHSL-BH-4 to BHSL-BH-6 and BHSL-S-5, and four hand excavated boreholes, BHSL-S-4 and BHSL-S-6 to BHSL-S-8, were advanced at specific locations around the edge of the BHSL to delineate the soil guideline exceedances. One soil sample from each borehole was submitted for laboratory analysis of metals and/or MTBE.

Five drilled boreholes (BHSL-MW-5 to BHSL-MW-9) that were not advanced as part of the Phase 2 ESA due to access agreements, were advanced as part of the Supplemental Phase 2 ESA. One soil sample from each borehole plus one duplicate soil sample were submitted for laboratory analysis of general chemistry, metals, mercury, PCBs, PAHs, VOCs, PHCs, phenols, cyanide, and dioxins and furans. An additional soil sample from borehole BHSL-MW-9 (depth of 1.8-2.4m) was submitted for PHC analyses. These boreholes were then completed as monitoring wells and groundwater samples were collected. A duplicate groundwater sample was collected from BHSL-MW-7. The groundwater samples were submitted for laboratory analyses of general chemistry, metals, mercury, PCBs, PAHs, VOCs, PHCs, phenols, cyanide, and dioxins and furans.

Samples collected from around the BHSL were compared to the Provincial criteria, where available, or the Federal criteria where no Provincial criteria exists. Groundwater samples were compared to the applicable marine criteria. Samples collected during the Supplemental Phase 2 ESA which exceed the Provincial/Federal guidelines are discussed below and are summarized in Table 4.3.

Soil | Metals and general chemistry

Groundwater | Metals, VOCs, and general chemistry

Table 4.3 Summary of Boat Harbour Stabilization Lagoon Exceedances

Parameter (units)	Provincial Criteria	Federal Criteria	Sample Location	Minimum Exceedance	Maximum Exceedance
Soil					
Metals (mg/kg)					
Arsenic	17	-	BHSL-BH-6	-	48
Barium	400	-	BHSL-BH-6, BHSL-MW-5	480	600
Copper	63	-	BHSL-BH-6	-	67
Iron	11,000	-	BHSL-BH-4, BHSL-BH-5, BHSL-BH-6, BHSL-MW-5 (BHSL-MW-DUP2), BHSL-MW-6, BHSL-MW-7, BHSL-MW-8,	13,000	28,000

Table 4.3 Summary of Boat Harbour Stabilization Lagoon Exceedances

Parameter (units)	Provincial Criteria	Federal Criteria	Sample Location	Minimum Exceedance	Maximum Exceedance
			BHSL-MW-9 (3.7-4.3m), BHSL-S-5, BHSL-S-7		
General Chemistry					
pH	-	6-8	BHSL-BH-4, BHSL-MW-5, BHSL-MW-6, BHSL-MW-7, BHSL-S-4, BHSL-S-5, BHSL-S-6, BHSL-S-7, BHSL-S-8	4.09	5.87
Marine Groundwater					
Metals (µg/L)					
Cadmium	0.12[1] 5[2]	-	BHSL-MW-6	-	0.49
VOCs					
Chloroform (Trichloromethane)	6,400/64,000[1] 3[2]	-	BHSL-MW-6	-	6.2
General Chemistry					
pH	-	7-8.7	BHSL-MW-5, BHSL-MW-6, BHSL-MW-7 (BHSL-DUP2), BHSL-MW-9	4.94	6.79

Notes:
[1] Provincial ecological marine guideline based on distance from surface water
[2] Provincial human health guideline

All other parameters analyzed were reported as either less than the laboratory detection limits or below the applicable criteria for each media type.

4.3.1.2 Assessment of Chemicals of Concern

Additional surface and subsurface soil samples were collected adjacent to BHSL-MW-1 during the Supplemental Phase 2 ESA where delineation was not required (as noted in Section 2.1.1). A subsurface soil sample (BHSL-BH-5) and a surface soil sample (BHSL-S-7) were collected to the west and east of BHSL-MW-1, respectively. Consistent with the analytical results for the soil sample collected from borehole BHSL-MW-1, analytical results for the surface and subsurface soil samples identified criteria exceedances for iron and pH.

Phase 2 ESA results identified arsenic in a soil sample collected from borehole BHSL-BH-2, located along the eastern side of the BHSL, at a depth of 4.3 to 4.9 mbgs. To delineate arsenic in the soil at this location, both a surface soil sample (BHSL-S-6) and a subsurface soil sample (BHSL-BH-4)

were collected to the north and east of BHSL-BH-2, respectively. While arsenic was identified in both samples at concentrations above the laboratory detection limits, analytical results were below the applicable criteria for arsenic in soil, indicating that the arsenic impact is limited to the subsurface soil at BHSL-BH-2.

Arsenic and MTBE were identified in a soil sample collected from borehole BHSL-MW-11, located along the eastern side of the BHSL, at a depth of 1.2 to 1.8 mbgs. To confirm and/or delineate arsenic and MTBE in the soil at this location, both a surface soil sample (BHSL-S-4) and a subsurface soil sample (BHSL-S-5) were collected to the east and northeast of BHSL-MW-11, respectively. The subsurface soil sample at BHSL-S-5 was intended to be collected using a shovel and hand auger; however, the sample depth was adjusted to account for higher terrain and was collected from 1.8-2.4 mbgs using a drill and split spoon. Arsenic was detected in both samples at concentrations below the applicable soil criteria, indicating that the arsenic impact is limited to the subsurface soil at BHSL-MW-11. Analytical results for MTBE reported concentrations below the laboratory detection limits in both samples, which is below the applicable soil criteria for MTBE, indicating that the MTBE exceedances identified in the samples collected at BHSL-MW-11 during the Phase 2 ESA may have been an erroneous value. Therefore, MTBE is not likely a COC in the soil in this area around the BHSL.

Both arsenic and copper were identified in a soil sample collected from borehole BHSL-MW-2, located to the northwest of the BHSL, at a depth of 2.43 to 3.0 mbgs. To delineate arsenic and copper in the soil at this location, both a surface soil sample (BHSL-S-8) and a subsurface soil sample (BHSL-BH-6) were collected to the west of BHSL-MW-2. Both arsenic and copper were identified at concentrations above applicable soil criteria in the subsurface sample collected from BHSL-BH-6, but below the laboratory detection limits in the surface soil sample collected form BHSL-S-8, indicating that the arsenic and copper impact is limited to the subsurface soil in this area. Further horizontal delineation is required to quantify the extent of arsenic and copper impact to the subsurface soil at BHSL-MW-2.

Five drilled boreholes that were originally proposed as part of the Phase 2 ESA were advanced as part of the Supplemental Phase 2 ESA to the north (BHSL-MW-5 to BHSL-MW-8) and southeast (BHSL-MW-9) of the BHSL. Analytical results for the soil samples collected from the five boreholes identified criteria exceedances for metals (barium and/or iron) and/or pH. As described in the GHD Phase 2 ESA report, barium may be naturally occurring based on the regional geology (Pictou Coal Basin), and iron concentrations in soil on the Site can be generally considered below background soil concentrations.

Analytical results for groundwater samples collected from the newly installed monitoring wells around the BHSL (BHSL-MW-5 to BHSL-MW-9) identified criteria exceedances for metals (cadmium), VOCs (chloroform), and pH. Field and laboratory measured pH levels indicated that the pH in the groundwater at monitoring wells BHSL-MW-5 to BHSL-MW-7 and BHSL-MW-9 were outside (below) the Federal acceptable range of 7.0 to 8.7 for groundwater near a marine water body. Both cadmium and chloroform were identified in the groundwater sample collected from monitoring well BHSL-MW-6, located along the northern shore of the BHSL. Neither parameter was detected in the soil sample collected from the borehole at this location, nor was chloroform detected in the field blank collected during the groundwater sampling program, suggesting that both cadmium and chloroform may be limited to the groundwater at this location. The groundwater at BHSL-MW-6

should be re-sampled to confirm the presence of cadmium and chloroform in the groundwater at this location.

4.3.2 Estuary and Northumberland Strait

4.3.2.1 Analytical Results

Sediment, soil, and groundwater samples were collected from within or surrounding the estuary (EST) and the Northumberland Strait (NS) to characterize the soil and groundwater and to provide delineation of contaminants (PHCs) identified in the sediment during the Phase 2 ESA.

Five sediment samples plus one duplicate sediment sample were collected from five locations (NS-SED-3 and NS-SED-7) in the Northumberland Strait to delineate the sediment impact at the mouth of the estuary. One sediment sample was collected from each location based on there being only one visible layer and no sludge present in the sample. All sediment samples collected were submitted for laboratory analyses of PHCs and FOC. One sediment sample, NS-SED-3 (0.0-0.2m), was also submitted for grain size analysis.

Two drilled boreholes (EST-MW-2 and EST-MW-3) that were not advanced as part of the Phase 2 ESA due to access agreements were advanced as part of the Supplemental Phase 2 ESA. The two drilled boreholes were advanced along the west side of the estuary to assess the soil quality surrounding the estuary. One soil sample from each borehole was submitted for laboratory analysis of general chemistry, metals, mercury, PCBs, PAHs, VOCs, PHCs, phenols, cyanide, and dioxins and furans. One soil sample collected from EST-MW-2 was also submitted for laboratory analysis of FOC, and grain size analyses.

EST-MW-2 and EST-MW-3 were then completed as monitoring wells and a groundwater sample was collected from each well and submitted for laboratory analyses of general chemistry, metals, mercury, PCBs, PAHs, VOCs, PHCs, phenols, cyanide, and dioxins and furans.

Samples collected from the estuary and the Northumberland Strait were compared to the Provincial criteria, where available, or the Federal criteria where no Provincial criteria exists. Sediment and groundwater samples were compared to the applicable marine criteria. Samples collected during the Supplemental Phase 2 ESA which exceed the Provincial/Federal guidelines are discussed below and are summarized in Table 4.4.

Sediment | PHCs

Soil | Metals and general chemistry

Groundwater | VOCs and general chemistry

Table 4.4 Summary of Estuary and Northumberland Strait Exceedances

Parameter (units)	Provincial Criteria	Federal Criteria	Sample Location	Minimum Exceedance	Maximum Exceedance
Marine Sediment					
PHCs (mg/kg)					
TPH (>C21-C32)	43-500[1]	-	NS-SED-3 (NS-SED-DUP2), NS-SED-4, NS-SED-5, NS-SED-6, NS-SED-7	71	150
Soil					
Metals (mg/kg)					
Iron	11,000	-	EST-MW-3	-	12,000
General Chemistry					
pH	-	6-8	EST-MW-3	-	5.77
Marine Groundwater					
VOCs (µg/L)					
Chloroform (Trichloromethane)	6,400/ 64,000[1] 3[2]	-	EST-MW-2	-	3.3
General Chemistry					
pH	-	6-8	EST-MW-2, EST-MW-3	5.25	6.5

Notes:
[1] Provincial ecological marine guideline
[2] Provincial human health guideline

All other parameters analyzed were reported as either less than the laboratory detection limits or below the applicable criteria for each media type.

4.3.2.2 Assessment of Chemicals of Concern

Sediment samples were collected from five locations (NS-SED-3 and NS-SED-7) in the Northumberland Strait to delineate petroleum hydrocarbon impact identified during the Phase 2 ESA in the sediment at the mouth of the estuary. Two samples were collected to the east and west of each of the previously sampled areas NS-SED-1 (NS-SED-4 and NS-SED-5) and NS-SED-2 (NS-SED-6 and NS-SED-7), and one sample (NS-SED-3) was collected further to the west within the mouth of the estuary. Analytical results for all five sediment samples identified PHC (TPH >C21-C32) concentrations above the applicable marine sediment criteria. As noted in Section 4.2, PHC impacts were not identified in the sediment samples collected from the background sampling area in the Northumberland Strait; therefore, the PHC impacts identified in the marine sediment at the mouth of the estuary are potentially due to Mill and BHETF operations. Further horizontal delineation is required to quantify the extent of PHC impact to the sediment in the Northumberland Strait at the mouth of the estuary.

Two drilled boreholes (EST-MW-2 and EST-MW-3) that were originally proposed as part of the Phase 2 ESA were advanced as part of the Supplemental Phase 2 ESA to the west of the estuary. Analytical results for the soil samples collected from the two boreholes identified criteria exceedances for metals (iron) and pH in EST-MW-3. As described in the Phase 2 ESA report, iron concentrations in soil on the Site can be generally considered below background soil concentrations.

Analytical results for groundwater samples collected from the newly installed monitoring wells west of the estuary (EST-MW-2 and EST-MW-3) identified criteria exceedances for VOCs (chloroform at EST-MW-2 only), and pH. Field and laboratory measured pH levels indicated that the pH in the groundwater in both monitoring wells were outside (below) the Federal acceptable range of 7.0 to 8.7 for groundwater near a marine water body. Chloroform was identified in the groundwater sample collected from monitoring well EST-MW-2 but was not detected in the soil sample collected from the borehole at this location, or in the field blank collected during the groundwater sampling program, suggesting that chloroform may be limited to the groundwater at this location. The groundwater at EST-MW-2 should be re-sampled to confirm the presence of chloroform in the groundwater at this location.

4.3.3 Former Settling Pond 2

4.3.3.1 Analytical Results

Sediment and soil samples were collected from within and surrounding Former Settling Pond 2 (FSP2) to provide horizontal and vertical delineation of contaminants identified during the Phase 2 ESA.

Five sediment samples plus one duplicate sediment sample were collected from three locations (FSP2-SED-8 to FSP2-SED-10) in Former Settling Pond 2. Sediment samples collected from FSP2-SED-8 and FSP2-SED-9 were submitted for laboratory analyses of general chemistry, metals, mercury, PCBs, PAHs, VOCs, PHCs, FOC, phenols, cyanide, and dioxins and furans. One sediment sample, FSP2-SED-8-1 (0.15-0.55m), was also submitted for grain size analysis and the lowest sample from each location was submitted for laboratory analyses of chlorate and chlorite, and H_2S. The sediment sample collected from FSP2-SED-10 was submitted for PHCs and FOC to provide vertical delineation of the PHC impact identified at this location during the Phase 2 ESA.

Two hand excavated boreholes, FSP2-S-16 and FSP2-S-17, were advanced along the eastern edge of Former Settling Pond 2 to delineate impact identified during the Phase 2 ESA. One soil sample from each borehole was submitted for laboratory analysis of MTBE.

Samples collected from Former Settling Pond 2 were compared to the Provincial criteria, where available, or the Federal criteria where no Provincial criteria exists. Sediment samples were compared to the applicable freshwater criteria. Samples collected during the Supplemental Phase 2 ESA which exceed the Provincial/Federal guidelines are discussed below and are summarized in Table 4.5.

Sediment | Metals, PAHs, PHCs, VOCs, and dioxins and furans

Soil | No Exceedances

Table 4.5 Summary of Former Settling Pond 2 Exceedances

Parameter (units)	Provincial Criteria	Federal Criteria	Sample Location	Minimum Exceedance	Maximum Exceedance
Freshwater Sediment					
Metals (mg/kg)					
Cadmium	3.5[1] 1.4[2]	-	FSP2-SED-8-1 FSP2-SED-8-2, FSP2-SED-9-1, FSP2-SED-9-2	1.9	4.1
Mercury	0.486[1] 6.6[2]	-	FSP2-SED-8-2	-	2.0
Vanadium	39[2]	-	FSP2-SED-8-1, FSP2-SED-8-2	61	94
PAHs (mg/kg)					
2-Methylnaphthalene	0.201[1] 72[2]	-	FSP2-SED-8-2	-	0.27
Acenaphthene	0.0889[1] 5,300[2]	-	FSP2-SED-8-2, FSP2-SED-9-2	0.15	0.16
Anthracene	0.245[1] 24,000[2]	-	FSP2-SED-9-1	-	0.42
Fluorene	0.144[1] 2,700[2]	-	FSP2-SED-8-2, FSP2-SED-9-2	0.23	0.27
Phenanthrene	0.515[1]	-		1.4	1.5
Pyrene	0.875[1] 2,100[2]	-	FSP2-SED-9-2	-	1.2
PHCs (mg/kg)					
TPH (>C10-C16)	25-500[1]	-	FSP2-SED-9-2	-	520
TPH (>C16-C21)	43-500[1]	-	FSP2-SED-8-2, FSP2-SED-9-1, FSP2-SED-9-2	850	1,800
TPH (>C21-C32)	43-500[1]	-	FSP2-SED-8-1 FSP2-SED-8-2, FSP2-SED-9-1, FSP2-SED-9-2	1,100	4,200
Modified TPH	500[1] 15,000/ 8,600/ 14,000[2]	-		1,500	6,500
VOCs (mg/kg)					
1,2-Dichlorobenzene	0.05[1] 16,000[2]	-	FSP2-SED-8-2	-	0.96
1,4-Dichlorobenzene	0.09[1] 4,200[2]	-		-	0.25
Toluene	1.4[1] 20,000[2]	-	FSP2-SED-8-1 FSP2-SED-9-1, FSP2-SED-9-2	1.5	9.2

Table 4.5 Summary of Former Settling Pond 2 Exceedances

Parameter (units)	Provincial Criteria	Federal Criteria	Sample Location	Minimum Exceedance	Maximum Exceedance
Dioxins and Furans (pg/g)					
Human Health/ Mammals TEQ	21.5[1] 4[2]	-	FSP2-SED-8-1 FSP2-SED-8-2, FSP2-SED-9-1, FSP2-SED-9-2	78.9	523
Fish TEQ	21.5[1]	-		61.47	325.54
Notes: [1] Provincial ecological freshwater guideline [2] Provincial human health guideline					

All other parameters analyzed were reported as either less than the laboratory detection limits or below the applicable criteria for each media type.

4.3.3.2 Assessment of Chemicals of Concern

Four sediment samples were collected from two locations (FSP2-SED-8 and FSP2-SED-9) along the northern portion of Former Settling Pond 2. As noted in Section 4.3.3.1 above, at both locations exceedances of the applicable freshwater sediment criteria were reported for metals, PAHs, PHCs, VOCs, and dioxins and furans. Criteria exceedances were reported for both the upper and lower samples at each location. Based on the results of soil samples collected north of former settling pond 2 during the Phase 2 ESA, the metals, PAH, PHC, VOC, and/or dioxin and furan impact is horizontally contained within the sediment. Both locations should be resampled at lower depths to vertically delineate the sediment impact in the northern portion of former settling pond 2.

During the Phase 2 ESA, PHC impact was identified in sediment samples collected from sediment location FSP2-SED-4, located along the southern side of Former Settling Pond 2 where the former raw effluent ditch historically discharged to the settling pond. Impact was identified in both the upper sample collected from 0.1 to 0.5 mbgs and the lower sample collected from 0.5 to 1.0 mbgs. To delineate PHCs in the sediment at this location a sample was collected from sediment location FSP2-SED-10 (same location as FSP2-SED-4) from 1.0 to 1.2 mbgs. While PHCs were identified in the sample collected from FSP2-SED-10 at concentrations above the laboratory detection limits, analytical results were below the applicable criteria for PHCs in sediment, indicating that the PHC impact is limited to the upper metre of sediment at FSP2-SED-4/FSP2-SED-10.

MTBE was identified in a soil sample collected from soil sample location FSP2-S-5, located along the eastern side of Former Settling Pond 2, at a depth of 0.31 to 0.46 mbgs. To confirm and/or delineate MTBE in the soil at this location two surface soil samples (FSP2-S-16 and FSP2-S-17) were collected to the east of FSP2-S-5 at the same sample depth. Analytical results for MTBE reported concentrations below the laboratory detection limits, which is below the applicable soil criteria for MTBE in both samples, indicating that the MTBE exceedances identified in the samples collected at FSP2-S-5 during the Phase 2 ESA may have been an erroneous value. Therefore, MTBE is not likely a COC in the soil at Former Settling Pond 2.

4.3.4 Former Settling Pond 3

4.3.4.1 Analytical Results

Sediment and soil samples were collected from within and surrounding Former Settling Pond 3 (FSP3) to provide horizontal and vertical delineation of contaminants identified during the Phase 2 ESA.

Two sediment samples plus one duplicate sediment sample were collected from one location (FSP3-SED-7) in Former Settling Pond 3. A sediment sample could not be collected from FSP3-SED-8 due to the density of the sediment layer that was to be sampled (deeper than 0.7 m). All sediment samples were submitted for laboratory analyses of general chemistry, metals, mercury, PCBs, PAHs, VOCs, PHCs, FOC, phenols, cyanide, and dioxins and furans. The lowest sediment sample, FSP3-SED-7-2 (0.4-0.9m), was also submitted for analyses of chlorate and chlorite, H_2S, and grain size.

One drilled borehole, FSP3-BH-1, and one hand excavated borehole, FSP3-S-8, were advanced near the western edge of Former Settling Pond 3 to delineate soil impact identified in the area during the Phase 2 ESA. One soil sample from each borehole was submitted for laboratory analysis of MTBE.

Samples collected from Former Settling Pond 3 were compared to the Provincial criteria, where available, or the Federal criteria where no Provincial criteria exists. Sediment samples were compared to the applicable freshwater criteria. Samples collected during the Supplemental Phase 2 ESA which exceed the Provincial/Federal guidelines are discussed below and are summarized in Table 4.6.

Sediment | PAHs, PHCs, and dioxins and furans

Soil | No Exceedances

Table 4.6 Summary of Former Settling Pond 3 Exceedances

Parameter (units)	Provincial Criteria	Federal Criteria	Sample ID	Minimum Exceedance	Maximum Exceedance
Freshwater Sediment					
PAHs (mg/kg)					
Perylene	-	3.1[3]	FSP3-SED-7-2 (FSP3-SED-DUP2)	4.0	4.1
PHCs (mg/kg)					
TPH (>C21-C32)	43-500[1]	-	FSP3-SED-7-1, FSP3-SED-7-2 (FSP3-SED-DUP2)	550	630
Modified TPH	500[1] 15,000/ 8,600/ 14,000[2]	-		700	740

Table 4.6 Summary of Former Settling Pond 3 Exceedances

Parameter (units)	Provincial Criteria	Federal Criteria	Sample ID	Minimum Exceedance	Maximum Exceedance
Dioxins and Furans (pg/g)					
Human Health/ Mammals TEQ	21.5[1] 4[2]	-	FSP3-SED-7-1, FSP3-SED-DUP2 (FSP3-SED-7-2)	4.81	75.2
Fish TEQ	21.5[1]	-	FSP3-SED-7-1	-	50.01

Notes:
[1] Provincial ecological freshwater guideline
[2] Provincial human health guideline
[3] Equilibrium Partitioning Sediment Benchmark (ESB)

All other parameters analyzed were reported as either less than the laboratory detection limits or below the applicable criteria for each media type.

4.3.4.2 Assessment of Chemicals of Concern

Two sediment samples were collected from FSP3-SED-7 (FSP3-SED-7-1 and FSP3-SED-7-2) located east of FSP3-SED-1 in Former Settling Pond 3. As noted in Section 4.3.4.1 above, exceedances of the applicable freshwater sediment criteria were reported for PAHs, PHCs, and dioxins and furans. Criteria exceedances for PHCs were reported for both the upper and lower samples at sediment location FSP3-SED-7 and dioxins and furans exceeded the human health criteria in both samples. The ecological criteria for dioxins and furans was exceeded in the upper sample only as the concentrations of dioxins and furans is significantly lower in the lower sample. Perylene was detected at concentrations above the sediment criteria in the lower sample but was reported as below the laboratory detection limits in the upper sample. Based on the results of soil samples collected east of Former Settling Pond 3 during the Phase 2 ESA, the PAH, PHC, and dioxin and furan impact is horizontally contained within the sediment. However, due to the detections of perylene in the lower sediment sample, the location should be resampled, if possible, at a depth below 0.9 m to vertically delineate the sediment impact in Former Settling Pond 3.

During the Phase 2 ESA, PHC impact was identified in sediment samples collected from sediment location FSP3-SED-3, located along the southeastern side of Former Settling Pond 3. Impact was identified in both the upper sample collected from 0.0 to 0.3 mbgs and the lower sample collected from 0.3 to 0.7 mbgs. To vertically delineate PHCs in the sediment at this location GHD recommended that a sample be collected from below 0.7 m at sediment location FSP3-SED-8 (same location as FSP3-SED-3). Due to the density of the underlying sediment at this location a sample could not be collected below 0.7 m.

MTBE was identified in a soil sample collected from borehole FSP3-MW-2, located along the western side of Former Settling Pond 3, at a depth of 3.1 to 3.7 mbgs. To confirm or delineate MTBE in the soil at this location, both a surface soil sample (FSP3-S-8) and a subsurface soil sample (FSP3-BH-1) were collected to the south of FSP3-MW-2. Analytical results for MTBE reported concentrations below the laboratory detection limits, which is below the applicable soil criteria for MTBE in both samples, indicating that the MTBE exceedance identified in the sample collected at

FSP3-MW-2 during the Phase 2 ESA may have been an erroneous value. Therefore, MTBE is not likely a COC in the soil at Former Settling Pond 3.

4.3.5 Mill Air Emissions

4.3.5.1 Analytical Results

Surface soil samples were collected during the Phase 2 ESA from ten locations surrounding the BHETF for characterization purposes and to assess whether surface soil impacts have occurred due to migration of contaminants from historical and current Mill air emissions, as well as other potential sources of industrial air emissions. The samples collected to assess potential impacts from industrial air sources are categorized under the APEC "Mill Air Emissions." Metals and MTBE impact were identified at five of these locations. Additional surface soil samples were collected as part of the Supplemental Phase 2 ESA to horizontally delineate these impacts.

Ten hand-augered shallow boreholes, MAE-SS-11 to MAE-SS-20, were advanced adjacent to each of the impacted areas. One soil sample from each shallow borehole plus two duplicate soil samples were submitted for laboratory analysis of Metals, PHCs, and/or MTBE.

Samples collected during the Supplemental Phase 2 ESA which exceed the Provincial/Federal guidelines are discussed below and are summarized in Table 4.7.

Soil | Metals and general chemistry

Table 4.7 Summary of Mill Air Emissions Exceedances

Parameter (units)	Provincial Criteria	Federal Criteria	Sample Location	Minimum Exceedance	Maximum Exceedance
Soil					
Metals (mg/kg)					
Aluminum	15,400	-	MAE-SS-11 (MAE-SS-DUP1)	29,000	32,000
Iron	11,000	-	MAE-SS-11 (MAE-SS-DUP1), MAE-SS-12	12,000	30,000
Nickel	50	-	MAE-SS-11 (MAE-SS-DUP1)	52	55
Selenium	1	-		1.2	1.4
Zinc	200	-		260	280
General Chemistry					
pH	-	6-8	MAE-SS-11 (MAE-SS-DUP1), MAE-SS-12, MAE-SS-19, MAE-SS-20	4.22	4.92

All other parameters analyzed were reported as either less than the laboratory detection limits or below the applicable soil criteria.

4.3.5.2 Assessment of Chemicals of Concern

During the Phase 2 ESA, metals impact (aluminum, barium, cadmium, chromium, iron, nickel, vanadium, and zinc) was identified in a surface soil sample (MAE-SS-1) collected to the west of the twin settling basins, adjacent to a multi-use trail. Metals impacts at this location may be related to ATV use rather than Mill air emissions; however, additional surface soil samples were collected at this location away from the multi-use trail during the Supplemental Phase 2 ESA to confirm and/or delineate metals exceedances in the surface soil. Metals exceedances were identified in both surface soil samples (MAE-SS-11 and MAE-SS-12), with multiple metals parameters (aluminum, iron, nickel, selenium, and zinc) exceeding the criteria at MAE-SS-11, located to the west of MAE-SS-1, but only iron exceeded the soil criteria at MAE-SS-12, located to the east of MAE-SS-1. Additional surface soil sampling would be required around MAE-SS-11 and MAE-SS-1 to horizontally delineate and quantify metals impact in the soil.

MTBE was identified in soil samples collected from surface soil sample locations MAE-SS-3, located south of Former Settling Pond 2, MAE-SS-6, located east of the BHSL, and MAE-SS-9, located west of the BHSL during the Phase 2 ESA. To delineate MTBE in the soil at all three locations, two additional surface soil samples were collected adjacent to each location, totaling six surface soil samples (MAE-SS-13 to MAE-SS-18). Analytical results for MTBE reported concentrations below the laboratory detection limits in all six samples, which is below the applicable soil criteria for MTBE, indicating that the MTBE exceedances identified in the samples collected at each location (MAE-SS-3, MAE-SS-6, and MAE-SS-9) during the Phase 2 ESA may have been erroneous values. Therefore, MTBE is not likely a COC in the surface soil at the Site.

Arsenic was identified in a soil sample collected from surface soil sample location MAE-SS-10, located west of Former Settling Pond 3. To delineate arsenic in the soil at this location, two additional surface soil samples were collected adjacent to the original location (MAE-SS-19 and MAE-SS-20). Analytical results for arsenic reported concentrations below the laboratory detection limits in both samples, which is below the applicable soil criteria for arsenic, indicating that the arsenic impact identified in the soil at MAE-SS-10 is either erroneous or limited to that location.

4.3.6 Sludge Disposal Cell

4.3.6.1 Analytical Results

Sediment and surface water samples were collected downstream in the stream located east of the sludge disposal cell (SDC) overflow pond for characterization purposes and to delineate impacts identified in the stream, specifically mercury in the sediment. For delineation purposes, the samples collected from the stream have been identified as being associated with the Sludge Disposal Cell APEC.

Two sediment samples were collected from one location in the stream, SDC-SED-3, and were submitted for laboratory analyses of general chemistry, metals, mercury, PCBs, PAHs, VOCs, PHCs, FOC, phenols, cyanide, and dioxins and furans. One sediment sample, SDC-SED-3-1 (0.05-0.25m), was also submitted for grain size analysis. The lower sample, SDC-SED-3-2 (0.25-0.45m), was submitted for laboratory analyses of chlorate and chlorite, and H_2S.

One surface water sample, SDC-SW-4, was collected from the stream east of the sludge disposal cell overflow pond. The surface water sample was submitted for laboratory analyses of general chemistry, metals, mercury, PAHs, VOCs, PHCs, phenols, cyanide, chlorate and chlorite, resins and fatty acids, and H_2S.

Samples collected from the stream east of the sludge disposal cell area were compared to the Provincial criteria, where available, or the Federal criteria where no Provincial criteria exists. The stream east of the sludge disposal cell overflow pond discharges into the BHSL, which is a marine water body, therefore, sediment and surface water samples collected from within the stream were compared to the Provincial or Federal marine criteria. Samples collected during the Supplemental Phase 2 which exceed the Provincial/Federal guidelines are discussed below and are summarized in Table 4.8.

Sediment | Metals

Surface Water | No Exceedances

Table 4.8 Summary of Sludge Disposal Cell Exceedances

Parameter (units)	Provincial Criteria	Federal Criteria	Sample Location	Minimum Exceedance	Maximum Exceedance
Marine Sediment					
Metals (mg/kg)					
Iron	11,000[1]	-	SDC-SED-3-2	-	30,000
Notes: [1] Provincial human health guideline					

All other parameters analyzed were reported as either less than the laboratory detection limits or below the applicable criteria for each media type.

4.3.6.2 Assessment of Chemicals of Concern

During the Phase 2 ESA, mercury was identified in a sediment sample collected from sediment sample location SDC-SED-2, located in a stream to the east of the sludge disposal cell overflow pond. To delineate mercury in the sediment in the stream, two sediment samples were collected from one sediment sample location SDC-SED-3 (SDC-SED-3-1 and SCD-SED-3-2) further downstream (east) of the original sample location. Analytical results for mercury reported concentrations below the laboratory detection limits in both the upper and lower sample collected from SDC-SED-3, which is below the applicable sediment criteria for mercury, indicating that the mercury impact is limited to the sediment at SDC-SED-2.

Iron was identified at a concentration above the Provincial human health guideline in the lower sample collected from sediment sample location SDC-SED-3. The iron concentration in the sediment at this location is similar to iron concentrations identified at other areas of the Site, including in the wetlands, and is not likely due to migration from the Sludge Disposal Cell.

To provide additional surface water analytical data for the stream east of the sludge disposal cell overflow pond, a surface water sample (SDC-SW-4) was also collected downstream. While a surface water sample collected from the sludge disposal cell overflow pond during the Phase 2 ESA

identified PHC impact in the surface water, analytical results for the sample collected downstream of the overflow pond reported no surface water criteria exceedances.

4.3.7 Twin Settling Basins

4.3.7.1 Analytical Results

Soil samples were collected from around the Twin Settling Basins (TSB) to provide delineation of contaminants (arsenic) identified in the soil during the Phase 2 ESA.

Two drilled boreholes, TSB-BH-3 and TSB-BH-4, and two hand excavated boreholes, TSB-S-1 and TSB-S-2, were advanced adjacent to the twin settling basins to assess the soil quality surrounding each to delineate the soil impact identified during the Phase 2 ESA. One soil sample from each borehole was submitted for laboratory analysis of general chemistry and metals, and mercury.

Soil samples were compared to the Provincial criteria, where available, or the Federal criteria where no Provincial criteria exists. Samples collected during the Supplemental Phase 2 ESA which exceed the Provincial/Federal guidelines are discussed below and are summarized in Table 4.9.

Soil | Metals and general chemistry

Table 4.9 Summary of Twin Settling Basins Exceedances

Parameter (units)	Provincial Criteria	Federal Criteria	Sample Location	Minimum Exceedance	Maximum Exceedance
Soil					
Metals (mg/kg)					
Iron	11,000	-	TSB-BH-3, TSB-BH-4, TSB-S-1, TSB-S-2	19,000	28,000
General Chemistry					
pH	-	6-8	TSB-BH-3, TSB-S-2	5.33	5.68

All other parameters analyzed were reported as either less than the laboratory detection limits or below the applicable criteria for each media type.

4.3.7.2 Assessment of Chemicals of Concern

During the Phase 2 ESA, arsenic was identified in a soil sample collected from borehole TSB-BH-2, located to the west of the twin settling basins, at a depth of 2.4 to 3.0 mbgs. To delineate arsenic in the soil at this location, both a surface soil sample (TSB-S-1) and a subsurface soil sample (TSB-BH-3) were collected to the south of TSB-BH-2. Arsenic was also identified in a soil sample collected from borehole TSB-MW-1, located to the south of the twin settling basins, at a depth of 1.8 to 2.4 mbgs. To delineate arsenic in the soil at this location, both a surface soil sample (TSB-S-2) and a subsurface soil sample (TSB-BH-4) were collected to the southeast of TSB-MW-1. Analytical results for arsenic reported concentrations below the laboratory detection limits in all four samples, which is below the applicable soil criteria for arsenic, indicating that the arsenic impact is not widespread near the twin settling basins but is limited to the soil at TSB-BH-2 and TSB-MW-1.

4.4 Distribution of Environmental Impact

Based on the analytical results presented in Section 4 and the Phase 2 ESA report, chemicals of concern in the sediment, soil, groundwater, and surface water were identified across the entire Site, which includes both the source property, owned by the Province of Nova Scotia, along with several third party properties, as identified on Figure 2. Table 4.10 below presents an overview of the environmental impact for sediment, soil, groundwater, and surface water for each property associated with the Site.

Background or naturally occurring metals, as identified in Section 4.2.1.2 above, with concentrations above the applicable criteria were identified in all sample media across the Site and are only indicated in Table 4.10 (noted as " background metals") where no other metals exceedances were reported. At select Phase 2 ESA soil sample locations (BHSL-BH-1, FRED-MW-1, FSP1-BH-2, FSP2-MW-3, MAE-SS-1, and PIPE-MW-1), concentrations of aluminum and/or iron exceeded the referenced background soil concentrations identified in a report prepared by Dillon Consulting in March 2011 titled, "Review of Environment Canada's Background Soil Database (2004-2009), Version No. 1". Therefore, aluminum and iron are listed as contaminants in Table 4.10 for the PIDs associated with these sample locations (see Figures 6 and 7 of the Phase 2 ESA report for sample locations).

Table 4.10 Environmental Impact to Source Properties and Third Party Properties

PID	Property Owner	Impacted Media	Contaminants Exceeding Applicable Criteria
Source Property			
801191	Her Majesty the Queen in Right of The Province of Nova Scotia (NSTIR); Pictou Landing Devel Corp (Parcel 4 and 6, and island)[1]	Sediment	Metals (Al, Ag, Cd, Cr, Cu, Fe, Hg, Th, Va, Zn), PHCs, PAHs, VOCs, PCBs, Dioxins/Furans
		Soil	Metals (Al, As, Cr, Cu, Fe, Ni, Se, Va, Zn), pH
		Groundwater	Metals (As, Ca, Cu, Zn), pH, Ammonia, Chloride, Sulfate
		Surface Water	Metals (Cd, Cu, Rb, Va, Zn), PHCs, PAHs, VOCs, Chlorate, Phenol, Cyanide
961367	NS Supply and Services (NSTIR); Pictou Landing First Nation[1]	Sediment	Metals (Fe)
		Soil	Metals (Fe, Ni)
		Groundwater	Ammonia
		Surface Water	Background Metals
Third Party Properties			
1045343, 802611, 65073298	Indian and Northern Affairs Canada	Sediment	Metals (Ag, Cd, Fe, Va), PHCs, PAHs, Dioxins/Furans
		Soil	Metals (Fe), pH

Table 4.10 Environmental Impact to Source Properties and Third Party Properties

PID	Property Owner	Impacted Media	Contaminants Exceeding Applicable Criteria
		Groundwater	Metals (Cd), pH, VOCs, Ammonia
		Surface Water	Not Assessed
878421, 65214264	Pictou Landing Devel Corp	Sediment	Metals (Background Metals
		Soil	Metals (As, Fe), pH
		Groundwater	Metals (Ca, Zn), pH
		Surface Water	No Exceedances
878454	Bart Brown	Sediment	N/A
		Soil	Background Metals, pH
		Groundwater	Metals (Cu)
		Surface Water	N/A
65052607	Her Majesty the Queen in Right of The Province of Nova Scotia (NSE)	Sediment	N/A
		Soil	Background Metals, pH
		Groundwater	pH
		Surface Water	N/A
Estuary	Department of Natural Resources	Sediment	Metals (Cd, Va, Zn), PHCs, PAHs, Dioxins/Furans
		Soil	N/A
		Groundwater	N/A
		Surface Water	Metals (Cd, Cu, Hg, Zn), PHCs, Cyanide, Chloride
Northumberland Strait	Department of Natural Resources	Sediment	PHCs
		Soil	N/A
		Groundwater	N/A
		Surface Water	Metals (Bo, Cd), Cyanide, Chloride

Notes:
[1] Land transferred from the Province of Nova Scotia to Pictou Landing First Nation in 1999
N/A – Sample media not present on PID
Not Assessed – Sample media present on PID but not sampled

5. Conceptual Site Model

Conceptual Site Models for human and ecological receptors have been developed to illustrate the potentially complete pathways to receptors at the Site, based on the results of the Phase 2 ESA and the Supplemental Phase 2 ESA.

As previously noted in the Phase 2 ESA, the BHETF properties are currently owned by Nova Scotia Department of Transportation and Infrastructure Renewal (NSTIR) and leased to Northern Pulp.

Adjacent lands are generally owned by Provincial, Municipal, and private landowners, including Forest Management Areas owned by the Pictou Landing First Nations (PLFN).

The PLFN is a Mi'kmaq First Nation located at the mouth of Pictou Harbour on the Northumberland Strait of Nova Scotia. The Mi'kmaq people have a long-existing, unique, and special relationship with the land and its' resources which involves the use and conservation of natural resources and spiritual ideologies regarding such. Historically, Boat Harbour, formerly known as A'se'k in Mi'kmaq, was a gathering place where food, knowledge and skills were exchanged between generations and amongst family groups. The land was traditionally used by the Mi'kmaq for recreation, fishing, hunting and gathering, as well as for physical, mental, spiritual and emotional purposes. Through the proposed remediation project, it is PLFN's hope that A'se'k be restored to allow the community to re-establish its relationship with the water and land of A'se'k.

5.1 Human and Ecological Conceptual Site Models

The potential human and ecological exposure pathways for COCs in soil, groundwater, surface water and sediment at the Site are presented on Figure E-1 (Human Receptors), Figure E-2 (Terrestrial Receptors), and Figure E-3 (Aquatic Receptors) located in Appendix E. The potential exposure pathway figures identify the following:

- Contaminant release mechanisms
- Transport pathways
- Human and ecological receptor locations on and off-Site
- Receptor exposure points
- Routes of exposure

Figure E-1 presents an evaluation for potential human receptors that may be exposed to soil, sediment, groundwater and surface water under the intended land use. As mentioned above, the intended land use following remediation is an estuary that may be used as a gathering place for the PLFN people, where food, knowledge, and skills can be exchanged between generations and amongst family groups. It is assumed that this may include enclosed residential buildings with potable drinking water wells, along with traditional uses by the Mi'kmaq for recreation, fishing, hunting, and gathering, as well as for physical, mental, spiritual, and emotional purposes. As such, the identified receptors include a potential resident (PLFN), recreational visitor (including swimming, fishing, hunting, gathering, and camping), indoor and outdoor commercial workers, and a construction/utility worker.

The potential sources of human exposure to COCs are considered to be through the following potential pathways: direct soil ingestion and contact, outdoor and indoor air inhalation pathway, consumption of potable groundwater, swimming in surface water and potential consumption of food items exposed to COCs in soil, sediment and/or surface water.

Although the initial Phase 2 ESA at the Site indicated some MTBE concentrations in soil slightly exceeding applicable Tier I guidelines, resampling and delineation of these areas during the Supplemental Phase 2 ESA confirmed that MTBE is non-detect in soil at the Site and therefore VOCs (MTBE) are not considered to be PCOC in this media. There have also been some low level detections of chloroform in groundwater at the site, exceeding Tier I guidelines, which are based on

inhalation to indoor air pathway. The recommendations in the Supplemental Phase 2 ESA include confirmation of these groundwater concentrations.

Bio-accumulative chemicals (such as dioxins/furans, PCBs, mercury) detected above background concentrations in soil, sediment and/or surface water were included as COCs in potential food items exposed to these media, regardless of whether they exceeded screening criteria for the media. However, the human health guideline for dioxin/furans total equivalency factor (TEF) in soil is based on ambient background soil concentrations across Canada. Therefore, dioxin/furans TEF concentrations in Site soil which meet this guideline can be considered to be representative of background concentrations and would not likely pose risk to humans through the consumption of vegetation or wild game from the Site. Since all soil dioxin/furan TEF concentrations in soil are well within this guideline, they have not been carried forward as PCOCs for vegetation and wild game uptake from soil.

Figure E-2 presents an evaluation for the potential ecological terrestrial receptors that may be exposed to soil, groundwater, sediment and surface water. The terrestrial habitat at the Site is considered suitable to support a variety of ecological receptors and include terrestrial vegetation, soil invertebrates, reptiles and anuran, mammals, and birds. The primary source of exposure to COCs in the terrestrial environment is considered to be through the direct soil ingestion and contact pathway and consumption of food items exposed to COCs in soil. However, surface water at the Site could also serve as a source of drinking water for terrestrial receptors and was included as a potential pathway. Sediment exposure for terrestrial receptors was considered limited to incidental ingestion during consumption of drinking water. Bioaccumulation of COCs in ecological receptors through the surface water and sediment ingestion/contact pathway was included in the aquatic CSM (Figure E-3). Groundwater is not known to directly discharge at ground surface and, therefore, exposure to groundwater at the Site was considered limited to groundwater discharging to surface water and ingestion as drinking water. It is acknowledged that deep rooting plants have the potential to directly interact with COCs in groundwater but for the purposes of this Phase 2 ESA, this exposure pathway was considered negligible as previous vegetation surveys indicated that terrestrial vegetation at the Site appear to be healthy and typical of plant communities in Nova Scotia (WSP, 2018). In addition, groundwater guidelines available in Canada specific to interactions with vegetation are based on direct contact and are generally limited to non-polar organic compounds (e.g., BTEX, PAHs). Non-polar organic compounds were generally not detected in groundwater samples collected from the Site during the Supplemental Phase 2 ESA.

Figure E-3 presents an evaluation for the potential aquatic receptors that may be exposed to sediment, surface water and groundwater in the event that shallow groundwater COCs from the Site discharge to surface water. The potential aquatic receptors considered for the Site include aquatic vegetation, aquatic and benthic invertebrates, amphibians, mammals, birds and fish.

In addition, information obtained from the Atlantic Canada Conservation Data Centre (ACCDC) indicates that several federally and provincially listed avian species at risk (SAR) have been previously observed within 2.5 km of the Site. The avian species identified to potentially be present in the vicinity of the Site and would have the potential use the site as habitat foraging or breeding include Common Nighthawk (*Chordeiles minor*), Olive-sided Flycatcher (*Contopus cooperi*), Bank Swallow (*Riparia riparia*), Canada Warbler (*Wilsonia Canadensis*) and Eastern Wood-Pewee (*Contopus virens*). However, an *Interim Avian Baseline Review* including field surveys completed by

WSP in the fall of 2017 and winter/spring of 2018 only observed three SAR at the Site and included the Olive-Sided Flycatcher, Eastern Wood-Pewee and Evening Grosbeak (*Coccothraustes vespertinus)* (WSP, 2018). These species could potentially use both the terrestrial and aquatic portions of the Site but the Evening Grosbeak is primarily associated with wooded areas and consume buds, seeds, berries and fruits. As such, for the for the purpose of this evaluation, the Evening Grosbeak was considered an herbivorous SAR for inclusion in the terrestrial CSM. Conversely, the Eastern Wood-Pewee and Olive-Sided Flycatcher are primarily aerial insectivores associated with open areas such as marshes or lakes as well as mixed forest areas with open canopies. These aerial insectivorous SAR that have been directly observed at the Site are included in both the terrestrial and aquatic CSM.

The ACCDC database identified Piping Plovers (*Charadrius melodus*) to be present in the Pictou Bar area north of the Site. In Eastern Canada, this SAR is a shore bird associated with sandy marine beaches. As previously indicated, the intended land use following remediation is an estuary that extends to the Northumberland Strait and could be used as habitat for this SAR. Although Piping Plovers were not observed at the Site, these benthic insectivores SAR were included in the aquatic CSM.

Where required, potential exposure pathways for human and ecological receptors will be further evaluated in detail through Risk Assessment and/or Remediation plans for the Site, including the determination of whether or not each of the pathways presented on Figures E-1, E-2, and E-3 are complete.

6. Conclusions and Recommendations

The purpose of the Supplemental Phase 2 ESA was to further define the nature and extent of environmental concerns at the Site and address any data gaps identified in the Phase 2 ESA (GHD June 6, 2018). Laboratory analytical results were compared to applicable Provincial ecological and human health criteria. Where no Provincial criteria were available, applicable Federal criteria were referenced. CSM for human and ecological receptors developed during the Phase 2 ESA to determine potential receptor pathways at the Site were updated based on the results of the Supplemental Phase 2 ESA.

Based on the results of the Phase 2 ESA, GHD recommended additional sampling for specific COCs to further delineate sediment, soil, groundwater, and surface water impact identified in several APECs.

Nineteen sediment samples (plus QA/QC samples) were collected at 10 locations across the Site and at 5 locations from the Northumberland Strait, 2.5 km east of the Estuary, to assess background sediment conditions in a marine environment. Where possible in the wetlands, sediment samples collected for horizontal delineation were also collected for vertical delineation, with samples from both the overlying organic-rich sediment (at depths 0.0 to 0.5 mbgs) and the underlying clay and silt material (at depths 0.5 to 1.0 mbgs) being collected. Sediment samples collected for vertical delineation only were collected from below the previous sample depths, where possible. Various sediment samples collected as part of the Supplemental Phase 2 ESA exceeded the applicable Provincial and/or Federal ecological sediment criteria for metals, Polycyclic Aromatic Hydrocarbons

(PAHs), Petroleum Hydrocarbons (PHCs), Volatile Organic Compounds (VOCs), and/or dioxins and furans, and the Provincial human health soil criteria for metals and dioxins and furans. Except where noted in the recommendations table below, both vertical and horizontal delineation of the impacts in sediment were achieved.

A total of 20 surface soil samples were collected from shallow boreholes (advanced by hand using a shovel and a hand auger) and 14 subsurface soil samples were collected from 13 drilled boreholes. Soil samples collected across the Site during the Supplemental Phase 2 ESA exceeded the applicable Provincial and/or Federal soil criteria for various metals and general chemistry parameters. Except where noted in the recommendations table below, both vertical and horizontal delineation of the impacts in soil were achieved. Groundwater samples were collected from 7 newly installed monitoring wells near the BHSL and the Estuary using low-flow purging and sampling methods where possible. Groundwater samples exceeded the applicable Provincial and/or Federal groundwater criteria for various metals, VOC, and general chemistry parameters. Criteria exceedances were not reported for PAHs, PHCs, PCBs, phenols, and dioxins and furans. Analytical results for five of the newly installed monitoring wells were consistent with groundwater results from the Phase 2 ESA; however, additional metal (cadmium) and/or VOC (chloroform) exceedances were identified at monitoring wells BHSL-MW-6 and EST-MW-2. These metal and VOC parameters were not identified in any other groundwater samples collected during either the Phase 2 ESA or the Supplemental Phase 2 ESA. As such, additional groundwater sampling is recommended at monitoring wells BHSL-MW-6 and EST-MW-2 to confirm these metal and VOC exceedances, which are noted in the recommendations table below.

One surface water sample was collected from a stream to the east of the sludge disposal cell overflow pond. Analytical results for the surface water sample SDC-SW-4 were reported as below the applicable marine surface water criteria.

Five additional background surface water samples were collected from Chance Harbour Lake to confirm the background surface water conditions for the area. Surface water samples collected from Chance Harbour Lake exceeded the applicable freshwater surface water criteria for metals and general chemistry parameters.

Based on the results of the Supplemental Phase 2 ESA, additional sampling may need to be completed at the Site to fully delineate sediment, soil, and groundwater impact, following completion of the human health and ecological risk assessment screening phase, as identified in Table 6.1 below.

Table 6.1 Additional Sampling Recommendations

Sample Location	Sample Matrix	Delineation Requirement	COC
Boat Harbour Stabilization Lagoon (BHSL)			
BHSL-MW-2	Soil	Horizontal	Arsenic, Copper
BHSL-MW-6	Groundwater	Confirm Results	Cadmium, VOCs (Chloroform)
Estuary (EST)			
EST-MW-2	Groundwater	Confirm Results	VOCs (Chloroform)
Northumberland Strait (NS)			
NS-SED-1 to NS-SED-7	Sediment	Horizontal	PHCs

Table 6.1 Additional Sampling Recommendations

Sample Location	Sample Matrix	Delineation Requirement	COC
Former Settling Pond 2 (FSP2)			
FSP2-SED-8	Sediment	Vertical (below 0.9 m)	Metals, PAHs, PHCs, VOCs, Dioxins and Furans
FSP2-SED-9		Vertical (below 0.85 m)	
Former Settling Pond 3 (FSP3)			
FSP3-SED-7	Sediment	Vertical (below 0.9 m)	PAHs (Perylene) Dioxins/Furans
Mill Air Emissions (MAE)			
MAE-SS-1/MAE-SS-11	Soil	Horizontal	Metals

7. References

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8. Limitation of Liability, Scope of Report, and Third Party Reliance

This report has been prepared and the work referred to in this report has been undertaken by GHD for NS Lands. It is intended for the sole and exclusive use of NS Lands, its affiliated companies and partners and their respective insurers, agents, employees and advisors (collectively, "NS Lands"). Any use, reliance on or decision made by any person other than NS Lands based on this report is the sole responsibility of such other person. NS Lands and GHD make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The investigation undertaken by GHD with respect to this report and any conclusions or recommendations made in this report reflect GHD judgment based on the Site conditions observed at the time of the Site inspection on the date(s) set out in this report and on information examined at the time of preparation of this report. This report has been prepared for specific application to this Site and it is based, in part, upon visual observation of the Site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the Site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters,

materials or analysis which were not addressed. Substances other than those addressed by the investigation described in this report may exist within the Site, substances addressed by the investigation may exist in areas of the Site not investigated and concentrations of substances addressed which are different than those reported may exist in areas other than the locations from which samples were taken.

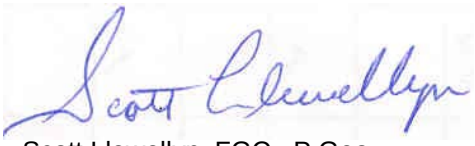
If Site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

Other than by NS Lands, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of GHD. Nothing in this report is intended to constitute or provide a legal opinion.

All of Which is Respectfully Submitted,

GHD

Kathleen Schaller, B.Tech., C.E.T.



Scott Llewellyn, FGC., P.Geo.

Christine Skirth, C.E.T., PMP

Source: Service Nova Scotia

0 500 1,000 1,500
Metres

Coordinate System:
NAD 1983 CSRS UTM Zone 20N

N

NOVA SCOTIA LANDS INC
BOAT HARBOUR EFFLUENT TREATMENT FACILITY, PICTOU LANDING, NS
SUPPLEMENTAL PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
SITE LOCATION MAP

11148275-26
Jul 26, 2018

FIGURE 1

GIS File: I:\GIS_DATA\Projects\8-chars\1114----\11148275 Boat Harbour\11148275-REPORTS\11148275-Rpt-11\11148275-26(011)GIS-DA001.mxd

Legend

Phase 2 ESA Sample Locations (To be delineated during Supplemental)
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample

Supplemental Phase 2 ESA Sample Locations
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample

Remaining Phase 2 ESA Sample Locations
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample
- Sludge Sample
- Existing Monitoring Well Location
- Temporary Impermeable Barrier (Constructed in 2017)
- Pipeline Area to be Avoided as per NS Lands Inc.
- Areas of Potential Environmental Concern (APECs)
- Indian Reserve No. 24
- Indian Reserve No. 24G
- Indian Reserve No. 37
- Current Study Area Boundary
- Future Study Area Boundary
- Current High Water Mark
- Approximate Location of Old Burial Ground
- Pipeline
- Land Owned by PLFN (Transferred from Province in 1999)
- Property Boundary
- Residential
- Government
- Pictou Landing First Nation
- Water
- Wetlands

NORTHUMBERLAND STRAIT
PICTOU HARBOUR
PICTOU LANDING ROAD/HIGHWAY 348
PID 65052607
PICTOU LANDING FIRST NATION
PID 00802611
ON-PENINSULA WELLFIELD
PID 65073298
ESTUARY
PID 65073306
PID 00878454
PID 00802611
DAM/DISCHARGE OF TREATED EFFLUENT (POINT D)
OFF-PENINSULA WELLFIELD
FORMER SETTLING POND 3
METALS STORAGE AREA
TWIN SETTLING BASINS
BOAT HARBOUR STABILIZATION LAGOON
DISCHARGE OF BIOLOGICALLY TREATED EFFLUENT
PRESS BLDG
ELECTRICAL BUILDING
AERATION STABILIZING BASIN
POINT A BLDG
SILO
CURRENT RAW EFFLUENT DISCHARGE DITCH
PID 00801191
PID 00878421
PID 01045350
POINT C BUILDINGS
FORMER SETTLING POND 2
PID 01045343
FORMER SETTLING POND 1
FORMER EFFLUENT DISCHARGE AREA (1967 - 1972)
SLUDGE DISPOSAL CELL
PID 65214264
PID 00961367
PID 01045343
FORMER RAW EFFLUENT DISCHARGE DITCH
NORTHERN PULP MILL
PIPELINE CORRIDOR
FORMER CANSO CHEMICAL
EAST RIVER OF PICTOU

Source: Imagery @2017 Google CNES / Airbus, DigitalGlobe, Landsat / Copernicus

0 200 400 600
Meters

Coordinate System:
NAD 1983 CSRS UTM Zone 20N

GHD

NOVA SCOTIA LANDS INC
BOAT HARBOUR EFFLUENT TREATMENT FACILITY, PICTOU LANDING, NS
SUPPLEMENTAL PHASE 2 ENVIRONMENTAL SITE ASSESSMENT

11148275-26
Jul 26, 2018

SITE PLAN

FIGURE 2

GIS File: I:\GIS_DATA\Projects\8-chars\1114----\11148275 Boat Harbour\11148275-REPORTS\11148275-Rpt-11\11148275-26(011)GIS-DA002.mxd

Legend

Phase 2 ESA Sample Locations (To be delineated during Supplemental)

- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample

Supplemental Phase 2 ESA Sample Locations

- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample
- Temporary Impermeable Barrier (Constructed in 2017)
- Land Owned by PLFN (Transferred from Province in 1999)
- APECs
- Indian Reserve No. 24
- Indian Reserve No. 24G
- Indian Reserve No. 37
- Study Area
- Current High Water Mark
- Pipeline

FIGURE 7
NORTHUMBERLAND STRAIT
NS-SED-7
NS-SED-6
NS-SED-3
NS-SED-4
NS-SED-5
PICTOU LANDING FIRST NATION
EST-MW-3
ESTUARY
ON-PENINSULA WELLFIELD
EST-MW-2
PICTOU LANDING ROAD
DAM/DISCHARGE OF TREATED EFFLUENT
FIGURE 6
BHSL-BH-6
BHSL-MW-5
BHSL-MW-8
BOX CULVERTS
BHSL-S-8
OFF-PENINSULA WELLFIELD
BHSL-S-6
BHSL-BH-4
MAE-SS-17
MAE-SS-18
FIGURE 4
BHSL-MW-7
BHSL-BH-5
BHSL-MW-6
BHSL-S-7
FORMER SETTLING POND 3
MAE-SS-19
MAE-SS-20
BOAT HARBOUR STABILIZATION LAGOON
TWIN SETTLING BASINS
FSP3-BH-1
FSP3-SED-7
BHSL-S-5
MAE-SS-16
MAE-SS-15
FSP3-S-8
FSP3-SED-8
AERATION STABILIZING BASIN
DISCHARGE OF BIOLOGICALLY TREATED EFFLUENT
BHSL-S-4
TSB-BH-2
TSB-S-1
MAE-SS-11
MAE-SS-12
POINT A BLDG
TSB-BH-4
TSB-S-2
FIGURE 5
FORMER SETTLING POND 2
PICTOU HARBOUR
CURRENT RAW EFFLUENT DISCHARGE DITCH
BHSL-MW-9
FSP2-SED-8
FSP2-SED-9
FSP2-S-16
FSP2-S-17
FORMER SETTLING POND 1
POINT C BUILDINGS (ELECTRICAL & SAMPLING)
SDC-SW-4
SDC-SED-3
FORMER RAW EFFLUENT DISCHARGE DITCH
FSP2-SED-10
FORMER EFFLUENT DISCHARGE AREA (1967 - 1972)
MAE-SS-14
MAE-SS-13
SLUDGE DISPOSAL CELL

Source: Imagery @2017 Google CNES / Airbus, DigitalGlobe, Landsat / Copernicus

0 150 300 450
Meters

Coordinate System:
NAD 1983 CSRS UTM Zone 20N

N

GHD

NOVA SCOTIA LANDS INC
BOAT HARBOUR EFFLUENT TREATMENT FACILITY, PICTOU LANDING, NS
SUPPLEMENTAL PHASE 2 ENVIRONMENTAL SITE ASSESSMENT

11148275-26
Jul 26, 2018

DELINEATION SAMPLE LOCATIONS

FIGURE 3

GIS File: I:\GIS_DATA\Projects\8-chars\1114----\11148275 Boat Harbour\11148275-REPORTS\11148275-Rpt-11\11148275-26(011)GIS-DA003.mxd

Legend

Phase 2 ESA Sample Locations (To be delineated during Supplemental)
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample

Supplemental Phase 2 ESA Sample Locations
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample

Remaining Phase 2 ESA Sample Locations
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample
- Sludge Sample
- Temporary Impermeable Barrier (Constructed in 2017)
- Land Owned by PLFN (Transferred from Province in 1999)
- APECs
- Indian Reserve No. 24
- Indian Reserve No. 24G
- Indian Reserve No. 37
- Study Area
- Current High Water Mark
- Pipeline

SOIL
MAE-SS-9 (Ph 2)
MTBE
pH
MAE-SS-17 (Sup)
No Exceedance
MAE-SS-18 (Sup)
No Exceedance

SOIL
MAE-SS-10 (Ph 2)
Metals (As)
pH
MAE-SS-19 (Sup)
pH
MAE-SS-20 (Sup)
pH

SOIL
FSP3-MW-2 (Ph 2)
Metals (Fe)
MTBE
FSP3-BH-1 (Sup)
No Exceedance
FSP3-S-8 (Sup)
No Exceedance

SOIL
TSB-BH-2 (Ph 2)
Metals (As, Co, Fe)
TSB-BH-3 (Sup)
Metals (Fe)
pH
TSB-S-1 (Sup)
Metals (Fe)

SOIL
MAE-SS-1 (Ph 2)
Metals (Al, Ba, Cd, Cr, Fe, Ni, Va, Zn)
MAE-SS-11 (Sup)
Metals (Al, Fe, Ni, Se, Zn)
pH
MAE-SS-12 (Sup)
Metals (Fe)
pH

SOIL
TSB-MW-1 (Ph 2)
Metals (As, Fe)
pH
TSB-BH-4 (Sup)
Metals (Fe)
TSB-S-2 (Sup)
Metals (Fe)
pH

SEDIMENT
FSP3-SED-3 (Ph 2)
Metals (Fe)
PHCs
FSP3-SED-8 (Sup)
Unable to Sample

SEDIMENT
FSP3-SED-1 (Ph 2)
Metals (Cd, Fe, Se)
PHCs
Dioxins/Furans
FSP3-SED-7-1 (Sup)
PHCs
Dioxins/Furans
FSP3-SED-7-2 (Sup)
PHCs
PAHs
Dioxins/Furans

MAE-SS-17, MAE-SS-18, MAE-SS-9, BHSL-MW-1, BHSL-S-7, BHSL-BH-5, MAE-SS-19, MAE-SS-10, MAE-SS-20, FSP3-MW-2, FSP3-BH-1, FSP3-S-8, FSP3-SED-1, FSP3-SED-7, FSP3-SED-3, FSP3-SED-8, TSB-BH-2, TSB-BH-3, TSB-S-1, MAE-SS-1, MAE-SS-11, MAE-SS-12, TSB-MW-1, TSB-BH-4, TSB-S-2

FORMER SETTLING POND 3
TWIN SETTLING BASINS
FORMER SETTLING POND 2
FORMER SETTLING POND 1
CURRENT RAW EFFLUENT DISCHARGE DITCH
BOAT HARBOUR STABILIZATION LAGOON
AERATION STABILIZING BASIN
DISCHARGE OF BIOLOGICALLY TREATED EFFLUENT
POINT C BUILDINGS (ELECTRICAL & SAMPLING)

Source: Imagery @2017 Google CNES / Airbus, DigitalGlobe, Landsat / Copernicus

0 50 100 150
Meters

Coordinate System:
NAD 1983 CSRS UTM Zone 20N

Note: Applicable Phase 2 ESA (Ph 2) data presented to support Supplemental Phase 2 ESA (Sup) data

NOVA SCOTIA LANDS INC
BOAT HARBOUR EFFLUENT TREATMENT FACILITY, PICTOU LANDING, NS
SUPPLEMENTAL PHASE 2 ENVIRONMENTAL SITE ASSESSMENT

SAMPLE LOCATIONS (FORMER SETTLING POND 3, TWIN SETTLING BASINS & MILL AIR EMISSIONS)

11148275-26
Jul 26, 2018

FIGURE 4

GIS File: I:\GIS_DATA\Projects\8-chars\1114----\11148275 Boat Harbour\11148275-REPORTS\11148275-Rpt-11\11148275-26(011)GIS-DA004.mxd

Legend

Phase 2 ESA Sample Locations (To be delineated during Supplemental)
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample

Supplemental Phase 2 ESA Sample Locations
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample

Remaining Phase 2 ESA Sample Locations
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample
- Sludge Sample
- Temporary Impermeable Barrier (Constructed in 2017)
- Land Owned by PLFN (Transferred from Province in 1999)
- APECs
- Indian Reserve No. 24
- Indian Reserve No. 24G
- Indian Reserve No. 37
- Study Area
- Current High Water Mark
- Pipeline

FORMER SETTLING POND 2

FORMER SETTLING POND 1

SEDIMENT
FSP2-SED-8-1 (Sup)
Metals (Cd, Va)
PHCs
VOCs
Dioxins/Furans
FSP2-SED-8-2 (Sup)
Metals (Cd, Hg, Va)
PHCs
PAHs
VOCs
Dioxins/Furans

FSP2-SED-8

FSP2-SED-9

SEDIMENT
FSP2-SED-9-1 (Sup)
Metals (Cd)
PHCs
PAHs
VOCs
Dioxins/Furans
FSP2-SED-9-2 (Sup)
Metals (Cd)
PHCs
PAHs
VOCs
Dioxins/Furans

AERATION STABILIZING BASIN

BOAT HARBOUR STABILIZATION LAGOON

BHSL-MW-9

SOIL
BHSL-MW-9 (Sup)
Metals (Fe)

FSP2-S-5

FSP2-S-16

FSP2-S-17

SOIL
FSP2-S-5 (Ph 2)
Metals (Fe)
MTBE
FSP2-S-16 (Sup)
No Exceedance
FSP2-S-17 (Sup)
No Exceedance

SURFACE WATER
SDC-SW-3 (Ph 2)
PHCs
SDC-SW-4 (Sup)
No Exceedance

SDC-SW-4

SDC-SW-3

SDC-SED-3

SDC-SED-2

SEDIMENT
SDC-SED-2 (Ph 2)
Metals (Al, Hg)
SDC-SED-3-1 (Sup)
No Exceedance
SDC-SED-3-2 (Sup)
Metals (Fe)

FSP2-SED-4

FSP2-SED-10

FORMER RAW EFFLUENT DISCHARGE DITCH

SEDIMENT
FSP2-SED-4 (Ph 2)
PHCs
FSP2-SED-10 (Sup)
No Exceedance

FORMER EFFLUENT DISCHARGE AREA (1967 - 1972)

SLUDGE DISPOSAL CELL

SOIL
MAE-SS-3 (Ph 2)
Metals (Fe)
MTBE
pH
MAE-SS-13 (Sup)
No Exceedance
MAE-SS-14 (Sup)
No Exceedance

MAE-SS-14

MAE-SS-3

MAE-SS-13

Source: Imagery @2017 Google CNES / Airbus, DigitalGlobe, Landsat / Copernicus

0 50 100 150
Meters

Coordinate System:
NAD 1983 CSRS UTM Zone 20N

Note: Applicable Phase 2 ESA (Ph 2) data presented to support Supplemental Phase 2 ESA (Sup) data

NOVA SCOTIA LANDS INC
BOAT HARBOUR EFFLUENT TREATMENT FACILITY, PICTOU LANDING, NS
SUPPLEMENTAL PHASE 2 ENVIRONMENTAL SITE ASSESSMENT

SAMPLE LOCATIONS (FORMER SETTLING POND 2, SLUDGE DISPOSAL CELL, BHSL & MILL AIR EMISSIONS)

11148275-26
Jul 26, 2018

FIGURE 5

GIS File: I:\GIS_DATA\Projects\8-chars\1114----\11148275 Boat Harbour\11148275-REPORTS\11148275-Rpt-11\11148275-26(011)GIS-DA005.mxd

Legend

Phase 2 ESA Sample Locations (To be delineated during Supplemental)
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample

Supplemental Phase 2 ESA Sample Locations
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample

Remaining Phase 2 ESA Sample Locations
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample
- Sludge Sample
- Temporary Impermeable Barrier (Constructed in 2017)
- Land Owned by PLFN (Transferred from Province in 1999)
- APECs
- Indian Reserve No. 24
- Indian Reserve No. 24G
- Indian Reserve No. 37
- Study Area
- Current High Water Mark
- Pipeline

SOIL
BHSL-MW-2 (Ph 2)
Metals (As, Cu, Fe)
BHSL-BH-6 (Sup)
Metals (As, Ba, Cu, Fe)
BHSL-S-8 (Sup)
pH

BHSL-BH-6
BHSL-MW-2
BHSL-S-8

SOIL
BHSL-MW-5 (Sup)
Metals (Ba, Fe)
pH

BHSL-MW-5

SOIL
BHSL-MW-8 (Sup)
Metals (Fe)

BHSL-MW-8

BOX CULVERTS

SOIL
BHSL-BH-2 (Ph 2)
Metals (As, Fe)
pH
BHSL-BH-4 (Sup)
Metals (Fe)
pH
BHSL-S-6 (Sup)
pH

BHSL-S-6
BHSL-BH-2
BHSL-BH-4

SOIL
BHSL-MW-1 (Ph 2)
Metals (Fe)
pH
BHSL-BH-5 (Sup)
Metals (Fe)
BHSL-S-7 (Sup)
Metals (Fe)
pH

BHSL-MW-1
BHSL-S-7
BHSL-BH-5

SOIL
BHSL-MW-6 (Sup)
Metals (Fe)
pH

BHSL-MW-6

SOIL
BHSL-MW-7 (Sup)
Metals (Fe)
pH

BHSL-MW-7

FORMER SETTLING POND 3

FSP3-SED-7
FSP3-SED-8

BOAT HARBOUR STABILIZATION LAGOON

SOIL
BHSL-MW-11 (Ph 2)
Metals (As, Fe)
MTBE
pH
BHSL-S-4 (Sup)
pH
BHSL-S-5 (Sup)
Metals (Fe)
pH

BHSL-S-5
BHSL-MW11
BHSL-S-4

MAE-SS-6
MAE-SS-16
MAE-SS-15

SOIL
MAE-SS-6 (Ph 2)
Metals (Al, Fe)
MTBE
pH
MAE-SS-15 (Sup)
No Exceedance
MAE-SS-16 (Sup)
No Exceedance

Source: Imagery @2017 Google CNES / Airbus, DigitalGlobe, Landsat / Copernicus

0 50 100 150
Meters

Coordinate System:
NAD 1983 CSRS UTM Zone 20N

N

Note: Applicable Phase 2 ESA (Ph 2) data presented to support Supplemental Phase 2 ESA (Sup) data

GHD

NOVA SCOTIA LANDS INC
BOAT HARBOUR EFFLUENT TREATMENT FACILITY, PICTOU LANDING, NS
SUPPLEMENTAL PHASE 2 ENVIRONMENTAL SITE ASSESSMENT

SAMPLE LOCATIONS (BHSL & MILL AIR EMISSIONS)

11148275-26
Jul 26, 2018

FIGURE 6

GIS File: I:\GIS_DATA\Projects\8-chars\1114----\11148275 Boat Harbour\11148275-REPORTS\11148275-Rpt-11\11148275-26(011)GIS-DA006.mxd

Legend

Phase 2 ESA Sample Locations (To be delineated during Supplemental)
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample

Supplemental Phase 2 ESA Sample Locations
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample

Remaining Phase 2 ESA Sample Locations
- Monitoring Well
- Bore Hole (Soil - by hand)
- Bore Hole (Soil - By Drill)
- Sediment Sample
- Surface Soil Sample
- Surface Water Sample
- Sludge Sample
- Temporary Impermeable Barrier (Constructed in 2017)
- Land Owned by PLFN (Transferred from Province in 1999)
- APECs
- Indian Reserve No. 24
- Indian Reserve No. 24G
- Indian Reserve No. 37
- Study Area
- Current High Water Mark
- Pipeline

NORTHUMBERLAND STRAIT

PICTOU LANDING FIRST NATION

ESTUARY

BOAT HARBOUR STABILIZATION LAGOON

DAM/DISCHARGE OF TREATED EFFLUENT

BOX CULVERTS

NS-SED-7

NS-SED-2

NS-SED-6

NS-SED-3

NS-SED-4

NS-SED-5

NS-SED-1

EST-MW-3

EST-MW-2

BHSL-MW-8

SEDIMENT
NS-SED-3 (Sup)
PHCs

SEDIMENT
NS-SED-2 (Ph 2)
PHCs
NS-SED-6 (Sup)
PHCs
NS-SED-7 (Sup)
PHCs

SOIL
EST-MW-3 (Sup)
Metals (Fe)
pH

SEDIMENT
NS-SED-1 (Ph 2)
PHCs
NS-SED-4 (Sup)
PHCs
NS-SED-5 (Sup)
PHCs

SOIL
EST-MW-2 (Sup)
No Exceedance

Source: Imagery @2017 Google CNES / Airbus, DigitalGlobe, Landsat / Copernicus

0 50 100 150
Meters

Coordinate System:
NAD 1983 CSRS UTM Zone 20N

Note: Applicable Phase 2 ESA (Ph 2) data presented to support Supplemental Phase 2 ESA (Sup) data

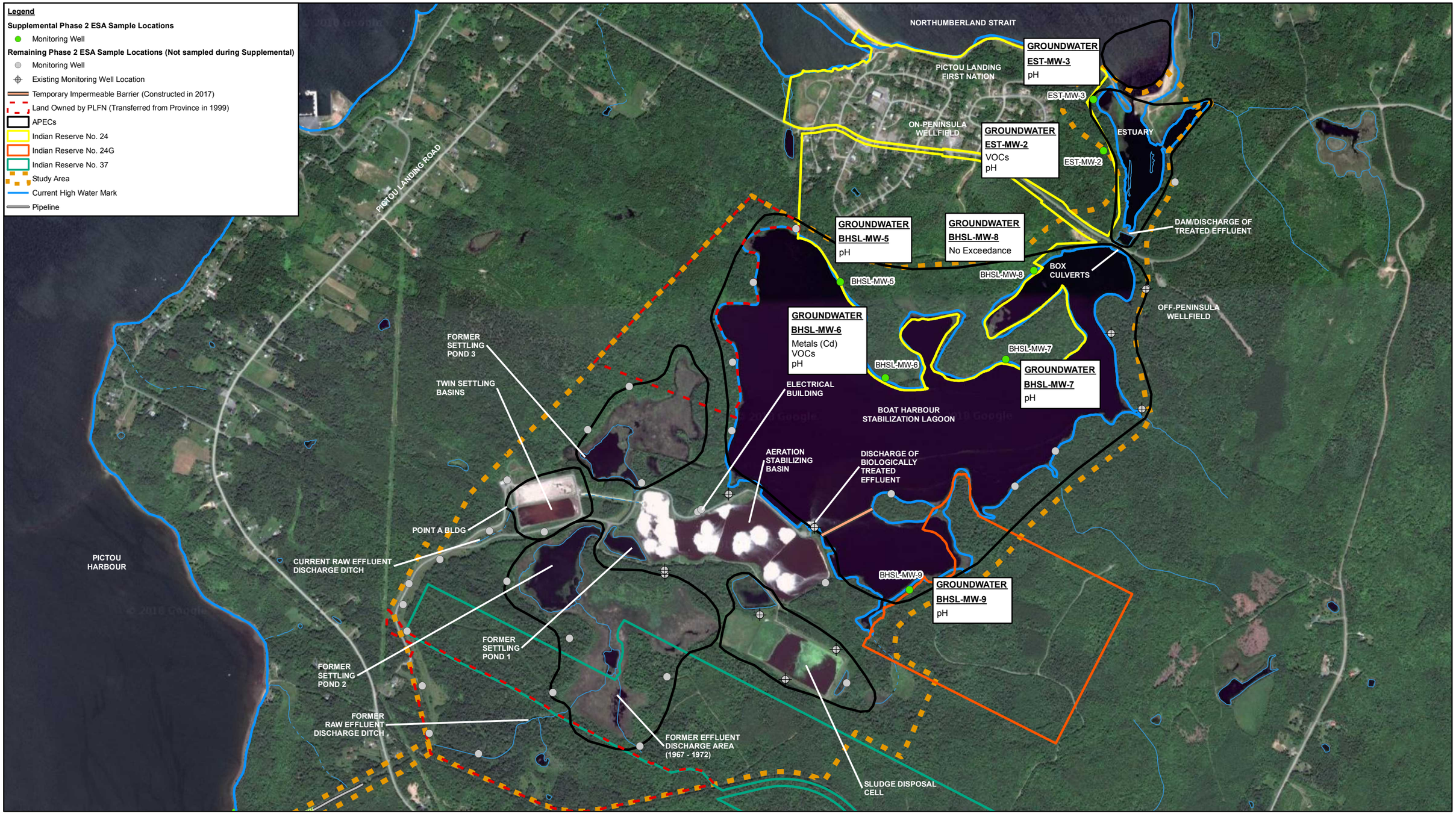
NOVA SCOTIA LANDS INC
BOAT HARBOUR EFFLUENT TREATMENT FACILITY, PICTOU LANDING, NS
SUPPLEMENTAL PHASE 2 ENVIRONMENTAL SITE ASSESSMENT

SAMPLE LOCATIONS (ESTUARY & NORTHUMBERLAND STRAIT)

11148275-26
Jul 26, 2018

FIGURE 7

GIS File: I:\GIS_DATA\Projects\8-chars\1114----\11148275 Boat Harbour\11148275-REPORTS\11148275-Rpt-11\11148275-26(011)GIS-DA007.mxd



Source: Imagery @2017 Google CNES / Airbus, DigitalGlobe, Landsat / Copernicus

0 150 300 450
Meters

Coordinate System:
NAD 1983 CSRS UTM Zone 20N

NOVA SCOTIA LANDS INC
BOAT HARBOUR EFFLUENT TREATMENT FACILITY, PICTOU LANDING, NS
SUPPLEMENTAL PHASE 2 ENVIRONMENTAL SITE ASSESSMENT

11148275-26
Jul 26, 2018

GROUNDWATER SAMPLE LOCATIONS

FIGURE 8

GIS File: I:\GIS_DATA\Projects\8-chars\1114----\11148275 Boat Harbour\11148275-REPORTS\11148275-Rpt-11\11148275-26(011)GIS-DA008.mxd

Legend

Phase 2 ESA Background Sample Locations

- Background Borehole Location (Hand Auger)
- Background Sediment Sample Location
- Background Surface Water Sample Location

Supplemental Phase 2 ESA Background Sample Locations

- Background Sediment Sample Location
- Background Surface Water Location

NORTHUMBERLAND STRAIT

BKGD-SED-11
BKGD-SED-15
BKGD-SED-12
BKGD-SED-13
BKGD-SED-14

SEDIMENT

BKGD-SED-11 to BKGD-SED-15 (Sup)

No Exceedance

FERGUSONS POND

BKGD-SW-6
BKGD-SW-1
BKGD-SW-8
BKGD-SW-7
BKGD-SW-3
BKGD-SW-2
CHANCE HARBOUR LAKE
BKGD-SW-10
BKGD-SW-4
BKGD-SW-5
BKGD-SW-9

PICTOU LANDING ROAD/HIGHWAY 348

SURFACE WATER

BKGD-SW-1 and BKGD-SW-2 (Ph 2)

Metals (Al)

SURFACE WATER

BKGD-SW-3 to BKGD-SW-5 (Ph 2)

Metals (Al)
pH

BKGD-SW-6 to BKGD-SW-10 (Sup)

Metals (Al)
pH

Source: Imagery @2017 Google CNES / Airbus, DigitalGlobe, Landsat / Copernicus

0 50 100 150
Meters

Coordinate System:
NAD 1983 CSRS UTM Zone 20N

Note: Applicable Phase 2 ESA (Ph 2) data presented to support Supplemental Phase 2 ESA (Sup) data

NOVA SCOTIA LANDS INC
BOAT HARBOUR EFFLUENT TREATMENT FACILITY, PICTOU LANDING, NS
SUPPLEMENTAL PHASE 2 ENVIRONMENTAL SITE ASSESSMENT

BACKGROUND SAMPLE LOCATIONS
CHANCE HARBOUR LAKE & NORTHUMBERLAND STRAIT

11148275-26
Jul 26, 2018

FIGURE 9

GIS File: I:\GIS_DATA\Projects\8-chars\1114----\11148275 Boat Harbour\11148275-REPORTS\11148275-Rpt-11\11148275-26(011)GIS-DA009.mxd

Table 1

Sample Identification Key
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC	Sample Location ID	Sample Identification	Sample Date	Criteria Designation (Freshwater / Marine)	Delineated Location ID	Coordinates [2]		Parameters																
						Northing	Easting	Chlorate/Chlorite	Cyanide	Dioxins/Furans	Fraction of Organic Carbon	General Chemistry/Metals/Mercury	Grain Size	Hydrogen Sulfide	Phenols	Polychlorinated Biphenyls	Polycyclic Aromatic Hydrocarbons	Petroleum Hydrocarbons	Resin/Fatty Acids	Silica Gel Cleanup	MTBE Only	Volitile Organic Compounds
Sediment																						
Background (Northumberland Straight)	BKGD-SED-11	BKGD-SED-11 (0.0-0.2m)	4/27/2018	Marine	-	5058695.28	530689.48	x	x	x	x	x	x	x	x	x	x	x		x		x
	BKGD-SED-12	BKGD-SED-12 (0.0-0.2m)	4/27/2018	Marine	-	5058666.97	530713.96	x	x	x	x	x		x	x	x	x	x		x		x
	BKGD-SED-13	BKGD-SED-13 (0.0-0.2m)	4/27/2018	Marine	-	5058655.98	530766.01	x	x	x	x	x		x	x	x	x	x		x		x
	BKGD-SED-14	BKGD-SED-14 (0.0-0.2m)	4/27/2018	Marine	-	5058641.32	530801.58	x	x	x	x	x		x	x	x	x	x		x		x
	BKGD-SED-15	BKGD-SED-15 (0.0-0.2m)	4/27/2018	Marine	-	5058690.23	530840.64	x	x	x	x	x		x	x	x	x	x		x		x
Former Settling Ponds 2 & 3	FSP2-SED-8	FSP2-SED-8-1 (0.15-0.55m)	4/23/2018	Freshwater	-	5055945.67	526014.78		x	x	x	x	x	x	x	x	x	x		x		x
	FSP2-SED-8	FSP2-SED-8-2 (0.6-0.9m)	4/23/2018	Freshwater	-	5055945.67	526014.78	x	x	x	x	x		x	x	x	x	x		x		x
	FSP2-SED-9	FSP2-SED-9-1 (0.0-0.4m)	4/24/2018	Freshwater	-	5055933.34	526232.34		x	x	x	x		x	x	x	x	x		x		x
	FSP2-SED-9	FSP2-SED-9-2 (0.45-0.85m)	4/24/2018	Freshwater	-	5055933.34	526232.34	x	x	x	x	x		x	x	x	x	x		x		x
	FSP2-SED-10	FSP2-SED-10 (1.0-1.2m)	4/24/2018	Freshwater	FSP2-SED-4	5055593.77	525818.19				x							x		x		
	FSP3-SED-7	FSP3-SED-7-1 (0.0-0.3m)	4/25/2018	Freshwater	FSP3-SED-1	5056672.4	526154.6		x	x	x	x				x	x	x		x		x
	FSP3-SED-7	FSP3-SED7-2 (0.4-0.9m) & FSP3-SED-DUP2	4/25/2018	Freshwater	FSP3-SED-1	5056672.4	526154.6	x[1]	x	x	x	x	x[1]	x[1]	x	x	x	x		x		x
Northumberland Strait	NS-SED-3	NS-SED-3 (0.0-0.2m) & NS-SED-DUP2	4/30/2018	Marine	West of Estuary	5058249.05	528034.11				x		x[1]					x		x		
	NS-SED-4	NS-SED-4 (0.0-0.2m)	4/30/2018	Marine	NS-SED-1	5058197.6	528083.71				x							x		x		
	NS-SED-5	NS-SED-5 (0.0-0.2m)	4/30/2018	Marine	NS-SED-1	5058207.64	528164.92				x							x		x		
	NS-SED-6	NS-SED-6 (0.0-0.2m)	4/30/2018	Marine	NS-SED-2	5058343.24	528261.02				x							x		x		
	NS-SED-7	NS-SED-7 (0.0-0.2m)	4/30/2018	Marine	NS-SED-2	5058427.66	528282.5				x							x		x		
Sludge Disposal Cell	SDC-SED-3	SDC-SED-3-1 (0.05-0.25m)	4/26/2018	Marine	SDC-SED-2	5055606.17	527133.03		x	x	x	x	x		x	x	x	x		x		x
	SDC-SED-3	SDC-SED-3-2 (0.25-0.45m)	4/26/2018	Marine	SDC-SED-2	5055606.17	527133.03	x	x	x	x	x		x	x	x	x	x		x		x

Table 1

Sample Identification Key
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC	Sample Location ID	Sample Identification	Sample Date	Criteria Designation (Freshwater / Marine)	Delineated Location ID	Coordinates [2]		Parameters																
						Northing	Easting	Chlorate/Chlorite	Cyanide	Dioxins/Furans	Fraction of Organic Carbon	General Chemistry/Metals/Mercury	Grain Size	Hydrogen Sulfide	Phenols	Polychlorinated Biphenyls	Polycyclic Aromatic Hydrocarbons	Petroleum Hydrocarbons	Resin/Fatty Acids	Silica Gel Cleanup	MTBE Only	Volitile Organic Compounds
Soil																						
Boat Harbour Stabilization Lagoon	BHSL-MW-5	BHSL-MW-5 (1.2-1.8m) & BHSL-MW-DUP2	4/6/2018	-	-	5057310.44	526906.85		x	x		x			x	x	x	x				x
	BHSL-MW-6	BHSL-MW-6 (3.7-4.3m)	4/5/2018	-	-	5056910.14	527093.8		x	x		x			x	x	x	x				x
	BHSL-MW-7	BHSL-MW-7 (3.7-4.3m)	4/5/2018	-	-	5056985.81	527597.69		x	x		x			x	x	x	x				x
	BHSL-MW-8	BHSL-MW-8 (3.0-3.7m)	4/5/2018	-	-	5057358.24	527713.55		x	x		x			x	x	x	x				x
	BHSL-MW-9	BHSL-MW-9 (1.8-2.4m)	4/4/2018	-	-	5056024.46	527194.28											x				
	BHSL-MW-9	BHSL-MW-9 (3.7-4.3m)	4/4/2018	-	-	5056024.46	527194.28		x	x		x			x	x	x	x				x
	BHSL-BH-4	BHSL-BH-4 (4.3-4.8m)	4/10/2018	-	BHSL-BH-2	5057120	528043					x										
	BHSL-BH-5	BHSL-BH-5 (2.4-3.0m)	4/6/2018	-	BHSL-MW-1	5056969.17	526451.09					x										
	BHSL-BH-6	BHSL-BH-6 (2.4-3.0m)	4/26/2018	-	BHSL-MW-2	5057309	526533					x										
	BHSL-S-4	BHSL-S-4 (0.0-0.2m)	4/6/2018	-	BHSL-MW-11	5056602.66	527807.28					x									x	
	BHSL-S-5	BHSL-S-5 (1.8-2.4m)	4/6/2018	-	BHSL-MW-11	5056624.44	527831.74					x									x	
	BHSL-S-6	BHSL-S-6 (0.0-0.2m)	4/10/2018	-	BHSL-BH-2	5057120	528043					x										
	BHSL-S-7	BHSL-S-7 (0.0-0.2m)	4/6/2018	-	BHSL-MW-1	5056965.62	526469.12					x										
	BHSL-S-8	BHSL-S-8 (0.0-0.2m)	4/26/2018	-	BHSL-MW-2	5057309	526542					x										
Estuary	EST-MW-2	EST-MW-2 (4.3-4.9m)	4/9/2018	-	-	5057857.23	528005.05		x	x	x	x	x		x	x	x	x				x
	EST-MW-3	EST-MW-3 (1.8-2.4m)	4/10/2018	-	-	5058071.98	527963.54		x	x		x			x	x	x	x				x
Former Settling Ponds 2 & 3	FSP2-S-16	FSP2-S-16 (0.31-0.46m)	4/16/2018	-	FSP2-S-5	5055843.34	526400.34														x	
	FSP2-S-17	FSP2-S-17 (0.31-0.46m)	4/16/2018	-	FSP2-S-5	5055837.06	526395.52														x	
	FSP3-S-8	FSP3-S-8 (0.0-0.2m)	4/12/2018	-	FSP3-MW-1	5056679.93	525854.21														x	
	FSP3-BH-1	FSP3-BH-1 (3.1-3.7m)	4/12/2018	-	FSP3-MW-1	5056685.26	525855.54														x	
Mill Air Emissions	MAE-SS-11	MAE-SS-11 (0.0-0.15m) & MAE-SS-DUP1	4/16/2018	-	MAE-SS-1	5056355.19	525416.96					x						x				
	MAE-SS-12	MAE-SS-12 (0.0-0.15m)	4/16/2018	-	MAE-SS-1	5056350	525440					x						x				
	MAE-SS-13	MAE-SS-13 (0.0-0.15m)	4/17/2018	-	MAE-SS-3	5055165.7	525919.04														x	
	MAE-SS-14	MAE-SS-14 (0.0-0.15m)	4/17/2018	-	MAE-SS-3	5055182.92	525911.4														x	
	MAE-SS-15	MAE-SS-15 (0.0-0.15m)	4/17/2018	-	MAE-SS-6	5056632.86	527927.89														x	
	MAE-SS-16	MAE-SS-16 (0.0-0.15m)	4/17/2018	-	MAE-SS-6	5056636.62	527935.54														x	
	MAE-SS-17	MAE-SS-17 (0.0-0.15m) & MAE-SS-DUP2	4/16/2018	-	MAE-SS-9	5057098.16	526062.44														x	
	MAE-SS-18	MAE-SS-18 (0.0-0.15m)	4/16/2018	-	MAE-SS-9	5057096.14	526070.03														x	
	MAE-SS-19	MAE-SS-19 (0.0-0.15m)	4/16/2018	-	MAE-SS-10	5056799.11	525786.08					x										
	MAE-SS-20	MAE-SS-20 (0.0-0.15m)	4/16/2018	-	MAE-SS-10	5056794.69	525800.75					x										
Twin Settling Basins	TSB-S-1	TSB-S-1 (0.0-0.2m)	4/11/2018	-	-	5056386.25	525524.5					x										
	TSB-BH-3	TSB-BH-3 (2.4-3.0m)	4/11/2018	-	-	5056388.15	525520.3					x										
	TSB-S-2	TSB-S-2 (0.0-0.2m)	4/12/2018	-	-	5056257.36	525677.01					x										
	TSB-BH-4	TSB-BH-4 (1.8-2.4m)	4/12/2018	-	-	5056260.83	525677.90					x										

Table 1

Sample Identification Key
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC	Sample Location ID	Sample Identification	Sample Date	Criteria Designation (Freshwater / Marine)	Delineated Location ID	Coordinates [2]		Parameters															
						Northing	Easting	Chlorate/Chlorite	Cyanide	Dioxins/Furans	Fraction of Organic Carbon	General Chemistry/Metals/Mercury	Grain Size	Hydrogen Sulfide	Phenols	Polychlorinated Biphenyls	Polycyclic Aromatic Hydrocarbons	Petroleum Hydrocarbons	Resin/Fatty Acids	Silica Gel Cleanup	MTBE Only	Volitile Organic Compounds
Groundwater																							
Boat Harbour Stabilization Lagoon	BHSL-MW-5	BHSL-MW5	4/19/2018	Marine ≤10 m	-	5057310.44	526906.860		x	x		x			x	x	x	x				x
	BHSL-MW-6	BHSL-MW6	4/19/2018	Marine ≤10 m	-	5056910.140	527093.800		x	x		x			x	x	x	x				x
	BHSL-MW-7	BHSL-MW7 & BHSL-DUP2	4/19/2018	Marine ≤10 m	-	5056985.810	527597.690		x	x		x			x	x	x	x				x
	BHSL-MW-8	BHSL-MW8	4/19/2018	Marine ≤10 m	-	5057358.240	527713.550		x	x		x			x	x	x	x				x
	BHSL-MW-9	BHSL-MW9	4/20/2018	Marine ≤10 m	-	5056024.460	527194.280		x	x		x			x	x	x	x				x
Estuary	EST-MW-2	EST-MW-2	4/20/2018	Marine >10 m	-	5057857.230	528005.050		x	x		x			x	x	x	x				x
	EST-MW-3	EST-MW-3	4/20/2018	Marine >10 m	-	5058071.980	527963.540		x	x		x			x	x	x	x				x
Surface Water																							
Background (Chance harbour Lake)	BKGD-SW-6	BKGD-SW-6 & BKGD-SW-DUP2	4/18/2018	Freshwater	-	5057622.1	530306.98	x	x			x		x	x		x	x	x			x
	BKGD-SW-7	BKGD-SW-7	4/18/2018	Freshwater	-	5057473.07	530330.4	x	x			x		x	x		x	x	x			x
	BKGD-SW-8	BKGD-SW-8	4/18/2018	Freshwater	-	5057492.65	530403.19	x	x			x		x	x		x	x	x			x
	BKGD-SW-9	BKGD-SW-9	4/18/2018	Freshwater	-	5057321.05	530373.77	x	x			x		x	x		x	x	x			x
	BKGD-SW-10	BKGD-SW-10	4/18/2018	Freshwater	-	5057365.55	53048933	x	x			x		x	x		x	x	x			x
Sludge Disposal Cell	SDC-SW-4	SDC-SW-4	4/18/2018	Marine	SDC-SW-3	5055669.31	527141.89	x	x			x		x	x		x	x	x			x

Notes:
[1] Analyses requested on parent sample only
[2] Coordinate System: NAD 1983 CSRS UTM Zone 20N; Surveyed with handheld sub-metre GPS
x Analysis Requested

Table 2

Summary of Hydraulic Monitoring Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC	Monitoring Well	Hydrogeological Unit	April 19-20, 2018			
			Ground Surface Elevation (mAMSL)	Top of Riser Elevation (mAMSL)	Groundwater Depth (m btr)	Groundwater Elevation (mAMSL)
Boat Harbour Stabilization Lagoon	BHSL-MW5	Overburden	Not Surveyed	Not Surveyed	2.993	-
	BHSL-MW6	Overburden	Not Surveyed	Not Surveyed	2.228	-
	BHSL-MW7	Overburden	Not Surveyed	Not Surveyed	2.373	-
	BHSL-MW8	Overburden	Not Surveyed	Not Surveyed	2.196	-
	BHSL-MW9	Overburden	Not Surveyed	Not Surveyed	0.795	-
Estuary	EST-MW2	Overburden	Not Surveyed	Not Surveyed	1.777	-
	EST-MW3	Overburden	Not Surveyed	Not Surveyed	1.015	-

Notes:
Overburden - Overburden indicates the monitoring well is screened in the overburden hydrogeological unit
Not Surveyed - Well not surveyed due to either tree cover; Groundwater elevations could not be calculated
mAMSL - Metres above mean sea level
m btr - Metres below top of riser
"-" - Insufficient data

Table 3

Sediment Analytical Results - Marine
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:					Background - Northumberland Strait (BKGD)					Northumberland Strait (NS)	
Delineated Sample Location:										West of Estuary	
Sample Location:					BKGD-SED-11	BKGD-SED-12	BKGD-SED-13	BKGD-SED-14	BKGD-SED-15	NS-SED-3	NS-SED-3
Sample ID:					BKGD-SED-11 (0.0-0.2m)	BKGD-SED-12 (0.0-0.2m)	BKGD-SED-13 (0.0-0.2m)	BKGD-SED-14 (0.0-0.2m)	BKGD-SED-15 (0.0-0.2m)	NS-SED-3 (0.0-0.2m)	NS-SED-DUP2
Sample Date:		Marine Sediment Criteria			27-Apr-18	27-Apr-18	27-Apr-18	27-Apr-18	27-Apr-18	30-Apr-18	30-Apr-18
Sample Depth (m):					0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2
Sample Matrix:		Provincial Ecological	Federal ESB	Provincial Human Health	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sample Type:		a	b	c	Original	Original	Original	Original	Original	Original	Duplicate
Parameters	**Units**										
Metals											
Aluminum	mg/kg			15400	2200	2500	1900	1300	1800	--	--
Antimony	mg/kg			7.5	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--
Arsenic	mg/kg	41.6		31	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--
Barium	mg/kg			10000	19	10	8.2	ND(5.0)	8.8	--	--
Beryllium	mg/kg			38	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--
Bismuth	mg/kg				ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--
Boron	mg/kg			4300	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	--	--
Cadmium	mg/kg	4.2		1.4	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	--	--
Chromium	mg/kg	160		220	4.1	4.6	3.3	2.3	3.2	--	--
Cobalt	mg/kg			22	2.1	2.5	1.9	1.4	1.7	--	--
Copper	mg/kg	108		1100	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--
Iron	mg/kg			11000	5700	6400	4700	3400	4500	--	--
Lead	mg/kg	112		140	2.2	3.1	1.8	1.5	1.7	--	--
Lithium	mg/kg				5.6	6.8	5.3	3.2	5.1	--	--
Manganese	mg/kg				130	180	160	110	130	--	--
Mercury	mg/kg	0.7		6.6	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	--	--
Molybdenum	mg/kg			110	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--
Nickel	mg/kg			330	4.0	4.7	3.7	2.3	3.7	--	--
Rubidium	mg/kg				ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--
Selenium	mg/kg			80	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	--	--
Silver	mg/kg	2.2		77	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	--	--
Strontium	mg/kg			9400	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	5.5	--	--
Thallium	mg/kg			1	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	--	--
Tin	mg/kg			9400	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--
Uranium	mg/kg			23	0.17	0.17	0.13	0.11	0.20	--	--
Vanadium	mg/kg			39	5.6	5.7	4.5	3.5	4.1	--	--
Zinc	mg/kg	271		5600	20	17	13	9.6	13	--	--
Polychlorinated Biphenyls (PCBs)											
Aroclor-1016 (PCB-1016)	mg/kg	0.189			ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	--	--
Aroclor-1221 (PCB-1221)	mg/kg	0.189			ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	--	--
Aroclor-1232 (PCB-1232)	mg/kg	0.189			ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	--	--
Aroclor-1242 (PCB-1242)	mg/kg	0.189			ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	--	--
Aroclor-1248 (PCB-1248)	mg/kg	0.189			ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	--	--
Aroclor-1254 (PCB-1254)	mg/kg	0.189			ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	--	--
Aroclor-1260 (PCB-1260)	mg/kg	0.189			ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	--	--
Total PCB	mg/kg	0.189			ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	--	--
Petroleum Hydrocarbons (PHCs)											
Benzene	mg/kg	1.2		66	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
Toluene	mg/kg	1.4		20000	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
Ethylbenzene	mg/kg	1.2		9300	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
Xylenes (total)	mg/kg	1.3		140000	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Total Petroleum Hydrocarbons (C6-C10) Less BTEX	mg/kg	15-500 [1]		See Modified TPH	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)
Total Petroleum hydrocarbons (>C10-C16)	mg/kg	25-500 [1]		See Modified TPH	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Total Petroleum Hydrocarbons (>C16-C21)	mg/kg	43-500 [1]		See Modified TPH	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Total Petroleum Hydrocarbons (>C21-C32)	mg/kg	43-500 [1]		See Modified TPH	ND(15)	ND(15)	ND(15)	ND(15)	ND(15)	100[a]	100[a]
Total Petroleum Hydrocarbons (Modified TPH)	mg/kg	500		15000/8600/14000	ND(15)	ND(15)	ND(15)	ND(15)	ND(15)	100	100
Polycyclic Aromatic Hydrocarbons (PAHs)											
1-Methylnaphthalene	mg/kg	0.201		72	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
2-Methylnaphthalene	mg/kg	0.201		72	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Acenaphthene	mg/kg	0.0889		5300	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Acenaphthylene	mg/kg	0.128		78	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Anthracene	mg/kg	0.245		24000	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Benzo fluoranthenes	mg/kg				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	--	--
Benzo(a)anthracene	mg/kg	0.693			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Benzo(a)pyrene	mg/kg	0.763			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Benzo(b)fluoranthene	mg/kg	4.5			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Benzo(g,h,i)perylene	mg/kg	3.2			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Benzo(j)fluoranthene	mg/kg	4.5			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Benzo(k)fluoranthene	mg/kg	4.5			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Chrysene	mg/kg	0.846			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Dibenz(a,h)anthracene	mg/kg	0.135			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Fluoranthene	mg/kg	1.494		3500	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Fluorene	mg/kg	0.144		2700	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Indeno(1,2,3-cd)pyrene	mg/kg	0.88			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Naphthalene	mg/kg	0.391		1800	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Perylene	mg/kg		3.1		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Phenanthrene	mg/kg	0.544			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--
Pyrene	mg/kg	1.398		2100	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--

Table 3

Sediment Analytical Results - Marine
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:					Background - Northumberland Strait (BKGD)					Northumberland Strait (NS)	
Delineated Sample Location:										West of Estuary	
Sample Location:					BKGD-SED-11	BKGD-SED-12	BKGD-SED-13	BKGD-SED-14	BKGD-SED-15	NS-SED-3	NS-SED-3
Sample ID:					BKGD-SED-11 (0.0-0.2m)	BKGD-SED-12 (0.0-0.2m)	BKGD-SED-13 (0.0-0.2m)	BKGD-SED-14 (0.0-0.2m)	BKGD-SED-15 (0.0-0.2m)	NS-SED-3 (0.0-0.2m)	NS-SED-DUP2
Sample Date:		Marine Sediment Criteria			27-Apr-18	27-Apr-18	27-Apr-18	27-Apr-18	27-Apr-18	30-Apr-18	30-Apr-18
Sample Depth (m):		Provincial	Federal	Provincial	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2
Sample Matrix:		Ecological	ESB	Human Health	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sample Type:		a	b	c	Original	Original	Original	Original	Original	Original	Duplicate
Parameters	**Units**										
Phenols											
2,3,4,5-Tetrachlorophenol	µg/g				ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
2,3,4,6-Tetrachlorophenol	µg/g		6.99		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
2,3,4-Trichlorophenol	µg/g				ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
2,3,5,6-Tetrachlorophenol	µg/g				ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
2,3,5-Trichlorophenol	µg/g				ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
2,3,6-Trichlorophenol	µg/g				ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
2,3-Dichlorophenol	µg/g				ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
2,4,5-Trichlorophenol	µg/g				ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
2,4,6-Trichlorophenol	µg/g		12.3		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
2,4-Dichlorophenol	µg/g		14.3		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
2,4-Dimethylphenol	µg/g				ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--
2,4-Dinitrophenol	µg/g				ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--
2,5-Dichlorophenol	µg/g				ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
2,6-Dichlorophenol	µg/g				ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
2-Chlorophenol	µg/g				ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
2-Methylphenol	µg/g				ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--
2-Nitrophenol	µg/g				ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--
3&4-Methylphenol	µg/g				ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--
3,4,5-Trichlorophenol	µg/g				ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
3,4-Dichlorophenol	µg/g				ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
3,5-Dichlorophenol	µg/g				ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
3/4-Chlorophenol	µg/g				ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
4,6-Dinitro-2-methylphenol	µg/g				ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--
4-Chloro-3-methylphenol	µg/g				ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--
4-Nitrophenol	µg/g				ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--
Pentachlorophenol	µg/g	0.1		93	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
Phenol	µg/g		62.1	1900	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--
Volitile Organic Compounds (VOCs)											
1,1,1-Trichloroethane	mg/kg	0.17		42000	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
1,1,2,2-Tetrachloroethane	mg/kg			40	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
1,1,2-Trichloroethane	mg/kg	0.17		140	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
1,1-Dichloroethane	mg/kg		7.91	840	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
1,1-Dichloroethene	mg/kg		6.34	1900	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
1,2-Dibromoethane (Ethylene dibromide)	mg/kg		9.91	2.2	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
1,2-Dichlorobenzene	mg/kg	0.05		16000	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
1,2-Dichloroethane	mg/kg		23	2800	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
1,2-Dichloropropane	mg/kg		13.1	220	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
1,3-Dichlorobenzene	mg/kg	0.05		420	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
1,4-Dichlorobenzene	mg/kg	0.09		4200	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Benzene	mg/kg	1.2		66	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Bromodichloromethane	mg/kg		8.21	130	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Bromoform	mg/kg	0.65		1000	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Bromomethane (Methyl bromide)	mg/kg		54.7	6.3	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
Carbon tetrachloride	mg/kg	1.2		27	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Chlorobenzene	mg/kg			16000	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Chloroethane	mg/kg		13.3		ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	--	--
Chloroform (Trichloromethane)	mg/kg		13	220	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
cis-1,2-Dichloroethene	mg/kg		7.96	630	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
cis-1,3-Dichloropropene	mg/kg		8.17	1.7	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Dibromochloromethane	mg/kg		29.5	760	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Ethylbenzene	mg/kg	1.2		9300	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
m&p-Xylenes	mg/kg			140000	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Methyl tert butyl ether (MTBE)	mg/kg			380	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Methylene chloride	mg/kg		29.5	990	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
o-Xylene	mg/kg			140000	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Styrene	mg/kg		11.1	2500	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Tetrachloroethene	mg/kg	0.53		530	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Toluene	mg/kg	1.4		20000	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
trans-1,2-Dichloroethene	mg/kg		10.34	420	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
trans-1,3-Dichloropropene	mg/kg		8.17	1.7	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Trichloroethene	mg/kg	1.6		28	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)	--	--
Trichlorofluoromethane (CFC-11)	mg/kg		5.61		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--
Vinyl chloride	mg/kg		16	71	ND(0.02)	ND(0.02)	ND(0.02)	ND(0.02)	ND(0.02)	--	--
Xylenes (total)	mg/kg	1.3		140000	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--
General Chemistry											
Ammonia-N	mg/kg				0.47	0.50	0.51	0.49	0.51	--	--
Chlorate	mg/kg				ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	--	--
Chloride	mg/kg				1700	1500	1600	1200	1700	--	--
Chlorite	mg/kg				ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	--	--
Conductivity	µS/cm				1300	1300	1300	970	1300	--	--
Cyanide (free)	mg/kg			29	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	--	--
Cyanide (total)	mg/kg			29	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	--	--
Fraction organic carbon (FOC)	g/g				0.00045	0.00052	0.00043	0.00042	0.00051	0.0028	0.0030
Hydrogen sulfide	mg/kg				ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	--	--
Moisture	%				22 D 21 D 22 D 20	21 D 21 D 23 D 23	22 D 19 D 22 D 22	21 D 22 D 21 D 20	19 D 21 D 19 D 21	18	18
Nitrite (as N)	mg/kg				ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	--
Nitrite/Nitrate	mg/kg				0.55	0.35	0.35	0.40	0.36	--	--
Orthophosphate	mg/kg				1.3	1.8	1.5	1.4	2.5	--	--
pH, soluble (5:1)	s.u.				6.95	7.18	7.31	7.18	7.38	--	--
Sulfate	mg/kg				240	210	200	180	220	--	--
Sulfide	µg/g				ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	--	--
Total organic carbon (TOC)	mg/kg				450	520	430	420	510	2800	3000

Table 3

Sediment Analytical Results - Marine
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:					Background - Northumberland Strait (BKGD)					Northumberland Strait (NS)	
Delineated Sample Location:										West of Estuary	
Sample Location:					BKGD-SED-11	BKGD-SED-12	BKGD-SED-13	BKGD-SED-14	BKGD-SED-15	NS-SED-3	NS-SED-3
Sample ID:					BKGD-SED-11 (0.0-0.2m)	BKGD-SED-12 (0.0-0.2m)	BKGD-SED-13 (0.0-0.2m)	BKGD-SED-14 (0.0-0.2m)	BKGD-SED-15 (0.0-0.2m)	NS-SED-3 (0.0-0.2m)	NS-SED-DUP2
Sample Date:	Marine Sediment Criteria				27-Apr-18	27-Apr-18	27-Apr-18	27-Apr-18	27-Apr-18	30-Apr-18	30-Apr-18
Sample Depth (m):	Provincial	Federal	Provincial		0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2
Sample Matrix:	Ecological	ESB	Human Health		Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sample Type:	a	b	c		Original	Original	Original	Original	Original	Original	Duplicate
Parameters	**Units**										
Dioxins and Furans											
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g				ND(0.106)	ND(0.127)	ND(0.120)	ND(0.102)	0.129	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g				ND(7.97)	7.30	7.70	5.53	8.49	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g				ND(0.0979)	ND(0.112)	ND(0.0932)	ND(0.0891)	ND(0.0661)	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g				0.215	0.217	0.200	0.755	0.482	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g				ND(0.126)	ND(0.132)	ND(0.111)	ND(0.106)	ND(0.0784)	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g				ND(0.0644)	ND(0.0551)	ND(0.0596)	ND(0.0387)	ND(0.0828)	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				ND(0.105)	ND(0.0861)	ND(0.119)	ND(0.116)	ND(0.0740)	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g				ND(0.0621)	ND(0.0559)	ND(0.0605)	ND(0.0393)	ND(0.0841)	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				ND(0.105)	ND(0.0892)	ND(0.123)	ND(0.120)	ND(0.0766)	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g				ND(0.0738)	ND(0.0639)	ND(0.0691)	ND(0.0448)	ND(0.0960)	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				ND(0.0977)	ND(0.0829)	ND(0.114)	ND(0.111)	ND(0.0713)	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g				ND(0.0944)	ND(0.115)	ND(0.105)	ND(0.109)	ND(0.0979)	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g				ND(0.0764)	ND(0.0699)	ND(0.0713)	ND(0.0916)	ND(0.0699)	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g				ND(0.0672)	ND(0.0596)	ND(0.0645)	ND(0.0419)	ND(0.0897)	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g				ND(0.0948)	ND(0.114)	ND(0.104)	ND(0.108)	ND(0.0970)	--	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g				0.169	0.0925	ND(0.0751)	ND(0.0736)	ND(0.122)	--	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g				ND(0.0983)	ND(0.0595)	ND(0.0522)	ND(0.0650)	ND(0.0584)	--	--
Total heptachlorodibenzofuran (HpCDF)	pg/g				ND(0.110)	ND(0.121)	ND(0.101)	ND(0.0967)	0.108	--	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g				0.732	0.572	0.585	2.05	2.65	--	--
Total hexachlorodibenzofuran (HxCDF)	pg/g				ND(0.0666)	ND(0.0584)	ND(0.0632)	ND(0.0410)	ND(0.0878)	--	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				ND(0.102)	ND(0.108)	0.150	0.474	0.169	--	--
Total pentachlorodibenzofuran (PeCDF)	pg/g				ND(0.0946)	ND(0.114)	ND(0.104)	ND(0.108)	ND(0.0975)	--	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g				ND(0.0764)	ND(0.0699)	ND(0.0713)	ND(0.0916)	ND(0.0699)	--	--
Total tetrachlorodibenzofuran (TCDF)	pg/g				0.169	0.0925	ND(0.0751)	ND(0.0736)	ND(0.122)	--	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g				ND(0.0983)	ND(0.0595)	ND(0.0522)	ND(0.0650)	ND(0.0584)	--	--
Total TEQ-Human/Mammal	pg/g	21.5		4	0.287	0.232	0.233	0.262	0.239	--	--
Grain Size											
Clay	%				1.3	--	--	--	--	1.3	--
Grain Size <1000um	%				100	--	--	--	--	98	--
Grain Size <120um	%				4.5	--	--	--	--	9.3	--
Grain Size <16um	%				1.3	--	--	--	--	1.4	--
Grain Size <2.0um	%				1.2	--	--	--	--	1.2	--
Grain Size <2000um	%				100	--	--	--	--	100	--
Grain Size <250um	%				50	--	--	--	--	47	--
Grain Size <3.9um	%				1.3	--	--	--	--	1.3	--
Grain Size <31um	%				1.4	--	--	--	--	1.5	--
Grain Size <500um	%				99	--	--	--	--	87	--
Grain Size <62um	%				1.4	--	--	--	--	1.8	--
Grain Size <7.8um	%				1.2	--	--	--	--	1.3	--
Gravel	%				ND(0.10)	--	--	--	--	0.33	--
Sand	%				99	--	--	--	--	98	--
Silt	%				ND(0.10)	--	--	--	--	0.50	--

Notes:

100[a] Exceeds applicable criteria; superscript identifies which criteria is exceeded

Provincial Ecological[a] - Nova Scotia Contaminated Sites Regulation Table A1 Reference Tables for Pathway Specific Standards for Marine Sediment

Federal ESB[b] - Where provincial guidelines are not available, guidelines for organic compounds in sediment were developed based on the Equilibrium Partitioning Sediment Benchmarks (ESBs)

Provincial Human Health[c] - Nova Scotia Contaminated Sites Regulation Table A4 References for Pathway Specific Standards for Agricultural Soil (Soil Contact/Ingestion Pathway)

BTEX - Benzene, Toluene, Ethylbenzene, and total Xylenes

ND (2.0) - Not detected at the associated reporting limit

(1) - The associated Total Petroleum Guidline is calculated based on the Fraction of Organic Carbon concentration

J - The associated value is an estimated concentration

D - The associated value is a confirmatory or duplicate concentration

"--" - Parameter not analysed

Table 3

Sediment Analytical Results - Marine
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:					Northumberland Strait (NS)							Sludge Disposal Cell (SDC)		
Delineated Sample Location:					**NS-SED-1**		**NS-SED-1**			**NS-SED-2**				
Sample Location:					NS-SED-1	NS-SED-1	NS-SED-4	NS-SED-5	NS-SED-2	NS-SED-6	NS-SED-7	SDC-SED-2	SDC-SED-3	SDC-SED-3
Sample ID:					NS-SED-1 (0.0-0.15m)	NS-SED-DUP	NS-SED-4 (0.0-0.2m)	NS-SED-5 (0.0-0.2m)	NS-SED-2 (0.0-0.15m)	NS-SED-6 (0.0-0.2m)	NS-SED-7 (0.0-0.2m)	SDC-SED-2-1 (0.0-0.5m)	SDC-SED-3-1 (0.05-0.25m)	SDC-SED-3-2 (0.25-0.45m)
Sample Date:		**Marine Sediment Criteria**			20-Nov-17	20-Nov-17	30-Apr-18	30-Apr-18	20-Nov-17	30-Apr-18	30-Apr-18	10-Nov-17	26-Apr-18	26-Apr-18
Sample Depth (m):		**Provincial**	**Federal**	**Provincial**	0.0-0.15	0.0-0.15	0.0-0.2	0.0-0.2	0.0-0.15	0.0-0.2	0.0-0.2	0.0-0.5	0.05-0.25	0.25-0.45
Sample Matrix:		**Ecological**	**ESB**	**Human Health**	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sample Type:		a	b	c	Original	Duplicate	Original	Original	Original	Original	Original	Original	Original	Original
Parameters	**Units**													
Metals														
Aluminum	mg/kg			15400	3000	2400	--	--	3100	--	--	32000[c]	5300	12000
Antimony	mg/kg			7.5	ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--	ND(2.0)	ND(2.0)	ND(2.0)
Arsenic	mg/kg	41.6		31	ND(2.0)	3.3	--	--	3.2	--	--	3.8	ND(2.0)	6.1
Barium	mg/kg			10000	20	14	--	--	27	--	--	1600	320	480
Beryllium	mg/kg			38	ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--	2.1	ND(2.0)	ND(2.0)
Bismuth	mg/kg				ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--	ND(2.0)	ND(2.0)	ND(2.0)
Boron	mg/kg			4300	ND(50)	ND(50)	--	--	ND(50)	--	--	ND(50)	ND(50)	ND(50)
Cadmium	mg/kg	4.2		1.4	ND(0.30)	ND(0.30)	--	--	ND(0.30)	--	--	0.69	ND(0.30)	ND(0.30)
Chromium	mg/kg	160		220	4.8	4.0	--	--	5.2	--	--	44	7.9	24
Cobalt	mg/kg			22	2.7	2.2	--	--	3.1	--	--	9.0	4.1	13
Copper	mg/kg	108		1100	2.5	2.4	--	--	ND(2.0)	--	--	18	2.7	18
Iron	mg/kg			11000	6700	6000	--	--	8000	--	--	11000	7400	30000[c]
Lead	mg/kg	112		140	2.7	3.2	--	--	3.7	--	--	25	6.3	22
Lithium	mg/kg				8.8	6.6	--	--	9.4	--	--	70	13	32
Manganese	mg/kg				440	340	--	--	300	--	--	290	230	370
Mercury	mg/kg	0.7		6.6	ND(0.10)	ND(0.10)	--	--	ND(0.10)	--	--	0.82[a]	ND(0.10)	ND(0.10)
Molybdenum	mg/kg			110	ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--	ND(2.0)	ND(2.0)	ND(2.0)
Nickel	mg/kg			330	5.6	4.7	--	--	5.9	--	--	24	7.9	29
Rubidium	mg/kg				2.5	2.1	--	--	2.1	--	--	18	6.3	11
Selenium	mg/kg			80	ND(1.0)	ND(1.0)	--	--	ND(1.0)	--	--	2.0	ND(1.0)	ND(1.0)
Silver	mg/kg	2.2		77	ND(0.50)	ND(0.50)	--	--	ND(0.50)	--	--	0.99	ND(0.50)	ND(0.50)
Strontium	mg/kg			9400	8.3	8.0	--	--	5.5	--	--	21	ND(5.0)	9.8
Thallium	mg/kg			1	ND(0.10)	ND(0.10)	--	--	ND(0.10)	--	--	0.38	ND(0.10)	0.11
Tin	mg/kg			9400	ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--	ND(2.0)	ND(2.0)	ND(2.0)
Uranium	mg/kg			23	0.19	0.16	--	--	0.22	--	--	22	0.74	0.87
Vanadium	mg/kg			39	4.3	3.3	--	--	6.2	--	--	15	5.6	21
Zinc	mg/kg	271		5600	23	19	--	--	24	--	--	110	29	91
Polychlorinated Biphenyls (PCBs)														
Aroclor-1016 (PCB-1016)	mg/kg	0.189			ND(0.010)	ND(0.010)	--	--	ND(0.010)	--	--	ND(0.010)	ND(0.010)	ND(0.010)
Aroclor-1221 (PCB-1221)	mg/kg	0.189			ND(0.010)	ND(0.010)	--	--	ND(0.010)	--	--	ND(0.010)	ND(0.010)	ND(0.010)
Aroclor-1232 (PCB-1232)	mg/kg	0.189			ND(0.010)	ND(0.010)	--	--	ND(0.010)	--	--	ND(0.010)	ND(0.010)	ND(0.010)
Aroclor-1242 (PCB-1242)	mg/kg	0.189			ND(0.010)	ND(0.010)	--	--	ND(0.010)	--	--	ND(0.010)	ND(0.010)	ND(0.010)
Aroclor-1248 (PCB-1248)	mg/kg	0.189			ND(0.010)	ND(0.010)	--	--	ND(0.010)	--	--	ND(0.010)	ND(0.010)	ND(0.010)
Aroclor-1254 (PCB-1254)	mg/kg	0.189			ND(0.010)	ND(0.010)	--	--	ND(0.010)	--	--	ND(0.010)	ND(0.010)	ND(0.010)
Aroclor-1260 (PCB-1260)	mg/kg	0.189			ND(0.010)	ND(0.010)	--	--	ND(0.010)	--	--	ND(0.010)	ND(0.010)	ND(0.010)
Total PCB	mg/kg	0.189			ND(0.010)	ND(0.010)	--	--	ND(0.010)	--	--	ND(0.010)	ND(0.010)	ND(0.010)
Petroleum Hydrocarbons (PHCs)														
Benzene	mg/kg	1.2		66	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
Toluene	mg/kg	1.4		20000	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
Ethylbenzene	mg/kg	1.2		9300	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
Xylenes (total)	mg/kg	1.3		140000	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Total Petroleum Hydrocarbons (C6-C10) Less BTEX	mg/kg	15-500 [(1)]		See Modified TPH	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)
Total Petroleum hydrocarbons (>C10-C16)	mg/kg	25-500 [(1)]		See Modified TPH	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Total Petroleum Hydrocarbons (>C16-C21)	mg/kg	43-500 [(1)]		See Modified TPH	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Total Petroleum Hydrocarbons (>C21-C32)	mg/kg	43-500 [(1)]		See Modified TPH	59[a]	60[a]	100[a]	150[a]	54[a]	97[a]	71[a]	62	30	ND(15)
Total Petroleum Hydrocarbons (Modified TPH)	mg/kg	500		15000/8600/14000	59	60	100	150	54	97	71	62	30	ND(15)
Polycyclic Aromatic Hydrocarbons (PAHs)														
1-Methylnaphthalene	mg/kg	0.201		72	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
2-Methylnaphthalene	mg/kg	0.201		72	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Acenaphthene	mg/kg	0.0889		5300	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Acenaphthylene	mg/kg	0.128		78	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Anthracene	mg/kg	0.245		24000	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Benzo fluoranthenes	mg/kg				ND(0.010)	ND(0.010)	--	--	ND(0.010)	--	--	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(a)anthracene	mg/kg	0.693			ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Benzo(a)pyrene	mg/kg	0.763			ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Benzo(b)fluoranthene	mg/kg	4.5			ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Benzo(g,h,i)perylene	mg/kg	3.2			ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Benzo(j)fluoranthene	mg/kg	4.5			ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Benzo(k)fluoranthene	mg/kg	4.5			ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Chrysene	mg/kg	0.846			ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Dibenz(a,h)anthracene	mg/kg	0.135			ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Fluoranthene	mg/kg	1.494		3500	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Fluorene	mg/kg	0.144		2700	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Indeno(1,2,3-cd)pyrene	mg/kg	0.88			ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Naphthalene	mg/kg	0.391		1800	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Perylene	mg/kg		3.1		ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	0.23	0.024	ND(0.0050)
Phenanthrene	mg/kg	0.544			ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)
Pyrene	mg/kg	1.398		2100	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)

Table 3

Sediment Analytical Results - Marine
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:					Northumberland Strait (NS)							Sludge Disposal Cell (SDC)		
Delineated Sample Location:					NS-SED-1		NS-SED-1				NS-SED-2			
Sample Location:					NS-SED-1	NS-SED-1	NS-SED-4	NS-SED-5	NS-SED-2	NS-SED-6	NS-SED-7	SDC-SED-2	SDC-SED-3	SDC-SED-3
Sample ID:					NS-SED-1 (0.0-0.15m)	NS-SED-DUP	NS-SED-4 (0.0-0.2m)	NS-SED-5 (0.0-0.2m)	NS-SED-2 (0.0-0.15m)	NS-SED-6 (0.0-0.2m)	NS-SED-7 (0.0-0.2m)	SDC-SED-2-1 (0.0-0.5m)	SDC-SED-3-1 (0.05-0.25m)	SDC-SED-3-2 (0.25-0.45m)
Sample Date:		**Marine Sediment Criteria**			20-Nov-17	20-Nov-17	30-Apr-18	30-Apr-18	20-Nov-17	30-Apr-18	30-Apr-18	10-Nov-17	26-Apr-18	26-Apr-18
Sample Depth (m):		**Provincial**	**Federal**	**Provincial**	0.0-0.15	0.0-0.15	0.0-0.2	0.0-0.2	0.0-0.15	0.0-0.2	0.0-0.2	0.0-0.5	0.05-0.25	0.25-0.45
Sample Matrix:		**Ecological**	**ESB**	**Human Health**	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sample Type:		a	b	c	Original	Duplicate	Original	Original	Original	Original	Original	Original	Original	Original
Parameters	**Units**													
Phenols														
2,3,4,5-Tetrachlorophenol	µg/g				ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
2,3,4,6-Tetrachlorophenol	µg/g		6.99		ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
2,3,4-Trichlorophenol	µg/g				ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
2,3,5,6-Tetrachlorophenol	µg/g				ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
2,3,5-Trichlorophenol	µg/g				ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
2,3,6-Trichlorophenol	µg/g				ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
2,3-Dichlorophenol	µg/g				ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
2,4,5-Trichlorophenol	µg/g				ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
2,4,6-Trichlorophenol	µg/g		12.3		ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
2,4-Dichlorophenol	µg/g		14.3		ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
2,4-Dimethylphenol	µg/g				ND(0.2)	ND(0.2)	--	--	ND(0.2)	--	--	ND(2)	ND(0.1)	ND(0.1)
2,4-Dinitrophenol	µg/g				ND(0.2)	ND(0.2)	--	--	ND(0.2)	--	--	ND(2)	ND(0.1)	ND(0.1)
2,5-Dichlorophenol	µg/g				ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
2,6-Dichlorophenol	µg/g				ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
2-Chlorophenol	µg/g				ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
2-Methylphenol	µg/g				ND(0.2)	ND(0.2)	--	--	ND(0.2)	--	--	ND(2)	ND(0.1)	ND(0.1)
2-Nitrophenol	µg/g				ND(0.2)	ND(0.2)	--	--	ND(0.2)	--	--	ND(2)	ND(0.1)	ND(0.1)
3&4-Methylphenol	µg/g				ND(0.2)	ND(0.2)	--	--	ND(0.2)	--	--	ND(2)	ND(0.1)	ND(0.1)
3,4,5-Trichlorophenol	µg/g				ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
3,4-Dichlorophenol	µg/g				ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
3,5-Dichlorophenol	µg/g				ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
3/4-Chlorophenol	µg/g				ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
4,6-Dinitro-2-methylphenol	µg/g				ND(0.2)	ND(0.2)	--	--	ND(0.2)	--	--	ND(2)	ND(0.1)	ND(0.1)
4-Chloro-3-methylphenol	µg/g				ND(0.2)	ND(0.2)	--	--	ND(0.2)	--	--	ND(2)	ND(0.1)	ND(0.1)
4-Nitrophenol	µg/g				ND(0.2)	ND(0.2)	--	--	ND(0.2)	--	--	ND(2)	ND(0.1)	ND(0.1)
Pentachlorophenol	µg/g	0.1		93	ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--	ND(0.8)	ND(0.05)	ND(0.05)
Phenol	µg/g		62.1	1900	ND(0.2)	ND(0.2)	--	--	ND(0.2)	--	--	ND(2)	ND(0.1)	ND(0.1)
Volitile Organic Compounds (VOCs)														
1,1,1-Trichloroethane	mg/kg	0.17		42000	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
1,1,2,2-Tetrachloroethane	mg/kg			40	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
1,1,2-Trichloroethane	mg/kg	0.17		140	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
1,1-Dichloroethane	mg/kg		7.91	840	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
1,1-Dichloroethene	mg/kg		6.34	1900	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
1,2-Dibromoethane (Ethylene dibromide)	mg/kg		9.91	2.2	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
1,2-Dichlorobenzene	mg/kg	0.05		16000	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
1,2-Dichloroethane	mg/kg		23	2800	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
1,2-Dichloropropane	mg/kg		13.1	220	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
1,3-Dichlorobenzene	mg/kg	0.05		420	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
1,4-Dichlorobenzene	mg/kg	0.09		4200	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Benzene	mg/kg	1.2		66	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Bromodichloromethane	mg/kg		8.21	130	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Bromoform	mg/kg	0.65		1000	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Bromomethane (Methyl bromide)	mg/kg		54.7	6.3	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)
Carbon tetrachloride	mg/kg	1.2		27	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Chlorobenzene	mg/kg			16000	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Chloroethane	mg/kg		13.3		ND(0.2)	ND(0.2)	--	--	ND(0.2)	--	--	ND(0.2)	ND(0.2)	ND(0.2)
Chloroform (Trichloromethane)	mg/kg		13	220	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
cis-1,2-Dichloroethene	mg/kg		7.96	630	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
cis-1,3-Dichloropropene	mg/kg		8.17	1.7	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Dibromochloromethane	mg/kg		29.5	760	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Ethylbenzene	mg/kg	1.2		9300	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
m&p-Xylenes	mg/kg			140000	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Methyl tert butyl ether (MTBE)	mg/kg			380	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Methylene chloride	mg/kg		29.5	990	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
o-Xylene	mg/kg			140000	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Styrene	mg/kg		11.1	2500	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Tetrachloroethene	mg/kg	0.53		530	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Toluene	mg/kg	1.4		20000	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
trans-1,2-Dichloroethene	mg/kg		10.34	420	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
trans-1,3-Dichloropropene	mg/kg		8.17	1.7	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Trichloroethene	mg/kg	1.6		28	ND(0.01)	ND(0.01)	--	--	ND(0.01)	--	--	ND(0.01)	ND(0.01)	ND(0.01)
Trichlorofluoromethane (CFC-11)	mg/kg		5.61		ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)
Vinyl chloride	mg/kg		16	71	ND(0.02)	ND(0.02)	--	--	ND(0.02)	--	--	ND(0.02)	ND(0.02)	ND(0.02)
Xylenes (total)	mg/kg	1.3		140000	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)
General Chemistry														
Ammonia-N	mg/kg				ND(0.32)	ND(0.32)	--	--	0.36	--	--	2.9	0.080	ND(0.30)
Chlorate	mg/kg				ND(1.0)	ND(1.0)	--	--	ND(1.0)	--	--	--	--	ND(1.0)
Chloride	mg/kg				1900	2500	--	--	1600	--	--	21	120	14
Chlorite	mg/kg				ND(1.0)	ND(1.0)	--	--	ND(1.0)	--	--	--	--	ND(1.0)
Conductivity	µS/cm				1400	2000	--	--	1200	--	--	59	160	30
Cyanide (free)	mg/kg			29	ND(0.50)	ND(0.50)	--	--	ND(0.50)	--	--	ND(1.0)	ND(1.5)	ND(0.50)
Cyanide (total)	mg/kg			29	ND(0.50)	ND(0.50)	--	--	ND(0.50)	--	--	1.6	ND(1.5)	ND(1.5)
Fraction organic carbon (FOC)	g/g				0.0026	0.0023	0.0025	0.0042	0.0019	0.0032	0.0022	0.17	0.011	0.0015
Hydrogen sulfide	mg/kg				0.55	ND(0.50)	--	--	ND(0.50)	--	--	--	--	ND(0.50)
Moisture	%				19 D 18 D 17	18 D 18 D 19	18	18	22 D 22 D 22	22	22	69	17 D 28	17 D 27 D 16 D 19
Nitrite (as N)	mg/kg				ND(0.050)	ND(0.050)	--	--	ND(0.050)	--	--	ND(0.050)	ND(0.050)	0.19
Nitrite/Nitrate	mg/kg				0.75	1.4	--	--	0.55	--	--	ND(0.25)	3.9	1.4
Orthophosphate	mg/kg				2.5	1.9	--	--	1.1	--	--	0.85	0.059	0.053
pH, soluble (5:1)	s.u.				7.37	7.44	--	--	7.33	--	--	5.59	6.37	6.85
Sulfate	mg/kg				280	420	--	--	240	--	--	ND(10)	25	13
Sulfide	µg/g				0.51	ND(0.50)	--	--	ND(0.50) J	--	--	--	--	ND(0.50)
Total organic carbon (TOC)	mg/kg				2600	2300	2500	4200	1900	3200	2200	170000	11000	1500

Table 3

Sediment Analytical Results - Marine
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:					Northumberland Strait (NS)							Sludge Disposal Cell (SDC)		
Delineated Sample Location:					**NS-SED-1**		**NS-SED-1**							
Sample Location:					NS-SED-1	NS-SED-1	**NS-SED-4**	**NS-SED-5**	NS-SED-2	**NS-SED-6**	**NS-SED-7**	SDC-SED-2	**SDC-SED-3**	**SDC-SED-3**
Sample ID:					NS-SED-1 (0.0-0.15m)	NS-SED-DUP	**NS-SED-4 (0.0-0.2m)**	**NS-SED-5 (0.0-0.2m)**	NS-SED-2 (0.0-0.15m)	**NS-SED-6 (0.0-0.2m)**	**NS-SED-7 (0.0-0.2m)**	SDC-SED-2-1 (0.0-0.5m)	**SDC-SED-3-1 (0.05-0.25m)**	**SDC-SED-3-2 (0.25-0.45m)**
Sample Date:		**Marine Sediment Criteria**			20-Nov-17	20-Nov-17	**30-Apr-18**	**30-Apr-18**	20-Nov-17	**30-Apr-18**	**30-Apr-18**	10-Nov-17	**26-Apr-18**	**26-Apr-18**
Sample Depth (m):		**Provincial**	**Federal**	**Provincial**	0.0-0.15	0.0-0.15	**0.0-0.2**	**0.0-0.2**	0.0-0.15	**0.0-0.2**	**0.0-0.2**	0.0-0.5	**0.05-0.25**	**0.25-0.45**
Sample Matrix:		**Ecological**	**ESB**	**Human Health**	Sediment	Sediment	**Sediment**	**Sediment**	Sediment	**Sediment**	**Sediment**	Sediment	**Sediment**	**Sediment**
Sample Type:		a	b	c	Original	Duplicate	**Original**	**Original**	Original	**Original**	**Original**	Original	**Original**	**Original**
Parameters	**Units**													
Dioxins and Furans														
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g				0.683	0.412	--	--	ND(0.125)	--	--	ND(0.150)	ND(0.163)	ND(0.149)
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g				16.5	11.4	--	--	20.6	--	--	136	53.9	2.02
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g				ND(0.144)	0.235	--	--	ND(0.0917)	--	--	ND(0.739)	0.131	ND(0.0762)
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g				0.930	0.481	--	--	0.461	--	--	4.76	1.12	ND(0.142)
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g				ND(0.109)	ND(0.251)	--	--	ND(0.122)	--	--	ND(0.154)	ND(0.122)	ND(0.0904)
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g				ND(0.101)	0.238	--	--	ND(0.114)	--	--	ND(0.100)	ND(0.105)	ND(0.0564)
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				ND(0.114)	0.271	--	--	ND(0.0968)	--	--	ND(0.168)	ND(0.108)	ND(0.0764)
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g				ND(0.0987)	0.271	--	--	ND(0.111)	--	--	0.115	ND(0.101)	ND(0.0573)
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				ND(0.115)	0.260	--	--	ND(0.0974)	--	--	ND(0.165)	ND(0.109)	ND(0.0791)
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g				ND(0.121)	0.248	--	--	ND(0.136)	--	--	ND(0.116)	ND(0.120)	ND(0.0654)
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				ND(0.103)	0.325	--	--	ND(0.0871)	--	--	ND(0.236)	0.147 J	ND(0.0735)
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g				ND(0.0973)	ND(0.319)	--	--	ND(0.116)	--	--	ND(0.145)	ND(0.108)	ND(0.130)
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g				ND(0.144)	ND(0.289)	--	--	ND(0.0862)	--	--	ND(0.230)	ND(0.107)	ND(0.0884)
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g				ND(0.111)	0.260	--	--	ND(0.124)	--	--	ND(0.107)	ND(0.109)	ND(0.0611)
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g				ND(0.0968)	ND(0.247)	--	--	ND(0.115)	--	--	ND(0.149)	ND(0.108)	ND(0.129)
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g				ND(0.190)	0.392	--	--	0.114	--	--	ND(0.109)	ND(0.105)	ND(0.0707)
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g				ND(0.121)	0.231	--	--	ND(0.0712)	--	--	ND(0.175)	ND(0.118)	ND(0.0915)
Total heptachlorodibenzofuran (HpCDF)	pg/g				0.475	0.235	--	--	ND(0.105)	--	--	ND(0.739)	0.131	ND(0.0827)
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g				1.54	0.749	--	--	0.972	--	--	9.13	2.53	0.232
Total hexachlorodibenzofuran (HxCDF)	pg/g				ND(0.107)	1.02	--	--	ND(0.120)	--	--	0.277	ND(0.108)	ND(0.0598)
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				ND(0.110)	0.855	--	--	ND(0.0935)	--	--	2.71	0.683	ND(0.0763)
Total pentachlorodibenzofuran (PeCDF)	pg/g				ND(0.0971)	ND(0.318)	--	--	ND(0.116)	--	--	ND(0.253)	ND(0.141)	ND(0.129)
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g				ND(0.144)	0.289	--	--	ND(0.0862)	--	--	ND(0.230)	ND(0.107)	ND(0.0884)
Total tetrachlorodibenzofuran (TCDF)	pg/g				ND(0.190)	0.392	--	--	0.114	--	--	6.78	0.284	0.0921
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g				ND(0.121)	0.231	--	--	ND(0.0712)	--	--	1.31	ND(0.118)	ND(0.0915)
Total TEQ-Human/Mammal	pg/g	21.5		4	0.409	0.843	--	--	0.296	--	--	0.663	--	--
Grain Size														
Clay	%				--	--	--	--	1.9	--	--	--	20	--
Grain Size <1000um	%				--	--	--	--	100	--	--	--	96	--
Grain Size <120um	%				--	--	--	--	10	--	--	--	49	--
Grain Size <16um	%				--	--	--	--	2.1	--	--	--	32	--
Grain Size <2.0um	%				--	--	--	--	1.8	--	--	--	16	--
Grain Size <2000um	%				--	--	--	--	100	--	--	--	98	--
Grain Size <250um	%				--	--	--	--	54	--	--	--	67	--
Grain Size <3.9um	%				--	--	--	--	1.9	--	--	--	20	--
Grain Size <31um	%				--	--	--	--	2.3	--	--	--	38	--
Grain Size <500um	%				--	--	--	--	97	--	--	--	88	--
Grain Size <62um	%				--	--	--	--	2.3	--	--	--	40	--
Grain Size <7.8um	%				--	--	--	--	1.9	--	--	--	23	--
Gravel	%				--	--	--	--	ND(0.10)	--	--	--	1.6	--
Sand	%				--	--	--	--	98	--	--	--	59	--
Silt	%				--	--	--	--	0.31	--	--	--	20	--

Notes:

100[a] Exceeds applicable criteria; superscript identifies which criteria is exceeded

Provincial Ecological[a] - Nova Scotia Contaminated Sites Regulation Table A1 Reference Tables for Pathway Specific Standards for Marine Sediment

Federal ESB[b] - Where provincial guidelines are not available, guidelines for organic compounds in sediment were developed based on the Equilibrium Partitioning Sediment Benchmarks (ESBs)

Provincial Human Health[c] - Nova Scotia Contaminated Sites Regulation Table A4 References for Pathway Specific Standards for Agricultural Soil (Soil Contact/Ingestion Pathway)

BTEX - Benzene, Toluene, Ethylbenzene, and total Xylenes

ND (2.0) - Not detected at the associated reporting limit

(1) - The associated Total Petroleum Guidline is calculated based on the Fraction of Organic Carbon concentration

J - The associated value is an estimated concentration

D - The associated value is a confirmatory or duplicate concentration

"--" - Parameter not analysed

Table 4

Sediment Analytical Results - Freshwater
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:					**Former Settling Pond 2 (FSP2)**						
Delineated Sample Location:					**FSP2-SED-8**	**FSP2-SED-8**	**FSP2-SED-9**	**FSP2-SED-9**	FSP2-SED-4	**FSP2-SED-4** FSP2-SED-4	**FSP2-SED-10**
Sample Location:					**FSP2-SED-8-1 (0.15-0.55m)**	**FSP2-SED-8-2 (0.6-0.9m)**	**FSP2-SED-9-1 (0.0-0.4m)**	**FSP2-SED-9-2 (0.45-0.85m)**	FSP2-SED-4-1 (0.1-0.5m)	FSP2-SED-4-2 (0.5-1.0m)	**FSP2-SED-10 (1.0-1.2m)**
Sample ID:					**23-Apr-18**	**23-Apr-18**	**24-Apr-18**	**24-Apr-18**	3-Nov-17	3-Nov-17	**24-Apr-18**
Sample Date:		**Freshwater Sediment Criteria**			**0.15-0.55**	**0.6-0.9**	**0.0-0.4**	**0.45-0.85**	0.1-0.5	0.5-1.0	**1.0-1.2**
Sample Depth (m):		**Provincial**	**Federal**	**Provincial**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	Sediment	Sediment	**Sediment**
Sample Matrix:		**Ecological**	**ESB**	**Human Health**	**Original**	**Original**	**Original**	**Original**	Original	Original	**Original**
Sample Type:		a	b	c							
Parameters	**Units**										
Metals											
Aluminum	mg/kg			15400	4600	3300	3500	2900	10000	7300	--
Antimony	mg/kg	25		7.5	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--
Arsenic	mg/kg	17		31	2.5	ND(2.0)	ND(2.0)	ND(2.0)	6.3	4.2	--
Barium	mg/kg			10000	180	170	170	170	320	220	--
Beryllium	mg/kg			38	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--
Bismuth	mg/kg				ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--
Boron	mg/kg			4300	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	--
Cadmium	mg/kg	3.5		1.4	3.8[ac]	4.1[ac]	2.5[c]	1.9[c]	ND(0.30)	ND(0.30)	--
Chromium	mg/kg	90		220	58	90	38	63	23	16	--
Cobalt	mg/kg			22	4.0	2.5	2.7	2.6	11	9.1	--
Copper	mg/kg	197		1100	33	31	21	21	19	12	--
Iron	mg/kg	43766		11000	9900	6800	5800	6000	24000[c]	20000[c]	--
Lead	mg/kg	91.3		140	31	27	25	21	15	9.9	--
Lithium	mg/kg				7.2	4.6	4.6	5.2	28	21	--
Manganese	mg/kg	1100			1100	950	760	990	770	660	--
Mercury	mg/kg	0.486		6.6	0.35	2.0[a]	0.25	0.24	ND(0.10)	ND(0.10)	--
Molybdenum	mg/kg			110	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--
Nickel	mg/kg	75		330	28	39	18	17	26	20	--
Rubidium	mg/kg				4.9	3.4	3.3	3.3	11	6.1	--
Selenium	mg/kg	2		80	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	--
Silver	mg/kg	1		77	1.0	0.66	0.88	ND(0.50)	ND(0.50)	ND(0.50)	--
Strontium	mg/kg			9400	85	100	77	100	17	8.9	--
Thallium	mg/kg			1	0.40	0.24	0.31	0.19	ND(0.10)	ND(0.10)	--
Tin	mg/kg			9400	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--
Uranium	mg/kg			23	1.0	0.77	0.57	0.51	1.4	0.97	--
Vanadium	mg/kg			39	61[c]	94[c]	33	23	18	13	--
Zinc	mg/kg	315		5600	220	220	170	120	79	55	--
Polychlorinated Biphenyls (PCBs)											
Aroclor-1016 (PCB-1016)	mg/kg	0.277			ND(0.10)	ND(0.25)	ND(0.10)	ND(0.10)	ND(0.030)	ND(0.010)	--
Aroclor-1221 (PCB-1221)	mg/kg	0.277			ND(0.10)	ND(0.25)	ND(0.10)	ND(0.10)	ND(0.030)	ND(0.010)	--
Aroclor-1232 (PCB-1232)	mg/kg	0.277			ND(0.10)	ND(0.25)	ND(0.10)	ND(0.10)	ND(0.030)	ND(0.010)	--
Aroclor-1242 (PCB-1242)	mg/kg	0.277			ND(0.10)	ND(0.25)	ND(0.10)	ND(0.10)	ND(0.030)	ND(0.010)	--
Aroclor-1248 (PCB-1248)	mg/kg	0.277			ND(0.10)	ND(0.25)	ND(0.10)	ND(0.10)	ND(0.030)	ND(0.010)	--
Aroclor-1254 (PCB-1254)	mg/kg	0.277			ND(0.10)	ND(0.25)	ND(0.10)	ND(0.10)	ND(0.030)	ND(0.010)	--
Aroclor-1260 (PCB-1260)	mg/kg	0.277			ND(0.10)	ND(0.25)	ND(0.10)	ND(0.10)	ND(0.030)	ND(0.010)	--
Total PCB	mg/kg	0.277			ND(0.10)	ND(0.25)	ND(0.10)	ND(0.10)	ND(0.030)	ND(0.010)	--
Petroleum Hydrocarbons (PHCs)											
Benzene	mg/kg	1.2		66	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
Toluene	mg/kg	1.4		20000	1.5[a]	0.21	5.9[a]	2.0[a]	ND(0.025)	ND(0.025)	ND(0.025)
Ethylbenzene	mg/kg	1.2		9300	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
Xylenes (total)	mg/kg	1.3		140000	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Total Petroleum Hydrocarbons (C6-C10) Less BTEX	mg/kg	15-500 [(1)]		See Modified TPH	ND(2.5)	ND(2.5)	ND(2.5)	46	ND(2.5)	9.5	ND(2.5)
Total Petroleum hydrocarbons (>C10-C16)	mg/kg	25-500 [(1)]		See Modified TPH	74	350	280	520 •	ND(10)	ND(50)	ND(10)
Total Petroleum Hydrocarbons (>C16-C21)	mg/kg	43-500 [(1)]		See Modified TPH	360	1100[a]	850[a]	1800[a]	50[a]	110[a]	ND(10)
Total Petroleum Hydrocarbons (>C21-C32)	mg/kg	43-500 [(1)]		See Modified TPH	1100[a]	4100[a]	2100[a]	4200[a]	53[a]	260[a]	100
Total Petroleum Hydrocarbons (Modified TPH)	mg/kg	500		15000/8600/14000	1500[a]	5500[a]	3200[a]	6500[a]	100	370	100
Polycyclic Aromatic Hydrocarbons (PAHs)											
1-Methylnaphthalene	mg/kg	0.201		72	0.025	0.10	0.049	0.16	ND(0.0050)	ND(0.0050)	--
2-Methylnaphthalene	mg/kg	0.201		72	0.045	0.27[a]	0.11	ND(0.40)	0.010	ND(0.0050)	--
Acenaphthene	mg/kg	0.0889		5300	ND(0.0050)	0.15[a]	0.054	0.16[a]	ND(0.0050)	ND(0.0050)	--
Acenaphthylene	mg/kg	0.128		78	ND(0.0050)	ND(0.0050)	0.082	ND(0.0050)	ND(0.0050)	ND(0.0050)	--
Anthracene	mg/kg	0.245		24000	ND(0.0050)	0.19	0.42[a]	0.17	0.011	ND(0.0050)	--
Benzo fluoranthenes	mg/kg				ND(0.010)	ND(0.010)	ND(0.010)	0.033	ND(0.010)	ND(0.010)	--
Benzo(a)anthracene	mg/kg	0.385			ND(0.0050) J	0.028 J	ND(0.0050) J	0.095 J	ND(0.0050)	ND(0.0050)	--
Benzo(a)pyrene	mg/kg	0.782			ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	ND(0.0050)	ND(0.0050)	--
Benzo(b)fluoranthene	mg/kg	13.4			ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	0.033 J	ND(0.0050)	ND(0.0050)	--
Benzo(g,h,i)perylene	mg/kg	3.2			ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	ND(0.0050)	ND(0.0050)	--
Benzo(j)fluoranthene	mg/kg	13.4			ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	ND(0.0050)	ND(0.0050)	--
Benzo(k)fluoranthene	mg/kg	13.4			ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	ND(0.0050)	ND(0.0050)	--
Chrysene	mg/kg	0.862			0.021 J	0.028 J	ND(0.0050) J	0.12 J	0.012	ND(0.0050)	--
Dibenz(a,h)anthracene	mg/kg	0.135			ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	ND(0.0050)	ND(0.0050)	--
Fluoranthene	mg/kg	2.355		3500	0.19	0.69	0.25	1.1	0.039	ND(0.0050)	--
Fluorene	mg/kg	0.144		2700	0.031	0.27[a]	0.051	0.23[a]	0.012	ND(0.0050)	--
Indeno(1,2,3-cd)pyrene	mg/kg	3.2			ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	ND(0.0050)	ND(0.0050)	--
Naphthalene	mg/kg	0.391		1800	0.11	0.10	0.23	0.12	ND(0.0050)	ND(0.0050)	--
Perylene	mg/kg		3.1		ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	ND(0.0050) J	0.019	0.045	--
Phenanthrene	mg/kg	0.515			0.23	1.5[a]	0.40	1.4[a]	0.046	ND(0.0050)	--
Pyrene	mg/kg	0.875		2100	0.15	0.56	0.26	1.2[a]	0.043	ND(0.0050)	--

Table 4

Sediment Analytical Results - Freshwater
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC: **Former Settling Pond 2 (FSP2)**

Delineated Sample Location:												
Sample Location:					**FSP2-SED-8**	**FSP2-SED-8**	**FSP2-SED-9**	**FSP2-SED-9**	FSP2-SED-4	FSP2-SED-4	**FSP2-SED-4**	**FSP2-SED-10**
Sample ID:					**FSP2-SED-8-1 (0.15-0.55m)**	**FSP2-SED-8-2 (0.6-0.9m)**	**FSP2-SED-9-1 (0.0-0.4m)**	**FSP2-SED-9-2 (0.45-0.85m)**	FSP2-SED-4-1 (0.1-0.5m)	FSP2-SED-4-2 (0.5-1.0m)	**FSP2-SED-10 (1.0-1.2m)**	
Sample Date:		**Freshwater Sediment Criteria**			**23-Apr-18**	**23-Apr-18**	**24-Apr-18**	**24-Apr-18**	3-Nov-17	3-Nov-17	**24-Apr-18**	
Sample Depth (m):		**Provincial**	**Federal**	**Provincial**	**0.15-0.55**	**0.6-0.9**	**0.0-0.4**	**0.45-0.85**	0.1-0.5	0.5-1.0	**1.0-1.2**	
Sample Matrix:		**Ecological**	**ESB**	**Human Health**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	Sediment	Sediment	**Sediment**	
Sample Type:		a	b	c	**Original**	**Original**	**Original**	**Original**	Original	Original	**Original**	
Parameters	**Units**											
Phenols												
2,3,4,5-Tetrachlorophenol	µg/g				ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
2,3,4,6-Tetrachlorophenol	µg/g		6.99		ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
2,3,4-Trichlorophenol	µg/g				ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
2,3,5,6-Tetrachlorophenol	µg/g				ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
2,3,5-Trichlorophenol	µg/g				ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
2,3,6-Trichlorophenol	µg/g				ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
2,3-Dichlorophenol	µg/g				ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
2,4,5-Trichlorophenol	µg/g				ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
2,4,6-Trichlorophenol	µg/g		12.3		ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
2,4-Dichlorophenol	µg/g		14.3		ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
2,4-Dimethylphenol	µg/g				ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.1)	--	
2,4-Dinitrophenol	µg/g				ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.1)	--	
2,5-Dichlorophenol	µg/g				ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
2,6-Dichlorophenol	µg/g				ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
2-Chlorophenol	µg/g				ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1) J	ND(0.05) J	--	
2-Methylphenol	µg/g				ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.1)	--	
2-Nitrophenol	µg/g				ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.1)	--	
3&4-Methylphenol	µg/g				ND(0.4)	ND(0.4)	0.5	ND(0.4)	ND(0.2)	ND(0.1)	--	
3,4,5-Trichlorophenol	µg/g				ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
3,4-Dichlorophenol	µg/g				ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
3,5-Dichlorophenol	µg/g				ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
3/4-Chlorophenol	µg/g				ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
4,6-Dinitro-2-methylphenol	µg/g				ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.1)	--	
4-Chloro-3-methylphenol	µg/g				ND(0.4)	ND(0.4)	ND(0.4)	0.4	ND(0.2)	ND(0.1)	--	
4-Nitrophenol	µg/g				ND(0.4)	ND(0.4)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.1)	--	
Pentachlorophenol	µg/g	0.1		93	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.1)	ND(0.05)	--	
Phenol	µg/g		62.1	1900	1.1	ND(0.4)	0.6	0.6	ND(0.2)	ND(0.1)	--	
Volitile Organic Compounds (VOCs)												
1,1,1-Trichloroethane	mg/kg	0.03		42000	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
1,1,2,2-Tetrachloroethane	mg/kg	1.4		40	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
1,1,2-Trichloroethane	mg/kg	0.03		140	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
1,1-Dichloroethane	mg/kg		7.91	840	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
1,1-Dichloroethene	mg/kg		6.34	1900	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
1,2-Dibromoethane (Ethylene dibromide)	mg/kg		9.91	2.2	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
1,2-Dichlorobenzene	mg/kg	0.05		16000	ND(0.025)	0.96[a]	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
1,2-Dichloroethane	mg/kg		23	2800	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
1,2-Dichloropropane	mg/kg		13.1	220	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
1,3-Dichlorobenzene	mg/kg	0.05		420	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
1,4-Dichlorobenzene	mg/kg	0.09		4200	ND(0.025)	0.25[a]	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
Benzene	mg/kg	1.2		66	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
Bromodichloromethane	mg/kg		8.21	130	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
Bromoform	mg/kg	0.65		1000	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
Bromomethane (Methyl bromide)	mg/kg		54.7	6.3	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	
Carbon tetrachloride	mg/kg	1.2		27	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
Chlorobenzene	mg/kg	0.41		16000	ND(0.025)	0.31	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
Chloroethane	mg/kg		13.3		ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	--	
Chloroform (Trichloromethane)	mg/kg		13	220	0.3	ND(0.025)	4.5	ND(0.025)	ND(0.025)	ND(0.025)	--	
cis-1,2-Dichloroethene	mg/kg		7.96	630	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
cis-1,3-Dichloropropene	mg/kg		8.17	1.7	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
Dibromochloromethane	mg/kg		29.5	760	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
Ethylbenzene	mg/kg	1.2		9300	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
m&p-Xylenes	mg/kg			140000	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
Methyl tert butyl ether (MTBE)	mg/kg			380	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	0.76	--	
Methylene chloride	mg/kg		29.5	990	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
o-Xylene	mg/kg			140000	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
Styrene	mg/kg		11.1	2500	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
Tetrachloroethene	mg/kg	0.41		530	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
Toluene	mg/kg	1.4		20000	1.1	0.29	9.2[a]	1.7[a]	ND(0.025)	ND(0.025)	--	
trans-1,2-Dichloroethene	mg/kg		10.34	420	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
trans-1,3-Dichloropropene	mg/kg		8.17	1.7	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
Trichloroethene	mg/kg	0.22		28	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)	--	
Trichlorofluoromethane (CFC-11)	mg/kg		5.61		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	
Vinyl chloride	mg/kg		16	71	ND(0.02)	ND(0.02)	ND(0.02)	ND(0.02)	ND(0.02)	ND(0.02)	--	
Xylenes (total)	mg/kg	1.3		140000	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	

Table 4

Sediment Analytical Results - Freshwater
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC: **Former Settling Pond 2 (FSP2)**

Delineated Sample Location:												
Sample Location:					**FSP2-SED-8**	**FSP2-SED-8**	**FSP2-SED-9**	**FSP2-SED-9**	FSP2-SED-4	FSP2-SED-4	**FSP2-SED-4**	**FSP2-SED-10**
Sample ID:					**FSP2-SED-8-1 (0.15-0.55m)**	**FSP2-SED-8-2 (0.6-0.9m)**	**FSP2-SED-9-1 (0.0-0.4m)**	**FSP2-SED-9-2 (0.45-0.85m)**	FSP2-SED-4-1 (0.1-0.5m)	FSP2-SED-4-2 (0.5-1.0m)	**FSP2-SED-10 (1.0-1.2m)**	
Sample Date:		**Freshwater Sediment Criteria**			**23-Apr-18**	**23-Apr-18**	**24-Apr-18**	**24-Apr-18**	3-Nov-17	3-Nov-17	**24-Apr-18**	
Sample Depth (m):		**Provincial**	**Federal**	**Provincial**	**0.15-0.55**	**0.6-0.9**	**0.0-0.4**	**0.45-0.85**	0.1-0.5	0.5-1.0	**1.0-1.2**	
Sample Matrix:		**Ecological**	**ESB**	**Human Health**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	Sediment	Sediment	**Sediment**	
Sample Type:		a	b	c	**Original**	**Original**	**Original**	**Original**	Original	Original	**Original**	
Parameters	**Units**											
General Chemistry												
Ammonia-N	mg/kg				62	270	24	67	3.3	9.4	--	
Chlorate	mg/kg				--	ND(3.2)	--	ND(3.5)	--	ND(1.0)	--	
Chloride	mg/kg				600	1200	530	420	77	38	--	
Chlorite	mg/kg				--	ND(3.2)	--	ND(3.5)	--	ND(1.0)	--	
Conductivity	µS/cm				640	1000	570	460	210	130	--	
Cyanide (free)	mg/kg			29	ND(1.0)	ND(1.0)	ND(1.0)	ND(3.0)	ND(0.50)	ND(0.50)	--	
Cyanide (total)	mg/kg			29	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(0.50)	ND(0.50)	--	
Fraction organic carbon (FOC)	g/g				0.27	0.21	0.22	0.15	0.011	0.010	0.070	
Hydrogen sulfide	mg/kg				--	6700	--	700	--	18	--	
Moisture	%				73	69 D 71 D 68	77	68 D 79 D 72	49	33 D 25 D 20	79	
Nitrite (as N)	mg/kg				ND(0.050)	ND(0.050)	0.062	0.088	ND(0.050)	ND(0.050)	--	
Nitrite/Nitrate	mg/kg				0.84	0.98	0.59	0.42	6.3	2.9	--	
Orthophosphate	mg/kg				0.34	0.16	0.34	0.094	0.20	0.29	--	
pH, soluble (5:1)	s.u.				7.54	7.67	7.73	7.89	7.72	7.81	--	
Sulfate	mg/kg				160	60	67	11	ND(10)	ND(10)	--	
Sulfide	µg/g				--	6290	--	654	--	17.4	--	
Total organic carbon (TOC)	mg/kg				270000	210000	220000	150000	11000	10000	70000	
Dioxins and Furans												
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g				40.6	ND(24.6)	11.3	11.3	0.847	0.447	--	
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g				311	280	229	157	53.1	17.2	--	
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g				14.8	11.4	4.68	10.5	0.364	ND(0.209)	--	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g				38.3	26.4	26.9	19.2	1.60	0.558	--	
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g				2.71	1.87	ND(0.450)	0.576	ND(0.135)	0.0766	--	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g				5.46	4.04	1.80	3.03	ND(0.0865)	0.133	--	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				0.785	0.481	0.770	ND(0.458)	ND(0.141)	0.107	--	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g				1.75	1.17	0.784	1.82	ND(0.0861)	0.112	--	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				4.10	3.24	7.14	3.35	ND(0.138)	ND(0.103)	--	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g				0.741	ND(0.497)	ND(0.480)	ND(0.464)	ND(0.100)	ND(0.0811)	--	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				2.58	1.92	4.56	2.58	ND(0.129)	0.137	--	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g				29.1	24.5	6.79	5.07	0.169	0.232	--	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g				2.40	2.33	1.58	ND(0.683)	ND(0.114)	ND(0.106)	--	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g				2.36	1.99	0.955	1.28	ND(0.0927)	0.0858	--	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g				57.3	41.5	9.03	6.83	ND(0.194)	0.270	--	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g				5110 D 4640	3730 D 5080 J	1270 J D 910	628 D 898 J	13.5 D 7.71	11.4 D 64.9	--	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g				35.8	40.8	20.1	11.6	0.509	0.396	--	
Total heptachlorodibenzofuran (HpCDF)	pg/g				45.2	30.2	11.6	17.0	0.981	0.280	--	
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g				72.8	48.9	82.0	59.5	3.17	1.05	--	
Total hexachlorodibenzofuran (HxCDF)	pg/g				25.9	19.4	10.2	14.3	ND(0.163)	0.331	--	
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				24.5	16.4	51.0	26.5	ND(0.205)	0.137	--	
Total pentachlorodibenzofuran (PeCDF)	pg/g				211	190	70.5	51.7	0.822	0.501	--	
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g				9.34	8.53	7.66	2.21	ND(0.275)	ND(0.257)	--	
Total tetrachlorodibenzofuran (TCDF)	pg/g				8720	8700	2370	1620	21.8	16.7	--	
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g				43.7	51.5	29.2	15.6	0.509	0.396	--	
Total TEQ-Human/Mammal	pg/g	21.5		4	523[ac]	431[ac]	118[ac]	78.9[ac]	1.57	7.17[c]	--	
Total TEQ-Fish	pg/g	21.5			325.54[a]	320.33[a]	91.01[a]	61.47[a]	--	--	--	
Grain Size												
Clay	%				29	--	--	--	--	--	--	
Grain Size <1000um	%				99	--	--	--	--	--	--	
Grain Size <120um	%				82	--	--	--	--	--	--	
Grain Size <16um	%				66	--	--	--	--	--	--	
Grain Size <2.0um	%				20	--	--	--	--	--	--	
Grain Size <2000um	%				100	--	--	--	--	--	--	
Grain Size <250um	%				88	--	--	--	--	--	--	
Grain Size <3.9um	%				29	--	--	--	--	--	--	
Grain Size <31um	%				76	--	--	--	--	--	--	
Grain Size <500um	%				94	--	--	--	--	--	--	
Grain Size <62um	%				78	--	--	--	--	--	--	
Grain Size <7.8um	%				37	--	--	--	--	--	--	
Gravel	%				0.16	--	--	--	--	--	--	
Sand	%				21	--	--	--	--	--	--	
Silt	%				49	--	--	--	--	--	--	

Notes:

3.8[a] Exceeds applicable criteria; superscript dentifies exceeded criteria

Provincial Ecological[a] - Nova Scotia Contaminated Sites Regulation Table A1 Reference Tables for Pathway Specific Standards for Freshwater Sediment

Federal ESB[b] - Where provincial guidelines are not available, guidelines for organic compounds in sediment were developed based on the Equilibrium Partitioning Sediment Benchmarks (ESBs)

Provincial Human Health[c] - Nova Scotia Contaminated Sites Regulation Table A4 References for Pathway Specific Standards for Agricultural Soil (Soil Contact/Ingestion Pathway)

BTEX - Benzene, Toluene, Ethylbenzene, and total Xylenes

ND (2.0) - Not detected at the associated reporting limit.

(1) - The associated Total Petroleum Guidline is calculated based on the Fraction of Organic Carbon concentration

J - The associated value is an estimated concentration

D - The associated value is a confirmatory or duplicate concentration

"--" - Parameter not analysed

Table 4

Sediment Analytical Results - Freshwater
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:					**Former Settling Pond 3 (FSP3)**					
Delineated Sample Location:							**FSP2-SED-1**			
Sample Location:					**FSP3-SED-1**	**FSP3-SED-1**	**FSP3-SED-1**	**FSP3-SED-7**	**FSP3-SED-7**	**FSP3-SED-7**
Sample ID:					**FSP3-SED-1-1 (0.0-0.3m)**	**FSP3-SED-DUP**	**FSP3-SED-1-2 (0.3-0.7m)**	**FSP3-SED-7-1 (0.0-0.3m)**	**FSP3-SED-7-2 (0.4-0.9m)**	**FSP3-SED-DUP2**
Sample Date:		**Freshwater Sediment Criteria**			**24-Oct-17**	**24-Oct-17**	**24-Oct-17**	**25-Apr-18**	**25-Apr-18**	**25-Apr-18**
Sample Depth (m):		**Provincial**	**Federal**	**Provincial**	**0.0-0.3**	**0.0-0.3**	**0.3-0.7**	**0.0-0.3**	**0.4-0.9**	**0.4-0.9**
Sample Matrix:		**Ecological**	**ESB**	**Human Health**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**
Sample Type:		a	b	c	**Original**	**Duplicate**	**Original**	**Original**	**Original**	**Duplicate**
Parameters	**Units**									
Metals										
Aluminum	mg/kg			15400	6900	4100	7000	640	1500	1700
Antimony	mg/kg	25		7.5	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Arsenic	mg/kg	17		31	7.4	6.7	5.8	ND(2.0)	ND(2.0)	ND(2.0)
Barium	mg/kg			10000	140	150	480	180	690	790
Beryllium	mg/kg			38	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Bismuth	mg/kg				ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Boron	mg/kg			4300	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
Cadmium	mg/kg	3.5		1.4	2.2[c]	1.5[c]	0.74	ND(0.30)	ND(0.30)	ND(0.30)
Chromium	mg/kg	90		220	33	23	15	5.6	3.8	3.2
Cobalt	mg/kg			22	4.7	3.1	5.5	ND(1.0)	ND(1.0)	ND(1.0)
Copper	mg/kg	197		1100	26	17	30	2.5	7.3	7.6
Iron	mg/kg	43766		11000	14000[c]	12000[c]	8500	1600	5800	7200
Lead	mg/kg	91.3		140	27	23	7.2	5.9	2.0	1.5
Lithium	mg/kg				11	6.7	13	ND(2.0)	ND(2.0)	ND(2.0)
Manganese	mg/kg	1100			1000	720	150	500	530	540
Mercury	mg/kg	0.486		6.6	0.46	0.36	ND(0.10)	0.11	0.11	ND(0.10)
Molybdenum	mg/kg			110	6.3	4.9	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Nickel	mg/kg	75		330	21	13	25	2.1	2.9	3.0
Rubidium	mg/kg				7.3	5.6	6.5	ND(2.0)	ND(2.0)	ND(2.0)
Selenium	mg/kg	2		80	1.7	1.1	2.4[a]	ND(1.0)	1.3	1.5
Silver	mg/kg	1		77	0.51	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Strontium	mg/kg			9400	93	44	94	23	96	110
Thallium	mg/kg			1	0.18	0.12	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Tin	mg/kg			9400	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Uranium	mg/kg			23	15	9.3	12	0.22	1.0	0.99
Vanadium	mg/kg			39	23	18	12	3.3	2.0	ND(2.0)
Zinc	mg/kg	315		5600	130	91	61	26	13	8.9
Polychlorinated Biphenyls (PCBs)										
Aroclor-1016 (PCB-1016)	mg/kg	0.277			ND(0.030)	ND(0.030)	ND(0.030)	ND(0.010)	ND(0.010)	ND(0.010)
Aroclor-1221 (PCB-1221)	mg/kg	0.277			ND(0.030)	ND(0.030)	ND(0.030)	ND(0.010)	ND(0.010)	ND(0.010)
Aroclor-1232 (PCB-1232)	mg/kg	0.277			ND(0.030)	ND(0.030)	ND(0.030)	ND(0.010)	ND(0.010)	ND(0.010)
Aroclor-1242 (PCB-1242)	mg/kg	0.277			ND(0.030)	ND(0.030)	ND(0.030)	ND(0.010)	ND(0.010)	ND(0.010)
Aroclor-1248 (PCB-1248)	mg/kg	0.277			ND(0.030)	ND(0.030)	ND(0.030)	ND(0.010)	ND(0.010)	ND(0.010)
Aroclor-1254 (PCB-1254)	mg/kg	0.277			ND(0.030)	ND(0.030)	ND(0.030)	ND(0.010)	ND(0.010)	ND(0.010)
Aroclor-1260 (PCB-1260)	mg/kg	0.277			ND(0.030)	ND(0.030)	ND(0.030)	ND(0.010)	ND(0.010)	ND(0.010)
Total PCB	mg/kg	0.277			ND(0.030)	--	ND(0.030)	ND(0.010)	ND(0.010)	ND(0.010)
Petroleum Hydrocarbons (PHCs)										
Benzene	mg/kg	1.2		66	ND(0.025)	ND(0.025)	ND(0.050)	ND(0.050)	ND(0.025)	ND(0.025)
Toluene	mg/kg	1.4		20000	ND(0.025)	ND(0.025)	ND(0.050)	ND(0.050)	ND(0.025)	ND(0.025)
Ethylbenzene	mg/kg	1.2		9300	ND(0.025)	ND(0.025)	ND(0.050)	ND(0.050)	ND(0.025)	ND(0.025)
Xylenes (total)	mg/kg	1.3		140000	ND(0.050)	ND(0.050)	ND(0.10)	ND(0.10)	ND(0.050)	ND(0.050)
Total Petroleum Hydrocarbons (C6-C10) Less BTEX	mg/kg	15-500 [(1)]		See Modified TPH	ND(2.5)	ND(2.5)	ND(5.0)	ND(5.0)	ND(2.5)	ND(2.5)
Total Petroleum hydrocarbons (>C10-C16)	mg/kg	25-500 [(1)]		See Modified TPH	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Total Petroleum Hydrocarbons (>C16-C21)	mg/kg	43-500 [(1)]		See Modified TPH	280	430	ND(10)	140	140	120
Total Petroleum Hydrocarbons (>C21-C32)	mg/kg	43-500 [(1)]		See Modified TPH	1100[a]	1400[a]	120	550[a]	600[a]	630[a]
Total Petroleum Hydrocarbons (Modified TPH)	mg/kg	500		15000/8600/14000	1400[a]	1800[a]	120	700[a]	730[a]	740[a]
Polycyclic Aromatic Hydrocarbons (PAHs)										
1-Methylnaphthalene	mg/kg	0.201		72	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
2-Methylnaphthalene	mg/kg	0.201		72	ND(0.0050)	0.055	ND(0.0050)	ND(0.0050)	0.076 J	ND(0.0050) J
Acenaphthene	mg/kg	0.0889		5300	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Acenaphthylene	mg/kg	0.128		78	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Anthracene	mg/kg	0.245		24000	0.067	0.11	0.029	ND(0.0050)	ND(0.0050)	ND(0.0050)
Benzo fluoranthenes	mg/kg				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(a)anthracene	mg/kg	0.385			ND(0.0050)	ND(0.0050)	ND(0.040)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Benzo(a)pyrene	mg/kg	0.782			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Benzo(b)fluoranthene	mg/kg	13.4			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Benzo(g,h,i)perylene	mg/kg	3.2			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.12) J	ND(0.080) J
Benzo(j)fluoranthene	mg/kg	13.4			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Benzo(k)fluoranthene	mg/kg	13.4			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Chrysene	mg/kg	0.862			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Dibenz(a,h)anthracene	mg/kg	0.135			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Fluoranthene	mg/kg	2.355		3500	0.28	0.40	0.11	0.075	ND(0.0050)	ND(0.0050)
Fluorene	mg/kg	0.144		2700	ND(0.0050)	0.067	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Indeno(1,2,3-cd)pyrene	mg/kg	3.2			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Naphthalene	mg/kg	0.391		1800	0.065	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)
Perylene	mg/kg		3.1		0.11	ND(0.0050)	0.31	ND(0.0050)	4.1[b]	4.0[b]
Phenanthrene	mg/kg	0.515			0.28	0.47	0.11	0.15	0.089 J	ND(0.0050) J
Pyrene	mg/kg	0.875		2100	0.24	0.33	0.082	ND(0.080)	ND(0.0050)	ND(0.0050)

Table 4

Sediment Analytical Results - Freshwater
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:					**Former Settling Pond 3 (FSP3)**					
Delineated Sample Location:							**FSP2-SED-1**			
Sample Location:					**FSP3-SED-1**	**FSP3-SED-1**	**FSP3-SED-1**	**FSP3-SED-7**	**FSP3-SED-7**	**FSP3-SED-7**
Sample ID:					**FSP3-SED-1-1 (0.0-0.3m)**	**FSP3-SED-DUP**	**FSP3-SED-1-2 (0.3-0.7m)**	**FSP3-SED-7-1 (0.0-0.3m)**	**FSP3-SED-7-2 (0.4-0.9m)**	**FSP3-SED-DUP2**
Sample Date:	**Freshwater Sediment Criteria**				**24-Oct-17**	**24-Oct-17**	**24-Oct-17**	**25-Apr-18**	**25-Apr-18**	**25-Apr-18**
Sample Depth (m):	**Provincial**	**Federal**	**Provincial**		**0.0-0.3**	**0.0-0.3**	**0.3-0.7**	**0.0-0.3**	**0.4-0.9**	**0.4-0.9**
Sample Matrix:	**Ecological**	**ESB**	**Human Health**		**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**
Sample Type:	a	b	c		**Original**	**Duplicate**	**Original**	**Original**	**Original**	**Duplicate**
Parameters	**Units**									
Phenols										
2,3,4,5-Tetrachlorophenol	µg/g				ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
2,3,4,6-Tetrachlorophenol	µg/g		6.99		ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
2,3,4-Trichlorophenol	µg/g				ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
2,3,5,6-Tetrachlorophenol	µg/g				ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
2,3,5-Trichlorophenol	µg/g				ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
2,3,6-Trichlorophenol	µg/g				ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
2,3-Dichlorophenol	µg/g				ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
2,4,5-Trichlorophenol	µg/g				ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
2,4,6-Trichlorophenol	µg/g		12.3		ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
2,4-Dichlorophenol	µg/g		14.3		ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
2,4-Dimethylphenol	µg/g				ND(10)	ND(10)	ND(4)	ND(1)	ND(4)	ND(0.8)
2,4-Dinitrophenol	µg/g				ND(10)	ND(10)	ND(4)	ND(1)	ND(4)	ND(0.8)
2,5-Dichlorophenol	µg/g				ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
2,6-Dichlorophenol	µg/g				ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
2-Chlorophenol	µg/g				ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
2-Methylphenol	µg/g				ND(10)	ND(10)	ND(4)	ND(1)	ND(4)	ND(0.8)
2-Nitrophenol	µg/g				ND(10)	ND(10)	ND(4)	ND(1)	ND(4)	ND(0.8)
3&4-Methylphenol	µg/g				ND(10)	ND(10)	ND(4)	ND(1)	ND(4)	ND(0.8)
3,4,5-Trichlorophenol	µg/g				ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
3,4-Dichlorophenol	µg/g				ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
3,5-Dichlorophenol	µg/g				ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
3/4-Chlorophenol	µg/g				ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
4,6-Dinitro-2-methylphenol	µg/g				ND(10)	ND(10)	ND(4)	ND(1)	ND(4)	ND(0.8)
4-Chloro-3-methylphenol	µg/g				ND(10)	ND(10)	ND(4)	ND(1)	ND(4)	ND(0.8)
4-Nitrophenol	µg/g				ND(10)	ND(10)	ND(4)	ND(1)	ND(4)	ND(0.8)
Pentachlorophenol	µg/g	0.1		93	ND(5)	ND(5)	ND(2)	ND(0.5)	ND(2)	ND(0.4)
Phenol	µg/g		62.1	1900	ND(10)	ND(10)	ND(4)	ND(1)	ND(4)	ND(0.8)
Volitile Organic Compounds (VOCs)										
1,1,1-Trichloroethane	mg/kg	0.03		42000	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
1,1,2,2-Tetrachloroethane	mg/kg	1.4		40	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
1,1,2-Trichloroethane	mg/kg	0.03		140	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
1,1-Dichloroethane	mg/kg		7.91	840	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
1,1-Dichloroethene	mg/kg		6.34	1900	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
1,2-Dibromoethane (Ethylene dibromide)	mg/kg		9.91	2.2	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
1,2-Dichlorobenzene	mg/kg	0.05		16000	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
1,2-Dichloroethane	mg/kg		23	2800	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
1,2-Dichloropropane	mg/kg		13.1	220	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
1,3-Dichlorobenzene	mg/kg	0.05		420	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
1,4-Dichlorobenzene	mg/kg	0.09		4200	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Benzene	mg/kg	1.2		66	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Bromodichloromethane	mg/kg		8.21	130	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Bromoform	mg/kg	0.65		1000	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Bromomethane (Methyl bromide)	mg/kg		54.7	6.3	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.1)	ND(0.05)	ND(0.05)
Carbon tetrachloride	mg/kg	1.2		27	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Chlorobenzene	mg/kg	0.41		16000	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Chloroethane	mg/kg		13.3		ND(0.2)	ND(0.2)	ND(0.4)	ND(0.4)	ND(0.2)	ND(0.2)
Chloroform (Trichloromethane)	mg/kg		13	220	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
cis-1,2-Dichloroethene	mg/kg		7.96	630	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
cis-1,3-Dichloropropene	mg/kg		8.17	1.7	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Dibromochloromethane	mg/kg		29.5	760	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Ethylbenzene	mg/kg	1.2		9300	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
m&p-Xylenes	mg/kg			140000	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Methyl tert butyl ether (MTBE)	mg/kg			380	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Methylene chloride	mg/kg		29.5	990	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
o-Xylene	mg/kg			140000	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Styrene	mg/kg		11.1	2500	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Tetrachloroethene	mg/kg	0.41		530	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Toluene	mg/kg	1.4		20000	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
trans-1,2-Dichloroethene	mg/kg		10.34	420	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
trans-1,3-Dichloropropene	mg/kg		8.17	1.7	ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Trichloroethene	mg/kg	0.22		28	ND(0.01)	ND(0.01)	ND(0.02)	ND(0.02)	ND(0.01)	ND(0.01)
Trichlorofluoromethane (CFC-11)	mg/kg		5.61		ND(0.025)	ND(0.025)	ND(0.05)	ND(0.05)	ND(0.025)	ND(0.025)
Vinyl chloride	mg/kg		16	71	ND(0.02)	ND(0.02)	ND(0.04)	ND(0.04)	ND(0.02)	ND(0.02)
Xylenes (total)	mg/kg	1.3		140000	ND(0.05)	ND(0.05)	ND(0.1)	ND(0.1)	ND(0.05)	ND(0.05)

Table 4

Sediment Analytical Results - Freshwater
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:					**Former Settling Pond 3 (FSP3)**						
Delineated Sample Location:								**FSP2-SED-1**			
Sample Location:					**FSP3-SED-1**	**FSP3-SED-1**	**FSP3-SED-1**	**FSP3-SED-7**	**FSP3-SED-7**	**FSP3-SED-7**	
Sample ID:					**FSP3-SED-1-1 (0.0-0.3m)**	**FSP3-SED-DUP**	**FSP3-SED-1-2 (0.3-0.7m)**	**FSP3-SED-7-1 (0.0-0.3m)**	**FSP3-SED-7-2 (0.4-0.9m)**	**FSP3-SED-DUP2**	
Sample Date:		**Freshwater Sediment Criteria**			**24-Oct-17**	**24-Oct-17**	**24-Oct-17**	**25-Apr-18**	**25-Apr-18**	**25-Apr-18**	
Sample Depth (m):		**Provincial**	**Federal**	**Provincial**	**0.0-0.3**	**0.0-0.3**	**0.3-0.7**	**0.0-0.3**	**0.4-0.9**	**0.4-0.9**	
Sample Matrix:		**Ecological**	**ESB**	**Human Health**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	**Sediment**	
Sample Type:		a	b	c	**Original**	**Duplicate**	**Original**	**Original**	**Original**	**Duplicate**	
Parameters	**Units**										
General Chemistry											
Ammonia-N	mg/kg				68	64	19	4.8	20	18	
Chlorate	mg/kg				--	--	ND(1.0)	--	ND(33)	--	
Chloride	mg/kg				820	480	3000	130	17 J	130 J	
Chlorite	mg/kg				--	--	ND(1.0)	--	ND(33)	--	
Conductivity	µS/cm				800	520	2100	150	32 J	170 J	
Cyanide (free)	mg/kg			29	ND(1.0)	ND(1.0)	ND(1.0)	ND(3.0)	ND(3.0)	ND(3.0)	
Cyanide (total)	mg/kg			29	1.6	1.3	1.2	ND(3.0)	ND(5.0)	ND(5.0)	
Fraction organic carbon (FOC)	g/g				0.34	0.39	0.25	0.23	0.38	0.38	
Hydrogen sulfide	mg/kg				--	--	39	--	16	--	
Moisture	%				89	90	81 D 71 D 82	93 D 92	86 D 85 D 89 D 85	85 D 89	
Nitrite (as N)	mg/kg				ND(0.050)	ND(0.050)	ND(0.050)	0.065	ND(0.050)	ND(0.050)	
Nitrite/Nitrate	mg/kg				5.3	2.7	15	1.7	0.99 J	4.0 J	
Orthophosphate	mg/kg				0.99	0.48	0.33	1.0	0.28 J	ND(0.050) J	
pH, soluble (5:1)	s.u.				6.21	6.43	6.32	5.99	6.40	6.31	
Sulfate	mg/kg				490	290	300	32	ND(10)	10	
Sulfide	µg/g				--	--	36.5	--	14.7	--	
Total organic carbon (TOC)	mg/kg				340000	390000	250000	230000	380000	380000	
Dioxins and Furans											
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g				9.93	8.22	ND(0.114)	4.56	0.286	0.954	
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g				345	297	4.55	86.1	191	194	
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g				6.11	4.90	ND(0.0903)	3.30	0.281	0.685	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g				21.9	19.8	0.386	8.37	4.41	6.42	
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g				0.963	ND(0.251)	ND(0.120)	0.234 J	ND(0.109)	ND(0.0746)	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g				5.62	2.95	ND(0.101)	1.06	0.176	0.666	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				2.01	0.620	ND(0.102)	0.368	0.198	0.603	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g				3.05	0.826	ND(0.0984)	0.729	ND(0.109)	ND(0.130)	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				3.72	2.33	ND(0.102)	0.744	0.128	0.525	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g				1.76	0.204	ND(0.121)	ND(0.121)	ND(0.124)	ND(0.148)	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				3.15	1.89	ND(0.0914)	1.77 J	1.05 J	5.75 J	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g				20.8	15.2	ND(0.101)	4.43	ND(0.269)	0.380	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g				4.12	1.54	ND(0.0993)	0.527	ND(0.163)	ND(0.138)	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g				3.62	1.38	ND(0.110)	0.738 J	ND(0.116)	ND(0.138)	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g				34.1	27.2	ND(0.101)	7.84	0.293	0.397	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g				3180 J D 3980 J	2650 J D 3220 J	3.75 D 3.69	667 D 800	22.8 D 27.8	42.7 D 33.3	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g				36.7	26.9	ND(0.107)	4.82	0.193	0.287	
Total heptachlorodibenzofuran (HpCDF)	pg/g				13.4	10.9	ND(0.103)	6.89	0.417	1.10	
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g				40.4	51.8	1.08	22.4	10.5	17.4	
Total hexachlorodibenzofuran (HxCDF)	pg/g				25.5	15.9	ND(0.107)	8.41	1.04	3.91	
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g				24.0	18.2	0.410	12.0	7.10	26.1	
Total pentachlorodibenzofuran (PeCDF)	pg/g				136	121	ND(0.101)	43.9	1.62	5.72	
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g				12.9	10.9	ND(0.0993)	7.09	1.95	9.63	
Total tetrachlorodibenzofuran (TCDF)	pg/g				7760	5920	5.88	1260	45.2	69.1	
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g				36.7	27.4	ND(0.107)	7.16	1.50	3.57	
Total TEQ-Human/Mammal	pg/g	21.5		4	372[ac]	303[ac]	0.695	75.2[ac]	3.03	4.81[c]	
Total TEQ-Fish	pg/g	21.5			260.52[a]	204.79[a]	--	50.01[a]	--	--	
Grain Size											
Clay	%				--	--	--	--	45	--	
Grain Size <1000um	%				--	--	--	--	99	--	
Grain Size <120um	%				--	--	--	--	59	--	
Grain Size <16um	%				--	--	--	--	55	--	
Grain Size <2.0um	%				--	--	--	--	43	--	
Grain Size <2000um	%				--	--	--	--	100	--	
Grain Size <250um	%				--	--	--	--	71	--	
Grain Size <3.9um	%				--	--	--	--	45	--	
Grain Size <31um	%				--	--	--	--	55	--	
Grain Size <500um	%				--	--	--	--	88	--	
Grain Size <62um	%				--	--	--	--	54	--	
Grain Size <7.8um	%				--	--	--	--	48	--	
Gravel	%				--	--	--	--	ND(0.10)	--	
Sand	%				--	--	--	--	46	--	
Silt	%				--	--	--	--	8.6	--	

Notes:

3.8[a] Exceeds applicable criteria; superscript dentifies exceeded criteria

Provincial Ecological[a] - Nova Scotia Contaminated Sites Regulation Table A1 Reference Tables for Pathway Specific Standards for Freshwater Sediment

Federal ESB[b] - Where provincial guidelines are not available, guidelines for organic compounds in sediment were developed based on the Equilibrium Partitioning Sediment Benchmarks (ESBs)

Provincial Human Health[c] - Nova Scotia Contaminated Sites Regulation Table A4 References for Pathway Specific Standards for Agricultural Soil (Soil Contact/Ingestion Pathway)

BTEX - Benzene, Toluene, Ethylbenzene, and total Xylenes

ND (2.0) - Not detected at the associated reporting limit.

(1) - The associated Total Petroleum Guidline is calculated based on the Fraction of Organic Carbon concentration

J - The associated value is an estimated concentration

D - The associated value is a confirmatory or duplicate concentration

"--" - Parameter not analysed

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC: **Boat Harbour Stabilization Lagoon (BHSL)**

Delineated Sample Location:												
Sample Location:				BHSL-BH-2	**BHSL-BH-2**		BHSL-MW-1	**BHSL-MW-1**		BHSL-MW-2	**BHSL-MW-2**	
Sample ID:	**Soil Criteria**			BHSL-BH-2 (4.3-4.9m)	**BHSL-BH-4 (4.3-4.8m)**	**BHSL-S-6 (0.0-0.2m)**	BHSL-MW-1 (1.2-1.8m)	**BHSL-BH-5 (2.4-3.0m)**	**BHSL-S-7 (0.0-0.2m)**	BHSL-MW-2 (2.4-3.0m)	**BHSL-BH-6 (2.4-3.0m)**	**BHSL-S-8 (0.0-0.2m)**
Sample Date:				3-Nov-17	**10-Apr-18**	**10-Apr-18**	25-Oct-17	**6-Apr-18**	**6-Apr-18**	25-Oct-17	**26-Apr-18**	**26-Apr-18**
Sample Depth:				4.3-4.9	**4.3-4.8**	**0.0-0.2**	1.2-1.8	**2.4-3.0**	**0.0-0.2**	2.4-3.0	**2.4-3.0**	**0.0-0.2**
Matrix Code:				Soil	**Soil**	**Soil**	Soil	**Soil**	**Soil**	Soil	**Soil**	**Soil**
Sample Type:				Original	**Original**	**Original**	Original	**Original**	**Original**	Original	**Original**	**Original**
Parameters	**Units**	**Provincial Ecological/ Human Health** a	**Federal Ecological/ Human Health** b									
Metals												
Aluminum	mg/kg	15400		5200	5400	2600	8300	8400	15000	8500	6400	1300
Antimony	mg/kg	7.5		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Arsenic	mg/kg	17		20[a]	12	6.9	4.5	5.8	5.1	40[a]	48[a]	ND(2.0)
Barium	mg/kg	400		330	300	15	300	190	120	390	480[a]	17
Beryllium	mg/kg	5		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Bismuth	mg/kg			ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Boron	mg/kg	4300		ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
Cadmium	mg/kg	1.4		ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)
Chromium	mg/kg	52		11	10	4.0	16	19	19	15	13	ND(2.0)
Cobalt	mg/kg	20		7.0	7.1	ND(1.0)	9.4	10	8.5	15	12	ND(1.0)
Copper	mg/kg	63		18	17	4.1	20	17	7.4	100[a]	67[a]	ND(2.0)
Iron	mg/kg	11000		14000[a]	14000[a]	7000	21000[a]	27000[a]	26000[a]	22000[a]	24000[a]	2500
Lead	mg/kg	70		9.8	12	27	10	7.9	7.6	12	10	4.9
Lithium	mg/kg			14	15	3.3	23	24	32	20	17	ND(2.0)
Manganese	mg/kg			770	660	41	1500	640	970	3500	3000	45
Mercury	mg/kg	6.6		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	0.16	ND(0.10)	ND(0.10)	ND(0.10)
Molybdenum	mg/kg	40		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Nickel	mg/kg	50		11	12	2.3	23	24	15	24	17	ND(2.0)
Rubidium	mg/kg			4.8	4.4	5.6	8.7	8.1	16	9.4	6.1	2.2
Selenium	mg/kg	1		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Silver	mg/kg	20		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Strontium	mg/kg	9400		ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	6.0	ND(5.0)	44	14	ND(5.0)
Thallium	mg/kg	1		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	0.13	0.21	0.13	ND(0.10)
Tin	mg/kg	5		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Uranium	mg/kg	23		0.51	0.49	0.20	0.70	0.51	0.50	0.61	0.42	0.15
Vanadium	mg/kg	39		7.0	7.1	8.7	12	16	18	9.9	9.6	3.8
Zinc	mg/kg	200		31	33	8.0	45	47	61	44	43	ND(5.0)
Polychlorinated Biphenyls (PCBs)												
Aroclor-1016 (PCB-1016)	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1221 (PCB-1221)	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1232 (PCB-1232)	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1242 (PCB-1242)	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1248 (PCB-1248)	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1254 (PCB-1254)	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1260 (PCB-1260)	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Total PCB	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Petroleum Hydrocarbons (PHCs)												
Benzene	mg/kg	0.042		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Toluene	mg/kg	0.35		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Ethylbenzene	mg/kg	0.065		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Xylenes (total)	mg/kg	8.8		ND(0.050)	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Methyl tert butyl ether (MTBE)	mg/kg	0.05		--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Total Petroleum Hydrocarbons (C6-C10) Less BTEX	mg/kg	See Modified TPH		ND(2.5)	--	--	ND(2.5)	--	--	ND(2.5)	--	--
Total Petroleum hydrocarbons (>C10-C16)	mg/kg	See Modified TPH		ND(10)	--	--	ND(10)	--	--	ND(10)	--	--
Total Petroleum Hydrocarbons (>C16-C21)	mg/kg	See Modified TPH		ND(10)	--	--	ND(10)	--	--	ND(10)	--	--
Total Petroleum Hydrocarbons (>C21-C32)	mg/kg	See Modified TPH		ND(15)	--	--	ND(15)	--	--	ND(15)	--	--
Total Petroleum Hydrocarbons (Modified TPH)	mg/kg	74/150/300		ND(15)	--	--	ND(15)	--	--	ND(15)	--	--
Polycyclic Aromatic Hydrocarbons (PAHs)												
1-Methylnaphthalene	mg/kg	30		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
2-Methylnaphthalene	mg/kg	30		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Acenaphthene	mg/kg	21.5		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Acenaphthylene	mg/kg	4.5		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Anthracene	mg/kg	2.5		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo fluoranthenes	mg/kg			ND(0.010)	--	--	ND(0.010)	--	--	ND(0.010)	--	--
Benzo(a)anthracene	mg/kg	0.5		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(a)pyrene	mg/kg	0.6		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(b)fluoranthene	mg/kg	6.2		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(b)pyridine (Quinoline)	mg/kg		0.1	ND(0.050)	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Benzo(g,h,i)perylene	mg/kg	6.6		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(j)fluoranthene	mg/kg	6.2		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(k)fluoranthene	mg/kg	6.2		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Chrysene	mg/kg	6.2		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Dibenz(a,h)anthracene	mg/kg		0.1	ND(0.0050)	--	--	ND(0.0050) J	--	--	ND(0.0050) J	--	--
Fluoranthene	mg/kg	15.4		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Fluorene	mg/kg	15.4		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Indeno(1,2,3-cd)pyrene	mg/kg	0.38		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Naphthalene	mg/kg	0.6		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Perylene	mg/kg			ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Phenanthrene	mg/kg	6.2		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Pyrene	mg/kg	7.7		ND(0.0050)	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC: **Boat Harbour Stabilization Lagoon (BHSL)**

Delineated Sample Location:					**BHSL-BH-2**				**BHSL-MW-1**				**BHSL-MW-2**	
Sample Location:				BHSL-BH-2	**BHSL-BH-4**	**BHSL-S-6**	BHSL-MW-1	**BHSL-BH-5**	**BHSL-S-7**	BHSL-MW-2	**BHSL-BH-6**	**BHSL-S-8**
Sample ID:	**Soil Criteria**			BHSL-BH-2 (4.3-4.9m)	**BHSL-BH-4 (4.3-4.8m)**	**BHSL-S-6 (0.0-0.2m)**	BHSL-MW-1 (1.2-1.8m)	**BHSL-BH-5 (2.4-3.0m)**	**BHSL-S-7 (0.0-0.2m)**	BHSL-MW-2 (2.4-3.0m)	**BHSL-BH-6 (2.4-3.0m)**	**BHSL-S-8 (0.0-0.2m)**
Sample Date:	**Provincial Ecological/ Human Health**	**Federal Ecological/ Human Health**		3-Nov-17	**10-Apr-18**	**10-Apr-18**	25-Oct-17	**6-Apr-18**	**6-Apr-18**	25-Oct-17	**26-Apr-18**	**26-Apr-18**
Sample Depth:				4.3-4.9	**4.3-4.8**	**0.0-0.2**	1.2-1.8	**2.4-3.0**	**0.0-0.2**	2.4-3.0	**2.4-3.0**	**0.0-0.2**
Matrix Code:				Soil	**Soil**	**Soil**	Soil	**Soil**	**Soil**	Soil	**Soil**	**Soil**
Sample Type:	a	b		Original	**Original**	**Original**	Original	**Original**	**Original**	Original	**Original**	**Original**
Parameters	**Units**											
Phenols												
2,3,4,5-Tetrachlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,3,4,6-Tetrachlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,3,4-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,3,5,6-Tetrachlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,3,5-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,3,6-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,3-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,4,5-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,4,6-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,4-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,4-Dimethylphenol	µg/g			ND(0.1)	--	--	ND(0.1)	--	--	ND(0.1)	--	--
2,4-Dinitrophenol	µg/g			ND(0.1)	--	--	ND(0.1)	--	--	ND(0.1)	--	--
2,5-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,6-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2-Chlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2-Methylphenol	µg/g			ND(0.1)	--	--	ND(0.1)	--	--	ND(0.1)	--	--
2-Nitrophenol	µg/g			ND(0.1)	--	--	ND(0.1)	--	--	ND(0.1)	--	--
3&4-Methylphenol	µg/g			ND(0.1)	--	--	ND(0.1)	--	--	ND(0.1)	--	--
3,4,5-Trichlorophenol	µg/g			ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
3,4-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
3,5-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
3/4-Chlorophenol	µg/g		0.05	ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
4,6-Dinitro-2-methylphenol	µg/g			ND(0.1)	--	--	ND(0.1)	--	--	ND(0.1)	--	--
4-Chloro-3-methylphenol	µg/g			ND(0.1)	--	--	ND(0.1)	--	--	ND(0.1)	--	--
4-Nitrophenol	µg/g			ND(0.1)	--	--	ND(0.1)	--	--	ND(0.1)	--	--
Pentachlorophenol	µg/g	7.6		ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
Phenol	µg/g	3.8		ND(0.1)	--	--	ND(0.1)	--	--	ND(0.1)	--	--
Volitile Organic Compounds (VOCs)												
1,1,1-Trichloroethane	mg/kg	0.38		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,1,2,2-Tetrachloroethane	mg/kg	0.05		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,1,2-Trichloroethane	mg/kg	0.3		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,1-Dichloroethane	mg/kg	0.47		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,1-Dichloroethene	mg/kg	0.05		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,2-Dibromoethane (Ethylene dibromide)	mg/kg	0.05		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,2-Dichlorobenzene	mg/kg	0.18		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,2-Dichloroethane	mg/kg	0.05		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,2-Dichloropropane	mg/kg	0.05		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,3-Dichlorobenzene	mg/kg	4.8		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,4-Dichlorobenzene	mg/kg	0.098		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Benzene	mg/kg	0.042		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Bromodichloromethane	mg/kg	1.5		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Bromoform	mg/kg	2.3		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Bromomethane (Methyl bromide)	mg/kg	0.05		ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
Carbon tetrachloride	mg/kg	0.05		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Chlorobenzene	mg/kg	0.05		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Chloroethane	mg/kg			ND(0.2)	--	--	ND(0.2)	--	--	ND(0.2)	--	--
Chloroform (Trichloromethane)	mg/kg	0.05		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
cis-1,2-Dichloroethene	mg/kg	1.9		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
cis-1,3-Dichloropropene	mg/kg	1.7		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Dibromochloromethane	mg/kg	0.27		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Ethylbenzene	mg/kg	0.065		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
m&p-Xylenes	mg/kg			ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Methyl tert butyl ether (MTBE)	mg/kg	0.05		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Methylene chloride	mg/kg	0.32		ND(0.025)	--	--	ND(0.03)	--	--	ND(0.03)	--	--
o-Xylene	mg/kg			ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Styrene	mg/kg	16		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Tetrachloroethene	mg/kg	0.1		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Toluene	mg/kg	0.35		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
trans-1,2-Dichloroethene	mg/kg	0.084		ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
trans-1,3-Dichloropropene	mg/kg			ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Trichloroethene	mg/kg	0.01		ND(0.01)	--	--	ND(0.01)	--	--	ND(0.01)	--	--
Trichlorofluoromethane (CFC-11)	mg/kg			ND(0.025)	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Vinyl chloride	mg/kg	0.02		ND(0.02)	--	--	ND(0.02)	--	--	ND(0.02)	--	--
Xylenes (total)	mg/kg	8.8		ND(0.05)	--	--	ND(0.05)	--	--	ND(0.05)	--	--
General Chemistry												
Ammonia-N	mg/kg			ND(0.28)	ND(0.28) J	ND(0.32) J	ND(0.29)	ND(0.30) J	ND(0.40) J	ND(0.30)	ND(0.31)	0.48
Chloride	mg/kg			10	7.9	36	10	16	47	18	12	13
Conductivity	uS/cm			28	22	82	14	31	69	120	89	31
Cyanide (free)	mg/kg	0.9		ND(0.50)	--	--	ND(0.50)	--	--	ND(0.50)	--	--
Cyanide (total)	mg/kg	0.9		ND(0.50)	--	--	ND(0.50)	--	--	ND(0.50)	--	--
Fraction organic carbon (FOC)	g/g			--	--	--	ND(0.00050)	--	--	--	--	--
Moisture	%			7.6	10	19	12	15	34	15	16	18
Nitrite (as N)	mg/kg			ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	0.14	ND(0.050)	ND(0.050)	0.23	ND(0.050)
Nitrite/Nitrate	mg/kg			0.98	1.3	4.8	0.65	2.7	5.2	1.4	1.5	0.63
Orthophosphate	mg/kg			0.19	0.15	0.097	0.25	0.051	0.13	0.081	ND(0.050)	0.11
pH, soluble (5:1)	s.u.		6-8	5.60[b]	5.16[b]	4.09[b]	5.95[b]	7.03	4.90[b]	7.76	7.88	4.83[b]
Sulfate	mg/kg			30	19	ND(10)	ND(10)	ND(10)	ND(10)	19	ND(10)	ND(10)
Total organic carbon (TOC)	mg/kg			--	--	--	ND(500)	--	--	--	--	--

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC: **Boat Harbour Stabilization Lagoon (BHSL)**

Delineated Sample Location:				**BHSL-BH-2**								
Sample Location:				**BHSL-BH-4**	**BHSL-S-6**		**BHSL-MW-1**	**BHSL-S-7**		**BHSL-MW-2**	**BHSL-S-8**	
Sample ID:	**Soil Criteria**		**BHSL-BH-2**	**BHSL-BH-4 (4.3-4.8m)**	**BHSL-S-6 (0.0-0.2m)**	**BHSL-MW-1**	**BHSL-BH-5**	**BHSL-S-7 (0.0-0.2m)**	**BHSL-MW-2**	**BHSL-BH-6 (2.4-3.0m)**	**BHSL-S-8 (0.0-0.2m)**	
Sample Date:	**Provincial Ecological/ Human Health**	**Federal Ecological/ Human Health**	**BHSL-BH-2 (4.3-4.9m)**	**10-Apr-18**	**10-Apr-18**	**BHSL-MW-1 (1.2-1.8m)**	**6-Apr-18**	**6-Apr-18**	**BHSL-MW-2 (2.4-3.0m)**	**26-Apr-18**	**26-Apr-18**	
Sample Depth:			**3-Nov-17**	**4.3-4.8**	**0.0-0.2**	**25-Oct-17**	**2.4-3.0**	**0.0-0.2**	**25-Oct-17**	**2.4-3.0**	**0.0-0.2**	
Matrix Code:			**4.3-4.9**	**Soil**	**Soil**	**1.2-1.8**	**Soil**	**Soil**	**2.4-3.0**	**Soil**	**Soil**	
Sample Type:			**Soil**	**Original**	**Original**	**Soil**	**Original**	**Original**	**Soil**	**Original**	**Original**	
Parameters	**Units**		**Original**			**Original**			**Original**			
Dioxins and Furans												
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g		ND(0.0920)	--	--	ND(0.111)	--	--	ND(0.117)	--	--	
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g		9.52	--	--	2.49	--	--	1.31	--	--	
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g		ND(0.0452)	--	--	ND(0.0866)	--	--	ND(0.0985)	--	--	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g		0.120	--	--	ND(0.113)	--	--	ND(0.102)	--	--	
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g		ND(0.0602)	--	--	ND(0.115)	--	--	ND(0.131)	--	--	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.0592)	--	--	ND(0.0695)	--	--	ND(0.110)	--	--	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.0833)	--	--	ND(0.101)	--	--	ND(0.123)	--	--	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.0576)	--	--	ND(0.0676)	--	--	ND(0.107)	--	--	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.0838)	--	--	ND(0.102)	--	--	ND(0.123)	--	--	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.0708)	--	--	ND(0.0832)	--	--	ND(0.131)	--	--	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.0749)	--	--	ND(0.0911)	--	--	ND(0.110)	--	--	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.112)	--	--	ND(0.0882)	--	--	ND(0.106)	--	--	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g		ND(0.0997)	--	--	ND(0.0871)	--	--	ND(0.103)	--	--	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.0646)	--	--	ND(0.0759)	--	--	ND(0.120)	--	--	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.112)	--	--	ND(0.0877)	--	--	ND(0.106)	--	--	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g		ND(0.0825)	--	--	ND(0.101)	--	--	ND(0.111)	--	--	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g		ND(0.0715)	--	--	ND(0.0934)	--	--	ND(0.113)	--	--	
Total heptachlorodibenzofuran (HpCDF)	pg/g		ND(0.0517)	--	--	ND(0.0989)	--	--	ND(0.112)	--	--	
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g		0.120	--	--	ND(0.113)	--	--	ND(0.102)	--	--	
Total hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.0626)	--	--	ND(0.0736)	--	--	ND(0.116)	--	--	
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.0805)	--	--	ND(0.0978)	--	--	ND(0.118)	--	--	
Total pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.112)	--	--	ND(0.0879)	--	--	ND(0.106)	--	--	
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g		ND(0.0997)	--	--	ND(0.0871)	--	--	ND(0.103)	--	--	
Total tetrachlorodibenzofuran (TCDF)	pg/g		ND(0.0825)	--	--	ND(0.101)	--	--	ND(0.111)	--	--	
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g		ND(0.0715)	--	--	ND(0.0934)	--	--	ND(0.113)	--	--	
Total TEQ	ng/kg	4	0.271	--	--	0.283	--	--	0.348	--	--	
Grain Size												
Clay	%		--	--	--	11	--	--	--	--	--	
Grain Size <1000um	%		--	--	--	90	--	--	--	--	--	
Grain Size <120um	%		--	--	--	63	--	--	--	--	--	
Grain Size <16um	%		--	--	--	25	--	--	--	--	--	
Grain Size <2.0um	%		--	--	--	7.5	--	--	--	--	--	
Grain Size <2000um	%		--	--	--	93	--	--	--	--	--	
Grain Size <250um	%		--	--	--	80	--	--	--	--	--	
Grain Size <3.9um	%		--	--	--	11	--	--	--	--	--	
Grain Size <31um	%		--	--	--	32	--	--	--	--	--	
Grain Size <500um	%		--	--	--	88	--	--	--	--	--	
Grain Size <62um	%		--	--	--	44	--	--	--	--	--	
Grain Size <7.8um	%		--	--	--	14	--	--	--	--	--	
Gravel	%		--	--	--	7.3	--	--	--	--	--	
Sand	%		--	--	--	49	--	--	--	--	--	
Silt	%		--	--	--	33	--	--	--	--	--	
Grain size (median)	none		--	--	--	--	--	--	--	--	--	
Sieve pan	%		--	--	--	--	--	--	--	--	--	
Sieve, #200	%		--	--	--	--	--	--	--	--	--	

Notes:
20[a] Exceeds applicable criteria; superscript identifies exceeded criteria
Provincial Ecological/ Human Health[a] - Nova Scotia Contaminated Sites Regulation Table A4 References for Pathway Specific Standards for coarse-grained soil on a potable agricultural site
Federal Ecological/ Human Health[b] - Canadian Council of Ministers of the Environment (CCME) Soil Quality Guidelines for the protection of Environment and Human Health on an Agricultural Site. Federal criteria is
BTEX - Benzene, Toluene, Ethylbenzene, and total Xylenes
ND (2.0) - Not detected at the associated reporting limit.
J - The associated value is an estimated concentration
D - The associated value is a confirmatory or duplicate concentration
"--" - Parameter not analysed

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:				Boat Harbour Stabilization Lagoon (BHSL)									
Delineated Sample Location:				**BHSL-MW-11**									
Sample Location:			BHSL-MW-11	**BHSL-S-4**	**BHSL-S-5**	**BHSL-MW-5**	**BHSL-MW-5**	**BHSL-MW-6**	**BHSL-MW-7**	**BHSL-MW-8**	**BHSL-MW-9**	**BHSL-MW-9**
Sample ID:	**Soil Criteria**		BHSL-MW-11 (1.2-1.8m)	**BHSL-S-4 (0.0-0.2m)**	**BHSL-S-5 (1.8-2.4m)**	**BHSL-MW-5 (1.2-1.8m)**	**BHSL-MW-DUP2**	**BHSL-MW-6 (3.7-4.3m)**	**BHSL-MW-7 (3.7-4.3m)**	**BHSL-MW-8 (3.0-3.7m)**	**BHSL-MW-9 (1.8-2.4m)**	**BHSL-MW-9 (3.7-4.3m)**
Sample Date:	**Provincial Ecological/ Human Health**	**Federal Ecological/ Human Health**	24-Oct-17	**6-Apr-18**	**6-Apr-18**	**6-Apr-18**	**6-Apr-18**	**5-Apr-18**	**5-Apr-18**	**5-Apr-18**	**4-Apr-18**	**4-Apr-18**
Sample Depth:			1.2-1.8	**0.0-0.2**	**1.8-2.4**	**1.2-1.8**	**1.2-1.8**	**3.7-4.3**	**3.7-4.3**	**3-3.7**	**1.8-2.4**	**3.7-4.3**
Matrix Code:			Soil	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Sample Type:	a	b	Original	**Original**	**Original**	**Original**	**Duplicate**	**Original**	**Original**	**Original**	**Original**	**Original**
Parameters	**Units**											
Metals												
Aluminum	mg/kg	15400	6200	4000	5400	10000	9900	7000	7100	6300	--	5700
Antimony	mg/kg	7.5	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	ND(2.0)
Arsenic	mg/kg	17	34[a]	3.2	4.7	8.8	8.9	10	5.7	13	--	7.5
Barium	mg/kg	400	65	12	23	42 J	600 J[a]	180	70	300	--	210
Beryllium	mg/kg	5	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	ND(2.0)
Bismuth	mg/kg		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	ND(2.0)
Boron	mg/kg	4300	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	--	ND(50)
Cadmium	mg/kg	1.4	0.52	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	--	ND(0.30)
Chromium	mg/kg	52	11	6.7	9.6	20	22	12	13	14	--	11
Cobalt	mg/kg	20	8.8	4.0	6.4	12	13	9.9	8.3	7.8	--	5.7
Copper	mg/kg	63	12	5.1	13	15	16	9.6	12	12	--	9.5
Iron	mg/kg	11000	21000[a]	8900	14000[a]	28000[a]	27000[a]	15000[a]	17000[a]	22000[a]	--	13000[a]
Lead	mg/kg	70	25	7.7	8.7	9.5	8.2	4.2	3.5	16	--	7.9
Lithium	mg/kg		16	7.5	14	28	29	21	19	18	--	12
Manganese	mg/kg		1300	130	300	600 J	2600 J	470	480	710	--	1300
Mercury	mg/kg	6.6	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	--	ND(0.10)
Molybdenum	mg/kg	40	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	ND(2.0)
Nickel	mg/kg	50	15	7.4	13	24	26	16	16	16	--	11
Rubidium	mg/kg		4.5	2.5	4.0	7.7	9.7	6.4	6.1	5.3	--	4.5
Selenium	mg/kg	1	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	--	ND(1.0)
Silver	mg/kg	20	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	--	ND(0.50)
Strontium	mg/kg	9400	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0) J	86 J	ND(5.0)	ND(5.0)	8.3	--	ND(5.0)
Thallium	mg/kg	1	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	--	ND(0.10)
Tin	mg/kg	5	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	ND(2.0)
Uranium	mg/kg	23	0.55	0.27	0.47	0.74	0.77	0.92	0.47	0.40	--	0.41
Vanadium	mg/kg	39	7.8	6.9	6.4	16	14	7.9	9.7	9.2	--	7.4
Zinc	mg/kg	200	84	24	49	52	52	46	37	41	--	28
Polychlorinated Biphenyls (PCBs)												
Aroclor-1016 (PCB-1016)	µg/g	1.3	ND(0.050)	--	--	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	ND(0.050)
Aroclor-1221 (PCB-1221)	µg/g	1.3	ND(0.050)	--	--	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	ND(0.050)
Aroclor-1232 (PCB-1232)	µg/g	1.3	ND(0.050)	--	--	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	ND(0.050)
Aroclor-1242 (PCB-1242)	µg/g	1.3	ND(0.050)	--	--	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	ND(0.050)
Aroclor-1248 (PCB-1248)	µg/g	1.3	ND(0.050)	--	--	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	ND(0.050)
Aroclor-1254 (PCB-1254)	µg/g	1.3	ND(0.050)	--	--	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	ND(0.050)
Aroclor-1260 (PCB-1260)	µg/g	1.3	ND(0.050)	--	--	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	ND(0.050)
Total PCB	µg/g	1.3	ND(0.050)	--	--	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	ND(0.050)
Petroleum Hydrocarbons (PHCs)												
Benzene	mg/kg	0.042	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
Toluene	mg/kg	0.35	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
Ethylbenzene	mg/kg	0.065	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)
Xylenes (total)	mg/kg	8.8	ND(0.050)	--	--	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Methyl tert butyl ether (MTBE)	mg/kg	0.05	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C10) Less BTEX	mg/kg	See Modified TPH	ND(2.5)	--	--	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)
Total Petroleum hydrocarbons (>C10-C16)	mg/kg	See Modified TPH	ND(10)	--	--	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Total Petroleum Hydrocarbons (>C16-C21)	mg/kg	See Modified TPH	ND(10)	--	--	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Total Petroleum Hydrocarbons (>C21-C32)	mg/kg	See Modified TPH	ND(15)	--	--	ND(15)	ND(15)	ND(15)	ND(15)	ND(15)	25	19
Total Petroleum Hydrocarbons (Modified TPH)	mg/kg	74/150/300	ND(15)	--	--	ND(15)	ND(15)	ND(15)	ND(15)	ND(15)	25	19
Polycyclic Aromatic Hydrocarbons (PAHs)												
1-Methylnaphthalene	mg/kg	30	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
2-Methylnaphthalene	mg/kg	30	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Acenaphthene	mg/kg	21.5	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Acenaphthylene	mg/kg	4.5	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Anthracene	mg/kg	2.5	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Benzo fluoranthenes	mg/kg		ND(0.010)	--	--	ND(0.010)	ND(0.020) D ND(0.010)	ND(0.020) D ND(0.010)	ND(0.010) D ND(0.020)	ND(0.020) D ND(0.010)	--	ND(0.010) D ND(0.020)
Benzo(a)anthracene	mg/kg	0.5	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Benzo(a)pyrene	mg/kg	0.6	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Benzo(b)fluoranthene	mg/kg	6.2	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Benzo(b)pyridine (Quinoline)	mg/kg	0.1	ND(0.050)	--	--	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	ND(0.050)
Benzo(g,h,i)perylene	mg/kg	6.6	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Benzo(j)fluoranthene	mg/kg	6.2	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Benzo(k)fluoranthene	mg/kg	6.2	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Chrysene	mg/kg	6.2	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Dibenz(a,h)anthracene	mg/kg	0.1	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Fluoranthene	mg/kg	15.4	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Fluorene	mg/kg	15.4	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Indeno(1,2,3-cd)pyrene	mg/kg	0.38	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Naphthalene	mg/kg	0.6	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Perylene	mg/kg		ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Phenanthrene	mg/kg	6.2	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)
Pyrene	mg/kg	7.7	ND(0.0050)	--	--	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	ND(0.0050)

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:						Boat Harbour Stabilization Lagoon (BHSL)						
Delineated Sample Location:				**BHSL-MW-11**								
Sample Location:			BHSL-MW-11	**BHSL-S-4**	**BHSL-S-5**	**BHSL-MW-5**	**BHSL-MW-5**	**BHSL-MW-6**	**BHSL-MW-7**	**BHSL-MW-8**	**BHSL-MW-9**	**BHSL-MW-9**
Sample ID:	**Soil Criteria**		BHSL-MW-11 (1.2-1.8m)	**BHSL-S-4 (0.0-0.2m)**	**BHSL-S-5 (1.8-2.4m)**	**BHSL-MW-5 (1.2-1.8m)**	**BHSL-MW-DUP2**	**BHSL-MW-6 (3.7-4.3m)**	**BHSL-MW-7 (3.7-4.3m)**	**BHSL-MW-8 (3.0-3.7m)**	**BHSL-MW-9 (1.8-2.4m)**	**BHSL-MW-9 (3.7-4.3m)**
Sample Date:	**Provincial Ecological/ Human Health**	**Federal Ecological/ Human Health**	24-Oct-17	**6-Apr-18**	**6-Apr-18**	**6-Apr-18**	**6-Apr-18**	**5-Apr-18**	**5-Apr-18**	**5-Apr-18**	**4-Apr-18**	**4-Apr-18**
Sample Depth:			1.2-1.8	**0.0-0.2**	**1.8-2.4**	**1.2-1.8**	**1.2-1.8**	**3.7-4.3**	**3.7-4.3**	**3-3.7**	**1.8-2.4**	**3.7-4.3**
Matrix Code:			Soil	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Sample Type:	a	b	Original	**Original**	**Original**	**Original**	**Duplicate**	**Original**	**Original**	**Original**	**Original**	**Original**
Parameters	**Units**											
Phenols												
2,3,4,5-Tetrachlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
2,3,4,6-Tetrachlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
2,3,4-Trichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
2,3,5,6-Tetrachlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
2,3,5-Trichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
2,3,6-Trichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
2,3-Dichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
2,4,5-Trichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
2,4,6-Trichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
2,4-Dichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
2,4-Dimethylphenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	ND(0.1)
2,4-Dinitrophenol	µg/g		ND(0.1)	--	--	ND(0.1) J	ND(0.1) J	ND(0.1) J	ND(0.1) J	ND(0.1) J	--	ND(0.1) J
2,5-Dichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
2,6-Dichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
2-Chlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
2-Methylphenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	ND(0.1)
2-Nitrophenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	ND(0.1)
3&4-Methylphenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	ND(0.1)
3,4,5-Trichlorophenol	µg/g		ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
3,4-Dichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
3,5-Dichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
3/4-Chlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
4,6-Dinitro-2-methylphenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	ND(0.1)
4-Chloro-3-methylphenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	ND(0.1)
4-Nitrophenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	ND(0.1)
Pentachlorophenol	µg/g	7.6	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
Phenol	µg/g	3.8	ND(0.1)	--	--	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	ND(0.1)
Volitile Organic Compounds (VOCs)												
1,1,1-Trichloroethane	mg/kg	0.38	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
1,1,2,2-Tetrachloroethane	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
1,1,2-Trichloroethane	mg/kg	0.3	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
1,1-Dichloroethane	mg/kg	0.47	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
1,1-Dichloroethene	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
1,2-Dibromoethane (Ethylene dibromide)	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
1,2-Dichlorobenzene	mg/kg	0.18	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
1,2-Dichloroethane	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
1,2-Dichloropropane	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
1,3-Dichlorobenzene	mg/kg	4.8	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
1,4-Dichlorobenzene	mg/kg	0.098	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Benzene	mg/kg	0.042	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Bromodichloromethane	mg/kg	1.5	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Bromoform	mg/kg	2.3	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Bromomethane (Methyl bromide)	mg/kg	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
Carbon tetrachloride	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Chlorobenzene	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Chloroethane	mg/kg		ND(0.2)	--	--	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	--	ND(0.2)
Chloroform (Trichloromethane)	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
cis-1,2-Dichloroethene	mg/kg	1.9	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
cis-1,3-Dichloropropene	mg/kg	1.7	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Dibromochloromethane	mg/kg	0.27	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Ethylbenzene	mg/kg	0.065	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
m&p-Xylenes	mg/kg		ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Methyl tert butyl ether (MTBE)	mg/kg	0.05	0.086[a]	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Methylene chloride	mg/kg	0.32	ND(0.05)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
o-Xylene	mg/kg		ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Styrene	mg/kg	16	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Tetrachloroethene	mg/kg	0.1	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Toluene	mg/kg	0.35	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
trans-1,2-Dichloroethene	mg/kg	0.084	ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
trans-1,3-Dichloropropene	mg/kg		ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Trichloroethene	mg/kg	0.01	ND(0.01)	--	--	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)	--	ND(0.01)
Trichlorofluoromethane (CFC-11)	mg/kg		ND(0.025)	--	--	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	ND(0.025)
Vinyl chloride	mg/kg	0.02	ND(0.02)	--	--	ND(0.02)	ND(0.02)	ND(0.02)	ND(0.02)	ND(0.02)	--	ND(0.02)
Xylenes (total)	mg/kg	8.8	ND(0.05)	--	--	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	ND(0.05)
General Chemistry												
Ammonia-N	mg/kg		ND(0.31)	ND(0.31) J	ND(0.29) J	ND(0.30) J	ND(0.29) J	ND(0.29) J	ND(0.30) J	ND(0.29) J	--	ND(0.30) J
Chloride	mg/kg		5.7	27	14	15	16	15	14	22	--	23
Conductivity	uS/cm		15	41	16	23 J	130 J	18	22	83	--	110
Cyanide (free)	mg/kg	0.9	ND(0.50)	--	--	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	--	ND(0.50)
Cyanide (total)	mg/kg	0.9	ND(0.50)	--	--	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	--	ND(0.50)
Fraction organic carbon (FOC)	g/g		--	--	--	--	--	--	--	--	--	--
Moisture	%		17	18	13	14 D 13	12 D 14	11 D 11	13 D 14	11 D 11	13	14 D 13
Nitrite (as N)	mg/kg		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050) J	0.19 J	0.086	0.085	0.13	--	0.15
Nitrite/Nitrate	mg/kg		ND(0.25)	4.1	1.2	1.8	1.8	1.7	2.4	4.2	--	2.3
Orthophosphate	mg/kg		0.053	0.063	ND(0.050)	0.059	0.15	0.19	0.055	ND(0.050)	--	ND(0.050)
pH, soluble (5:1)	s.u.	6-8	5.38[b]	4.57[b]	5.25[b]	5.54[b]	7.62	5.87[b]	5.42[b]	7.44	--	7.35
Sulfate	mg/kg		18	ND(10)	ND(10)	12 J	40 J	ND(10)	ND(10)	13	--	72
Total organic carbon (TOC)	mg/kg		--	--	--	--	--	--	--	--	--	--

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:				Boat Harbour Stabilization Lagoon (BHSL)								
Delineated Sample Location:				**BHSL-MW-11**								
Sample Location:			BHSL-MW-11	**BHSL-S-4**	**BHSL-S-5**	**BHSL-MW-5**	**BHSL-MW-5**	**BHSL-MW-6**	**BHSL-MW-7**	**BHSL-MW-8**	**BHSL-MW-9**	**BHSL-MW-9**
Sample ID:	**Soil Criteria**		BHSL-MW-11 (1.2-1.8m)	**BHSL-S-4 (0.0-0.2m)**	**BHSL-S-5 (1.8-2.4m)**	**BHSL-MW-5 (1.2-1.8m)**	**BHSL-MW-DUP2**	**BHSL-MW-6 (3.7-4.3m)**	**BHSL-MW-7 (3.7-4.3m)**	**BHSL-MW-8 (3.0-3.7m)**	**BHSL-MW-9 (1.8-2.4m)**	**BHSL-MW-9 (3.7-4.3m)**
Sample Date:	**Provincial Ecological/ Human Health**	**Federal Ecological/ Human Health**	24-Oct-17	**6-Apr-18**	**6-Apr-18**	**6-Apr-18**	**6-Apr-18**	**5-Apr-18**	**5-Apr-18**	**5-Apr-18**	**4-Apr-18**	**4-Apr-18**
Sample Depth:			1.2-1.8	**0.0-0.2**	**1.8-2.4**	**1.2-1.8**	**1.2-1.8**	**3.7-4.3**	**3.7-4.3**	**3-3.7**	**1.8-2.4**	**3.7-4.3**
Matrix Code:			Soil	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Sample Type:	a	b	Original	**Original**	**Original**	**Original**	**Duplicate**	**Original**	**Original**	**Original**	**Original**	**Original**
Parameters	**Units**											
Dioxins and Furans												
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g		ND(0.0690)	--	--	ND(0.104)	ND(0.117)	0.381	0.297	0.335	--	ND(0.117)
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g		2.30	--	--	93.3	250	3.34	21.6	2.61	--	2.64
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g		ND(0.0624)	--	--	ND(0.102)	ND(0.0932)	ND(0.105)	ND(0.108)	ND(0.106)	--	ND(0.107)
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g		ND(0.106)	--	--	1.44	2.06	0.503	0.536	0.428	--	ND(0.157)
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g		ND(0.0700)	--	--	ND(0.121) J	ND(0.111) J	ND(0.125) J	ND(0.128) J	ND(0.113) J	--	ND(0.127) J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.101)	--	--	ND(0.0447)	ND(0.0864)	ND(0.101)	ND(0.0966)	ND(0.0925)	--	ND(0.0748)
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.109)	--	--	ND(0.108)	ND(0.101)	ND(0.104)	ND(0.113)	ND(0.108)	--	ND(0.117)
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.0994)	--	--	ND(0.0454)	ND(0.0878)	ND(0.102)	ND(0.0980)	ND(0.0939)	--	ND(0.0759)
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.112)	--	--	ND(0.112)	ND(0.104)	ND(0.108)	ND(0.117)	ND(0.112)	--	ND(0.121)
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.107)	--	--	ND(0.0519) J	ND(0.100) J	ND(0.117) J	ND(0.112) J	ND(0.107) J	--	ND(0.0867) J
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.0927)	--	--	2.53 J	ND(0.0968) J	ND(0.100) J	ND(0.109) J	ND(0.104) J	--	ND(0.112) J
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.105)	--	--	ND(0.113)	ND(0.112)	ND(0.103)	ND(0.111)	ND(0.114)	--	ND(0.100)
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g		ND(0.110)	--	--	ND(0.105)	ND(0.106)	ND(0.102)	ND(0.109)	ND(0.107)	--	ND(0.105)
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.108)	--	--	ND(0.0484) J	ND(0.0936) J	ND(0.109) J	ND(0.105) J	ND(0.100) J	--	ND(0.0810) J
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.103)	--	--	ND(0.112)	ND(0.111)	ND(0.102)	ND(0.110)	ND(0.113)	--	ND(0.0992)
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g		ND(0.108)	--	--	ND(0.114)	ND(0.108)	ND(0.0992)	ND(0.0538)	ND(0.100)	--	ND(0.113)
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g		ND(0.113)	--	--	ND(0.113)	ND(0.0977)	ND(0.103)	ND(0.110)	ND(0.109)	--	ND(0.106)
Total heptachlorodibenzofuran (HpCDF)	pg/g		ND(0.0660)	--	--	ND(0.110)	ND(0.101)	0.318	ND(0.194)	0.299	--	ND(0.116)
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g		ND(0.106)	--	--	2.26	3.63	1.74	1.59	1.62	--	ND(0.220)
Total hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.104)	--	--	ND(0.0475)	ND(0.0917)	ND(0.107)	ND(0.102)	ND(0.0981)	--	ND(0.0793)
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(1.71)	--	--	2.53 J	ND(0.100) J	ND(0.104)	ND(0.113)	ND(0.108)	--	ND(0.117)
Total pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.104)	--	--	ND(0.113)	ND(0.111)	ND(0.102)	ND(0.111)	ND(0.114)	--	ND(0.0997)
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g		ND(0.501)	--	--	ND(0.105)	ND(0.106)	ND(0.102)	ND(0.109)	ND(0.107)	--	ND(0.105)
Total tetrachlorodibenzofuran (TCDF)	pg/g		ND(0.181)	--	--	ND(0.114)	ND(0.108)	ND(0.0992)	ND(0.0538)	ND(0.100)	--	ND(0.113)
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g		ND(0.752)	--	--	ND(0.113)	ND(0.0977)	ND(0.103)	ND(0.110)	ND(0.109)	--	ND(0.106)
Total TEQ	ng/kg	4	0.344	--	--	0.605	0.416	0.331	0.350	0.342	--	0.327
Grain Size												
Clay	%		--	--	--	--	--	--	--	--	--	--
Grain Size <1000um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <120um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <16um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <2.0um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <2000um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <250um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <3.9um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <31um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <500um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <62um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <7.8um	%		--	--	--	--	--	--	--	--	--	--
Gravel	%		--	--	--	--	--	--	--	--	--	--
Sand	%		--	--	--	--	--	--	--	--	--	--
Silt	%		--	--	--	--	--	--	--	--	--	--
Grain size (median)	none		--	--	--	--	--	--	--	--	--	--
Sieve pan	%		--	--	--	--	--	--	--	--	--	--
Sieve, #200	%		--	--	--	--	--	--	--	--	--	--

Notes:
20[a] Exceeds applicable criteria; superscript identifies exceeded criteria
Provincial Ecological/ Human Health[a] - Nova Scotia Contaminated Sites Regulation Table A4 References for Pathway Specific Standards for coarse-grained soil on a potable agricultural site
Federal Ecological/ Human Health[b] - Canadian Council of Ministers of the Environment (CCME) Soil Quality Guidelines for the protection of Environment and Human Health on an Agricultural Site. Federal criteria is
BTEX - Benzene, Toluene, Ethylbenzene, and total Xylenes
ND (2.0) - Not detected at the associated reporting limit.
J - The associated value is an estimated concentration
D - The associated value is a confirmatory or duplicate concentration
"--" - Parameter not analysed

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:				Estuary (EST)		Former Settling Pond 2 (FSP2)				Former Settling Pond 3 (FSP3)		
Delineated Sample Location:						FSP2-S-5					FSP3-MW-2	
Sample Location:				EST-MW-2	EST-MW-3	FSP2-S-5	FSP2-S-5	FSP2-S-16	FSP2-S-17	FSP3-MW-2	FSP3-BH-1	FSP3-S-8
Sample ID:	Soil Criteria			EST-MW-2 (4.3-4.9m)	EST-MW-3 (1.8-2.4m)	FSP2-S-5 (0.31-0.46m)	FSP2-S-DUP	FSP2-S-16 (0.31-0.46m)	FSP2-S-17 (0.31-0.46m	FSP3-MW-2 (3.1-3.7m)	FSP3-BH-1 (3.1-3.7m)	FSP3-S-8 (0.0-0.2m)
Sample Date:	Provincial Ecological/ Human Health	Federal Ecological/ Human Health		9-Apr-18	10-Apr-18	16-Oct-17	16-Oct-17	16-Apr-18	16-Apr-18	8-Nov-17	12-Apr-18	12-Apr-18
Sample Depth:				4.3-4.9	1.8-2.4	0.31-0.46	0.31-0.46	0.31-0.46	0.31-0.46	3.1-3.7	3.1-3.7	0.0-0.2
Matrix Code:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Type:				Original	Original	Original	Duplicate	Original	Original	Original	Original	Original
Parameters	**Units**											
Metals												
Aluminum	mg/kg	15400		3400	6000	7100	7200	--	--	6300	--	--
Antimony	mg/kg	7.5		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--
Arsenic	mg/kg	17		5.9	6.6	3.5	5.6	--	--	3.2	--	--
Barium	mg/kg	400		130	64	160	170	--	--	89	--	--
Beryllium	mg/kg	5		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--
Bismuth	mg/kg			ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--
Boron	mg/kg	4300		ND(50)	ND(50)	ND(50)	ND(50)	--	--	ND(50)	--	--
Cadmium	mg/kg	1.4		ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	--	--	ND(0.30)	--	--
Chromium	mg/kg	52		6.3	9.5	14	13	--	--	14	--	--
Cobalt	mg/kg	20		3.9	5.2	4.5	6.4	--	--	8.4	--	--
Copper	mg/kg	63		6.9	8.0	4.8	7.7	--	--	16	--	--
Iron	mg/kg	11000		8900	12000[a]	10000	16000[a]	--	--	17000[a]	--	--
Lead	mg/kg	70		11	15	7.8	9.8	--	--	5.2	--	--
Lithium	mg/kg			9.1	13	17	21	--	--	17	--	--
Manganese	mg/kg			540	610	440	920	--	--	500	--	--
Mercury	mg/kg	6.6		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	--	--	ND(0.10)	--	--
Molybdenum	mg/kg	40		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--
Nickel	mg/kg	50		9.0	11	11	14	--	--	17	--	--
Rubidium	mg/kg			2.9	3.3	7.4	7.1	--	--	8.1	--	--
Selenium	mg/kg	1		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	--	--	ND(1.0)	--	--
Silver	mg/kg	20		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	--	--	ND(0.50)	--	--
Strontium	mg/kg	9400		ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	--	--	14	--	--
Thallium	mg/kg	1		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	--	--	ND(0.10)	--	--
Tin	mg/kg	5		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--
Uranium	mg/kg	23		0.47	0.48	0.80	0.80	--	--	1.2	--	--
Vanadium	mg/kg	39		5.0	7.0	8.8	11	--	--	10	--	--
Zinc	mg/kg	200		36	35	31	37	--	--	35	--	--
Polychlorinated Biphenyls (PCBs)												
Aroclor-1016 (PCB-1016)	µg/g	1.3		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1221 (PCB-1221)	µg/g	1.3		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1232 (PCB-1232)	µg/g	1.3		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1242 (PCB-1242)	µg/g	1.3		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1248 (PCB-1248)	µg/g	1.3		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1254 (PCB-1254)	µg/g	1.3		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1260 (PCB-1260)	µg/g	1.3		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	--	ND(0.050)	--	--
Total PCB	µg/g	1.3		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	--	ND(0.050)	--	--
Petroleum Hydrocarbons (PHCs)												
Benzene	mg/kg	0.042		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Toluene	mg/kg	0.35		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Ethylbenzene	mg/kg	0.065		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Xylenes (total)	mg/kg	8.8		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	--	ND(0.050)	--	--
Methyl tert butyl ether (MTBE)	mg/kg	0.05		--	--	ND(0.025)	ND(0.025)	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C10) Less BTEX	mg/kg	See Modified TPH		ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	--	--	ND(2.5)	--	--
Total Petroleum hydrocarbons (>C10-C16)	mg/kg	See Modified TPH		ND(10)	ND(10)	ND(10)	ND(10)	--	--	ND(10)	--	--
Total Petroleum Hydrocarbons (>C16-C21)	mg/kg	See Modified TPH		ND(10)	ND(10)	ND(10)	ND(10)	--	--	ND(10)	--	--
Total Petroleum Hydrocarbons (>C21-C32)	mg/kg	See Modified TPH		ND(15)	ND(15)	ND(15)	ND(15)	--	--	ND(15)	--	--
Total Petroleum Hydrocarbons (Modified TPH)	mg/kg	74/150/300		ND(15)	ND(15)	ND(15)	ND(15)	--	--	ND(15)	--	--
Polycyclic Aromatic Hydrocarbons (PAHs)												
1-Methylnaphthalene	mg/kg	30		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
2-Methylnaphthalene	mg/kg	30		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Acenaphthene	mg/kg	21.5		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Acenaphthylene	mg/kg	4.5		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Anthracene	mg/kg	2.5		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo fluoranthenes	mg/kg			ND(0.020) D ND(0.010)	ND(0.020) D ND(0.010)	ND(0.020) D ND(0.010)	ND(0.020) D ND(0.010)	--	--	ND(0.010)	--	--
Benzo(a)anthracene	mg/kg	0.5		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(a)pyrene	mg/kg	0.6		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(b)fluoranthene	mg/kg	6.2		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(b)pyridine (Quinoline)	mg/kg		0.1	ND(0.050)	ND(0.050)	ND(0.050) D ND(0.050)	ND(0.050) D ND(0.050)	--	--	ND(0.050)	--	--
Benzo(g,h,i)perylene	mg/kg	6.6		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(j)fluoranthene	mg/kg	6.2		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(k)fluoranthene	mg/kg	6.2		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Chrysene	mg/kg	6.2		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Dibenz(a,h)anthracene	mg/kg		0.1	ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Fluoranthene	mg/kg	15.4		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Fluorene	mg/kg	15.4		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Indeno(1,2,3-cd)pyrene	mg/kg	0.38		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Naphthalene	mg/kg	0.6		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Perylene	mg/kg			ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Phenanthrene	mg/kg	6.2		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--
Pyrene	mg/kg	7.7		ND(0.0050)	ND(0.0050)	ND(0.0050)	ND(0.0050)	--	--	ND(0.0050)	--	--

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:				Estuary (EST)		Former Settling Pond 2 (FSP2)				Former Settling Pond 3 (FSP3)		
Delineated Sample Location:						FSP2-S-5				FSP3-MW-2		
Sample Location:				EST-MW-2	EST-MW-3	FSP2-S-5	FSP2-S-5	FSP2-S-16	FSP2-S-17	FSP3-MW-2	FSP3-BH-1	FSP3-S-8
Sample ID:	**Soil Criteria**			EST-MW-2 (4.3-4.9m)	EST-MW-3 (1.8-2.4m)	FSP2-S-5 (0.31-0.46m)	FSP2-S-DUP	FSP2-S-16 (0.31-0.46m)	FSP2-S-17 (0.31-0.46m	FSP3-MW-2 (3.1-3.7m)	FSP3-BH-1 (3.1-3.7m)	FSP3-S-8 (0.0-0.2m)
Sample Date:				9-Apr-18	10-Apr-18	16-Oct-17	16-Oct-17	16-Apr-18	16-Apr-18	8-Nov-17	12-Apr-18	12-Apr-18
Sample Depth:				4.3-4.9	1.8-2.4	0.31-0.46	0.31-0.46	0.31-0.46	0.31-0.46	3.1-3.7	3.1-3.7	0.0-0.2
Matrix Code:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Type:				Original	Original	Original	Duplicate	Original	Original	Original	Original	Original
Parameters	**Units**											
Phenols												
2,3,4,5-Tetrachlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
2,3,4,6-Tetrachlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
2,3,4-Trichlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
2,3,5,6-Tetrachlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
2,3,5-Trichlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
2,3,6-Trichlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
2,3-Dichlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
2,4,5-Trichlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
2,4,6-Trichlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
2,4-Dichlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
2,4-Dimethylphenol	µg/g			ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--
2,4-Dinitrophenol	µg/g			ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--
2,5-Dichlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
2,6-Dichlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
2-Chlorophenol	µg/g			ND(0.05) J	ND(0.05) J	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
2-Methylphenol	µg/g			ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--
2-Nitrophenol	µg/g			ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--
3&4-Methylphenol	µg/g			ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--
3,4,5-Trichlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
3,4-Dichlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
3,5-Dichlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
3/4-Chlorophenol	µg/g			ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
4,6-Dinitro-2-methylphenol	µg/g			ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--
4-Chloro-3-methylphenol	µg/g			ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--
4-Nitrophenol	µg/g			ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--
Pentachlorophenol	µg/g	7.6		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
Phenol	µg/g	3.8		ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	--	--	ND(0.1)	--	--
Volitile Organic Compounds (VOCs)												
1,1,1-Trichloroethane	mg/kg	0.38		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
1,1,2,2-Tetrachloroethane	mg/kg	0.05		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
1,1,2-Trichloroethane	mg/kg	0.3		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
1,1-Dichloroethane	mg/kg	0.47		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
1,1-Dichloroethene	mg/kg	0.05		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
1,2-Dibromoethane (Ethylene dibromide)	mg/kg	0.05		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
1,2-Dichlorobenzene	mg/kg	0.18		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
1,2-Dichloroethane	mg/kg	0.05		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
1,2-Dichloropropane	mg/kg	0.05		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
1,3-Dichlorobenzene	mg/kg	4.8		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
1,4-Dichlorobenzene	mg/kg	0.098		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Benzene	mg/kg	0.042		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Bromodichloromethane	mg/kg	1.5		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Bromoform	mg/kg	2.3		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Bromomethane (Methyl bromide)	mg/kg	0.05		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
Carbon tetrachloride	mg/kg	0.05		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Chlorobenzene	mg/kg	0.05		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Chloroethane	mg/kg			ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	--	--	ND(0.2)	--	--
Chloroform (Trichloromethane)	mg/kg	0.05		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
cis-1,2-Dichloroethene	mg/kg	1.9		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
cis-1,3-Dichloropropene	mg/kg	1.7		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Dibromochloromethane	mg/kg	0.27		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Ethylbenzene	mg/kg	0.065		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
m&p-Xylenes	mg/kg			ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Methyl tert butyl ether (MTBE)	mg/kg	0.05		ND(0.025)	ND(0.025)	0.11[a]	0.1[a]	ND(0.025)	ND(0.025)	0.072[a]	ND(0.025)	ND(0.025)
Methylene chloride	mg/kg	0.32		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
o-Xylene	mg/kg			ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Styrene	mg/kg	16		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Tetrachloroethene	mg/kg	0.1		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Toluene	mg/kg	0.35		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
trans-1,2-Dichloroethene	mg/kg	0.084		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
trans-1,3-Dichloropropene	mg/kg			ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Trichloroethene	mg/kg	0.01		ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)	--	--	ND(0.01)	--	--
Trichlorofluoromethane (CFC-11)	mg/kg			ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.025)	--	--
Vinyl chloride	mg/kg	0.02		ND(0.02)	ND(0.02)	ND(0.02)	ND(0.02)	--	--	ND(0.02)	--	--
Xylenes (total)	mg/kg	8.8		ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)	--	--	ND(0.05)	--	--
General Chemistry												
Ammonia-N	mg/kg			ND(0.29) J	ND(0.30) J	0.50	0.38	--	--	ND(0.25)	--	--
Chloride	mg/kg			15	16	8.8	14	--	--	8.1	--	--
Conductivity	uS/cm			58	33	21	24	--	--	69	--	--
Cyanide (free)	mg/kg	0.9		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	--	--	ND(0.50)	--	--
Cyanide (total)	mg/kg	0.9		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	--	--	ND(0.50)	--	--
Fraction organic carbon (FOC)	g/g			0.00059	--	--	--	--	--	--	--	--
Moisture	%			12 D 11	14 D 13	22	16	17	24	21	14	36
Nitrite (as N)	mg/kg			0.12	0.094	ND(0.050)	ND(0.050)	--	--	0.42	--	--
Nitrite/Nitrate	mg/kg			3.5	2.3	0.45 J	1.5 J	--	--	0.88	--	--
Orthophosphate	mg/kg			0.075	ND(0.050)	0.15	0.15	--	--	ND(0.050)	--	--
pH, soluble (5:1)	s.u.		6-8	7.10	5.77[b]	6.12	6.28	--	--	7.84	--	--
Sulfate	mg/kg			ND(10)	24	ND(10)	ND(10)	--	--	13	--	--
Total organic carbon (TOC)	mg/kg			590	--	--	--	--	--	--	--	--

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:				Estuary (EST)		Former Settling Pond 2 (FSP2)				Former Settling Pond 3 (FSP3)		
Delineated Sample Location:						FSP2-S-5					FSP3-MW-2	
Sample Location:				EST-MW-2	EST-MW-3	FSP2-S-5	FSP2-S-5	FSP2-S-16	FSP2-S-17	FSP3-MW-2	FSP3-BH-1	FSP3-S-8
Sample ID:	Soil Criteria			EST-MW-2 (4.3-4.9m)	EST-MW-3 (1.8-2.4m)	FSP2-S-5 (0.31-0.46m)	FSP2-S-DUP	FSP2-S-16 (0.31-0.46m)	FSP2-S-17 (0.31-0.46m	FSP3-MW-2 (3.1-3.7m)	FSP3-BH-1 (3.1-3.7m)	FSP3-S-8 (0.0-0.2m)
Sample Date:	Provincial Ecological/ Human Health	Federal Ecological/ Human Health		9-Apr-18	10-Apr-18	16-Oct-17	16-Oct-17	16-Apr-18	16-Apr-18	8-Nov-17	12-Apr-18	12-Apr-18
Sample Depth:				4.3-4.9	1.8-2.4	0.31-0.46	0.31-0.46	0.31-0.46	0.31-0.46	3.1-3.7	3.1-3.7	0.0-0.2
Matrix Code:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Type:				Original	Original	Original	Duplicate	Original	Original	Original	Original	Original
Parameters	**Units**											
Dioxins and Furans												
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g			0.855	0.609	0.172 J	2.84 J	--	--	ND(0.119)	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g			8.57	1720	45.3	78.1	--	--	ND(1.19)	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g			ND(0.281)	ND(0.104)	ND(0.103) J	0.648 J	--	--	ND(0.0742)	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g			1.20	13.9	0.679 J	4.93 J	--	--	ND(0.194)	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g			ND(0.120) J	ND(0.123) J	ND(0.137)	ND(0.105)	--	--	ND(0.0890)	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g			ND(0.100)	ND(0.0720)	ND(0.106)	ND(0.108)	--	--	ND(0.0910)	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g			ND(0.118)	ND(0.116)	ND(0.115)	ND(0.110)	--	--	ND(0.145)	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g			ND(0.102)	ND(0.0731)	ND(0.103)	ND(0.105)	--	--	ND(0.0906)	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g			ND(0.123)	ND(0.120)	ND(0.116)	0.137	--	--	ND(0.141)	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g			ND(0.116) J	ND(0.0835) J	ND(0.127)	ND(0.130)	--	--	ND(0.106)	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g			ND(0.114) J	ND(0.112) J	ND(0.104)	ND(0.0993)	--	--	ND(0.132)	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g			ND(0.115)	ND(0.111)	ND(0.100)	ND(0.111)	--	--	ND(0.114)	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g			ND(0.0972)	ND(0.109)	ND(0.0854)	ND(0.0817)	--	--	ND(0.139)	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g			ND(0.108) J	ND(0.0779) J	ND(0.116)	ND(0.118)	--	--	ND(0.0976)	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g			ND(0.114)	ND(0.110)	ND(0.0999)	ND(0.111)	--	--	ND(0.117)	--	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g			ND(0.107)	ND(0.101)	ND(0.108)	ND(0.0956)	--	--	ND(0.132)	--	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g			ND(0.111)	ND(0.104)	ND(0.0833)	ND(0.106)	--	--	ND(0.127)	--	--
Total heptachlorodibenzofuran (HpCDF)	pg/g			0.802	ND(0.113)	ND(0.118) J	2.68 J	--	--	ND(0.0809)	--	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g			4.74	32.3	1.21 J	12.2 J	--	--	ND(0.194)	--	--
Total hexachlorodibenzofuran (HxCDF)	pg/g			ND(0.106)	ND(0.0763)	ND(0.112) J	0.607 J	--	--	ND(0.0959)	--	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g			0.383	0.174	ND(0.111)	0.850	--	--	ND(0.139)	--	--
Total pentachlorodibenzofuran (PeCDF)	pg/g			ND(0.114)	ND(0.110)	ND(0.100)	ND(0.111)	--	--	ND(0.115)	--	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g			ND(0.0972)	ND(0.109)	ND(0.0854)	ND(0.0817)	--	--	ND(0.139)	--	--
Total tetrachlorodibenzofuran (TCDF)	pg/g			ND(0.107)	ND(0.101)	ND(0.108)	ND(0.0956)	--	--	ND(0.132)	--	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g			ND(0.111)	ND(0.104)	ND(0.0833)	ND(0.106)	--	--	ND(0.127)	--	--
Total TEQ	ng/kg	4		0.353	0.982	0.314	0.396	--	--	0.402	--	--
Grain Size												
Clay	%			--	--	--	--	--	--	--	--	--
Grain Size <1000um	%			--	--	--	--	--	--	--	--	--
Grain Size <120um	%			--	--	--	--	--	--	--	--	--
Grain Size <16um	%			--	--	--	--	--	--	--	--	--
Grain Size <2.0um	%			--	--	--	--	--	--	--	--	--
Grain Size <2000um	%			--	--	--	--	--	--	--	--	--
Grain Size <250um	%			--	--	--	--	--	--	--	--	--
Grain Size <3.9um	%			--	--	--	--	--	--	--	--	--
Grain Size <31um	%			--	--	--	--	--	--	--	--	--
Grain Size <500um	%			--	--	--	--	--	--	--	--	--
Grain Size <62um	%			--	--	--	--	--	--	--	--	--
Grain Size <7.8um	%			--	--	--	--	--	--	--	--	--
Gravel	%			--	--	--	--	--	--	--	--	--
Sand	%			--	--	--	--	--	--	--	--	--
Silt	%			--	--	--	--	--	--	--	--	--
Grain size (median)	none			ND()	--	--	--	--	--	--	--	--
Sieve pan	%			32	--	--	--	--	--	--	--	--
Sieve, #200	%			68	--	--	--	--	--	--	--	--

Notes:
20[a] Exceeds applicable criteria; superscript identifies exceeded criteria
Provincial Ecological/ Human Health[a] - Nova Scotia Contaminated Sites Regulation Table A4 References for Pathway Specific Standards for coarse-grained soil on a potable agricultural site
Federal Ecological/ Human Health[b] - Canadian Council of Ministers of the Environment (CCME) Soil Quality Guidelines for the protection of Environment and Human Health on an Agricultural Site. Federal criteria is
BTEX - Benzene, Toluene, Ethylbenzene, and total Xylenes
ND (2.0) - Not detected at the associated reporting limit.
J - The associated value is an estimated concentration
D - The associated value is a confirmatory or duplicate concentration
"--" - Parameter not analysed

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:								Mill Air Emissions (MAE)					
Delineated Sample Location:				MAE-SS-1				MAE-SS-3			MAE-SS-6		
Sample Location:				MAE-SS-1	MAE-SS-11	MAE-SS-11	MAE-SS-12	MAE-SS-3	MAE-SS-13	MAE-SS-14	MAE-SS-6	MAE-SS-15	MAE-SS-16
Sample ID:	Soil Criteria			MAE-SS-1 (0.06-0.21m)	MAE-SS-11 (0.0-0.15m)	MAE-SS-DUP1	MAE-SS-12 (0.0-0.15m)	MAE-SS-3 (0.05-0.15m)	MAE-SS-13 (0.0-0.15m)	MAE-SS-14 (0.0-0.15m)	MAE-SS-6 (0.08-0.23m)	MAE-SS-15 (0.0-0.15m)	MAE-SS-16 (0.0-0.15m)
Sample Date:	Provincial Ecological/ Human Health	Federal Ecological/ Human Health		20-Oct-17	16-Apr-18	16-Apr-18	16-Apr-18	20-Oct-17	17-Apr-18	17-Apr-18	23-Oct-17	17-Apr-18	17-Apr-18
Sample Depth:				0.06-0.21	0.0-0.15	0.0-0.15	0.0-0.15	0.05-0.15	0.0-0.15	0.0-0.15	0.08-0.23	0.0-0.15	0.0-0.15
Matrix Code:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Type:				Original	Original	Duplicate	Original	Original	Original	Original	Original	Original	Original
Parameters	**Units**												
Metals													
Aluminum	mg/kg	15400		25000[a]	29000[a]	32000[a]	9600	11000	--	--	18000[a]	--	--
Antimony	mg/kg	7.5		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--
Arsenic	mg/kg	17		6.3	7.9	8.4	3.4	5.8	--	--	12	--	--
Barium	mg/kg	400		560[a]	350	370	65	61	--	--	37	--	--
Beryllium	mg/kg	5		ND(2.0)	2.0	2.1	ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--
Bismuth	mg/kg			ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--
Boron	mg/kg	4300		ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	--	--	ND(50)	--	--
Cadmium	mg/kg	1.4		ND(0.30)	0.73	0.76	ND(0.30)	ND(0.30)	--	--	ND(0.30)	--	--
Chromium	mg/kg	52		67[a]	30	32	10	13	--	--	17	--	--
Cobalt	mg/kg	20		31[a]	14	15	3.1	5.5	--	--	5.4	--	--
Copper	mg/kg	63		10	17	18	4.1	7.2	--	--	7.8	--	--
Iron	mg/kg	11000		67000[a]	29000[a]	30000[a]	12000[a]	18000[a]	--	--	28000[a]	--	--
Lead	mg/kg	70		15	34	35	13	11	--	--	16	--	--
Lithium	mg/kg			110	61	68	18	18	--	--	25	--	--
Manganese	mg/kg			2200	5000	5500	210	470	--	--	520	--	--
Mercury	mg/kg	6.6		ND(0.10)	0.18	0.21	ND(0.10)	ND(0.10)	--	--	0.11	--	--
Molybdenum	mg/kg	40		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--
Nickel	mg/kg	50		54[a]	52[a]	55[a]	8.0	9.4	--	--	8.4	--	--
Rubidium	mg/kg			6.2	24	27	14	7.7	--	--	9.1	--	--
Selenium	mg/kg	1		ND(1.0)	1.2[a]	1.4[a]	ND(1.0)	ND(1.0)	--	--	ND(1.0)	--	--
Silver	mg/kg	20		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	--	--	ND(0.50)	--	--
Strontium	mg/kg	9400		22	5.5	6.5	ND(5.0)	ND(5.0)	--	--	ND(5.0)	--	--
Thallium	mg/kg	1		ND(0.10)	0.32	0.36	ND(0.10)	0.10	--	--	ND(0.10)	--	--
Tin	mg/kg	5		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	--	ND(2.0)	--	--
Uranium	mg/kg	23		0.46	2.8	2.9	0.72	0.40	--	--	0.34	--	--
Vanadium	mg/kg	39		120[a]	25	27	12	15	--	--	18	--	--
Zinc	mg/kg	200		260[a]	260[a]	280[a]	48	45	--	--	65	--	--
Polychlorinated Biphenyls (PCBs)													
Aroclor-1016 (PCB-1016)	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1221 (PCB-1221)	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1232 (PCB-1232)	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1242 (PCB-1242)	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1248 (PCB-1248)	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1254 (PCB-1254)	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Aroclor-1260 (PCB-1260)	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Total PCB	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--	ND(0.050)	--	--
Petroleum Hydrocarbons (PHCs)													
Benzene	mg/kg	0.042		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.050)	--	--
Toluene	mg/kg	0.35		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.050)	--	--
Ethylbenzene	mg/kg	0.065		ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.025)	--	--	ND(0.050)	--	--
Xylenes (total)	mg/kg	8.8		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	--	--	ND(0.10)	--	--
Methyl tert butyl ether (MTBE)	mg/kg	0.05		ND(0.025)	--	--	--	0.22[a]	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C10) Less BTEX	mg/kg	See Modified TPH		39	ND(2.5)	ND(2.5)	ND(2.5)	ND(2.5)	--	--	ND(5.0)	--	--
Total Petroleum hydrocarbons (>C10-C16)	mg/kg	See Modified TPH		ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	--	--	ND(10)	--	--
Total Petroleum Hydrocarbons (>C16-C21)	mg/kg	See Modified TPH		ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	--	--	ND(10)	--	--
Total Petroleum Hydrocarbons (>C21-C32)	mg/kg	See Modified TPH		22	ND(15)	ND(15)	ND(15)	24	--	--	ND(15)	--	--
Total Petroleum Hydrocarbons (Modified TPH)	mg/kg	74/150/300		61	ND(15)	ND(15)	ND(15)	24	--	--	ND(15)	--	--
Polycyclic Aromatic Hydrocarbons (PAHs)													
1-Methylnaphthalene	mg/kg	30		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
2-Methylnaphthalene	mg/kg	30		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Acenaphthene	mg/kg	21.5		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Acenaphthylene	mg/kg	4.5		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Anthracene	mg/kg	2.5		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo fluoranthenes	mg/kg			ND(0.010)	--	--	--	ND(0.010)	--	--	ND(0.010)	--	--
Benzo(a)anthracene	mg/kg	0.5		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(a)pyrene	mg/kg	0.6		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(b)fluoranthene	mg/kg	6.2		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(b)pyridine (Quinoline)	mg/kg		0.1	ND(0.050) D ND(0.050)	--	--	--	ND(0.050) D ND(0.050)	--	--	ND(0.050) D ND(0.050)	--	--
Benzo(g,h,i)perylene	mg/kg	6.6		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(j)fluoranthene	mg/kg	6.2		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Benzo(k)fluoranthene	mg/kg	6.2		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Chrysene	mg/kg	6.2		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Dibenz(a,h)anthracene	mg/kg		0.1	ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Fluoranthene	mg/kg	15.4		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Fluorene	mg/kg	15.4		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Indeno(1,2,3-cd)pyrene	mg/kg	0.38		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Naphthalene	mg/kg	0.6		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Perylene	mg/kg			ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Phenanthrene	mg/kg	6.2		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--
Pyrene	mg/kg	7.7		ND(0.0050)	--	--	--	ND(0.0050)	--	--	ND(0.0050)	--	--

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:								Mill Air Emissions (MAE)					
Delineated Sample Location:				MAE-SS-1					MAE-SS-3			MAE-SS-6	
Sample Location:				MAE-SS-1	MAE-SS-11	MAE-SS-11	MAE-SS-12	MAE-SS-3	MAE-SS-13	MAE-SS-14	MAE-SS-6	MAE-SS-15	MAE-SS-16
Sample ID:	**Soil Criteria**			MAE-SS-1 (0.06-0.21m)	MAE-SS-11 (0.0-0.15m)	MAE-SS-DUP1	MAE-SS-12 (0.0-0.15m)	MAE-SS-3 (0.05-0.15m)	MAE-SS-13 (0.0-0.15m)	MAE-SS-14 (0.0-0.15m)	MAE-SS-6 (0.08-0.23m)	MAE-SS-15 (0.0-0.15m)	MAE-SS-16 (0.0-0.15m)
Sample Date:	**Provincial Ecological/ Human Health**	**Federal Ecological/ Human Health**		20-Oct-17	16-Apr-18	16-Apr-18	16-Apr-18	20-Oct-17	17-Apr-18	17-Apr-18	23-Oct-17	17-Apr-18	17-Apr-18
Sample Depth:				0.06-0.21	0.0-0.15	0.0-0.15	0.0-0.15	0.05-0.15	0.0-0.15	0.0-0.15	0.08-0.23	0.0-0.15	0.0-0.15
Matrix Code:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Type:				Original	Original	Duplicate	Original	Original	Original	Original	Original	Original	Original
Parameters	**Units**												
Phenols													
2,3,4,5-Tetrachlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,3,4,6-Tetrachlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,3,4-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,3,5,6-Tetrachlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,3,5-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,3,6-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,3-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,4,5-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,4,6-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,4-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,4-Dimethylphenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--	ND(0.1)	--	--
2,4-Dinitrophenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--	ND(0.1)	--	--
2,5-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2,6-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2-Chlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
2-Methylphenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--	ND(0.1)	--	--
2-Nitrophenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--	ND(0.1)	--	--
3&4-Methylphenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--	ND(0.1)	--	--
3,4,5-Trichlorophenol	µg/g			ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
3,4-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
3,5-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
3/4-Chlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
4,6-Dinitro-2-methylphenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--	ND(0.1)	--	--
4-Chloro-3-methylphenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--	ND(0.1)	--	--
4-Nitrophenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--	ND(0.1)	--	--
Pentachlorophenol	µg/g	7.6		ND(0.05)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
Phenol	µg/g	3.8		ND(0.1)	--	--	--	ND(0.1)	--	--	ND(0.1)	--	--
Volitile Organic Compounds (VOCs)													
1,1,1-Trichloroethane	mg/kg	0.38		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,1,2,2-Tetrachloroethane	mg/kg	0.05		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,1,2-Trichloroethane	mg/kg	0.3		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,1-Dichloroethane	mg/kg	0.47		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,1-Dichloroethene	mg/kg	0.05		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,2-Dibromoethane (Ethylene dibromide)	mg/kg	0.05		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,2-Dichlorobenzene	mg/kg	0.18		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,2-Dichloroethane	mg/kg	0.05		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,2-Dichloropropane	mg/kg	0.05		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,3-Dichlorobenzene	mg/kg	4.8		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
1,4-Dichlorobenzene	mg/kg	0.098		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Benzene	mg/kg	0.042		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Bromodichloromethane	mg/kg	1.5		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Bromoform	mg/kg	2.3		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Bromomethane (Methyl bromide)	mg/kg	0.05		ND(0.1)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
Carbon tetrachloride	mg/kg	0.05		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Chlorobenzene	mg/kg	0.05		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Chloroethane	mg/kg			ND(0.4)	--	--	--	ND(0.2)	--	--	ND(0.2)	--	--
Chloroform (Trichloromethane)	mg/kg	0.05		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
cis-1,2-Dichloroethene	mg/kg	1.9		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
cis-1,3-Dichloropropene	mg/kg	1.7		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Dibromochloromethane	mg/kg	0.27		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Ethylbenzene	mg/kg	0.065		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
m&p-Xylenes	mg/kg			ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Methyl tert butyl ether (MTBE)	mg/kg	0.05		ND(0.05)	--	--	--	ND(0.025)	ND(0.025)	ND(0.025)	0.087[a]	ND(0.025)	ND(0.025)
Methylene chloride	mg/kg	0.32		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.05)	--	--
o-Xylene	mg/kg			ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Styrene	mg/kg	16		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Tetrachloroethene	mg/kg	0.1		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Toluene	mg/kg	0.35		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
trans-1,2-Dichloroethene	mg/kg	0.084		ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
trans-1,3-Dichloropropene	mg/kg			ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Trichloroethene	mg/kg	0.01		ND(0.02)	--	--	--	ND(0.01)	--	--	ND(0.01)	--	--
Trichlorofluoromethane (CFC-11)	mg/kg			ND(0.05)	--	--	--	ND(0.025)	--	--	ND(0.025)	--	--
Vinyl chloride	mg/kg	0.02		ND(0.04)	--	--	--	ND(0.02)	--	--	ND(0.02)	--	--
Xylenes (total)	mg/kg	8.8		ND(0.1)	--	--	--	ND(0.05)	--	--	ND(0.05)	--	--
General Chemistry													
Ammonia-N	mg/kg			ND(0.28)	ND(0.52) J	ND(0.55) J	ND(0.48) J	0.34	--	--	ND(0.36)	--	--
Chloride	mg/kg			32	130	130	32	12	--	--	25	--	--
Conductivity	uS/cm			150	170	180	63	23	--	--	43	--	--
Cyanide (free)	mg/kg	0.9		ND(0.50)	--	--	--	ND(0.50)	--	--	ND(0.50)	--	--
Cyanide (total)	mg/kg	0.9		ND(0.50)	--	--	--	ND(0.50)	--	--	ND(0.50)	--	--
Fraction organic carbon (FOC)	g/g			--	--	--	--	--	--	--	--	--	--
Moisture	%			9.0	47	49	44	20	42	37	26	22	20
Nitrite (as N)	mg/kg			ND(0.050)	0.055	0.079	ND(0.050)	ND(0.050)	--	--	ND(0.050)	--	--
Nitrite/Nitrate	mg/kg			ND(0.25)	8.1	9.5	2.2	0.27	--	--	0.99	--	--
Orthophosphate	mg/kg			1.1	ND(0.050)	0.088	ND(0.050)	0.11	--	--	0.15	--	--
pH, soluble (5:1)	s.u.		6-8	7.05	4.89[b]	4.78[b]	4.92[b]	4.77[b]	--	--	4.60[b]	--	--
Sulfate	mg/kg			ND(10)	67	69	28	ND(10)	--	--	11	--	--
Total organic carbon (TOC)	mg/kg			--	--	--	--	--	--	--	--	--	--

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:							Mill Air Emissions (MAE)					
Delineated Sample Location:				MAE-SS-1								
Sample Location:			MAE-SS-1	MAE-SS-11	MAE-SS-11	MAE-SS-12	MAE-SS-3	MAE-SS-3	MAE-SS-14	MAE-SS-6	MAE-SS-6	MAE-SS-16
Sample ID:	**Soil Criteria**		MAE-SS-1 (0.06-0.21m)	MAE-SS-11 (0.0-0.15m)	MAE-SS-DUP1	MAE-SS-12 (0.0-0.15m)	MAE-SS-3 (0.05-0.15m)	MAE-SS-13 (0.0-0.15m)	MAE-SS-14 (0.0-0.15m)	MAE-SS-6 (0.08-0.23m)	MAE-SS-15 (0.0-0.15m)	MAE-SS-16 (0.0-0.15m)
Sample Date:	**Provincial Ecological/ Human Health**	**Federal Ecological/ Human Health**	20-Oct-17	16-Apr-18	16-Apr-18	16-Apr-18	20-Oct-17	17-Apr-18	17-Apr-18	23-Oct-17	17-Apr-18	17-Apr-18
Sample Depth:			0.06-0.21	0.0-0.15	0.0-0.15	0.0-0.15	0.05-0.15	0.0-0.15	0.0-0.15	0.08-0.23	0.0-0.15	0.0-0.15
Matrix Code:			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Type:	a	b	Original	Original	Duplicate	Original	Original	Original	Original	Original	Original	Original
Parameters	**Units**											
Dioxins and Furans												
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g		0.471	--	--	--	0.533	--	--	0.258	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g		68.2	--	--	--	233	--	--	36.0	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g		0.343	--	--	--	0.556	--	--	0.259	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g		1.64	--	--	--	5.56	--	--	1.29	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g		ND(0.125)	--	--	--	ND(0.136)	--	--	ND(0.115)	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.102)	--	--	--	0.309	--	--	0.162	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.115)	--	--	--	0.171	--	--	ND(0.124)	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.0992)	--	--	--	ND(0.118)	--	--	ND(0.107)	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.116)	--	--	--	0.218	--	--	ND(0.128)	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.122)	--	--	--	ND(0.126)	--	--	ND(0.115)	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.104)	--	--	--	0.263	--	--	0.258	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.113)	--	--	--	ND(0.175)	--	--	ND(0.111)	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g		ND(0.112)	--	--	--	ND(0.114)	--	--	ND(0.114)	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.111)	--	--	--	ND(0.115)	--	--	ND(0.116)	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.113)	--	--	--	ND(0.174)	--	--	ND(0.109)	--	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g		ND(0.115)	--	--	--	ND(0.272)	--	--	0.204	--	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g		ND(0.114)	--	--	--	ND(0.113)	--	--	ND(0.112)	--	--
Total heptachlorodibenzofuran (HpCDF)	pg/g		0.760	--	--	--	0.762	--	--	0.259	--	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g		3.21	--	--	--	11.6	--	--	1.29	--	--
Total hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.169)	--	--	--	0.941	--	--	0.431	--	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		0.409	--	--	--	2.89	--	--	0.446	--	--
Total pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.113)	--	--	--	0.360	--	--	0.236	--	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g		ND(0.112)	--	--	--	ND(0.114)	--	--	ND(0.475)	--	--
Total tetrachlorodibenzofuran (TCDF)	pg/g		ND(0.115)	--	--	--	0.456	--	--	1.22	--	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g		ND(0.114)	--	--	--	ND(0.185)	--	--	ND(0.599)	--	--
Total TEQ	ng/kg	4	0.393	--	--	--	0.576	--	--	0.411	--	--
Grain Size												
Clay	%		--	--	--	--	--	--	--	--	--	--
Grain Size <1000um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <120um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <16um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <2.0um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <2000um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <250um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <3.9um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <31um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <500um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <62um	%		--	--	--	--	--	--	--	--	--	--
Grain Size <7.8um	%		--	--	--	--	--	--	--	--	--	--
Gravel	%		--	--	--	--	--	--	--	--	--	--
Sand	%		--	--	--	--	--	--	--	--	--	--
Silt	%		--	--	--	--	--	--	--	--	--	--
Grain size (median)	none		--	--	--	--	--	--	--	--	--	--
Sieve pan	%		--	--	--	--	--	--	--	--	--	--
Sieve, #200	%		--	--	--	--	--	--	--	--	--	--

Notes:
20[a] Exceeds applicable criteria; superscript identifies exceeded criteria

Provincial Ecological/ Human Health[a] - Nova Scotia Contaminated Sites Regulation Table A4 References for Pathway Specific Standards for coarse-grained soil on a potable agricultural site

Federal Ecological/ Human Health[b] - Canadan Council of Ministers of the Environment (CCME) Soil Quality Guidelines for the protection of Environment and Human Health on an Agricultural Site. Federal criteria is BTEX - Benzene, Toluene, Ethylbenzene, and total Xylenes
ND (2.0) - Not detected at the associated reporting limit.
J - The associated value is an estimated concentration
D - The associated value is a confirmatory or duplicate concentration
"--" - Parameter not analysed

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:					Mill Air Emissions (MAE)					
Delineated Sample Location:					**MAE-SS-9**				**MAE-SS-10**	
Sample Location:				MAE-SS-9	MAE-SS-17	MAE-SS-17	MAE-SS-18	MAE-SS-10	MAE-SS-19	MAE-SS-20
Sample ID:		**Soil Criteria**		MAE-SS-9 (0.10-0.25m)	MAE-SS-17 (0.0-0.15m)	MAE-SS-DUP2	MAE-SS-18 (0.0-0.15m)	MAE-SS-10 (0.13-0.28m)	MAE-SS-19 (0.0-0.15m)	MAE-SS-20 (0.0-0.15m)
Sample Date:		**Provincial Ecological/ Human Health**	**Federal Ecological/ Human Health**	23-Oct-17	16-Apr-18	16-Apr-18	16-Apr-18	23-Oct-17	16-Apr-18	16-Apr-18
Sample Depth:				0.1-0.25	0.0-0.15	0.0-0.15	0.0-0.15	0.13-0.28	0.0-0.15	0.0-0.15
Matrix Code:				Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Type:		a	b	Original	Original	Duplicate	Original	Original	Original	Original
Parameters	**Units**									
Metals										
Aluminum	mg/kg	15400		520	--	--	--	320	550	700
Antimony	mg/kg	7.5		ND(2.0)	--	--	--	ND(2.0)	ND(2.0)	ND(2.0)
Arsenic	mg/kg	17		ND(2.0)	--	--	--	21[a]	ND(2.0)	ND(2.0)
Barium	mg/kg	400		5.0	--	--	--	5.9	ND(5.0)	5.6
Beryllium	mg/kg	5		ND(2.0)	--	--	--	ND(2.0)	ND(2.0)	ND(2.0)
Bismuth	mg/kg			ND(2.0)	--	--	--	ND(2.0)	ND(2.0)	ND(2.0)
Boron	mg/kg	4300		ND(50)	--	--	--	ND(50)	ND(50)	ND(50)
Cadmium	mg/kg	1.4		ND(0.30)	--	--	--	ND(0.30)	ND(0.30)	ND(0.30)
Chromium	mg/kg	52		ND(2.0)	--	--	--	ND(2.0)	ND(2.0)	ND(2.0)
Cobalt	mg/kg	20		ND(1.0)	--	--	--	3.6	ND(1.0)	ND(1.0)
Copper	mg/kg	63		ND(2.0)	--	--	--	6.5	ND(2.0)	37
Iron	mg/kg	11000		800	--	--	--	5400	2400	2100
Lead	mg/kg	70		2.5	--	--	--	3.5	1.9	1.9
Lithium	mg/kg			ND(2.0)	--	--	--	ND(2.0)	ND(2.0)	ND(2.0)
Manganese	mg/kg			4.0	--	--	--	5.2	19	9.2
Mercury	mg/kg	6.6		ND(0.10)	--	--	--	ND(0.10)	ND(0.10)	ND(0.10)
Molybdenum	mg/kg	40		ND(2.0)	--	--	--	ND(2.0)	ND(2.0)	ND(2.0)
Nickel	mg/kg	50		ND(2.0)	--	--	--	2.1	ND(2.0)	ND(2.0)
Rubidium	mg/kg			ND(2.0)	--	--	--	ND(2.0)	2.2	3.2
Selenium	mg/kg	1		ND(1.0)	--	--	--	ND(1.0)	ND(1.0)	ND(1.0)
Silver	mg/kg	20		ND(0.50)	--	--	--	ND(0.50)	ND(0.50)	ND(0.50)
Strontium	mg/kg	9400		ND(5.0)	--	--	--	ND(5.0)	ND(5.0)	ND(5.0)
Thallium	mg/kg	1		ND(0.10)	--	--	--	ND(0.10)	ND(0.10)	ND(0.10)
Tin	mg/kg	5		ND(2.0)	--	--	--	ND(2.0)	ND(2.0)	ND(2.0)
Uranium	mg/kg	23		ND(0.10)	--	--	--	0.13	0.16	0.12
Vanadium	mg/kg	39		ND(2.0)	--	--	--	3.2	3.0	3.2
Zinc	mg/kg	200		ND(5.0)	--	--	--	ND(5.0)	ND(5.0)	ND(5.0)
Polychlorinated Biphenyls (PCBs)										
Aroclor-1016 (PCB-1016)	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--
Aroclor-1221 (PCB-1221)	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--
Aroclor-1232 (PCB-1232)	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--
Aroclor-1242 (PCB-1242)	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--
Aroclor-1248 (PCB-1248)	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--
Aroclor-1254 (PCB-1254)	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--
Aroclor-1260 (PCB-1260)	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--
Total PCB	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--
Petroleum Hydrocarbons (PHCs)										
Benzene	mg/kg	0.042		ND(0.025)	--	--	--	ND(0.050)	--	--
Toluene	mg/kg	0.35		ND(0.025)	--	--	--	ND(0.050)	--	--
Ethylbenzene	mg/kg	0.065		ND(0.025)	--	--	--	ND(0.050)	--	--
Xylenes (total)	mg/kg	8.8		ND(0.10)	--	--	--	ND(0.10)	--	--
Methyl tert butyl ether (MTBE)	mg/kg	0.05		--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C10) Less BTEX	mg/kg	See Modified TPH		ND(2.5)	--	--	--	ND(5.0)	--	--
Total Petroleum hydrocarbons (>C10-C16)	mg/kg	See Modified TPH		ND(10)	--	--	--	ND(10)	--	--
Total Petroleum Hydrocarbons (>C16-C21)	mg/kg	See Modified TPH		ND(10)	--	--	--	ND(10)	--	--
Total Petroleum Hydrocarbons (>C21-C32)	mg/kg	See Modified TPH		ND(15)	--	--	--	29	--	--
Total Petroleum Hydrocarbons (Modified TPH)	mg/kg	74/150/300		ND(15)	--	--	--	29	--	--
Polycyclic Aromatic Hydrocarbons (PAHs)										
1-Methylnaphthalene	mg/kg	30		ND(0.0050)	--	--	--	ND(0.0050)	--	--
2-Methylnaphthalene	mg/kg	30		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Acenaphthene	mg/kg	21.5		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Acenaphthylene	mg/kg	4.5		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Anthracene	mg/kg	2.5		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Benzo fluoranthenes	mg/kg			ND(0.010)	--	--	--	ND(0.010)	--	--
Benzo(a)anthracene	mg/kg	0.5		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Benzo(a)pyrene	mg/kg	0.6		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Benzo(b)fluoranthene	mg/kg	6.2		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Benzo(b)pyridine (Quinoline)	mg/kg		0.1	ND(0.050) D ND(0.050)	--	--	--	ND(0.050) D ND(0.050)	--	--
Benzo(g,h,i)perylene	mg/kg	6.6		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Benzo(j)fluoranthene	mg/kg	6.2		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Benzo(k)fluoranthene	mg/kg	6.2		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Chrysene	mg/kg	6.2		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Dibenz(a,h)anthracene	mg/kg		0.1	ND(0.0050)	--	--	--	ND(0.0050)	--	--
Fluoranthene	mg/kg	15.4		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Fluorene	mg/kg	15.4		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Indeno(1,2,3-cd)pyrene	mg/kg	0.38		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Naphthalene	mg/kg	0.6		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Perylene	mg/kg			ND(0.0050)	--	--	--	ND(0.0050)	--	--
Phenanthrene	mg/kg	6.2		ND(0.0050)	--	--	--	ND(0.0050)	--	--
Pyrene	mg/kg	7.7		ND(0.0050)	--	--	--	ND(0.0050)	--	--

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:					Mill Air Emissions (MAE)					
Delineated Sample Location:					MAE-SS-9					
Sample Location:				MAE-SS-9	MAE-SS-17	MAE-SS-17	MAE-SS-18	MAE-SS-10	MAE-SS-19	MAE-SS-20
Sample ID:	**Soil Criteria**			MAE-SS-9 (0.10-0.25m)	MAE-SS-17 (0.0-0.15m)	MAE-SS-DUP2	MAE-SS-18 (0.0-0.15m)	MAE-SS-10 (0.13-0.28m)	MAE-SS-19 (0.0-0.15m)	MAE-SS-20 (0.0-0.15m)
Sample Date:	**Provincial Ecological/ Human Health**	**Federal Ecological/ Human Health**		23-Oct-17	16-Apr-18	16-Apr-18	16-Apr-18	23-Oct-17	16-Apr-18	16-Apr-18
Sample Depth:				0.1-0.25	0.0-0.15	0.0-0.15	0.0-0.15	0.13-0.28	0.0-0.15	0.0-0.15
Matrix Code:				Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Type:	a	b		Original	Original	Duplicate	Original	Original	Original	Original
Parameters	**Units**									
Phenols										
2,3,4,5-Tetrachlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
2,3,4,6-Tetrachlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
2,3,4-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
2,3,5,6-Tetrachlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
2,3,5-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
2,3,6-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
2,3-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
2,4,5-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
2,4,6-Trichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
2,4-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
2,4-Dimethylphenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--
2,4-Dinitrophenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--
2,5-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
2,6-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
2-Chlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
2-Methylphenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--
2-Nitrophenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--
3&4-Methylphenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--
3,4,5-Trichlorophenol	µg/g			ND(0.05)	--	--	--	ND(0.05)	--	--
3,4-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
3,5-Dichlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
3/4-Chlorophenol	µg/g		0.05	ND(0.05)	--	--	--	ND(0.05)	--	--
4,6-Dinitro-2-methylphenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--
4-Chloro-3-methylphenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--
4-Nitrophenol	µg/g			ND(0.1)	--	--	--	ND(0.1)	--	--
Pentachlorophenol	µg/g	7.6		ND(0.05)	--	--	--	ND(0.05)	--	--
Phenol	µg/g	3.8		ND(0.1)	--	--	--	ND(0.1)	--	--
Volitile Organic Compounds (VOCs)										
1,1,1-Trichloroethane	mg/kg	0.38		ND(0.025)	--	--	--	ND(0.05)	--	--
1,1,2,2-Tetrachloroethane	mg/kg	0.05		ND(0.025)	--	--	--	ND(0.05)	--	--
1,1,2-Trichloroethane	mg/kg	0.3		ND(0.025)	--	--	--	ND(0.05)	--	--
1,1-Dichloroethane	mg/kg	0.47		ND(0.025)	--	--	--	ND(0.05)	--	--
1,1-Dichloroethene	mg/kg	0.05		ND(0.025)	--	--	--	ND(0.05)	--	--
1,2-Dibromoethane (Ethylene dibromide)	mg/kg	0.05		ND(0.025)	--	--	--	ND(0.05)	--	--
1,2-Dichlorobenzene	mg/kg	0.18		ND(0.025)	--	--	--	ND(0.05)	--	--
1,2-Dichloroethane	mg/kg	0.05		ND(0.025)	--	--	--	ND(0.05)	--	--
1,2-Dichloropropane	mg/kg	0.05		ND(0.025)	--	--	--	ND(0.05)	--	--
1,3-Dichlorobenzene	mg/kg	4.8		ND(0.025)	--	--	--	ND(0.05)	--	--
1,4-Dichlorobenzene	mg/kg	0.098		ND(0.025)	--	--	--	ND(0.05)	--	--
Benzene	mg/kg	0.042		ND(0.025)	--	--	--	ND(0.05)	--	--
Bromodichloromethane	mg/kg	1.5		ND(0.025)	--	--	--	ND(0.05)	--	--
Bromoform	mg/kg	2.3		ND(0.025)	--	--	--	ND(0.05)	--	--
Bromomethane (Methyl bromide)	mg/kg	0.05		ND(0.05)	--	--	--	ND(0.1)	--	--
Carbon tetrachloride	mg/kg	0.05		ND(0.025)	--	--	--	ND(0.05)	--	--
Chlorobenzene	mg/kg	0.05		ND(0.025)	--	--	--	ND(0.05)	--	--
Chloroethane	mg/kg			ND(0.2)	--	--	--	ND(0.4)	--	--
Chloroform (Trichloromethane)	mg/kg	0.05		ND(0.025)	--	--	--	ND(0.05)	--	--
cis-1,2-Dichloroethene	mg/kg	1.9		ND(0.025)	--	--	--	ND(0.05)	--	--
cis-1,3-Dichloropropene	mg/kg	1.7		ND(0.025)	--	--	--	ND(0.05)	--	--
Dibromochloromethane	mg/kg	0.27		ND(0.025)	--	--	--	ND(0.05)	--	--
Ethylbenzene	mg/kg	0.065		ND(0.025)	--	--	--	ND(0.05)	--	--
m&p-Xylenes	mg/kg			ND(0.025)	--	--	--	ND(0.05)	--	--
Methyl tert butyl ether (MTBE)	mg/kg	0.05		0.059[a]	ND(0.025)	ND(0.025)	ND(0.025)	ND(0.05)	--	--
Methylene chloride	mg/kg	0.32		ND(0.05)	--	--	--	ND(0.05)	--	--
o-Xylene	mg/kg			ND(0.025)	--	--	--	ND(0.05)	--	--
Styrene	mg/kg	16		ND(0.025)	--	--	--	ND(0.05)	--	--
Tetrachloroethene	mg/kg	0.1		ND(0.025)	--	--	--	ND(0.05)	--	--
Toluene	mg/kg	0.35		ND(0.025)	--	--	--	ND(0.05)	--	--
trans-1,2-Dichloroethene	mg/kg	0.084		ND(0.025)	--	--	--	ND(0.05)	--	--
trans-1,3-Dichloropropene	mg/kg			ND(0.025)	--	--	--	ND(0.05)	--	--
Trichloroethene	mg/kg	0.01		ND(0.01)	--	--	--	ND(0.02)	--	--
Trichlorofluoromethane (CFC-11)	mg/kg			ND(0.025)	--	--	--	ND(0.05)	--	--
Vinyl chloride	mg/kg	0.02		ND(0.02)	--	--	--	ND(0.04)	--	--
Xylenes (total)	mg/kg	8.8		ND(0.05)	--	--	--	ND(0.1)	--	--
General Chemistry										
Ammonia-N	mg/kg			ND(0.36)	--	--	--	ND(0.29)	ND(0.31) J	ND(0.29) J
Chloride	mg/kg			9.8	--	--	--	10	11	13
Conductivity	uS/cm			23	--	--	--	22	34	43
Cyanide (free)	mg/kg	0.9		ND(0.50)	--	--	--	ND(0.50)	--	--
Cyanide (total)	mg/kg	0.9		ND(0.50)	--	--	--	ND(0.50)	--	--
Fraction organic carbon (FOC)	g/g			--	--	--	--	--	--	--
Moisture	%			27	20	21	17	11	16	14
Nitrite (as N)	mg/kg			ND(0.050)	--	--	--	ND(0.050)	ND(0.050)	ND(0.050)
Nitrite/Nitrate	mg/kg			0.64	--	--	--	0.50	1.3	1.9
Orthophosphate	mg/kg			2.1	--	--	--	1.9	0.78	1.1
pH, soluble (5:1)	s.u.		6-8	4.34[b]	--	--	--	4.33[b]	4.31[b]	4.22[b]
Sulfate	mg/kg			ND(10)	--	--	--	ND(10)	ND(10)	ND(10)
Total organic carbon (TOC)	mg/kg			--	--	--	--	--	--	--

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:				**Mill Air Emissions (MAE)**					
Delineated Sample Location:				**MAE-SS-9**				**MAE-SS-10**	
Sample Location:			MAE-SS-9	MAE-SS-17	MAE-SS-17	MAE-SS-18	MAE-SS-10	MAE-SS-19	MAE-SS-20
Sample ID:	**Soil Criteria**		MAE-SS-9 (0.10-0.25m)	MAE-SS-17 (0.0-0.15m)	MAE-SS-DUP2	MAE-SS-18 (0.0-0.15m)	MAE-SS-10 (0.13-0.28m)	MAE-SS-19 (0.0-0.15m)	MAE-SS-20 (0.0-0.15m)
Sample Date:			23-Oct-17	16-Apr-18	16-Apr-18	16-Apr-18	23-Oct-17	16-Apr-18	16-Apr-18
Sample Depth:			0.1-0.25	0.0-0.15	0.0-0.15	0.0-0.15	0.13-0.28	0.0-0.15	0.0-0.15
Matrix Code:	**Provincial Ecological/ Human Health**	**Federal Ecological/ Human Health**	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Type:	a	b	Original	Original	Duplicate	Original	Original	Original	Original
Parameters	**Units**								
Dioxins and Furans									
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g		ND(0.102)	--	--	--	0.197	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g		10.6	--	--	--	24.5	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g		0.111	--	--	--	0.139	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g		0.384	--	--	--	0.780	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g		ND(0.101)	--	--	--	ND(0.106)	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.0942)	--	--	--	ND(0.0999)	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.103)	--	--	--	ND(0.118)	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.0917)	--	--	--	ND(0.0982)	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.104)	--	--	--	ND(0.122)	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.113)	--	--	--	ND(0.105)	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.0926)	--	--	--	0.131	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.108)	--	--	--	ND(0.112)	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g		ND(0.108)	--	--	--	ND(0.105)	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.103)	--	--	--	ND(0.107)	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.108)	--	--	--	ND(0.110)	--	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g		ND(0.117)	--	--	--	ND(0.104)	--	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g		ND(0.0965)	--	--	--	ND(0.112)	--	--
Total heptachlorodibenzofuran (HpCDF)	pg/g		0.111	--	--	--	0.139	--	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g		0.924	--	--	--	1.58	--	--
Total hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.0998)	--	--	--	ND(0.102)	--	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.0994)	--	--	--	0.131	--	--
Total pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.108)	--	--	--	0.137	--	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g		ND(0.108)	--	--	--	ND(0.522)	--	--
Total tetrachlorodibenzofuran (TCDF)	pg/g		0.537	--	--	--	3.78	--	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g		0.117	--	--	--	0.148	--	--
Total TEQ	ng/kg	4	0.331	--	--	--	0.360	--	--
Grain Size									
Clay	%		--	--	--	--	--	--	--
Grain Size <1000um	%		--	--	--	--	--	--	--
Grain Size <120um	%		--	--	--	--	--	--	--
Grain Size <16um	%		--	--	--	--	--	--	--
Grain Size <2.0um	%		--	--	--	--	--	--	--
Grain Size <2000um	%		--	--	--	--	--	--	--
Grain Size <250um	%		--	--	--	--	--	--	--
Grain Size <3.9um	%		--	--	--	--	--	--	--
Grain Size <31um	%		--	--	--	--	--	--	--
Grain Size <500um	%		--	--	--	--	--	--	--
Grain Size <62um	%		--	--	--	--	--	--	--
Grain Size <7.8um	%		--	--	--	--	--	--	--
Gravel	%		--	--	--	--	--	--	--
Sand	%		--	--	--	--	--	--	--
Silt	%		--	--	--	--	--	--	--
Grain size (median)	none		--	--	--	--	--	--	--
Sieve pan	%		--	--	--	--	--	--	--
Sieve, #200	%		--	--	--	--	--	--	--

Notes:
20[a] Exceeds applicable criteria; superscript identifies exceeded criteria
Provincial Ecological/ Human Health[a] - Nova Scotia Contaminated Sites Regulation Table A4 References for Pathway Specific Standards for coarse-grained soil on a potable agricultural site
Federal Ecological/ Human Health[b] - Canadan Council of Ministers of the Environment (CCME) Soil Quality Guidelines for the protection of Environment and Human Health on an Agricultural Site. Federal criteria is
BTEX - Benzene, Toluene, Ethylbenzene, and total Xylenes
ND (2.0) - Not detected at the associated reporting limit.
J - The associated value is an estimated concentration
D - The associated value is a confirmatory or duplicate concentration
"--" - Parameter not analysed

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:				Twin Settling Basins (TSB)								
Delineated Sample Location:					**TSB-BH-2**					**TSB-MW-1**		
Sample Location:				TSB-BH-2	**TSB-BH-3**	**TSB-S-1**	TSB-MW-1	TSB-MW-1	TSB-MW-1	**TSB-BH-4**	**TSB-S-2**
Sample ID:	**Soil Criteria**			TSB-BH-2 (2.4-3.0m)	**TSB-BH-3 (2.4-3.0m**	**TSB S-1 (0.0-0.2m)**	TSB-MW-1 (1.8-2.4m)	TSB-MW-DUP	TSB-MW-1 (2.4-3.0m)	**TSB-BH-4 (1.8-2.4m)**	**TSB-S-2 (0.0-0.02m)**
Sample Date:	**Provincial Ecological/ Human Health**	**Federal Ecological/ Human Health**		6-Nov-17	**11-Apr-18**	**11-Apr-18**	31-Oct-17	31-Oct-17	31-Oct-17	**12-Apr-18**	**12-Apr-18**
Sample Depth:				2.4-3.0	**2.4-3.0**	**0.0-0.2**	1.8-2.4	1.8-2.4	2.4-3.0	**1.8-2.4**	**0.0-0.02**
Matrix Code:				Soil	**Soil**	**Soil**	Soil	Soil	Soil	**Soil**	**Soil**
Sample Type:	a	b		Original	**Original**	**Original**	Original	Duplicate	Original	**Original**	**Original**
Parameters	**Units**										
Metals											
Aluminum	mg/kg	15400		15000	15000	11000	11000	10000	--	8800	10000
Antimony	mg/kg	7.5		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	ND(2.0)	ND(2.0)
Arsenic	mg/kg	17		23[a]	6.3	7.8	18[a]	8.8	--	12	11
Barium	mg/kg	400		230	210	260	57	110	--	200	41
Beryllium	mg/kg	5		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	ND(2.0)	ND(2.0)
Bismuth	mg/kg			ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	ND(2.0)	ND(2.0)
Boron	mg/kg	4300		ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	--	ND(50)	ND(50)
Cadmium	mg/kg	1.4		ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	ND(0.30)	--	ND(0.30)	ND(0.30)
Chromium	mg/kg	52		27	24	22	17	16	--	17	13
Cobalt	mg/kg	20		24[a]	9.1	12	11	11	--	8.6	7.5
Copper	mg/kg	63		21	7.3	17	24	14	--	13	8.6
Iron	mg/kg	11000		35000[a]	25000[a]	28000[a]	22000[a]	19000[a]	--	20000[a]	19000[a]
Lead	mg/kg	70		19	14	14	15	16	--	38	14
Lithium	mg/kg			43	35	29	26	26	--	23	20
Manganese	mg/kg			970	480	1500	1100	1500	--	2400	860
Mercury	mg/kg	6.6		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	--	ND(0.10)	ND(0.10)
Molybdenum	mg/kg	40		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	ND(2.0)	ND(2.0)
Nickel	mg/kg	50		35	23	25	19	19	--	20	13
Rubidium	mg/kg			12	19	11	12	9.4	--	9.0	9.4
Selenium	mg/kg	1		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	--	ND(1.0)	ND(1.0)
Silver	mg/kg	20		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	--	ND(0.50)	ND(0.50)
Strontium	mg/kg	9400		11	5.7	8.8	ND(5.0)	ND(5.0)	--	ND(5.0)	ND(5.0)
Thallium	mg/kg	1		0.13	0.14	0.13	0.13	ND(0.10)	--	ND(0.10)	ND(0.10)
Tin	mg/kg	5		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	--	ND(2.0)	ND(2.0)
Uranium	mg/kg	23		1.5	1.8	1.0	1.3	1.0	--	1.3	0.57
Vanadium	mg/kg	39		18	21	19	14	13	--	15	14
Zinc	mg/kg	200		90	70	65	55	65	--	77	61
Polychlorinated Biphenyls (PCBs)											
Aroclor-1016 (PCB-1016)	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	ND(0.050)	--	--	--
Aroclor-1221 (PCB-1221)	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	ND(0.050)	--	--	--
Aroclor-1232 (PCB-1232)	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	ND(0.050)	--	--	--
Aroclor-1242 (PCB-1242)	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	ND(0.050)	--	--	--
Aroclor-1248 (PCB-1248)	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	ND(0.050)	--	--	--
Aroclor-1254 (PCB-1254)	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	ND(0.050)	--	--	--
Aroclor-1260 (PCB-1260)	µg/g	1.3		ND(0.050)	--	--	ND(0.050)	ND(0.050)	--	--	--
Total PCB	µg/g	1.3		ND(0.050)	--	--	--	ND(0.050)	--	--	--
Petroleum Hydrocarbons (PHCs)											
Benzene	mg/kg	0.042		ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Toluene	mg/kg	0.35		ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Ethylbenzene	mg/kg	0.065		ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Xylenes (total)	mg/kg	8.8		ND(0.050)	--	--	ND(0.050)	ND(0.050)	--	--	--
Methyl tert butyl ether (MTBE)	mg/kg	0.05		--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C10) Less BTEX	mg/kg	See Modified TPH		ND(2.5)	--	--	ND(2.5)	ND(2.5)	--	--	--
Total Petroleum hydrocarbons (>C10-C16)	mg/kg	See Modified TPH		ND(10)	--	--	ND(10)	ND(10)	--	--	--
Total Petroleum Hydrocarbons (>C16-C21)	mg/kg	See Modified TPH		ND(10)	--	--	ND(10)	ND(10)	--	--	--
Total Petroleum Hydrocarbons (>C21-C32)	mg/kg	See Modified TPH		ND(15)	--	--	19	ND(15)	--	--	--
Total Petroleum Hydrocarbons (Modified TPH)	mg/kg	74/150/300		ND(15)	--	--	19	ND(15)	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs)											
1-Methylnaphthalene	mg/kg	30		ND(0.0050)	--	--	0.0071 J	ND(0.0050)	--	--	--
2-Methylnaphthalene	mg/kg	30		ND(0.0050)	--	--	0.014 J	ND(0.0050)	--	--	--
Acenaphthene	mg/kg	21.5		ND(0.0050)	--	--	ND(0.0050) J	ND(0.0050)	--	--	--
Acenaphthylene	mg/kg	4.5		ND(0.0050)	--	--	ND(0.0050) J	ND(0.0050)	--	--	--
Anthracene	mg/kg	2.5		ND(0.0050)	--	--	ND(0.0050) J	ND(0.0050)	--	--	--
Benzo fluoranthenes	mg/kg			0.018	--	--	ND(0.010) J	ND(0.010)	--	--	--
Benzo(a)anthracene	mg/kg	0.5		ND(0.0050)	--	--	ND(0.0050) J	ND(0.0050)	--	--	--
Benzo(a)pyrene	mg/kg	0.6		ND(0.0050)	--	--	ND(0.0050) J	ND(0.0050)	--	--	--
Benzo(b)fluoranthene	mg/kg	6.2		0.017	--	--	ND(0.0050) J	ND(0.0050)	--	--	--
Benzo(b)pyridine (Quinoline)	mg/kg		0.1	ND(0.050)	--	--	ND(0.050)	ND(0.050)	--	--	--
Benzo(g,h,i)perylene	mg/kg	6.6		ND(0.0050)	--	--	ND(0.0050) J	ND(0.0050)	--	--	--
Benzo(j)fluoranthene	mg/kg	6.2		ND(0.0050)	--	--	ND(0.0050) J	ND(0.0050)	--	--	--
Benzo(k)fluoranthene	mg/kg	6.2		ND(0.0050)	--	--	ND(0.0050) J	ND(0.0050)	--	--	--
Chrysene	mg/kg	6.2		ND(0.0050)	--	--	ND(0.0050) J	ND(0.0050)	--	--	--
Dibenz(a,h)anthracene	mg/kg		0.1	ND(0.0050)	--	--	ND(0.0050) J	ND(0.0050)	--	--	--
Fluoranthene	mg/kg	15.4		ND(0.0050)	--	--	ND(0.0050) J	ND(0.0050)	--	--	--
Fluorene	mg/kg	15.4		ND(0.0050)	--	--	ND(0.0050) J	ND(0.0050)	--	--	--
Indeno(1,2,3-cd)pyrene	mg/kg	0.38		ND(0.0050)	--	--	ND(0.0050) J	ND(0.0050)	--	--	--
Naphthalene	mg/kg	0.6		ND(0.0050)	--	--	0.0055 J	ND(0.0050)	--	--	--
Perylene	mg/kg			ND(0.0050)	--	--	ND(0.0050) J	0.0074	--	--	--
Phenanthrene	mg/kg	6.2		ND(0.0050)	--	--	0.0059 J	ND(0.0050)	--	--	--
Pyrene	mg/kg	7.7		0.0054	--	--	ND(0.0050) J	0.023	--	--	--

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:							Twin Settling Basins (TSB)				
Delineated Sample Location:				**TSB-BH-2**					**TSB-MW-1**		
Sample Location:			TSB-BH-2	**TSB-BH-3**	**TSB-S-1**	TSB-MW-1	TSB-MW-1	TSB-MW-1	**TSB-BH-4**	**TSB-S-2**
Sample ID:	**Soil Criteria**		TSB-BH-2 (2.4-3.0m)	**TSB-BH-3 (2.4-3.0m**	**TSB S-1 (0.0-0.2m)**	TSB-MW-1 (1.8-2.4m)	TSB-MW-DUP	TSB-MW-1 (2.4-3.0m)	**TSB-BH-4 (1.8-2.4m)**	**TSB-S-2 (0.0-0.02m)**
Sample Date:	**Provincial Ecological/ Human Health**	**Federal Ecological/ Human Health**	6-Nov-17	**11-Apr-18**	**11-Apr-18**	31-Oct-17	31-Oct-17	31-Oct-17	**12-Apr-18**	**12-Apr-18**
Sample Depth:			2.4-3.0	**2.4-3.0**	**0.0-0.2**	1.8-2.4	1.8-2.4	2.4-3.0	**1.8-2.4**	**0.0-0.02**
Matrix Code:			Soil	**Soil**	**Soil**	Soil	Soil	Soil	**Soil**	**Soil**
Sample Type:	a	b	Original	**Original**	**Original**	Original	Duplicate	Original	**Original**	**Original**
Parameters	**Units**									
Phenols										
2,3,4,5-Tetrachlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
2,3,4,6-Tetrachlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
2,3,4-Trichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
2,3,5,6-Tetrachlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
2,3,5-Trichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
2,3,6-Trichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
2,3-Dichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
2,4,5-Trichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
2,4,6-Trichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
2,4-Dichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
2,4-Dimethylphenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	--	--	--
2,4-Dinitrophenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	--	--	--
2,5-Dichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
2,6-Dichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
2-Chlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05) J	ND(0.05) J	--	--	--
2-Methylphenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	--	--	--
2-Nitrophenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	--	--	--
3&4-Methylphenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	--	--	--
3,4,5-Trichlorophenol	µg/g		ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
3,4-Dichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
3,5-Dichlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
3/4-Chlorophenol	µg/g	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
4,6-Dinitro-2-methylphenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	--	--	--
4-Chloro-3-methylphenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	--	--	--
4-Nitrophenol	µg/g		ND(0.1)	--	--	ND(0.1)	ND(0.1)	--	--	--
Pentachlorophenol	µg/g	7.6	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
Phenol	µg/g	3.8	ND(0.1)	--	--	ND(0.1)	ND(0.1)	--	--	--
Volitile Organic Compounds (VOCs)										
1,1,1-Trichloroethane	mg/kg	0.38	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
1,1,2,2-Tetrachloroethane	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
1,1,2-Trichloroethane	mg/kg	0.3	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
1,1-Dichloroethane	mg/kg	0.47	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
1,1-Dichloroethene	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
1,2-Dibromoethane (Ethylene dibromide)	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
1,2-Dichlorobenzene	mg/kg	0.18	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
1,2-Dichloroethane	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
1,2-Dichloropropane	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
1,3-Dichlorobenzene	mg/kg	4.8	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
1,4-Dichlorobenzene	mg/kg	0.098	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Benzene	mg/kg	0.042	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Bromodichloromethane	mg/kg	1.5	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Bromoform	mg/kg	2.3	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Bromomethane (Methyl bromide)	mg/kg	0.05	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
Carbon tetrachloride	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Chlorobenzene	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Chloroethane	mg/kg		ND(0.2)	--	--	ND(0.2)	ND(0.2)	--	--	--
Chloroform (Trichloromethane)	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
cis-1,2-Dichloroethene	mg/kg	1.9	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
cis-1,3-Dichloropropene	mg/kg	1.7	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Dibromochloromethane	mg/kg	0.27	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Ethylbenzene	mg/kg	0.065	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
m&p-Xylenes	mg/kg		ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Methyl tert butyl ether (MTBE)	mg/kg	0.05	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Methylene chloride	mg/kg	0.32	ND(0.025)	--	--	ND(0.05)	ND(0.05)	--	--	--
o-Xylene	mg/kg		ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Styrene	mg/kg	16	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Tetrachloroethene	mg/kg	0.1	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Toluene	mg/kg	0.35	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
trans-1,2-Dichloroethene	mg/kg	0.084	ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
trans-1,3-Dichloropropene	mg/kg		ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Trichloroethene	mg/kg	0.01	ND(0.01)	--	--	ND(0.01)	ND(0.01)	--	--	--
Trichlorofluoromethane (CFC-11)	mg/kg		ND(0.025)	--	--	ND(0.025)	ND(0.025)	--	--	--
Vinyl chloride	mg/kg	0.02	ND(0.02)	--	--	ND(0.02)	ND(0.02)	--	--	--
Xylenes (total)	mg/kg	8.8	ND(0.05)	--	--	ND(0.05)	ND(0.05)	--	--	--
General Chemistry										
Ammonia-N	mg/kg		0.74	26	0.99	3.7	1.8	--	ND(0.29)	0.70
Chloride	mg/kg		14	81	11	19	16	--	11	15
Conductivity	uS/cm		39	100	56	31	33	--	20	50
Cyanide (free)	mg/kg	0.9	ND(0.50)	--	--	ND(0.50)	ND(0.50)	--	--	--
Cyanide (total)	mg/kg	0.9	ND(0.50)	--	--	ND(0.50)	ND(0.50)	--	--	--
Fraction organic carbon (FOC)	g/g		--	--	--	--	--	0.0045	--	--
Moisture	%		34	30	33	18	17	--	13	31
Nitrite (as N)	mg/kg		0.19	ND(0.050)	0.30	ND(0.050)	ND(0.050)	--	0.15	0.068
Nitrite/Nitrate	mg/kg		0.52	2.9	0.74	0.29	0.44	--	1.2	0.78
Orthophosphate	mg/kg		0.13	0.13	0.59	0.14	0.13	--	ND(0.050)	0.17
pH, soluble (5:1)	s.u.	6-8	6.83	5.68[b]	7.06	5.92[b]	6.45	--	6.93	5.33[b]
Sulfate	mg/kg		ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	--	ND(10)	ND(10)
Total organic carbon (TOC)	mg/kg		--	--	--	--	--	4500	--	--

Table 5

Soil Analytical Results
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:						Twin Settling Basins (TSB)				
Delineated Sample Location:				**TSB-BH-2**				**TSB-MW-1**		
Sample Location:			TSB-BH-2	**TSB-BH-3**	**TSB-S-1**	TSB-MW-1	TSB-MW-1	TSB-MW-1	**TSB-BH-4**	**TSB-S-2**
Sample ID:	**Soil Criteria**		TSB-BH-2 (2.4-3.0m)	**TSB-BH-3 (2.4-3.0m**	**TSB S-1 (0.0-0.2m)**	TSB-MW-1 (1.8-2.4m)	TSB-MW-DUP	TSB-MW-1 (2.4-3.0m)	**TSB-BH-4 (1.8-2.4m)**	**TSB-S-2 (0.0-0.02m)**
Sample Date:	**Provincial Ecological/ Human Health**	**Federal Ecological/ Human Health**	6-Nov-17	**11-Apr-18**	**11-Apr-18**	31-Oct-17	31-Oct-17	31-Oct-17	**12-Apr-18**	**12-Apr-18**
Sample Depth:			2.4-3.0	**2.4-3.0**	**0.0-0.2**	1.8-2.4	1.8-2.4	2.4-3.0	**1.8-2.4**	**0.0-0.02**
Matrix Code:			Soil	**Soil**	**Soil**	Soil	Soil	Soil	**Soil**	**Soil**
Sample Type:	a	b	Original	**Original**	**Original**	Original	Duplicate	Original	**Original**	**Original**
Parameters	**Units**									
Dioxins and Furans										
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/g		0.241	--	--	ND(0.102)	ND(0.630)	--	--	--
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/g		4.41	--	--	899	381	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/g		ND(0.0858)	--	--	ND(0.0987)	0.258	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/g		ND(0.216)	--	--	6.77	3.40	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/g		ND(0.103)	--	--	ND(0.0735)	ND(0.0605)	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.0888)	--	--	ND(0.114)	ND(0.0717)	--	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.105)	--	--	ND(0.110)	ND(0.0949)	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.0883)	--	--	ND(0.112)	ND(0.0704)	--	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.103)	--	--	ND(0.113)	ND(0.0981)	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.103)	--	--	ND(0.120)	ND(0.0756)	--	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.0959)	--	--	ND(0.180)	ND(0.0809)	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.114)	--	--	ND(0.109)	ND(0.0791)	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/g		ND(0.167)	--	--	ND(0.0890)	ND(0.0864)	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.0952)	--	--	ND(0.122)	ND(0.0767)	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.117)	--	--	ND(0.108)	ND(0.0780)	--	--	--
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/g		0.211	--	--	0.0975	0.138	--	--	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/g		ND(0.0490)	--	--	ND(0.0876)	ND(0.131)	--	--	--
Total heptachlorodibenzofuran (HpCDF)	pg/g		ND(0.124)	--	--	ND(0.104)	0.682	--	--	--
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/g		ND(0.216)	--	--	14.9	8.28	--	--	--
Total hexachlorodibenzofuran (HxCDF)	pg/g		ND(0.0935)	--	--	ND(0.117)	0.212	--	--	--
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/g		ND(0.101)	--	--	1.32	0.753	--	--	--
Total pentachlorodibenzofuran (PeCDF)	pg/g		ND(0.116)	--	--	ND(0.108)	ND(0.0785)	--	--	--
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/g		ND(0.167)	--	--	ND(0.230)	ND(0.156)	--	--	--
Total tetrachlorodibenzofuran (TCDF)	pg/g		0.211	--	--	0.0975	0.522	--	--	--
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/g		ND(0.0490)	--	--	ND(0.157)	ND(0.175)	--	--	--
Total TEQ	ng/kg	4	0.349	--	--	0.649	0.465	--	--	--
Grain Size										
Clay	%		--	--	--	--	--	17	--	--
Grain Size <1000um	%		--	--	--	--	--	93	--	--
Grain Size <120um	%		--	--	--	--	--	71	--	--
Grain Size <16um	%		--	--	--	--	--	37	--	--
Grain Size <2.0um	%		--	--	--	--	--	11	--	--
Grain Size <2000um	%		--	--	--	--	--	96	--	--
Grain Size <250um	%		--	--	--	--	--	80	--	--
Grain Size <3.9um	%		--	--	--	--	--	17	--	--
Grain Size <31um	%		--	--	--	--	--	49	--	--
Grain Size <500um	%		--	--	--	--	--	88	--	--
Grain Size <62um	%		--	--	--	--	--	59	--	--
Grain Size <7.8um	%		--	--	--	--	--	20	--	--
Gravel	%		--	--	--	--	--	3.9	--	--
Sand	%		--	--	--	--	--	38	--	--
Silt	%		--	--	--	--	--	42	--	--
Grain size (median)	none		--	--	--	--	--	--	--	--
Sieve pan	%		--	--	--	--	--	--	--	--
Sieve, #200	%		--	--	--	--	--	--	--	--

Notes:

20[a] Exceeds applicable criteria; superscript identifies exceeded criteria

Provincial Ecological/ Human Health[a] - Nova Scotia Contaminated Sites Regulation Table A4 References for Pathway Specific Standards for coarse-grained soil on a potable agricultural site

Federal Ecological/ Human Health[b] - Canadian Council of Ministers of the Environment (CCME) Soil Quality Guidelines for the protection of Environment and Human Health on an Agricultural Site. Federal criteria is BTEX - Benzene, Toluene, Ethylbenzene, and total Xylenes

ND (2.0) - Not detected at the associated reporting limit.

J - The associated value is an estimated concentration

D - The associated value is a confirmatory or duplicate concentration

"--" - Parameter not analysed

Table 6

Groundwater Analytical Results - Marine
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:							Boat Harbour Stabilization Lagoon (BHSL)						Estuary (EST)	
Sample Location:							**BHSL-MW-5**	**BHSL-MW-6**	**BHSL-MW-7**	**BHSL-MW-7**	**BHSL-MW-8**	**BHSL-MW-9**	**EST-MW-2**	**EST-MW-3**
Sample ID:							**BHSL-MW-5**	**BHSL-MW-6**	**BHSL-MW-7**	**BHSL-DUP2**	**BHSL-MW-8**	**BHSL-MW-9**	**EST-MW-2**	**EST-MW-3**
Sample Date:		**Marine Groundwater Criteria**					**19-Apr-18**	**19-Apr-18**	**19-Apr-18**	**19-Apr-18**	**19-Apr-18**	**20-Apr-18**	**20-Apr-18**	**20-Apr-18**
Sample Matrix:		**Provincial**	**Provincial**	**Federal**	**Provincial**	**Federal**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**
Sample Type:		**Ecological ≤10m**	**Ecological >10m**	**Ecological**	**Human Health**	**Human Health**	**Original**	**Original**	**Original**	**Duplicate**	**Original**	**Original**	**Original**	**Original**
Applicable Criteria:		a	b	c	d	e	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine >10 m**	**Marine >10 m**
Parameters	**Units**													
Field Parameters														
Conductivity, field	mS/cm						0.041	0.067	0.042	--	0.087	0.084	0.068	0.056
Dissolved oxygen (DO), field	µg/L						4820	8150	5990	--	3900	7760	7620	9300
pH, field	s.u.			7-8.7			5.06[c]	4.94[c]	5.18[c]	--	7.23	6.14[c]	6.5[c]	5.25[c]
Temperature, field	Deg C						8.02	7.99	8	--	8.69	5.82	4.78	5.22
Turbidity, field	NTU						34.3	27.9	12.7	--	1.9	15	8.3	303
Metals														
Aluminum	µg/L						8.4	47	17	17	7.1	ND(5.0)	ND(5.0)	ND(5.0)
Antimony	µg/L	500	5000		6		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Arsenic	µg/L	12.5	125		10		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Barium	µg/L	500	5000		1000		250	130	180	180	120	370	210	110
Beryllium	µg/L	100	1000		4		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bismuth	µg/L						ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Boron	µg/L	1200	12000		5000		ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
Cadmium	µg/L	0.12	1.2		5		0.028	0.49[a]	0.027	0.030	ND(0.010)	0.018	ND(0.010)	0.016
Calcium	µg/L						7300	4300	6500	6600	26000	25000	12000	6300
Chromium	µg/L			56	50		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Cobalt	µg/L				10		ND(0.40)	0.73	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)
Copper	µg/L	2	20				ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Iron	µg/L						ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
Lead	µg/L	2	20		10		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Magnesium	µg/L						1900	2700	1800	1800	4000	4000	1800	1500
Manganese	µg/L						55	730	77	77	6.2	160	17	32
Mercury	µg/L	0.016	0.16		1		ND(0.013)	ND(0.013)	ND(0.013)	ND(0.013)	ND(0.013)	ND(0.013)	ND(0.013)	ND(0.013)
Molybdenum	µg/L				70		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Nickel	µg/L	8.3	83		100		ND(2.0)	2.5	2.3	2.1	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Phosphorus	µg/L						ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
Potassium	µg/L						740	1200	730	740	940	1500	860	280
Selenium	µg/L	2	20		10		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Silver	µg/L	1.5	15		100		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Sodium	µg/L				200000		5300	12000	6100	6100	5300	6700	7100	13000
Strontium	µg/L				4400		23	30	18	18	61	32	32	45
Thallium	µg/L	21.3	213		2		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Tin	µg/L				4400		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Titanium	µg/L						ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Uranium	µg/L	100	1000		20		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	0.26	ND(0.10)	ND(0.10)	0.21
Vanadium	µg/L	50	500		6.2		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Zinc	µg/L	10	100		5000		ND(5.0)	7.1	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Polychlorinated Biphenyls (PCBs)														
Aroclor-1016 (PCB-1016)	µg/L						ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Aroclor-1221 (PCB-1221)	µg/L						ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Aroclor-1232 (PCB-1232)	µg/L						ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Aroclor-1242 (PCB-1242)	µg/L						ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Aroclor-1248 (PCB-1248)	µg/L						ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Aroclor-1254 (PCB-1254)	µg/L						ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Aroclor-1260 (PCB-1260)	µg/L						ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Total PCB	µg/L						ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Petroleum Hydrocarbons (PHCs)														
Benzene	µg/L	2100	4600		5		ND(1) D ND(1)	ND(1) D ND(1)	ND(1.3) D ND(1.3)	ND(1.3) D ND(1.3)	ND(1) D ND(1)	ND(1) D ND(1)	ND(1) D ND(1)	ND(1) D ND(1)
Toluene	µg/L	770	4200		24		ND(1) D ND(1)	ND(1) D ND(1)	ND(1.3) D ND(1.3)	ND(1.3) D ND(1.3)	ND(1) D ND(1)	ND(1) D ND(1)	ND(1) D ND(1)	ND(1) D ND(1)
Ethylbenzene	µg/L	320	3200		1.6		ND(1) D ND(1)	ND(1) D ND(1)	ND(1.3) D ND(1.3)	ND(1.3) D ND(1.3)	ND(1) D ND(1)	ND(1) D ND(1)	ND(1) D ND(1)	ND(1) D ND(1)
Xylenes (total)	µg/L	330	2800		20		ND(2) D ND(2)	ND(2) D ND(2)	ND(2.6) D ND(2.6)	ND(2.6) D ND(2.6)	ND(2) D ND(2)	ND(2) D ND(2)	ND(2) D ND(2)	ND(2) D ND(2)
Total Petroleum Hydrocarbons (C6-C10) Less BTEX	µg/L	see Modified TPH	see Modified TPH		see Modified TPH		11	ND(10)	ND(13)	ND(13)	ND(10)	ND(10)	ND(10)	ND(10)
Total Petroleum hydrocarbons (>C10-C16)	µg/L	see Modified TPH	see Modified TPH		see Modified TPH		ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
Total Petroleum Hydrocarbons (>C16-C21)	µg/L	see Modified TPH	see Modified TPH		see Modified TPH		ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
Total Petroleum Hydrocarbons (>C21-C32)	µg/L	see Modified TPH	see Modified TPH		see Modified TPH		ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
Total Petroleum Hydrocarbons (Modified TPH)	µg/L	1500/100/100	13000/840/480		4400/3200/7800		ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)

Table 6

Groundwater Analytical Results - Marine
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:							Boat Harbour Stabilization Lagoon (BHSL)						Estuary (EST)	
Sample Location:							**BHSL-MW-5**	**BHSL-MW-6**	**BHSL-MW-7**	**BHSL-MW-7**	**BHSL-MW-8**	**BHSL-MW-9**	**EST-MW-2**	**EST-MW-3**
Sample ID:							**BHSL-MW-5**	**BHSL-MW-6**	**BHSL-MW-7**	**BHSL-DUP2**	**BHSL-MW-8**	**BHSL-MW-9**	**EST-MW-2**	**EST-MW-3**
Sample Date:		**Marine Groundwater Criteria**					**19-Apr-18**	**19-Apr-18**	**19-Apr-18**	**19-Apr-18**	**19-Apr-18**	**20-Apr-18**	**20-Apr-18**	**20-Apr-18**
Sample Matrix:		**Provincial**	**Provincial**	**Federal**	**Provincial**	**Federal**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**
Sample Type:		**Ecological ≤10m**	**Ecological >10m**	**Ecological**	**Human Health**	**Human Health**	**Original**	**Original**	**Original**	**Duplicate**	**Original**	**Original**	**Original**	**Original**
Applicable Criteria:		a	b	c	d	e	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine >10 m**	**Marine >10 m**
Parameters	**Units**													
Polycyclic Aromatic Hydrocarbons (PAHs) and Phenols														
1-Methylnaphthalene	µg/L	1	10		12		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
2,3,4,5-Tetrachlorophenol	µg/L						ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
2,3,4,6-Tetrachlorophenol	µg/L					100	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
2,3,4-Trichlorophenol	µg/L						ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)
2,3,5,6-Tetrachlorophenol	µg/L						ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
2,3,5-Trichlorophenol	µg/L						ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
2,3,6-Trichlorophenol	µg/L						ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
2,3-Dichlorophenol	µg/L						ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)
2,4,5-Trichlorophenol	µg/L						ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
2,4,6-Trichlorophenol	µg/L					5	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
2,4+2,5-Dichlorophenol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
2,4-Dichlorophenol	µg/L					900	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
2,4-Dimethylphenol	µg/L						ND(0.50) D ND(1)	ND(1) D ND(0.50)	ND(1) D ND(0.50)	ND(1) D ND(0.50)	ND(0.50) D ND(1)	ND(0.50) D ND(1)	ND(1) D ND(0.50)	ND(1) D ND(0.50)
2,4-Dinitrophenol	µg/L						ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
2,5-Dichlorophenol	µg/L						ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
2,6-Dichlorophenol	µg/L						ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
2-Chlorophenol	µg/L						ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) J D ND(0.50)
2-Methylnaphthalene	µg/L	2	20		12		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
2-Methylphenol	µg/L						ND(0.5) D ND(0.50)	ND(0.50) D ND(0.5)	ND(0.50) D ND(0.5)	ND(0.50) D ND(0.5)	ND(0.5) D ND(0.50)	ND(0.5) D ND(0.50)	ND(0.5) D ND(0.50)	ND(0.5) D ND(0.50)
2-Nitrophenol	µg/L						ND(1.0) D ND(1)	ND(1) D ND(1.0)	ND(1.0) D ND(1)	ND(1) D ND(1.0)	ND(1.0) D ND(1)	ND(1.0) D ND(1)	ND(1) D ND(1.0)	ND(1.0) D ND(1)
3&4-Methylphenol	µg/L						ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
3,4,5-Trichlorocatechol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3,4,5-Trichloroguaiacol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3,4,5-Trichlorophenol	µg/L						ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)
3,4,5-Trichlorosyringol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3,4,5-Trichloroveratrol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3,4-Dichlorophenol	µg/L						ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
3,5-Dichlorocatechol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3,5-Dichlorophenol	µg/L						ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)
3/4-Chlorophenol	µg/L						ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
3-Chlorophenol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3-Methylphenol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,5,6-Trichloroguaiacol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,5-Dichlorocatechol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,5-Dichloroguaiacol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,5-Dichloroveratrol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,6-Dichloroguaiacol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,6-Dinitro-2-methylphenol	µg/L						ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
4-Chloro-3-methylphenol	µg/L						ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
4-Chloroguaiacol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4-Chlorophenol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4-Methylphenol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4-Nitrophenol	µg/L						ND(1) D ND(5.0)	ND(5.0) D ND(1)	ND(5.0) D ND(1)	ND(1) D ND(5.0)	ND(5.0) D ND(1)	ND(5.0) D ND(1)	ND(1) D ND(5.0)	ND(1) D ND(5.0)
5,6-Dichlorovanilline	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
6-Chlorovanilline	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Acenaphthene	µg/L	6	60		1400		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Acenaphthylene	µg/L	6	60		4.5		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Acridine	µg/L						ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Anthracene	µg/L						ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(a)anthracene	µg/L						ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(a)pyrene	µg/L	0.01	0.1		0.01		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(b)fluoranthene	µg/L						ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(b)pyridine (Quinoline)	µg/L						ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(g,h,i)perylene	µg/L						ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(j)fluoranthene	µg/L						ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(k)fluoranthene	µg/L						ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo fluoranthenes	µg/L						ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)
Catechol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Chlorocatechols	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Chrysene	µg/L	0.1	1				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Dibenz(a,h)anthracene	µg/L						ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Eugenol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Fluoranthene	µg/L	11	110				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Fluorene	µg/L	12	120		940		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Guaiacol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Indeno(1,2,3-cd)pyrene	µg/L						ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Isoeugenol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Naphthalene	µg/L	1.4	14		470		ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Pentachlorophenol	µg/L	7.9	79		30		ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)
Perylene	µg/L						ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.020)
Phenanthrene	µg/L	4.6	46				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)

Table 6

Groundwater Analytical Results - Marine
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:							Boat Harbour Stabilization Lagoon (BHSL)						Estuary (EST)	
Sample Location:							**BHSL-MW-5**	**BHSL-MW-6**	**BHSL-MW-7**	**BHSL-MW-7**	**BHSL-MW-8**	**BHSL-MW-9**	**EST-MW-2**	**EST-MW-3**
Sample ID:							**BHSL-MW-5**	**BHSL-MW-6**	**BHSL-MW-7**	**BHSL-DUP2**	**BHSL-MW-8**	**BHSL-MW-9**	**EST-MW-2**	**EST-MW-3**
Sample Date:		**Marine Groundwater Criteria**					**19-Apr-18**	**19-Apr-18**	**19-Apr-18**	**19-Apr-18**	**19-Apr-18**	**20-Apr-18**	**20-Apr-18**	**20-Apr-18**
Sample Matrix:		**Provincial**	**Provincial**	**Federal**	**Provincial**	**Federal**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**
Sample Type:		**Ecological ≤10m**	**Ecological >10m**	**Ecological**	**Human Health**	**Human Health**	**Original**	**Original**	**Original**	**Duplicate**	**Original**	**Original**	**Original**	**Original**
Applicable Criteria:		a	b	c	d	e	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine >10 m**	**Marine >10 m**
Parameters	**Units**													
Phenol	µg/L				0.8		ND(0.5) D ND(0.50)	ND(0.50) D ND(0.5)	ND(0.50) D ND(0.5)	ND(0.50) D ND(0.5)	ND(0.5) D ND(0.50)	ND(0.50) D ND(0.5)	ND(0.5) D ND(0.50)	ND(0.5) D ND(0.50)
Phenolics (total)	µg/L						ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Pyrene	µg/L	0.02	0.2		710		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Tetrachlorocatechol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Tetrachloroguaiacol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Tetrachloroveratrol	µg/L						ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Volitile Organic Compounds (VOCs)														
1,1,1-Trichloroethane	µg/L	312	3120		200		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1,2,2-Tetrachloroethane	µg/L	90.2	902		1		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,1,2-Trichloroethane	µg/L	312	3120		5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1-Dichloroethane	µg/L	1130	11300		5		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
1,1-Dichloroethene	µg/L	2240	22400		14		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,2-Dibromoethane (Ethylene dibromide)	µg/L						ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
1,2-Dichlorobenzene	µg/L	42	420		200		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,2-Dichloroethane	µg/L	1130	11300		5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloropropane	µg/L	3040	30400		5		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,3-Dichlorobenzene	µg/L	19.7	197		59		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,4-Dichlorobenzene	µg/L	19.7	197		5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Benzene	µg/L	2100	4600		5		ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)
Bromodichloromethane	µg/L	6400	64000		100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromoform	µg/L	6400	64000		100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromomethane (Methyl bromide)	µg/L	6400	64000		0.89		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Carbon tetrachloride	µg/L	500	5000		0.56		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Chlorobenzene	µg/L	25	250		14		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Chloroethane	µg/L						ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)
Chloroform (Trichloromethane)	µg/L	6400	64000		3		ND(1.0)	6.2[d]	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	3.3[d]	ND(1.0)
Chloromethane (Methyl chloride)	µg/L	6400	64000		38		ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)
cis-1,2-Dichloroethene	µg/L	2240	22400		1.6		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
cis-1,3-Dichloropropene	µg/L	7.9	79				ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Dibromochloromethane	µg/L	6400	64000		100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	µg/L	320	3200		1.6		ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)
m&p-Xylenes	µg/L						ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Methyl tert butyl ether (MTBE)	µg/L	5000	50000		15		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Methylene chloride	µg/L	6400	64000		50		ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
o-Xylene	µg/L						ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Styrene	µg/L				100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Tetrachloroethene	µg/L	450	4500		30		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	µg/L	770	4200		24		ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)
trans-1,2-Dichloroethene	µg/L	2240	22400		1.6		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
trans-1,3-Dichloropropene	µg/L	7.9	79				ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Trichloroethene	µg/L	20	200		5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Trichlorofluoromethane (CFC-11)	µg/L						ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)
Trihalomethanes	µg/L						ND(1.0)	6.2	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	3.3	ND(1.0)
Vinyl chloride	µg/L				1.1		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Xylenes (total)	µg/L	330	2800		20		ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)	ND(1.0) D ND(1.0)
General Chemistry														
%difference/ion balance	%						2.53	1.46	1.30	1.94	2.59	2.55	5.26	3.32
Alkalinity, bicarbonate (calculated)	µg/L						25000	8200	18000	19000	80000	81000	38000	25000
Alkalinity, carbonate (calculated)	µg/L						ND(1000)	ND(1000)	ND(1000)	ND(1000)	ND(1000)	ND(1000)	ND(1000)	ND(1000)
Alkalinity, total (as CaCO3)	µg/L						25000	8200	18000	19000	80000	81000	38000	25000
Ammonia-N	µg/L						ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	100
Anion sum	meq/L(me/L)						0.810	1.04	0.780	0.790	1.98	2.01	1.20	1.09
Cation sum	meq/L(me/L)						0.770	1.01	0.760	0.760	1.88	1.91	1.08	1.02
Chloride (dissolved)	µg/L		<10% ambient		250000		6600	17000	9100	9000	6100	8000	12000	14000
Color	TCU						ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Conductivity	µS/cm						85	130	88	89	180	180	130	120
Cyanide (strong acid extractable)	µg/L	1	10		200		ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
Hardness	µg/L						26000	22000	24000	24000	81000	79000	37000	22000
Langelier saturated index @ 20C	none						-2.62	-3.58	-2.45	-2.51	-0.215	-0.585	-1.39	-2.69
Langelier saturated index @ 4C	none						-2.87	-3.83	-2.71	-2.76	-0.466	-0.836	-1.64	-2.94
Langelier saturated pH @ 20C	none						9.04	9.78	9.24	9.21	8.03	8.04	8.67	9.13
Langelier saturated pH @ 4C	none						9.30	10.0	9.49	9.46	8.28	8.29	8.92	9.38
Nitrate (as N)	µg/L			16000		1000	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
Nitrite (as N)	µg/L					45000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Nitrite/Nitrate	µg/L						ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
Orthophosphate	µg/L						18	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
pH, lab	s.u.			7-8.7			6.43[c]	6.19[c]	6.79[c]	6.71[c]	7.82	7.45	7.28	6.44[c]
Silica, reactive	µg/L						8400	6800	7400	7200	5800	6100	7100	5800
Sulfate (dissolved)	µg/L			100000			5500	19000	7800	7700	9900	7400	4800	9200
Total dissolved solids (TDS) (calculated)	µg/L						51000	69000	50000	51000	110000	110000	69000	66000
Total organic carbon (TOC)	µg/L						530	ND(5000)	ND(500)	540	ND(500)	850	520	ND(5000)
Turbidity	NTU						13	58	3.4	2.5	0.49	11	41	420

Table 6

Groundwater Analytical Results - Marine
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:							Boat Harbour Stabilization Lagoon (BHSL)						Estuary (EST)	
Sample Location:							**BHSL-MW-5**	**BHSL-MW-6**	**BHSL-MW-7**	**BHSL-MW-7**	**BHSL-MW-8**	**BHSL-MW-9**	**EST-MW-2**	**EST-MW-3**
Sample ID:							**BHSL-MW-5**	**BHSL-MW-6**	**BHSL-MW-7**	**BHSL-DUP2**	**BHSL-MW-8**	**BHSL-MW-9**	**EST-MW-2**	**EST-MW-3**
Sample Date:		**Marine Groundwater Criteria**					**19-Apr-18**	**19-Apr-18**	**19-Apr-18**	**19-Apr-18**	**19-Apr-18**	**20-Apr-18**	**20-Apr-18**	**20-Apr-18**
Sample Matrix:		**Provincial**	**Provincial**	**Federal**	**Provincial**	**Federal**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**
Sample Type:		**Ecological ≤10m**	**Ecological >10m**	**Ecological**	**Human Health**	**Human Health**	**Original**	**Original**	**Original**	**Duplicate**	**Original**	**Original**	**Original**	**Original**
Applicable Criteria:		a	b	c	d	e	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine ≤10 m**	**Marine >10 m**	**Marine >10 m**
Parameters	**Units**													
Dioxins and Furans														
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/L						ND(1.02)	ND(1.56)	ND(1.09)	ND(1.02)	ND(1.34)	3.13	ND(0.780)	ND(1.18)
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/L						ND(1.69)	ND(1.45)	4.16	4.23	ND(1.06)	ND(4.01)	ND(1.85)	27.8
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/L						ND(0.630)	ND(1.31)	ND(0.803)	ND(0.728)	ND(1.17)	ND(1.23)	ND(1.11)	ND(0.972)
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/L						ND(0.740)	ND(1.44)	ND(1.09)	ND(1.25)	ND(1.41)	ND(1.09)	ND(1.07)	1.08
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/L						ND(0.747)	ND(1.81)	ND(0.953)	ND(0.864)	ND(1.62)	ND(1.32)	ND(1.32)	ND(1.15)
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L						ND(0.790)	ND(1.27)	ND(0.665)	ND(0.597)	ND(1.46)	ND(0.742)	ND(0.364)	ND(0.417)
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L						ND(0.853)	ND(1.24)	ND(1.52)	ND(0.790)	ND(1.82)	ND(1.18)	ND(0.771)	ND(0.672)
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L						ND(0.802)	ND(1.04)	ND(0.675)	ND(0.606)	ND(1.20)	ND(0.753)	ND(0.369)	ND(0.423)
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L						ND(0.884)	ND(0.932)	ND(1.57)	ND(0.818)	ND(1.37)	ND(1.22)	ND(0.798)	ND(0.696)
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/L						ND(0.916)	ND(1.59)	ND(0.771)	ND(0.692)	ND(1.82)	ND(0.860)	ND(0.422)	ND(0.483)
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L						ND(0.822)	ND(1.09)	ND(1.46)	ND(0.760)	ND(1.60)	ND(1.14)	ND(0.742)	ND(0.647)
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/L						ND(1.16)	ND(1.28)	ND(1.11)	ND(1.25)	ND(0.978)	ND(1.14)	ND(1.32)	ND(0.737)
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/L						ND(0.706)	ND(1.24)	ND(1.02)	ND(1.00)	ND(1.41)	ND(1.03)	ND(0.835)	ND(0.904)
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L						ND(0.855)	ND(1.42)	ND(0.720)	ND(0.646)	ND(1.63)	ND(0.803)	ND(0.394)	ND(0.451)
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/L						ND(1.15)	ND(1.33)	ND(1.10)	ND(1.24)	ND(1.02)	ND(1.13)	ND(1.31)	ND(0.731)
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/L						ND(0.680)	ND(1.09)	ND(1.05)	ND(1.12)	ND(1.39)	ND(0.868)	ND(0.616)	ND(0.710)
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/L						ND(0.615)	ND(1.15)	ND(1.21)	ND(1.03)	ND(1.21)	ND(1.02)	ND(0.834)	ND(1.06)
Total heptachlorodibenzofuran (HpCDF)	pg/L						ND(0.684)	ND(1.52)	ND(0.872)	ND(0.790)	ND(1.36)	ND(1.34)	ND(1.21)	ND(1.06)
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/L						ND(0.740)	ND(1.44)	ND(1.09)	ND(1.25)	ND(1.41)	ND(1.48)	ND(1.07)	2.74
Total hexachlorodibenzofuran (HxCDF)	pg/L						ND(0.838)	ND(1.30)	ND(0.706)	ND(0.633)	ND(1.49)	ND(0.787)	ND(0.386)	ND(0.442)
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/L						ND(0.852)	ND(4.05)	ND(1.51)	ND(0.788)	ND(11.6)	ND(1.18)	ND(0.770)	ND(0.671)
Total pentachlorodibenzofuran (PeCDF)	pg/L						ND(1.15)	ND(1.30)	ND(1.11)	ND(1.25)	ND(0.998)	ND(1.13)	ND(1.31)	ND(0.734)
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/L						ND(0.706)	ND(1.46)	ND(1.02)	ND(1.00)	ND(4.42)	ND(1.03)	ND(0.835)	ND(0.904)
Total tetrachlorodibenzofuran (TCDF)	pg/L						ND(0.680)	ND(1.70)	ND(1.05)	ND(1.12)	ND(2.22)	ND(0.868)	ND(0.616)	ND(0.710)
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/L						ND(0.615)	ND(1.37)	ND(1.21)	ND(1.03)	ND(3.58)	ND(1.02)	ND(0.834)	ND(1.06)
Total Toxic Equivalency (TEQ)	pg/L				120		2.38	3.84	3.47	3.07	4.23	3.22	2.58	2.70

Notes:

5.06[c] Exceeds applicable criteria; superscript identifies exceeded criteria

Provincial Ecological ≤10m[a] - Nova Scotia Contaminated Sites Regulation Table A3 References for Pathway Specific Standards for Groundwater discharging to a marine surface water body withing a distance less than or equal to 10 metres

Provincial Ecological >10m[b] - Nova Scotia Contaminated Sites Regulation Table A3 References for Pathway Specific Standards for Groundwater discharging to a marine surface water body greater than10 metres away

Federal Ecological[c] - Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the protection of Aquatic Life for Marine Groundwater

Provincial Human Health[d] - Nova Scotia Contaminated Sites Regulation Table A3 References for Pathway Specific Standards for agricultural/residential land use and coarse-grained soil

Federal Human Health [e] - Canadian Drinking Water Quality Guidelines

BTEX - Benzene, Toluene, Ethylbenzene, and total Xylenes

ND (1.0) - Not detected at the associated reporting limit

J - The associated value is an estimated concentration

D - The associated value is a confirmatory or duplicate concentration

"--" - Parameter not analysed

Table 7

Surface Water Analytical Resutls - Marine
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:						**Sludge Disposal Cell (SDC)**	
Delineated Sample Location:						**SDC-SW-3**	
Sample Location:						**SDC-SW-3**	**SDC-SW-4**
Sample ID:			**Marine Surface Water Criteria**			**SDC-SW-3**	**SDC-SW-4**
Sample Date:		**Provincial**	**Federal**	**Provincial**	**Federal**	**27-Oct-17**	**18-Apr-18**
Sample Matrix:		**Ecological**	**Ecological**	**Human Health**	**Human Health**	**Surface Water**	**Surface Water**
Sample Type:		**a**	**b**	c	d	**Original**	**Original**
Parameters	**Units**						
Field Parameters							
Conductivity, field	mS/cm					0.095	0.027
Dissolved oxygen (DO), field	µg/L					170	9650
pH, field	s.u.					5.72	4.78
Temperature, field	Deg C					16.08	8.67
Turbidity, field	NTU					14.2	0.6
Metals							
Aluminum	µg/L					890	92
Antimony	µg/L	500		6		ND(1.0)	ND(1.0)
Arsenic	µg/L	12.5		10		1.7	ND(1.0)
Barium	µg/L	500				170	97
Beryllium	µg/L	100		4		ND(1.0)	ND(1.0)
Bismuth	µg/L					ND(2.0)	ND(2.0)
Boron	µg/L	1200				ND(50)	ND(50)
Cadmium	µg/L	0.12				0.055	0.013
Calcium	µg/L					22000	4200
Chromium	µg/L		56 (trivalent)	50		1.3	ND(1.0)
Cobalt	µg/L			10		0.75	ND(0.40)
Copper	µg/L	2				ND(2.0)	ND(2.0)
Iron	µg/L					2300	190
Lead	µg/L	2				1.7	ND(0.50)
Magnesium	µg/L					2100	920
Manganese	µg/L					500	82
Mercury	µg/L	0.016				ND(0.013)	ND(0.013)
Molybdenum	µg/L			70		ND(2.0)	ND(2.0)
Nickel	µg/L	8.3				ND(2.0)	ND(2.0)
Phosphorus	µg/L					120	ND(100)
Potassium	µg/L					2200	660
Selenium	µg/L	2				ND(1.0)	ND(1.0)
Silver	µg/L	1.5				ND(0.10)	ND(0.10)
Sodium	µg/L			200000		6700	4600
Strontium	µg/L			4400		44	19
Thallium	µg/L	21.3		2		ND(0.10)	ND(0.10)
Tin	µg/L			4400		ND(2.0)	ND(2.0)
Titanium	µg/L					11	ND(2.0)
Uranium	µg/L	100		20		ND(0.10)	ND(0.10)
Vanadium	µg/L	50		6.2		2.2	ND(2.0)
Zinc	µg/L	10				8.8	ND(5.0)
Petroleum Hydrocarbons (PHCs)							
Benzene	µg/L	2100		5		ND(1)	ND(1)
Toluene	µg/L	770		24		ND(1)	ND(1)
Ethylbenzene	µg/L	320		1.6		ND(1)	ND(1)
Xylenes (total)	µg/L	330		20		ND(2)	ND(2)
Total Petroleum Hydrocarbons (C6-C10) Less BTEX	µg/L	see Modified TPH		see Modified TPH		ND(10)	ND(10)
Total Petroleum hydrocarbons (>C10-C16)	µg/L	see Modified TPH		see Modified TPH		ND(50)	ND(50)
Total Petroleum Hydrocarbons (>C16-C21)	µg/L	see Modified TPH		see Modified TPH		ND(50)	ND(50)
Total Petroleum Hydrocarbons (>C21-C32)	µg/L	see Modified TPH		see Modified TPH		120	ND(100)
Total Petroleum Hydrocarbons (Modified TPH)	µg/L	1500/100/100		4400/3200/7800		120[a]	ND(100)
Polycyclic Aromatic Hydrocarbons (PAHs) and Phenols							
1-Methylnaphthalene	µg/L	1		12		ND(0.050)	ND(0.050)
2,3,4,5-Tetrachlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
2,3,4,6-Tetrachlorophenol	µg/L				100	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)
2,3,4-Trichlorophenol	µg/L					ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
2,3,5,6-Tetrachlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)
2,3,5-Trichlorophenol	µg/L					ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
2,3,6-Trichlorophenol	µg/L					ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
2,3-Dichlorophenol	µg/L					ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)
2,4,5-Trichlorophenol	µg/L					ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)
2,4,6-Trichlorophenol	µg/L				5	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
2,4+2,5-Dichlorophenol	µg/L					ND(0.50)	ND(0.50)
2,4-Dichlorophenol	µg/L				900	ND(0.1)	ND(0.1)
2,4-Dimethylphenol	µg/L					ND(0.50) D ND(1)	ND(0.50) D ND(1)
2,4-Dinitrophenol	µg/L					ND(1)	ND(1)
2,5-Dichlorophenol	µg/L					ND(0.1)	ND(0.1)
2,6-Dichlorophenol	µg/L					ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
2-Chlorophenol	µg/L					ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)
2-Methylnaphthalene	µg/L	2		12		ND(0.050)	ND(0.050)
2-Methylphenol	µg/L					ND(0.5) D ND(0.50)	ND(0.5) D ND(0.50)
2-Nitrophenol	µg/L					ND(1) D ND(1.0)	ND(1) D ND(1.0)
3&4-Methylphenol	µg/L					ND(0.5)	ND(0.5)
3,4,5-Trichlorocatechol	µg/L					ND(0.50)	ND(0.50)

Table 7

Surface Water Analytical Resutls - Marine
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:						**Sludge Disposal Cell (SDC)**	
Delineated Sample Location:						**SDC-SW-3**	
Sample Location:						**SDC-SW-3**	**SDC-SW-4**
Sample ID:		**Marine Surface Water Criteria**				**SDC-SW-3**	**SDC-SW-4**
Sample Date:		**Provincial**	**Federal**	**Provincial**	**Federal**	**27-Oct-17**	**18-Apr-18**
Sample Matrix:		**Ecological**	**Ecological**	**Human Health**	**Human Health**	**Surface Water**	**Surface Water**
Sample Type:		**a**	**b**	c	d	**Original**	**Original**
Parameters	**Units**						
3,4,5-Trichloroguaiacol	µg/L					ND(0.50)	ND(0.50)
3,4,5-Trichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
3,4,5-Trichlorosyringol	µg/L					ND(0.50)	ND(0.50)
3,4,5-Trichloroveratrol	µg/L					ND(0.50)	ND(0.50)
3,4-Dichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
3,5-Dichlorocatechol	µg/L					ND(0.50)	ND(0.50)
3,5-Dichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
3/4-Chlorophenol	µg/L					ND(0.1)	ND(0.1)
3-Chlorophenol	µg/L					ND(0.50)	ND(0.50)
3-Methylphenol	µg/L					ND(0.50)	ND(0.50)
4,5,6-Trichloroguaiacol	µg/L					ND(0.50)	ND(0.50)
4,5-Dichlorocatechol	µg/L					ND(0.50)	ND(0.50)
4,5-Dichloroguaiacol	µg/L					ND(0.50)	ND(0.50)
4,5-Dichloroveratrol	µg/L					ND(0.50)	ND(0.50)
4,6-Dichloroguaiacol	µg/L					ND(0.50)	ND(0.50)
4,6-Dinitro-2-methylphenol	µg/L					ND(1)	ND(1)
4-Chloro-3-methylphenol	µg/L					ND(0.1)	ND(0.1)
4-Chloroguaiacol	µg/L					ND(0.50)	ND(0.50)
4-Chlorophenol	µg/L					ND(0.50)	ND(0.50)
4-Methylphenol	µg/L					ND(0.50)	ND(0.50)
4-Nitrophenol	µg/L					ND(1) D ND(5.0)	ND(1) D ND(5.0)
5,6-Dichlorovanilline	µg/L					ND(0.50)	ND(0.50)
6-Chlorovanilline	µg/L					ND(0.50)	ND(0.50)
Acenaphthene	µg/L	6		1400		ND(0.010)	ND(0.010)
Acenaphthylene	µg/L	6		4.5		ND(0.010)	ND(0.010)
Acridine	µg/L					ND(0.050)	ND(0.050)
Anthracene	µg/L					ND(0.010)	ND(0.010)
Benzo(a)anthracene	µg/L					ND(0.010)	ND(0.010)
Benzo(a)pyrene	µg/L	0.01		0.01		ND(0.010)	ND(0.010)
Benzo(b)fluoranthene	µg/L					ND(0.010)	ND(0.010)
Benzo(b)pyridine (Quinoline)	µg/L					ND(0.050)	ND(0.050)
Benzo(g,h,i)perylene	µg/L					ND(0.010)	ND(0.010)
Benzo(j)fluoranthene	µg/L					ND(0.010)	ND(0.010)
Benzo(k)fluoranthene	µg/L					ND(0.010)	ND(0.010)
Catechol	µg/L	2000				ND(0.50)	ND(0.50)
Chlorocatechols	µg/L					ND(0.50)	ND(0.50)
Chrysene	µg/L	0.1				ND(0.010)	ND(0.010)
Dibenz(a,h)anthracene	µg/L					ND(0.010)	ND(0.010)
Eugenol	µg/L					ND(0.50)	ND(0.50)
Fluoranthene	µg/L	11				ND(0.010)	ND(0.010)
Fluorene	µg/L	12		940		ND(0.010)	ND(0.010)
Guaiacol	µg/L					ND(0.50)	ND(0.50)
Indeno(1,2,3-cd)pyrene	µg/L					ND(0.010)	ND(0.010)
Isoeugenol	µg/L					ND(0.50)	ND(0.50)
Naphthalene	µg/L	1.4		470		ND(0.20)	ND(0.20)
Pentachlorophenol	µg/L	7.9		30		ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
Perylene	µg/L					ND(0.010)	ND(0.10)
Phenanthrene	µg/L	4.6				0.011	ND(0.010)
Phenol	µg/L			0.8		ND(0.5) D ND(0.50)	ND(0.5) D ND(0.50)
Phenolics (total)	µg/L					ND(5.0)	ND(5.0)
Pyrene	µg/L	0.02		710		ND(0.010)	ND(0.010)
Tetrachlorocatechol	µg/L					ND(0.50)	ND(0.50)
Tetrachloroguaiacol	µg/L					ND(0.50)	ND(0.50)
Tetrachloroveratrol	µg/L					ND(0.50)	ND(0.50)

Table 7

Surface Water Analytical Resutls - Marine
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:						**Sludge Disposal Cell (SDC)**	
Delineated Sample Location:						**SDC-SW-3**	
Sample Location:						**SDC-SW-3**	**SDC-SW-4**
Sample ID:		**Marine Surface Water Criteria**				**SDC-SW-3**	**SDC-SW-4**
Sample Date:		**Provincial**	**Federal**	**Provincial**	**Federal**	**27-Oct-17**	**18-Apr-18**
Sample Matrix:		**Ecological**	**Ecological**	**Human Health**	**Human Health**	**Surface Water**	**Surface Water**
Sample Type:		**a**	**b**	c	d	**Original**	**Original**
Parameters	**Units**						
Resins and Fatty Acids							
-Chlorodehydroabietic acid	µg/L					ND(3.0)	ND(3.0)
-Chlorodehydroabietic acid	µg/L					ND(3.0)	ND(3.0)
9,10-Dichlorostearic acid	µg/L					ND(3.0)	ND(3.0)
Abietic Acid	µg/L					ND(5.0)	ND(5.0)
Dehydroabietic acid	µg/L					ND(5.0)	ND(5.0)
Hexadecanoic acid	µg/L					ND(30)	ND(30)
Isopimaric acid	µg/L					ND(3.0)	ND(3.0)
Levopimaric acid	µg/L					ND(3.0) J	ND(3.0) J
Linoleic acid	µg/L					3.9	ND(3.0) J
Linolenic acid	µg/L					ND(3.0)	ND(3.0)
Neoabietic acid	µg/L					ND(3.0)	ND(3.0)
Octadecanoic acid	µg/L					ND(30)	ND(30)
Oleic acid	µg/L					ND(3.0)	ND(3.0)
Palmitoleic acid	µg/L					5.1	ND(3.0)
Palustric acid	µg/L					ND(3.0)	ND(3.0)
Pimaric acid	µg/L					ND(3.0)	ND(3.0)
Sandarcopimaric acid	µg/L					ND(3.0)	ND(3.0)
Total of fatty acids detected	µg/L					ND(30)	ND(30)
Total of resin acids detected	µg/L					ND(5.0)	ND(5.0)
Volitile Organic Compounds (VOCs)							
1,1,1-Trichloroethane	µg/L	312		200		ND(1.0)	ND(1.0)
1,1,2,2-Tetrachloroethane	µg/L	90.2		1		ND(0.50)	ND(0.50)
1,1,2-Trichloroethane	µg/L	312		5		ND(1.0)	ND(1.0)
1,1-Dichloroethane	µg/L	1130		5		ND(2.0)	ND(2.0)
1,1-Dichloroethene	µg/L	2240		14		ND(0.50)	ND(0.50)
1,2-Dibromoethane (Ethylene dibromide)	µg/L			0.2		ND(0.20)	ND(0.20)
1,2-Dichlorobenzene	µg/L	42		200		ND(0.50)	ND(0.50)
1,2-Dichloroethane	µg/L	1130		5		ND(1.0)	ND(1.0)
1,2-Dichloropropane	µg/L	3040		5		ND(0.50)	ND(0.50)
1,3-Dichlorobenzene	µg/L	19.7		59		ND(1.0)	ND(1.0)
1,4-Dichlorobenzene	µg/L	19.7		5		ND(1.0)	ND(1.0)
Benzene	µg/L	2100		5		ND(1.0)	ND(1.0)
Bromodichloromethane	µg/L	6400		100		ND(1.0)	ND(1.0)
Bromoform	µg/L	6400		100		ND(1.0)	ND(1.0)
Bromomethane (Methyl bromide)	µg/L	6400		0.89		ND(0.50)	ND(0.50)
Carbon tetrachloride	µg/L	500		2		ND(0.50)	ND(0.50)
Chlorobenzene	µg/L	25		30		ND(1.0)	ND(1.0)
Chloroethane	µg/L					ND(8.0)	ND(8.0)
Chloroform (Trichloromethane)	µg/L	6400		100		ND(1.0)	ND(1.0)
Chloromethane (Methyl chloride)	µg/L	6400		38		ND(8.0)	ND(8.0)
cis-1,2-Dichloroethene	µg/L	2240		20		ND(0.50)	ND(0.50)
cis-1,3-Dichloropropene	µg/L	7.9		0.5		ND(0.50)	ND(0.50)
Dibromochloromethane	µg/L	6400		100		ND(1.0)	ND(1.0)
Ethylbenzene	µg/L	320		1.6		ND(1.0)	ND(1.0)
m&p-Xylenes	µg/L			20		ND(2.0)	ND(2.0)
Methyl tert butyl ether (MTBE)	µg/L	5000		15		ND(2.0)	ND(2.0)
Methylene chloride	µg/L	6400		50		ND(3.0)	ND(3.0)
o-Xylene	µg/L			20		ND(1.0)	ND(1.0)
Styrene	µg/L			100		ND(1.0)	ND(1.0)
Tetrachloroethene	µg/L	450		30		ND(1.0)	ND(1.0)
Toluene	µg/L	770		24		ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	µg/L	2240		20		ND(0.50)	ND(0.50)
trans-1,3-Dichloropropene	µg/L	7.9		0.5		ND(0.50)	ND(0.50)
Trichloroethene	µg/L	20		5		ND(1.0)	ND(1.0)
Trichlorofluoromethane (CFC-11)	µg/L					ND(8.0)	ND(8.0)
Trihalomethanes	µg/L				100	ND(1.0)	ND(1.0)
Vinyl chloride	µg/L			2		ND(0.50)	ND(0.50)
Xylenes (total)	µg/L	330		20		ND(1.0)	ND(1.0)

Table 7

Surface Water Analytical Resutls - Marine
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:						**Sludge Disposal Cell (SDC)**	
Delineated Sample Location:						**SDC-SW-3**	
Sample Location:						**SDC-SW-3**	**SDC-SW-4**
Sample ID:		**Marine Surface Water Criteria**				**SDC-SW-3**	**SDC-SW-4**
Sample Date:		**Provincial**	**Federal**	**Provincial**	**Federal**	**27-Oct-17**	**18-Apr-18**
Sample Matrix:		**Ecological**	**Ecological**	**Human Health**	**Human Health**	**Surface Water**	**Surface Water**
Sample Type:		**a**	**b**	c	d	**Original**	**Original**
Parameters	**Units**						
General Chemistry							
%difference/ion balance	%					2.30	0.970
Alkalinity, bicarbonate (calculated)	µg/L					77000	7800
Alkalinity, carbonate (calculated)	µg/L					ND(1000)	ND(1000)
Alkalinity, total (as CaCO3)	µg/L					77000	7800
Ammonia-N	µg/L					64	82
Anion sum	meq/L(me/L)					1.78	0.510
Benzo fluoranthenes	µg/L					ND(0.020)	ND(0.020)
Cation sum	meq/L(me/L)					1.70	0.520
Chlorate	µg/L	5000				ND(100)	ND(500)
Chloride (dissolved)	µg/L			250000		7200	7900
Chlorite	µg/L					ND(100)	ND(500)
Color	TCU					35	29
Conductivity	µS/cm					160	56
Cyanide (strong acid extractable)	µg/L	1				ND(1)	ND(1)
Hardness	µg/L					63000	14000
Hydrogen sulfide (calculated)	µg/L					ND(21)	ND(21)
Langelier saturated index @ 20C	none					-0.968	-3.28
Langelier saturated index @ 4C	none					-1.22	-3.54
Langelier saturated pH @ 20C	none					8.12	9.78
Langelier saturated pH @ 4C	none					8.37	10.0
Nitrate (as N)	µg/L		200000		1000	ND(50)	ND(50)
Nitrite (as N)	µg/L				45000	ND(10)	ND(10)
Nitrite/Nitrate	µg/L					ND(50)	ND(50)
Orthophosphate	µg/L					ND(10)	ND(10)
pH, lab	s.u.					7.15	6.50
Silica, reactive	µg/L					700	3200
Sulfate (dissolved)	µg/L					2200	6200
Sulfide	µg/L					ND(20)	ND(20)
Total dissolved solids (TDS) (calculated)	µg/L					92000	33000
Total organic carbon (TOC)	µg/L					13000	6900
Turbidity	NTU					47	0.73

Notes:

120[a]	Exceeds applicable criteria; superscript identifies exceeded criteria
Provincial Ecological[a]	Nova Scotia Contaminated Sites Regulation Table A2 References for Pathway Specific Standards for marine surface water
Federal Ecological[b]	Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the protection of Aquatic Life for marine surface water
Provincial Human Health[c]	Nova Scotia Contaminated Sites Regulation Table A3 References for Pathway Specific Standards for agricultural/residential land use and coarse-grained soil, potable groundwater drinking water pathway
Federal Human Health[d]	Canadian Drinking Water Quality Guidelines

BTEX - Benzene, Toluene, Ethylbenzene, and total Xylenes
ND (1.0) - Not detected at the associated reporting limit
J - The associated value is an estimated concentration
D - The associated value is a confirmatory or duplicate concentration
"--" - Parameter not analysed

Table 8

Surface Water Analytical Results - Freshwater
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:						Background (BKGD) Chance Harbour Lake							
Sample Location:						**BKGD-SW-1**	**BKGD-SW-2**	**BKGD-SW-3**	**BKGD-SW-3**	**BKGD-SW-4**	**BKGD-SW-5**	**BKGD-SW-6**	**BKGD-SW-6**
Sample ID:			Freshwater Surface Water Criteria			**BKGD-SW-1**	**BKGD-SW-2**	**BKGD-SW-3**	**BKGD-SW-DUP**	**BKGD-SW-4**	**BKGD-SW-5**	**BKGD-SW-6**	**BKGD-SW-DUP2**
Sample Date:		**Provincial**	**Federal**	**Provincial**	**Federal**	**23-Nov-17**	**23-Nov-17**	**23-Nov-17**	**23-Nov-17**	**23-Nov-17**	**23-Nov-17**	**18-Apr-18**	**18-Apr-18**
Sample Matrix:		**Ecological**	**Ecological**	**Human Health**	**Human Health**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**
Sample Type:		a	b	c	d	**Original**	**Original**	**Original**	**Duplicate**	**Original**	**Original**	**Original**	**Duplicate**
Parameters	**Units**												
Field Parameters													
Conductivity, field	mS/cm					0.07	0.071	0.071	0.071	0.071	0.111	0.033	--
Dissolved oxygen (DO), field	µg/L					11350	12200	11300	11300	11460	12110	10070	--
pH, field	s.u.		6.5-9			6.56	6.89	6.34[b]	6.34[b]	6.15[b]	5.3[b]	4.28[b]	--
Temperature, field	Deg C					5.71	5.62	5.72	5.72	5.72	5.64	7.1	--
Turbidity, field	NTU					--	--	--	--	--	--	0.7	--
Metals													
Aluminum	µg/L	5				19[a]	20[a]	21[a]	20[a]	20[a]	26[a]	46[a]	47[a]
Antimony	µg/L	20		6		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Arsenic	µg/L	5		10		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Barium	µg/L	1000		1000		170	170	170	170	170	180	150	150
Beryllium	µg/L	5.3		4		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bismuth	µg/L					ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Boron	µg/L	1200		5000		ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
Cadmium	µg/L	0.01		5		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Calcium	µg/L					4300	4300	4400	4400	4300	4300	4000	3900
Chromium	µg/L		8.9 (trivalent)	50		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Cobalt	µg/L	10		10		ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)
Copper	µg/L	2				ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Iron	µg/L	300				140	150	150	150	150	200	150	140
Lead	µg/L	1		10		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Magnesium	µg/L					1900	1900	1900	2000	1900	1900	1800	1800
Manganese	µg/L	820				140	140	140	140	140	200	90	91
Mercury	µg/L	0.026		1		ND(0.013)	ND(0.013)	ND(0.013)	ND(0.013)	ND(0.013)	ND(0.013)	ND(0.013)	ND(0.013)
Molybdenum	µg/L	73		70		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Nickel	µg/L	25		100		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Phosphorus	µg/L					ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
Potassium	µg/L					810	810	830	820	830	840	790	780
Selenium	µg/L	1		10		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Silver	µg/L	0.1		100		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Sodium	µg/L			200000		6100	6200	6200	6400	6300	6300	6200	6100
Strontium	µg/L	21000		4400		15	16	15	16	16	15	13	13
Thallium	µg/L	0.8		2		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Tin	µg/L			4400		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Titanium	µg/L					ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Uranium	µg/L	300		20		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Vanadium	µg/L	6		6.2		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Zinc	µg/L	30				ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Petroleum Hydrocarbons (PHCs)													
Benzene	µg/L	2100		5		ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
Toluene	µg/L	770		24		ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
Ethylbenzene	µg/L	320		1.6		ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
Xylenes (total)	µg/L	330		20		ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)	ND(2)
Total Petroleum Hydrocarbons (C6-C10) Less BTEX	µg/L	see Modified TPH		see Modified TPH		ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Total Petroleum hydrocarbons (>C10-C16)	µg/L	see Modified TPH		see Modified TPH		ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
Total Petroleum Hydrocarbons (>C16-C21)	µg/L	see Modified TPH		see Modified TPH		ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
Total Petroleum Hydrocarbons (>C21-C32)	µg/L	see Modified TPH		see Modified TPH		ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
Total Petroleum Hydrocarbons (Modified TPH)	µg/L	1500/100/100		4400/3200/7800		ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
Polycyclic Aromatic Hydrocarbons (PAHs) and Phenols													
1-Methylnaphthalene	µg/L	2		12		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
2,3,4,5-Tetrachlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)
2,3,4,6-Tetrachlorophenol	µg/L				100	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)
2,3,4-Trichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
2,3,5,6-Tetrachlorophenol	µg/L					ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
2,3,5-Trichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
2,3,6-Trichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)
2,3-Dichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
2,4,5-Trichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
2,4,6-Trichlorophenol	µg/L				5	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
2,4+2,5-Dichlorophenol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
2,4-Dichlorophenol	µg/L				900	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
2,4-Dimethylphenol	µg/L					ND(1) D ND(0.50)	ND(1) D ND(0.50)	ND(1) D ND(0.50)	ND(1) D ND(0.50)	ND(0.50) D ND(1)	ND(1) D ND(0.50)	ND(0.50) D ND(1)	ND(1) D ND(0.50)
2,4-Dinitrophenol	µg/L					ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
2,5-Dichlorophenol	µg/L					ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
2,6-Dichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
2-Chlorophenol	µg/L					ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
2-Methylnaphthalene	µg/L	2		12		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
2-Methylphenol	µg/L					ND(0.50) D ND(0.5)	ND(0.5) D ND(0.50)	ND(0.50) D ND(0.5)	ND(0.5) D ND(0.50)	ND(0.5) D ND(0.50)	ND(0.5) D ND(0.50)	ND(0.5) D ND(0.50)	ND(0.5) D ND(0.50)
2-Nitrophenol	µg/L					ND(1) D ND(1.0)	ND(1.0) D ND(1)	ND(1) D ND(1.0)	ND(1) D ND(1.0)	ND(1.0) D ND(1)	ND(1) D ND(1.0)	ND(1.0) D ND(1)	ND(1.0) D ND(1)
3&4-Methylphenol	µg/L					ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
3,4,5-Trichlorocatechol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3,4,5-Trichloroguaiacol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

Table 8

Surface Water Analytical Results - Freshwater
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:						Background (BKGD) Chance Harbour Lake							
Sample Location:						**BKGD-SW-1**	**BKGD-SW-2**	**BKGD-SW-3**	**BKGD-SW-3**	**BKGD-SW-4**	**BKGD-SW-5**	**BKGD-SW-6**	**BKGD-SW-6**
Sample ID:			Freshwater Surface Water Criteria			**BKGD-SW-1**	**BKGD-SW-2**	**BKGD-SW-3**	**BKGD-SW-DUP**	**BKGD-SW-4**	**BKGD-SW-5**	**BKGD-SW-6**	**BKGD-SW-DUP2**
Sample Date:		**Provincial**	**Federal**	**Provincial**	**Federal**	**23-Nov-17**	**23-Nov-17**	**23-Nov-17**	**23-Nov-17**	**23-Nov-17**	**23-Nov-17**	**18-Apr-18**	**18-Apr-18**
Sample Matrix:		**Ecological**	**Ecological**	**Human Health**	**Human Health**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**
Sample Type:		a	b	c	d	**Original**	**Original**	**Original**	**Duplicate**	**Original**	**Original**	**Original**	**Duplicate**
Parameters	**Units**												
3,4,5-Trichlorophenol	µg/L					ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
3,4,5-Trichlorosyringol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3,4,5-Trichloroveratrol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3,4-Dichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)
3,5-Dichlorocatechol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3,5-Dichlorophenol	µg/L					ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
3/4-Chlorophenol	µg/L					ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
3-Chlorophenol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3-Methylphenol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,5,6-Trichloroguaiacol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,5-Dichlorocatechol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,5-Dichloroguaiacol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,5-Dichloroveratrol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,6-Dichloroguaiacol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,6-Dinitro-2-methylphenol	µg/L					ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
4-Chloro-3-methylphenol	µg/L					ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
4-Chloroguaiacol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4-Chlorophenol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4-Methylphenol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4-Nitrophenol	µg/L					ND(1) D ND(5.0)	ND(1) D ND(5.0)	ND(5.0) D ND(1)	ND(1) D ND(5.0)	ND(1) D ND(5.0)	ND(1) D ND(5.0)	ND(1) D ND(5.0)	ND(5.0) D ND(1)
5,6-Dichlorovanilline	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
6-Chlorovanilline	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Acenaphthene	µg/L	5.8		1400		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Acenaphthylene	µg/L	4.6		4.5		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Acridine	µg/L					ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Anthracene	µg/L	0.012				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(a)anthracene	µg/L	0.018				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(a)pyrene	µg/L	0.015		0.01		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(b)fluoranthene	µg/L	0.48				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(b)pyridine (Quinoline)	µg/L		3.4			ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(g,h,i)perylene	µg/L	0.17				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(j)fluoranthene	µg/L	0.48				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(k)fluoranthene	µg/L	0.48				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Catechol	µg/L	2000				ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Chlorocatechols	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Chrysene	µg/L	1.4				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Dibenz(a,h)anthracene	µg/L	0.26				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Eugenol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Fluoranthene	µg/L	0.04				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Fluorene	µg/L	3		940		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Guaiacol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Indeno(1,2,3-cd)pyrene	µg/L	0.21				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Isoeugenol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Naphthalene	µg/L	1.1		470		ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Pentachlorophenol	µg/L	0.5		30		ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
Perylene	µg/L					ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Phenanthrene	µg/L	0.4				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Phenol	µg/L	4000		0.8		ND(0.5) D ND(0.50)	ND(0.50) D ND(0.5)	ND(0.5) D ND(0.50)	ND(0.50) D ND(0.5)	ND(0.50) D ND(0.5)	ND(0.5) D ND(0.50)	ND(0.5) D ND(0.50)	ND(0.5) D ND(0.50)
Phenolics (total)	µg/L		0.004			ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Pyrene	µg/L	0.025		710		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Tetrachlorocatechol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Tetrachloroguaiacol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Tetrachloroveratrol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

Table 8

Surface Water Analytical Results - Freshwater
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:						Background (BKGD) Chance Harbour Lake							
Sample Location:						**BKGD-SW-1**	**BKGD-SW-2**	**BKGD-SW-3**	**BKGD-SW-3**	**BKGD-SW-4**	**BKGD-SW-5**	**BKGD-SW-6**	**BKGD-SW-6**
Sample ID:			Freshwater Surface Water Criteria			**BKGD-SW-1**	**BKGD-SW-2**	**BKGD-SW-3**	**BKGD-SW-DUP**	**BKGD-SW-4**	**BKGD-SW-5**	**BKGD-SW-6**	**BKGD-SW-DUP2**
Sample Date:		**Provincial**	**Federal**	**Provincial**	**Federal**	**23-Nov-17**	**23-Nov-17**	**23-Nov-17**	**23-Nov-17**	**23-Nov-17**	**23-Nov-17**	**18-Apr-18**	**18-Apr-18**
Sample Matrix:		**Ecological**	**Ecological**	**Human Health**	**Human Health**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**
Sample Type:		a	b	c	d	**Original**	**Original**	**Original**	**Duplicate**	**Original**	**Original**	**Original**	**Duplicate**
Parameters	**Units**												
Resins and Fatty Acids													
-Chlorodehydroabietic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
-Chlorodehydroabietic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
9,10-Dichlorostearic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Abietic Acid	µg/L					ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Dehydroabietic acid	µg/L					ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Hexadecanoic acid	µg/L					ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)
Isopimaric acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Levopimaric acid	µg/L					ND(3.0) J	ND(3.0) J	ND(3.0) J	ND(3.0) J	ND(3.0) J	ND(3.0) J	ND(3.0) J	ND(3.0) J
Linoleic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0) J	ND(3.0) J
Linolenic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Neoabietic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Octadecanoic acid	µg/L					ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)
Oleic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Palmitoleic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Palustric acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Pimaric acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Sandarcopimaric acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Total of fatty acids detected	µg/L					ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)
Total of resin acids detected	µg/L					ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Volitile Organic Compounds (VOCs)													
1,1,1-Trichloroethane	µg/L	10		200		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1,2,2-Tetrachloroethane	µg/L	70		1		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,1,2-Trichloroethane	µg/L	800		5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1-Dichloroethane	µg/L	200		5		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
1,1-Dichloroethene	µg/L	40		14		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,2-Dibromoethane (Ethylene dibromide)	µg/L	5		0.2		ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
1,2-Dichlorobenzene	µg/L	0.7		200		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,2-Dichloroethane	µg/L	100		5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloropropane	µg/L	0.7		5		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,3-Dichlorobenzene	µg/L	150		59		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,4-Dichlorobenzene	µg/L	26		5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Benzene	µg/L	2100		5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromodichloromethane	µg/L	200		100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromoform	µg/L	60		100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromomethane (Methyl bromide)	µg/L	0.9		0.89		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Carbon tetrachloride	µg/L	13.3		2		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Chlorobenzene	µg/L	1.3		30		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Chloroethane	µg/L	1100				ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)
Chloroform (Trichloromethane)	µg/L	1.8		100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Chloromethane (Methyl chloride)	µg/L	700		38		ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)
cis-1,2-Dichloroethene	µg/L	200		20		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
cis-1,3-Dichloropropene	µg/L	7		0.5		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Dibromochloromethane	µg/L	40		100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	µg/L	320		1.6		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
m&p-Xylenes	µg/L			20		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Methyl tert butyl ether (MTBE)	µg/L	10000		15		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Methylene chloride	µg/L	98.1		50		ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
o-Xylene	µg/L			20		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Styrene	µg/L	72		100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Tetrachloroethene	µg/L	111		30		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	µg/L	770		24		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	µg/L	200		20		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
trans-1,3-Dichloropropene	µg/L	7		0.5		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Trichloroethene	µg/L	21		5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Trichlorofluoromethane (CFC-11)	µg/L					ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)
Trihalomethanes	µg/L					ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	µg/L	600		2		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Xylenes (total)	µg/L	330		20		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)

Table 8

Surface Water Analytical Results - Freshwater
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:						Background (BKGD) Chance Harbour Lake							
Sample Location:						BKGD-SW-1	BKGD-SW-2	BKGD-SW-3	BKGD-SW-3	BKGD-SW-4	BKGD-SW-5	BKGD-SW-6	BKGD-SW-6
Sample ID:			Freshwater Surface Water Criteria			BKGD-SW-1	BKGD-SW-2	BKGD-SW-3	BKGD-SW-DUP	BKGD-SW-4	BKGD-SW-5	BKGD-SW-6	BKGD-SW-DUP2
Sample Date:		Provincial	Federal	Provincial	Federal	23-Nov-17	23-Nov-17	23-Nov-17	23-Nov-17	23-Nov-17	23-Nov-17	18-Apr-18	18-Apr-18
Sample Matrix:		Ecological	Ecological	Human Health	Human Health	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Sample Type:		a	b	c	d	Original	Original	Original	Duplicate	Original	Original	Original	Duplicate
Parameters	**Units**												
General Chemistry													
%difference/ion balance	%					1.49	1.49	1.49	0.740	0.00	0.740	1.59	0.790
Alkalinity, bicarbonate (calculated)	µg/L					16000	16000	16000	15000	15000	15000	12000	12000
Alkalinity, carbonate (calculated)	µg/L					ND(1000)	ND(1000)	ND(1000)	ND(1000)	ND(1000)	ND(1000)	ND(1000)	ND(1000)
Alkalinity, total (as CaCO3)	µg/L					16000	16000	16000	15000	15000	15000	12000	12000
Ammonia-N	µg/L		pH and temp dependent			ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
Anion sum	meq/L(me/L)					0.680	0.680	0.660	0.670	0.670	0.680	0.620	0.640
Benzo fluoranthenes	µg/L					ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)
Cation sum	meq/L(me/L)					0.660	0.660	0.680	0.680	0.670	0.670	0.640	0.630
Chlorate	µg/L	30000				ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(500)	ND(500)
Chloride (dissolved)	µg/L		120000			9700	9600	9100	9800	9600	9900	9400	10000
Chlorite	µg/L					ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(500)	ND(500)
Color	TCU					27	26	26	27	26	28	28	28
Conductivity	µS/cm					76	76	77	76	76	77	70	70
Cyanide (strong acid extractable)	µg/L	5				1.1	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
Hardness	µg/L					19000	18000	19000	19000	19000	19000	17000	17000
Hydrogen sulfide (calculated)	µg/L					ND(21)	ND(21)	ND(21)	ND(21)	ND(21)	ND(21)	ND(21)	ND(21)
Langelier saturated index @ 20C	none					-2.41	-2.41	-2.38	-2.33	-2.37	-2.52	-2.56	-2.55
Langelier saturated index @ 4C	none					-2.66	-2.67	-2.63	-2.58	-2.62	-2.77	-2.82	-2.81
Langelier saturated pH @ 20C	none					9.47	9.47	9.47	9.47	9.48	9.48	9.61	9.62
Langelier saturated pH @ 4C	none					9.73	9.73	9.72	9.72	9.73	9.73	9.86	9.87
Nitrate (as N)	µg/L		13000		1000	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
Nitrite (as N)	µg/L		60 (as NO2-N)		45000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Nitrite/Nitrate	µg/L					ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)	ND(50)
Orthophosphate	µg/L					ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
pH, lab	s.u.		6.5-9			7.07	7.06	7.09	7.14	7.11	6.96	7.05	7.06
Silica, reactive	µg/L					3100	3100	3100	3100	3200	3200	3700	3600
Sulfate (dissolved)	µg/L					4500	4400	4400	4400	4400	4400	5300	5300
Sulfide	µg/L					ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)	ND(20)
Total dissolved solids (TDS) (calculated)	µg/L					40000	40000	40000	40000	40000	40000	39000	39000
Total organic carbon (TOC)	µg/L					6300	6300	6100	6200	6400	6200	6600	6700
Turbidity	NTU					0.79	0.70	0.73	0.72	1.1	1.5	0.97	0.87

19[a] Exceeds applicable criteria; superscript identifies exceeded criteria

Provincial Ecological[a] Nova Scotia Contaminated Sites Regulation Table A2 References for Pathway Specific Standards for freshwater surface water

Federal Ecological[b] Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the protection of Aquatic Life for freshwater surface water

Provincial Human Health[c] Nova Scotia Contaminated Sites Regulation Table A3 References for Pathway Specific Standards for agricultural/residential land use and coarse-grained soil, potable groundwater drinking water pathway

Federal Human Health[d] Canadian Drinking Water Quality Guidelines

BTEX - Benzene, Toluene, Ethylbenzene, and total Xylenes
ND (1.0) - Not detected at the associated reporting limit
J - The associated value is an estimated concentration
D - The associated value is a confirmatory or duplicate concentration
"--" - Parameter not analysed

Table 8

Surface Water Analytical Results - Freshwater
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:						Background (BKGD) Chance Harbour Lake			
Sample Location:						**BKGD-SW-7**	**BKGD-SW-8**	**BKGD-SW-9**	**BKGD-SW-10**
Sample ID:		Freshwater Surface Water Criteria				**BKGD-SW-7**	**BKGD-SW-8**	**BKGD-SW-9**	**BKGD-SW-10**
Sample Date:		**Provincial**	**Federal**	**Provincial**	**Federal**	**18-Apr-18**	**18-Apr-18**	**18-Apr-18**	**18-Apr-18**
Sample Matrix:		**Ecological**	**Ecological**	**Human Health**	**Human Health**	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**
Sample Type:		a	b	c	d	**Original**	**Original**	**Original**	**Original**
Parameters	**Units**								
Field Parameters									
Conductivity, field	mS/cm					0.033	0.033	0.033	0.033
Dissolved oxygen (DO), field	µg/L					9510	9880	8970	9120
pH, field	s.u.		6.5-9			4.63[b]	4.79[b]	5.36[b]	4.91[b]
Temperature, field	Deg C					7	7.15	6.91	7.27
Turbidity, field	NTU					0.7	0.6	0.6	0.7
Metals									
Aluminum	µg/L	5				49[a]	49[a]	49[a]	49[a]
Antimony	µg/L	20		6		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Arsenic	µg/L	5		10		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Barium	µg/L	1000		1000		150	150	150	150
Beryllium	µg/L	5.3		4		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bismuth	µg/L					ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Boron	µg/L	1200		5000		ND(50)	ND(50)	ND(50)	ND(50)
Cadmium	µg/L	0.01		5		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Calcium	µg/L					4100	4000	4000	3800
Chromium	µg/L		8.9 (trivalent)	50		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Cobalt	µg/L	10		10		ND(0.40)	ND(0.40)	ND(0.40)	ND(0.40)
Copper	µg/L	2				ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Iron	µg/L	300				190	150	150	140
Lead	µg/L	1		10		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Magnesium	µg/L					1900	1800	1800	1700
Manganese	µg/L	820				95	91	92	85
Mercury	µg/L	0.026		1		ND(0.013)	ND(0.013)	ND(0.013)	ND(0.013)
Molybdenum	µg/L	73		70		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Nickel	µg/L	25		100		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Phosphorus	µg/L					ND(100)	ND(100)	ND(100)	ND(100)
Potassium	µg/L					830	810	790	790
Selenium	µg/L	1		10		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Silver	µg/L	0.1		100		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Sodium	µg/L			200000		6300	6200	6000	5800
Strontium	µg/L	21000		4400		14	13	13	12
Thallium	µg/L	0.8		2		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Tin	µg/L			4400		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Titanium	µg/L					ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Uranium	µg/L	300		20		ND(0.10)	ND(0.10)	ND(0.10)	ND(0.10)
Vanadium	µg/L	6		6.2		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Zinc	µg/L	30				ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Petroleum Hydrocarbons (PHCs)									
Benzene	µg/L	2100		5		ND(1)	ND(1)	ND(1)	ND(1)
Toluene	µg/L	770		24		ND(1)	ND(1)	ND(1)	ND(1)
Ethylbenzene	µg/L	320		1.6		ND(1)	ND(1)	ND(1)	ND(1)
Xylenes (total)	µg/L	330		20		ND(2)	ND(2)	ND(2)	ND(2)
Total Petroleum Hydrocarbons (C6-C10) Less BTEX	µg/L	see Modified TPH		see Modified TPH		ND(10)	ND(10)	ND(10)	ND(10)
Total Petroleum hydrocarbons (>C10-C16)	µg/L	see Modified TPH		see Modified TPH		ND(50)	ND(50)	ND(50)	ND(50)
Total Petroleum Hydrocarbons (>C16-C21)	µg/L	see Modified TPH		see Modified TPH		ND(50)	ND(50)	ND(50)	ND(50)
Total Petroleum Hydrocarbons (>C21-C32)	µg/L	see Modified TPH		see Modified TPH		ND(100)	ND(100)	ND(100)	ND(100)
Total Petroleum Hydrocarbons (Modified TPH)	µg/L	1500/100/100		4400/3200/7800		ND(100)	ND(100)	ND(100)	ND(100)
Polycyclic Aromatic Hydrocarbons (PAHs) and Phenols									
1-Methylnaphthalene	µg/L	2		12		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
2,3,4,5-Tetrachlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)
2,3,4,6-Tetrachlorophenol	µg/L				100	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)
2,3,4-Trichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
2,3,5,6-Tetrachlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)
2,3,5-Trichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)
2,3,6-Trichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)
2,3-Dichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)
2,4,5-Trichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
2,4,6-Trichlorophenol	µg/L				5	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
2,4+2,5-Dichlorophenol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
2,4-Dichlorophenol	µg/L				900	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
2,4-Dimethylphenol	µg/L					ND(1) D ND(0.50)	ND(0.50) D ND(1)	ND(0.50) D ND(1)	ND(1) D ND(0.50)
2,4-Dinitrophenol	µg/L					ND(1)	ND(1)	ND(1)	ND(1)
2,5-Dichlorophenol	µg/L					ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
2,6-Dichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
2-Chlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)	ND(0.50) D ND(0.1)
2-Methylnaphthalene	µg/L	2		12		ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
2-Methylphenol	µg/L					ND(0.5) D ND(0.50)	ND(0.50) D ND(0.5)	ND(0.50) D ND(0.5)	ND(0.5) D ND(0.50)
2-Nitrophenol	µg/L					ND(1) D ND(1.0)	ND(1) D ND(1.0)	ND(1.0) D ND(1)	ND(1.0) D ND(1)
3&4-Methylphenol	µg/L					ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
3,4,5-Trichlorocatechol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3,4,5-Trichloroguaiacol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

Table 8

Surface Water Analytical Results - Freshwater
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:						**Background (BKGD)**			
Sample Location:						**Chance Harbour Lake**			
Sample ID:		**Freshwater Surface Water Criteria**				**BKGD-SW-7**	**BKGD-SW-8**	**BKGD-SW-9**	**BKGD-SW-10**
Sample Date:		**Provincial**	**Federal**	**Provincial**	**Federal**	**BKGD-SW-7**	**BKGD-SW-8**	**BKGD-SW-9**	**BKGD-SW-10**
Sample Matrix:		**Ecological**	**Ecological**	**Human Health**	**Human Health**	**18-Apr-18**	**18-Apr-18**	**18-Apr-18**	**18-Apr-18**
Sample Type:		a	b	c	d	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**
						Original	**Original**	**Original**	**Original**
Parameters	**Units**								
3,4,5-Trichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.50) D ND(0.1)
3,4,5-Trichlorosyringol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3,4,5-Trichloroveratrol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3,4-Dichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)
3,5-Dichlorocatechol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3,5-Dichlorophenol	µg/L					ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)
3/4-Chlorophenol	µg/L					ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
3-Chlorophenol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
3-Methylphenol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,5,6-Trichloroguaiacol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,5-Dichlorocatechol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,5-Dichloroguaiacol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,5-Dichloroveratrol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,6-Dichloroguaiacol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4,6-Dinitro-2-methylphenol	µg/L					ND(1)	ND(1)	ND(1)	ND(1)
4-Chloro-3-methylphenol	µg/L					ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
4-Chloroguaiacol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4-Chlorophenol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4-Methylphenol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
4-Nitrophenol	µg/L					ND(1) D ND(5.0)	ND(1) D ND(5.0)	ND(5.0) D ND(1)	ND(5.0) D ND(1)
5,6-Dichlorovanilline	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
6-Chlorovanilline	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Acenaphthene	µg/L	5.8		1400		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Acenaphthylene	µg/L	4.6		4.5		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Acridine	µg/L					ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Anthracene	µg/L	0.012				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(a)anthracene	µg/L	0.018				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(a)pyrene	µg/L	0.015		0.01		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(b)fluoranthene	µg/L	0.48				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(b)pyridine (Quinoline)	µg/L		3.4			ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Benzo(g,h,i)perylene	µg/L	0.17				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(j)fluoranthene	µg/L	0.48				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Benzo(k)fluoranthene	µg/L	0.48				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Catechol	µg/L	2000				ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Chlorocatechols	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Chrysene	µg/L	1.4				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Dibenz(a,h)anthracene	µg/L	0.26				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Eugenol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Fluoranthene	µg/L	0.04				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Fluorene	µg/L	3		940		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Guaiacol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Indeno(1,2,3-cd)pyrene	µg/L	0.21				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Isoeugenol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Naphthalene	µg/L	1.1		470		ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Pentachlorophenol	µg/L	0.5		30		ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)	ND(0.1) D ND(0.50)
Perylene	µg/L					ND(0.040)	ND(0.010)	ND(0.010)	ND(0.010)
Phenanthrene	µg/L	0.4				ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Phenol	µg/L	4000		0.8		ND(0.5) D ND(0.50)	ND(0.50) D ND(0.5)	ND(0.50) D ND(0.5)	ND(0.50) D ND(0.5)
Phenolics (total)	µg/L		0.004			ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Pyrene	µg/L	0.025		710		ND(0.010)	ND(0.010)	ND(0.010)	ND(0.010)
Tetrachlorocatechol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Tetrachloroguaiacol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Tetrachloroveratrol	µg/L					ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

Table 8

Surface Water Analytical Results - Freshwater
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:						**Background (BKGD)**			
Sample Location:						**Chance Harbour Lake**			
Sample ID:		**Freshwater Surface Water Criteria**				**BKGD-SW-7**	**BKGD-SW-8**	**BKGD-SW-9**	**BKGD-SW-10**
Sample Date:		**Provincial**	**Federal**	**Provincial**	**Federal**	**BKGD-SW-7**	**BKGD-SW-8**	**BKGD-SW-9**	**BKGD-SW-10**
Sample Matrix:		**Ecological**	**Ecological**	**Human Health**	**Human Health**	**18-Apr-18**	**18-Apr-18**	**18-Apr-18**	**18-Apr-18**
Sample Type:		a	b	c	d	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**
						Original	**Original**	**Original**	**Original**
Parameters	**Units**								
Resins and Fatty Acids									
-Chlorodehydroabietic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
-Chlorodehydroabietic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
9,10-Dichlorostearic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Abietic Acid	µg/L					ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Dehydroabietic acid	µg/L					ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Hexadecanoic acid	µg/L					ND(30)	ND(30)	ND(30)	ND(30)
Isopimaric acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Levopimaric acid	µg/L					ND(3.0) J	ND(3.0) J	ND(3.0) J	ND(3.0) J
Linoleic acid	µg/L					ND(3.0) J	ND(3.0) J	ND(3.0) J	ND(3.0) J
Linolenic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Neoabietic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Octadecanoic acid	µg/L					ND(30)	ND(30)	ND(30)	ND(30)
Oleic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Palmitoleic acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Palustric acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Pimaric acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Sandarcopimaric acid	µg/L					ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Total of fatty acids detected	µg/L					ND(30)	ND(30)	ND(30)	ND(30)
Total of resin acids detected	µg/L					ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Volitile Organic Compounds (VOCs)									
1,1,1-Trichloroethane	µg/L	10		200		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1,2,2-Tetrachloroethane	µg/L	70		1		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,1,2-Trichloroethane	µg/L	800		5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1-Dichloroethane	µg/L	200		5		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
1,1-Dichloroethene	µg/L	40		14		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,2-Dibromoethane (Ethylene dibromide)	µg/L	5		0.2		ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
1,2-Dichlorobenzene	µg/L	0.7		200		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,2-Dichloroethane	µg/L	100		5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloropropane	µg/L	0.7		5		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
1,3-Dichlorobenzene	µg/L	150		59		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,4-Dichlorobenzene	µg/L	26		5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Benzene	µg/L	2100		5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromodichloromethane	µg/L	200		100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromoform	µg/L	60		100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromomethane (Methyl bromide)	µg/L	0.9		0.89		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Carbon tetrachloride	µg/L	13.3		2		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Chlorobenzene	µg/L	1.3		30		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Chloroethane	µg/L	1100				ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)
Chloroform (Trichloromethane)	µg/L	1.8		100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Chloromethane (Methyl chloride)	µg/L	700		38		ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)
cis-1,2-Dichloroethene	µg/L	200		20		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
cis-1,3-Dichloropropene	µg/L	7		0.5		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Dibromochloromethane	µg/L	40		100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Ethylbenzene	µg/L	320		1.6		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
m&p-Xylenes	µg/L			20		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Methyl tert butyl ether (MTBE)	µg/L	10000		15		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Methylene chloride	µg/L	98.1		50		ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
o-Xylene	µg/L			20		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Styrene	µg/L	72		100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Tetrachloroethene	µg/L	111		30		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	µg/L	770		24		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	µg/L	200		20		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
trans-1,3-Dichloropropene	µg/L	7		0.5		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Trichloroethene	µg/L	21		5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Trichlorofluoromethane (CFC-11)	µg/L					ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)
Trihalomethanes	µg/L					ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Vinyl chloride	µg/L	600		2		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Xylenes (total)	µg/L	330		20		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)

Table 8

Surface Water Analytical Results - Freshwater
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC:						**Background (BKGD)**			
Sample Location:						**Chance Harbour Lake**			
Sample ID:		**Freshwater Surface Water Criteria**				**BKGD-SW-7**	**BKGD-SW-8**	**BKGD-SW-9**	**BKGD-SW-10**
Sample Date:		**Provincial**	**Federal**	**Provincial**	**Federal**	**BKGD-SW-7**	**BKGD-SW-8**	**BKGD-SW-9**	**BKGD-SW-10**
Sample Matrix:		**Ecological**	**Ecological**	**Human Health**	**Human Health**	**18-Apr-18**	**18-Apr-18**	**18-Apr-18**	**18-Apr-18**
Sample Type:		a	b	c	d	**Surface Water**	**Surface Water**	**Surface Water**	**Surface Water**
						Original	**Original**	**Original**	**Original**
Parameters	**Units**								
General Chemistry									
%difference/ion balance	%					2.33	0.790	0.00	1.61
Alkalinity, bicarbonate (calculated)	µg/L					13000	13000	12000	12000
Alkalinity, carbonate (calculated)	µg/L					ND(1000)	ND(1000)	ND(1000)	ND(1000)
Alkalinity, total (as CaCO3)	µg/L					13000	13000	12000	12000
Ammonia-N	µg/L		pH and temp dependent			ND(50)	ND(50)	ND(50)	ND(50)
Anion sum	meq/L(me/L)					0.630	0.630	0.630	0.630
Benzo fluoranthenes	µg/L					ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)
Cation sum	meq/L(me/L)					0.660	0.640	0.630	0.610
Chlorate	µg/L	30000				ND(500)	ND(500)	ND(500)	ND(500)
Chloride (dissolved)	µg/L		120000			9100	9400	9600	9500
Chlorite	µg/L					ND(500)	ND(500)	ND(500)	ND(500)
Color	TCU					28	29	29	28
Conductivity	µS/cm					70	67	70	70
Cyanide (strong acid extractable)	µg/L	5				ND(1)	ND(1)	ND(1)	ND(1)
Hardness	µg/L					18000	17000	17000	17000
Hydrogen sulfide (calculated)	µg/L					ND(21)	ND(21)	ND(21)	ND(21)
Langelier saturated index @ 20C	none					-2.57	-2.62	-2.54	-2.56
Langelier saturated index @ 4C	none					-2.82	-2.87	-2.79	-2.81
Langelier saturated pH @ 20C	none					9.58	9.60	9.61	9.62
Langelier saturated pH @ 4C	none					9.84	9.85	9.86	9.87
Nitrate (as N)	µg/L		13000		1000	ND(50)	ND(50)	ND(50)	ND(50)
Nitrite (as N)	µg/L		60 (as NO2-N)		45000	ND(10)	ND(10)	ND(10)	ND(10)
Nitrite/Nitrate	µg/L					ND(50)	ND(50)	ND(50)	ND(50)
Orthophosphate	µg/L					ND(10)	ND(10)	ND(10)	ND(10)
pH, lab	s.u.		6.5-9			7.01	6.98	7.07	7.06
Silica, reactive	µg/L					3700	3700	3700	3700
Sulfate (dissolved)	µg/L					5400	5400	5300	5400
Sulfide	µg/L					ND(20)	ND(20)	ND(20)	ND(20)
Total dissolved solids (TDS) (calculated)	µg/L					39000	39000	39000	38000
Total organic carbon (TOC)	µg/L					6600	6400	6600	6700
Turbidity	NTU					0.82	0.75	0.72	1.3

19[a] Exceeds applicable criteria; superscript identifies exceeded criteria

Provincial Ecological[a] Nova Scotia Contaminated Sites Regulation Table A2 References for Pathway Specific Standards for freshwater surface water

Federal Ecological[b] Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the protection of Aquatic Life for freshwater surface water

Provincial Human Health[c] Nova Scotia Contaminated Sites Regulation Table A3 References for Pathway Specific Standards for agricultural/residential land use and coarse-grained soil, potable groundwater drinking water pathway

Federal Human Health[d] Canadian Drinking Water Quality Guidelines

BTEX - Benzene, Toluene, Ethylbenzene, and total Xylenes
ND (1.0) - Not detected at the associated reporting limit
J - The associated value is an estimated concentration
D - The associated value is a confirmatory or duplicate concentration
"--" - Parameter not analysed

Appendices

Appendix A
Sampling Analysis Plans

Sampling Analysis Plan
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC	Location ID	Analysis																Sample Depth	Confirming Location ID	At Location/ Step Out	Delineation	Confirm Analysis
		Dioxins/Furans	Polychlorinated Biphenyls	Polycyclic Aromatic Hydrocarbons + Quinoline	Volitile Organic Compounds	Petroleum Hydrocarbons	Phenols	Metals/General Chemistry + Mercury	Cyanide	Hydrogen Sulphide	Chlorate/Chlorite	Resins/Fatty Acids	Fraction of Organic Carbon	Grain Size	Grain Size with Hydrometer	TPH Frac	Silica Gel Cleanup					
Former Settling Pond 2	**Sediment**																					
	FSP2-SED-8	x	x	x	x	x	x	x	x	x	x		x		1	1	x	2 depths	-	-	Horizontal	All
	FSP2-SED-9	x	x	x	x	x	x	x	x	x	x		x				x	2 depths	-	-	Horizontal	All
	FSP2-SED-10					x							x				x	below 1.0m	FSP2-SED-4	At Location	Vertical	TPH
	Soil																					
	FSP2-S-16				x													0.31-0.46m	FSP2-S-5	Step Out	Confirm Results	mtbe
	FSP2-S-17				x													0.31-0.46m	FSP2-S-5	Step Out	Horizontal	mtbe
Former Settling Pond 3	**Sediment**																					
	FSP3-SED-7	x	x	x	x	x	x	x	x	x	x		x		1	1	x	2 depths	East of FSP3-SED-1	-	Horizontal	All
	FSP3-SED-8					x							x				x	Below 0.7m	FSP3-SED-3	At Location	Vertical	TPH
	FSP3-SED-DUP2	x	x	x	x	x	x	x	x	x	x		x				x	Lower depth	East of FSP3-SED-1	-	-	-
	Soil																					
	FSP3-S-8				x													Surface	FSP3-MW-2	At Location	Vertical	mtbe
	FSP3-BH-1				x													3.1-3.7m	FSP3-MW-2	Step Out	Horizontal	mtbe
	Trip Blank 1				x													-	-	-	-	-
Twin Settling Basins	**Soil**																					
	TSB-S-1							x										Surface	TSB-BH-2	At Location	Vertical	Arsenic
	TSB-BH-3							x										2.4-3.0m	TSB-BH-2	Step Out	Horizontal	Arsenic
	TSB-S-2							x										Surface	TSB-MW-1	At Location	Vertical	Arsenic
	TSB-BH-4							x										1.8-2.4m	TSB-MW-1	Step Out	Horizontal	Arsenic
Boat Harbour Stabilization Lagoon	**Soil**																					
	BHSL-MW-5	x	x	x	x	x	x	x	x								x	-	-	-	-	All
	BHSL-MW-6	x	x	x	x	x	x	x	x								x	-	-	-	-	All
	BHSL-MW-7	x	x	x	x	x	x	x	x								x	-	-	-	-	All
	BHSL-MW-8	x	x	x	x	x	x	x	x								x	-	-	-	-	All
	BHSL-MW-9	x	x	x	x	x	x	x	x								x	-	-	-	-	All
	BHSL-MW-DUP2	x	x	x	x	x	x	x	x								x	-	-	-	-	All
	BHSL-S-6							x										Surface	BHSL-BH-2	At Location	Vertical	Arsenic
	BHSL-BH-4							x										4.3-4.9m	BHSL-BH-2	Step Out	Horizontal	Arsenic
	BHSL-S-7							x										Surface	BHSL-MW-1	At Location	-	-
	BHSL-BH-5							x										2.4-3.0m	BHSL-MW-1	Step Out	-	-
	BHSL-S-8							x										Surface	BHSL-MW-2	At Location	Vertical	Copper + Arsenic
	BHSL-BH-6							x										2.4-3.0m	BHSL-MW-2	Step Out	Horizontal	Copper + Arsenic
	BHSL-S-4				x			x										Surface	BHSL-MW-11	At Location	Vertical	Arsenic + mtbe

Sampling Analysis Plan
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC	Location ID	Analysis																Sample Depth	Confirming Location ID	At Location/ Step Out	Delineation	Confirm Analysis
		Dioxins/Furans	Polychlorinated Biphenyls	Polycyclic Aromatic Hydrocarbons + Quinoline	Volitile Organic Compounds	Petroleum Hydrocarbons	Phenols	Metals/General Chemistry + Mercury	Cyanide	Hydrogen Sulphide	Chlorate/Chlorite	Resins/Fatty Acids	Fraction of Organic Carbon	Grain Size	Grain Size with Hydrometer	TPH Frac	Silica Gel Cleanup					
Boat Harbour Stabilization Lagoon (con't)	BHSL-S-5				x			x										1.2-1.8m	BHSL-MW-11	Step Out	Horizontal	Arsenic + mtbe
	Groundwater																					
	BHSL-MW-5	x	x	x	x	x	x	x	x									-	-	-	-	All
	BHSL-MW-6	x	x	x	x	x	x	x	x									-	-	-	-	All
	BHSL-MW-7	x	x	x	x	x	x	x	x									-	-	-	-	All
	BHSL-MW-8	x	x	x	x	x	x	x	x									-	-	-	-	All
	BHSL-MW-9	x	x	x	x	x	x	x	x									-	-	-	-	All
	BHSL-DUP	x	x	x	x	x	x	x	x									-	-	-	-	All
Sludge Disposal Cell	**Sediment**																					
	SDC-SED-3	x	x	x	x	x	x	x	x	x	x		x		1		x	2 depths	SDC-SED-2	Downstream	Horizontal	Mercury/All
	Surface Water																					
	SDC-SW-4			x	x	x	x	x	x	x	x	x						-	SDC-SW-3	Downstream	Horizontal	All
Estuary	**Soil**																					
	EST-MW-2	x	x	x	x	x	x	x	x				x	x		x	x	-	-	-	-	All
	EST-MW-3	x	x	x	x	x	x	x	x				x	x			x	-	-	-	-	All
	Groundwater																					
	EST-MW-2	x	x	x	x	x	x	x	x									-	-	-	-	All
	EST-MW-3	x	x	x	x	x	x	x	x									-	-	-	-	All
Northumberland Strait	**Sediment**																					
	NS-SED-3					x							x	x			x	1 depth	West of Estuary	West of Estuary	Horizontal	TPH
	NS-SED-4					x							x				x	1 depth	NS-SED-1	Step Out	Horizontal	TPH
	NS-SED-5					x							x				x	1 depth	NS-SED-1	Step Out	Horizontal	TPH
	NS-SED-6					x							x				x	1 depth	NS-SED-2	Step Out	Horizontal	TPH
	NS-SED-7					x							x				x	1 depth	NS-SED-2	Step Out	Horizontal	TPH
	NS-SED-DUP2					x							x				x	1 depth	-	-	-	TPH
Mill Air Emissions	**Soil**																					
	MAE-SS-11					x		x											MAE-SS-1	Step Out	Horizontal	Metals
	MAE-SS-12					x		x											MAE-SS-1			Metals
	MAE-SS-13				x														MAE-SS-3			mtbe
	MAE-SS-14				x														MAE-SS-3			mtbe
	MAE-SS-15				x														MAE-SS-6			mtbe
	MAE-SS-16				x														MAE-SS-6			mtbe
	MAE-SS-17				x														MAE-SS-9			mtbe
	MAE-SS-18				x														MAE-SS-9			mtbe

Sampling Analysis Plan
Supplemental Phase 2 Environmental Site Assessment
Boat Harbour Effluent Treatment Facility
Pictou Landing, Nova Scotia

APEC	Location ID	Analysis																Sample Depth	Confirming Location ID	At Location/ Step Out	Delineation	Confirm Analysis
		Dioxins/Furans	Polychlorinated Biphenyls	Polycyclic Aromatic Hydrocarbons + Quinoline	Volitile Organic Compounds	Petroleum Hydrocarbons	Phenols	Metals/General Chemistry + Mercury	Cyanide	Hydrogen Sulphide	Chlorate/Chlorite	Resins/Fatty Acids	Fraction of Organic Carbon	Grain Size	Grain Size with Hydrometer	TPH Frac	Silica Gel Cleanup					
Mill Air Emissions (con't)	MAE-SS-19							x											MAE-SS-10			Arsenic
	MAE-SS-20							x											MAE-SS-10			Arsenic
	MAE-SS-DUP-1					x		x											MAE-SS-1	-	-	Metals
	MAE-SS-DUP-2				x														MAE-SS-3, 6, or 9	-	-	mtbe
	Trip Blank 2					x													-	-	-	-
	Trip Blank 3				x														-	-	-	-
Background (Chance Harbour Lake & Northumberland Strait)	**Sediment**																					
	BKGD-SED-11	x	x	x	x	x	x	x	x	x	x		x		x		x	1 depth	-	Northumberland Strait	-	All
	BKGD-SED-12	x	x	x	x	x	x	x	x	x	x		x				x	1 depth	-		-	All
	BKGD-SED-13	x	x	x	x	x	x	x	x	x	x		x				x	1 depth	-		-	All
	BKGD-SED-14	x	x	x	x	x	x	x	x	x	x		x				x	1 depth	-		-	All
	BKGD-SED-15	x	x	x	x	x	x	x	x	x	x		x				x	1 depth	-		-	All
	Surface Water																					
	BKGD-SW-6			x	x	x	x	x	x	x	x	x						-	-	Chance Harbour Lake	-	All
	BKGD-SW-7			x	x	x	x	x	x	x	x	x						-	-		-	All
	BKGD-SW-8			x	x	x	x	x	x	x	x	x						-	-		-	All
	BKGD-SW-9			x	x	x	x	x	x	x	x	x						-	-		-	All
	BKGD-SW-10			x	x	x	x	x	x	x	x	x						-	-		-	All
	BKGD-SW-DUP2			x	x	x	x	x	x	x	x	x						-	-		-	All

Notes:
mbgs - Metres below ground surface
TPH - Total Proleum Hydrocarbons
mtbe - Methyl tert butyl ether
x - Analysis recommended
1 - Where two samples recommended at a location, analysis recommended for only one of the two samples

Appendix B
Stratigraphic and Instrumentation Logs

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BKGD-SED-11
DATE COMPLETED: 27 April 2018
DRILLING METHOD: PONAR GRAB SAMPLER
FIELD PERSONNEL: MB DN AF

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5058695.28 EASTING: 530689.48						
	SP-SAND, trace gravel, brown, wet	0.20	BACKFILLED WITH SEDIMENT CUTTINGS	0-0.2m			
	END OF BOREHOLE @ 0.20m BGS						
	NOTE: 2.75m OF WATER ABOVE SEDIMENT						

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 11/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BKGD-SED-12
DATE COMPLETED: 27 April 2018
DRILLING METHOD: PONAR GRAB SAMPLER
FIELD PERSONNEL: MB DN AF

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5058666.97 EASTING: 530713.96						
	SP-SAND, trace gravel, brown, wet	0.20	BACKFILLED WITH SEDIMENT CUTTINGS	0-0.2m			
	END OF BOREHOLE @ 0.20m BGS						
	NOTE: 2.75m OF WATER ABOVE SEDIMENT						

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 11/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BKGD-SED-13
DATE COMPLETED: 27 April 2018
DRILLING METHOD: PONAR GRAB SAMPLER
FIELD PERSONNEL: MB DN AF

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5058655.98 EASTING: 530766.01						
	SP-SAND, trace gravel, brown, wet	0.20	BACKFILLED WITH SEDIMENT CUTTINGS	0-0.2m			
	END OF BOREHOLE @ 0.20m BGS						
	NOTE: 2.75m OF WATER ABOVE SEDIMENT						

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 11/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BKGD-SED-14
DATE COMPLETED: 27 April 2018
DRILLING METHOD: PONAR GRAB SAMPLER
FIELD PERSONNEL: MB DN AF

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5058641.32 EASTING: 530801.58						
	SP-SAND, trace gravel, brown, wet	0.20	BACKFILLED WITH SEDIMENT CUTTINGS	0-0.2m			
	END OF BOREHOLE @ 0.20m BGS						
	NOTE: 2.75m OF WATER ABOVE SEDIMENT						

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 11/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BKGD-SED-15
DATE COMPLETED: 27 April 2018
DRILLING METHOD: PONAR GRAB SAMPLER
FIELD PERSONNEL: MB DN AF

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5058690.23 EASTING: 530840.64						
	SP-SAND, trace gravel, brown, wet	0.20	BACKFILLED WITH SEDIMENT CUTTINGS	0-0.2m			
	END OF BOREHOLE @ 0.20m BGS						
	NOTE: 3.6m OF WATER ABOVE SEDIMENT						

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 11/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BHSL-BH-4
DATE COMPLETED: 10 April 2018
DRILLING METHOD: SPLIT SPOON/STANDARD AUGER
FIELD PERSONNEL: DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5057120 EASTING: 528043						
0.0	SM-SILTY SAND, trace gravel, loose to compact, brown, dry		BACKFILLED WITH SOIL CUTTINGS	0-0.2m			
4.5				4.3-4.8m			
	END OF BOREHOLE @ 4.80m BGS	4.80					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m, 4.3-4.8m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BHSL-BH-5
DATE COMPLETED: 6 April 2018
DRILLING METHOD: SPLIT SPOON/STANDARD AUGER
FIELD PERSONNEL: DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	NORTHING: 5056969.17 EASTING: 526451.09							
0.5	SM-SILTY SAND, trace gravel, dark brown, wet, no odour		BACKFILLED WITH SOIL CUTTINGS					
1.0								
1.5								
2.0								
2.5								
3.0				2.4-3.0m				0
	END OF BOREHOLE @ 3.00m BGS	3.00						
3.5								
4.0								
4.5								
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (2.4-3.0m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 11/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BHSL-BH-6
DATE COMPLETED: 26 April 2018
DRILLING METHOD: SPLIT SPOON/STANDARD AUGER
FIELD PERSONNEL: SJ

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5057309 EASTING: 526533						
0.0	OL-ORGANICS	0.05					
0.5	SM-SILTY SAND, trace gravel, trace cobble, fine sand, brown		BACKFILLED WITH SOIL CUTTINGS				
1.0							
1.5							
2.0							
2.5				2.4-3.0m			
3.0	END OF BOREHOLE @ 3.00m BGS	3.00					
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▽
CHEMICAL ANALYSIS ⬭

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

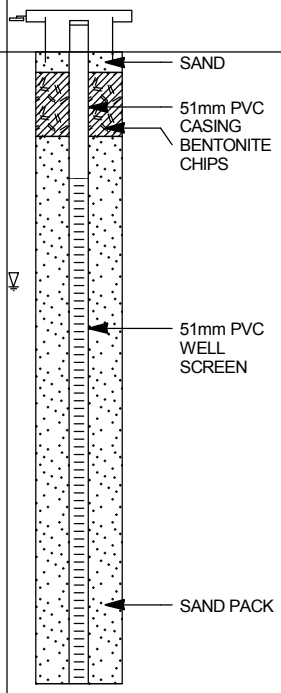
PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BHSL-MW-5
DATE COMPLETED: 6 April 2018
DRILLING METHOD: SPLIT SPOON/STANDARD AUGER
FIELD PERSONNEL: DN

NORTHING: 5057310.44
EASTING: 526906.85

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m
0	OL-ORGANICS, rootmat	0.05
	SP/GP-SAND/GRAVEL, gray	0.15
0.5	SC-CLAYEY SAND, with gravel, brown	0.61
	SM-SILTY SAND, trace gravel, brown, trace gray	
1.0		
1.5	- some cobble, wet at 1.68m BGS	
	- no cobble at 1.83m BGS	
2.0	- trace gravel and cobble, dry at 1.98m BGS	
	- mudstone at 2.29m BGS	
2.5	- no mudstone, with gravel and cobble, brown, dry at 2.44m BGS	
3.0		
	- sandstone, gray at 3.28m BGS	
3.5	- brown, with gray at 3.66m BGS	
4.0		
4.5	END OF BOREHOLE @ 4.57m BGS	4.57
5.0		
5.5		
6.0		
6.5		
7.0		
7.5		
8.0		
8.5		
9.0		
9.5		

MONITORING WELL



WELL DETAILS
Screened interval:
0.91 to 4.57m BGS
Length: 3.66m
Diameter: 51mm
Slot Size: 0.01
Material: PVC
Seal:
0.15 to 0.61m BGS
Material: BENTONITE CHIPS
Sand Pack:
0.61 to 4.57m BGS
Material: SAND

SAMPLE NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
		58	5	10
		100	28	15
1.2-1.8m		100	21	0
		100	40	0
		67	32	50
		50	22	45
		58	29	35
		0		

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▽
CHEMICAL ANALYSIS (oval)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

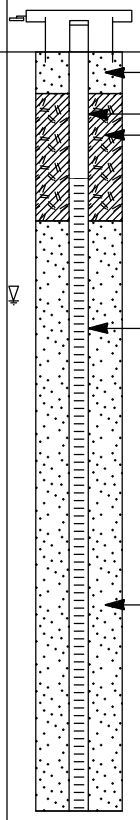
PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BHSL-MW-6
DATE COMPLETED: 5 April 2018
DRILLING METHOD: SPLIT SPOON/STANDARD AUGER
FIELD PERSONNEL: DN

NORTHING: 5056910.14
EASTING: 527093.8

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m
0	ORGANICS, rootmat	0.05
0.5	SP-SAND, trace sandstone cobble and gravel, loose, brown, dry - trace black organics at 0.61m BGS	
1.0		
1.5	- no organics, trace gray at 1.22m BGS	
2.0	- wet at 1.83m BGS	
2.5		
3.0		3.05
3.5	SM-SILTY SAND, trace gravel, brown, wet	3.66
4.0	SC-CLAYEY SAND (till), brown, moist to dry	4.27
4.5	CL-CLAY (till), with sand, trace organics, trace gravel, brown, moist to dry	
5.0		
5.5	END OF BOREHOLE @ 5.49m BGS	5.49
6.0		
6.5		
7.0		
7.5		
8.0		
8.5		
9.0		
9.5		

MONITORING WELL



WELL DETAILS
Screened interval:
0.91 to 5.49m BGS
Length: 4.58m
Diameter: 51mm
Slot Size: 0.01
Material: PVC
Seal:
0.30 to 1.22m BGS
Material: BENTONITE CHIPS
Sand Pack:
1.22 to 5.49m BGS
Material: SAND

SAMPLE NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
		100	7	20
		75	33	10
		67	38	0
		63	24	20
		54	26	55
		58	21	110
3.7-4.3m		92	61	150
		75	33	140

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▽
CHEMICAL ANALYSIS (oval)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

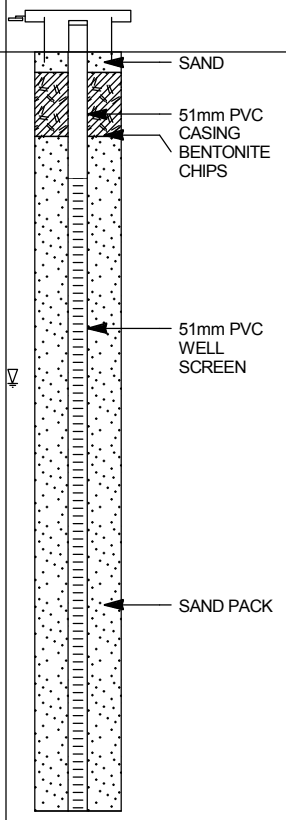
PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BHSL-MW-7
DATE COMPLETED: 5 April 2018
DRILLING METHOD: SPLIT SPOON/STANDARD AUGER
FIELD PERSONNEL: DN

NORTHING: 5056985.81
EASTING: 527597.69

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m
0	OL-ORGANICS, rootmat	0.10
	SC-CLAYEY SAND, trace gravel, brown, moist	
0.5	CL/SC-SANDY CLAY/CLAYEY SAND, trace gravel, brown	0.53
1.0		
1.5		
2.0	- trace sandstone cobble, moist at 1.83m BGS	
2.5	SP-SAND, trace clay ,trace gravel, loose, brown, wet	2.44
3.0	- gray at 3.10m BGS	
3.5	- brown, wet at 3.58m BGS - no clay, trace gray at 3.66m BGS	
4.0	- trace clay, compact, brown, dry at 4.27m BGS	
4.5		
5.0	SC/SM-CLAYEY/SILTY SAND, trace gravel, intermixed with gray sand with gray sandstone cobble, brown, dry	4.88
5.5	END OF BOREHOLE @ 5.49m BGS	5.49
6.0		
6.5		
7.0		
7.5		
8.0		
8.5		
9.0		
9.5		

MONITORING WELL



WELL DETAILS
Screened interval:
0.91 to 5.49m BGS
Length: 4.58m
Diameter: 51mm
Slot Size: 0.01
Material: PVC
Seal:
0.15 to 0.61m BGS
Material: BENTONITE CHIPS
Sand Pack:
0.61 to 5.49m BGS
Material: SAND

SAMPLE

NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
		88	3	0
		100	37	30
		67	23	30
		67	44	20
			42	55
		42	40	55
3.7-4.3m		83	35	11% LEL
		96	36	310
		25	42	300

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▽
CHEMICAL ANALYSIS (oval)

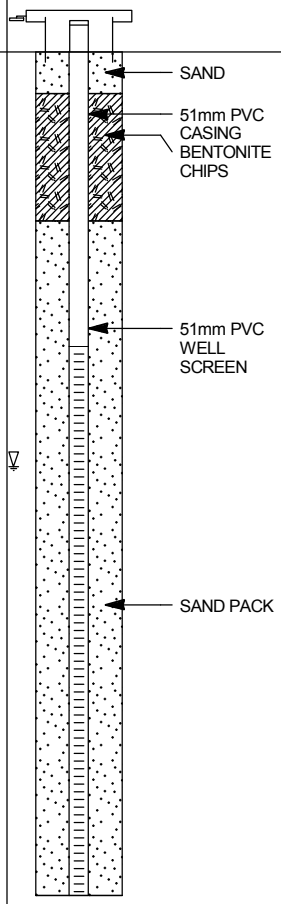
STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BHSL-MW-8
DATE COMPLETED: 5 April 2018
DRILLING METHOD: SPLIT SPOON/STANDARD AUGER
FIELD PERSONNEL: DN

NORTHING: 5057358.24
EASTING: 527713.55

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m
0	OL-ORGANICS, rootmat	0.15
0.5	SC-CLAYEY SAND, some cobble and boulders, brown, moist	0.61
1.0	SP-SAND, trace dark brown/black sandstone gravel, trace organics, fine grained, brown, moist	1.40
1.5	CL-SANDY CLAY (till), trace sandstone gravel, with light brown sand, brown	2.31
2.0		
2.5	SP-SAND, very dense, fine grained, gray - dense, intermixed with brown clayey sand and trace gravel, gray at 2.44m BGS	3.05
3.0	CL-SANDY CLAY (till), large cobble, brown, wet	3.66
3.5		
4.0	SP-SAND, loose, brown/gray, wet	
4.5	- clayey sand, trace gravel, brown, moist at 4.27m BGS	
5.0	- brown/gray at 4.88m BGS	
5.5	- cobble at 5.49m BGS	
6.0	END OF BOREHOLE @ 6.10m BGS	6.10
6.5		
7.0		
7.5		
8.0		
8.5		
9.0		
9.5		



WELL DETAILS
Screened interval:
2.13 to 6.10m BGS
Length: 3.97m
Diameter: 51mm
Slot Size: 0.01
Material: PVC
Seal:
0.30 to 1.22m BGS
Material: BENTONITE CHIPS
Sand Pack:
1.22 to 6.10m BGS
Material: SAND

SAMPLE NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
		100	9	10
		67	24	20
		67	28	15
			47	25
		50	42	25
3.0-3.7m		29	17	10
		71	72	10
		50	31	45
		29	78	35
		0	45	

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▽
CHEMICAL ANALYSIS (oval)

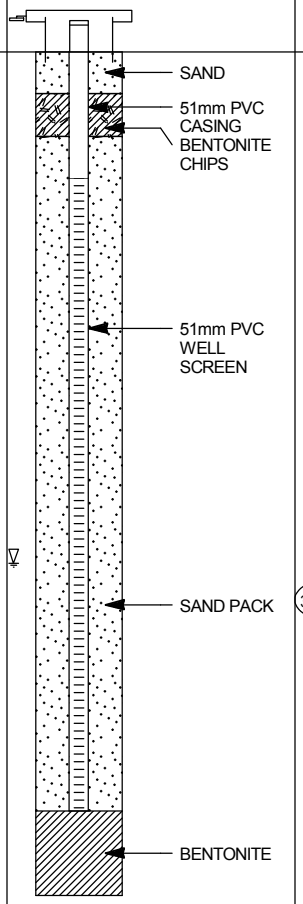
STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BHSL-MW-9
DATE COMPLETED: 4 April 2018
DRILLING METHOD: SPLIT SPOON/STANDARD AUGER
FIELD PERSONNEL: DN

NORTHING: 5056024.46
EASTING: 527194.28

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m
0	OL-ORGANICS, rootmat	0.08
0.5	SM-SILTY SAND, trace gravel, loose, brown, moist - coarse grained, brown, trace gray, dry at 0.7ft BGS	
1.0		
1.5	SP-SAND, trace silty and clay, trace gravel, brown, trace gray	1.22
2.0	- no clay, light brown, trace gray at 1.83m BGS	
2.5	- no silt at 2.44m BGS	
3.0	- organic layer, black/dark brown at 2.87m BGS	3.05
3.5	SM-SILTY SAND, trace black organics, trace gravel and cobble, brown, wet	
4.0		
4.5	- no organics, no gravel or cobble, moist at 4.27m BGS	
5.0	- trace gravel, trace cobble at 4.88m BGS	
5.5	- gray at 5.36m BGS - brown at 5.49m BGS	
6.0	- trace fine gravel, very compact, dry at 6.04m BGS	6.10
6.5	END OF BOREHOLE @ 6.10m BGS	
7.0		
7.5		
8.0		
8.5		
9.0		
9.5		



WELL DETAILS
Screened interval:
0.91 to 5.49m BGS
Length: 4.58m
Diameter: 51mm
Slot Size: 0.01
Material: PVC
Seal:
0.30 to 0.61m BGS
Material: BENTONITE CHIPS
Sand Pack:
0.61 to 5.49m BGS
Material: SAND

SAMPLE NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
		38	2	0
		79	27	10
		63	15	20
		58	32	610
		79	35	280
		50	29	85
3.7-4.3m		88	33	50
		92	34	250
		58	34	20
		67	30	430

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▽
CHEMICAL ANALYSIS ⬭

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BHSL-S-4
DATE COMPLETED: 6 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	NORTHING: 5056602.66 EASTING: 527807.28							
0.5	SP/GP-SAND/GRAVEL, trace organics, medium brown, moist	0.20	BACKFILLED WITH SOIL CUTTINGS	0-0.2m				30
	END OF BOREHOLE @ 0.20m BGS							
1.0								
1.5								
2.0								
2.5								
3.0								
3.5								
4.0								
4.5								
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BHSL-S-5
DATE COMPLETED: 6 April 2018
DRILLING METHOD: SPLIT SPOON/STANDARD AUGER
FIELD PERSONNEL: DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	NORTHING: 5056624.44 EASTING: 527831.74							
0.5	SP-SAND, with silty sand and gravel, medium brown, moist		BACKFILLED WITH SOIL CUTTINGS					
1.0								
1.5								
2.0				1.8-2.4m				30
2.5	END OF BOREHOLE @ 2.40m BGS	2.40						
3.0								
3.5								
4.0								
4.5								
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (1.8-2.4m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BHSL-S-6
DATE COMPLETED: 10 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5057120 EASTING: 528043						
0.5	SM-SILTY SAND, trace gravel, trace organics, brown, moist	0.20	BACKFILLED WITH SOIL CUTTINGS	0-0.2m			
	END OF BOREHOLE @ 0.20m BGS						
1.0							
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BHSL-S-7
DATE COMPLETED: 6 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	NORTHING: 5056965.62 EASTING: 526469.12							
0.5	SM-SILTY SAND, trace gravel and organics, dark brown, wet, no odour	0.20	BACKFILLED WITH SOIL CUTTINGS	0-0.2m				30
	END OF BOREHOLE @ 0.20m BGS							
1.0								
1.5								
2.0								
2.5								
3.0								
3.5								
4.0								
4.5								
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: BHSL-S-8
DATE COMPLETED: 26 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: SJ

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5057309 EASTING: 526542						
0.5	ML-SANDY SILT, trace gravel, trace organics, brown	0.20	BACKFILLED WITH SOIL CUTTINGS	0-0.2m			
	END OF BOREHOLE @ 0.20m BGS						
1.0							
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

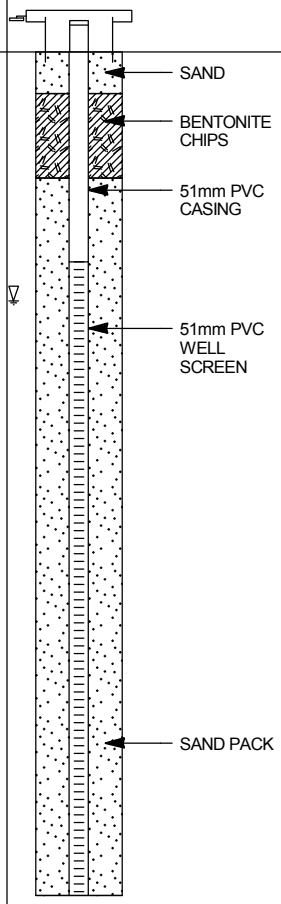
PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: EST-MW-2
DATE COMPLETED: 9 April 2018
DRILLING METHOD: SPLIT SPOON/STANDARD AUGER
FIELD PERSONNEL: KB

NORTHING: 5057857.23
EASTING: 528005.05

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	SAMPLE NUMBER	SAMPLE INTERVAL	REC (%)	'N' VALUE	PID (ppm)
0.5	SM-SILTY SAND, trace organics, loose, brown, dry				75	3	15
1.0	- no organics, trace cobble and boulders, dry to moist at 0.61m BGS				100	24	20
1.5	- no cobble and boulders, trace clay, compact, moist to wet at 1.22m BGS				100	12	15
2.0	- wet at 1.83m BGS				100	12	110
2.5					100	10	460
3.0					100	49	250
3.5					100	66	200
4.0					100	64	11% LEL
4.5			4.3-4.9m		100	75	510
5.0					92	65	160
5.5							
6.0	END OF BOREHOLE @ 6.10m BGS	6.10					
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

MONITORING WELL



WELL DETAILS
Screened interval:
1.52 to 6.10m BGS
Length: 4.58m
Diameter: 51mm
Slot Size: 0.01
Material: PVC
Seal:
0.30 to 0.91m BGS
Material: BENTONITE CHIPS
Sand Pack:
0.91 to 6.10m BGS
Material: SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▽
CHEMICAL ANALYSIS (4.3-4.9m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

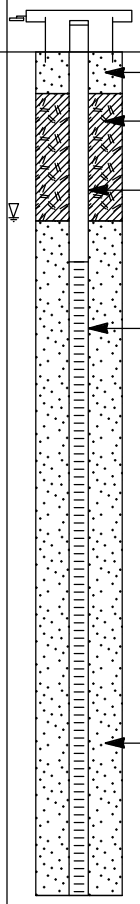
PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: EST-MW-3
DATE COMPLETED: 10 April 2018
DRILLING METHOD: SPLIT SPOON/STANDARD AUGER
FIELD PERSONNEL: DN

NORTHING: 5058071.98
EASTING: 527963.54

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m
0	OL-ORGANICS, rootmat	0.05
0.5	SM-SILTY SAND, trace gravel, trace organics, loose, brown, moist	0.61
1.0	SP-SAND, trace gravel, trace cobble, loose, brown, moist - no cobble, wet at 1.22m BGS	
1.5		
2.0		
2.5	- compact, moist at 2.44m BGS	
3.0	ROCK	3.05
3.5		3.66
4.0	CL-CLAY (till), trace gravel, dense, brown, moist to dry	
4.5		
5.0		
5.5		
6.0	END OF BOREHOLE @ 6.10m BGS	6.10
6.5		
7.0		
7.5		
8.0		
8.5		
9.0		
9.5		

MONITORING WELL



WELL DETAILS
Screened interval:
1.52 to 6.10m BGS
Length: 4.58m
Diameter: 51mm
Slot Size: 0.01
Material: PVC
Seal:
0.30 to 1.22m BGS
Material: BENTONITE CHIPS
Sand Pack:
1.22 to 6.10m BGS
Material: SAND

SAMPLE

NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
		67	11	70
		63	33	75
		50	24	200
1.8-2.4m		92	24	1060
		46	48	410
		42	55	85
		63	31	40
		21	45	40
		29	45	45

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ⊽
CHEMICAL ANALYSIS ⬭

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: NS-SED-3
DATE COMPLETED: 30 April 2018
DRILLING METHOD: PONAR GRAP SAMPLER
FIELD PERSONNEL: AF JV

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5058249.05 EASTING: 528034.11						
0.5	SP-SAND, trace gravel, fine to coarse grained, dark brown	0.20	BACKFILLED WITH SEDIMENT CUTTINGS	0-0.2m			
	END OF BOREHOLE @ 0.20m BGS NOTE: 1.13m OF WATER ABOVE SEDIMENT						

1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: NS-SED-4
DATE COMPLETED: 30 April 2018
DRILLING METHOD: PONAR GRAP SAMPLER
FIELD PERSONNEL: AF JV

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5058197.6 EASTING: 528083.71						
0.5	SP-SAND, trace gravel, fine to coarse grained, dark brown	0.20	BACKFILLED WITH SEDIMENT CUTTINGS	0-0.2m			
	END OF BOREHOLE @ 0.20m BGS						
	NOTE: 0.55m OF WATER ABOVE SEDIMENT						
1.0							
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 11/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: NS-SED-5
DATE COMPLETED: 30 April 2018
DRILLING METHOD: PONAR GRAP SAMPLER
FIELD PERSONNEL: AF JV

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5058207.64 EASTING: 528164.92						
0.5	SP-SAND, trace gravel, fine to coarse grained, dark brown	0.20	BACKFILLED WITH SEDIMENT CUTTINGS	0-0.2m			
	END OF BOREHOLE @ 0.20m BGS NOTE: 1.05m OF WATER ABOVE SEDIMENT						

1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: NS-SED-6
DATE COMPLETED: 30 April 2018
DRILLING METHOD: PONAR GRAP SAMPLER
FIELD PERSONNEL: AF JV

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5058343.24 EASTING: 528261.02						
0.5	SP-SAND, trace gravel, fine to coarse grained, dark brown	0.20		0-0.2m			
	END OF BOREHOLE @ 0.20m BGS NOTE: 1.35m OF WATER ABOVE SEDIMENT		BACKFILLED WITH SEDIMENT CUTTINGS				
1.0							
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 11/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: NS-SED-7
DATE COMPLETED: 30 April 2018
DRILLING METHOD: PONAR GRAP SAMPLER
FIELD PERSONNEL: AF JV

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5058427.66 EASTING: 528282.5						
0.5	SP-SAND, trace gravel, fine to coarse grained, dark brown	0.20	BACKFILLED WITH SEDIMENT CUTTINGS	0-0.2m			
	END OF BOREHOLE @ 0.20m BGS						
	NOTE: 1.25m OF WATER ABOVE SEDIMENT						
1.0							
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 11/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: FSP2-S-16
DATE COMPLETED: 16 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: AF DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5055843.34 EASTING: 526400.34						
0.5	SM-SILTY SAND, minor clay and gravel, cobble, brown	0.46	BACKFILLED WITH SOIL CUTTINGS	0.31-0.46m			
	END OF BOREHOLE @ 0.46m BGS						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: FSP2-S-17
DATE COMPLETED: 16 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: AF DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5055837.06 EASTING: 526395.52						
0.5	SM-SILTY SAND, minor clay and gravel, cobble, brown	0.46	BACKFILLED WITH SOIL CUTTINGS	0.31-0.46m			
	END OF BOREHOLE @ 0.46m BGS						
1.0							
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0.31-0.46m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: FSP2-SED-8
DATE COMPLETED: 23 April 2018
DRILLING METHOD: PERCUSSION CORING
FIELD PERSONNEL: MB, AF, DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5055945.67 EASTING: 526014.78						
0.5	ML-SILT, with organics and root mat, dark brown, moist to wet			0.15-0.55m			
1.0	OL-SILT, with decaying organic matter, dark brown to black, moist to wet	0.55	BACKFILLED WITH SEDIMENT CUTTINGS	0.6-0.9m			
1.5							
2.0							
2.5	END OF BOREHOLE @ 2.30m BGS	2.30					
3.0	NOTE: 0.05m OF WATER ABOVE SEDIMENT						
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (oval)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: FSP2-SED-9
DATE COMPLETED: 24 April 2018
DRILLING METHOD: PERCUSSION CORING
FIELD PERSONNEL: MB, AF, DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5055933.34 EASTING: 526232.34						
0.5	ML-SILT, with decaying vegetation, very loose, dark brown, wet			0-0.4m			
	OL-ORGANIC SILT, with vegetation and root material, black, sulfurous odour	0.45	BACKFILLED WITH SEDIMENT CUTTINGS	0.45-0.85m			
1.0							
1.5							
2.0							
2.5	END OF BOREHOLE @ 2.60m BGS	2.60					
3.0	NOTE: 0.5m OF WATER ABOVE SEDIMENT						
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (oval)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: FSP2-SED-10
DATE COMPLETED: 24 April 2018
DRILLING METHOD: PERCUSSION CORING
FIELD PERSONNEL: MB, AF, DN

NORTHING: 5055593.77
EASTING: 525818.19

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
0.5	OL-ORGANICS, root mat	0.05	BACKFILLED WITH SEDIMENT CUTTINGS	1.0-1.2m			
	ML-SILT, trace gravel, trace roots, soft, black, wet, no odour	0.35					
1.0	SM-SILTY SAND, trace gravel, wood chips, black, moist to wet	0.65 0.80					
	WOOD, block of fibrous yellow/brown material, possibly wood	1.20					
1.5	ML-CLAYEY SILT, wood chips, firm, brown, moist	1.50					
2.0	ML-SILT, trace gravel, wood fibers, black, moist	1.85					
	PEAT, black/brown, moist						
2.5	END OF BOREHOLE @ 1.85m BGS						
	NOTE: 0.55m OF WATER ABOVE SEDIMENT						
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (1.0-1.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: FSP3-SED-7
DATE COMPLETED: 25 April 2018
DRILLING METHOD: PERCUSSION CORING
FIELD PERSONNEL: MB, AF, DN

NORTHING: 5056672.4
EASTING: 526154.6

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
0.5	ML-SILT, trace gravel, rootmat, organics, black, wet	0.25	BACKFILLED WITH SEDIMENT CUTTINGS	0-0.3m			
	WOOD FIBER LAYER, soft, reddish brown	0.60					
1.0	- sludge-like, with silt, black/brown at 0.40m BGS	0.70		0.4-0.9m			
	ML-SILT, with clay, trace roots, high organic content, very soft (sludge-like), black, we	0.95					
1.5	ML-SILT, with clay, trace gravel, heavily decayed wood fibers and trace roots, high to moderate organic content, firm, dark brown/black						
2.0	PEAT, wood fibers, trace roots, brown/black						
2.5	END OF BOREHOLE @ 2.60m BGS	2.60					
3.0	NOTE: 0.48m OF WATER ABOVE SEDIMENT						
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.3m, 0.4-0.9m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: FSP3-SED-8
DATE COMPLETED: 26 April 2018
DRILLING METHOD: PERCUSSION CORING
FIELD PERSONNEL: MB AF DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5056602.25 EASTING: 526076.68						
0.0	OL-ORGANICS, root mat	0.05	BACKFILLED WITH SEDIMENT CUTTINGS				
	ML-SILT, with clay, trace gravel, soft to firm, brown, wet to moist	0.38					
0.5	COBBLE	0.44					
1.0	ML-SILT, with clay, very firm, brown, moist, refusal	1.00					
	END OF BOREHOLE @ 1.00m BGS						
1.5	NOTE: 0.39m OF WATER ABOVE SEDIMENT						
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: FSP3-BH-1
DATE COMPLETED: 12 April 2018
DRILLING METHOD: SPLIT SPOON/STANDARD AUGER
FIELD PERSONNEL: DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	NORTHING: 5056685.26 EASTING: 525855.54							
0.5	CL-SILTY CLAY, trace gravel, moist, cobble at bottom of spoon		BACKFILLED WITH SOIL CUTTINGS					
1.0								
1.5								
2.0								
2.5								
3.0								
3.5				3.1-3.7m				0
	END OF BOREHOLE @ 3.70m BGS	3.70						
4.0								
4.5								
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (3.1-3.7m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 11/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: FSP3-S-8
DATE COMPLETED: 12 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	NORTHING: 5056679.93 EASTING: 525854.21							
0.5	CL-SILTY CLAY, with sand, trace organics, wet	0.20	BACKFILLED WITH SOIL CUTTINGS	0-0.2m				25
	END OF BOREHOLE @ 0.20m BGS							
1.0								
1.5								
2.0								
2.5								
3.0								
3.5								
4.0								
4.5								
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: MAE-SS-11
DATE COMPLETED: 16 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: AF DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5056355.19 EASTING: 525416.96						
	SM-SILTY SAND, trace clay, brown	0.15	BACKFILLED WITH SOIL CUTTINGS	0-0.15m			
	END OF BOREHOLE @ 0.15m BGS						

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.15m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: MAE-SS-12
DATE COMPLETED: 16 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: AF DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5056350 EASTING: 525440						
	SM-SILTY SAND, trace clay, brown	0.15	BACKFILLED WITH SOIL CUTTINGS	0-0.15m			
	END OF BOREHOLE @ 0.15m BGS						

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: MAE-SS-13
DATE COMPLETED: 17 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: AF DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5055165.7 EASTING: 525919.04						
	SM-SILTY SAND, trace organics, brown	0.15	BACKFILLED WITH SOIL CUTTINGS	0-0.15m			
	END OF BOREHOLE @ 0.15m BGS						

0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0
9.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (○)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: MAE-SS-14
DATE COMPLETED: 17 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: AF DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5055182.92 EASTING: 525911.4						
	SM-SILTY SAND, trace organics, brown	0.15	BACKFILLED WITH SOIL CUTTINGS	0-0.15m			
	END OF BOREHOLE @ 0.15m BGS						

0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0
9.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (○)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: MAE-SS-15
DATE COMPLETED: 17 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: AF DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5056632.86 EASTING: 527927.89						
	SM-SILTY SAND, trace gravel, orange/brown	0.15	BACKFILLED WITH SOIL CUTTINGS	0-0.15m			
	END OF BOREHOLE @ 0.15m BGS						

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.15m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: MAE-SS-16
DATE COMPLETED: 17 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: AF DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5056636.62 EASTING: 527935.54						
	SP-SAND, trace gravel, fine grained, grey/brown	0.15	BACKFILLED WITH SOIL CUTTINGS	0-0.15m			
	END OF BOREHOLE @ 0.15m BGS						

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (O)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: MAE-SS-17
DATE COMPLETED: 16 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: AF DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5057098.16 EASTING: 526062.44						
0.5	SM-SILTY SAND, minor gravel and cobble, light brown	0.15	BACKFILLED WITH SOIL CUTTINGS	0-0.15m			
	END OF BOREHOLE @ 0.15m BGS						
1.0							
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.15m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: MAE-SS-18
DATE COMPLETED: 16 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: AF DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5057096.14 EASTING: 526070.03						
0.5	SM-SILTY SAND, minor gravel and cobble, light brown	0.15	BACKFILLED WITH SOIL CUTTINGS	0-0.15m			
	END OF BOREHOLE @ 0.15m BGS						
1.0							
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.15m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: MAE-SS-19
DATE COMPLETED: 16 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: AF DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5056799.11 EASTING: 525786.08						
0.5	SM-SILTY SAND, with gravel and cobble, trace organics, light brown	0.15	BACKFILLED WITH SOIL CUTTINGS	0-0.15m			
	END OF BOREHOLE @ 0.15m BGS						
1.0							
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.15m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: MAE-SS-20
DATE COMPLETED: 16 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: AF DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5056794.69 EASTING: 525800.75						
0.5	SM-SILTY SAND, with gravel and cobble, trace organics, light brown	0.15	BACKFILLED WITH SOIL CUTTINGS	0-0.15m			
	END OF BOREHOLE @ 0.15m BGS						
1.0							
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.15m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: SDC-SED-3
DATE COMPLETED: 26 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: MB AF DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5055606.17 EASTING: 527133.03						
0.0	OL-ORGANICS, sandy, rootmat	0.05		0.05-0.25m			
	CL-CLAY, with sand, trace gravel, firm, brown, wet	0.25		0.25-0.45m			
0.5	- grey at 0.21m BGS		BACKFILLED WITH SEDIMENT CUTTINGS				
1.0	CL-CLAY, trace sand and gravel, very firm, grey to red/brown, moist to wet						
1.5	END OF BOREHOLE @ 1.50m BGS	1.50					
2.0	NOTE: 0.21m OF WATER ABOVE SEDIMENT						
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (oval)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: TSB-BH-3
DATE COMPLETED: 11 April 2018
DRILLING METHOD: SPLIT SPOON/STANDARD AUGER
FIELD PERSONNEL: DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	NORTHING: 5056388.15 EASTING: 525520.3							
0.0	ML-CLAYEY SILT, trace gravel, brown, moist		BACKFILLED WITH SOIL CUTTINGS					
3.0	END OF BOREHOLE @ 3.05m BGS	3.05		2.4-3.0m		75	6	0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (2.4-3.0m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: TSB-BH-4
DATE COMPLETED: 12 April 2018
DRILLING METHOD: SPLIT SPOON/STANDARD AUGER
FIELD PERSONNEL: DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	NORTHING: 5056260.83 EASTING: 525677.9							
0.0	SC-CLAYEY SAND, trace gravel, brown, moist		BACKFILLED WITH SOIL CUTTINGS					
0.5								
1.0								
1.5								
2.0				1.8-2.4m		92	12	0
2.5	END OF BOREHOLE @ 2.40m BGS	2.40						
3.0								
3.5								
4.0								
4.5								
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (1.8-2.4m)

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: TSB-S-1
DATE COMPLETED: 11 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	NORTHING: 5056386.25 EASTING: 525524.5							
0.5	ML-CLAYEY SILT, trace organics, brown, saturated	0.20	BACKFILLED WITH SOIL CUTTINGS	0-0.2m				10
	END OF BOREHOLE @ 0.20m BGS							
1.0								
1.5								
2.0								
2.5								
3.0								
3.5								
4.0								
4.5								
5.0								
5.5								
6.0								
6.5								
7.0								
7.5								
8.0								
8.5								
9.0								
9.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: BOAT HARBOUR SUPPLEMENTAL PHASE 2 ESA
PROJECT NUMBER: 11148275-26
CLIENT: NOVA SCOTA LANDS INC.
LOCATION: PICTOU LANDING, NOVA SCOTIA

HOLE DESIGNATION: TSB-S-2
DATE COMPLETED: 12 April 2018
DRILLING METHOD: SHOVEL/HAND AUGER
FIELD PERSONNEL: DN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH m	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE
	NORTHING: 5056257.36 EASTING: 525677.01						
0.5	CL-SANDY CLAY, trace gravel, trace organics, brown, moist	0.20	BACKFILLED WITH SOIL CUTTINGS	0-0.2m			
	END OF BOREHOLE @ 0.20m BGS						
1.0							
1.5							
2.0							
2.5							
3.0							
3.5							
4.0							
4.5							
5.0							
5.5							
6.0							
6.5							
7.0							
7.5							
8.0							
8.5							
9.0							
9.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS (0-0.2m)

OVERBURDEN LOG 11148275-26-WI.GPJ GHD_Corp 4/7/18

Appendix C
Data Quality Assessment and Validation Memo

Memorandum

July 27, 2018

To:	Kathleen Schaller	Ref. No.:	11148275
From:	Airesse MacPhee/al/31	Tel:	604-248-3661
CC:	Christine Plourde, Scott Llewellyn		

Subject: **Analytical Data Verification**
Supplemental Phase 2 ESA – Boat Harbour Effluent Treatment Facility
Nova Scotia Lands
Pictou Landing, Nova Scotia
April 2018

1. Introduction

The following document details an analytical data verification of results for soil, sediment, groundwater and surface water samples collected as part of the Supplemental Phase 2 Environmental Site Assessment at the Boat Harbour Effluent Treatment Facility in Pictou Landing, Nova Scotia during April 2018. Samples were submitted to Maxxam Analytics International Corporation (Maxxam) located in Bedford, Nova Scotia. A sample collection and analysis summary is presented in Table 1. A summary of the analytical methodology is presented in Table 2.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, duplicate data, recovery data from surrogate spikes, laboratory control samples (LCS), matrix spikes (MS), and field QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 2 and applicable guidance from the documents entitled:

i) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", United States Environmental Protection Agency (USEPA) 540/R-99-008, October 1999.

ii) "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", USEPA 540/R-94-013, February 1994.

iii) "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act", Laboratory Services Branch, Ministry of the Environment. March 9, 2004, amended as of July 1, 2011.

Items i) and ii) will subsequently be referred to as the "Guidelines" in this Memorandum. Item iii) will subsequently be referred to as the "O. Reg. 153 Analytical Protocols".

2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 2. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (<10°C).

3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

Most method blank results were non-detect with the exception of low concentrations of conductivity and dioxins and furans. Associated sample concentrations greater than five times the blank value were not qualified. Associated samples with analyte concentrations similar to the blank concentrations were qualified as non-detect (refer Table 3).

4. Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample extraction and/or analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for petroleum hydrocarbons (PHCs), volatile organic compounds (VOCs), benzene, toluene, ethylbenzene, xylenes (BTEX), semi-volatile organic compounds (SVOCs), dioxins and furans, and polychlorinated biphenyls (PCBs) determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. Most surrogate recoveries met the above criteria. Each individual surrogate compound is expected to meet the laboratory (method) control limits with the exception of semi volatile organic compounds (SVOCs) analyses. According to the "Guidelines" for SVOC analyses, up to one outlying surrogate in the base/neutral or acid fractions is acceptable as long as the recovery is at least 10 percent.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met the above criteria.

5. Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

Organic Analyses

The LCS contained all compounds of interest. Most LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy. Non-detect results associated with high LCS recoveries were not qualified as the indicated high bias would not impact the data. Detect and non-detect results associated with low recoveries have been qualified (see Table 4).

Inorganic Analyses

The LCS contained all analytes of interest. LCS recoveries were assessed per the "Guidelines". All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

6. Matrix Spike (MS) Analyses

To evaluate the effects of sample matrices on the extraction or digestion process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS samples. If the original sample concentration is significantly greater than the spike concentration, the recovery is not assessed.

Organic Analyses

The MS samples were spiked with all compounds of interest. Most percent recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy. Non-detect results associated with high LCS recoveries were not qualified as the indicated high bias would not impact the data. Detect and non-detect results associated with low recoveries have been qualified (see Table 5).

Inorganic Analyses

The MS samples were spiked with the analytes of interest, and the results were evaluated using the "Guidelines". Most percent recoveries were within the control limits, demonstrating acceptable analytical accuracy. Non-detect results associated with low MS recoveries were qualified as estimated (refer Table 5). Non-detect results associated with high MS recoveries were not qualified. The indicated high bias would not impact the data.

7. Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory. The laboratory performed additional site-specific duplicate analyses internally. The relative percent differences (RPDs) associated with these

duplicate samples must be less than 20 percent for water samples, and 35 percent for soil and sediment samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is a difference of one time the RL for water samples, or two times the RL value for soil and sediments samples. All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision.

8. Calibration Range

2,3,7,8-Tetrachlorodibenzofuran (TCDF) was detected above the maximum calibration range in the analysis of various samples results which were detected above the maximum calibration range were qualified as estimated (refer Table 6).

9. Field QA/QC Samples

The field QA/QC consisted of six trip blank samples, five field blank samples and twelve field duplicate sample sets.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, six trip blanks were submitted to the laboratory for VOCs analysis as outlined in Table 1. All results were non-detect for the compounds of interest.

Field Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, five field blank samples were submitted "blind" to the laboratory for analysis as specified in Table 1. All results were non-detect for the compounds of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, twelve field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for water samples or 100 percent for soil and sediment samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is a difference of one time the RL for water samples or two times the RL for soil and sediment samples.

Most field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision. Results which showed variability have been qualified as estimated (refer Table 7).

10. Conclusion

Based on the assessment detailed in the foregoing, the data are acceptable with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
GSC Boat Harbour Remediation
Province of Nova Scotia - NS Lands
Boat Harbour, Nova Scotia
April 2018

Lab Report #	Sample Identification	Location	Matrix	Start depth (mbgs)	End depth (mbgs)	Collection Date (mm/dd/yyyy)	Analysis/Parameters: pH	Turbidity	Color	Hardness	Conductivity	Total Dissolved Solids (TDS)	Alkalinity, total (as CaCO3)	Ammonia-N	Orthophosphate	Sulfate	Nitrite/Nitrate (as N)	Sulfide	Chlorate/Chlorite	Chloride	Cyanide (free)	Cyanide (total)	Cyanide (Strong Acid Extractable)	Silica, reactive	Total Organic Carbon (TOC)	Fraction Organic Carbon (FOC)	Mercury	Metals	VOCs	SVOCs	Petroleum Hydrocarbons (PHCs)	BTEX	PCBs	Grain Size	Ion Balance	Resin/Fatty Acids	Dioxins & Furans	Comments
B812237	BHSL-MW-5 (1.2-1.8M)	BHSL-MW-5	Soil	1.2	1.8	04/06/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B812237	BHSL-MW-6 (3.7-4.3M)	BHSL-MW-6	Soil	3.7	4.3	04/05/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B812237	BHSL-MW-7 (3.7-4.3M)	BHSL-MW-7	Soil	3.7	4.3	04/05/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B812237	BHSL-MW-8 (3.0-3.7M)	BHSL-MW-8	Soil	3	3.7	04/05/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B812237	BHSL-MW-9 (3.7-4.3M)	BHSL-MW-9	Soil	3.7	4.3	04/04/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B812237	BHSL-MW-DUP2	BHSL-MW-5	Soil	1.2	1.8	04/06/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	FD (GKO854-05R\ BHSL-MW-5 (1.2-1.8M)RE)
B812714	EST-MW-2 (4.3-4.9M)	EST-MW-2	Soil	4.3	4.9	04/09/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B812714	EST-MW-3 (1.8-2.4M)	EST-MW-3	Soil	1.8	2.4	04/10/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B813714	SDC-SW-4	SDC-SW-4	Surface Water	-	-	04/18/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	
B813714	BKGD-SW-6	BKGD-SW-6	Surface Water	-	-	04/18/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	
B813714	BKGD-SW-6	BKGD-SW-6	Surface Water	-	-	04/18/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B813714	BKGD-SW-7	BKGD-SW-7	Surface Water	-	-	04/18/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	
B813714	BKGD-SW-7	BKGD-SW-7	Surface Water	-	-	04/18/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B813714	BKGD-SW-8	BKGD-SW-8	Surface Water	-	-	04/18/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	
B813714	BKGD-SW-8	BKGD-SW-8	Surface Water	-	-	04/18/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B813714	BKGD-SW-9	BKGD-SW-9	Surface Water	-	-	04/18/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	
B813714	BKGD-SW-9	BKGD-SW-9	Surface Water	-	-	04/18/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B813714	BKGD-SW-10	BKGD-SW-10	Surface Water	-	-	04/18/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	
B813714	BKGD-SW-10	BKGD-SW-10	Surface Water	-	-	04/18/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B813714	BKGD-SW-DUP2	BKGD-SW-6	Surface Water	-	-	04/18/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	FD (BKGD-SW-6)
B813714	BKGD-SW-DUP2	BKGD-SW-6	Surface Water	-	-	04/18/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	FD (BKGD-SW-6)
B814098	BHSL-MW-5	BHSL-MW-5	Groundwater	-	-	04/19/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814098	BHSL-MW-6	BHSL-MW-6	Groundwater	-	-	04/19/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814098	BHSL-MW-7	BHSL-MW-7	Groundwater	-	-	04/19/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814098	BHSL-MW-8	BHSL-MW-8	Groundwater	-	-	04/19/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814098	BHSL-MW-9	BHSL-MW-9	Groundwater	-	-	04/20/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814098	BHSL-DUP2	BHSL-MW-7	Groundwater	-	-	04/19/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	FD (BHSL-MW-7)
B814098	EST-MW-2	EST-MW-2	Groundwater	-	-	04/20/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814098	EST-MW-3	EST-MW-3	Groundwater	-	-	04/20/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814404	FSP2-SED-8-1 (0.15-0.55M)	FSP2-SED-8	Sediment	0.15	0.55	04/23/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814404	FSP2-SED-8-2 (0.6-0.9M)	FSP2-SED-8	Sediment	0.6	0.9	04/23/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814404	FSP2-SED-9-1 (0.0-0.4M)	FSP2-SED-9	Sediment	0	0.4	04/24/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814404	FSP2-SED-9-2 (0.45-0.85M)	FSP2-SED-9	Sediment	0.45	0.85	04/24/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814731	FSP3-SED-7-1 (0.0-0.3M)	FSP3-SED-7	Sediment	0	0.3	04/25/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814731	FSP3-SED-7-2 (0.4-0.9M)	FSP3-SED-7	Sediment	0.4	0.9	04/25/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814731	FSP3-SED-DUP2	FSP3-SED-7	Sediment	0.4	0.9	04/25/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	FD (GOL001-04\FSP3-SED-7-2(0.4-0.9M)R1)
B814731	SDC-SED-3-1 (0.05-0.25M)	SDC-SED-3	Sediment	0.05	0.25	04/26/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814731	SDC-SED-3-2 (0.25-0.45M)	SDC-SED-3	Sediment	0.25	0.45	04/26/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Table 1

Sample Collection and Analysis Summary
GSC Boat Harbour Remediation
Province of Nova Scotia - NS Lands
Boat Harbour, Nova Scotia
April 2018

Lab Report #	Sample Identification	Location	Matrix	Start depth (mbgs)	End depth (mbgs)	Collection Date (mm/dd/yyyy)	Analysis/Parameters: *pH*	*Turbidity*	*Color*	*Hardness*	*Conductivity*	*Total Dissolved Solids (TDS)*	*Alkalinity, total (as CaCO3)*	*Ammonia-N*	*Orthophosphate*	*Sulfate*	*Nitrite/Nitrate (as N)*	*Sulfide*	*Chlorate/Chlorite*	*Chloride*	*Cyanide (free)*	*Cyanide (total)*	*Cyanide (Strong Acid Extractable)*	*Silica, reactive*	*Total Organic Carbon (TOC)*	*Fraction Organic Carbon (FOC)*	*Mercury*	*Metals*	*VOCs*	*SVOCs*	*Petroleum Hydrocarbons (PHCs)*	*BTEX*	*PCBs*	*Grain Size*	*Ion Balance*	*Resin/Fatty Acids*	*Dioxins & Furans*	Comments
B814932	BKGD-SED-11(0.0-0.2M)	BKGD-SED-11	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814932	BKGD-SED-12(0.0-0.2M)	BKGD-SED-12	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814932	BKGD-SED-13(0.0-0.2M)	BKGD-SED-13	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814932	BKGD-SED-14(0.0-0.2M)	BKGD-SED-14	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B814932	BKGD-SED-15(0.0-0.2M)	BKGD-SED-15	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B831501	FSP2-SED-8-2 (0.6-0.9M)	FSP2-SED-8	Sediment	0.6	0.9	04/23/2018	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B831501	FSP2-SED-9-2 (0.45-0.85M)	FSP2-SED-9	Sediment	0.45	0.85	04/24/2018	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B831810	FSP2-SED-8-2 (0.6-0.9M)	FSP2-SED-8	Sediment	0.6	0.9	04/23/2018	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B831810	FSP2-SED-9-2 (0.45-0.85M)	FSP2-SED-9	Sediment	0.45	0.85	04/24/2018	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B832398	FSP3-SED-7-2 (0.4-0.9M)	FSP3-SED-7	Sediment	0.4	0.9	04/25/2018	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B832398	SDC-SED-3-2 (0.25-0.45M)	SDC-SED-3	Sediment	0.25	0.45	04/26/2018	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B832413	FSP3-SED-7-2 (0.4-0.9M)	FSP3-SED-7	Sediment	0.4	0.9	04/25/2018	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B832413	SDC-SED-3-2 (0.25-0.45M)	SDC-SED-3	Sediment	0.25	0.45	04/26/2018	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B832749	BKGD-SED-11(0.0-0.2M)	BKGD-SED-11	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B832749	BKGD-SED-12(0.0-0.2M)	BKGD-SED-12	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B832749	BKGD-SED-13(0.0-0.2M)	BKGD-SED-13	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B832749	BKGD-SED-14(0.0-0.2M)	BKGD-SED-14	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B832749	BKGD-SED-15(0.0-0.2M)	BKGD-SED-15	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B833173	BKGD-SED-11(0.0-0.2M)	BKGD-SED-11	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B833173	BKGD-SED-12(0.0-0.2M)	BKGD-SED-12	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B833173	BKGD-SED-13(0.0-0.2M)	BKGD-SED-13	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B833173	BKGD-SED-14(0.0-0.2M)	BKGD-SED-14	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B833173	BKGD-SED-15(0.0-0.2M)	BKGD-SED-15	Sediment	0	0.2	04/27/2018	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
B879049	BHSL-MW-5 (1.2-1.8M)	BHSL-MW-5	Soil	1.2	1.8	04/06/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	-	-	-	-	X	X	X	X	X	X	-	-	-	X	
B879049	BHSL-MW-6 (3.7-4.3M)	BHSL-MW-6	Soil	3.7	4.3	04/05/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	-	-	-	-	X	X	X	X	X	X	-	-	-	X	
B879049	BHSL-MW-7 (3.7-4.3M)	BHSL-MW-7	Soil	3.7	4.3	04/05/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	-	-	-	-	X	X	X	X	X	X	-	-	-	X	
B879049	BHSL-MW-8 (3.0-3.7M)	BHSL-MW-8	Soil	3	3.7	04/05/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	-	-	-	-	X	X	X	X	X	X	-	-	-	X	
B879049	BHSL-MW-9 (3.7-4.3M)	BHSL-MW-9	Soil	3.7	4.3	04/04/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	-	-	-	-	X	X	X	X	X	X	-	-	-	X	
B879049	BHSL-MW-DUP2	BHSL-MW-5	Soil	1.2	1.8	04/06/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	-	-	-	-	X	X	X	X	X	X	-	-	-	X	FD (GKO854-05R\ BHSL-MW-5 (1.2-1.8M)RE)
B879049	BHSL-BH-5 (2.4-3.0M)	BHSL-BH-5	Soil	2.4	3	04/06/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	
B879049	BHSL-S-4 (0.0-0.2M)	BHSL-S-4	Soil	0	0.2	04/06/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-	
B879049	BHSL-S-5 (1.8-2.4M)	BHSL-S-5	Soil	1.8	2.4	04/06/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-	
B879049	BHSL-S-7 (0.0-0.2M)	BHSL-S-7	Soil	0	0.2	04/06/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	
B879049	TRIP BLANK 6	-	Methanol	-	-	04/06/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	Trip Blank
B879049	FIELD BLANK 1	-	Methanol	-	-	04/06/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	Field Blank
B879049	BHSL-MW-9 (1.8-2.4M)	BHSL-MW-9	Soil	1.8	2.4	04/04/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-	

Table 1

Sample Collection and Analysis Summary
GSC Boat Harbour Remediation
Province of Nova Scotia - NS Lands
Boat Harbour, Nova Scotia
April 2018

Lab Report #	Sample Identification	Location	Matrix	Start depth (mbgs)	End depth (mbgs)	Collection Date (mm/dd/yyyy)	Analysis/Parameters: pH	Turbidity	Color	Hardness	Conductivity	Total Dissolved Solids (TDS)	Alkalinity, total (as CaCO3)	Ammonia-N	Orthophosphate	Sulfate	Nitrite/Nitrate (as N)	Sulfide	Chlorate/Chlorite	Chloride	Cyanide (free)	Cyanide (total)	Cyanide (Strong Acid Extractable)	Silica, reactive	Total Organic Carbon (TOC)	Fraction Organic Carbon (FOC)	Mercury	Metals	VOCs	SVOCs	Petroleum Hydrocarbons (PHCs)	BTEX	PCBs	Grain Size	Ion Balance	Resin/Fatty Acids	Dioxins & Furans	Comments
B883154	EST-MW-2 (4.3-4.9M)	EST-MW-2	Soil	4.3	4.9	04/09/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	X	X	-	X	X	X	X	X	X	X	-	-	X	
B883154	EST-MW-3 (1.8-2.4M)	EST-MW-3	Soil	1.8	2.4	04/10/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	-	-	-	X	X	X	X	X	X	-	-	-	X	
B883154	BHSL-BH-4 (4.3-4.8M)	BHSL-BH-4	Soil	4.3	4.8	04/10/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	
B883154	BHSL-S-6 (0.0-0.2M)	BHSL-S-6	Soil	0	0.2	04/10/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	
B885743	TSB-BH-3 (2.4-3.0M)	TSB-BH-3	Soil	2.4	3	04/11/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	
B885743	TSB-BH-4 (1.8-2.4M)	TSB-BH-4	Soil	1.8	2.4	04/12/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	
B885743	TSB S-1 (0.0-0.2M)	TSB-S-1	Soil	0	0.2	04/11/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	
B885743	TSB-S-2 (0.0-0.02M)	TSB-S-2	Soil	0	0.02	04/12/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	
B885743	FSP3-BH-1 (3.1-3.7M)	FSP3-BH-1	Soil	3.1	3.7	04/12/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	
B885743	FSP3-S-8 (0.0-0.2M)	FSP3-S-8	Soil	0	0.2	04/12/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	
B885743	TRIP BLANK 7	-	Methanol	-	-	04/12/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	Trip Blank
B885743	FIELD BLANK 2	-	Methanol	-	-	04/12/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	Field Blank
B888493	FSP2-S-16 (0.31-0.46M)	FSP2-S-16	Soil	0.31	0.46	04/16/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	
B888493	FSP2-S-17 (0.31-0.46M)	FSP2-S-17	Soil	0.31	0.46	04/16/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	
B888493	MAE-SS-11 (0.0-0.15M)	MAE-SS-11	Soil	0	0.15	04/16/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	X	-	-	X	X	-	-	-	-	-	
B888493	MAE-SS-12 (0.0-0.15M)	MAE-SS-12	Soil	0	0.15	04/16/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	X	-	-	X	X	-	-	-	-	-	
B888493	MAE-SS-13 (0.0-0.15M)	MAE-SS-13	Soil	0	0.15	04/17/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	
B888493	MAE-SS-14 (0.0-0.15M)	MAE-SS-14	Soil	0	0.15	04/17/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	
B888493	MAE-SS-15 (0.0-0.15M)	MAE-SS-15	Soil	0	0.15	04/17/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	
B888493	MAE-SS-16 (0.0-0.15M)	MAE-SS-16	Soil	0	0.15	04/17/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	
B888493	MAE-SS-17 (0.0-0.15M)	MAE-SS-17	Soil	0	0.15	04/16/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	
B888493	MAE-SS-18 (0.0-0.15M)	MAE-SS-18	Soil	0	0.15	04/16/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	
B888493	MAE-SS-19 (0.0-0.15M)	MAE-SS-19	Soil	0	0.15	04/16/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	
B888493	MAE-SS-20 (0.0-0.15M)	MAE-SS-20	Soil	0	0.15	04/16/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	
B888493	MAE-SS-DUP1	MAE-SS-11	Soil	0	0.15	04/16/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	X	-	-	X	X	-	-	-	-	-	FD (MAE-SS-11 (0.0-0.15M))
B888493	MAE-SS-DUP2	MAE-SS-17	Soil	0	0.15	04/16/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	FD (MAE-SS-17 (0.0-0.15M))
B888493	TRIP BLANK 8	-	Methanol	-	-	04/17/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	Trip Blank
B888493	FIELD BLANK 3	-	Methanol	-	-	04/16/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	Field Blank
B889781	SDC-SW-4	SDC-SW-4	Surface Water	-	-	04/18/2018	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	
B889781	BKGD-SW-6	BKGD-SW-6	Surface Water	-	-	04/18/2018	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	
B889781	BKGD-SW-7	BKGD-SW-7	Surface Water	-	-	04/18/2018	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	
B889781	BKGD-SW-8	BKGD-SW-8	Surface Water	-	-	04/18/2018	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	
B889781	BKGD-SW-9	BKGD-SW-9	Surface Water	-	-	04/18/2018	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	
B889781	BKGD-SW-10	BKGD-SW-10	Surface Water	-	-	04/18/2018	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	
B889781	BKGD-SW-DUP2	BKGD-SW-6	Surface Water	-	-	04/18/2018	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	FD (BKGD-SW-6)
B889781	TRIP BLANK 9	-	Water	-	-	04/18/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	Trip Blank
B891658	BHSL-MW-5	BHSL-MW-5	Groundwater	-	-	04/19/2018	X	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	X	X	X	X	X	X	X	X	X	X	X	-	X	-	X	
B891658	BHSL-MW-6	BHSL-MW-6	Groundwater	-	-	04/19/2018	X	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	X	X	X	X	X	X	X	X	X	X	X	-	X	-	X	
B891658	BHSL-MW-7	BHSL-MW-7	Groundwater	-	-	04/19/2018	X	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	X	X	X	X	X	X	X	X	X	X	X	-	X	-	X	
B891658	BHSL-MW-8	BHSL-MW-8	Groundwater	-	-	04/19/2018	X	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	X	X	X	X	X	X	X	X	X	X	X	-	X	-	X	
B891658	BHSL-MW-9	BHSL-MW-9	Groundwater	-	-	04/20/2018	X	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	X	X	X	X	X	X	X	X	X	X	X	-	X	-	X	
B891658	BHSL-DUP2	BHSL-MW-7	Groundwater	-	-	04/19/2018	X	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	X	X	X	X	X	X	X	X	X	X	X	-	X	-	X	FD (BHSL-MW-7)

Table 1

Sample Collection and Analysis Summary
GSC Boat Harbour Remediation
Province of Nova Scotia - NS Lands
Boat Harbour, Nova Scotia
April 2018

							Analysis/Parameters																																
Lab Report #	**Sample Identification**	**Location**	**Matrix**	**Start depth (mbgs)**	**End depth (mbgs)**	**Collection Date (mm/dd/yyyy)**	***pH***	***Turbidity***	***Color***	***Hardness***	***Conductivity***	***Total Dissolved Solids (TDS)***	***Alkalinity, total (as CaCO3)***	***Ammonia-N***	***Orthophosphate***	***Sulfate***	***Nitrite/Nitrate (as N)***	***Sulfide***	***Chlorate/Chlorite***	***Chloride***	***Cyanide (free)***	***Cyanide (total)***	***Cyanide (Strong Acid Extractable)***	***Silica, reactive***	***Total Organic Carbon (TOC)***	***Fraction Organic Carbon (FOC)***	***Mercury***	***Metals***	***VOCs***	***SVOCs***	***Petroleum Hydrocarbons (PHCs)***	***BTEX***	***PCBs***	***Grain Size***	***Ion Balance***	***Resin/Fatty Acids***	***Dioxins & Furans***	**Comments**
B891658	EST-MW-2	EST-MW-2	Groundwater	-	-	04/20/2018	X	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	X	X	X	X	X	X	X	X	X	X	X	-	X	-	X	
B891658	EST-MW-3	EST-MW-3	Groundwater	-	-	04/20/2018	X	X	X	X	X	X	X	X	X	X	X	-	-	X	-	-	X	X	X	X	X	X	X	X	X	X	X	-	X	-	X	
B891658	FIELD BLANK 4	-	Water	-	-	04/19/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	Field Blank
B891658	TRIP BLANK 10	-	Water	-	-	04/20/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	Trip Blank
B894082	FSP2-SED-8-1 (0.15-0.55M)	FSP2-SED-8	Sediment	0.15	0.55	04/23/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	X	X	-	X	X	X	X	X	X	X	-	-	X	
B894082	FSP2-SED-8-2 (0.6-0.9M)	FSP2-SED-8	Sediment	0.6	0.9	04/23/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	X	X	-	X	X	X	X	X	X	-	-	-	X	
B894082	FSP2-SED-9-1 (0.0-0.4M)	FSP2-SED-9	Sediment	0	0.4	04/24/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	X	X	-	X	X	X	X	X	X	-	-	-	X	
B894082	FSP2-SED-9-2 (0.45-0.85M)	FSP2-SED-9	Sediment	0.45	0.85	04/24/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	X	X	-	X	X	X	X	X	X	-	-	-	X	
B894082	FSP2-SED-10 (1.0-1.2M)	FSP2-SED-10	Sediment	1	1.2	04/24/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-	X	X	-	-	-	-	-	
B897988	FSP3-SED-7-1 (0.0-0.3M)	FSP3-SED-7	Sediment	0	0.3	04/25/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	X	X	-	X	X	X	X	X	X	-	-	-	X	
B897988	FSP3-SED-7-2 (0.4-0.9M)	FSP3-SED-7	Sediment	0.4	0.9	04/25/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	X	X	-	X	X	X	X	X	X	X	-	-	X	
B897988	FSP3-SED-DUP2	FSP3-SED-7	Sediment	0.4	0.9	04/25/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	X	X	-	X	X	X	X	X	X	-	-	-	X	FD (GOL001-04\FSP3-SED-7-2(0.4-0.9M)R1)
B897988	SDC-SED-3-1 (0.05-0.25M)	SDC-SED-3	Sediment	0.05	0.25	04/26/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	X	X	-	X	X	X	X	X	X	X	-	-	X	
B897988	SDC-SED-3-2 (0.25-0.45M)	SDC-SED-3	Sediment	0.25	0.45	04/26/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	X	X	-	X	X	X	X	X	X	-	-	-	X	
B897988	TRIP BLANK 11	-	Methanol	-	-	04/26/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	Trip Blank
B897988	FIELD BLANK 5	-	Methanol	-	-	04/26/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	Field Blank
B897989	BHSL-BH-6 (2.4-3.0M)	BHSL-BH-6	Soil	2.4	3	04/26/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	
B897989	BHSL-S-8 (0.0-0.2M)	BHSL-S-8	Soil	0	0.2	04/26/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	
B899076	BKGD-SED-11(0.0-0.2M)	BKGD-SED-11	Sediment	0	0.2	04/27/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	X	X	-	X	X	X	X	X	X	X	-	-	X	
B899076	BKGD-SED-12(0.0-0.2M)	BKGD-SED-12	Sediment	0	0.2	04/27/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	X	X	-	X	X	X	X	X	X	-	-	-	X	
B899076	BKGD-SED-13(0.0-0.2M)	BKGD-SED-13	Sediment	0	0.2	04/27/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	X	X	-	X	X	X	X	X	X	-	-	-	X	
B899076	BKGD-SED-14(0.0-0.2M)	BKGD-SED-14	Sediment	0	0.2	04/27/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	X	X	-	X	X	X	X	X	X	-	-	-	X	
B899076	BKGD-SED-15(0.0-0.2M)	BKGD-SED-15	Sediment	0	0.2	04/27/2018	X	-	-	-	X	-	-	X	X	X	X	-	-	X	-	X	-	-	X	X	-	X	X	X	X	X	X	-	-	-	X	
B8A0511	NS-SED-3 (0.0-0.2M)	NS-SED-3	Sediment	0	0.2	04/30/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-	X	X	-	X	-	-	-	
B8A0511	NS-SED-4 (0.0-0.2M)	NS-SED-4	Sediment	0	0.2	04/30/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-	X	X	-	-	-	-	-	
B8A0511	NS-SED-5 (0.0-0.2M)	NS-SED-5	Sediment	0	0.2	04/30/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-	X	X	-	-	-	-	-	
B8A0511	NS-SED-6 (0.0-0.2M)	NS-SED-6	Sediment	0	0.2	04/30/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-	X	X	-	-	-	-	-	
B8A0511	NS-SED-7 (0.0-0.2M)	NS-SED-7	Sediment	0	0.2	04/30/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-	X	X	-	-	-	-	-	
B8A0511	NS-SED-DUP2	NS-SED-3	Sediment	0	0.2	04/30/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-	X	X	-	-	-	-	-	FD (NS-SED-3 (0.0-0.2M))

Notes:
"-" - Not Applicable
FD - Field duplicate sample of sample in parenthesis
mbgs - Meters below ground surface
BTEX - Benzene, Toluene, Ethylbenzene, Xylene
VOCs - Volatile Organic Compounds
SVOCs - Semi-volatile Organic Compounds
N - Nitrogen
PCBs - Polychlorinated Biphenyls

Table 2

Analytical Method and Holding Time Criteria
GSC Boat Harbour Remediation
Province of Nova Scotia - NS Lands
Boat Harbour, Nova Scotia
April 2018

Parameters	Methodology [1]	Holding Time Criteria [2]	
		Soil/Sediments	Water
pH	SM 22 4500-H+ B	30 days	NA
Turbidity	EPA 180.1 R2	NA	48 hours
Color	SM 22 2120C	NA	48 hours
Hardness	SM 22 2340 B	180 days	180 days
Conductivity	SM 22 2510B	30 days	28 days
Total Dissolved Solids (TDS)	SM 2540C	NA	7days
Alkalinity, total (as CaCO3)	EPA 310.2 R1974	NA	14 days
Ammonia-N	EPA 350.1 R2	NA	28 days
Orthophosphate	SM 22 4500-P E	NA	3 days
Sulfate	ASTM D516-16	180 days	28 days
Nitrite/Nitrate (as N)	ASTM D3867-16	180 days	28 days
Sulfide	SM 22 4500-S G	7 days	7 days
Chlorate/Chlorite	SM 22 4110 D	30 days	28 days
Chloride	SM 22 4500-Cl- E	30 days	28 days
Cyanide (free)	MA300-CN 1.2 R3	28 days	28 days
Cyanide (total)	MA300-CN 1.2 R3	28 days	14 days
Silica, reactive	EPA 366.0 m	NA	24 hours
Total Organic Carbon (TOC)	SM 22 5310C	28 days	28 days
Fraction Organic Carbon (FOC)	Lloyd Kahn Method	14 days	NA
Mercury	EPA 245.1 R3	28 days	28 days
Metals	EPA 6020A R1	180 days	180 days
VOCs/BTEX	EPA 8260C R3	28 days	14 days
SVOCs	EPA 8270 m	14 days	7 days
Petroleum Hydrocarbons	Atl. RBCA v3.1	14 days	14 days
PCBs	EPA 8082A 2007	14 days	7 days
Dioxins & Furans	EPA M8290A / M1613	indefinite	indefinite
Grain Size	ASTM D1140-14 m	NA	indefinite
Ion Balance	NA	NA	NA
Resin/Fatty Acids	MA414-Aci-g-r-1.0R3m	14 days	NA

Notes:

[1] Methods referenced from the following:

EPA - U.S. Environmental protection Agency. Analytical Methodology (October, 2007)

ASTM - Annual Book of ASTM Standards, American Society for Testing Materials, Section 5 and Section 11

SW846 - "Test Method for Evaluating Solid Waste Physical/Chemical Methods", EPA, November 1986 with promulgated updates

SM - "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, with subsequent revisions

MA - CENTRE D'EXPERTISE EN ANALYSE ENVIRONNEMENTALE DU QUÉBEC

Atl. RBCA - Atlantic RBCA (Risk-Based Corrective Action) for Petroleum Impacted Sites in Atlantic Canada

Lloyd Kahn Method - Lloyd Kahn, Quality Assurance Specialist, Determination of Total Organic Carbon in Sediment (Lloyd Kahn Method) July 27, 1988

[2] Holding times differing from those defined in the indicated methodology were obtained from the O. Reg. 153 Analytical Protocols

NA - Not Applicable

VOCs - Volatile Organic Compounds

SVOCs - Semi-volatile Organic Compounds

N - Nitrogen

PCBs - Polychlorinated Biphenyls

BTEX - Benzene, Toluene, Ethylbenzene, Xylene

Table 3

Qualified Sample Results Due To Analyte Concentrations in the Method Blanks
GSC Boat Harbour Remediation
Province of Nova Scotia - NS Lands
Boat Harbour, Nova Scotia
April 2018

Lab Report #	Parameter	Analyte	Blank Result	Sample ID	Qualified Result	Units
B879049	Dioxins & Furans	Total heptachlorodibenzo-p-dioxin (HpCDD)	0.161	BHSL-MW-9 (3.7-4.3M)	0.220 U	pg/g
B891658	Dioxins & Furans	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	2.17	BHSL-MW-5	1.69 U	pg/L

Notes:
U - Not detected at the associated reporting limit

Qualified Sample Data Due To Outlying Laboratory Control Sample Recoveries
GSC Boat Harbour Remediation
Province of Nova Scotia - NS Lands
Boat Harbour, Nova Scotia
April 2018

Lab Report #	Parameter	Sample ID	LCS % Recovery	Control Limits % Recovery	Analyte	Qualified Result	Units
B813714	SVOCs	SDC-SW-4	53	60-130	Levopimaric acid	3.0 UJ	µg/L
B813714	SVOCs	BKGD-SW-6	53	60-130	Levopimaric acid	3.0 UJ	µg/L
B813714	SVOCs	BKGD-SW-7	53	60-130	Levopimaric acid	3.0 UJ	µg/L
B813714	SVOCs	BKGD-SW-8	53	60-130	Levopimaric acid	3.0 UJ	µg/L
B813714	SVOCs	BKGD-SW-9	53	60-130	Levopimaric acid	3.0 UJ	µg/L
B813714	SVOCs	BKGD-SW-10	53	60-130	Levopimaric acid	3.0 UJ	µg/L
B813714	SVOCs	BKGD-SW-DUP2	53	60-130	Levopimaric acid	3.0 UJ	µg/L
B813714	SVOCs	SDC-SW-4	57	60-130	Linoleic acid	3.0 UJ	µg/L
B813714	SVOCs	BKGD-SW-6	57	60-130	Linoleic acid	3.0 UJ	µg/L
B813714	SVOCs	BKGD-SW-7	57	60-130	Linoleic acid	3.0 UJ	µg/L
B813714	SVOCs	BKGD-SW-8	57	60-130	Linoleic acid	3.0 UJ	µg/L
B813714	SVOCs	BKGD-SW-9	57	60-130	Linoleic acid	3.0 UJ	µg/L
B813714	SVOCs	BKGD-SW-10	57	60-130	Linoleic acid	3.0 UJ	µg/L
B813714	SVOCs	BKGD-SW-DUP2	57	60-130	Linoleic acid	3.0 UJ	µg/L
B879049	Dioxins & Furans	BHSL-MW-5 (1.2-1.8M)	163	80-140	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.121 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-6 (3.7-4.3M)	163	80-140	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.125 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-7 (3.7-4.3M)	163	80-140	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.128 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-8 (3.0-3.7M)	163	80-140	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.113 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-9 (3.7-4.3M)	163	80-140	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.127 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-DUP2	163	80-140	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.111 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-5 (1.2-1.8M)	153	80-140	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.0519 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-6 (3.7-4.3M)	153	80-140	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.117 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-7 (3.7-4.3M)	153	80-140	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.112 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-8 (3.0-3.7M)	153	80-140	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.107 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-9 (3.7-4.3M)	153	80-140	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.0867 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-DUP2	153	80-140	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.100 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-5 (1.2-1.8M)	164	60-140	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	2.53 J	pg/g
B879049	Dioxins & Furans	BHSL-MW-6 (3.7-4.3M)	164	60-140	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.100 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-7 (3.7-4.3M)	164	60-140	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.109 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-8 (3.0-3.7M)	164	60-140	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.104 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-9 (3.7-4.3M)	164	60-140	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.112 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-DUP2	164	60-140	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.0968 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-5 (1.2-1.8M)	163	80-140	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.0484 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-6 (3.7-4.3M)	163	80-140	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.109 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-7 (3.7-4.3M)	163	80-140	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.105 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-8 (3.0-3.7M)	163	80-140	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.100 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-9 (3.7-4.3M)	163	80-140	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.0810 UJ	pg/g
B879049	Dioxins & Furans	BHSL-MW-DUP2	163	80-140	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.0936 UJ	pg/g
B883154	Dioxins & Furans	EST-MW-2 (4.3-4.9M)	163	80-140	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.120 UJ	pg/g
B883154	Dioxins & Furans	EST-MW-3 (1.8-2.4M)	163	80-140	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.123 UJ	pg/g
B883154	Dioxins & Furans	EST-MW-2 (4.3-4.9M)	153	80-140	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.116 UJ	pg/g
B883154	Dioxins & Furans	EST-MW-3 (1.8-2.4M)	153	80-140	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.0835 UJ	pg/g
B883154	Dioxins & Furans	EST-MW-2 (4.3-4.9M)	164	80-140	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.114 UJ	pg/g
B883154	Dioxins & Furans	EST-MW-3 (1.8-2.4M)	164	80-140	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.112 UJ	pg/g
B883154	Dioxins & Furans	EST-MW-2 (4.3-4.9M)	163	80-140	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.108 UJ	pg/g
B883154	Dioxins & Furans	EST-MW-3 (1.8-2.4M)	163	80-140	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.0779 UJ	pg/g
B883154	SVOCs	EST-MW-2 (4.3-4.9M)	30	50-130	2-Chlorophenol	0.05 UJ	ug/g
B883154	SVOCs	EST-MW-3 (1.8-2.4M)	30	50-130	2-Chlorophenol	0.05 UJ	ug/g
B891658	SVOCs	EST-MW-3	50	50-130	2-Chlorophenol	0.1 UJ	ug/L
B897988	Dioxins & Furans	FSP3-SED-7-1 (0.0-0.3M)	197	80-140	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.234 J	pg/g

Qualified Sample Data Due To Outlying Laboratory Control Sample Recoveries
GSC Boat Harbour Remediation
Province of Nova Scotia - NS Lands
Boat Harbour, Nova Scotia
April 2018

Lab Report #	Parameter	Sample ID	LCS % Recovery	Control Limits % Recovery	Analyte	Qualified Result	Units
B897988	Dioxins & Furans	FSP3-SED-7-1 (0.0-0.3M)	170	80-140	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	1.77 J	pg/g
B897988	Dioxins & Furans	FSP3-SED-7-2 (0.4-0.9M)	170	80-140	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	1.05 J	pg/g
B897988	Dioxins & Furans	FSP3-SED-DUP2	170	80-140	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	5.75 J	pg/g
B897988	Dioxins & Furans	SDC-SED-3-1 (0.05-0.25M)	170	80-140	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.147 J	pg/g
B897988	Dioxins & Furans	FSP3-SED-7-1 (0.0-0.3M)	164	80-140	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.738 J	pg/g

Notes:
J - Estimated concentration
UJ - Not detected; associated reporting limit is estimated
SVOCs - Semi-volatile Organic Compounds

Qualified Sample Results Due To Outlying Matrix Spike Results
GSC Boat Harbour Remediation
Province of Nova Scotia - NS Lands
Boat Harbour, Nova Scotia
April 2018

Lab Report #	Parameter	Sample ID	Analyte	MS Recovery	Control Limits % Recovery	Qualified Result	Units
B879049	SVOCs	BHSL-MW-5 (1.2-1.8M)	2,4-Dinitrophenol	21%	30-130	0.1 UJ	µg/g
B879049	SVOCs	BHSL-MW-6 (3.7-4.3M)	2,4-Dinitrophenol	21%	30-130	0.1 UJ	µg/g
B879049	SVOCs	BHSL-MW-7 (3.7-4.3M)	2,4-Dinitrophenol	21%	30-130	0.1 UJ	µg/g
B879049	SVOCs	BHSL-MW-8 (3.0-3.7M)	2,4-Dinitrophenol	21%	30-130	0.1 UJ	µg/g
B879049	SVOCs	BHSL-MW-9 (3.7-4.3M)	2,4-Dinitrophenol	21%	30-130	0.1 UJ	µg/g
B879049	SVOCs	BHSL-MW-DUP2	2,4-Dinitrophenol	21%	30-130	0.1 UJ	µg/g
B879049	Gen Chem	BHSL-MW-5 (1.2-1.8M)	Ammonia-N	62%	75-125	0.30 UJ	mg/kg
B879049	Gen Chem	BHSL-MW-6 (3.7-4.3M)	Ammonia-N	62%	75-125	0.29 UJ	mg/kg
B879049	Gen Chem	BHSL-MW-7 (3.7-4.3M)	Ammonia-N	62%	75-125	0.30 UJ	mg/kg
B879049	Gen Chem	BHSL-MW-8 (3.0-3.7M)	Ammonia-N	62%	75-125	0.29 UJ	mg/kg
B879049	Gen Chem	BHSL-MW-9 (3.7-4.3M)	Ammonia-N	62%	75-125	0.30 UJ	mg/kg
B879049	Gen Chem	BHSL-MW-DUP2	Ammonia-N	62%	75-125	0.29 UJ	mg/kg
B879049	Gen Chem	BHSL-BH-5 (2.4-3.0M)	Ammonia-N	62%	75-125	0.30 UJ	mg/kg
B879049	Gen Chem	BHSL-S-4 (0.0-0.2M)	Ammonia-N	62%	75-125	0.31 UJ	mg/kg
B879049	Gen Chem	BHSL-S-5 (1.8-2.4M)	Ammonia-N	62%	75-125	0.29 UJ	mg/kg
B879049	Gen Chem	BHSL-S-7 (0.0-0.2M)	Ammonia-N	62%	75-125	0.40 UJ	mg/kg
B883154	Gen Chem	EST-MW-2 (4.3-4.9M)	Ammonia-N	56%	75-125	0.29 UJ	mg/kg
B883154	Gen Chem	EST-MW-3 (1.8-2.4M)	Ammonia-N	56%	75-125	0.30 UJ	mg/kg
B883154	Gen Chem	BHSL-BH-4 (4.3-4.8M)	Ammonia-N	56%	75-125	0.28 UJ	mg/kg
B883154	Gen Chem	BHSL-S-6 (0.0-0.2M)	Ammonia-N	56%	75-125	0.32 UJ	mg/kg
B888493	Gen Chem	MAE-SS-11 (0.0-0.15M)	Ammonia-N	40%	75-125	0.52 UJ	mg/kg
B888493	Gen Chem	MAE-SS-12 (0.0-0.15M)	Ammonia-N	40%	75-125	0.48 UJ	mg/kg
B888493	Gen Chem	MAE-SS-19 (0.0-0.15M)	Ammonia-N	40%	75-125	0.31 UJ	mg/kg
B888493	Gen Chem	MAE-SS-20 (0.0-0.15M)	Ammonia-N	40%	75-125	0.29 UJ	mg/kg
B888493	Gen Chem	MAE-SS-DUP1	Ammonia-N	40%	75-125	0.55 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-1 (0.15-0.55M)	Benzo(a)anthracene	26%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-2 (0.6-0.9M)	Benzo(a)anthracene	26%	50-130	0.028 J	mg/kg
B894082	SVOCs	FSP2-SED-9-1 (0.0-0.4M)	Benzo(a)anthracene	26%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-2 (0.45-0.85M)	Benzo(a)anthracene	26%	50-130	0.095 J	mg/kg
B894082	SVOCs	FSP2-SED-8-1 (0.15-0.55M)	Benzo(a)pyrene	13%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-2 (0.6-0.9M)	Benzo(a)pyrene	13%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-1 (0.0-0.4M)	Benzo(a)pyrene	13%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-2 (0.45-0.85M)	Benzo(a)pyrene	13%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-1 (0.15-0.55M)	Benzo(b)fluoranthene	16%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-2 (0.6-0.9M)	Benzo(b)fluoranthene	16%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-1 (0.0-0.4M)	Benzo(b)fluoranthene	16%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-2 (0.45-0.85M)	Benzo(b)fluoranthene	16%	50-130	0.033 J	mg/kg
B894082	SVOCs	FSP2-SED-8-1 (0.15-0.55M)	Benzo(g,h,i)perylene	8%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-2 (0.6-0.9M)	Benzo(g,h,i)perylene	8%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-1 (0.0-0.4M)	Benzo(g,h,i)perylene	8%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-2 (0.45-0.85M)	Benzo(g,h,i)perylene	8%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-1 (0.15-0.55M)	Benzo(j)fluoranthene	16%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-2 (0.6-0.9M)	Benzo(j)fluoranthene	16%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-1 (0.0-0.4M)	Benzo(j)fluoranthene	16%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-2 (0.45-0.85M)	Benzo(j)fluoranthene	16%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-1 (0.15-0.55M)	Benzo(k)fluoranthene	15%	50-130	0.0050 UJ	mg/kg

Qualified Sample Results Due To Outlying Matrix Spike Results
GSC Boat Harbour Remediation
Province of Nova Scotia - NS Lands
Boat Harbour, Nova Scotia
April 2018

Lab Report #	Parameter	Sample ID	Analyte	MS Recovery	Control Limits % Recovery	Qualified Result	Units
B894082	SVOCs	FSP2-SED-8-2 (0.6-0.9M)	Benzo(k)fluoranthene	15%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-1 (0.0-0.4M)	Benzo(k)fluoranthene	15%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-2 (0.45-0.85M)	Benzo(k)fluoranthene	15%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-1 (0.15-0.55M)	Chrysene	26%	50-130	0.021 J	mg/kg
B894082	SVOCs	FSP2-SED-8-2 (0.6-0.9M)	Chrysene	26%	50-130	0.028 J	mg/kg
B894082	SVOCs	FSP2-SED-9-1 (0.0-0.4M)	Chrysene	26%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-2 (0.45-0.85M)	Chrysene	26%	50-130	0.12 J	mg/kg
B894082	SVOCs	FSP2-SED-8-1 (0.15-0.55M)	Dibenz(a,h)anthracene	5.6%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-2 (0.6-0.9M)	Dibenz(a,h)anthracene	5.6%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-1 (0.0-0.4M)	Dibenz(a,h)anthracene	5.6%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-2 (0.45-0.85M)	Dibenz(a,h)anthracene	5.6%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-1 (0.15-0.55M)	Indeno(1,2,3-cd)pyrene	7%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-2 (0.6-0.9M)	Indeno(1,2,3-cd)pyrene	7%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-1 (0.0-0.4M)	Indeno(1,2,3-cd)pyrene	7%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-2 (0.45-0.85M)	Indeno(1,2,3-cd)pyrene	7%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-1 (0.15-0.55M)	Perylene	11%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-8-2 (0.6-0.9M)	Perylene	11%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-1 (0.0-0.4M)	Perylene	11%	50-130	0.0050 UJ	mg/kg
B894082	SVOCs	FSP2-SED-9-2 (0.45-0.85M)	Perylene	11%	50-130	0.0050 UJ	mg/kg
B897988	SVOCs	FSP3-SED-7-2 (0.4-0.9M)	Benzo(g,h,i)perylene	48%	50-130	0.12 UJ	mg/kg
B897988	SVOCs	FSP3-SED-DUP2	Benzo(g,h,i)perylene	48%	50-130	0.080 UJ	mg/kg

Notes:
MS - Matrix Spike
J - Estimated concentration
UJ - Not detected; associated reporting limit is estimated
SVOCs - Semi-volatile Organic Compounds
N - Nitrogen
Gen Chem - General Chemistry

Qualified Sample Data Due To Exceedance of Calibration Range
GSC Boat Harbour Remediation
Province of Nova Scotia - NS Lands
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Lab Report #	Parameter	Sample ID	Analyte	Qualified Result	Units
B894082	Dioxins & Furans	FSP2-SED-8-2 (0.6-0.9M)	2,3,7,8-Tetrachlorodibenzofuran (TCDF)	5080 J	pg/g
		FSP2-SED-9-1 (0.0-0.4M)	2,3,7,8-Tetrachlorodibenzofuran (TCDF)	1270 J	pg/g
		FSP2-SED-9-2 (0.45-0.85M)	2,3,7,8-Tetrachlorodibenzofuran (TCDF)	898 J	pg/g

Notes:
J - Estimated concentration

Qualified Sample Data Due To Variability in Field Duplicate Results
GSC Boat Harbour Remediation
Province of Nova Scotia - NS Lands
Boat Harbour, Nova Scotia
April 2018

Lab Report #	Parameter	Analyte	RPD/Diff	Sample ID	Qualified Result	Field Duplicate Sample ID	Qualified Result	Units
B879049	Dioxins & Furans	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD	>2x RL	BHSL-MW-5 (1.2-1.8M)	2.53 J	BHSL-MW-DUP2	0.0968 UJ	pg/g
B879049	Dioxins & Furans	Total hexachlorodibenzo-p-dioxin (HxCDD)	>2x RL	BHSL-MW-5 (1.2-1.8M)	2.53 J	BHSL-MW-DUP2	0.100 UJ	pg/g
B879049	Metals	Barium	174%	BHSL-MW-5 (1.2-1.8M)	42 J	BHSL-MW-DUP2	600 J	mg/kg
B879049	Metals	Manganese	125%	BHSL-MW-5 (1.2-1.8M)	600 J	BHSL-MW-DUP2	2600 J	mg/kg
B879049	Metals	Strontium	>2x RL	BHSL-MW-5 (1.2-1.8M)	5.0 UJ	BHSL-MW-DUP2	86 J	mg/kg
B879049	Gen Chem	Conductivity	140%	BHSL-MW-5 (1.2-1.8M)	23 J	BHSL-MW-DUP2	130 J	µS/cm
B879049	Gen Chem	Nitrite (as N)	>2x RL	BHSL-MW-5 (1.2-1.8M)	0.050 UJ	BHSL-MW-DUP2	0.19 J	mg/kg
B879049	Gen Chem	Sulfate	>2x RL	BHSL-MW-5 (1.2-1.8M)	12 J	BHSL-MW-DUP2	40 J	mg/kg
B897988	SVOCs	2-Methylnaphthalene	>2x RL	FSP3-SED-7-2 (0.4-0.9M)	0.076 J	FSP3-SED-DUP2	0.0050 UJ	mg/kg
B897988	SVOCs	Phenanthrene	>2x RL	FSP3-SED-7-2 (0.4-0.9M)	0.089 J	FSP3-SED-DUP2	0.0050 UJ	mg/kg
B897988	Gen Chem	Chloride	>2x RL	FSP3-SED-7-2 (0.4-0.9M)	17 J	FSP3-SED-DUP2	130 J	mg/kg
B897988	Gen Chem	Conductivity	137%	FSP3-SED-7-2 (0.4-0.9M)	32 J	FSP3-SED-DUP2	170 J	µS/cm
B897988	Gen Chem	Nitrite/Nitrate	>2x RL	FSP3-SED-7-2 (0.4-0.9M)	0.99 J	FSP3-SED-DUP2	4.0 J	mg/kg
B897988	Gen Chem	Orthophosphate	>2x RL	FSP3-SED-7-2 (0.4-0.9M)	0.28 J	FSP3-SED-DUP2	0.050 UJ	mg/kg

Notes:
RPD - Relative Percent Difference
Diff - Difference (i.e., >2x RL for Soil and Sediment samples)
J - Estimated Concentration
UJ - Not detected; associated reporting limit is estimated
RL - Reporting limit
Gen Chem - General Chemistry
N - Nitrogen
SVOCs - General Chemistry

Appendix D
Laboratory Analytical Certificates
(To be provided with final)

Appendix E
Conceptual Site Model Figures

Figure E-1 Conceptual Site Model for Human Receptors - Boat Harbour

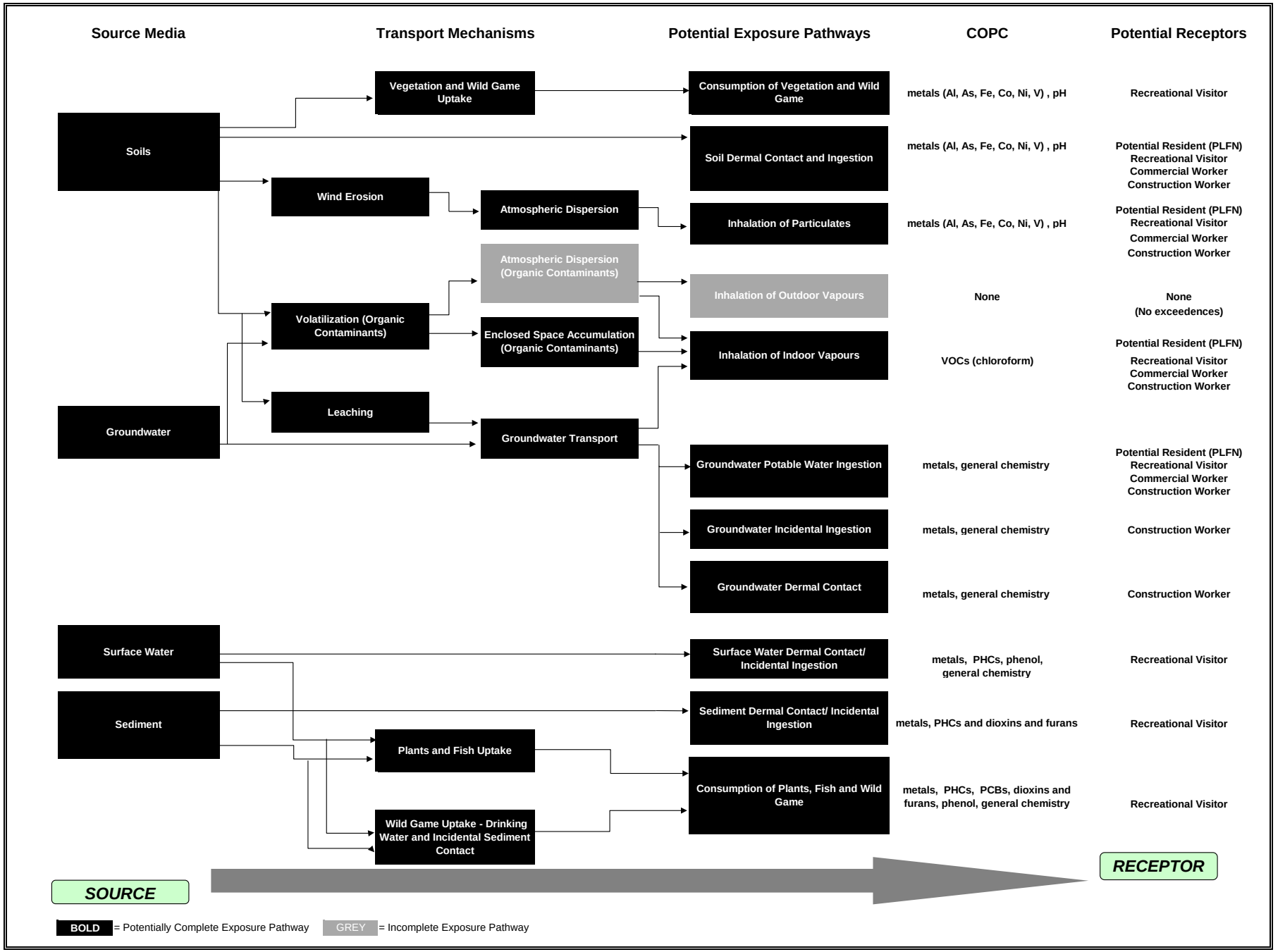
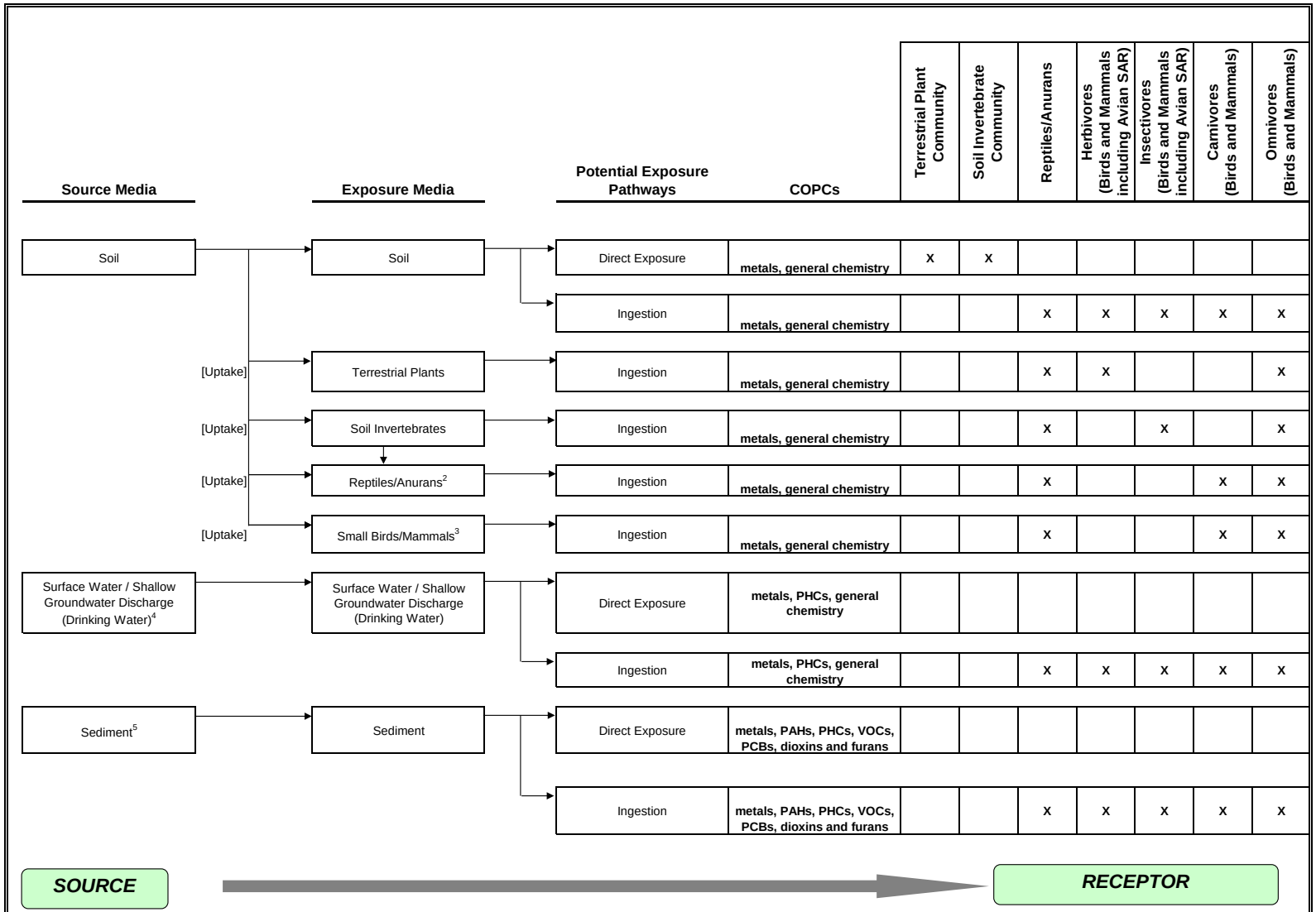


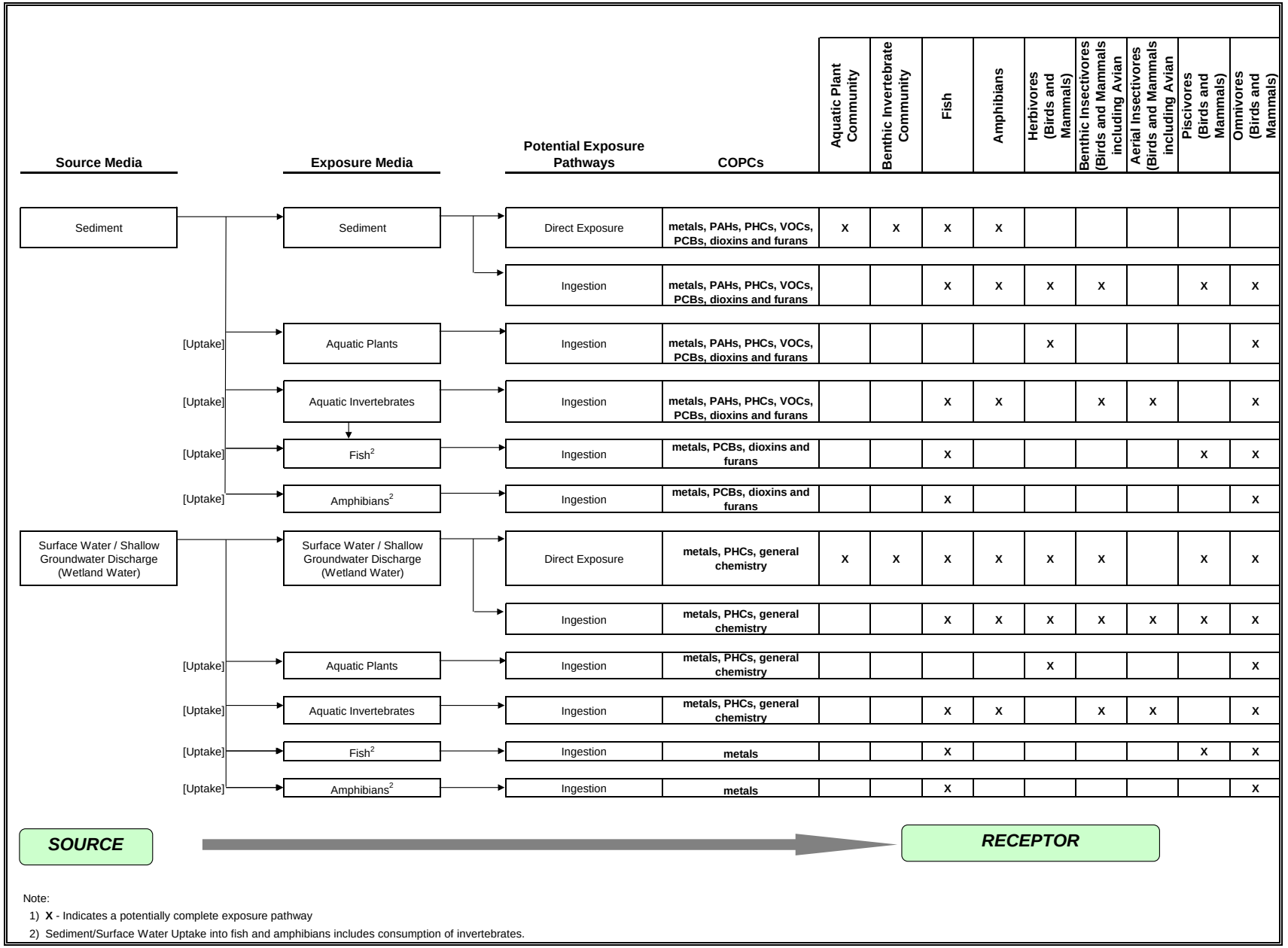
Figure E-2 Conceptual Site Model for Ecological Receptors (Terrestrial) - Boat Harbour



Note:

1) **X** - Indicates a potentially complete exposure pathway
2) Soil uptake into Reptiles/Anurans includes consumption of vegetation/invertebrates/other prey
3) Soil uptake into Small Birds/Mammals includes consumption of vegetation/invertebrates.
4) Surface Water Exposure for Terrestrial Organisms is considered limited to consumption of drinking water. Uptake of contaminants from surface water included in the Aquatic CSM (Figure 6-3)
5) Sediment exposure for Terrestrial Organisms is considered limited to incidental sediment ingestion during consumption of drinking water.

Figure E-3 Conceptual Site Model for Ecological Receptors (Aquatic) - Boat Harbour



Note:

1) **X** - Indicates a potentially complete exposure pathway
2) Sediment/Surface Water Uptake into fish and amphibians includes consumption of invertebrates.

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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