Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3, Former U.S. Military Site, Hopedale, NL

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Executive Summary

On behalf of the Newfoundland and Labrador Department of Environment and Conservation (NLDEC), Aivek Stantec Partnership Limited (Stantec) conducted additional sampling of environmental media in freshwater and marine environments near the Former U.S. Military Site in Hopedale, NL. The purpose of the work was to further characterize polychlorinated biphenyl (PCB) concentrations in environmental media in aquatic environments surrounding the Former U.S. Military Site. Results of field investigations carried out in Years 2 and 3 of the three (3) year Marine Study of Hopedale Harbour, which also includes work in nearby freshwater environments, are provided in the following report and are summarized below.

Harbour Delineation

- A total of 23 grab sediment samples were collected from Hopedale Harbour to provide further delineation of PCB concentrations in harbour sediments surrounding the wharf and in the outer harbour. PCBs were detected in each of the sediment samples at concentrations ranging from 0.02 mg/kg to 0.94 mg/kg.
- The harbour plan showing PCB concentration contours was updated with the results of the 2012 and 2013 sampling and is provided in Appendix A (Drawing No. 121411777.610-EE-03). The harbour plan shows the estimated extent of sediment with concentrations exceeding the Canadian Council of Ministers of the Environment (CCME) marine Probable Effects Level (PEL) of 0.189 mg/kg.
- A total of 10 grab sediment samples were collected from a variety of areas throughout Hopedale Harbour to characterize grain size distribution. Results indicated that the finest sediments are located near the shoreline in the inner harbour and within the cove located south of the airstrip (silt with sand). Sediments in the outer harbour are slightly coarser (silty sand) and sediments off the tip of the air strip and deeper waters in the channel west of Ellen Island contain the highest percentage of coarse material (silty sand with gravel).
- A total of 50 water samples were collected along the sill separating the inner harbour from the outer harbour during rising and falling tides. Each sample was submitted for total suspended solids (TSS) and volatile suspended solids (VSS). The five (5) samples containing the highest TSS concentrations were submitted for PCB analysis. TSS levels in water were low; therefore, measurable levels of PCBs were not detected in the water column separating the inner and outer harbour.
- The TSS portion of the water samples contained an average of 59 % volatile content (i.e., organic matter), where detected.

Old Dump Pond

- Sediments in Old Dump Pond were characterized using probing techniques and visual inspections of core sediment samples. Soft sediments generally ranged from 0.3 m to 0.6 m in thickness, with slightly less sediment near the northeastern shoreline of the pond and

slightly more sediment near the southeastern shoreline of the pond. Sediment generally consisted of fine grained material overlying coarser gravel. An abundance of submerged, partially buried metal debris was observed along the eastern side of the pond, near the outfall. It is believed that this buried debris may have influenced soft sediment depth estimates in this area.

- The water depth in the center of Old Dump Pond ranged from approximately 0.8 m to 1.2 m.
- Undisturbed sediment core samples were collected from 17 locations in Old Dump Pond (ODP-C1 to ODP-C17). Cores were sectioned to provide vertical delineation information on total PCB and petroleum hydrocarbon concentrations.
- Based on the core sampling results, PCBs are generally present near the sediment surface and extend to a maximum depth of 15 cm. PCBs were not vertically delineated at core sample locations C2 (maximum sample depth of 0.10 m), C4 (maximum sample depth of 0.15 m), C14 (maximum sample depth of 0.10 m), C15 (maximum sample depth of 0.10 m) and C17 (maximum sample depth of 0.10 m).
- Modified total petroleum hydrocarbons (TPH) was detected in select sediment samples at concentrations ranging from 41 mg/kg to 20,000 mg/kg. With the exception of ODP-C7B-01, all the detected concentrations of modified TPH exceeded the Tier I Ecological Screening Level (ESL) for the Protection of Freshwater and Marine Aquatic Life (Table 4) for typical sediment (43 mg/kg). The concentration of modified TPH in sample ODP-C8AB-01 (20,000 mg/kg) also exceeded the Tier I Pathway-Specific Screening Level (PSSL) (Table 5a) for soil ingestion on a residential site with non-potable groundwater, coarse grained soil and fuel oil impacts (8,600 mg/kg). Benzene, toluene, ethylbenzene and xylenes (BTEX) parameters were not detected in any of the sediment samples analyzed.
- Of note is that sample ODP-C8AB-01 that contained an elevated concentration of TPH (20,000 mg/kg resembling the weathered fuel oil/lube oil range) also contained a particularly elevated concentration of PCBs (90 mg/kg).

<u>Big Lake</u>

- A total of 42 fish were caught in Big Lake and were submitted for analysis total PCBs in whole fish (bones in), fillet (muscle), eggs and/or liver. Fish samples collected in 2013 were also submitted for analysis of crude fat. PCBs were detected in 22 of the 34 fillet samples, 1 of 1 egg samples, 1 of 2 liver samples and 0 of 8 whole fish samples. The highest detected concentration of PCBs in fish samples collected by Stantec in 2012 and 2013 was 0.35 mg/kg (20120924NET3A – brook trout fillet sample). Crude fat concentrations ranged from 1.9 % to 11 % in whole fish and fillet samples.
- A total of 22 sediment samples were collected from Big Lake and were submitted for analysis of total PCBs. Sediment samples collected in 2013 were also submitted for analysis of total organic carbon (TOC). PCBs were not detected in any of the sediment samples (reportable detection limit (RDL) = 0.05 mg/kg in 2012 and 0.01 mg/kg in 2013). TOC concentrations in sediment ranged from 22 g/kg to 120 g/kg.
- A total of 3 berry samples (red berries and black berries) were collected along the drainage channel located downgradient of the BMEWS site that empties into Big Lake and were

submitted for analysis of total PCBs. PCBs were not detected above the RDL of 0.05 mg/kg in any of the berry samples.

Ussiranniak Lake (Trout Pond)

- A total of 20 fish were retained from Ussiranniak Lake and were submitted for analysis total PCBs and crude fat in fillet (muscle) liver. PCBs were detected in1 of 20 fillet samples (20130924NET8A-FILLET – 0.11 mg/kg) and 1 of 6 liver samples (20130924NET8G-LIVER – 0.071 mg/kg). Crude fat concentrations ranged from 1.4 % to 16 % in fillet and liver samples.
- A total of 3 sediment samples were collected from Ussiranniak Lake and were submitted for analysis of total PCBs and TOC. PCBs were not detected above the RDL of 0.01 mg/kg in the sediment samples. TOC concentrations ranged from 6.5 to 21 g/kg.

Flux Study

- Flux monitoring including measurements of flow, total suspended solids, turbidity, and PCB concentrations was conducted on periodically from early-July to early-November 2012. Low levels of PCBs were detected in surface water immediately upstream of the outfall to Hopedale Harbour during 6 of 13 sampling events in 2012 at concentrations ranging from 0.034 µg/L to 0.061 µg/L.

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1.0 INTRODUCTION

On behalf of the Newfoundland and Labrador Department of Environment and Conservation (NLDEC), Aivek Stantec Partnership Limited (Stantec) conducted additional sampling of environmental media in freshwater and marine environments near the Former U.S. Military Site in Hopedale, NL. The purpose of the work was to further characterize polychlorinated biphenyl (PCB) concentrations in environmental media in aquatic environments surrounding the Former U.S. Military Site. The following report presents the results of field investigations carried out in Years 2 and 3 of the three (3) year Marine Study of Hopedale Harbour, which also includes work in nearby freshwater environments.

1.1 Site Description and Background

The Inuit Community of Hopedale is located on the Labrador coast, 148 air miles north of Goose Bay, NL and has no outside road access (see Drawing No. 121411777.610-EE-01 in Appendix A). Coastal boat service is available to the community of approximately 600 people from mid-summer to late fall. A military base and radar site was constructed in Hopedale in the 1950s, and was operated by the United States (U.S.) government until 1969 as a station on the United States Air Force Pinetree Line and the Mid-Canada Line. The Former U.S. Military Site is located north and west of the developed areas of the community of Hopedale. The Former U.S. Military Site consists of three (3) main hilltop sites (i.e., BMEWS, Main Base and Mid-Canada Line) as well as several other associated sites (refer to Drawing No. 121411777.610-EE-02 in Appendix A for site names and locations).

Between 1969 and 1975, portions of the site were operated by Canadian Marconi and ITT as a telecommunications site. In 1969, the base was closed down and the radome and radar antennae were removed. Most of the remaining aboveground structures were demolished and buried in several locations around the site in the mid-1980s. At that time, limited clean-up efforts were carried out and included the removal and disposal of PCB containing transformers. With the exception of infrastructure at the Mid-Canada Line site, only the foundations and floor slabs of buildings and the foundations and bases of antennae currently remain on the site. Two (2) antennae and an associated operations building are currently being operated by Bell Aliant at the Mid-Canada Line site.

Several environmental assessment reports have been produced (mainly since 1996) relating to potential and actual contamination at and in the vicinity of the Former U.S. Military Site and Residential Subdivision in Hopedale, Labrador. Previous environmental assessments and a Human Health and Ecological Risk Assessment (HHERA) revealed the presence of total petroleum hydrocarbons (TPH), PCBs and metals in soil at concentrations that may present adverse risks to human and/or ecological receptors. Based on this information, a RAP/RMP was developed for the terrestrial portion of the site and soil remediation was recommended in certain areas. In 2009 and 2010, preliminary freshwater and marine sampling revealed elevated

concentrations of PCBs in sediment and fish samples collected from Hopedale Harbour and in selected sediment samples collected from freshwater ponds and streams near the site; therefore, a comprehensive marine study was recommended. The proposed marine study included freshwater components.

PCBs are man-made chemical mixtures that are persistent and bioaccumulative (CCME, 2001). At elevated levels, PCBs can cause adverse health effects to humans and ecological receptors. From the 1930s to the 1970s, PCBs were widely used as coolants and lubricants for electrical equipment, including transformers and capacitors, and in a number of industrial materials, including sealing and caulking compounds, inks and paint additives. The use of PCBs was prohibited in heat transfer and electrical equipment installed after September 1, 1977, and in transformers and capacitors installed after July 1, 1980. The primary source of PCBs in Hopedale Harbour is expected to be related to operations at the Former U.S. Military Site.

In the summer of 2011, the Government of Newfoundland and Labrador committed funds over a three (3) year period to support the Implementation of the RAP and the completion of a three (3) year Marine Study. Each year of work was to be conducted in accordance with NLDEC budget allowances and a mutually-agreeable work plan proposed by the Stakeholder Scientific Advisory Working Group (referred to as the "Stakeholder Committee"). The Stakeholder Committee is made up of representatives from the Inuit Community Government of Hopedale, the Nunatsiavut Government, Labrador Grenfell Health, the Office of Labrador and Aboriginal Affairs, NLDEC and technical advisors. The scope of work for Years 1 to 3 of the Implementation of the RAP included the remediation of PCB-impacted soil in terrestrial areas located closest to the residential areas of Hopedale and upgradient of the community's water supply (the Old Dump Pond, Residential Subdivision, Wharf and BMEWS sites). The scope of work for the 3-year Marine Study included a characterization of the present and anticipated future distribution of PCBs in sediment and marine country foods in Hopedale Harbour and the investigation of other potential sources of PCB exposure to the residents of Hopedale. Data collected as part of the Marine Study would support a marine Human Health Risk Assessment and a remedial action/risk management plan for sediments (if deemed necessary). It was not understood whether Hopedale Harbour would benefit from natural processes (as did Saglek) that could bury or disperse the existing contamination, or whether the harbour is a more protected area where PCB contamination is likely to persist indefinitely.

The proposed work plans for Years 1 to 3 of the Marine Study were provided in Stantec's proposal dated May 27, 2011. The work plan for Year 1 was explained in the greatest detail because the immediate requirements were well understood. For Years 2 and 3, the proposed work plans were less detailed and more conceptual, as it was understood that information collected in Year 1 would result in modifications to the work plan.

During Year 1 (2011) of the Marine Study, Stantec completed PCB flux monitoring in streams discharging into Hopedale Harbour, vertical and horizontal delineation of PCBs in harbour sediments, marine biota sampling in Hopedale Harbour and surrounding marine environments

and underwater videography. A fish consumption advisory was issued in the summer of 2012, advising residents of Hopedale to "[a]void bottom-feeding fish such as rock cod, sculpin, as well as mussels and clams from Hopedale Harbour." Based on the information gathered during Year 1 of the Marine Study, the work plan for Years 2 and 3 was modified to include the following:

1. Complete the PCB flux study to determine current PCB loading from the Main Watershed via Old Dump Pond and the Small Pond Bog to Hopedale Harbour.
2. Conduct further delineation of PCB contamination in marine sediments in Hopedale Harbour.
3. Collect samples of marine country foods not collected in Year 1 to support a Marine Human Health Risk Assessment.
4. Collect sediment and additional fish tissue samples from the following freshwater lakes near Hopedale: Big Lake, Ussiranniak Lake (referred to as "Trout Pond") and Old Dump Pond.
5. Obtain improved bathymetric data for Hopedale Harbour.
6. Obtain physical oceanographic data on currents and sedimentation rates in Hopedale Harbour.

The collection of additional marine life and country foods (Item 3) was conducted by the Environmental Sciences Group (ESG) of Kingston, Ontario in conjunction with individuals of the Community of Hopedale in Year 2. ESG also completed a dietary survey amongst the residents of Hopedale in Year 1. The results of these sampling events were provided to Stantec and were incorporated into a Human Health Risk Assessment for the Consumption of Country Foods (see Stantec Draft Report No. 121411777.310, dated June 13, 2013) and are not described herein.

Bathymetric data and oceanographic data (Items 5 and 6) were collected by NATECH Environmental Services Inc. (NATECH) under contract to Stantec in Year 2 and were reported in the *Presentation of Field Test Results Hopedale Harbour, NL, September 2012* report by NATECH dated June 26, 2013.

1.2 Scope of Work

The objective of the Freshwater and Marine Sampling carried out in Years 2 and 3 of the Marine Study was to collect additional data required to complete the human health risk assessment for the consumption of country foods and to evaluate remedial requirements and options for PCB-impacted sediments in Hopedale Harbour and Old Dump Pond.

The specific tasks completed as part of the Freshwater and Marine Sampling in Years 2 and 3 of the Marine Study were as follows:

<u>Hopedale Harbour</u>

1. Conduct further horizontal delineation of PCB impacts in harbour sediments.
2. Collect grab sediment samples from a variety of areas throughout Hopedale Harbour to characterize sediment grain size distribution.

3. Conduct water sampling along the sill that separates the inner harbour from the outer harbour to determine suspended sediment and PCB concentrations in water at different times during the tide cycle.

Old Dump Pond

1. Conduct further horizontal and vertical delineation of PCB and TPH impacts in pond sediments.

Big Lake

1. Consult residents of the Community of Hopedale to determine potential "PCB-hotspots" within the lake.
2. Collect additional grab sediment samples from the lake and submit for analysis of TOC and PCBs.
3. Collect additional fish from the lake and submit for analysis of crude fat and PCBs in whole fish and tissue (fillets).
4. Collect berry samples along the drainage channel located downgradient of the BMEWS site that empties into Big Lake and submit for analysis of PCBs.

Ussiranniak Lake (background freshwater lake)

1. Collect grab sediment samples from the lake and submit for analysis of TOC and PCBs.
2. Collect fish from the lake and submit for analysis of crude fat and PCBs in tissue (fillets) and liver.

Flux Study

1. Measure the PCB flux from the Main Watershed, via Old Dump Pond and the Small Bog Pond, to Hopedale Harbour while on site in Year 2 on a weekly basis.

1.3 Regulatory Framework

The Newfoundland and Labrador Department of Environment and Conservation (NLDEC) released soil and groundwater remediation guidelines on February 22, 2005 under *Department Policy Document PPD05-01*. These criteria are outlined in the *Guidance Document for the Management of Impacted Sites, Version 1.01* (September 2005). This guidance document is based on a tiered, risk-based approach to site management, and replaces the former *Department Policy Document PPD-97-01 Cleanup of Contaminated Sites Criteria* (December 1997), which referenced provincial and Canadian Council of Ministers of the Environment (CCME) numerical guidelines for soil and groundwater quality based on specific land and groundwater uses. Protocols outlined in the NLDEC *Department Policy Document PPD05-01* were fully implemented by the Province of Newfoundland and Labrador on May 16, 2005.

1.3.1 Petroleum Hydrocarbons in Sediment

For petroleum hydrocarbons, the NLDEC guidance document recommends the current version of the Atlantic RBCA (Risk-Based Corrective Action) guidance. The current version of the Atlantic RBCA guidance is the *Version 3.0 User Guidance Document (July 2012)*.

Human Health Screening

The Atlantic RBCA guidance document contains risk-based screening levels (RBSLs) for evaluating human exposure to sites impacted with total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene and xylenes (BTEX). These guidelines are contained in "Tier I RBSL Tables" that are based on default conditions for typical sites and exposure pathways and are classified by receptor characteristics, groundwater usage, and soil type. In addition, the TPH guidelines are dependent on the nature of the hydrocarbon type (i.e., the guidelines vary for gasoline, fuel oil and lube oil).

If site concentrations exceed the Tier I RBSLs, the site may be remediated to the Tier I RBSLs or a Tier II human health risk assessment may be completed to determine more appropriate clean-up levels. A Tier II human health risk assessment may include comparison of the site concentrations to the Tier II PSSL tables or development of Site-Specific Target Levels (SSTLs) using the Atlantic RBCA Toolkit Version 3.22. PSSLs are only appropriate for sites where the exposure pathways assumed in the Tier I RBSL tables are not complete (e.g., if a property has no building on site, there would be no potential for on-site indoor air exposure).

Since there are no human health guidelines for petroleum hydrocarbons in sediment under RBCA, the soil quality guidelines were applied to the Old Dump Pond sediment results. To be protective of potential swimmers in the pond, the petroleum hydrocarbon concentrations in sediment were screened against the applicable Tier II PSSL for the soil ingestion pathway for a residential, non-potable site with coarse grained soil.

Users of the Tier I RBSLs or Tier II PSSLs are required to ensure that site conditions are compatible with the default site conditions used to generate the screening guidelines. If significant differences exist, the site should be evaluated using a site-specific risk assessment approach. The Site Assessment and Tier I/II checklist has been completed for Old Dump Pond to determine the appropriate Tier I PSSLs for petroleum hydrocarbon screening at that site.

Ecological Screening

The current version of the Atlantic RBCA guidance document (Version 3.0, July 2012) includes an Ecological Screening Protocol for Petroleum Impacted Sites in Atlantic Canada. While the RBSLs, the PSSLs and the Atlantic RBCA Toolkit assess risks to human health, the goal of the Ecological Screening Protocol is to assess potential risks to the environment (specifically ecological receptors). While this protocol is not an ecological risk assessment, the protocol provides a decision making framework that will result in one of the following three conclusions:

- The site does not pose a risk to ecological receptors/habitat and no further action is necessary related to the environment;
- The site should be remediated to Tier I ecological screening levels; or,
- The site should undergo further assessment in terms of quantifying ecological risks at the site (e.g., further delineation, quantitative ecological risk assessment, etc.).

The three (3) parts of the ecological screening protocol are:

- Part I: Identification of petroleum hydrocarbon hazards in site media or site-influenced media;
- Part II: Identification of habitat and ecological receptors on or near a site; and,
- Part III: Identification of exposure pathways by which ecological receptors could come into contact with site petroleum hydrocarbons.

Old Dump Pond is considered to be aquatic habitat; therefore, the applicable ESLs for petroleum hydrocarbon screening include the Tier I Sediment ESLs for the Protection of Freshwater and Marine Aquatic Life for typical sediment type (Table 4).

1.3.2 PCBs in Sediment

In the absence of provincial guidelines for PCBs in sediment, the applicable guidelines are considered to be the CCME Canadian Environmental Quality Guidelines (CCME Guidelines; 1999 and subsequent updates) and its associated documents. The CCME guidelines provide limits for contaminants in environmental media and are intended to maintain, improve, and/or protect environmental quality and human health at contaminated sites in general. These criteria include numerical values for the assessment and remediation of soil and water in the context of agricultural, residential/parkland, commercial, and industrial land uses and of sediment in freshwater or marine environments. In addition to land use, the CCME include numerical values depending on soil texture (i.e., coarse or fine grained soils). Environmental soil, sediment and water quality guidelines are derived using toxicological data to determine the threshold level to key receptors. These criteria include the CCME Interim Sediment Quality Guidelines (ISQGs) and Probable Effects Levels (PELs), 2001. PCB concentrations in sediment are compared to the CCME PELs within this report. CCME ISQGs are also provided in the analytical tables in Appendix E for reference purposes. The latest update of the CCME ISQGs and PELs was obtained on-line at http://ceqg-rcqe.ccme.ca/.

The CCME criteria are intended for generic use and do not address site-specific conditions. They are considered generally protective of human and environmental health for specified uses of soil, sediment and surface water at contaminated sites.

2.0 HOPEDALE HARBOUR

2.1 Site Description and Background

The community of Hopedale is built around Hopedale Harbour, which is approximately 500 m wide at its mouth and is protected by Ellen Island followed by Anniowaktook Island to the east (see Drawing No. 121411777.610-EE-01a in Appendix A). Based upon the site topography and site inspections, the majority of terrestrial contaminants of potential concern released from the Former U.S. Military Site in Hopedale would eventually make their way towards a small pond (i.e., the "Small Pond Bog"), and from there through a Residential Subdivision to be discharged at the mouth of the small stream that flows into Hopedale Harbour. An old dumping area, referred to as Old Dump Pond also discharges into the harbour (see Drawing No. 121411777.610-EE-02 in Appendix A). The wharf that was used during operation of the military base is located along the west side of the harbour. This wharf is currently used by Nunatsiavut Marine for cargo and passenger ship docking and is referred to locally as the "American Dock" (referred to herein as "the Wharf"). An "L-shaped" Department of Fisheries and Oceans (DFO) wharf is present on the northeast side of the inner harbour.

During Year 1 of the Marine Study, Stantec conducted grab and core sediment sampling to determine the distribution of PCBs in marine sediments in Hopedale Harbour both spatially (areal extent) and vertically. The highest concentrations of PCBs in harbour sediments were detected north of the Wharf. PCBs appeared to extend 11 to 23 cm below surface, with considerable evidence of bioturbation. Core dating using Pb-210 showed PCBs apparently dating back to approximately 1950, with a peak loading between 1970 and 2000, but bioturbation would cause considerable spreading, so dates are not precise. A preliminary inventory of estimates of PCBs in harbour sediment was 48 kg of PCB in the Inner Harbour, 10.2 kg of PCB in the Southwest Bays (located north and south of the local airstrip) and 2.8 kg of PCB in the Outer Harbour. Following Year 1 of the Marine Study, it was not apparent whether or not there was a clear source of PCBs originating from1 terrestrial sources near the Wharf; therefore, additional delineation was recommended. Additional delineation of PCB concentrations in sediment was also recommended to refine volume estimates in support of a Remedial Options review for harbour sediments.

As part of the bathymetry mapping completed during Year 2 of the Marine Study, an elevated sill separating the inner and outer portions of Hopedale Harbour was identified that ran roughly between Kretschmer Island and the DFO wharf (see Drawing No. 121411777.610-EE-03 in Appendix A). In their report, NATECH stated that this sill was unlikely to have significant impact on surface circulation within the Harbour but may have implications for sediment transport (NATECH, 2013). Current measurements conducted in Year 2 showed stronger currents at depth (NATECH, 2013). Sediment transport sampling was carried out in Year 3 to help characterize the volume of PCBs migrating in/out of the harbour.

2.2 Field Procedures

Sediment Sampling

On July 5, 2012, Stantec attempted to collect ten (10) additional sediment samples (12-SED01 to 12-SED10) from the area surrounding the Wharf to delineate PCB concentrations in harbour sediments and to determine if impacts appeared to be originating on-land in the Wharf area. Sediment sampling was conducted from the shoreline during low tide and off the side of the wharf using a Petit Ponar Dredge sampler. Samples were not collected at locations 12-SED06 and 12-SED07 due to the presence of a rocky bottom at these locations.

On September 1, 2012, NATECH attempted sediment sampling at sixteen (16) locations in the inner and outer harbour as part of the bathymetric survey (1-SS to 16-SS). Sediment samples were collected over the side of an aluminium boat owned and operated by Mr. Frank Dicker of Hopedale, NL. Samples were collected using a Petit Ponar Dredge sampler. Samples were not collected at locations 8-SS, 9-SS, 12-SS, 13-SS, 14-SS or 16-SS due to the presence of very little sediment at these locations.

Between September 23 and 26, 2013, Stantec attempted to collect fourteen (14) additional sediment samples from Hopedale Harbour to further delineate the extent of PCB impacts and to obtain grain size and total organic carbon (TOC) data required for the sediment transport model (13-SED1 to 13-SED14). Sediment sampling was conducted over the side of a boat owned and operated by Mr. Kevin Flowers of Hopedale, NL. Samples were collected using a Petit Ponar Dredge sampler in shallower portions of the harbour and using a Van Veen sampler in deeper waters. Samples were not collected at locations 13-SED9, 13-SED12 or 13-SED13 due to the presence of a rocky bottom at these locations.

All sediment samples were collected into clean glass jars and were placed on ice in sample coolers. At each sampling location, composite samples were created using subsamples from three (3) replicate grab samples. A blind duplicate sample was collect at one (1) of the sampling locations (13-SED3).

The samples were shipped to Maxxam Analytics in Bedford, Nova Scotia (NS) for total PCB, grain size and/or TOC analysis. The grab sediment sample locations are shown on Drawing No. 121411777.610-EE-03 in Appendix A.

Sediment Transport Sampling

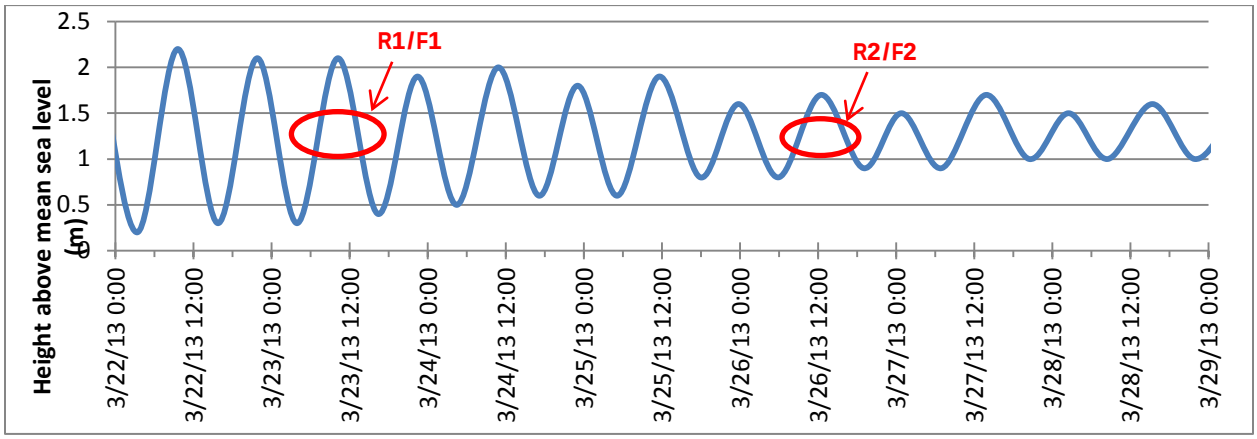
On September 23 and 26, 2013, Stantec conducted water sampling to characterize sediment transportation over the sill that separates the inner harbour from the outer harbour. Water samples were collected at various depth intervals at three (3) locations above the sill (SILL1 to SILL3). Sampling locations are shown on Drawing No. 121411777.610-EE-03 in Appendix A.

The results of drogue current measurements carried out in Year 2 indicated that during rising tides, currents appear to flow landward over the sill and during falling tides, currents appear to flow seaward over the sill (NATECH, 2013). Therefore, on each sampling date, one (1) sampling period was carried out in the middle of the falling tide and one (1) was carried in the middle of the rising tide in order to capture the biggest range of conditions. The sampling periods were as follows:

- September 23, 2013
    - Rising tide (R1): 07h20 to 08h10
    - Falling tide (F1): 13h00 to 13h30
- September 26, 2013
    - Rising tide (R2): 09h15 to 10h00
    - Falling tide (F2): 15h05 to 15h35

Sampling periods were selected based on DFO tide predictions for Hopedale shown in Figure 2-1 below. The sampling periods are shown in red.

Figure 2-1 Tide Predictions for Hopedale, NL (Source: DFO, 2013)



September 23 had tidal variations ranging from 1.7 to 1.8 m and was considered to be representative of a large tide date. September 26 had tidal variations of ranging from 0.8 m to 0.9 m and was considered to be a small tide date.

During each sampling period, water samples were collected off the side of an aluminum boat owned and operated by Mr. Kevin Flowers of Hopedale, NL. Once the sampling location was reached, the boat was anchored off and a submersible pump attached to a weight was lowered to 0.5 m above the harbour bottom. Stantec then waited a minimum of 5 minutes for bottom sediments to settle for prior to collecting water samples. Samples were collected at various intervals within the water column at each location. Sampling depths were selected in

the field based on the water column depth measured at the time of sampling. The SILL1 sampling location consisted of six (6) to seven (7) sampling intervals and the SILL2 and SILL3 sampling locations consisted of three (3) sampling intervals. Sampling intervals are provided in Table 2.1. Sample locations were identified using a hand-held GPS and may have differed slightly from one sampling period to another. This explains the variation in depths from one sampling period to another.

Table 2.1 Summary of Sill Samples

	September 23, 2013			September 26, 2013		
Sample Location	**Water Column Depth (m)**	**Sample ID**	**Sample Depth (m above bottom)**	**Water Column Depth (m)**	**Sample ID**	**Sample Depth (m above bottom)**
Rising Tide						
SILL1	13.5	SILL1-R1-01	0.5	10.5	SILL1-R2-01	0.5
		SILL1-R1-02 / SILL1-R2-08*	1.0		SILL1-R2-02/ SILL1-R2-07*	1.0
		SILL1-R1-03	2.0		SILL1-R2-03	2.0
		SILL1-R1-04	4.0		SILL1-R2-04	4.0
		SILL1-R1-05	7.0		SILL1-R2-05	7.0
		SILL1-R1-06	10.0		SILL1-R2-06	10.0
		SILL1-R1-07	13.0			
SILL2	6.0	SILL2-R1-01	0.5	4.0	SILL2-R2-01	0.5
		SILL2-R1-02	3.0		SILL2-R2-02	1.5
		SILL2-R1-03	5.5		SILL2-R2-03	3.5
SILL3	8.5	SILL3-R1-01	0.5	6.5	SILL3-R2-01	0.5
		SILL3-R1-02	3.0		SILL3-R2-02	3.0
		SILL3-R1-03	8.0		SILL3-R2-03	6.0
Falling Tide						
SILL1	10.5	SILL1-F1-01/ SILL1-F1/07*	0.5	9.0	SILL1-F2-01/ SILL1-F2-07*	0.5
		SILL1-F1-02	1.0		SILL1-F2-02	1.0
		SILL1-F1-03	2.0		SILL1-F2-03	2.0
		SILL1-F1-04	4.0		SILL1-F2-04	4.0
		SILL1-F1-05	7.0		SILL1-F2-05	6.0
		SILL1-F1-06	10.0		SILL1-F2-06	8.5

	September 23, 2013			September 26, 2013		
Sample Location	**Water Column Depth (m)**	**Sample ID**	**Sample Depth (m above bottom)**	**Water Column Depth (m)**	**Sample ID**	**Sample Depth (m above bottom)**
SILL2	5.5	SILL2-F1-01	0.5	5.0	SILL2-F2-01	0.5
		SILL2-F1-02	2.5		SILL2-F2-02	2.0
		SILL2-F1-03	5.0		SILL2-F2-03	4.5
SILL3	5.0	SILL3-F1-01	0.5	6.5	SILL3-F2-01	0.5
		SILL3-F1-02	2.0		SILL3-F2-02	3.0
		SILL3-F1-03	4.5		SILL3-F2-03	6.0
* Field duplicate sample						

Water samples were collected into pre-labelled laboratory-supplied bottles. The samples were stored on ice and shipped to Maxxam Analytics in Bedford, NS for laboratory analysis of total suspended solids (TSS) and volatile suspended solids (VSS) and aliquot extraction for potential future PCB analysis. VSS analysis was performed on the suspended solids to provide a rough approximation of the amount of organic matter present in the bottom sediments. Based on the initial round of analytical results, the samples containing the highest concentrations of TSS were selected for analysis of PCBs.

Photos taken during sampling in Hopedale Harbour are provided in Appendix B.

2.3 Laboratory Analytical Results

2.3.1 Sediment

PCBs in Sediment

PCB analysis was conducted on 18 grab sediment samples collected from Hopedale Harbour in Year 2 (12-SED01 to 12-SED05, 12-SED08 to 12-SED10, 1-SS to 7-SS, 10-SS, 11-SS and 15-SS) and six (6) grab sediment samples collected from Hopedale Harbour in Year 3 (13-SED3, 13-SED8, 13-SED10, 13-SED11, 13-SED14 and 13-SED16). The results of the laboratory analysis of sediment samples for PCBs are presented in Table E.1 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

The detected concentrations of PCBs in sediment samples collected din 2012 and 2013 ranged from 0.02 mg/kg to 0.94 mg/kg. The concentrations of PCBs in samples 12-SED-03 (0.22 mg/kg), 12-SED04 (0.19 mg/kg), 12-SED05 (0.25 mg/kg), 12-SED09 (0.84 mg/kg), 12-SED10 (0.57 mg/kg), 1-SS (0.28 mg/kg), 2-SS (0.27 mg/kg), 3-SS (0.88 mg/kg), 4-SS (0.27 mg/kg), 6-SS (0.35 mg/kg), 7-SS (0.41 mg/kg), 13-SED3 (0.94 mg/kg) and its field duplicate sample (0.83 mg/kg), and 13-SED8 (0.33 mg/kg) exceeded the CCME marine PEL of 0.189 mg/kg. The harbour plan showing PCB

concentration contours was updated with the Year 2 and Year 3 sampling results and is included in Appendix A (Drawing No. 121411777.610-EE-03).

TOC in Sediment

TOC analysis was conducted on the six (6) grab sediment samples submitted for PCB analysis in Year 3 (13-SED3, 13-SED8, 13-SED10, 13-SED11, 13-SED14 and 13-SED16). The results of the laboratory analysis of sediment samples for PCBs are presented in Table E.1 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

The detected concentrations of TOC in sediment samples collected during Year 3 ranged from 3.1 to 23 mg/kg.

Sediment Grain Size

Grain size analysis was conducted on 10 grab sediment samples collected from Hopedale Harbour in Year 3 (13-SED1 to 13-SED8, 13-SED11, 13-SED14 and the Field Duplicate of 13-SED1). The results of the laboratory analysis of sediment samples for grain size are presented in Table E.2 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

Based on the grain size analysis results, soils were classified on the basis of grain size in accordance with the Unified Soil Classification System (USCS) (ASTM D 2487) and assuming non-plastic properties (note that Atterberg limits testing was not completed). Sediment samples 13-SED1 and 13-SED2 collected from the inner harbour and 13-SED7 collected from the cove located south of the air strip were classified as silt with sand (ML). Sediment samples 13-SED3, 13-SED4, 13-SED5, 13-SED8 and 13-SED11 collected from the outer harbour were classified as silty sand (SM) (once the large rock interference was removed from 13-SED3). Sample 13-SED6 collected near the tip of the airstrip and sample 13-SED14 collected from deeper waters in the channel west of Ellen Island were classified as silty sand with gravel (SM).

2.3.2 Water

TSS and VSS in Water

TSS and VSS analysis was conducted on 50 water samples, including 4 field duplicate samples. The results of the laboratory analysis of water samples for TSS and VSS are presented in Table E.3 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

The concentrations of TSS in water samples collected during rising tide ranged from 1 to 13 mg/L. The concentrations of TSS in water samples collected during falling tide ranged from non-detect to 13 mg/L.

The VSS concentrations in water samples ranged from non-detect to 5.2 mg/L.

PCBs in Water

Based on the analytical results for TSS, five (5) water samples were selected for analysis of PCBs (SILL1-R1-01, SILL3-R2-02, SILL1-F1-02, SILL2-F1-03 and SILL2-F2-01). The results of the laboratory analysis of water samples for PCBs are presented in Table E.3 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

PCBs were not detected in any of the water samples analyzed.

3.0 OLD DUMP POND

3.1 Site Description and Background

Old Dump Pond is located downgradient of Reservoir Lake on the west side of the main access road, as shown on Drawing No. 121411777.610-EE-02 in Appendix A. Old Dump Pond was historically used for the storage of various metal waste and debris (i.e., wastes were stored in and around the pond). The shore of the pond is heavily vegetated with some bedrock outcroppings. Terrain in the immediate vicinity slopes towards the pond which discharges to the southeast into Hopedale Harbour via a stream. A relatively new area of residential development has been constructed on an elevated gravel pad to the east of the pond.

During previous investigations, elevated concentrations of PCBs (up to 32 ppm) were detected in grab sediment samples collected from the pond. No vertical profiling was previously completed to determine the thickness of impacted sediment in the pond. Between 2011 and 2013, soil remediation was carried out along the eastern shoreline of Old Dump Pond to remove soil with concentrations of PCBs in exceedance of the site-specific target level (SSTL) of 9 ppm (shown on drawing No. 121411777.610-EE-04 in Appendix A). An approximately 5 m wide strip of soil with a maximum recorded PCB concentration of 290 ppm was left undisturbed between the remedial excavation and the pond to minimize surface water infiltration (shown on drawing No. 121411777.610-EE-04 in Appendix A). Stantec previously recommended that this area of impacted soil be addressed during remediation of pond sediments (if deemed necessary) (Stantec, 2014).

3.2 Field Procedures

Core Sampling

On September 18 and 21, 2012, undisturbed sediment core samples were collected from seventeen (17) locations in Old Dump Pond (ODP-C1 to ODP-C17). At each sampling location, core samples were collected using push core samplers made of either stainless steel or acrylic tubing. The core tubes were manually pushed as far as possible into sediments from a boat. Once embedded, the top of the core tube was sealed with a rubber stopper, the core tube was removed from the sediments and a second rubber stopper was inserted into the bottom of

the core tube. The tube was then transferred to a support team on the shoreline for sectioning and sample formation. The core tubes were always kept upright to minimize movements that could disturb the core samples. Core thicknesses ranged from 10 to 46 cm.

The support team gently removed the bottom stopper and inserted an extruding stopper (stopper on the end of a length of threaded steel rod) into the bottom of the core tube. The extruding stopper was pushed upwards, driving the column of sediment through the core tube. Sediment slices measuring between 5 and 10 cm in length were then collected using a spatula and a short extruding tube and were placed in labeled sediment jars. The spatula and extruding tube were rinsed in clean water between slices. Each sample jar was labeled with the core sampling location (e.g., ODP-C1), the sampling device (A for stainless steel sampler or B for acrylic tube) and the slice number, counting sequentially from the top of the core (01, 02, 03, etc.). The stainless steel sampler was used at locations ODP-C1 to ODP-C8 and the acrylic tubing sampler was used at locations ODP-C4 to ODP-C17. Core sediment sample locations are shown on Drawing No. 121411777.610-EE-04 in Appendix A. Photos taken during core slicing are provided in Appendix B.

Sediment samples were packed on ice in sample coolers, and shipped to Maxxam Analytics in St. John's, NL and Bedford, NS for laboratory analysis. One (1) sample (A or B) was submitted per depth. Where both A and B replicate samples were available, the B samples were submitted for analysis. The A and B samples at location C8 were combined due to the small sample volume obtained from each device. Core sediment samples from two (2) transects within the pond (ODP-C1 to ODP-C6 and ODP-C7 and ODP-C8) were submitted for analysis of both total PCBs and petroleum hydrocarbons (TPH/BTEX). Samples from the remaining core sediment sample locations (ODP-C9 to ODP-C17) were submitted for analysis of total PCBs only.

3.3 Field Observations

The water depth in the center of the pond ranged from approximately 0.8 m to 1.2 m. A steel rod was used to probe the sediments at each core location prior to sampling. Information obtained from probing is provided in Table 3.1. Soft sediments generally ranged from 0.3 m to 0.6 m in thickness, with slightly less sediment near the northeastern shoreline (near C1, C8, C15, C15 and C17) and slightly more sediment near the southeastern shoreline, near C16. Sediment generally consisted of fine grained material overlying coarser gravel. An abundance of submerged, partially buried metal debris was observed along the eastern side of the pond, near the outfall.

Table 3.1 Old Dump Pond Characteristics

Core Location	Water Depth (m)	Sediment Depth (m)	Recovery (m)	Comments
C1	0.45	0.15	0.15	Abundant metal debris. Rocky bottom.
C2	0.90	0.60	0.10	Minor metal debris.
C3	0.90	0.30	0.10	-
C4	0.90	0.30	0.15	-
C5	0.90	0.45	0.20	Grassy bottom.
C6	0.90	0.60	0.30	-
C7	0.90	0.45	0.15	Rocky bottom.
C8	0.90	0.15	0.08	-
C9	1.00	0.35	0.23	-
C10	0.90	0.45	0.46	-
C11	1.00	0.55	0.33	-
C12	1.00	0.55	0.23	-
C13	1.10	0.35	0.20	Sheen on sediment.
C14	0.60	0.90*	0.10	Abundant debris.
C15	0.45	0.15	0.10	Abundant debris.
C16	0.90	0.75	0.28	-
C17	0.85	0.25	0.10	-

Note:
* Due to the large amount of debris in this area, the probe is expected to have penetrated voids in the debris before hitting solid bottom.

3.4 Laboratory Analytical Results

3.4.1 Sediment

PCBs in Sediment

PCB analysis was conducted on 48 sediment core samples collected from Old Dump Pond during Year 2 of the Marine Study (ODP-C1A-01 to ODP-C1A-03, ODP-C2A-01, ODP-C3A-01, ODP-C4B-01 to ODP-C4B-03, ODP-C5B-01 to ODP-C5B-03, ODP-C6B-01 to ODP-C6B-05, ODP-C7B-01 to ODP-C7B-03, ODP-C8AB-01, ODP-C9B-01 to ODP-C9B-03, ODP-C10B-01 to ODP-C10B-06, ODP-C11B-01 to ODP-C11B-04, ODP-C12B-01 to ODP-C12B-03, ODP-C13B-01 to ODP-C13B-03, ODP-C14B-01, ODP-C15B-01 to ODP-C15B-02, ODP-C16B-01 to ODP-C16B-04 and ODP-C17B-01 to ODP-C17B-02). The results of the laboratory analysis of sediment core samples for PCBs are presented in Table E.4 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

PCBs were detected in one (1) sample collected from C2 (ODP-C2A-01), two (2) samples collected from C4 (ODP-C4B-01 and OCP-C4B-03), one (1) sample collected from C6 (ODP-C6B-02), one (1) sample collected from C7 (ODP-C7B-01), one (1) sample collected from C8 (ODP-C8AB-01), two (2) samples collected from C9 (ODP-C9B-01 and ODP-C9B-02), one (1) sample collected from C10 (ODP-C10B-01), one (1) sample collected from C11 (ODP-C11B-01), one (1) sample collected from C12 (ODP-C12B-01), two (2) samples collected from C13 (ODP-C13B-01 and ODP-C13B-02), one (1) sample collected from C14 (ODP-C14B-01), two (2) samples collected from C15 (ODP-C15B-01 and ODP-C15B-02), two (2) samples collected from C16 (ODP-C16B-01 and ODP-C16B-02) and two (2) samples collected from C17 (ODP-C17B-01 and ODP-C17B-02). Detected concentrations of PCBs ranged from 0.28 mg/kg in ODP-C6B-02 to 90 mg/kg in ODP-C8AB-01, which exceed the CCME freshwater PEL of 0.277 mg/kg.

The highest PCB concentration from each sediment core was used to update the site plan showing horizontal PCB concentration contours in Old Dump Pond sediment (Drawing No. 121411777.610-EE-05 in Appendix A).

Petroleum Hydrocarbons in Sediment

Petroleum hydrocarbon (TPH/BTEX) analysis was conducted on 20 sediment core samples collected from Old Dump Pond during Year 2 of the Marine Study (ODP-C1A-01 to ODP-C1A-03, ODP-C2A-01, ODP-C3A-01, ODP-C4B-01 to ODP-C4B-03, ODP-C5B-01 to ODP-C5B-03, ODP-C6B-01 to ODP-C6B-05, ODP-C7B-01 to ODP-C7B-03 and ODP-C8AB-01). The results of the laboratory analysis of sediment samples for petroleum hydrocarbons are presented in Table E.5 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

Modified TPH was detected in all sediment samples collected from C2, C3, C4, C5, C6, C7 and C8 at concentrations ranging from 41 mg/kg in ODP-C7B-02 to 20,000 mg/kg in ODP-C8AB-01. Modified TPH was not detected in the three (3) sediment samples collected from C1. With the exception of ODP-C7B-01, all the detected concentrations of modified TPH exceeded the Tier I ESL for the Protection of Freshwater and Marine Aquatic Life (Table 4) for typical sediment (43 mg/kg). The concentration of modified TPH in sample ODP-C8AB-01 (20,000 mg/kg) also exceeded the Tier I PSSL (Table 5a) for soil ingestion on a residential site with non-potable groundwater, coarse grained soil and fuel oil impacts (8,600 mg/kg).

BTEX parameters were not detected above the laboratory detection limit in any of the sediment samples analyzed.

A sample exceedance plan showing the estimated extent of TPH impacted sediment in Old Dump Pond is provided in Appendix A (Drawing No. 121411777.610-EE-06).

4.0 BIG LAKE

4.1 Site Description and Background

Big Lake is located approximately 650 m northwest and downgradient of the BMEWS site. Locally, the lake is referred to as NCO Pond. Terrain in the vicinity of the site slopes moderately towards the lake. The shore of the lake is made up of low vegetation, trees and bedrock outcrops. Big Lake was initially selected as a background sampling area for the Phase II/III ESA and HHERA conducted in 2009/2010; however, following sampling, it came to Stantec's attention that the lake had previously been used for airplane landing. Also, several 45-litre drums were observed floating in the lake and along the shore. PCBs were detected in four (4) of six (6) fish (brook trout) collected from Big Lake in 2009 and 2010. Additional sediment and fish sampling in Big Lake was recommended to further investigate the potential source of PCBs in fish and to determine if the elevated level of PCBs in fish sample Big Lake-Fish 4 (1.9 mg/kg) was an anomaly.

Consultation with residents of the Community of Hopedale revealed that the pond was historically used by the U.S. military as a landing area during the winter months. Planes landed in a southwest to northeast direction as shown on Drawing No. 121411777.610-EE-07 in Appendix A. Planes were unloaded in the northeastern portion of the lake and a trail located northeast of the lake was used to travel up to the former base via all-terrain vehicle (shown on Drawing No. 121411777.610-EE-07 in Appendix A). The trail meets up with the main roadway between the BMEWS and Old Base 1 sites. An area of deeper waters, that could possibly contain submerged drums, was identified by residents near the end of the landing area (in the vicinity of sediment samples 13-BL-SED6 and 12-BL-SED5 on Drawing No. 121411777.610-EE-07).

4.2 Field Procedures

Fish Sampling

Fishing was carried out in Big Lake between September 19 and 24, 2012 and September 22 and 23, 2013. Freshwater finfish were caught with 1 ½ inch, 2 inch, 3 inch and 3 ½ inch tended gillnets placed at different locations within the lake and the brook flowing out of Big Lake, to the north. Net locations are shown on Drawing No. 121411777.610-EE-05 in Appendix A. In 2012, attempts were made to catch fish using fishing rods from the shoreline of the pond and from a boat; however, this technique was unsuccessful. Copies of the fishing permits obtained from Fisheries and Oceans Canada and the Nunatsiavut Government (Permit to access Labrador Inuit Lands) are provided in Appendix D.

In 2012, a total of 21 brook trout and one (1) arctic char were caught in Nets 1 to 3 in Big Lake. Fish were dissected in the field and fillet and liver samples were retained. One fillet (muscle) sample was retained from each fish. A liver sample was formed by compositing livers from multiple smaller fish in order to make up the minimum mass (50 g) required by the laboratory for

analysis (2012092424NET123LIVER). Another liver sample (2012092424NET3LIVERBIG) was obtained from one large brook trout. An egg sample was retained from the same large brook trout (20120923NET1EGGS). Each sample ID contains the date the fish was caught and the net it was taken from. Fish samples were frozen and shipped to Maxxam Analytics in Bedford, NS for total PCB analysis.

In 2013, a total of 15 brook trout and (2) char were caught in Nets 4 to 6 in Big Lake. Three (3) brook trout were also caught in the brook flowing out of Big Lake on September 23, 2013. The fork length of each fish was recorded and samples were formed on the day that they were caught. Fork lengths are provided in Table E.6 in Appendix E. Five (5) of the brook trout collected from Big Lake and the three (3) brook trout collected from the brook were placed in individual labeled ziplock bags for whole fish (bones in) analysis. The remaining 10 brook trout and two (2) char were dissected and one (1) fillet (muscle) sample was retained from each fish. Fillet samples were placed in individual labeled ziplock bags. Each sample ID contains the date the fish was caught, the net it was taken from and the type of sample (whole or fillet). Fish samples were frozen and shipped to Maxxam Analytics in Bedford, NS for crude fat and total PCB analysis.

Photos taken of the fish caught in 2012 and 2013 are provided in Appendix B.

Sediment Sampling

A total of 12 grab sediment samples were collected from Big Lake on September 19, 2012 and 10 grab sediment samples were collected on September 20, 2013. Sediment samples were collected from a boat using a Ponar sampler. Sediment sample locations are shown on Drawing No. 121411777.610-EE-07 in Appendix A. The sediment samples were examined in the field for any evidence of impacts. The samples were placed in clean glass jars and were placed on ice in sample coolers that were shipped to Maxxam Analytics in Bedford, NS for TOC (2013 samples only) and total PCB analysis. Duplicate samples were shipped to Stantec's office in St. John's, NL where they were archived.

Berry Sampling

Berry sampling was conducted by hand on September 19, 2012. Three (3) samples of approximately 200 grams were collected near the mouth of the drainage channel flowing into Big Lake (see Photo 17 in Appendix B). Sample 12-BL-VEG1 consisted of red berries and samples 12-BL-VEG2 and 12-BL-VEG3 consisted of black berries. Samples were collected into clean plastic bags. The collected samples were frozen and shipped on ice in sample coolers to Maxxam Analytics Inc. in Bedford, NS for laboratory analysis of PCBs. Berry sampling locations are shown on Drawing No. 121411777.610-EE-07 in Appendix A.

4.3 Laboratory Analytical Results

4.3.1 Fish

PCBs in Fish

PCB analysis was conducted on 22 fillet samples, one (1) egg sample and two (2) liver samples from fish collected from Big Lake in 2012. PCB analysis was also conducted on eight (8) whole fish samples and 12 fillet samples collected from Big Lake in 2013. The results of the laboratory analysis of fish samples for PCBs are presented in Table E.6 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

Analytical results of sampling conducted by Stantec in 2012 and 2013 revealed detectable concentrations of PCBs (i.e., above the laboratory reportable detection limit of 0.05 mg/kg) in 22 of the 34 fillet samples. Detected PCB concentrations in fillet samples ranged from 0.056 mg/kg (20120923NET3A) to 0.35 mg/kg (20120924NET3A). PCBs were not detected in any of the 8 whole fish samples collected in 2013. PCBs were detected in the egg sample (20120923NET1EGGS) collected in 2012 at a concentration of 0.15 mg/kg and in one (1) of the two (2) liver samples collected in 2012 at a concentration of 0.17 mg/kg (20120923NET3LIVERBIG).

Crude Fat in Fish

Crude fat analysis was conducted on the 8 whole fish and 12 fillet samples submitted for PCB analysis in 2013. The results of the laboratory analysis of crude fat in fish samples are presented in Table E.6 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

Analytical results indicate that crude fat concentrations ranged from 2.0 % to 8.4 % in whole fish samples and from 1.9 % to 11 % in fillet samples.

4.3.2 Sediment

PCBs in Sediment

PCB analysis was conducted on 12 sediment samples collected from Big Lake in 2012 (12-BL-SED01 to 12-BL-SED12) and 10 sediment samples collected from Big Lake in 2013 (13-BL-SED1 to 13-BL-SED10). PCB analysis was also conducted on one (1) field duplicate sample (13-BL-SED5-Field Dup). The results of the laboratory analysis of sediment samples for PCBs are presented in Table E.7 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

PCBs were not detected above the RDL of 0.01 mg/kg in any of the sediment samples analyzed.

TOC in Sediment

TOC analysis was conducted on the 10 sediment samples collected from Big Lake in 2013 (13-BL-SED1 to 13-BL-SED10) and the field duplicate sample (13-BL-SED5-Field Dup). The results of the laboratory analysis of sediment samples for TOC are presented in Table E.7 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

Concentrations of TOC in sediment samples ranged from 22 to 120 g/kg.

4.3.3 Vegetation

PCBs in Berries

PCB analysis was conducted on three (3) berry samples collected near Big Lake during in 2012 (12-VEG01 to 12-VEG03). The results of the laboratory analysis of vegetation (i.e., berry) samples for PCBs are presented in Table E.8 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

PCBs were not detected above the RDL of 0.05 mg/kg in any of the berry samples analyzed.

5.0 USSIRANNIAK LAKE

5.1 Site Description and Background

Ussiranniak Lake is located approximately 1.2 km southwest of the Hopedale Airstrip. The lake is referred to locally as Trout Pond and used for recreational fishing. This lake was selected as a background sampling location for fish as part of the current assessment. No previous testing for PCBs has been conducted by Stantec in Ussiranniak Lake.

5.2 Field Procedures

Fish Sampling

Fishing was carried out in Ussiranniak Lake between September 19 and 24, 2012 and September 23 and 24, 2013. Freshwater finfish were caught with 1 ½ inch, 3 inch and 3 ½ inch tended gillnets placed at different locations within the lake. Net locations are shown on Drawing No. 121411777.610-EE-08 in Appendix A. Copies of the fishing permits obtained from Fisheries and Oceans Canada and the Nunatsiavut Government (Permit to access Labrador Inuit Lands) are provided in Appendix D.

A total of ten (10) brook trout and ten (10) arctic char retained for analysis. The fork length of each fish was recorded and samples were formed on the day that they were caught. One (1) fillet (muscle) sample was retained from each fish. Livers from fish of similar species caught in each net were combined to form composite liver samples as indicated in Table 5.1. Each

sample ID contains the date the fish was caught, the net it was taken from and the type of sample (fillet or liver).

Table 5.1 Summary of Fish Samples Collected – Ussiranniak Lake

Net	Species	Fillet Samples	Composite Liver Sample
NET7	Brook Trout	20130924NET7A-FILLET 20130924NET7B-FILLET 20130924NET7C-FILLET 20130924NET7D-FILLET	20130924NET7I-LIVER
	Arctic Char	20130924NET7E-FILLET 20130924NET7F-FILLET 20130924NET7G-FILLET 20130924NET7H-FILLET	20130924NET7J-LIVER
NET8	Brook Trout	20130924NET8A-FILLET 20130924NET8B-FILLET 20130924NET8C-FILLET	20130924NET8G-LIVER
	Arctic Char	20130924NET8D-FILLET 20130924NET8E-FILLET 20130924NET8F-FILLET	20130924NET8H-LIVER
NET9	Brook Trout	20130924NET9A-FILLET 20130924NET9B-FILLET 20130924NET9C-FILLET	20130924NET9G-LIVER
	Arctic Char	20130924NET9D-FILLET 20130924NET9E-FILLET 20130924NET9F-FILLET	20130924NET9H-LIVER

Fillet and composite liver samples were placed in individual labeled ziplock bags. Fish samples were frozen and shipped to Maxxam Analytics in Bedford, NS for crude fat and total PCB analysis.

Photos taken of the fish caught in 2013 are provided in Appendix B.

Sediment Sampling

Grab sediment samples were collected from each net location in Ussiranniak Lake on September 24, 2013 (13-UL-SED1 to 13-UL-SED3). The sediment samples were collected from a boat using a Ponar sampler. Sediment sample locations are shown on Drawing No. 121411777.610-EE-07 in Appendix A. The sediment samples were examined in the field for any evidence of impacts. The samples were placed in clean glass jars and were placed on ice in sample coolers that were shipped to Maxxam Analytics in Bedford, NS for TOC and total PCB

analysis. Duplicate samples were shipped to Stantec's office in St. John's, NL where they were archived.

5.3 Laboratory Analytical Results

5.3.1 Fish

PCBs in Fish

PCB analysis was conducted on 20 fillet samples and six (6) liver samples from fish collected from Ussiranniak Lake in 2013. The results of the laboratory analysis of fish samples for PCBs are presented in Table E.9 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

PCBs were detected in one (1) of the fillet samples (20130924NET8A-FILLET – 0.11 mg/kg) and one (1) of the liver samples (20130924NET8G-LIVER – 0.071 mg/kg).

Crude Fat in Fish

Crude fat analysis was conducted on the 20 fillet samples and six (6) liver samples submitted for PCB analysis in 2013. The results of the laboratory analysis of crude fat in fish samples are presented in Table E.9 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

Analytical results indicate that crude fat concentrations ranged from 1.4 % to 12 % in fillet samples and from 6.9 % to 16 % in liver samples.

5.3.2 Sediment

PCBs in Sediment

PCB analysis was conducted on three (3) sediment samples collected from Ussiranniak Lake in 2013 (13-UL-SED1 to 13-UL-SED3). The results of the laboratory analysis of sediment samples for PCBs are presented in Table E.10 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

PCBs were not detected above the RDL of 0.01 mg/kg in any of the sediment samples analyzed.

TOC in Sediment

TOC analysis was conducted on the three (3) sediment samples collected from Ussiranniak Lake in 2013 (13-UL-SED1 to 13-UL-SED3). The results of the laboratory analysis of sediment samples for TOC are presented in Table E.10 in Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

Concentrations of TOC in sediment samples ranged from 6.5 to 21 g/kg.

6.0 FLUX STUDY

6.1 Site Description and Background

The stream in the Residential Subdivision originates in a small pond and boggy area (the Small Pond Bog), and flows through the east side of the subdivision in a north to south direction where it meets the Old Dump Pond outlet and eventually empties into Hopedale Harbour, located approximately 200 m south of the Residential Subdivision, as shown on Drawing No. 121411777.610-EE-03 in Appendix A. The stream bank is heavily vegetated with some areas of rocks and cobbles.

Sediments with concentrations of PCBs exceeding the site-specific target level of 9 ppm were remediated from an approximately 50 m long reach in the stream in the Residential Subdivision during Year 2 of the Implementation of the RAP (shown on Drawing No. 121411777.610-EE-03 in Appendix A). The remedial area was located adjacent to a former landfill discovered beneath the existing houses on the northeast side of the Residential Subdivision site. Steel drums and other military base debris were discovered in this area during previous geophysical surveys and subsurface investigations.

Flux monitoring conducted in Year 1 included measurements of flow, total suspended solids (TSS), turbidity, and PCB concentrations and was conducted at two locations on a bi-weekly basis from August to November 2011, as well as following two storm events. PCBs in stream flow were generally not detected and the best estimate of PCBs entering Hopedale Harbour from the stream was about 20 g/year. The inventories of PCB in the harbour were large in comparison with the estimated flux of 20 g PCB/year.

6.2 Field Procedures

Sampling locations for flux monitoring were established in the field by Stantec personnel during Year 1 of the Marine Study, and are shown on Drawing No. 121411777.610-EE-03 in Appendix A. Sampling location ODP is located downstream of the outlet from Old Dump Pond, and was selected to determine whether Old Dump Pond is a predominant source of PCB flux into the harbour. Sampling location HARBOUR is located near the road where the stream enters the harbour and was selected to allow quantification of the flux to the harbour. The two sampling locations consisted of straight reaches where the streambed was relatively uniform, and where the flow was relatively uniform and free of eddies, dead water and excessive turbulence.

Flux monitoring was conducted periodically by Stantec representatives, while on-site from early-July to early-November 2012. During each monitoring event, surface water samples were collected at the two sampling locations for total suspended solids (TSS), turbidity and total PCBs. Stream flow was also recorded. Surface water samples were collected at each sampling

location prior to taking flow measurements. During sample collection, care was taken not to stir up sediment in the stream. Samples were collected into clean, new sample bottles that were packed on ice in sample coolers and shipped to Maxxam Analytics in Bedford, NS for analysis of TSS, turbidity and total PCBs.

At the ODP sampling location, stream flow was determined by recording the wetted width of the stream, recording the stream velocity in the centre of the channel just below mid-depth (i.e., at 0.6 times the total depth) with an electronic flow meter device (Global Flow Probe, Model FP211) and recording water depth at three locations (at ¼, ½ and ¾ wetted width). The stream flow at the ODP sampling location was calculated using the following equation:

$$Q_{stream} = VA$$

Where: Q_{stream} = Stream discharge (m^3/s)

V = Velocity (m/s)

A = Cross sectional area (m^2) ≃ Average depth in m x wetted width in m

At the HARBOUR sampling location, stream flow was determined by recording the depth of water in three culverts that discharge into Hopedale Harbour and recording the water velocity in the centre of each culvert just below mid-depth (i.e., at 0.6 times the total depth) with the electronic flow meter device (Global Flow Probe, Model FP211). As a back-up, the wetted width of the stream and water depth at three locations (at ¼, ½ and ¾ wetted width) were also measured approximately 10 m upstream of the culverts. The stream flow at the ODP sampling location was calculated using the following equation:

$$Q_{stream} = V_{culvert1}A_{culvert1} + V_{culvert2}A_{culvert2} + V_{culvert3}A_{culvert3}$$

Where: Q_{stream} = Stream discharge (m^3/s)

$V_{culvert}$ = Velocity (m/s)

$A_{culvert}$ = Flow area for a partially filled culvert (m^2)
= $d^2/8*(\theta - \sin\theta)$ for a culvert that is < half full

θ = Internal angle (radians) = $2\cos^{-1}(1-2y/d)$

d = Culvert diameter = 1 m for culvert1, culvert2 and culvert3

y = Flow depth (m)

6.3 Laboratory Analytical Results

TSS, Turbidity and PCBs in Water

Table E.11 in Appendix E presents the calculated flow rates for each location during each monitoring event. Analytical results of TSS, turbidity, and PCBs are also presented in Table E.7, Appendix E. The corresponding Maxxam Analytics reports are provided in Appendix F.

The flow rates at the ODP monitoring station (located downstream of Old Dump Pond) ranged from 0.002 m^3/s (August 15 and 22, 2012) to 0.109 m^3/s (October 3, 2012). Total suspended solids in the water samples collected from Old Dump Pond ranged from 1.4 mg/L (July 18, 2012) to 7.2 mg/L (August 22, 2013) while the turbidity ranged from 1.1 NTU (September 5, 2012) to 4.6 NTU (November 3, 2012). PCBs were detected during one sampling event at this location in 2012 (0.064 µg/L July 18, 2012).

The flow rates at the Harbour monitoring station (located immediately upstream of the outfall to Hopedale Harbour) ranged from 0.004 m^3/s (August 22 and 29, 2012) to 0.064 m^3/s (October 3, 2012). Total suspended solids in the water samples collected from the Harbour monitoring station ranged from 1.4 mg/L (July 22, 2012) to 6.0 mg/L (August 29, 2012) while the turbidity ranged from 0.1 NTU (August 15, 2012) to 4 NTU (October 3, 2012). PCBs were detected during six (6) sampling events in 2012 (July 18, July 22, August 10, August 15, August 22 and October 3, 2012) at concentrations ranging from 0.034 µg/L to 0.061 µg/L.

7.0 CONCLUSIONS

Stantec Consulting Ltd. conducted additional sampling of environmental media in freshwater and marine environments near the Former U.S. Military Site in Hopedale, NL in 2012 and 2013. Results of the sampling program are summarized below:

Harbour Delineation

- A total of 23 grab sediment samples were collected from Hopedale Harbour to provide further delineation of PCB concentrations in harbour sediments surrounding the wharf and in the outer harbour. PCBs were detected in each of the sediment samples at concentrations ranging from 0.02 mg/kg to 0.94 mg/kg.
- The harbour plan showing PCB concentration contours was updated with the results of the 2012 and 2013 sampling and is provided in Appendix A (Drawing No. 121411777.610-EE-03). The harbour plan shows the estimated extent of sediment with concentrations exceeding the CCME marine PEL of 0.189 mg/kg.
- A total of 10 grab sediment samples were collected from a variety of areas throughout Hopedale Harbour to characterize grain size distribution. Results indicated that the finest sediments are located near the shoreline in the inner harbour and within the cove located south of the airstrip (SILT with sand). Sediments in the outer harbour are slightly coarser (sitly

sand) and sediments off the tip of the air strip and deeper waters in the channel west of Ellen Island contain the highest percentage of coarse material (silty sand with gravel).

- A total of 50 water samples were collected along the sill separating the inner harbour from the outer harbour during rising and falling tides. Each sample was submitted for TSS and VSS. The five (5) samples containing the highest TSS concentrations were submitted for PCB analysis. TSS levels in water were low; therefore, measurable levels of PCBs were not detected in the water column separating the inner and outer harbour.
- The TSS portion of the water samples contained an average of 59 % volatile content (i.e., organic matter), where detected.

Old Dump Pond

- Sediments in Old Dump Pond were characterized using probing techniques and visual inspections of core sediment samples. Soft sediments generally ranged from 0.3 m to 0.6 m in thickness, with slightly less sediment near the northeastern shoreline of the pond and slightly more sediment near the southeastern shoreline of the pond. Sediment generally consisted of fine grained material overlying coarser gravel. An abundance of submerged, partially buried metal debris was observed along the eastern side of the pond, near the outfall. It is believed that this buried debris may have influenced soft sediment depth estimates in this area.
- The water depth in the center of Old Dump Pond ranged from approximately 0.8 m to 1.2 m.
- Undisturbed sediment core samples were collected from 17 locations in Old Dump Pond (ODP-C1 to ODP-C17). Cores were sectioned to provide vertical delineation information on total PCB and petroleum hydrocarbon concentrations.
- Based on the core sampling results, PCBs are generally present near the sediment surface and extend to a maximum depth of 15 cm. PCBs were not vertically delineated at core sample locations C2 (maximum sample depth of 0.10 m), C4 (maximum sample depth of 0.15 m), C14 (maximum sample depth of 0.10 m), C15 (maximum sample depth of 0.10 m) and C17 (maximum sample depth of 0.10 m).
- Modified TPH was detected in select sediment samples at concentrations ranging from 41 mg/kg to 20,000 mg/kg. With the exception of ODP-C7B-01, all the detected concentrations of modified TPH exceeded the Tier I Ecological Screening Level (ESL) for the Protection of Freshwater and Marine Aquatic Life (Table 4) for typical sediment (43 mg/kg). The concentration of modified TPH in sample ODP-C8AB-01 (20,000 mg/kg) also exceeded the Tier I PSSL (Table 5a) for soil ingestion on a residential site with non-potable groundwater, coarse grained soil and fuel oil impacts (8,600 mg/kg). BTEX parameters were not detected in any of the sediment samples analyzed.
- Of note is that sample ODP-C8AB-01 that contained an elevated concentration of TPH (20,000 mg/kg resembling the weathered fuel oil/lube oil range) also contained a particularly elevated concentration of PCBs (90 mg/kg).

Big Lake

- A total of 42 fish were caught in Big Lake and were submitted for analysis total PCBs in whole fish (bones in), fillet (muscle), eggs and/or liver. Fish samples collected in 2013 were also submitted for analysis of crude fat. PCBs were detected in 22 of the 34 fillet samples, 1 of 1 egg samples, 1 of 2 liver samples and 0 of 8 whole fish samples. The highest detected concentration of PCBs in fish samples collected by Stantec in 2012 and 2013 was 0.35 mg/kg (20120924NET3A – brook trout fillet sample). Crude fat concentrations ranged from 1.9 % to 11 % in whole fish and fillet samples.
- A total of 22 sediment samples were collected from Big Lake and were submitted for analysis of total PCBs. Sediment samples collected in 2013 were also submitted for analysis of TOC. PCBs were not detected in any of the sediment samples (RDL = 0.05 mg/kg in 2012 and 0.01 mg/kg in 2013). TOC concentrations in sediment ranged from 22 g/kg to 120 g/kg.
- A total of 3 berry samples (red berries and black berries) were collected along the drainage channel located downgradient of the BMEWS site that empties into Big Lake and were submitted for analysis of total PCBs. PCBs were not detected above the RDL of 0.05 mg/kg in any of the berry samples.

Ussiranniak Lake

- A total of 20 fish were retained from Ussiranniak Lake and were submitted for analysis total PCBs and crude fat in fillet (muscle) liver. PCBs were detected in1 of 20 fillet samples (20130924NET8A-FILLET – 0.11 mg/kg) and 1 of 6 liver samples (20130924NET8G-LIVER – 0.071 mg/kg). Crude fat concentrations ranged from 1.4 % to 16 % in fillet and liver samples.
- A total of 3 sediment samples were collected from Ussiranniak Lake and were submitted for analysis of total PCBs and TOC. PCBs were not detected above the RDL of 0.01 mg/kg in the sediment samples. TOC concentrations ranged from 6.5 to 21 g/kg.

Flux Study

- Flux monitoring including measurements of flow, total suspended solids, turbidity, and PCB concentrations was conducted on periodically from early-July to early-November 2012. Low levels of PCBs were detected in surface water immediately upstream of the outfall to Hopedale Harbour during 6 of 13 sampling events in 2012 at concentrations ranging from 0.034 µg/L to 0.061 µg/L.

8.0 CLOSURE

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

CLOSURE
April 16, 2014

This report provides an evaluation of selected environmental conditions associated with the identified portion of the property that was assessed at the time the work was conducted and is based on information obtained by and/or provided to Stantec at that time. There are no assurances regarding the accuracy and completeness of this information. All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

The opinions in this report can only be relied upon as they relate to the condition of the portion of the identified property that was assessed at the time the work was conducted. Activities at the property subsequent to Stantec's assessment may have significantly altered the property's condition. Stantec cannot comment on other areas of the property that were not assessed.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report, and are based solely on the scope of work described in the report, the limited data available and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report.

The locations of any utilities, buildings and structures, and property boundaries illustrated in or described within this report, if any, including pole lines, conduits, water mains, sewers and other surface or sub-surface utilities and structures are not guaranteed. Before starting work, the exact location of all such utilities and structures should be confirmed and Stantec assumes no liability for damage to them.

The conclusions are based on the site conditions encountered by Stantec at the time the work was performed at the specific testing and/or sampling locations, and conditions may vary among sampling locations. Factors such as areas of potential concern identified in previous studies, site conditions (e.g., utilities) and cost may have constrained the sampling locations used in this assessment. In addition, analysis has been carried out for only a limited number of chemical parameters, and it should not be inferred that other chemical species are not present. Due to the nature of the investigation and the limited data available, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire site. As the purpose of this report is to identify site conditions which may pose an environmental risk; the identification of non-environmental risks to structures or people on the site is beyond the scope of this assessment.

CLOSURE
April 16, 2014

Should additional information become available which differs significantly from our understanding of conditions presented in this report, Stantec specifically disclaims any responsibility to update the conclusions in this report.

This report was prepared by Anna Roy, B.Sc.E., MIT and reviewed by Jim Slade, P.Eng., P.Geo.

Respectfully submitted,

AIVEK STANTEC LIMITED PARTNERSHIP

Anna Roy, B.Sc.E.
Environmental Engineer-In-Training

Jim Slade, P.Eng., P.Geo.
Team Leader – Environmental Remediation

9.0 REFERENCES

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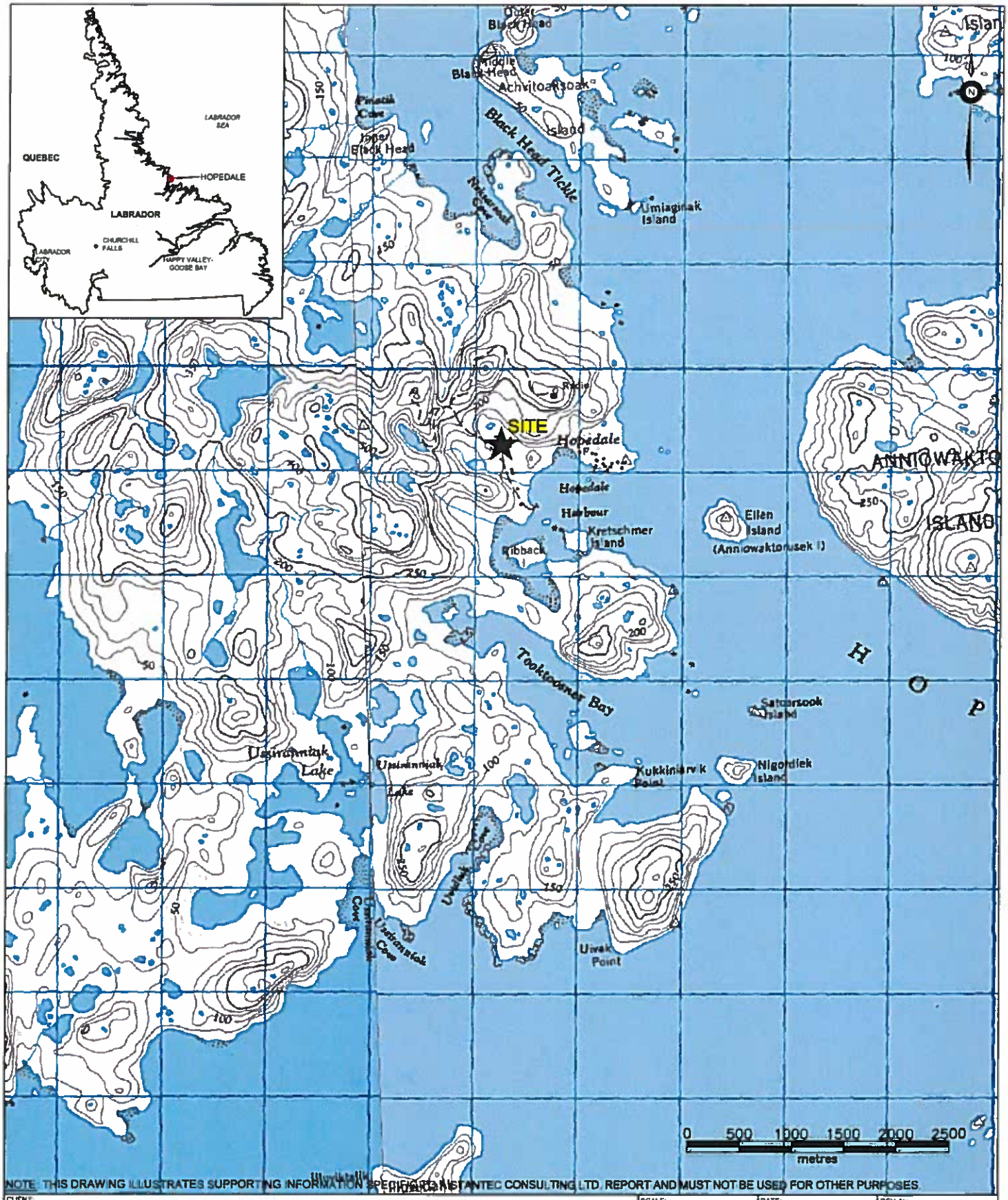
APPENDIX A

Drawings



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CLIENT:
NEWFOUNDLAND AND LABRADOR
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

PROJECT TITLE:
FRESHWATER AND MARINE SAMPLING IN SUPPORT OF THE MARINE STUDY - YEARS 2 AND 3, FORMER U.S. MILITARY SITE, HOPEDALE, NL

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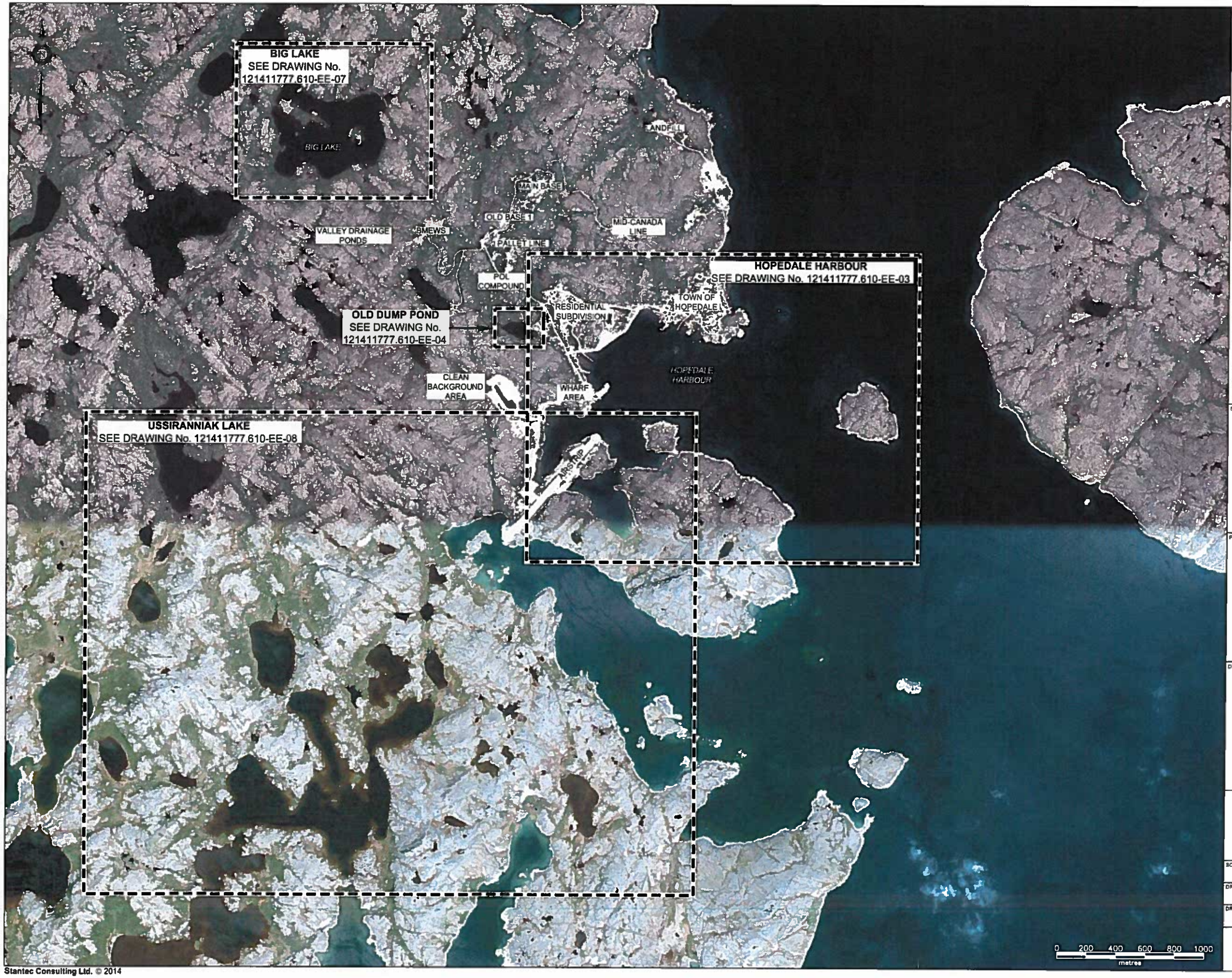

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Stantec Consulting Ltd.

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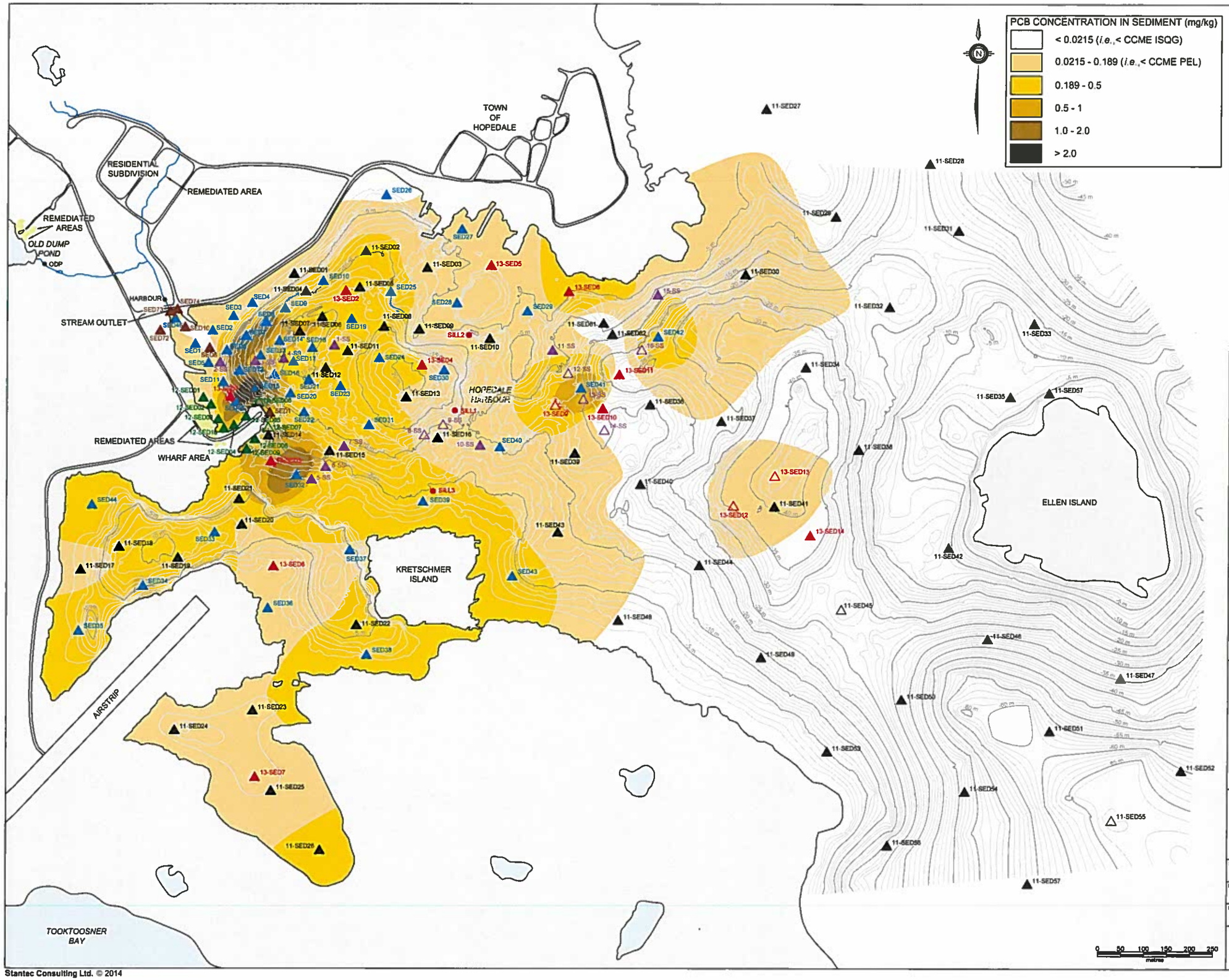

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PROJECT TITLE:

REMEDIAL OPTIONS PCB CONTAMINATED SEDIMENTS, HOPEDALE, LABRADOUR

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Stantec Consulting Ltd.

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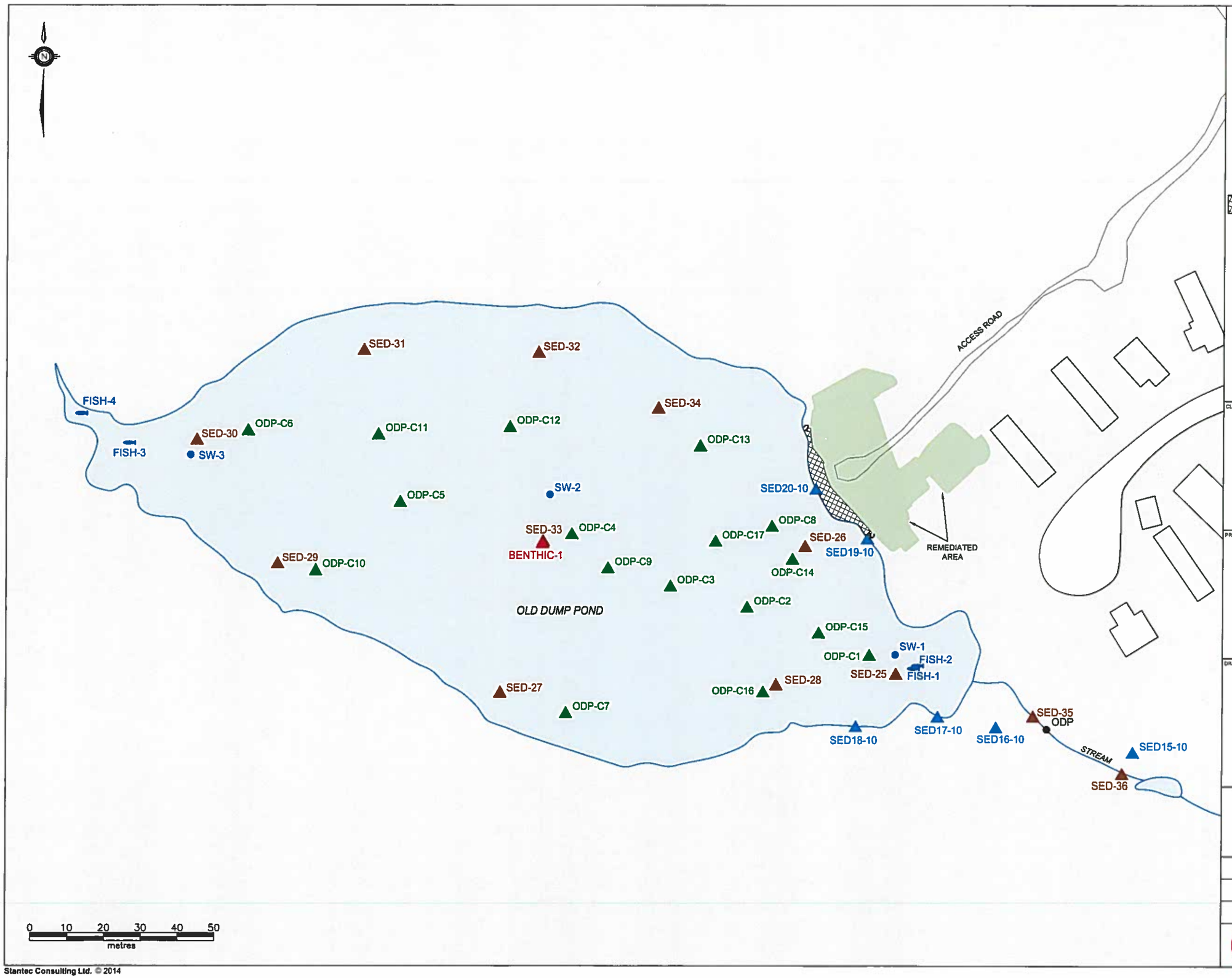

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FRESHWATER AND MARINE SAMPLING IN SUPPORT OF THE MARINE STUDY - YEARS 2 AND 3, FORMER U.S. MILITARY SITE, HOPEDALE, NL

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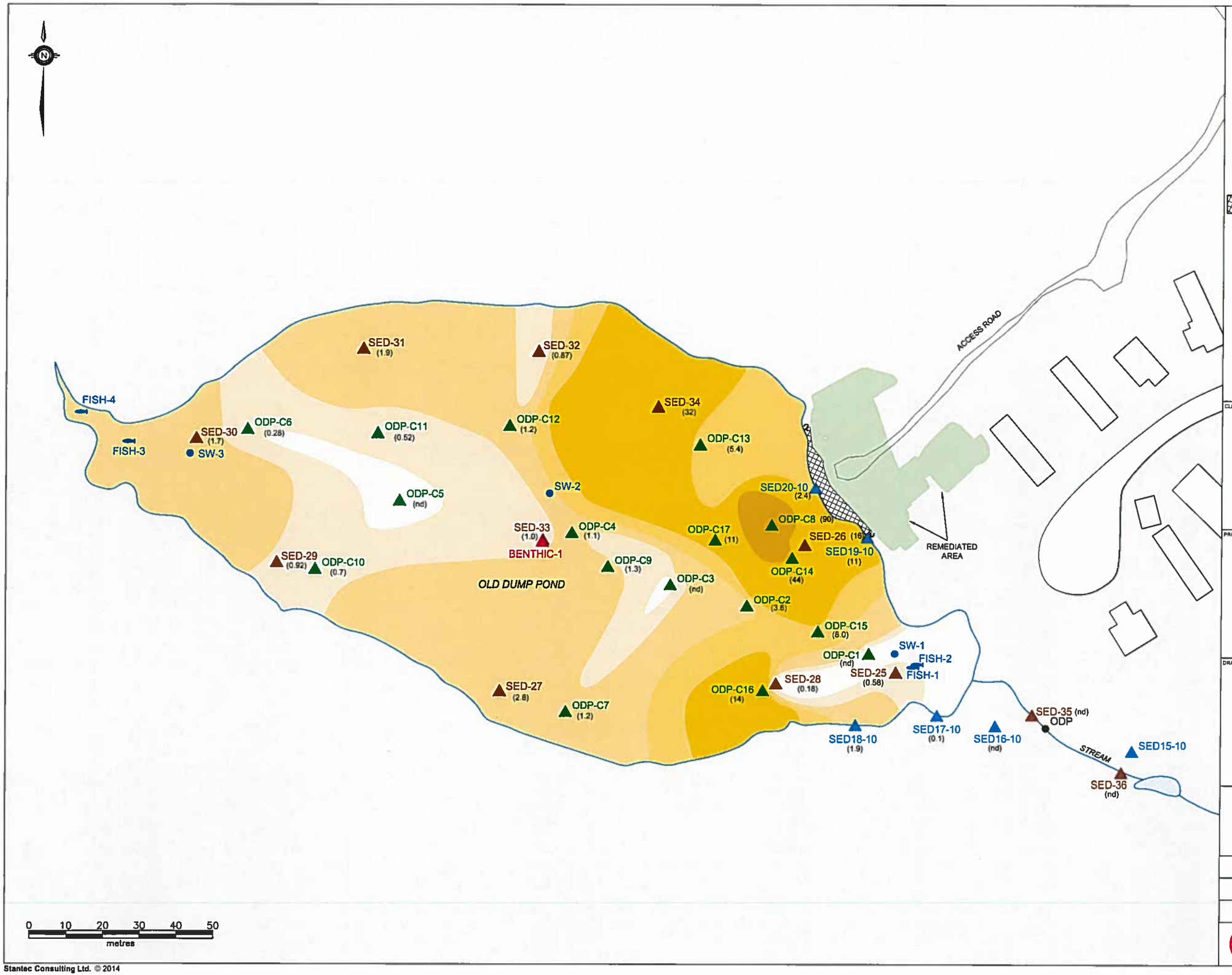

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- (#) PCB CONCENTRATION IN SEDIMENT (mg/kg)
- APPROXIMATE EXTENT OF PCB-IMPACTED SOIL REQUIRING REMOVAL

PCB CONCENTRATION IN SEDIMENT (mg/kg)

- < 0.277 (*i.e.*,< CCME PEL)
- 0.277 - 1
- 1 - 5
- 5 - 9 (TERRESTRIAL SSTL)
- 9 - 50
- > 50

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PROJECT TITLE:

FRESHWATER AND MARINE SAMPLING IN SUPPORT OF THE MARINE STUDY - YEARS 2 AND 3, FORMER U.S. MILITARY SITE, HOPEDALE, NL

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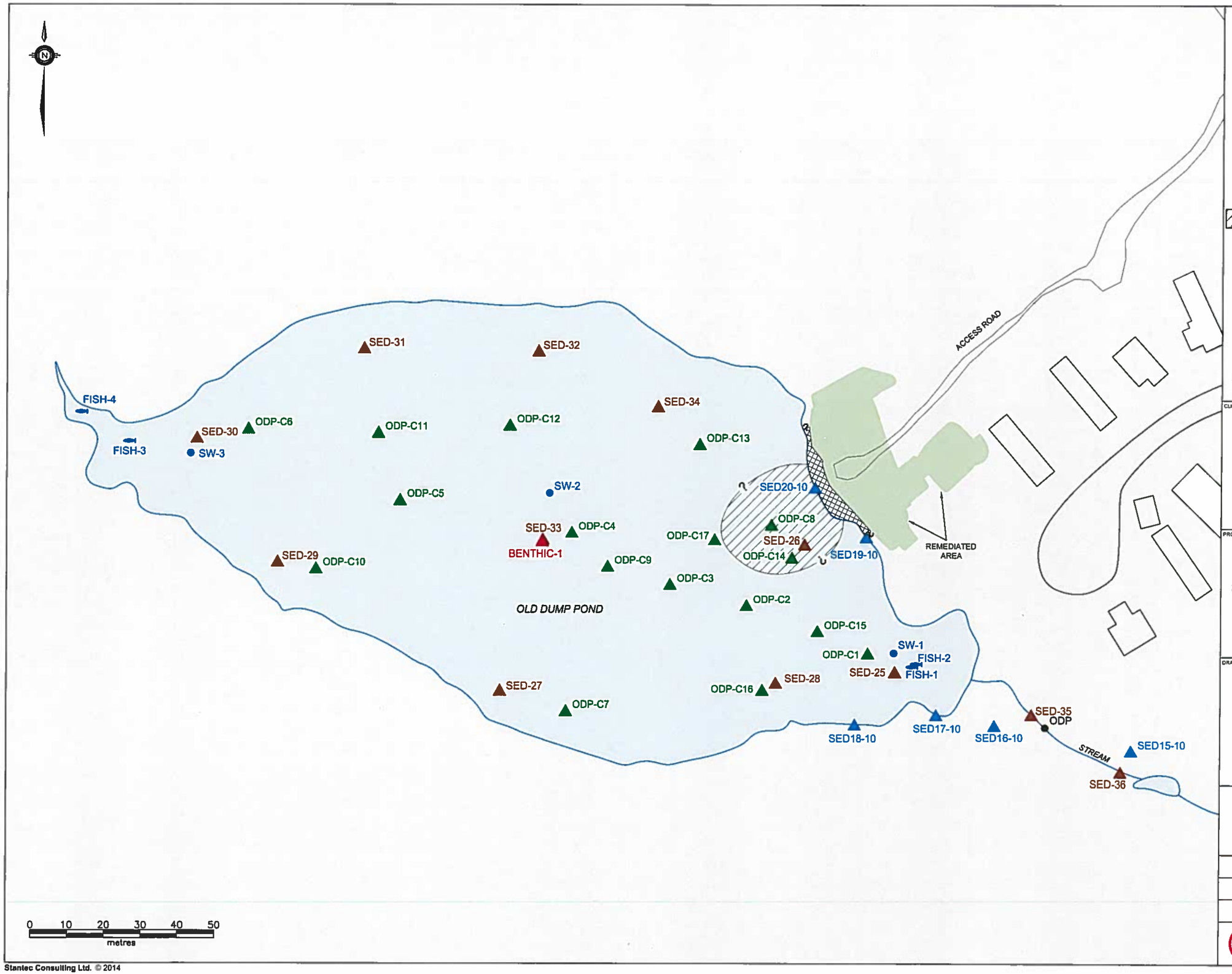

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FRESHWATER AND MARINE SAMPLING IN SUPPORT OF THE MARINE STUDY - YEARS 2 AND 3, FORMER U.S. MILITARY SITE, HOPEDALE, NL

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Stantec Consulting Ltd.

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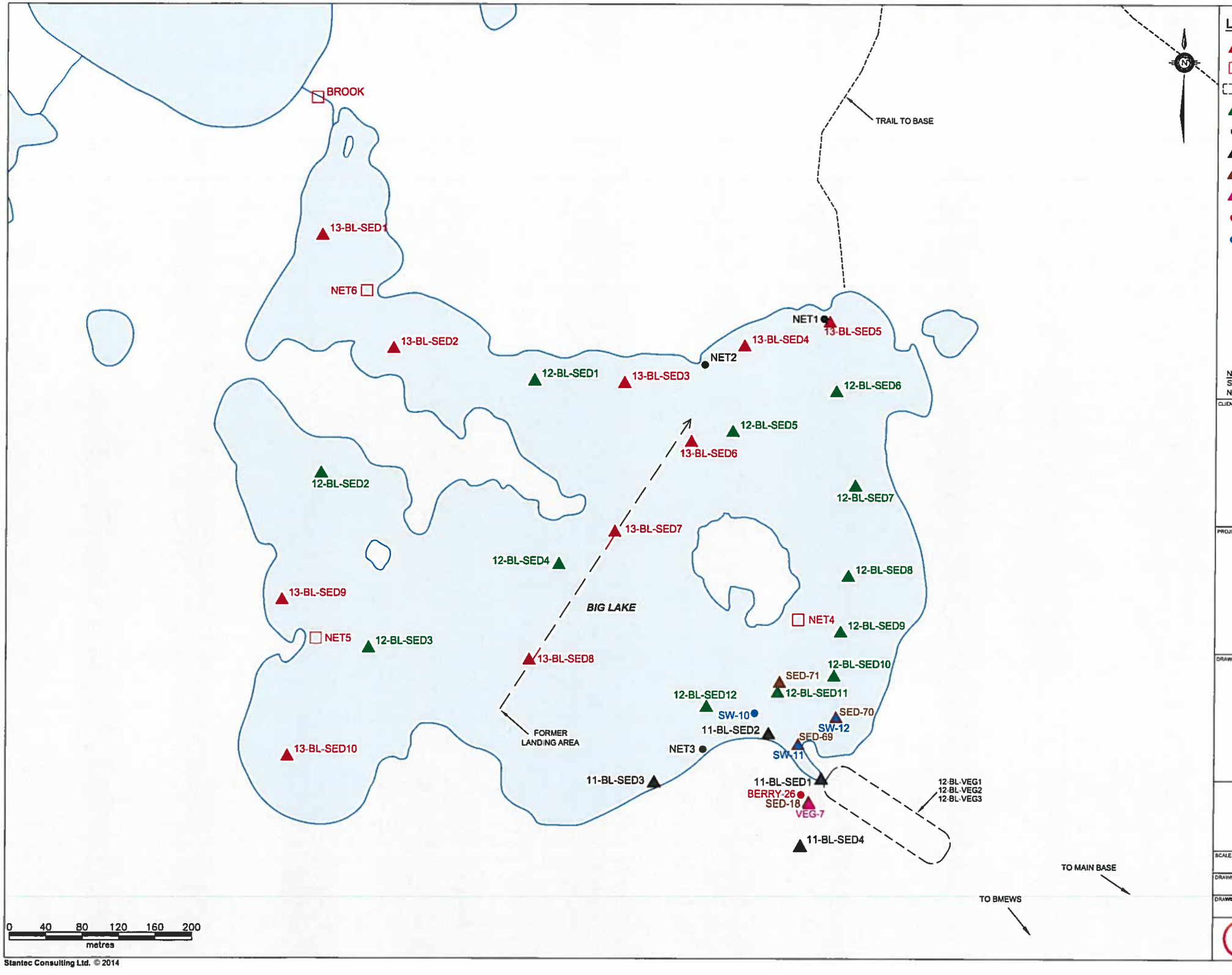

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PROJECT TITLE:

FRESHWATER AND MARINE SAMPLING IN SUPPORT OF THE MARINE STUDY - YEARS 2 AND 3, FORMER U.S. MILITARY SITE, HOPEDALE, NL

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Stantec Consulting Ltd.

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ENVIRONMENT AND CONSERVATION

PROJECT TITLE:

FRESHWATER AND MARINE SAMPLING IN SUPPORT OF THE MARINE STUDY - YEARS 2 AND 3, FORMER U.S. MILITARY SITE, HOPEDALE, NL

DRAWING TITLE:

SITE PLAN - USSIRANNIAK LAKE

Stantec Consulting Ltd.

SCALE:	DATE:	REV No
1:12,500	APR. 16, 2014	0
DRAWN BY: N.M.	EDITED BY: S.N.	CHECKED BY: A.R.
DRAWING No: 121411777.610-EE-08	CAD FILE: 121411777_610-EE-08.DWG	

Stantec

16APR14 11:00AM

APPENDIX B

Site Photographs

Photo 1 Hopedale Harbour, looking southeast from former military base.

Photo 2 Hopedale Harbour, looking north.

Photo 3 Wharf, looking southwest.

Photo 4 North side of Wharf, looking east.

Photo 1 SILL2 location.

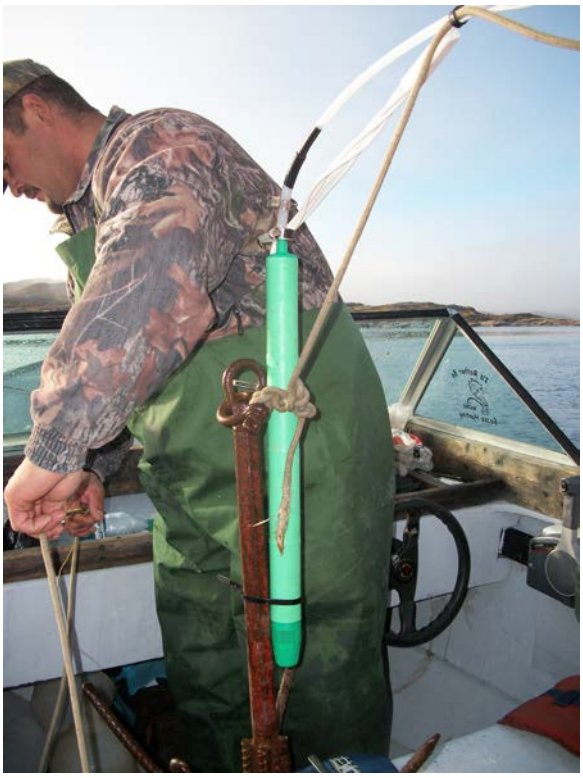

Photo 2 Hopedale Harbour, looking north.

Photo 3 Submersible pump attached to weight.

Photo 4 North side of Wharf, looking east.

Photo 5 Old Dump Pond, looking southeast. Orange snow-fence shows location of remediation on-land.

Photo 6 Remedial excavation adjacent to Old Dump Pond.

Photo 7 Submerged debris in Old Dump Pond.

Photo 8 Submerged debris in Old Dump Pond.

Photo 9 Core sediment sample.

Photo 10 Core sediment sample.

Photo 11 Set-up.

Photo 12 Core splitting.

Photo 13 Big Lake, looking north.

Photo 14 Location of samples 11-BL-SED1 and SED-69 in Big Lake.

Photo 15 Fish collected on September 23, 2012.

Top to bottom:
4 fish from Net 3 (3 brook trout and 1 char)
5 fish from Net 2 (5 brook trout)
2 fish from Net 1 (2 brook trout)

Photo 16 Fish collected from Net 1 on September 24, 2012 (1 brook trout).

Photo 17 Fish collected from Net 2 on September 24, 2012 (2 brook trout).

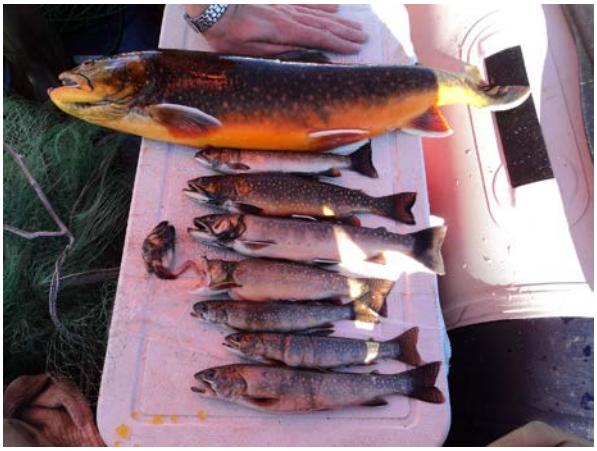

Photo 18 Fish collected from Net 3 on September 23, 2012 (8 brook trout).

Photo 19 Fish collected from Big Lake and the Brook on September 22, 2013 (9 brook trout and 1 char).

Photo 20 Fish collected from Big Lake on September 23, 2013 (9 brook trout and 1 char)

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Photo 17

Top to bottom:
20130924NET7A-FILLET
20130924NET7B-FILLET
20130924NET7C-FILLET
20130924NET7D-FILLET

4 livers composited to form
20130924NET7I-LIVER

Photo 18

Top to bottom:
20130924NET7E-FILLET
20130924NET7F-FILLET
20130924NET7G-FILLET
20130924NET7H-FILLET

4 livers composited to form
20130924NET7J-LIVER

Photo 19

Top to bottom:
20130924NET8A-FILLET
20130924NET8B-FILLET
20130924NET8C-FILLET

3 livers composited to form
20130924NET8G-LIVER

Photo 20

Top to bottom:
20130924NET8D-FILLET
20130924NET8E-FILLET
20130924NET8F-FILLET

3 livers composited to form
20130924NET8H-LIVER

Photo 17 Top to bottom:
20130924NET9A-FILLET
20130924NET9B-FILLET
20130924NET9C-FILLET

3 livers composited to form
20130924NET9G-LIVER

Photo 18 Top to bottom:
20130924NET9D-FILLET
20130924NET9E-FILLET
20130924NET9F-FILLET

3 livers composited to form
20130924NET9H-LIVER

Photo 19 ODP flux sampling location, looking upstream.

Photo 20 July 18, 2012 flux samples from ODP sampling location, showing clear water.

Photo 21 HARBOUR flux sampling location, looking upstream.

Photo 22 HARBOUR flux sampling location, looking downstream

APPENDIX C

Atlantic RBCA Checklists

SITE ASSESSMENT & TIER I/II TABLE CHECKLIST

Site Location:	Old Dump Pond, Hopedale, NL
Site Professional:	Jim Slade, P.Eng., P.Geo.
Date:	April 16, 2014

METHOD USED	
Tier I RBSL	
Tier II PSSL	✓
Tier II SSTL	

Minimum Site Assessment Requirements		
Issue	**Yes Or No***	**Comment**
PID, owner, location identified	Yes	
Current and anticipated future land use identified	Yes	
Review of underground services as conduits	N/A	
Historical review completed	Yes	
Local groundwater use identified	Yes	
Adjacent land uses and receptors identified	Yes	
Ecological screening completed	Yes	
Soil and groundwater samples from all source areas obtained	No	Guidelines were used to assess sediment. Sediment samples were collected throughout pond. No surface water samples collected for TPH/BTEX.
Soil and groundwater impacts delineated to Tier I RBSLs for potential receptor (adjacent property receptor may be lower Tier I RBSLs)	Yes	(Sediment).
Groundwater flow direction and gradient established	Yes	(Surface water flow direction).
Combination of surface and sub-surface soil samples analyzed	Yes	(Sediment).
Free product observations made in soil and groundwater	Yes	No measurable free product on sediment or surface water. Sheening was observed on sediment at the ODP-C13 sampling location
Low lab detection level for benzene in soil if potable water area	N/A	
Grain size and organic carbon analysis completed on soil	No	Grain size analysis not conducted; used most critical guidelines.
TPH fractionation done on soil and water if calculating Tier II SSTL	N/A	Used Tier I RBSLs.
Scale site plan showing all relevant site features	Yes	
Receptor building characteristics obtained (storeys, floor condition, ceiling height, *etc*.)	N/A	
Mandatory Conditions		
Issue	**Yes or No***	**Comment**
Non-aqueous phase liquids not present in groundwater	Yes	No free product observed on surface water.
Potable water free of objectionable taste and odour	N/A	
Soils do not contain liquid and/or free petroleum product	Yes	No free product observed on sediment.
Residual hydrocarbons do not create objectionable odours or explosive conditions in indoor or outdoor air	Yes	
Surface soil not stained	N/A	
No dirt basement floors, sumps with dirt bottoms, *etc*.	Yes	No buildings.
Confirmed that correct TPH type selected in RBSL or PSSL Table	Yes	
Confirmed that correct soil type selected in RBSL or PSSL Table	Yes	Used most stringent.
Defaults Site Characteristics and Exposure Scenarios		
Issue	**Yes Or No***	**Comment**
Depth to groundwater approximately 3.0 metres	N/A	
Impacted soil thickness is less than 3.0 metres	Yes	
Default foundation crack fraction is appropriate	N/A	No buildings.
Default foundation thickness is appropriate	N/A	No buildings.
Two floors exist if using a residential scenario	N/A	
Hydrocarbon impacts above RBSL or PSSL Table soil values are not within 0.3 m of foundation walls or floor slab	Yes	
Confirmed that RBSL or PSSL Table criteria is correct for adjacent property receptors (i.e., use residential at property line if adjacent property is residential)	Yes	
Where exposure pathways have been eliminated at Tier II, detailed explanation provided in report explain why pathways are not relevant	N/A	
Where PSSLs tables are used based on elimination or control of a pathway that could be reopened by changes in site use, this condition is specified as a limitation in the report	N/A	Indoor air and soil leaching pathways will never become operable in pond.
Where Tier II SSTLs have been calculated by changing default values, the report includes the parameter changed, the default value, the site-specific value used, and the rationale and/or detailed written justification	N/A	

* If no, indicate in comment section if and where in report the issue is addressed.
Consult the Best Management Practices (Appendix 2) for additional details.

SUMMARY TABLE - RESULTS OF ECOLOGICAL SCREENING PROTOCOL FOR PETROLEUM IMPACTED SITES

Instructions to Practitioners: This table is intended to summarize the results of the Ecological Screening Protocol and must be completed in consultation with guidance provided in the protocol. Users should include this completed table in their Environmental Assessment or Closure Report. Details and explanations are to be provided in the body of the Report.

Ecological Screening Component		Yes or No	Report name and location of details and explanations
Part I - Identification of petroleum hydrocarbons in media			
1.	Do site characterization data indicate the presence of PHC in site surface soil (depth < 1.5 m) above the appropriate screening levels in Tables 1a and 1b?	N/A	
2.	Do site characterization data indicate the presence of PHC in shallow site groundwater (depth < 3.0 m) above appropriate ecological screening levels that were derived for the protection of terrestrial plants and soil invertebrates in contact with site groundwater in Table 2?	N/A	
3.	Do existing site characterization data indicate the presence of PHC in site groundwater above appropriate ecological screening levels derived for the protection of aquatic receptors in Table 3a/3b?	N/A	
4.	Do site characterization data indicate the presence of PHC in site surface water above the appropriate screening levels in Table 3?	Unknown	No surface water sampling conducted (Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3, Stantec, 2014)
5.	Does site characterization indicate the presence of PHC in on-site or adjacent sediments above the appropriate screening levels in Table 4?	Yes	See Table D.3 in Appendix D (Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3, Stantec, 2014)
IF ALL ANSWERS IN PART I ARE"NO" THEN NO FURTHER ACTION IS REQUIRED			
Part II - Identification of habitat and ecological receptors			
1.	Are the following habitat types or conditions present on the site or proximate to site within a minimum of 200 metres? • wetland habitats • aquatic habitats • forested habitats • grassland habitats • provincial/national parks or ecological reserves • known rare, threatened or endangered species • other known critical or sensitive habitat • other local or regional receptor or habitat concerns	Yes	Aquatic habitat.
2a.	Are there visible indications of stressed vegetation on the site?	No	Site observations
2b.	Is there evidence that the site vegetation community differs from what would be expected?	No	Site observations.
2c.	Are there indications that the site soil cannot support a soil invertebrate community?	N/A	

Ecological Screening Component	Yes or No	Report name and location of details and explanations
3. Is there evidence that terrestrial plants in the habitats above are likely to be in root contact with site groundwater above screening levels?	N/A	
4. Would wildlife receptors be expected to forage on or near the contaminated areas of the site?	No	Assessed contaminated area is underwater.
Part III - Identification of exposure pathways for ecological receptors		
1a. Is it reasonable to conclude that site hydrocarbons in surface soil with concentrations exceeding applicable screening levels, will come into contact with terrestrial plants and invertebrates in a suitable habitat?	N/A	
1b. Is it reasonable to conclude that site hydrocarbons in surface soil with concentrations exceeding applicable screening levels, will come into contact with mammalian, avian or herptile terrestrial receptors within an agricultural land use in a suitable habitat?	N/A	
2. Is it reasonable to conclude that dissolved hydrocarbons in site groundwater with concentrations exceeding applicable screening levels will come into contact with plants or soil invertebrates in a suitable habitat?	No	No impacts anticipated in groundwater.
3. Is it reasonable to conclude that dissolved hydrocarbons in site groundwater with concentrations exceeding applicable screening levels will come into contact with aquatic receptors or aquatic receptor habitat?	No	No impacts anticipated in groundwater.
4. Is it reasonable to conclude that site petroleum hydrocarbon contamination could impact aquatic receptors or aquatic habitat in surface water bodies via the following: a. surface runoff (*e.g.*, erosion, windblown contaminants) b. groundwater flow c. preferential overland flow pathways (*e.g.* drainage ditch, slope, swale) d. preferential subsurface flow pathways (*e.g.* culvert, trench, sewer line, pipelines, swales) such that aqueous media concentrations would potentially exceed surface water and/or sediment quality screening levels?	Yes	
Ecological Screening Component	**Yes or No**	**Report name and location of details and explanations**
5. Are there site specific conditions present, which were not considered in any section above that should require further ecological assessment?	Yes	Potential impacts to aquatic receptors in the pond.
IF ALL ANSWERS IN PART III ARE"NO" THEN NO FURTHER ACTION IS REQUIRED		

APPENDIX D

Fishing Permits

Fisheries and Oceans Canada | Pêches et Océans Canada

2012

Licences / Conditions and Vessel Registration(s)

This licence is issued under the authority of the Minister of Fisheries and Oceans Canada, and is not transferable.
This document authorizes the licence holder to engage in fishing and related activities on the Atlantic coast of Canada subject to the provisions of the Fisheries Act and Regulations.

Permis / conditions et immatriculation des bateaux

Ce permis est délivré sous l'autorité du ministre des Pêches et des Océans du Canada et n'est pas transférable.
Le présent document autorise le détenteur de permis à pêcher et à s'adonner à des activités connexes sur la côte Atlantique du Canada sous réserve des dipositions de la Loi et sur les pêches et des règlements afférents.

EXPERIMENTAL LICENCE

NL-1415-12

Stantec Consulting Ltd
607 Torbay Road
St. John's, NL A1A 4Y6

Contact: Anna Roy (709) 576-1458)

Pursuant to Section 52, of the Fishery (General) Regulations, permission is hereby granted to **Stantec Consulting Ltd.**, or their designate(s), to sample fish subject to the following conditions:

1. This licence is effective from **August 21, 2012 to October 30, 2012.**

2. **Purpose:** The objective is to collect biota from Hopedale Harbour, reference/background marine locations and freshwater lakes (including, but not limited to, Big Lake and Ussiranniak Lake) in the vicinity of the community of Hopedale in order to determine body burden of the PCBs in freshwater and marine finfish and mammals in the vicinity of the Former U.S. Military Base.

3. **Location of Activity:** Hopedale, NL (see attached map)

4. **Species and Quantity:** Maximum of the following: 30 Rock Cod 30 Shorthorn Sculpin 50 Flatfish 50 Herring 50 Capelin 30 Arctic Char 30 Brook Trout

   Note: all species to be killed upon collection

   Tissue samples are to be collected from animals that have already been harvested by local hunters for food purposes:

   Harbour Seals – tissue samples from up to 10 animals
   Bottlenose Dolphin – tissue samples from up to 10 animals
   Harbour Porpoise – tissue samples from up to 10 animals

5. **Gear to be used:** Rock Cod, sculpin, flatfish, herring, and capelin will be collected by rod and reel/baited hook and tended gill nets (1 inch to 3.5 inch). Charr and brook trout will be collected along the shoreline using tended gill nets (1 inch to 3.5 inch). All gear is to be marked with the Experimental # **NL-1415-12.**

6. **Type of Biological Sampling:** Fillet, liver and whole fish samples will be submitted for analysis of PCB and lipid content.

7. **Designates:** Field crew has not yet been determined, but will consist of at least two of the following individuals: Robert Perry, Randy Perry, Jim Slade, Jarred Saunders, Brian Lane, Steve Moores, Amy Bradbury, Jonathan Murphy, Anna Roy

8. If there are any unusual mortalities or diseases identified, notify: Dr. John Brattey, Fish Health Protection Officer, Fisheries and Oceans Canada, PO Box 5667, St. John's, NL, A1C 5X1.

9. An electronic report of catch information shall be sent to Chuck Bourgeois, Salmoniods Section, Oceans and Environment Branch, Fisheries and Oceans Canada. This report shall reference

THIS DOCUMENT IS NOT A VALID LICENCE / REGISTRATION UNLESS SIGNED BY AN AUTHORIZED DFO AGENT

CE DOCUMENT N'EST PAS VALIDE S'IL N'EST PAS SIGNÉ UN AGENT AUTHORISÉ DU MPO.

Canada

REGIONAL MANAGER - LICENSING SERVICES
FISHERIES MANAGEMENT BRANCH

GESTIONNAIRE RÉGIONAL
SERVICES D'AUTORISATION

Licences / Conditions and Vessel Registration(s)

This licence is issued under the authority of the Minister of Fisheries and Oceans Canada, and is not transferable.
This document authorizes the licence holder to engage in fishing and related activities on the Atlantic coast of Canada subject to the provisions of the Fisheries Act and Regulations.

Permis / conditions et immatriculation des bateaux

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Le présent document autorise le détenteur de permis à pêcher et à s'adonner à des activités connexes sur la côte Atlantique du Canada sous réserve des dispositions de la Loi et sur les pêches et des règlements afférents.

EXPERIMENTAL LICENCE

NL-1415-12

Stantec Consulting Ltd
607 Torbay Road
St. John's, NL A1A 4Y6

Contact: Anna Roy (709) 576-1458)

Licence # NL-1415-12 and shall include the area fished, the dates fished, numbers caught, gear type, results of sampling, etc. for each species and shall be submitted within 90 days of the licence end date.

10. Prior to activities taking place, the Supervisor, Conservation and Protection shall be notified **(Goose Bay, 896-6153)**.

11. Fish caught under the authority of this licence cannot be sold or retained for any other purposes other than those stated in this licence.

12. Requests for amendments to this licence (i.e. changes or additions to species, quantities, gear etc.) shall be made in writing to Gladys Tucker, A/Regional Manager – Licensing Services, Fisheries and Oceans Canada, P.O. Box 5667, St. John's NL A1C 5X1 (fax: 772-5133, phone: 772-3687) or email experimentallicences@dfo-mpo.gc.ca

13. This licence shall be carried at all times and shall be produced for inspection upon request of a Fishery Officer.

Canada

REGIONAL MANAGER - LICENSING SERVICES
FISHERIES MANAGEMENT BRANCH

GESTIONNAIRE RÉGIONAL
SERVICES D'AUTORISATION

Fisheries and Oceans Canada | Pêches et Océans Canada

2012

Licences / Conditions and Vessel Registration(s)

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This document authorizes the licence holder to engage in fishing and related activities on the Atlantic coast of Canada subject to the provisions of the Fisheries Act and Regulations.

Permis / conditions et immatriculation des bateaux

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Le présent document autorise le détenteur de permis à pêcher et à s'adonner à des activités connexes sur la côte Atlantique du Canada sous réserve des dipositions de la Loi et sur les pêches et des règlements afférents.

EXPERIMENTAL LICENCE

NL-1415-12

Stantec Consulting Ltd
607 Torbay Road
St. John's, NL A1A 4Y6

Contact: Anna Roy (709) 576-1458)

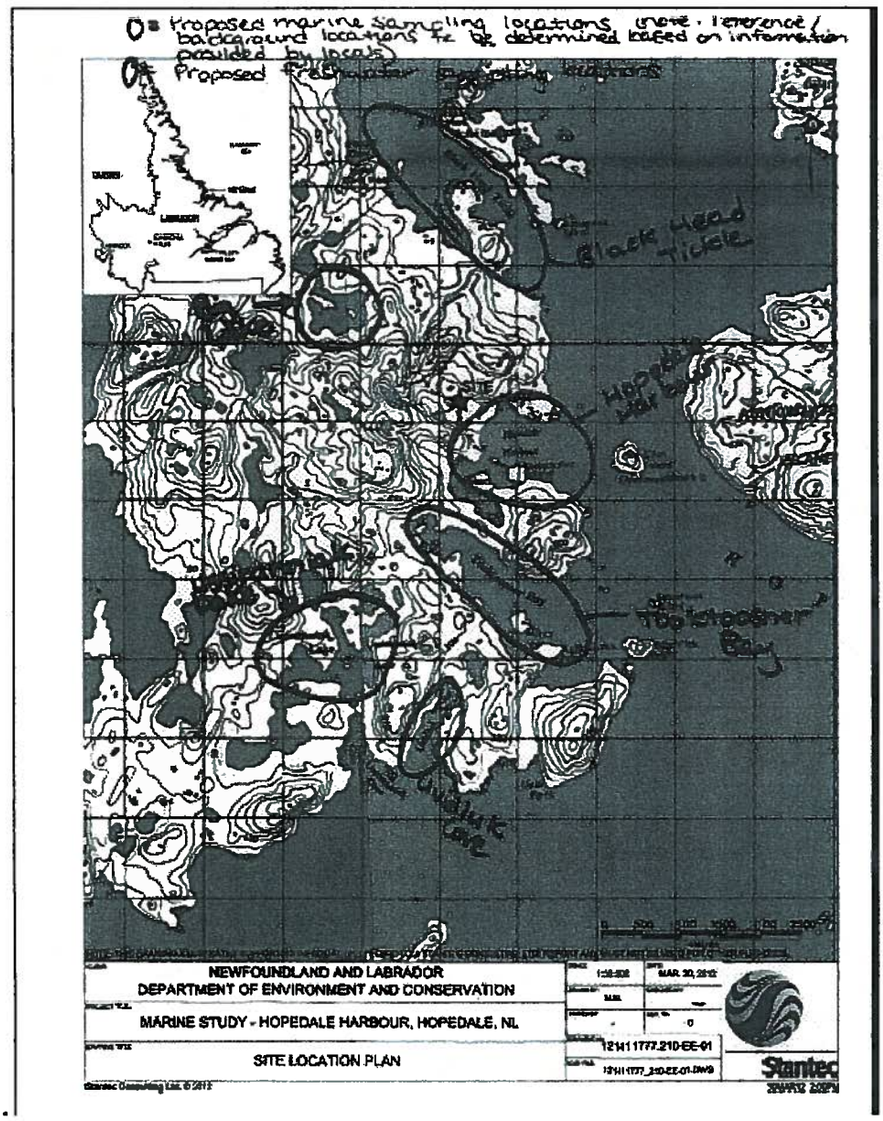

Figure 1.

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FISHERIES MANAGEMENT BRANCH

GESTIONNAIRE RÉGIONAL
SERVICES D'AUTORISATION

Fisheries and Oceans Canada | Pêches et Océans Canada

2012

Licences / Conditions and Vessel Registration(s)

This licence is issued under the authority of the Minister of Fisheries and Oceans Canada, and is not transferable.
This document authorizes the licence holder to engage in fishing and related activities on the Atlantic coast of Canada subject to the provisions of the Fisheries Act and Regulations.

Permis / conditions et immatriculation des bateaux

Ce permis est délivré sous l'autorité du ministre des Pêches et des Océans du Canada et n'est pas transférable.
Le présent document autorise le détenteur de permis à pêcher et à s'adonner à des activités connexes sur la côte Atlantique du Canada sous réserve des dipositions de la Loi et sur les pêches et des règlements afférents.

SPECIES AT RISK ACT (SARA)
SECTION 73 SCIENTIFIC PERMIT
NORTHERN AND SPOTTED WOLFFISH AND LEATHERBACK TURTLE

Experimental Licence
NL-1415-12

Stantec Consulting Ltd
607 Torbay Road
St. John's NL A1A 4Y6

Contact: Anna Roy (709) 576-1458

This Permit is issued to you under the authority of the Minister of Fisheries and Oceans pursuant to Section 73 of the ***SPECIES AT RISK ACT (SARA).***

This permit authorizes you, subject to the following conditions, to engage in fishing activities that
(a) are conducted under licences issued to you under the *Fisheries Act*, and
(b) incidentally kill, harm, harass, capture or take **Northern Wolffish** (*Anarhichas denticulatus)* **or Spotted Wolffish** (*Anarhichas minor*) or **Leatherback Turtle** (*Dermochelys coriacea*).

Pursuant to subsection 73(2) of SARA, the following conditions apply to this permit:

1. This permit is only valid while fishing is conducted under the Scientific (Experimental) licences issued to you under the Fisheries Act for any of the following species in NAFO Division 2GHJ.

Identify species:

Multiple Species

2. You are authorized to retain Northern Wolffish and Spotted Wolffish and Leatherback Turtle for the purposes of collecting scientific data. However, should you not wish to retain Wolffish or Leatherback Turtle for the collection of scientific data, then you should forthwith return them to the place from which they were taken, and where they are alive, in a manner that causes them the least harm. You are also authorized to retain wolffish for the purpose of providing them to Science Branch, DFO (Mark Simpson).

3. You shall ensure that this permit is attached to the fishing licences you have been issued for any of the species listed under item 1.

4. You are required to collect and subsequently report to DFO, Science Branch, NL Region the following information. This may be provided in the logbook or separately to DFO. PLEASE REPORT NORTHERN WOLFFISH AND SPOTTED WOLFFISH AND LEATHERBACK TURTLE SEPARATELY:
   a) The quantity and weight of each species caught
   b) The quantity and weight of each species retained
   c) Date of capture
   d) Location of capture
   e) Gear used

5. Unless amended, this permit is valid from August 21, 2012 to October 30 , 2012.

6. Within 60 days of the day and month of the expiry of this Permit, a completed Species at Risk Permit Regional Track Questionnaire referencing NL-1415-12, shall be completed and mailed, e-mailed or faxed to the Species at Risk Mar Office of Fisheries and Oceans Canada, Box 5667, St. John's NL A1C 5X1, email: SARANL-LEPTNL@DFO_MPO.g (709)772-3578

This licence is not a valid document unless signed by an authorized DFO agent.

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REGIONAL MANAGER - LICENSING SERVICES
FISHERIES MANAGEMENT BRANCH

GESTIONNAIRE RÉGIONAL
SERVICES D'AUTORISATION

Fisheries and Oceans Pêches et Océans

2013

EXPERIMENTAL LICENCE

NL-2069-13

Stantec Consulting Ltd
607 Torbay Road
St. John's, NL A1A 4Y6

Contact: Anna Roy (709) 576-1458)

Pursuant to Section 52, of the Fishery (General) Regulations, permission is hereby granted to **Stantec Consulting Ltd.,** or their designate(s), to sample fish subject to the following conditions:

Purpose: To collect fish from big lake and nearby reference background freshwater lake(s) in the vicinity of the community of Hopedale in order to determine body burden of PCBs in freshwater finfish in the vicinity of the Former U. S. Military base. The results of sampling will help to determine if a fish advisory is necessary for Big Lake (referred to locally as "NCO pond") because of elevated concentrations of PCBs above background levels.

1. This licence is effective from **September 17, 2013 to October 30, 2013.**

2. **Location of Activity:** Big Lake and/or Trout Lake, Hopedale, Labrador (see attached map).

3. **Species:** You are authorized to collect and retain a maximum of 30 Arctic Char, 30 Brook Trout and 30 (per species) of other captured species.

4. **Gear:** Rod and reel, with a baited hook and tended gillnets All set gear shall be marked with the Experimental # **NL-2069-13.**

5. **Designates:** Robert Perry, Jim Slade, Jarred Saunders, Carolyn Anstey-Moore, Anna Roy, and Jacqueline Gillis.

6. Fish caught under the authority of this licence cannot be sold or retained for any other purposes other than those stated in this licence.

7. If there are any unusual mortalities or diseases identified, notify: Dr. John Brattey, Fish Health Protection Officer, Fisheries and Oceans Canada, PO Box 5667, St. John's, NL, A1C 5X1.

8. An electronic report of catch information shall be sent to Carole Grant, Fisheries and Oceans Canada, PO Box 5667, St. John's, NL, A1C 5X1. This report shall reference Licence # NL-2069-13 and shall include the area fished, the dates fished, numbers caught, gear type, results of sampling, etc. for each species and shall be submitted within 90 days of the licence end date.

9. Prior to activities taking place, the Supervisor, Conservation and Protection shall be notified **(Goose Bay, 709-896-6153)**.

Canada

EXPERIMENTAL LICENCE

NL-2069-13

Stantec Consulting Ltd
607 Torbay Road
St. John's, NL A1A 4Y6

Contact: Anna Roy (709) 576-1458)

10. Requests for amendments to this licence (i.e. changes or additions to species, quantities, gear etc.) shall be made in writing to Licensing Services, Fisheries and Oceans Canada, P.O. Box 5667, St. John's NL A1C 5X1 (fax: 772-5133, phone: 772-4054) or email experimentallicences@dfo-mpo.gc.ca

11. This licence shall be carried at all times and shall be produced for inspection upon request of a Fishery Officer

Canada

Nunatsiavut
kavamanga Government

Nunamik amma Nunamiutanik

Lands and Resources

Permit to Access Labrador Inuit Lands

Application #: NG_____

Name: Stantec Consulting

Date of Birth: _____

Address: _____

Telephone: (___) _____

Hereby applies for access to Labrador Inuit Lands, specifically in the area of: Hopedale

for the period: July 3 2012 to Aug 15 2012

for the purpose of fishing capelin, herring.

I agree to the terms and conditions governing access to Labrador Inuit Lands as set out in the Labrador Inuit Land Claims Agreement under chapter 4 section 15.2.

Signature of Applicant

July 3 / 2012
Date

Permission is hereby granted to the Applicant to enter the Labrador Inuit Lands at the places and times and for the purposes set out above, subject to the terms and conditions below (or attached):

Approving Officer
Nunatsiavut Government

July 3 / 2012
Date

17 Sandbanks Road, PO Box 70, Nain, NL, Canada A0P 1L0 ▸ Tel: 709.922.2942 Fax: 709.922.2931 ▸ Email: nain_reception@nunatsiavut.com

Makkovik PO Box 92 Makkovik, NL A0P 1J0 Tel: 709.923.2365

Hopedale PO Box 91 Hopedale, NL A0P 1G0 Tel: 709.933.3777

Rigolet PO Box 47 Rigolet, NL A0P 1P0

Postville General Delivery

Happy Valley - Goose Bay

Nunatsiavut
kavamanga Government

Nunamik amma Nunamiutanik

Lands and Resources

Permit to Access Labrador Inuit Lands Application #: NG_____

Name: Stantec (Jared Saunders)

Date of Birth: _____

Address: _____

Telephone: ( ) 933-3752

Hereby applies for access to Labrador Inuit Lands specifically in the area of

Hopedale

for the period: July 29 2013 to Oct 31 2013

for the purpose of fishing

I agree to the terms and conditions governing access to Labrador Inuit Lands as set out in the Labrador Inuit Land Claims Agreement under chapter 4 section 15.2.

Signature of Applicant

29 July 2013
Date

Permission is hereby granted to the Applicant to enter the Labrador Inuit Lands at the places and times and for the purposes set out above, subject to the terms and conditions below (or attached):

Approving Officer
Nunatsiavut Government

July 29/2013
Date

17 Sandbanks Road, PO Box 70, Nain, NL, Canada A0P 1L0 • Tel: 709.922.2942 Fax: 709.922.2931 • Email: nain_reception@nunatsiavut.com

Makkovik PO Box 92 Hopedale PO Box 91 Rigolet Postville

APPENDIX E

Laboratory Analytical Summary Tables

Table E.1 Results of Laboratory Analysis of PCBs in Sediment - Grab Sampling, Hopedale Harbour
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sample ID	Total Polychlorinated Biphenyl (PCB)	Total Organic Carbon (TOC)
RDL	0.01	0.2 to 1
Units	mg/kg	g/kg
Criteria[1]	0.0215	-
Criteria[2]	0.189	-
2009 Sampling - Stantec		
SED-1	**0.44**	-
SED-8	**<0.05**	-
SED-10	**<0.1**	-
SED-72	**0.34**	-
SED-73	**0.14**	-
SED-74	**0.3**	-
2010 Sampling - Stantec		
SED 1	**0.08**	1.9
SED 2	**0.06**	3.5
SED 3	**0.12**	15
SED 4	**0.15**	10
SED 5	**0.03**	0.8
SED 555 (Field duplicate of SED 5)	**0.39**	1
SED 6	**1.6**	21
SED 7	**1.2**	23
SED 8	**1.4**	20
SED 9	**0.42**	17
SED 9 Lab-Dup	**0.4**	-
SED 10	**0.21**	10
SED 11	**0.4**	21
SED 12	**1.5**	23
SED 13	**0.93**	22
SED 14	**0.53**	23
SED 15	**2.6**	17
SED 16	**0.62**	17
SED 17	**0.31**	14
SED 18	**0.36**	20
SED 188 (Fied Duplicate of SED 18)	**0.96**	-
SED 19	**0.26**	13
SED 20	**0.32**	12
SED 21	**0.27**	14
SED 22	**0.16**	6.4
SED 23	**0.26**	8.3
SED 24	**0.57**	21
SED 24 Lab-Dup	**0.47**	21
SED 25	**0.26**	11
SED 26	<0.01	3.3
SED 27	**0.05**	2.5
SED 28	**0.04**	4.9
SED 29	**0.08**	14

Notes:
1 = Canadian Council of Ministers of the Environment (CCME) Interim Sediment Quality Guidelines (ISQGs) for marine sediment (2002)
2 = Canadian Council of Ministers of the Environment (CCME) Probable Effects Level (PEL) for marine sediment (2002)
RDL = Reportable Detection Limit for routine analysis
< ## = Not detected above RDL shown
Lab-Dup = Laboratory duplicate sample
Bold = Value exceeds CCME ISQG, or parameter not detected and elevated RDL exceeds the CCME ISQG
Shaded/ Bold = Value exceeds CCME ISQG and CCME PEL

Table E.1 Results of Laboratory Analysis of PCBs in Sediment - Grab Sampling, Hopedale Harbour
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sample ID	Total Polychlorinated Biphenyl (PCB)	Total Organic Carbon (TOC)
RDL	0.01	0.2 to 1
Units	mg/kg	g/kg
Criteria[1]	0.0215	-
Criteria[2]	0.189	-
2010 Sampling - Stantec (cont.)		
SED 299 (Field Duplicate of SED 29)	**0.4**	22
SED 30	**0.18**	7.9
SED 31	**0.26**	9.5
SED 32	**1.7**	13
SED 33	**0.31**	3.5
SED 34	**0.54**	18
SED 35	**0.34**	25
SED 355 (Field duplicate of SED 35)	**0.27**	23
SED 36	**0.05**	4.9
SED 37	**0.07**	5.4
SED 38	**0.36**	25
SED 39	**0.33**	4.7
SED 40	**0.11**	11
SED 41	**1.0**	14
SED 42	**0.37**	3
SED 43	**0.45**	3.3
SED 44	**0.31**	4
SED 45	**2.3**	21
SED 46	**0.35**	2.7
2011 Sampling - Stantec		
11-SED1	**0.07**	3.9
11-SED2	**0.30**	22
11-SED3	**0.10**	11
11-SED-DUP2 (Field duplicate of 11-SED3)	**0.11**	7.3
11-SED4	**0.40**	17
11-SED5	**0.23**	16
11-SED6	**0.51**	18
11-SED6 Lab-Dup	**0.43**	-
11-SED7	**0.51**	18
11-SED8	**0.25**	15
11-SED-DUP3 (Field duplicate of 11-SED8)	**0.43**	14
11-SED9	**0.06**	6.8
11-SED10	**0.06**	5.8
11-SED11	**0.26**	7.7
11-SED12	**0.15**	5.3
11-SED-DUP4 (Field duplicate of 11-SED12)	**0.05**	6.5
11-SED-DUP4 Lab-Dup (Field duplicate of 11-SED12)	-	6.3
11-SED13	**0.16**	7.4
11-SED14	**0.56**	5.0
11-SED15	**0.46**	9.4
11-SED16	**0.08**	6.9

Notes:
1 = Canadian Council of Ministers of the Environment (CCME) Interim Sediment Quality Guidelines (ISQGs) for marine sediment (2002)
2 = Canadian Council of Ministers of the Environment (CCME) Probable Effects Level (PEL) for marine sediment (2002)
RDL = Reportable Detection Limit for routine analysis
Lab-Dup = Laboratory duplicate sample
Bold = Value exceeds CCME ISQG, or parameter not detected and elevated RDL exceeds the CCME ISQG
Shaded/ Bold = Value exceeds CCME ISQG and CCME PEL

Table E.1 Results of Laboratory Analysis of PCBs in Sediment - Grab Sampling, Hopedale Harbour
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sample ID	Total Polychlorinated Biphenyl (PCB)	Total Organic Carbon (TOC)
RDL	0.01	0.2 to 1
Units	mg/kg	g/kg
Criteria[1]	0.0215	-
Criteria[2]	0.189	-
2011 Sampling - Stantec (cont.)		
11-SED-DUP5 (Field duplicate of 11-SED16)	**0.08**	6.2
11-SED17	**0.11**	17
11-SED18	**0.22**	19
11-SED19	**0.22**	15
11-SED20	**0.17**	10
11-SED21	**0.33**	15
11-SED22	**0.24**	20
11-SED23	**0.16**	21
11-SED24	**0.05**	8.3
11-SED25	**0.04**	19
11-SED-DUP1 (Field duplicate of 11-SED25)	**0.11**	24
11-SED26	**0.23**	3.6
11-SED27	<0.01	13
11-SED28	<0.01	14
11-SED28 Lab-Dup	-	13
11-SED29	<0.01	5.4
11-SED30	**0.05**	17
11-SED-DUP6 (Field duplicate of 11-SED30)	<0.01	5.5
11-SED31	<0.01	7.9
11-SED32	<0.01	12
11-SED33	<0.01	22
11-SED34	<0.01	6.5
11-SED35	<0.01	7.4
11-SED36	<0.01	11
11-SED37	<0.01	2.9
11-SED38	<0.01	13
11-SED39	**0.06**	3.0
11-SED40	<0.01	3.3
11-SED41	**0.06**	3.7
11-SED42	<0.01	26
11-SED43	**0.04**	15
11-SED44	<0.01	16
11-SED46	<0.01	7.4
11-SED47	<0.01	5.7
11-SED48	<0.01	1.1
11-SED49	<0.01	21
11-SED50	<0.01	6.3
11-SED51	<0.01	5.9
11-SED52	<0.01	5.0
11-SED52 Lab-Dup	<0.01	-

Notes:
1 = Canadian Council of Ministers of the Environment (CCME) Interim Sediment Quality Guidelines (ISQGs) for marine sediment (2002)
2 = Canadian Council of Ministers of the Environment (CCME) Probable Effects Level (PEL) for marine sediment (2002)
RDL = Reportable Detection Limit for routine analysis
< ## = Not detected above RDL shown
Lab-Dup = Laboratory duplicate sample
Bold = Value exceeds CCME ISQG, or parameter not detected and elevated RDL exceeds the CCME ISQG
Shaded/ Bold = Value exceeds CCME ISQG and CCME PEL

Table E.1 Results of Laboratory Analysis of PCBs in Sediment - Grab Sampling, Hopedale Harbour
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sample ID	Total Polychlorinated Biphenyl (PCB)	Total Organic Carbon (TOC)
RDL	0.01	0.2 to 1
Units	mg/kg	g/kg
Criteria[1]	0.0215	-
Criteria[2]	0.189	-
2011 Sampling - Stantec (cont.)		
11-SED53	<0.01	9.3
11-SED54	<0.01	5.5
11-SED56	<0.01	4.0
11-SED57	<0.01	4.1
11-SED58	<0.01	19
11-SED59	<0.01	6.8
11-SED59 Lab-Dup	<0.01	-
11-SED60	<0.01	1.9
11-SED61	<0.01	8
11-SED62	<0.01	8.7
11-SED62 Lab-Dup	<0.01	-
2012 Sampling - Stantec		
12-SED01	**0.042**	-
12-SED01 Lab-Dup	**0.033**	-
12-SED02	0.02	-
12-SED03	**0.22**	-
12-SED04	**0.19**	-
12-SED05	**0.25**	-
12-SED08	**0.13**	-
12-SED09	**0.84**	-
12-SED10	**0.57**	-
2012 Sampling - NATECH		
1-SS	**0.28**	-
2-SS	**0.27**	-
3-SS	**0.88**	-
4-SS	**0.27**	-
5-SS	**0.12**	-
6-SS	**0.35**	-
7-SS	**0.41**	-
10-SS	**0.062**	-
11-SS	**0.035**	-
11-SS Lab-Dup	**0.048**	-
15-SS	**0.13**	-
2013 Sampling - Stantec		
13-SED3	**0.94**	19
13-SED16 (Field Duplicate of 13-SED3)	**0.83**	23
13-SED8	**0.33**	17
13-SED10	<0.01	3.2
13-SED11	<0.01	3.1
13-SED14	<0.01	6.8

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Interim Sediment Quality Guidelines (ISQGs) for marine sediment (2001)

2 = Canadian Council of Ministers of the Environment (CCME) Probable Effects Level (PEL) for marine sediment (2001)

RDL = Reportable Detection Limit for routine analysis

< ## = Not detected above RDL shown

Lab-Dup = Laboratory duplicate sample

Bold = Value exceeds CCME ISQG, or parameter not detected and elevated RDL exceeds the CCME ISQG

Shaded/ Bold = Value exceeds CCME ISQG and CCME PEL

Table E.2 Results of Laboratory Analysis of Sediment Grain Size - Grab Sampling, Hopedale Harbour
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sieve Size	Units	RDL	13-SED1	13-SED15 (Field Duplicate of 13-SED1)	13-SED2	13-SED3	13-SED4	13-SED5	13-SED5 Lab-Dup	13-SED6	13-SED7	13-SED8	13-SED11	13-SED14
< -1 Phi (2 mm)	%	0.10	99	100	99	61 [1]	100	99	97	83	97	91 [2]	100	73
< 0 Phi (1 mm)	%	0.10	98	98	98	60	100	97	95	79	94	90	100	69
< +1 Phi (0.5 mm)	%	0.10	96	96	97	58	99	94	93	75	93	87	99	65
< +2 Phi (0.25 mm)	%	0.10	93	93	95	53	93	80	78	63	89	78	90	54
< +3 Phi (0.12 mm)	%	0.10	88	88	89	40	72	54	49	43	84	48	61	35
< +4 Phi (0.062 mm)	%	0.10	78	79	78	30	41	34	29	26	76	20	13	25
< +5 Phi (0.031 mm)	%	0.10	65	67	63	27	37	27	26	21	66	15	9.5	22
< +6 Phi (0.016 mm)	%	0.10	51	55	55	23	26	22	23	19	52	14	8.2	20
< +7 Phi (0.0078 mm)	%	0.10	40	42	42	19	21	18	19	14	40	12	7.0	17
< +8 Phi (0.0039 mm)	%	0.10	36	39	37	17	19	17	18	13	35	11	6.5	16
< +9 Phi (0.0020 mm)	%	0.10	31	33	32	13	17	15	15	12	29	10	3.3	9.6
Gravel	%	0.10	1.1	0.14	0.98	39	0.25	1.3	3.1	17	3.4	8.8	<0.10	27
Sand	%	0.10	21	21	21	31	59	65	68	57	20	71	87	48
Silt	%	0.10	42	40	40	14	22	17	11	12	41	8.7	6.9	8.9
Clay	%	0.10	36	39	37	17	19	17	18	13	35	11	6.5	16
Soil Classification[3]	-	-	SILT with sand (ML)	SILT with sand (ML)	SILT with sand (ML)	Silty GRAVEL with sand (GM)	Silty SAND (SM)	Silty SAND (SM)	Silty SAND (SM)	Silty SAND with gravel (SM)	SILT with sand (ML)	Silty SAND (SM)	Silty SAND (SM)	Silty SAND with gravel (SM)

Notes:

[1] Sample observation comment: fraction contained a large rock

[2] Sample observation comment: fraction contained a piece of fabric

[3] Soil classification determined in accordance with the Unified Soil Classification System (USCS) (ASTM D 2487). Atterberg limits test was not completed; therefore, assumed non-plastic properties.

Table E.3 Results of Laboratory Analysis of TSS, VSS and PCBs in Water - Sill Sampling, Hopedale Harbour
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sample ID	Sample Date	Sample Depth (m above bottom)	Total Suspended Solids (TSS) (mg/L)	Volatile Suspended Solids (VSS) (mg/L)	Total PCB (µg/L)
		RDL	1.0 - 2.0	2.0 - 4.0	0.050
Rising Tide					
SILL1-R1-01	23-Sep-13	0.5	13	3.8	<0.050
SILL1-R1-08 (Field Duplicate of SILL1-R1-01)	23-Sep-13	0.5	4.4	2.4	-
SILL1-R1-01 Lab-Dup	23-Sep-13	0.5	-	-	<0.050
SILL1-R1-02	23-Sep-13	1.0	3.4	<2.0	-
SILL1-R1-03	23-Sep-13	2.0	3.0	<2.0	-
SILL1-R1-04	23-Sep-13	4.0	2.6	<2.0	-
SILL1-R1-05	23-Sep-13	7.0	1.6	<2.0	-
SILL1-R1-06	23-Sep-13	10.0	2.6	<2.0	-
SILL1-R1-07	23-Sep-13	13.0	2.2	<2.0	-
SILL2-R1-01	23-Sep-13	0.5	1.0	<2.0	-
SILL2-R1-02	23-Sep-13	3.0	3.4	2.4	-
SILL2-R1-03	23-Sep-13	5.5	2.6	<2.0	-
SILL3-R1-01	23-Sep-13	0.5	2.8	2.0	-
SILL3-R1-02	23-Sep-13	3.0	4.0	4.0	-
SILL3-R1-02 Lab-Dup	23-Sep-13	3.0	4.0	<4.0	-
SILL3-R1-03	23-Sep-13	8.0	<1.0	<2.0	-
SILL1-R2-01	26-Sep-13	0.5	4.0	2.0	-
SILL1-R2-02	26-Sep-13	1.0	4.4	2.2	-
SILL1-R2-07 (Field Duplicate of SILL1-R2-02)	26-Sep-13	1.0	2.4	2	-
SILL1-R2-03	26-Sep-13	2.0	3.8	2.4	-
SILL1-R2-04	26-Sep-13	4.0	3.8	2.4	-
SILL1-R2-05	26-Sep-13	7.0	1.8	<2.0	-
SILL1-R2-06	26-Sep-13	10.0	3.2	<2.0	-
SILL2-R2-01	26-Sep-13	0.5	2.6	<2.0	-
SILL2-R2-02	26-Sep-13	2.5	2.0	<2.0	-
SILL2-R2-03	26-Sep-13	5.0	4.2	2.8	-
SILL3-R2-01	26-Sep-13	0.5	5.0	3.2	-
SILL3-R2-02	26-Sep-13	2.0	10	5.2	<0.050
SILL3-R2-03	26-Sep-13	4.5	4.4	2.4	-

Notes:
RDL = Reportable Detection Limit
< ##= Not detected above RDL shown
Lab-Dup = Laboratory duplicate sample
"-" = Not assessed

Table E.3 Results of Laboratory Analysis of TSS, VSS and PCBs in Water - Sill Sampling, Hopedale Harbour
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sample ID	Sample Date	Sample Depth (m above bottom)	Total Suspended Solids (TSS) (mg/L)	Volatile Suspended Solids (VSS) (mg/L)	Total PCB (µg/L)
		RDL	1.0 - 2.0	2.0 - 4.0	0.050
Falling Tide					
SILL1-F1-01	23-Sep-13	0.5	3.4	2.0	-
SILL1-F1-07 (Field Duplicate of SILL1-F1-01)	23-Sep-13	0.5	4.4	2.0	-
SILL1-F1-02	23-Sep-13	1.0	13	5.0	<0.050
SILL1-F1-03	23-Sep-13	2.0	4.8	<4.0	-
SILL1-F1-03 Lab-Dup	23-Sep-13	2.0	3.2	4.4	-
SILL1-F1-04	23-Sep-13	4.0	2.4	2.0	-
SILL1-F1-05	23-Sep-13	7.0	2.8	<2.0	-
SILL1-F1-06	23-Sep-13	10.0	1.4	<2.0	-
SILL2-F1-01	23-Sep-13	0.5	<1.0	<2.0	-
SILL2-F1-02	23-Sep-13	1.5	1.4	<2.0	-
SILL2-F1-03	23-Sep-13	3.5	7.8	3.0	<0.050
SILL3-F1-01	23-Sep-13	0.5	1.8	<2.0	-
SILL3-F1-02	23-Sep-13	3.0	1.2	<2.0	-
SILL3-F1-03	23-Sep-13	6.0	<2.0	<4.0	-
SILL3-F1-03 Lab-Dup	23-Sep-13	6.0	<2.0	<4.0	-
SILL1-F2-01	26-Sep-13	0.5	<1.0	<2.0	-
SILL1-F2-07 (Field Duplicate of SILL1-F2-01)	26-Sep-13	0.5	2.2	<2.0	-
SILL1-F2-02	26-Sep-13	1.0	<1.0	<2.0	-
SILL1-F2-03	26-Sep-13	2.0	1.8	<2.0	-
SILL1-F2-04	26-Sep-13	4.0	1.0	<2.0	-
SILL1-F2-05	26-Sep-13	6.0	<1.0	<2.0	-
SILL1-F2-06	26-Sep-13	8.5	<1.0	<2.0	-
SILL2-F2-01	26-Sep-13	0.5	5.8	<2.0	<0.050
SILL2-F2-02	26-Sep-13	2.0	2.6	<2.0	-
SILL2-F2-03	26-Sep-13	4.5	4.4	2.2	-
SILL3-F2-01	26-Sep-13	0.5	2.4	<2.0	-
SILL3-F2-02	26-Sep-13	3.0	2.4	<2.0	-
SILL3-F2-03	26-Sep-13	6.0	<1.0	<4.0	-

Notes:
RDL = Reportable Detection Limit
< ##= Not detected above RDL shown
Lab-Dup = Laboratory duplicate sample
"-" = Not assessed

Table E.4 Results of Laboratory Analysis of PCBs in Sediment - Core Sampling, Old Dump Pond
Additional Freshwater and Marine Sampling
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.310

Sample ID	Sample Depth (cm)	Total Polychlorinated Biphenyl (PCB)
	RDL (ODP-C1 to ODP-C8)	0.05
	RDL (ODP-C9 to ODP-C17)	0.01
	Units	mg/kg
	Criteria[1]	0.0341
	Criteria[2]	0.277
2012 Sampling - Stantec		
ODP-C1A-01	0.0 - 0.05	**<0.05**
ODP-C1A-01 Lab-Dup	0.0 - 0.05	**<0.05**
ODP-C1A-02	0.05 - 0.10	**<0.05**
ODP-C1A-03	0.10 - 0.15	**<0.05**
ODP-C2A-01	0.0 - 0.10	**3.6**
ODP-C3A-01	0.0 - 0.10	**<0.05**
ODP-C4B-01	0.0 - 0.05	**1.1**
ODP-C4B-02	0.05 - 0.10	**<0.05**
ODP-C4B-03	0.10 - 0.15	**0.31**
ODP-C5B-01	0.0 - 0.05	**<0.05**
ODP-C5B-02	0.05 - 0.13	**<0.05**
ODP-C5B-03	0.13 - 0.20	**<0.05**
ODP-C6B-01	0.0 - 0.05	**<0.05**
ODP-C6B-02	0.05 - 0.10	**0.28**
ODP-C6B-03	0.10 - 0.18	**<0.05**
ODP-C6B-04	0.18 - 0.25	**<0.05**
ODP-C6B-05	0.25 - 0.30	**<0.05**
ODP-C7B-01	0.0 - 0.05	**1.2**
ODP-C7B-02	0.05 - 0.10	**<0.05**
ODP-C7B-03	0.10 - 0.15	**<0.05**
ODP-C8AB-01	0.0 - 0.08	**90**
ODP-C9B-01	0.0 - 0.08	**1.2**
ODP-C9B-01 Lab-Dup	0.0 - 0.08	**1.3**
ODP-C9B-02	0.08 - 0.15	**0.12**
ODP-C9B-03	0.15 - 0.23	<0.01
ODP-C10B-01	0.0 - 0.08	**0.7**
ODP-C10B-02	0.08 - 0.15	<0.01
ODP-C10B-03	0.15 - 0.23	<0.01
ODP-C10B-04	0.23 - 0.30	<0.01
ODP-C10B-05	0.30 - 0.38	<0.01
ODP-C10B-06	0.38 - 0.46	<0.01
ODP-C11B-01	0.0 - 0.08	**0.52**
ODP-C11B-02	0.08 - 0.15	<0.01
ODP-C11B-03	0.15 - 0.23	<0.01
ODP-C11B-04	0.23 - 0.33	<0.01
ODP-C12B-01	0.0 - 0.08	**1.2**
ODP-C12B-02	0.08 - 0.15	<0.01
ODP-C12B-03	0.15 - 0.23	<0.01

Notes:
1 = Canadian Council of Ministers of the Environment (CCME) Interim Sediment Quality Guidelines (ISQGs) for freshwater sediment (2002)
2 = Canadian Council of Ministers of the Environment (CCME) Probable Effects Level (PEL) for freshwater sediment (2002)
RDL = Reportable Detection Limit
< ## = Not detected above RDL shown
Lab-Dup = Laboratory duplicate sample
Bold = Value exceeds CCME ISQG, or parameter not detected and elevated RDL exceeds the CCME ISQG
Shaded/ Bold = Value exceeds CCME ISQG and CCME PEL

Table E.4 Results of Laboratory Analysis of PCBs in Sediment - Core Sampling, Old Dump Pond
Additional Freshwater and Marine Sampling
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.310

Sample ID	Sample Depth (cm)	Total Polychlorinated Biphenyl (PCB)
	RDL (ODP-C1 to ODP-C8)	0.05
	RDL (ODP-C9 to ODP-C17)	0.01
	Units	mg/kg
	Criteria[1]	0.0341
	Criteria[2]	0.277
ODP-C13B-01	0.0 - 0.08	**5.4**
ODP-C13B-02	0.08 - 0.15	**0.26**
ODP-C13B-03	0.15 - 0.20	<0.01
ODP-C14B-01	0.0 - 0.10	**44**
ODP-C15B-01	0.0 - 0.05	**8.0**
ODP-C15B-01 Lab-Dup	0.0 - 0.05	**8.2**
ODP-C15B-02	0.05 - 0.10	**0.37**
ODP-C16B-01	0.0 - 0.08	**14**
ODP-C16B-02	0.08 - 0.15	**2.2**
ODP-C16B-03	0.15 - 0.23	<0.01
ODP-C16B-04	0.23 - 0.28	<0.01
ODP-C17B-01	0.0 - 0.05	**11**
ODP-C17B-02	0.05 - 0.10	**5.6**

Notes:
1 = Canadian Council of Ministers of the Environment (CCME) Interim Sediment Quality Guidelines (ISQGs) for freshwater sediment (2002)
2 = Canadian Council of Ministers of the Environment (CCME) Probable Effects Level (PEL) for freshwater sediment (2002)
RDL = Reportable Detection Limit
< ## = Not detected above RDL shown
Lab-Dup = Laboratory duplicate sample
Bold = Value exceeds CCME ISQG, or parameter not detected and elevated RDL exceeds the CCME ISQG
Shaded/ Bold = Value exceeds CCME ISQG and CCME PEL

Table E.5 Results of Laboratory Analysis of TPH in Sediment - Core Sampling, Old Dump Pond
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sample ID	Depth (m)	BTEX Parameters (mg/kg)				Total Petroleum Hydrocarbons (mg/kg)					Resemblance
		Benzene	Toluene	Ethyl-benzene	Xylenes	F1 (C_6-C_{10})	F2 (C_{10}-C_{16})	F3 (C_{16}-C_{32})	Returned to baseline?[3]	Modified TPH[4]	
RDL		0.025	0.025	0.025	0.050	2.5	10	-	-	15	-
Tier I ESLs - Aquatic Life. [1]		1.2	1.4	1.2	1.3	-	-	-	-	43	-
Tier II PSSLs - Soil Ingestion [2]		66	22,000	9,300	140000	-	-	-	-	8,600 / 14,000	-
Stantec, 2012*											
ODP-C1A-01	0.0 - 0.05	nd	nd	nd	nd	nd	nd	nd	-	nd	-
ODP-C1A-02	0.05 - 0.10	nd	nd	nd	nd	nd	nd	nd	-	nd	-
ODP-C1A-03	0.10 - 0.15	nd	nd	nd	nd	nd	nd	nd	-	nd	-
ODP-C2A-01	0.0 - 0.10	nd	nd	nd	nd	nd	63	409	No	**470**	WFO, LO
ODP-C3A-01	0.0 - 0.10	nd	nd	nd	nd	nd	nd	nd	Yes	**65**	ULO
ODP-C4B-01	0.0 - 0.05	nd	nd	nd	nd	nd	nd	355	Yes	**350**	LO
ODP-C4B-02	0.05 - 0.10	nd	nd	nd	nd	nd	nd	100	Yes	**100**	ULO
ODP-C4B-03	0.10 - 0.15	nd	nd	nd	nd	nd	nd	207	Yes	**200**	ULO
ODP-C5B-01	0.0 - 0.05	nd	nd	nd	nd	nd	nd	185	Yes	**190**	UFO/LO
ODP-C5B-01 Lab-Dup	0.0 - 0.05	nd	nd	nd	nd	nd	nd	167	-	-	-
ODP-C5B-02	0.05 - 0.13	nd	nd	nd	nd	nd	nd	87	Yes	**87**	ULO
ODP-C5B-03	0.13 - 0.20	nd	nd	nd	nd	nd	nd	81	Yes	**81**	ULO
ODP-C6B-01	0.0 - 0.05	nd	nd	nd	nd	nd	nd	130	Yes	**130**	ULO
ODP-C6B-02	0.05 - 0.10	nd	nd	nd	nd	nd	nd	110	Yes	**110**	ULO
ODP-C6B-03	0.10 - 0.18	nd	nd	nd	nd	nd	nd	110	Yes	**110**	ULO
ODP-C6B-04	0.18 - 0.25	nd	nd	nd	nd	nd	nd	55	Yes	**55**	ULO
ODP-C6B-05	0.25 - 0.30	nd	nd	nd	nd	nd	nd	44	Yes	**44**	ULO
ODP-C7B-01	0.0 - 0.05	nd	nd	nd	nd	8.2	250	444	No	**700**	WFO, LO
ODP-C7B-02	0.05 - 0.10	nd	nd	nd	nd	nd	nd	41	Yes	41	ULO
ODP-C7B-03	0.10 - 0.15	nd	nd	nd	nd	nd	nd	56	Yes	**56**	ULO
ODP-C7B-03 Lab-Dup	0.10 - 0.15	nd	nd	nd	nd	nd	-	-	-	-	-
ODP-C8AB-01	0.0 - 0.08	nd	nd	nd	nd	14	7,500	12,100	No	**20,000**	WFO, LO

Notes:

1 Atlantic RBCA Tier I Sediment Ecological Screening Levels (ESLs) for the Protection of Freshwater and Marine Aquatic Life (Table 4) - Typical sediment type (July
2 Atlantic RBCA Tier I Pathway Specific Screening Levels for Soil (PSSLs), Residential non-potable site, coarse grained soil, soil ingestion exposure pathway and fuel oil/lube oil impacts (July 2012).
3 Atlantic Partners in RBCA (Risk-Based Corrective Action) Implementation (PIRI) analytical method does not analyze for >C_{32}. Laboratory certificate indicates (Yes or No) whether chromatogram for each sample returns to baseline after C_{32}. Samples are considered to have returned to baseline if the area from C_{32}-C_{36} is less than 10% of the area from C_{10}-C_{32}.
4 Modified TPH = Total petroleum hydrocarbons excluding total BTEX
" * " Triple silca gel clean up performed on all samples to remove organic interferences
nd Not detected above standard RDL
RDL Reportable Detection Limit for routine analysis

Bold/Underlined = Value exceeds applicable Tier I ESL for Freshwater and Marine Aquatic Life (Table 4)
Shaded = Value exceeds applicable Tier II PSSL for Soil Ingestion (Table 5a).

Resemblence
LO Lube oil fraction
WFO Weathered fuel oil
ULO Unidentified compound(s) in lube oil range.
UFO/LO Unidentified compound(s) in fuel / lube range.

Table E.6 Results of Laboratory Analysis of PCBs in Fish - Big Lake
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sample ID	Sample Location	Species	Fork Length (cm)	% Crude Fat	Total Polychlorinated Biphenyl (PCB)
				RDL	0.010 - 0.050
				Units	mg/kg
2009 Sampling - Stantec					
Whole Fish					
FISH-10	-	Brook Trout	-	5.5	0.06
FISH-10 Lab-Dup	-	Brook Trout	-	-	0.06
FISH-11	-	Brook Trout	-	5.4	<0.050
2010 Sampling - Stantec					
Whole Fish					
Big Lake - Fish1	-	Brook Trout	-	7.5	<0.3
Big Lake - Fish2	-	Brook Trout	-	4.9	0.4
Big Lake - Fish3	-	Brook Trout	-	8.0	0.6
Big Lake - Fish4	-	Brook Trout	-	2.6	1.9
2012 Sampling - Stantec					
Fillets					
20120923NET1A	Net 1	Brook Trout	-	-	0.11
20120923NET1B		Brook Trout	-	-	0.088
20120924NET1A		Brook Trout	-	-	0.12
20120923NET2A	Net 2	Brook Trout	-	-	<0.050
20120923NET2B		Brook Trout	-	-	<0.050
20120923NET2C		Brook Trout	-	-	0.056
20120923NET2D		Brook Trout	-	-	<0.050
20120923NET2E		Brook Trout	-	-	<0.050
20120924NET2A		Brook Trout	-	-	0.088
20120924NET2B		Brook Trout	-	-	<0.050
20120923NET3A	Net 3	Brook Trout	-	-	0.056
20120923NET3B		Brook Trout	-	-	<0.050
20120923NET3C		Brook Trout	-	-	0.19
20120923NET3D		Arctic Char	-	-	0.072
20120923NET3D Lab-Dup		Arctic Char	-	-	0.066
20120924NET3A		Brook Trout	-	-	0.35
20120924NET3B		Brook Trout	-	-	0.18
20120924NET3C		Brook Trout	-	-	<0.050
20120924NET3D		Brook Trout	-	-	0.067
20120924NET3E		Brook Trout	-	-	0.071
20120924NET3F		Brook Trout	-	-	<0.050
20120924NET3F Lab-Dup		Brook Trout	-	-	<0.050
20120924NET3G		Brook Trout	-	-	<0.050
20120924NET3H		Brook Trout	-	-	0.061
Eggs					
20120923NET1EGGS	Net 1	Brook Trout	-	-	0.15
Liver					
2012092424NET3LIVERBIG	Net 3	Brook Trout	-	-	0.17
2012092424NET123LIVER	Net 1, Net 2 and Net 3	Brook Trout	-	-	<0.050

Notes:
RDL = Reportable Detection Limit for routine analysis
nd = Not detected above standard RDL
nd (#) = Not detected above alternate RDL shown in brackets
Lab-Dup = Laboratory duplicate sample

Table E.6 Results of Laboratory Analysis of PCBs in Fish - Big Lake
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sample ID	Sample Location	Species	Fork Length (cm)	% Crude Fat	Total Polychlorinated Biphenyl (PCB)
				RDL	0.010 - 0.050
				Units	mg/kg
2012 Sampling - ESG					
Whole Fish (Bones In)					
12-01-116	-	Brook Trout	-	3	0.039
12-01-117	-	Brook Trout	-	1.1	0.038
12-01-118	-	Brook Trout	-	0.9	0.046
12-01-119	-	Brook Trout	-	2.9	0.035
12-01-120	-	Brook Trout	-	1.5	0.054
12-01-121	-	Brook Trout	-	1.5	0.043
12-01-122	-	Brook Trout	-	2	0.034
12-01-123	-	Brook Trout	-	1.3	<0.01
12-01-124	-	Brook Trout	-	1.1	0.038
12-01-284	-	Brook Trout	-	3.3	0.058
2013 Sampling - Stantec					
Whole Fish (Bones In)					
20130922BROOKA-WHOLE	Brook	Brook Trout	19	2.5	<0.050
20130922BROOKA-WHOLE Lab-Dup		Brook Trout	19	2.4	-
20130922BROOKB-WHOLE		Brook Trout	23	2.0	<0.050
20130922BROOKC-WHOLE		Brook Trout	24	4.4	<0.050
20130922BROOKC-WHOLE Lab-Dup		Brook Trout	24	3.9	<0.050
20130922NET4A-WHOLE	Net 4	Brook Trout	19	2.8	<0.050
20130922NET4B-WHOLE		Brook Trout	17	3.6	<0.050
20130923NET4E-WHOLE		Brook Trout	22	2.0	<0.050
20130923NET4F-WHOLE		Brook Trout	20	3.3	<0.050
20130923NET5B-WHOLE	Net 5	Brook Trout	21	8.4	<0.050
Fillets					
20130922NET4C-FILLET	Net 4	Brook Trout	31	7.4	0.12
20130922NET4D-FILLET		Arctic Char	45	11	0.30
20130923NET4E-FILLET		Brook Trout	31	3.3	0.18
20130922NET5A-FILLET	Net 5	Brook Trout	26	2.7	<0.050
20130923NET5C-FILLET		Brook Trout	20	6.2	0.080
20130923NET5D-FILLET		Arctic Char	37	11	0.13
20130923NET5E-FILLET		Brook Trout	59	1.9	0.33
20130922NET6A-FILLET	Net 6	Brook Trout	34	5.2	0.24
20130922NET6B-FILLET		Brook Trout	28	5.3	0.12
20130923NET6C-FILLET		Brook Trout	27	3.8	<0.050
20130923NET6D-FILLET		Brook Trout	23	2.9	<0.050
20130923NET6F-FILLET		Brook Trout	31	3.3	0.062

Notes:
RDL = Reportable Detection Limit for routine analysis
nd = Not detected above standard RDL
nd (#) = Not detected above alternate RDL shown in brackets
Lab-Dup = Laboratory duplicate sample

Table E.7 Results of Laboratory Analysis of PCBs in Sediment - Big Lake
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sample ID	Sample Location	Total Polychlorinated Biphenyl (PCB)	Total Organic Carbon (TOC)
	RDL	0.010 / 0.050	0.50 - 0.90
	Units	mg/kg	g/kg
	Criteria[1]	0.0341	-
	Criteria[2]	0.277	-
2009 - Sampling - Stantec			
SED-12	East Drainage Valley	<0.050	-
SED-13	East Drainage Valley	<0.050	-
SED-14	East Drainage Valley	<0.050	-
SED-15	East Drainage Valley	<0.050	-
SED-16	West Drainage Valley	<0.050	-
SED-17	West Drainage Valley	<0.050	-
SED-18	West Drainage Valley	<0.050	-
SED-69	Big Lake	<0.050	-
SED-70	Big Lake	<0.050	-
SED-71	Big Lake	<0.050	-
2011 - Sampling - Stantec			
11-BL-SED1	Big Lake	<0.010	-
11-BL-SED2	Big Lake	<0.010	-
11-BL-SED3	Big Lake	<0.010	-
11-BL-SED4	Big Lake	<0.010	-
11-BL-SED4 Lab-Dup	Big Lake	<0.010	-
2012 - Sampling - Stantec			
12-BL-SED1	Big Lake	<0.050	-
12-BL-SED1 Lab-Dup	Big Lake	<0.050	-
12-BL-SED2	Big Lake	<0.050	-
12-BL-SED3	Big Lake	<0.050	-
12-BL-SED4	Big Lake	<0.050	-
12-BL-SED5	Big Lake	<0.050	-
12-BL-SED6	Big Lake	<0.050	-
12-BL-SED7	Big Lake	<0.050	-
12-BL-SED8	Big Lake	<0.050	-
12-BL-SED9	Big Lake	<0.050	-
12-BL-SED10	Big Lake	<0.050	-
12-BL-SED11	Big Lake	<0.050	-
12-BL-SED12	Big Lake	<0.050	-
2013 - Sampling - Stantec			
13-BL-SED1	Big Lake	<0.010	120
13-BL-SED1 Lab-Dup	Big Lake	-	110
13-BL-SED2	Big Lake	<0.010	22
13-BL-SED3	Big Lake	<0.010	110
13-BL-SED4	Big Lake	<0.010	52
13-BL-SED5	Big Lake	<0.010	52
13-BL-SED5 Field Dup	Big Lake	<0.010	100
13-BL-SED5 Lab-Dup	Big Lake	<0.010	-
13-BL-SED6	Big Lake	<0.010	94
13-BL-SED7	Big Lake	<0.010	41
13-BL-SED8	Big Lake	<0.010	110
13-BL-SED9	Big Lake	<0.010	99
13-BL-SED10	Big Lake	<0.010	95

Notes:
1 = Canadian Council of Ministers of the Environment (CCME) Interim Sediment Quality Guidelines (ISQGs) for freshwater sediment (2002)
2 = Canadian Council of Ministers of the Environment (CCME) Probable Effects Level (PEL) for freshwater sediment (2002)
RDL = Reportable Detection Limit
< ## = Not detected above RDL noted
Lab Dup = Laboratory Duplicate

Table E.8 Results of Laboratory Analysis of PCBs in Vegetation - Big Lake
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sample ID	Sample Location	Total Polychlorinated Biphenyl (PCB)
	RDL	0.050 / 0.010 / 0.3
	Units	mg/kg
2009 - Sampling - Stantec		
VEG-1	East Drainage Valley	<0.3
VEG-2	East Drainage Valley	<0.3
VEG-3	East Drainage Valley	<0.3
VEG-4	East Drainage Valley	<0.3
VEG-5	West Drainage Valley	<0.3
VEG-6	West Drainage Valley	<0.3
VEG-7	West Drainage Valley	<0.3
BERRY-20	East Drainage Valley	<0.050
BERRY-21	East Drainage Valley	<0.050
BERRY-22	East Drainage Valley	<0.050
BERRY-23	East Drainage Valley	<0.050
BERRY-24	West Drainage Valley	<0.050
BERRY-25	West Drainage Valley	<0.050
BERRY-26	West Drainage Valley	<0.050
2012 - Sampling - Stantec		
12-BL-VEG1	Big Lake (Red Berries)	<0.050
12-BL-VEG1 Lab-Dup	Big Lake (Red Berries)	<0.050
12-BL-VEG2	Big Lake (Black Berries)	<0.050
12-BL-VEG3	Big Lake (Black Berries)	<0.050
2012 - Sampling - ESG		
12-01 479	Base (back hill of main base) Blackberries	<0.010
12-01 480	Base (back hill of main base) Blueberries	<0.010
12-01 481	Base (back hill of main base) Red Berries	<0.010
12-01 485	Base (back hill of main base) Red Berries	<0.010
12-01 486	Base (back hill of main base) Blackberries	<0.010
12-01-138	Basehill Gulch Bakeapples	<0.010
12-01-139	Basehill North Side Blueberries	<0.010
12-01-140	Basehill North Side Blackberries	<0.010
12-01-141	Basehill North Side Red Berries	<0.010
12-01-274	BMEWS Hill North Side Bakeapples	<0.010
12-01-275	BMEWS Hill North Side Bakeapples	0.14
12-01-276	BMEWS Hill North Side Bakeapples	<0.010
12-01-277	BMEWS Hill North Side Bakeapples	<0.010
12-01-278	BMEWS Hill North Side Blueberries	<0.010
12-01-281	BMEWS Hill North side Blackberries	<0.010
12-01-289	NCO Pond Island Bakeapples	<0.010
12-01-289 Lab-Dup	NCO Pond Island Bakeapples	<0.010

Notes:
RDL = Reportable Detection Limit
< ## = Not detected above RDL noted
Lab Dup = Laboratory Duplicate

Table E.9 Results of Laboratory Analysis of PCBs in Fish - Ussiranniak Lake
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sample ID	Sample Location	Species	Fork Length (cm)	% Crude Fat	Total Polychlorinated Biphenyl (PCB)
				RDL	0.050
				Units	mg/kg
2013 Sampling - Stantec					
Fillet					
20130924NET7A-FILLET	Net 7	Brook Trout	34	11	<0.050
20130924NET7A-FILLET Lab-Dup		Brook Trout	34	-	<0.050
20130924NET7B-FILLET		Brook Trout	33	5.1	<0.050
20130924NET7C-FILLET		Brook Trout	31	6.6	<0.050
20130924NET7D-FILLET		Brook Trout	29	6.2	<0.050
20130924NET7E-FILLET		Arctic Char	34	11	<0.050
20130924NET7F-FILLET		Arctic Char	35	11	<0.050
20130924NET7G-FILLET		Arctic Char	39	4.2	<0.050
20130924NET7H-FILLET		Arctic Char	27	1.4	<0.050
20130924NET8A-FILLET	Net 8	Brook Trout	33	9.8	0.11
20130924NET8B-FILLET		Brook Trout	32	4.4	<0.050
20130924NET8B-FILLET Lab-Dup		Brook Trout	32	5.1	<0.050
20130924NET8C-FILLET		Brook Trout	29	2.9	<0.050
20130924NET8D-FILLET		Arctic Char	36	11	<0.050
20130924NET8E-FILLET		Arctic Char	29	6.7	<0.050
20130924NET8F-FILLET		Arctic Char	30	2.3	<0.050
20130924NET9A-FILLET	Net 9	Brook Trout	33	9.6	<0.050
20130924NET9B-FILLET		Brook Trout	28	2.4	<0.050
20130924NET9C-FILLET		Brook Trout	28	3	<0.050
20130924NET9D-FILLET		Arctic Char	36	12	<0.050
20130924NET9E-FILLET		Arctic Char	34	12	<0.050
20130924NET9F-FILLET		Arctic Char	31	4.6	<0.050
Liver					
20130924NET7I-LIVER	Net 7	Brook Trout	29 to 34	6.9	<0.050
20130924NET7J-LIVER		Arctic Char	27 to 35	13	<0.050
20130924NET8G-LIVER	Net 8	Brook Trout	29 to 33	8.3	0.071
20130924NET8H-LIVER		Arctic Char	29 to 36	16	<0.050
20130924NET9G-LIVER	Net 9	Brook Trout	28 to 33	-	<0.050
20130924NET9H-LIVER		Arctic Char	31 to 36	11	<0.050

Notes:
RDL = Reportable Detection Limit for routine analysis
< ## = Not detected above RDL noted
Lab-Dup = Laboratory duplicate sample

Table E.10 Results of Laboratory Analysis of PCBs in Sediment - Ussiranniak Lake
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sample ID	Total Polychlorinated Biphenyl (PCB)	Total Organic Carbon (TOC)
RDL	0.010	0.20
Units	mg/kg	g/kg
Criteria[1]	0.0341	-
Criteria[2]	0.277	-
2013 - Sampling - Stantec		
13-UL-SED1	<0.010	21
13-UL-SED2	<0.010	7.7
13-UL-SED3	<0.010	6.5

Notes:

1 = Canadian Council of Ministers of the Environment (CCME) Interim Sediment Quality Guidelines (ISQGs) for freshwater sediment (2002)
2 = Canadian Council of Ministers of the Environment (CCME) Probable Effects Level (PEL) for freshwater sediment
RDL = Reportable Detection Limit
< ## = Not detected above RDL noted
Lab Dup = Laboratory Duplicate

Table E.11 Results of Laboratory Analysis of Surface Water - Flux Study
Freshwater and Marine Sampling in Support of the Marine Study – Years 2 and 3
Former U.S. Military Site, Hopedale, Labrador
Stantec Project No. 121411777.610

Sampling Date	Sample ID	Flow	Total Suspended Solids	Turbidity	Total Polychlorinated Biphenyl (PCB)
	RDL	-	1 - 5	0.1	0.05 - 0.06
	Units	m^3/s	mg/L	NTU	µg/L
Downstream of Old Dump Pond					
28-Aug-11	ODP-AUG28	0.007	10	1.5	<0.05
	ODP-AUG28 FIELD DUP		8.0	1.5	<0.05
30-Aug-11 (Storm event)	ODP-AUG30-1:00AM	0.036	5.0	1.7	<0.05
	ODP-AUG30-6:00AM	0.205	5.0	1.5	<0.05
12-Sep-11	ODP-SEPT12	0.013	<2.0	1.7	<0.05
16-Sep-11 (Storm event)	ODP-SEPT16	0.032	3.0	1.4	<0.06
27-Sep-11	ODP-SEPT27	0.018	3.0	2.3	<0.05
	ODP-SEPT27 Lab-Dup		-	-	<0.05
10-Oct-11	ODP-OCT10	0.073	2.0	0.9	<0.06
24-Oct-11	ODP-OCT24	0.023	2.0	0.6	<0.05
7-Nov-11	ODP-NOV7	0.013	1.0	0.8	<0.05
16-Nov-11	ODP-NOV16/11	0.056	<1.0	0.6	<0.06
	ODP-NOV16/11 Lab-Dup		-	-	<0.05
4-Jul-12	ODP-JULY 4	0.005	2.8	1.3	<0.05
11-Jul-12	ODP-JUL 11	0.076	2.0	1.4	<0.05
18-Jul-12	ODP-JULY 18	0.014	1.4	1.3	0.064
	ODP-JULY 18 Lab-Dup		-	1.3	-
22-Jul-12	ODP-JULY 22	0.012	2.8	1.4	<0.05
10-Aug-12	ODP-AUG 10	0.007	2.2	1.9	<0.05
15-Aug-12	ODP-AUG 15	0.002	2.4	1.5	<0.05
22-Aug-12	ODP-AUG 22	0.002	7.2	2.1	<0.02
29-Aug-12	ODP-AUG.29	0.004	2.2	1.7	<0.05
5-Sep-12	ODP-SEPT.5	0.005	<2.0	1.1	<0.05
18-Sep-12	ODP-SEPT. 18	0.005	<2.0	1.6	<0.05
26-Sep-12	ODP - SEPT 26	0.005	4.2	1.4	<0.05
3-Oct-12	ODP - OCT.3	0.109	1.6	1.5	<0.05
3-Nov-12	ODP- 3NOV12	0.051	3.6	4.6	<0.05
Outfall to Harbour Harbour					
28-Aug-11	HARBOUR-AUG28	0.018	4.0	1.6	<0.05
30-Aug-11 (Storm event)	HARBOUR-AUG30-1:00AM	0.085	11	11	<0.05
	HARBOUR-AUG30-6:00AM	0.156	<5.0	4.0	0.06
12-Sep-11	HARBOUR-SEPT12	0.018	3.0	2.3	<0.05
	HARBOUR-SEPT12 Lab-Dup		-	2.2	-
16-Sep-11 (Storm event)	HARBOUR-SEPT16	0.033	9.0	3.5	<0.06
27-Sep-11	HARBOUR-SEPT27	0.024	2.0	1.5	<0.05
	HARBOUR-SEPT27 Lab-Dup		-	1.3	-
10-Oct-11	HARBOUR-OCT10	0.043	2.0	1.3	<0.06
24-Oct-11	HARBOUR-OCT24	0.026	2.0	1.0	<0.05
7-Nov-11	HARBOUR-NOV7	0.005	3.0	2.7	<0.05
	HARBOUR-NOV7 Field Dup		2.0	2.6	<0.05
16-Nov-11	HARBOUR-NOV16/11	0.045	26	17	<0.06
	HARBOUR-NOV16/11 Lab-Dup		-	19	-
4-Jul-12	HARBOUR-JULY 4	0.016	3.4	1.9	<0.05
11-Jul-12	HARBOUR-JUL 11	0.042	2.2	1.9	<0.05
18-Jul-12	HARBOUR-JULY 18	0.018	2.8	2.2	0.05
22-Jul-12	HARBOUR-JULY 22	0.016	1.4	1.6	0.061
10-Aug-12	HARBOUR-AUG 10	0.015	4.4	1.8	0.053
15-Aug-12	HARBOUR-AUG 15	0.011	2.0	0.1	0.05
22-Aug-12	HARBOUR-AUG 22	0.007	3.2	2.3	0.034
29-Aug-12	HARBOUR-AUG. 29	0.004	6.0	2.2	<0.05
5-Sep-12	HARBOUR-SEPT.5	0.004	3.8	2.6	<0.05
18-Sep-12	HARBOUR-SEPT. 18	0.007	4.0	2.1	<0.05
26-Sep-12	HARBOUR - SEPT 26	0.005	2.8	2.9	<0.05
3-Oct-12	HARBOUR - OCT.3	0.064	4.0	4.0	0.054
3-Nov-12	HARBOUR- 3NOV12	0.015	1.8	2.5	<0.05
	HARBOUR- 3NOV12 Lab-Dup		-	2.6	-

Notes:
RDL = Reportable Detection Limit
< ## = Not detected above RDL noted
Lab Dup = Laboratory duplicate sample

APPENDIX F

Maxxam Analytics Reports

Success Through Science®

Your P.O. #: 16400NR
Your Project #: 121411777.310
Site Location: HOPEDALE - BIG LAKE
Your C.O.C. #: ES617212

Attention: Anna Roy
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/10/15

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2E8977
Received: 2012/09/25, 09:57

Sample Matrix: Soil
Samples Received: 12

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Moisture (1)	12	N/A	2012/09/27	ATL SOP 00001	MOE Handbook 1983
PCBs in soil by GC/ECD (1,2)	12	2012/09/28	2012/10/01	ATL SOP 00106	Based on EPA8082

Sample Matrix: TISSUE
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Moisture (1)	3	N/A	2012/10/02	ATL SOP 00001	MOE Handbook 1983
PCBs in tissue by GC/ECD (1,3)	3	2012/10/03	2012/10/15	ATL SOP 00110	Based on EPA8082

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Bedford
(2) Soils are reported on a dry weight basis unless otherwise specified.
(3) Results are reported on an as received basis unless otherwise indicated.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

This document is in electronic format, hard copy is available on request.

Maxxam Job #: B2E8977
Report Date: 2012/10/15

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE - BIG LAKE
Your P.O. #: 16400NR
Sampler Initials: JSA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		OZ2329	OZ2330	OZ2331	OZ2332	OZ2333	OZ2334		
Sampling Date		2012/09/19	2012/09/19	2012/09/19	2012/09/19	2012/09/19	2012/09/19		
	Units	**BL-SED1**	**BL-SED2**	**BL-SED3**	**BL-SED4**	**BL-SED5**	**BL-SED6**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	90	82	91	41	88	85	1	2983700

Maxxam ID		OZ2335	OZ2336	OZ2337	OZ2338	OZ2339	OZ2340		
Sampling Date		2012/09/19	2012/09/19	2012/09/19	2012/09/19	2012/09/19	2012/09/19		
	Units	**BL-SED7**	**BL-SED8**	**BL-SED9**	**BL-SED10**	**BL-SED11**	**BL-SED12**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	78	89	89	87	88	34	1	2983700

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		OZ2329	OZ2329	OZ2330	OZ2331	OZ2332	OZ2333	OZ2334		
Sampling Date		2012/09/19	2012/09/19	2012/09/19	2012/09/19	2012/09/19	2012/09/19	2012/09/19		
	Units	**BL-SED1**	**BL-SED1 Lab-Dup**	**BL-SED2**	**BL-SED3**	**BL-SED4**	**BL-SED5**	**BL-SED6**	**RDL**	**QC Batch**
PCBs										
Total PCB	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2985126
Surrogate Recovery (%)										
Decachlorobiphenyl	%	75	73	78	77	77	78	77		2985126

Maxxam ID		OZ2335	OZ2336	OZ2337	OZ2338	OZ2339	OZ2340		
Sampling Date		2012/09/19	2012/09/19	2012/09/19	2012/09/19	2012/09/19	2012/09/19		
	Units	**BL-SED7**	**BL-SED8**	**BL-SED9**	**BL-SED10**	**BL-SED11**	**BL-SED12**	**RDL**	**QC Batch**
PCBs									
Total PCB	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2985126
Surrogate Recovery (%)									
Decachlorobiphenyl	%	80	72	77	76	74	79		2985126

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

Maxxam Job #: B2E8977
Report Date: 2012/10/15

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE - BIG LAKE
Your P.O. #: 16400NR
Sampler Initials: JSA

RESULTS OF ANALYSES OF TISSUE

Maxxam ID		OZ2341	OZ2342	OZ2343		
Sampling Date		2012/09/19	2012/09/19	2012/09/19		
	Units	**12-BL-VEG1**	**12-BL-VEG2**	**12-BL-VEG3**	**RDL**	**QC Batch**
Inorganics						
Moisture	%	89	77	87	1	2988484

POLYCHLORINATED BIPHENYLS BY GC-ECD (TISSUE)

Maxxam ID		OZ2341	OZ2341	OZ2342	OZ2343		
Sampling Date		2012/09/19	2012/09/19	2012/09/19	2012/09/19		
	Units	**12-BL-VEG1**	**12-BL-VEG1 Lab-Dup**	**12-BL-VEG2**	**12-BL-VEG3**	**RDL**	**QC Batch**
PCBs							
Total PCB	ug/g	<0.050	<0.050	<0.050	<0.050	0.050	2990269
Surrogate Recovery (%)							
Decachlorobiphenyl	%	42(1)	42(1)	39(1)	74		2990269

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - PCB surrogate not within acceptance limits. Analysis was repeated with similar results.

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Maxxam Job #: B2E8977
Report Date: 2012/10/15

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE - BIG LAKE
Your P.O. #: 16400NR
Sampler Initials: JSA

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		Reagent Blank	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
2985126	Decachlorobiphenyl	2012/10/01	75	30 - 130	81	30 - 130	78	%				
2985126	Total PCB	2012/10/01	108	70 - 130	108	70 - 130	<0.050	ug/g	NC	50		
2990269	Decachlorobiphenyl	2012/10/15	44(1)	30 - 130	90	30 - 130	84	%			88	30 - 130
2990269	Total PCB	2012/10/15	51(2)	30 - 130	81	30 - 130	<0.050	ug/g	NC	50	<0.050	N/A

N/A = Not Applicable
RPD = Relative Percent Difference
Reagent Blank: A blank matrix containing all reagents used in the analytical procedure. Used to determine any analytical contamination.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) - PCB surrogate not within acceptance limits. Analysis was repeated with similar results.
(2) - Matrix Spike: results are outside acceptance limit. Analysis was repeated with similar results.

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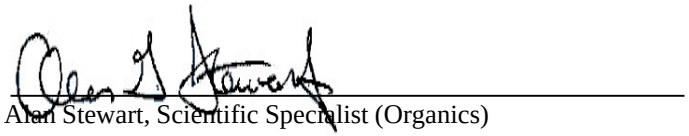
Validation Signature Page

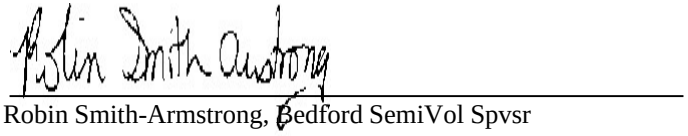
Maxxam Job #: B2E8977

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Alan Stewart, Scientific Specialist (Organics)

Ron MacDonald, Scientific Specialist (Organics)



Robin Smith-Armstrong, Bedford SemiVol Spvsr

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Your P.O. #: 16400NR
Your Project #: 121411777.310
Site Location: HOPEDALE-BIG LAKE
Your C.O.C. #: ES612112

Attention: Jim Slade
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/10/23

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2F2692
Received: 2012/09/29, 10:57

Sample Matrix: TISSUE
Samples Received: 25

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PCBs in tissue by GC/ECD (1,2)	13	2012/10/11	2012/10/18	ATL SOP 00110	Based on EPA8082
PCBs in tissue by GC/ECD (1,2)	12	2012/10/11	2012/10/22	ATL SOP 00110	Based on EPA8082

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Bedford
(2) Results are reported on an as received basis unless otherwise indicated.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

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Total cover pages: 1

This document is in electronic format, hard copy is available on request.

Maxxam Job #: B2F2692
Report Date: 2012/10/23

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE-BIG LAKE
Your P.O. #: 16400NR
Sampler Initials: JRS

POLYCHLORINATED BIPHENYLS BY GC-ECD (TISSUE)

Maxxam ID		PB3010	PB3010	PB3011	PB3012	PB3013	PB3014		
Sampling Date		2012/09/23	2012/09/23	2012/09/23	2012/09/24	2012/09/24	2012/09/24		
	Units	**20120923NET3D**	**20120923NET3D Lab-Dup**	**20120923NET1EGGS**	**20120924NET1A**	**20120924NET2A**	**20120924NET2B**	**RDL**	**QC Batch**
PCBs									
Total PCB	ug/g	0.072	0.066	0.15	0.12	0.088	<0.050	0.050	2997628
Surrogate Recovery (%)									
Decachlorobiphenyl	%	81(1)	84	91(1)	83(1)	92(1)	81		2997628

Maxxam ID		PB3015	PB3016	PB3017	PB3018	PB3019	PB3020	PB3021		
Sampling Date		2012/09/24	2012/09/24	2012/09/24	2012/09/24	2012/09/24	2012/09/23	2012/09/23		
	Units	**20120924NET3A**	**20120924NET3B**	**20120924NET3C**	**20120924NET3D**	**20120924NET3E**	**20120923NET1A**	**20120923NET1B**	**RDL**	**QC Batch**
PCBs										
Total PCB	ug/g	0.35	0.18	<0.050	0.067	0.071	0.11	0.088	0.050	2997628
Surrogate Recovery (%)										
Decachlorobiphenyl	%	80(1)	79(1)	96	78(1)	87(1)	96(1)	96(1)		2997628

Maxxam ID		PB3022		PB3023	PB3024	PB3025	PB3026	PB3027		
Sampling Date		2012/09/23		2012/09/23	2012/09/23	2012/09/23	2012/09/23	2012/09/23		
	Units	**20120923NET2A**	**QC Batch**	**20120923NET2B**	**20120923NET2C**	**20120923NET2D**	**20120923NET2E**	**20120923NET3A**	**RDL**	**QC Batch**
PCBs										
Total PCB	ug/g	<0.050	2997628	<0.050	0.056	<0.050	<0.050	0.056	0.050	2997631
Surrogate Recovery (%)										
Decachlorobiphenyl	%	77	2997628	81	88(1)	80	73	74(1)		2997631

Maxxam ID		PB3028	PB3029	PB3030	PB3030	PB3031		
Sampling Date		2012/09/23	2012/09/23	2012/09/24	2012/09/24	2012/09/24		
	Units	**20120923NET3B**	**20120923NET3C**	**20120924NET3F**	**20120924NET3F Lab-Dup**	**20120924NET3G**	**RDL**	**QC Batch**
PCBs								
Total PCB	ug/g	<0.050	0.19	<0.050	<0.050	<0.050	0.050	2997631
Surrogate Recovery (%)								
Decachlorobiphenyl	%	82	76(1)	90	96	94		2997631

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Aroclor 1260.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

Maxxam Job #: B2F2692
Report Date: 2012/10/23

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE-BIG LAKE
Your P.O. #: 16400NR
Sampler Initials: JRS

POLYCHLORINATED BIPHENYLS BY GC-ECD (TISSUE)

Maxxam ID		PB3032	PB3033	PB3034		
Sampling Date		2012/09/24	2012/09/24	2012/09/24		
	Units	**20120924NET3H**	**2012092424NET3LIVERBIG**	**2012092424NET123LIVER**	**RDL**	**QC Batch**
PCBs						
Total PCB	ug/g	0.061	0.17	<0.050	0.050	2997631
Surrogate Recovery (%)						
Decachlorobiphenyl	%	99(1)	81(1)	71		2997631

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Aroclor 1260.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

Maxxam Job #: B2F2692
Report Date: 2012/10/23

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE-BIG LAKE
Your P.O. #: 16400NR
Sampler Initials: JRS

Package 1	-2.0°C

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

POLYCHLORINATED BIPHENYLS BY GC-ECD (TISSUE)

PCBs in tissue by GC/ECD: PCB results reported on an as-received (fresh-weight) basis.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

Maxxam Job #: B2F2692
Report Date: 2012/10/23

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE-BIG LAKE
Your P.O. #: 16400NR
Sampler Initials: JRS

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		Reagent Blank	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
2997628	Decachlorobiphenyl	2012/10/18	86	30 - 130	79	30 - 130	81	%			77	30 - 130
2997628	Total PCB	2012/10/18	92	30 - 130	87	30 - 130	<0.050	ug/g	NC	50	<0.050	N/A
2997631	Decachlorobiphenyl	2012/10/22	99	30 - 130	73	30 - 130	71	%			84	30 - 130
2997631	Total PCB	2012/10/22	102	30 - 130	83	30 - 130	<0.050	ug/g	NC	50	<0.050	N/A

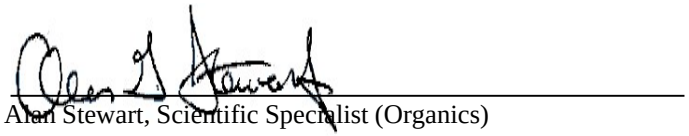
N/A = Not Applicable
RPD = Relative Percent Difference
Reagent Blank: A blank matrix containing all reagents used in the analytical procedure. Used to determine any analytical contamination.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

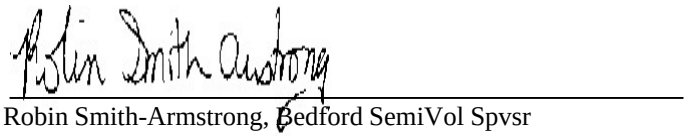
Validation Signature Page

Maxxam Job #: B2F2692

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Alan Stewart, Scientific Specialist (Organics)



Robin Smith-Armstrong, Bedford SemiVol Spvsr

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Your P.O. #: 16400NR
Your Project #: 121411777.210
Site Location: FLUX STUDY
Your C.O.C. #: ES563812

Attention: Jim Slade
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/07/16

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2A1592
Received: 2012/07/07, 11:00

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PCBs in water by GC/ECD (1)	1	2012/07/09	2012/07/12	ATL SOP 00107	Based on EPA8082
PCBs in water by GC/ECD (1)	1	2012/07/09	2012/07/16	ATL SOP 00107	Based on EPA8082
Total Suspended Solids (1)	2	N/A	2012/07/11	ATL SOP 00007	based on EPA 160.2
Turbidity (1)	2	N/A	2012/07/10	ATL SOP 00011	based on EPA 180.1

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Bedford

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

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Total cover pages: 1

Maxxam Job #: B2A1592
Report Date: 2012/07/16

Stantec Consulting Ltd
Client Project #: 121411777.210
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RP

RESULTS OF ANALYSES OF WATER

Maxxam ID		OB1393		OB1394		
Sampling Date		2012/07/04		2012/07/04		
	Units	**ODP-JULY 4**	**RDL**	**HARBOUR-JULY 4**	**RDL**	**QC Batch**
Inorganics						
Total Suspended Solids	mg/L	2.8	2.0	3.4	1.0	2904522
Turbidity	NTU	1.3	0.10	1.9	0.10	2903139

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		OB1393	OB1394		
Sampling Date		2012/07/04	2012/07/04		
	Units	**ODP-JULY 4**	**HARBOUR-JULY 4**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	<0.050	<0.050	0.050	2902513
Surrogate Recovery (%)					
Decachlorobiphenyl	%	78	89		2902513

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B2A1592
Report Date: 2012/07/16

Stantec Consulting Ltd
Client Project #: 121411777.210
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RP

GENERAL COMMENTS

Samples received at an average temperature >10°C.

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Maxxam Job #: B2A1592
Report Date: 2012/07/16

Stantec Consulting Ltd
Client Project #: 121411777.210
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RP

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
2902513	Decachlorobiphenyl	2012/07/12	69	30 - 130	81	30 - 130	67	%				
2902513	Total PCB	2012/07/12	80	70 - 130	88	70 - 130	<0.050	ug/L	NC	40		
2903139	Turbidity	2012/07/10					<0.10	NTU	7.4	25	100	80 - 120
2904522	Total Suspended Solids	2012/07/11					<1.0	mg/L	3.3	25	102	80 - 120

N/A = Not Applicable
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
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Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

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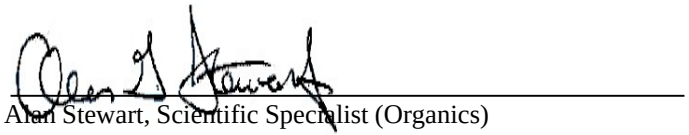
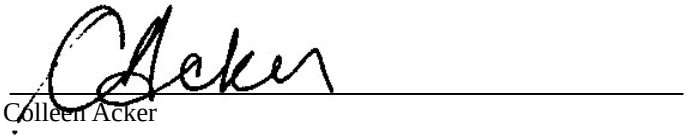
Validation Signature Page

Maxxam Job #: B2A1592

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Alan Stewart, Scientific Specialist (Organics)



Colleen Acker

Mike Macgillivray, Scientific Specialist (Inorganics)

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Your P.O. #: 16400NR
Your Project #: 121411777.200
Site Location: FLUX STUDY
Your C.O.C. #: ES570212

Attention: James Slade
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/07/24

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2A6617
Received: 2012/07/17, 09:53

Sample Matrix: Swab
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PCBs on swabs by GC/ECD (1)	7	2012/07/19	2012/07/23	ATL SOP 00109	Based on EPA8082

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PCBs in water by GC/ECD (1)	2	2012/07/18	2012/07/20	ATL SOP 00107	Based on EPA8082
Total Suspended Solids (1)	2	N/A	2012/07/19	ATL SOP 00007	based on EPA 160.2
Turbidity (1)	2	N/A	2012/07/18	ATL SOP 00011	based on EPA 180.1

Remarks:

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(1) This test was performed by Bedford

Encryption Key

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Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

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Total cover pages: 1

Maxxam Job #: B2A6617
Report Date: 2012/07/24

Stantec Consulting Ltd
Client Project #: 121411777.200
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RP

POLYCHLORINATED BIPHENYLS BY GC-ECD (SWAB)

Maxxam ID		OD9553	OD9554	OD9555	OD9556	OD9557	OD9558	OD9559		
Sampling Date		2012/07/11	2012/07/11	2012/07/11	2012/07/11	2012/07/11	2012/07/11	2012/07/11		
	Units	**12-SWAB1**	**12-SWAB2**	**12-SWAB3**	**12-SWAB4**	**12-SWAB5**	**12-SWAB6**	**12-SWAB7**	**RDL**	**QC Batch**
PCBs										
Total PCB	ug	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	2913088
Surrogate Recovery (%)										
Decachlorobiphenyl	%	93	94	95	96	100	95	98		2913088

RESULTS OF ANALYSES OF WATER

Maxxam ID		OD9551		OD9552		
Sampling Date		2012/07/11		2012/07/11		
	Units	**ODP-JUL 11**	**RDL**	**HARBOUR-JUL 11**	**RDL**	**QC Batch**
Inorganics						
Total Suspended Solids	mg/L	2.0	2.0	2.2	1.0	2911710
Turbidity	NTU	1.4	0.10	1.9	0.10	2911421

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		OD9551	OD9552		
Sampling Date		2012/07/11	2012/07/11		
	Units	**ODP-JUL 11**	**HARBOUR-JUL 11**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	<0.050	<0.050	0.050	2911450
Surrogate Recovery (%)					
Decachlorobiphenyl	%	82	73		2911450

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B2A6617
Report Date: 2012/07/24

Stantec Consulting Ltd
Client Project #: 121411777.200
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RP

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
2911421	Turbidity	2012/07/18					<0.10	NTU	12.1	25	102	80 - 120
2911450	Decachlorobiphenyl	2012/07/20	80	30 - 130	92	30 - 130	82	%				
2911450	Total PCB	2012/07/20	108	70 - 130	106	70 - 130	<0.050	ug/L	NC	40		
2911710	Total Suspended Solids	2012/07/19					<1.0	mg/L	1.3	25	98	80 - 120
2913088	Decachlorobiphenyl	2012/07/23			94	30 - 130	93	%				
2913088	Total PCB	2012/07/23			80	30 - 130	<5.0	ug				

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Validation Signature Page

Maxxam Job #: B2A6617

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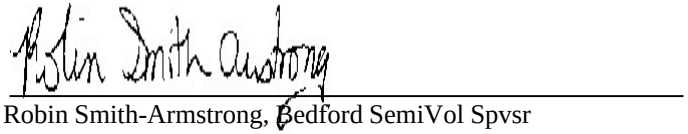
Kevin Macdonald, Inorganics Supervisor

Mike Macgillivray, Scientific Specialist (Inorganics)



Robin Smith-Armstrong, Bedford SemiVol Spvsr

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Your P.O. #: 16400NR
Your Project #: 121411777.300
Site Location: HOPEDALE-FLUX
Your C.O.C. #: ES573112

Attention: Anna Roy
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/07/31

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2B0772
Received: 2012/07/24, 09:51

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PCBs in water by GC/ECD (1)	2	2012/07/24	2012/07/27	ATL SOP 00107	Based on EPA8082
Total Suspended Solids (1)	2	N/A	2012/07/26	ATL SOP 00007	based on EPA 160.2
Turbidity (1)	2	N/A	2012/07/25	ATL SOP 00011	based on EPA 180.1

Remarks:

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Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

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Total cover pages: 1

Maxxam Job #: B2B0772
Report Date: 2012/07/31

Stantec Consulting Ltd
Client Project #: 121411777.300
Site Location: HOPEDALE-FLUX
Your P.O. #: 16400NR
Sampler Initials: AR

RESULTS OF ANALYSES OF WATER

Maxxam ID		OF9929	OF9929	OF9930		
Sampling Date		2012/07/18 14:00	2012/07/18 14:00	2012/07/18 14:30		
	Units	**ODP-JULY 18**	**ODP-JULY 18 Lab-Dup**	**HARBOUR-JULY 18**	**RDL**	**QC Batch**
Inorganics						
Total Suspended Solids	mg/L	1.4		2.8	1.0	2918481
Turbidity	NTU	1.3	1.3	2.2	0.10	2918332

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		OF9929	OF9930		
Sampling Date		2012/07/18 14:00	2012/07/18 14:30		
	Units	**ODP-JULY 18**	**HARBOUR-JULY 18**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	0.064	0.050	0.050	2917735
Surrogate Recovery (%)					
Decachlorobiphenyl	%	73(1)	74(1)		2917735

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Aroclor 1254, 1260.

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Maxxam Job #: B2B0772
Report Date: 2012/07/31

Stantec Consulting Ltd
Client Project #: 121411777.300
Site Location: HOPEDALE-FLUX
Your P.O. #: 16400NR
Sampler Initials: AR

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
2917735	Decachlorobiphenyl	2012/07/27	76	30 - 130	36	30 - 130	39	%				
2917735	Total PCB	2012/07/27	121	70 - 130	115	70 - 130	<0.050	ug/L	NC	40		
2918332	Turbidity	2012/07/25					<0.10	NTU	0	25	103	80 - 120
2918481	Total Suspended Solids	2012/07/26					<1.0	mg/L	21.7	25	100	80 - 120

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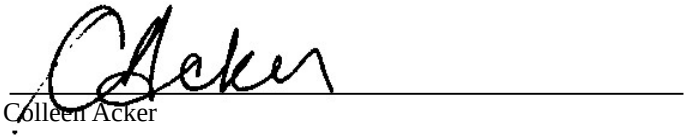
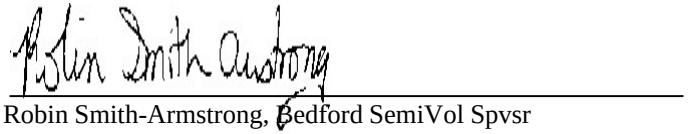


Colleen Acker

Kevin Macdonald, Inorganics Supervisor



Robin Smith-Armstrong, Bedford SemiVol Spvsr

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Your P.O. #: 16400NR
Your Project #: 121411777.310
Site Location: HOPEDALE-FLUX
Your C.O.C. #: ES573312

Attention: Jim Slade
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/07/31

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2B0773
Received: 2012/07/24, 09:51

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PCBs in water by GC/ECD (1)	2	2012/07/24	2012/07/27	ATL SOP 00107	Based on EPA8082
Total Suspended Solids (1)	2	N/A	2012/07/30	ATL SOP 00007	based on EPA 160.2
Turbidity (1)	2	N/A	2012/07/25	ATL SOP 00011	based on EPA 180.1

Remarks:

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Encryption Key

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Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

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Total cover pages: 1

Maxxam Job #: B2B0773
Report Date: 2012/07/31

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE-FLUX
Your P.O. #: 16400NR
Sampler Initials: AR

RESULTS OF ANALYSES OF WATER

Maxxam ID		OF9931	OF9943		
Sampling Date		2012/07/22 10:30	2012/07/22 10:00		
	Units	**HARBOUR-JULY 22**	**ODP-JULY 22**	**RDL**	**QC Batch**
Inorganics					
Total Suspended Solids	mg/L	1.4	2.8	1.0	2918461
Turbidity	NTU	1.6	1.4	0.10	2918332

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		OF9931	OF9943		
Sampling Date		2012/07/22 10:30	2012/07/22 10:00		
	Units	**HARBOUR-JULY 22**	**ODP-JULY 22**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	0.061	<0.050	0.050	2917735
Surrogate Recovery (%)					
Decachlorobiphenyl	%	74(1)	64		2917735

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Aroclor 1254, 1260.

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Maxxam Job #: B2B0773
Report Date: 2012/07/31

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE-FLUX
Your P.O. #: 16400NR
Sampler Initials: AR

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
2917735	Decachlorobiphenyl	2012/07/27	76	30 - 130	36	30 - 130	39	%				
2917735	Total PCB	2012/07/27	121	70 - 130	115	70 - 130	<0.050	ug/L	NC	40		
2918332	Turbidity	2012/07/25					<0.10	NTU	0	25	103	80 - 120
2918461	Total Suspended Solids	2012/07/30					<1.0	mg/L	2.5	25	99	80 - 120

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QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
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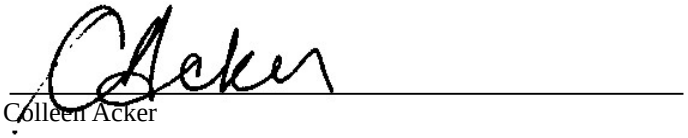
Validation Signature Page

Maxxam Job #: B2B0773

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Colleen Acker

Kevin Macdonald, Inorganics Supervisor

Robin Smith-Armstrong, Bedford SemiVol Spvsr

==========

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Your P.O. #: 16400NR
Your Project #: 121411777.310
Site Location: FLUX STUDY
Your C.O.C. #: ES564312

Attention: James Slade
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/08/27

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2C6950
Received: 2012/08/21, 09:29

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PCBs in water by GC/ECD (1)	2	2012/08/22	2012/08/24	ATL SOP 00107	Based on EPA8082
Total Suspended Solids (1)	2	N/A	2012/08/23	ATL SOP 00007	based on EPA 160.2
Turbidity (1)	2	N/A	2012/08/23	ATL SOP 00011	based on EPA 180.1

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Bedford

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

==========

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Total cover pages: 1

Maxxam Job #: B2C6950
Report Date: 2012/08/27

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RMP

RESULTS OF ANALYSES OF WATER

Maxxam ID		ON9965	ON9966		
Sampling Date		2012/08/15	2012/08/15		
	Units	**ODP-AUG 15**	**HARBOUR-AUG 15**	**RDL**	**QC Batch**
Inorganics					
Total Suspended Solids	mg/L	2.4	2.0	2.0	2946608
Turbidity	NTU	1.5	2.3	0.10	2947550

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		ON9965	ON9966		
Sampling Date		2012/08/15	2012/08/15		
	Units	**ODP-AUG 15**	**HARBOUR-AUG 15**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	<0.050	<0.050	0.050	2947122
Surrogate Recovery (%)					
Decachlorobiphenyl	%	73	79		2947122

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B2C6950
Report Date: 2012/08/27

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RMP

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
2946608	Total Suspended Solids	2012/08/23					<1.0	mg/L	5.8	25	99	80 - 120
2947122	Decachlorobiphenyl	2012/08/24	84	30 - 130	37	30 - 130	46	%				
2947122	Total PCB	2012/08/24	105	70 - 130	113	70 - 130	<0.050	ug/L	NC	40		
2947550	Turbidity	2012/08/23					<0.10	NTU	NC	25	102	80 - 120

N/A = Not Applicable
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

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Validation Signature Page

Maxxam Job #: B2C6950

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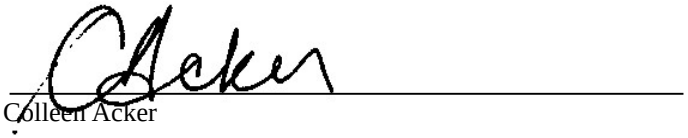
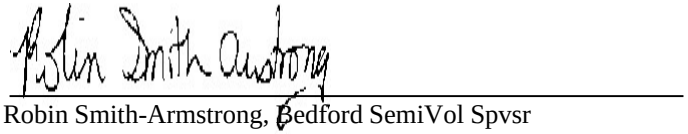


Colleen Acker

Mike Macgillivray, Scientific Specialist (Inorganics)



Robin Smith-Armstrong, Bedford SemiVol Spvsr

==========

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Your P.O. #: 16400NR
Your Project #: 121411777.310
Site Location: HOPEDALE FLUX
Your C.O.C. #: ES598712

Attention: Anna Roy
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/09/06

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2D2336
Received: 2012/08/29, 09:17

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PCBs in water by GC/ECD	2	2012/08/29	2012/09/05	ATL SOP 00107	Based on EPA8082
Total Suspended Solids	2	N/A	2012/08/30	ATL SOP 00007	based on EPA 160.2
Turbidity	2	N/A	2012/09/05	ATL SOP 00011	based on EPA 180.1

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

==========

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Total cover pages: 1

Maxxam Job #: B2D2336
Report Date: 2012/09/06

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE FLUX
Your P.O. #: 16400NR
Sampler Initials: AR

RESULTS OF ANALYSES OF WATER

Maxxam ID		OQ7601	OQ7602		
Sampling Date		2012/08/22 15:45	2012/08/22 15:15		
	Units	**HARBOUR-AUG.22**	**ODP-AUG.22**	**RDL**	**QC Batch**
Inorganics					
Total Suspended Solids	mg/L	3.2	7.2	2.0	2955043
Turbidity	NTU	2.3	2.1	0.10	2959447

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		OQ7601	OQ7602		
Sampling Date		2012/08/22 15:45	2012/08/22 15:15		
	Units	**HARBOUR-AUG.22**	**ODP-AUG.22**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	0.034	<0.020	0.020	2954260
Surrogate Recovery (%)					
Decachlorobiphenyl	%	159(1)	149(2)		2954260

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Aroclor 1260. PCBs reported with lower RDL as per client request. PCB surrogate not within acceptance limits. Insufficient sample to repeat.
(2) - PCBs reported with lower RDL as per client request. PCB surrogate not within acceptance limits. Insufficient sample to repeat.

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Maxxam Job #: B2D2336
Report Date: 2012/09/06

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE FLUX
Your P.O. #: 16400NR
Sampler Initials: AR

Package 1	14.0°C

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

GENERAL COMMENTS

The samples were received at an average temperature above 10 degrees celsius.

Sample OQ7601-01: Total Suspended Solids: Sample integrity may have been compromised, the sample exceeded it's hold time prior to being analyzed.

Sample OQ7602-01: Total Suspended Solids: Sample integrity may have been compromised, the sample exceeded it's hold time prior to being analyzed.

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Maxxam Job #: B2D2336
Report Date: 2012/09/06

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE FLUX
Your P.O. #: 16400NR
Sampler Initials: AR

QUALITY ASSURANCE REPORT

			Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
2954260	Decachlorobiphenyl	2012/09/05	64	30 - 130	70	%				
2954260	Total PCB	2012/09/05	110	70 - 130	<0.050	ug/L				
2955043	Total Suspended Solids	2012/08/30			<1.0	mg/L	12.9	25	100	80 - 120
2959447	Turbidity	2012/09/05			<0.10	NTU	8.8	25	102	80 - 120

N/A = Not Applicable
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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Validation Signature Page

Maxxam Job #: B2D2336

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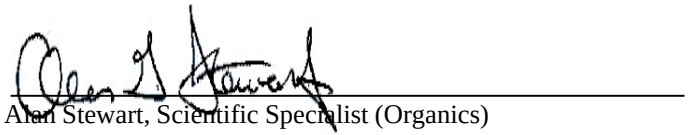
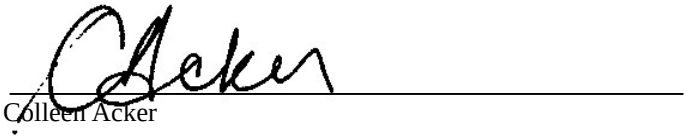
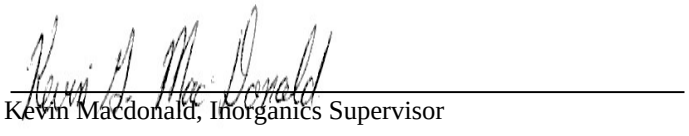


Alan Stewart, Scientific Specialist (Organics)



Colleen Acker



Kevin Macdonald, Inorganics Supervisor

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Your P.O. #: 16400NR
Your Project #: 121411777.310
Site Location: FLUX
Your C.O.C. #: ES579012

Attention: Anna Roy
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/09/11

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2D4809
Received: 2012/09/01, 11:04

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PCBs in water by GC/ECD (1)	2	2012/09/05	2012/09/11	ATL SOP 00107	Based on EPA8082
Total Suspended Solids (1)	2	N/A	2012/09/07	ATL SOP 00007	based on EPA 160.2
Turbidity (1)	2	N/A	2012/09/07	ATL SOP 00011	based on EPA 180.1

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Bedford

Encryption Key

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Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

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Total cover pages: 1

Maxxam Job #: B2D4809
Report Date: 2012/09/11

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX
Your P.O. #: 16400NR
Sampler Initials: AR

RESULTS OF ANALYSES OF WATER

Maxxam ID		OS1788	OS1794		
Sampling Date		2012/08/29 10:30	2012/08/29 10:15		
	Units	**HARBOUR- AUG. 29**	**ODP-AUG.29**	**RDL**	**QC Batch**
Inorganics					
Total Suspended Solids	mg/L	6.0	2.2	1.0	2959622
Turbidity	NTU	2.2	1.7	0.10	2962415

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		OS1788	OS1794		
Sampling Date		2012/08/29 10:30	2012/08/29 10:15		
	Units	**HARBOUR- AUG. 29**	**ODP-AUG.29**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	<0.050	<0.050	0.050	2963005
Surrogate Recovery (%)					
Decachlorobiphenyl	%	106	104		2963005

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B2D4809
Report Date: 2012/09/11

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX
Your P.O. #: 16400NR
Sampler Initials: AR

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
2959622	Total Suspended Solids	2012/09/07					<1.0	mg/L	3.5	25	92	80 - 120
2962415	Turbidity	2012/09/07					<0.10	NTU	3.8	25	100	80 - 120
2963005	Decachlorobiphenyl	2012/09/11	104	30 - 130	120	30 - 130	35	%				
2963005	Total PCB	2012/09/11	104	70 - 130	111	70 - 130	<0.050	ug/L	NC	40		

N/A = Not Applicable
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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Maxxam Job #: B2D4809
Report Date: 2012/09/11

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX
Your P.O. #: 16400NR
Sampler Initials: AR

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

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Validation Signature Page

Maxxam Job #: B2D4809

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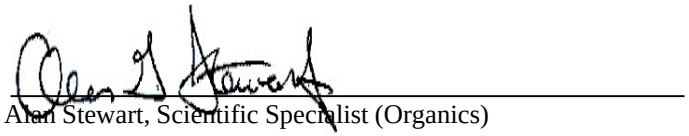

Alan Stewart, Scientific Specialist (Organics)

Kevin Macdonald, Inorganics Supervisor

Mike Macgillivray, Scientific Specialist (Inorganics)

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Your P.O. #: 16400NR
Your Project #: 121411777.310
Site Location: FLUX STUDY
Your C.O.C. #: ES612212

Attention: Jim Slade
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/09/20

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2E0596
Received: 2012/09/13, 09:20

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PCBs in water by GC/ECD (1)	2	2012/09/18	2012/09/20	ATL SOP 00107	Based on EPA8082
Total Suspended Solids (1)	2	N/A	2012/09/17	ATL SOP 00007	based on EPA 160.2
Turbidity (1)	2	N/A	2012/09/17	ATL SOP 00011	based on EPA 180.1

Remarks:

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* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Bedford

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

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Total cover pages: 1

Maxxam Job #: B2E0596
Report Date: 2012/09/20

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: JS

RESULTS OF ANALYSES OF WATER

Maxxam ID		OU9773		OU9774		
Sampling Date		2012/09/05		2012/09/05		
	Units	**ODP- SEPT.5**	**RDL**	**HARBOUR- SEPT.5**	**RDL**	**QC Batch**
Inorganics						
Total Suspended Solids	mg/L	<2.0	2.0	3.8	1.0	2970076
Turbidity	NTU	1.1	0.10	2.6	0.10	2971871

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		OU9773	OU9774		
Sampling Date		2012/09/05	2012/09/05		
	Units	**ODP- SEPT.5**	**HARBOUR- SEPT.5**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	<0.050	<0.050	0.050	2973202
Surrogate Recovery (%)					
Decachlorobiphenyl	%	78(1)	82(1)		2973202

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - PCB sample analysed past recommended hold time as per client request.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

Maxxam Job #: B2E0596
Report Date: 2012/09/20

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: JS

GENERAL COMMENTS

TSS samples received one day past the recommended 7 day holding time.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

Maxxam Job #: B2E0596
Report Date: 2012/09/20

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: JS

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
2970076	Total Suspended Solids	2012/09/17					<1.0	mg/L	NC	25	99	80 - 120
2971871	Turbidity	2012/09/17					<0.10	NTU	11.5	25	100	80 - 120
2973202	Decachlorobiphenyl	2012/09/20	83	30 - 130	32	30 - 130	40	%				
2973202	Total PCB	2012/09/20	104	70 - 130	105	70 - 130	<0.050	ug/L	NC	40		

N/A = Not Applicable
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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Maxxam Job #: B2E0596
Report Date: 2012/09/20

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: JS

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

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Validation Signature Page

Maxxam Job #: B2E0596

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Colleen Acker

Mike Macgillivray, Scientific Specialist (Inorganics)

Robin Smith-Armstrong, Bedford SemiVol Spvsr

==========

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Your P.O. #: 16400NR
Your Project #: 121411777.310
Site Location: HOPEDALE FLUX
Your C.O.C. #: ES617512

Attention: Anna Roy
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/10/02

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2E7721
Received: 2012/09/25, 9:57

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PCBs in water by GC/ECD (1)	2	2012/09/25	2012/09/28	ATL SOP 00107	Based on EPA8082
Total Suspended Solids (1)	2	N/A	2012/09/26	ATL SOP 00007	based on EPA 160.2
Turbidity (1)	2	N/A	2012/09/28	ATL SOP 00011	based on EPA 180.1

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Bedford

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

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Total cover pages: 1

Maxxam Job #: B2E7721
Report Date: 2012/10/02

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE FLUX
Your P.O. #: 16400NR
Sampler Initials: AR

RESULTS OF ANALYSES OF WATER

Maxxam ID		OY6057	OY6058		
Sampling Date		2012/09/18 16:00	2012/09/18 16:00		
	Units	**ODP-SEPT. 18**	**HARBOUR-SEPT. 18**	**RDL**	**QC Batch**
Inorganics					
Total Suspended Solids	mg/L	<2.0	4.0	2.0	2980801
Turbidity	NTU	1.6	2.1	0.10	2985426

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		OY6057	OY6058		
Sampling Date		2012/09/18 16:00	2012/09/18 16:00		
	Units	**ODP-SEPT. 18**	**HARBOUR-SEPT. 18**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	<0.050	<0.050	0.050	2982428
Surrogate Recovery (%)					
Decachlorobiphenyl	%	66	61		2982428

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B2E7721
Report Date: 2012/10/02

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE FLUX
Your P.O. #: 16400NR
Sampler Initials: AR

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
2980801	Total Suspended Solids	2012/09/26					<1.0	mg/L	1.2	25	96	80 - 120
2982428	Decachlorobiphenyl	2012/09/28	84	30 - 130	79	30 - 130	60	%				
2982428	Total PCB	2012/09/28	92	70 - 130	93	70 - 130	<0.050	ug/L	NC	40		
2985426	Turbidity	2012/09/28					<0.10	NTU	6.3	25	102	80 - 120

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Validation Signature Page

Maxxam Job #: B2E7721

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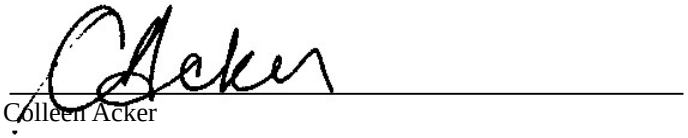
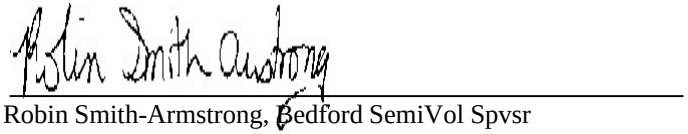


Colleen Acker

Mike Macgillivray, Scientific Specialist (Inorganics)



Robin Smith-Armstrong, Bedford SemiVol Spvsr

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Your P.O. #: 16400NR
Your Project #: 121411777.310
Site Location: FLUX STUDY
Your C.O.C. #: ES616812

Attention: Jim Slade
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/10/12

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2F3921
Received: 2012/10/04, 09:32

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PCBs in water by GC/ECD (1)	2	2012/10/05	2012/10/10	ATL SOP 00107	Based on EPA8082
Total Suspended Solids (1)	2	N/A	2012/10/09	ATL SOP 00007	based on EPA 160.2
Turbidity (1)	2	N/A	2012/10/12	ATL SOP 00011	based on EPA 180.1

Remarks:

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* Results relate only to the items tested.

(1) This test was performed by Bedford

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

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Total cover pages: 1

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Maxxam Job #: B2F3921
Report Date: 2012/10/12

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RMP

RESULTS OF ANALYSES OF WATER

Maxxam ID		PB8754	PB8755		
Sampling Date		2012/09/26	2012/09/26		
	Units	**ODP - SEPT 26**	**HARBOUR - SEPT 26**	**RDL**	**QC Batch**
Inorganics					
Total Suspended Solids	mg/L	4.2	2.8	1.0	2991890
Turbidity	NTU	1.4	2.9	0.10	2999152

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		PB8754	PB8755		
Sampling Date		2012/09/26	2012/09/26		
	Units	**ODP - SEPT 26**	**HARBOUR - SEPT 26**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	<0.050	<0.050	0.050	2994938
Surrogate Recovery (%)					
Decachlorobiphenyl	%	77	66		2994938

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B2F3921
Report Date: 2012/10/12

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RMP

GENERAL COMMENTS

Samples were received past the recommended hold time for PCB and TSS analysis. Analysis has proceeded as per client request. 10/4/12 MMC

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Maxxam Job #: B2F3921
Report Date: 2012/10/12

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RMP

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
2991890	Total Suspended Solids	2012/10/09					<1.0	mg/L	2.1	25	99	80 - 120
2994938	Decachlorobiphenyl	2012/10/10	62	30 - 130	45	30 - 130	39	%				
2994938	Total PCB	2012/10/10	105	70 - 130	111	70 - 130	<0.050	ug/L	NC	40		
2999152	Turbidity	2012/10/12							NC	25	102	80 - 120

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Maxxam Job #: B2F3921

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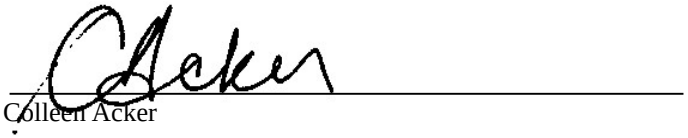
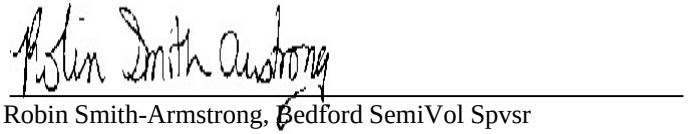


Colleen Acker

Mike Macgillivray, Scientific Specialist (Inorganics)



Robin Smith-Armstrong, Bedford SemiVol Spvsr

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Your P.O. #: 16400NR
Your Project #: 121411777.310
Site Location: FLUX STUDY
Your C.O.C. #: ES616612

Attention: Jim Slade
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/10/17

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2F6630
Received: 2012/10/10, 09:34

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PCBs in water by GC/ECD (1)	2	2012/10/10	2012/10/15	ATL SOP 00107	Based on EPA8082
Total Suspended Solids (1)	2	N/A	2012/10/11	ATL SOP 00007	based on EPA 160.2
Turbidity (1)	2	N/A	2012/10/17	ATL SOP 00011	based on EPA 180.1

Remarks:

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* Results relate only to the items tested.

(1) This test was performed by Bedford

Encryption Key

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Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

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Total cover pages: 1

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Maxxam Job #: B2F6630
Report Date: 2012/10/17

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RMP

RESULTS OF ANALYSES OF WATER

Maxxam ID		PD2627	PD2628		
Sampling Date		2012/10/03	2012/10/03		
	Units	**ODP - OCT.3**	**HARBOUR - OCT.3**	**RDL**	**QC Batch**
Inorganics					
Total Suspended Solids	mg/L	1.6	4.0	1.0	2996737
Turbidity	NTU	1.5	4.0	0.10	3004033

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		PD2627	PD2628		
Sampling Date		2012/10/03	2012/10/03		
	Units	**ODP - OCT.3**	**HARBOUR - OCT.3**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	<0.050	0.054	0.050	2997597
Surrogate Recovery (%)					
Decachlorobiphenyl	%	64	59(1)		2997597

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Aroclor 1260.

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Maxxam Job #: B2F6630
Report Date: 2012/10/17

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RMP

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
2996737	Total Suspended Solids	2012/10/11					<1.0	mg/L	0	25	96	80 - 120
2997597	Decachlorobiphenyl	2012/10/12	85	30 - 130	39	30 - 130	75	%				
2997597	Total PCB	2012/10/12	101	70 - 130	112	70 - 130	<0.050	ug/L	NC	40		
3004033	Turbidity	2012/10/17							NC	25	102	80 - 120

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Validation Signature Page

Maxxam Job #: B2F6630

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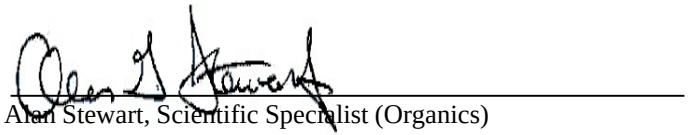
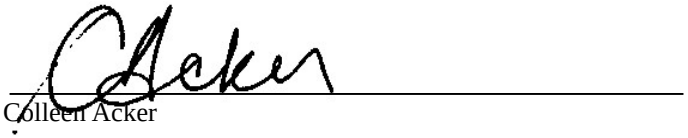


Alan Stewart, Scientific Specialist (Organics)



Colleen Acker

Mike Macgillivray, Scientific Specialist (Inorganics)

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Your P.O. #: 16400NR
Your Project #: 121411777.310
Site Location: FLUX STUDY
Your C.O.C. #: ES648212

Attention: Jim Slade
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/11/16

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2H6202
Received: 2012/11/09, 10:09

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
PCBs in water by GC/ECD (1)	2	2012/11/09	2012/11/15	ATL SOP 00107	Based on EPA8082
Total Suspended Solids (1)	2	N/A	2012/11/13	ATL SOP 00007	based on EPA 160.2
Turbidity (1)	2	N/A	2012/11/15	ATL SOP 00011	based on EPA 180.1

Remarks:

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* Results relate only to the items tested.

(1) This test was performed by Bedford

Encryption Key

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Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

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Total cover pages: 1

Maxxam Job #: B2H6202
Report Date: 2012/11/16

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RMP

RESULTS OF ANALYSES OF WATER

Maxxam ID		PN9446	PN9446	PN9447		
Sampling Date		2012/11/03	2012/11/03	2012/11/03		
	Units	**HARBOUR- 3NOV12**	**HARBOUR-3NOV12 Lab-Dup**	**ODP- 3NOV12**	**RDL**	**QC Batch**
Inorganics						
Total Suspended Solids	mg/L	1.8		3.6	1.0	3031936
Turbidity	NTU	2.5	2.6	4.6	0.10	3036969

POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Maxxam ID		PN9446	PN9447		
Sampling Date		2012/11/03	2012/11/03		
	Units	**HARBOUR- 3NOV12**	**ODP- 3NOV12**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/L	<0.050	<0.050	0.050	3035511
Surrogate Recovery (%)					
Decachlorobiphenyl	%	55	53		3035511

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B2H6202
Report Date: 2012/11/16

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RMP

GENERAL COMMENTS

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

Maxxam Job #: B2H6202
Report Date: 2012/11/16

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: FLUX STUDY
Your P.O. #: 16400NR
Sampler Initials: RMP

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
3031936	Total Suspended Solids	2012/11/13					<1.0	mg/L	3.4	25	100	80 - 120
3035511	Decachlorobiphenyl	2012/11/15	63	30 - 130	67	30 - 130	59	%				
3035511	Total PCB	2012/11/15	79	70 - 130	89	70 - 130	<0.050	ug/L	NC	40		
3036969	Turbidity	2012/11/15							4.4	25	103	80 - 120

N/A = Not Applicable
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Maxxam Analytics International Corporation o/a Maxxam Analytics 49-55 Elizabeth Ave, Suite 101A, St.John's, NL, Canada A1A 1W9 Tel: 709-754-0203 Toll Free: 888-492-7227 Fax:709-754-8612 www.maxxam.ca

Validation Signature Page

Maxxam Job #: B2H6202

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Mike Macgillivray, Scientific Specialist (Inorganics)

Robin Smith-Armstrong, Bedford SemiVol Spvsr

==========

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Your P.O. #: 16400NR
Your Project #: 121411777.210
Site Location: MARINE FRESHWATER SAMPLING
Your C.O.C. #: ES563912

Attention: James Slade
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2012/07/17

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2A3155
Received: 2012/07/11, 09:10

Sample Matrix: Soil
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Moisture (1)	8	N/A	2012/07/12	ATL SOP 00001	MOE Handbook 1983
Low Level PCB in Soil by GC-ECD (1)	1	2012/07/12	2012/07/16	ATL SOP 00106	Based EPA8082
Low Level PCB in Soil by GC-ECD (1)	7	2012/07/13	2012/07/16	ATL SOP 00106	Based EPA8082

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Bedford

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

==========

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Total cover pages: 1

Maxxam Job #: B2A3155
Report Date: 2012/07/17

Stantec Consulting Ltd
Client Project #: 121411777.210
Site Location: MARINE FRESHWATER SAMPLING
Your P.O. #: 16400NR
Sampler Initials: RP

RESULTS OF ANALYSES OF SOIL

Maxxam ID		OC0771	OC0772	OC0773	OC0774	OC0775	OC0776	OC0777	OC0778		
Sampling Date		2012/07/06	2012/07/06	2012/07/06	2012/07/06	2012/07/06	2012/07/06	2012/07/06	2012/07/06		
	Units	**12-SED01**	**12-SED02**	**12-SED03**	**12-SED04**	**12-SED05**	**12-SED08**	**12-SED09**	**12-SED10**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	20	14	14	17	27	22	14	13	1	2905900

PCB'S AND DDT BY GC-ECD (SOIL)

Maxxam ID		OC0771	OC0771	OC0772	OC0773	OC0774	OC0775	OC0776	OC0777	OC0778		
Sampling Date		2012/07/06	2012/07/06	2012/07/06	2012/07/06	2012/07/06	2012/07/06	2012/07/06	2012/07/06	2012/07/06		
	Units	**12-SED01**	**12-SED01 Lab-Dup**	**12-SED02**	**12-SED03**	**12-SED04**	**12-SED05**	**12-SED08**	**12-SED09**	**12-SED10**	**RDL**	**QC Batch**
PCBs												
Total PCB	mg/kg	0.042	0.033	0.020	0.22	0.19	0.25	0.13	0.84	0.57	0.010	2907110
Surrogate Recovery (%)												
Decachlorobiphenyl	%	91(1)	91	88(1)	96(1)	92(1)	87(1)	96(1)	91(1)	83(1)		2907110

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Aroclor 1260.

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Maxxam Job #: B2A3155
Report Date: 2012/07/17

Stantec Consulting Ltd
Client Project #: 121411777.210
Site Location: MARINE FRESHWATER SAMPLING
Your P.O. #: 16400NR
Sampler Initials: RP

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
2907110	Decachlorobiphenyl	2012/07/16	94	70 - 130	92	70 - 130	98	%		
2907110	Total PCB	2012/07/16	84	70 - 130	84	70 - 130	<0.010	mg/kg	NC	50

N/A = Not Applicable
RPD = Relative Percent Difference
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

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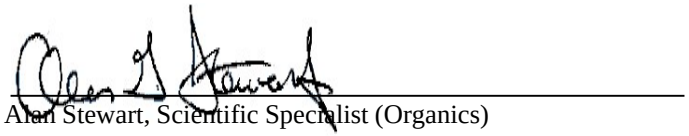
Validation Signature Page

Maxxam Job #: B2A3155

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Alan Stewart, Scientific Specialist (Organics)

Ross MacDonald, Scientific Specialist (Organics)

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Your P.O. #: 16400NR
Your Project #: 121411777.300
Site Location: HOPEDALE REMEDIATION
Your C.O.C. #: ES569712

Attention: Jim Slade
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2013/06/10
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2E1518
Received: 2012/09/13, 09:20

Sample Matrix: Soil
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Moisture	10	N/A	2012/09/18	ATL SOP 00001	MOE Handbook 1983
Low Level PCB in Soil by GC-ECD	10	2012/09/18	2012/09/20	ATL SOP 00106	Based EPA8082

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

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Total cover pages: 1

Maxxam Job #: B2E1518
Report Date: 2013/06/10

Stantec Consulting Ltd
Client Project #: 121411777.300
Site Location: HOPEDALE REMEDIATION
Your P.O. #: 16400NR
Sampler Initials: JS

RESULTS OF ANALYSES OF SOIL

Maxxam ID		OV4878	OV4879	OV4880	OV4881	OV4882	OV4883	OV4884		
Sampling Date		2012/09/01	2012/09/01	2012/09/01	2012/09/01	2012/09/01	2012/09/01	2012/09/01		
COC Number		ES569712	ES569712	ES569712	ES569712	ES569712	ES569712	ES569712		
	Units	**SS1**	**SS2**	**SS3**	**SS4**	**SS5**	**SS6**	**SS7**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	38	36	57	47	24	31	37	1	2972012

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		OV4885	OV4886	OV4887		
Sampling Date		2012/09/01	2012/09/01	2012/09/01		
COC Number		ES569712	ES569712	ES569712		
	Units	**SS10**	**SS11**	**SS15**	**RDL**	**QC Batch**
Inorganics						
Moisture	%	32	24	23	1	2972012

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B2E1518
Report Date: 2013/06/10

Stantec Consulting Ltd
Client Project #: 121411777.300
Site Location: HOPEDALE REMEDIATION
Your P.O. #: 16400NR
Sampler Initials: JS

PCB'S AND DDT BY GC-ECD (SOIL)

Maxxam ID		OV4878	OV4879	OV4880	OV4881	OV4882	OV4883		
Sampling Date		2012/09/01	2012/09/01	2012/09/01	2012/09/01	2012/09/01	2012/09/01		
COC Number		ES569712	ES569712	ES569712	ES569712	ES569712	ES569712		
	Units	**SS1**	**SS2**	**SS3**	**SS4**	**SS5**	**SS6**	**RDL**	**QC Batch**
PCBs									
Total PCB	mg/kg	0.28	0.27	0.88	0.27	0.12	0.35	0.010	2973251
Surrogate Recovery (%)									
Decachlorobiphenyl	%	91 (1)	83 (1)	80 (1)	97 (1)	102 (1)	97 (1)		2973251

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Aroclor 1260.

Maxxam ID		OV4884	OV4885	OV4886	OV4886	OV4887		
Sampling Date		2012/09/01	2012/09/01	2012/09/01	2012/09/01	2012/09/01		
COC Number		ES569712	ES569712	ES569712	ES569712	ES569712		
	Units	**SS7**	**SS10**	**SS11**	**SS11 Lab-Dup**	**SS15**	**RDL**	**QC Batch**
PCBs								
Total PCB	mg/kg	0.41	0.062	0.035	0.048	0.13	0.010	2973251
Surrogate Recovery (%)								
Decachlorobiphenyl	%	95 (1)	91 (1)	101 (1)	100	98 (2)		2973251

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Aroclor 1260.
(2) Aroclor 1254, 1260.

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Maxxam Job #: B2E1518
Report Date: 2013/06/10

Stantec Consulting Ltd
Client Project #: 121411777.300
Site Location: HOPEDALE REMEDIATION
Your P.O. #: 16400NR
Sampler Initials: JS

Package 1	10.0°C

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

GENERAL COMMENTS

Marine Sediment samples (SS1-SS10, SS11, and SS15) tested past the recommended 14 day holding time for PCBs due to lab errror.

Revised report: Split file to only report samples SS1-SS7, SS10, SS11, and SS15 separately as per client request. June 10, 2013. MHL

Results relate only to the items tested.

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Stantec Consulting Ltd
Attention: Jim Slade
Client Project #: 121411777.300
P.O. #: 16400NR
Site Location: HOPEDALE REMEDIATION

Quality Assurance Report

Maxxam Job Number: ZB2E1518

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2973251	KJO	Matrix Spike						
		[OV4886-01]	Decachlorobiphenyl	2012/09/20		89	%	70 - 130
			Total PCB	2012/09/20		92	%	70 - 130
		Spiked Blank	Decachlorobiphenyl	2012/09/20		94	%	70 - 130
			Total PCB	2012/09/20		96	%	70 - 130
		Method Blank	Decachlorobiphenyl	2012/09/20		99	%	70 - 130
			Total PCB	2012/09/20	<0.010		mg/kg	
		RPD [OV4886-01]	Total PCB	2012/09/20	NC		%	50

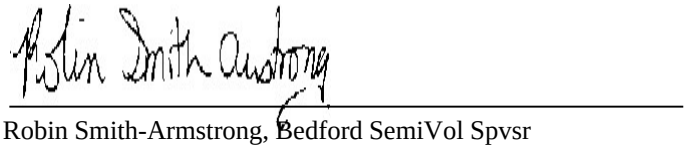
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B2E1518

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Rose MacDonald, Scientific Specialist (Organics)



Robin Smith-Armstrong, Bedford SemiVol Spvsr

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Your P.O. #: 16400NR
Your Project #: 121411777.310
Site Location: HOPEDALE-ODP
Your C.O.C. #: ES618312

Attention: Anna Roy
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2013/09/12
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2E9286
Received: 2012/09/26, 09:36

Sample Matrix: Soil
Samples Received: 20

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
TEH in Soil (PIRI) (1,2)	15	2012/09/28	2012/10/01	ATL SOP 00111	Based on Atl. PIRI
TEH in Soil (PIRI) (1,2)	5	2012/09/28	2012/10/02	ATL SOP 00111	Based on Atl. PIRI
Moisture (1)	20	N/A	2012/09/28	ATL SOP 00001	MOE Handbook 1983
PCBs in soil by GC/ECD (1,2)	3	2012/10/01	2012/10/02	ATL SOP 00106	Based on EPA8082
PCBs in soil by GC/ECD (1,2)	17	2012/10/01	2012/10/03	ATL SOP 00106	Based on EPA8082
VPH in Soil (PIRI) (1)	5	2012/09/28	2012/09/28	ATL SOP 00119	Based on Atl. PIRI
VPH in Soil (PIRI) (1)	6	2012/09/28	2012/09/29	ATL SOP 00119	Based on Atl. PIRI
VPH in Soil (PIRI) (1)	9	2012/09/28	2012/10/01	ATL SOP 00119	Based on Atl. PIRI
ModTPH (T1) Calc. for Soil (1,3)	20	N/A	2012/10/02	N/A	Based on Atl. PIRI

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Bedford
(2) Soils are reported on a dry weight basis unless otherwise specified.
(3) New RDLs in effect due to release of NS Contaminated Sites Regulations. Reduced RDL based on MDL study performance. Low level analytical run checks being implemented.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

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Total cover pages: 1

Maxxam Job #: B2E9286
Report Date: 2013/09/12

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE-ODP
Your P.O. #: 16400NR
Sampler Initials: JSA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		OZ3657	OZ3658	OZ3659	OZ3660	OZ3661	OZ3662	OZ3663	OZ3664		
Sampling Date		2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18		
	Units	**ODP-C1A-01**	**ODP-C1A-02**	**ODP-C1A-03**	**ODP-C2A-01**	**ODP-C3A-01**	**ODP-C4B-01**	**ODP-C4B-02**	**ODP-C4B-03**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	22	15	14	61	37	77	61	68	1	2985192

Maxxam ID		OZ3665	OZ3666	OZ3667	OZ3668	OZ3669	OZ3670		
Sampling Date		2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18		
	Units	**ODP-C5B-01**	**ODP-C5B-02**	**ODP-C5B-03**	**ODP-C6B-01**	**ODP-C6B-02**	**ODP-C6B-03**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	67	57	57	63	57	64	1	2985192

Maxxam ID		OZ3671	OZ3672	OZ3673	OZ3674	OZ3675	OZ3676		
Sampling Date		2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18		
	Units	**ODP-C6B-04**	**ODP-C6B-05**	**ODP-C7B-01**	**ODP-C7B-02**	**ODP-C7B-03**	**ODP-C8AB-01**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	36	31	34	32	41	66	1	2985192

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B2E9286
Report Date: 2013/09/12

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE-ODP
Your P.O. #: 16400NR
Sampler Initials: JSA

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		OZ3657	OZ3658	OZ3659	OZ3660	OZ3661	OZ3662	OZ3663	OZ3664		
Sampling Date		2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18		
	Units	**ODP-C1A-01**	**ODP-C1A-02**	**ODP-C1A-03**	**ODP-C2A-01**	**ODP-C3A-01**	**ODP-C4B-01**	**ODP-C4B-02**	**ODP-C4B-03**	**RDL**	**QC Batch**
Petroleum Hydrocarbons											
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	2985682
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	2985682
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	2985682
Xylene (Total)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2985682
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	2.5	2985682
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	63	<10	<10	<10	<10	10	2985783
>C16-C21 Hydrocarbons	mg/kg	<10	<10	<10	79	<10	65	<10	37	10	2985783
>C21-<C32 Hydrocarbons	mg/kg	<15	<15	<15	330	65	290	100	170	15	2985783
Modified TPH (Tier1)	mg/kg	<15	<15	<15	470	65	350	100	200	15	2983579
Reached Baseline at C32	mg/kg	NA	NA	NA	NO	YES	YES	YES	YES	N/A	2985783
Hydrocarbon Resemblance	mg/kg	NA	NA	NA	COMMENT(1)	COMMENT(2)	COMMENT(3)	COMMENT(2)	COMMENT(2)	N/A	2985783
Surrogate Recovery (%)											
Isobutylbenzene - Extractable	%	99	104	99	103	103	102	101	102		2985783
Isobutylbenzene - Volatile	%	103	100	104	104	102	96	100	97		2985682
n-Dotriacontane - Extractable	%	113	114	109	87	90	100	100	103		2985783

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Weathered fuel oil fraction. Lube oil fraction.
(2) - Unidentified compound(s) in lube oil range.
(3) - Lube oil fraction.

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Maxxam Job #: B2E9286
Report Date: 2013/09/12

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE-ODP
Your P.O. #: 16400NR
Sampler Initials: JSA

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		OZ3665	OZ3665	OZ3666	OZ3667		OZ3668	OZ3669	OZ3670		
Sampling Date		2012/09/18	2012/09/18	2012/09/18	2012/09/18		2012/09/18	2012/09/18	2012/09/18		
	Units	**ODP-C5B-01**	**ODP-C5B-01 Lab-Dup**	**ODP-C5B-02**	**ODP-C5B-03**	**QC Batch**	**ODP-C6B-01**	**ODP-C6B-02**	**ODP-C6B-03**	**RDL**	**QC Batch**
Petroleum Hydrocarbons											
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	2985682	<0.025	<0.025	<0.025	0.025	2987148
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	2985682	<0.025	<0.025	<0.025	0.025	2987148
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	2985682	<0.025	<0.025	<0.025	0.025	2987148
Xylene (Total)	mg/kg	<0.050	<0.050	<0.050	<0.050	2985682	<0.050	<0.050	<0.050	0.050	2987148
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	<2.5	<2.5	2985682	<2.5	<2.5	<2.5	2.5	2987148
>C10-C16 Hydrocarbons	mg/kg	<10	<10	<10	<10	2985783	<10	<10	<10	10	2985783
>C16-C21 Hydrocarbons	mg/kg	45	37	<10	<10	2985783	<10	<10	<10	10	2985783
>C21-<C32 Hydrocarbons	mg/kg	140	130	87	81	2985783	130	110	110	15	2985783
Modified TPH (Tier1)	mg/kg	190		87	81	2983579	130	110	110	15	2983579
Reached Baseline at C32	mg/kg	YES		YES	YES	2985783	YES	YES	YES	N/A	2985783
Hydrocarbon Resemblance	mg/kg	COMMENT(1)		COMMENT(2)	COMMENT(2)	2985783	COMMENT(2)	COMMENT(2)	COMMENT(2)	N/A	2985783
Surrogate Recovery (%)											
Isobutylbenzene - Extractable	%	104	97	103	94	2985783	104	101	101		2985783
Isobutylbenzene - Volatile	%	90	92	101	99	2985682	120	105	105		2987148
n-Dotriacontane - Extractable	%	117	83	91	88	2985783	115	100	107		2985783

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Unidentified compound(s) in fuel / lube range.
(2) - Unidentified compound(s) in lube oil range.

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Maxxam Job #: B2E9286
Report Date: 2013/09/12

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE-ODP
Your P.O. #: 16400NR
Sampler Initials: JSA

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		OZ3671	OZ3672	OZ3673	OZ3674	OZ3675	OZ3675	OZ3676		
Sampling Date		2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18		
	Units	**ODP-C6B-04**	**ODP-C6B-05**	**ODP-C7B-01**	**ODP-C7B-02**	**ODP-C7B-03**	**ODP-C7B-03 Lab-Dup**	**ODP-C8AB-01**	**RDL**	**QC Batch**
Petroleum Hydrocarbons										
Benzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	2987148
Toluene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	2987148
Ethylbenzene	mg/kg	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.025	2987148
Xylene (Total)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2987148
C6 - C10 (less BTEX)	mg/kg	<2.5	<2.5	8.2	<2.5	<2.5	<2.5	14	2.5	2987148
>C10-C16 Hydrocarbons	mg/kg	<10	<10	250	<10	<10		7500	10	2985783
>C16-C21 Hydrocarbons	mg/kg	<10	<10	64	<10	<10		2200	10	2985783
>C21-<C32 Hydrocarbons	mg/kg	55	44	380	41	56		9900	15	2985783
Modified TPH (Tier1)	mg/kg	55	44	700	41	56		20000	15	2983579
Reached Baseline at C32	mg/kg	YES	YES	NO	YES	YES		NO	N/A	2985783
Hydrocarbon Resemblance	mg/kg	COMMENT(1)	COMMENT(1)	COMMENT(2)	COMMENT(1)	COMMENT(1)		COMMENT(2)	N/A	2985783
Surrogate Recovery (%)										
Isobutylbenzene - Extractable	%	101	103	101	100	101		109		2985783
Isobutylbenzene - Volatile	%	105	120	100	116	129	125	52(3)		2987148
n-Dotriacontane - Extractable	%	120	92	77	116	115		86		2985783

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		OZ3657	OZ3657	OZ3658	OZ3659	OZ3660	OZ3661	OZ3662	OZ3663		
Sampling Date		2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18		
	Units	**ODP-C1A-01**	**ODP-C1A-01 Lab-Dup**	**ODP-C1A-02**	**ODP-C1A-03**	**ODP-C2A-01**	**ODP-C3A-01**	**ODP-C4B-01**	**ODP-C4B-02**	**RDL**	**QC Batch**
PCBs											
Total PCB	ug/g	<0.050	<0.050	<0.050	<0.050	3.6	<0.050	1.1	<0.050	0.050	2987163
Surrogate Recovery (%)											
Decachlorobiphenyl	%	101	101	105	110	104(4)	111	95(4)	93		2987163

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Unidentified compound(s) in lube oil range.
(2) - Weathered fuel oil fraction. Lube oil fraction.
(3) - VPH surrogate not within acceptance limits due to matrix interference.
(4) - Aroclor 1254, 1260.

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Maxxam Job #: B2E9286
Report Date: 2013/09/12

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE-ODP
Your P.O. #: 16400NR
Sampler Initials: JSA

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		OZ3664	OZ3665	OZ3666	OZ3667	OZ3668	OZ3669	OZ3670	OZ3671		
Sampling Date		2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18	2012/09/18		
	Units	**ODP-C4B-03**	**ODP-C5B-01**	**ODP-C5B-02**	**ODP-C5B-03**	**ODP-C6B-01**	**ODP-C6B-02**	**ODP-C6B-03**	**ODP-C6B-04**	**RDL**	**QC Batch**
PCBs											
Total PCB	ug/g	0.31	<0.050	<0.050	<0.050	<0.050	0.28	<0.050	<0.050	0.050	2987163
Surrogate Recovery (%)											
Decachlorobiphenyl	%	96(1)	100	100	99	97	95(1)	99	103		2987163

Maxxam ID		OZ3672		OZ3673	OZ3674	OZ3675	OZ3676		
Sampling Date		2012/09/18		2012/09/18	2012/09/18	2012/09/18	2012/09/18		
	Units	**ODP-C6B-05**	**QC Batch**	**ODP-C7B-01**	**ODP-C7B-02**	**ODP-C7B-03**	**ODP-C8AB-01**	**RDL**	**QC Batch**
PCBs									
Total PCB	ug/g	<0.050	2987163	1.2	<0.050	<0.050	90	0.050	2987437
Surrogate Recovery (%)									
Decachlorobiphenyl	%	102	2987163	86(1)	93	87	75(2)		2987437

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Aroclor 1254, 1260.
(2) - Aroclor 1242, 1254, 1260.

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Maxxam Job #: B2E9286
Report Date: 2013/09/12

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE-ODP
Your P.O. #: 16400NR
Sampler Initials: JSA

Package 1	6.0°C

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

GENERAL COMMENTS

VPH sample preservation not within 7 days of sampling date as recommended by the reference method due to lab error.

TEH Analysis: Silica gel clean-up performed prior to analysis as per client request.

Revised report: Changed sample ID as per Anna Roy's request 12/09/2013
Changes to IDs are as follows:
ODP-C1-01 changed to ODP-C1A-01 (Maxxam ID OZ3657)
ODP-C1-02 changed to ODP-C1A-02 (Maxxam IDOZ3658)
ODP-C1-03 changed to ODP-C1A-03 (Maxxam ID OZ3659)
ODP-C2-01 changed to ODP-C2A-01 (Maxxam ID OZ3660)
ODP-C3-01 changed to ODP-C3A-01 (Maxxam ID OZ3661)
ODP-C4A-01 changed to ODP-C4B-01 (Maxxam ID OZ3662)
ODP-C4A-02 changed to ODP-C4B-02 (Maxxam ID OZ3663)
ODP-C4A-03 changed to ODP-C4B-03 (Maxxam ID OZ3664)
ODP-C8-01 changed to ODP-C8AB-01 (Maxxam ID OZ3676)

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Maxxam Job #: B2E9286
Report Date: 2013/09/12

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: HOPEDALE-ODP
Your P.O. #: 16400NR
Sampler Initials: JSA

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
2985682	Isobutylbenzene - Volatile	2012/09/28	94	60 - 140	97	60 - 140	103	%		
2985682	Benzene	2012/09/29	65	60 - 140	93	60 - 140	<0.025	mg/kg	NC	50
2985682	Toluene	2012/09/29	87	60 - 140	95	60 - 140	<0.025	mg/kg	NC	50
2985682	Ethylbenzene	2012/09/29	77	60 - 140	92	60 - 140	<0.025	mg/kg	NC	50
2985682	Xylene (Total)	2012/09/29	86	60 - 140	93	60 - 140	<0.050	mg/kg	NC	50
2985682	C6 - C10 (less BTEX)	2012/09/29					<2.5	mg/kg	NC	50
2985783	Isobutylbenzene - Extractable	2012/10/01	100	30 - 130	103	30 - 130	93	%		
2985783	n-Dotriacontane - Extractable	2012/10/01	117	30 - 130	110	30 - 130	100	%		
2985783	>C10-C16 Hydrocarbons	2012/10/01	89	30 - 130	88	30 - 130	<10	mg/kg	NC	50
2985783	>C16-C21 Hydrocarbons	2012/10/01	100	30 - 130	101	30 - 130	<10	mg/kg	NC	50
2985783	>C21-<C32 Hydrocarbons	2012/10/01	NC	30 - 130	102	30 - 130	<15	mg/kg	12.9	50
2987148	Isobutylbenzene - Volatile	2012/10/01	84	60 - 140	95	60 - 140	98	%		
2987148	Benzene	2012/10/01	83	60 - 140	92	60 - 140	<0.025	mg/kg	NC	50
2987148	Toluene	2012/10/01	116	60 - 140	94	60 - 140	<0.025	mg/kg	NC	50
2987148	Ethylbenzene	2012/10/01	107	60 - 140	89	60 - 140	<0.025	mg/kg	NC	50
2987148	Xylene (Total)	2012/10/01	118	60 - 140	93	60 - 140	<0.050	mg/kg	NC	50
2987148	C6 - C10 (less BTEX)	2012/10/01					<2.5	mg/kg	NC	50
2987163	Decachlorobiphenyl	2012/10/02	104	30 - 130	95	30 - 130	102	%		
2987163	Total PCB	2012/10/02	104	70 - 130	88	70 - 130	<0.050	ug/g	NC	50
2987437	Decachlorobiphenyl	2012/10/02	86	30 - 130	95	30 - 130	90	%		
2987437	Total PCB	2012/10/02	NC	70 - 130	120	70 - 130	<0.050	ug/g	NC	50

N/A = Not Applicable
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

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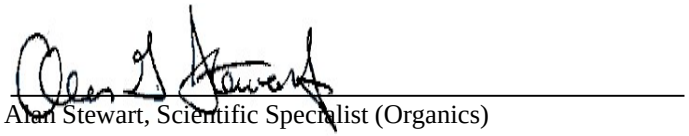
Validation Signature Page

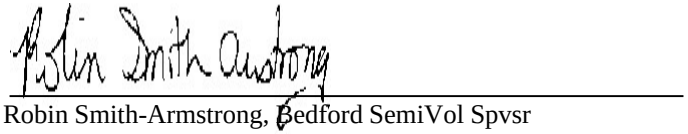
Maxxam Job #: B2E9286

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Alan Stewart, Scientific Specialist (Organics)

Ron MacDonald, Scientific Specialist (Organics)



Robin Smith-Armstrong, Bedford SemiVol Spvsr

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Your P.O. #: 16400NR
Your Project #: 121411777.310
Site Location: OLD DUMP POND
Your C.O.C. #: ES614212

Attention: Jim Slade
Stantec Consulting Ltd
607 Torbay Rd
St. John's, NL
A1A 4Y6

Report Date: 2013/09/11
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2F3620
Received: 2012/10/02, 10:16

Sample Matrix: Soil
Samples Received: 28

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Moisture (1)	28	N/A	2012/10/04	ATL SOP 00001	MOE Handbook 1983
Low Level PCB in Soil by GC-ECD (1)	16	2012/10/05	2012/10/10	ATL SOP 00106	Based EPA8082
Low Level PCB in Soil by GC-ECD (1)	12	2012/10/05	2012/10/11	ATL SOP 00106	Based EPA8082

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

(1) This test was performed by Bedford

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Michelle Hill, Project Manager
Email: MHill@maxxam.ca
Phone# (902) 420-0203 Ext:289

==========

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Total cover pages: 1

Maxxam Job #: B2F3620
Report Date: 2013/09/11

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: OLD DUMP POND
Your P.O. #: 16400NR
Sampler Initials: RMP

RESULTS OF ANALYSES OF SOIL

Maxxam ID		PB7433	PB7434	PB7435	PB7436	PB7437	PB7438	PB7439	PB7440		
Sampling Date		2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/21		
	Units	**ODB-C9B-01**	**ODP-C9B-02**	**ODP-C9B-03**	**ODP-C10B-01**	**ODP-C10B-02**	**ODP-C10B-03**	**ODP-C10B-04**	**ODP-C10B-05**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	77	67	51	73	62	47	38	32	1	2991445

Maxxam ID		PB7441	PB7442	PB7443	PB7444		PB7445	PB7446	PB7447		
Sampling Date		2012/09/21	2012/09/21	2012/09/21	2012/09/21		2012/09/21	2012/09/21	2012/09/21		
	Units	**ODP-C10B-06**	**ODP-C11B-01**	**ODP-C11B-02**	**ODP-C11B-03**	**QC Batch**	**ODP-C11B-04**	**ODP-C12B-01**	**ODP-C12B-02**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	36	75	65	46	2991445	41	79	69	1	2990537

Maxxam ID		PB7448	PB7449	PB7450	PB7451	PB7452	PB7453	PB7454	PB7455		
Sampling Date		2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/22	2012/09/22	2012/09/22		
	Units	**ODP-C12B-03**	**ODP-C13B-01**	**ODP-C13B-02**	**ODP-C13B-03**	**ODP-C14B-01**	**ODP-C15B-02**	**ODP-C15B-03**	**ODP-C16B-01**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	54	35	17	16	51	52	28	87	1	2990537

Maxxam ID		PB7456	PB7457	PB7458	PB7459	PB7460		
Sampling Date		2012/09/22	2012/09/22	2012/09/22	2012/09/22	2012/09/22		
	Units	**ODP-C16B-02**	**ODP-C16B-03**	**ODP-C16B-04**	**ODP-C17B-01**	**ODP-C17B-02**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	63	39	34	70	46	1	2990537

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2013/09/11

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: OLD DUMP POND
Your P.O. #: 16400NR
Sampler Initials: RMP

PCB'S AND DDT BY GC-ECD (SOIL)

Maxxam ID		PB7433	PB7433	PB7434	PB7435	PB7436	PB7437	PB7438	PB7439		
Sampling Date		2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/21		
	Units	**ODB-C9B-01**	**ODB-C9B-01 Lab-Dup**	**ODP-C9B-02**	**ODP-C9B-03**	**ODP-C10B-01**	**ODP-C10B-02**	**ODP-C10B-03**	**ODP-C10B-04**	**RDL**	**QC Batch**
PCBs											
Total PCB	mg/kg	1.2	1.3	0.12	<0.010	0.70	<0.010	<0.010	<0.010	0.010	2992950
Surrogate Recovery (%)											
Decachlorobiphenyl	%	88(1)	84	100(1)	95	89(1)	91	101	98		2992950

Maxxam ID		PB7440	PB7441	PB7442	PB7443	PB7444	PB7445	PB7446	PB7447		
Sampling Date		2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/21		
	Units	**ODP-C10B-05**	**ODP-C10B-06**	**ODP-C11B-01**	**ODP-C11B-02**	**ODP-C11B-03**	**ODP-C11B-04**	**ODP-C12B-01**	**ODP-C12B-02**	**RDL**	**QC Batch**
PCBs											
Total PCB	mg/kg	<0.010	<0.010	0.52	<0.010	<0.010	<0.010	1.2	<0.010	0.010	2992950
Surrogate Recovery (%)											
Decachlorobiphenyl	%	99	103	91(1)	93	92	94	80(1)	85		2992950

Maxxam ID		PB7448	PB7449	PB7450	PB7451	PB7452		PB7453	PB7453		
Sampling Date		2012/09/21	2012/09/21	2012/09/21	2012/09/21	2012/09/21		2012/09/22	2012/09/22		
	Units	**ODP-C12B-03**	**ODP-C13B-01**	**ODP-C13B-02**	**ODP-C13B-03**	**ODP-C14B-01**	**QC Batch**	**ODP-C15B-02**	**ODP-C15B-02 Lab-Dup**	**RDL**	**QC Batch**
PCBs											
Total PCB	mg/kg	<0.010	5.4	0.26	<0.010	44	2992950	8.0	8.2	0.010	2992941
Surrogate Recovery (%)											
Decachlorobiphenyl	%	80	80(2)	113(1)	85	109(1)	2992950	103(1)	92		2992941

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Aroclor 1254, 1260.
(2) - Aroclor 1242, 1254, 1260.

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Maxxam Job #: B2F3620
Report Date: 2013/09/11

Stantec Consulting Ltd
Client Project #: 121411777.310
Site Location: OLD DUMP POND
Your P.O. #: 16400NR
Sampler Initials: RMP

PCB'S AND DDT BY GC-ECD (SOIL)

Maxxam ID		PB7454	PB7455	PB7456	PB7457	PB7458	PB7459	PB7460		
Sampling Date		2012/09/22	2012/09/22	2012/09/22	2012/09/22	2012/09/22	2012/09/22	2012/09/22		
	Units	**ODP-C15B-03**	**ODP-C16B-01**	**ODP-C16B-02**	**ODP-C16B-03**	**ODP-C16B-04**	**ODP-C17B-01**	**ODP-C17B-02**	**RDL**	**QC Batch**
PCBs										
Total PCB	mg/kg	0.37	14	2.2	<0.010	<0.010	11	5.6	0.010	2992941
Surrogate Recovery (%)										
Decachlorobiphenyl	%	107(1)	79(1)	78(1)	80	81	79(1)	81(1)		2992941

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Aroclor 1254, 1260.

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Package 1	6.7°C

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

GENERAL COMMENTS

Revised report: Sample IDs changed as per Anna Roy's request 11/09/2013. Changes are as follows:

ODP-C9Achanged to ODP-C9B-01(Maxxam ID PB7433)
ODP-C9Bchanged to ODP-C9B-02 (Maxxam ID PB7434)
ODP-C9Cchanged to ODP-C9B-03 (Maxxam ID PB7435)
ODP-C10A changed to ODP-C10B-01 (Maxxam ID PB7436)
ODP-C10B changed to ODP-C10B-02 (Maxxam ID PB7437)
ODP-C10C changed to ODP-C10B-03 (Maxxam ID PB7438)
ODP-C10D changed to ODP-C10B-04 (Maxxam ID PB7439)
ODP-C10E changed to ODP-C10B-05 (Maxxam ID PB7440)
ODP-C10F changed to ODP-C10B-06 (Maxxam ID PB7441)
ODP-C11A changed to ODP-C11B-01(Maxxam ID PB7442)
ODP-C11B changed to ODP-C11B-02 (Maxxam ID PB7443)
ODP-C11C changed to ODP-C11B-03 (Maxxam ID PB7444)
ODP-C11D changed to ODP-C11B-04 (Maxxam ID PB7445)
ODP-C12A changed to ODP-C12B-01 (Maxxam ID PB7446)
ODP-C12B changed to ODP-C12B-02 (Maxxam ID PB7447)
ODP-C12C changed to ODP-C12B-03 (Maxxam ID PB7448)
ODP-C13A changed to ODP-C13B-01 (Maxxam ID PB7449)
ODP-C13B changed to ODP-C13B-02 (Maxxam ID PB7450)
ODP-C13C changed to ODP-C13B-03 (Maxxam ID PB7451)
ODP-C14A changed to ODP-C14B-01 (Maxxam ID PB7452)
ODP-C15A changed to ODP-C15B-02 (Maxxam ID PB7453)
ODP-C15B changed to ODP-C15B-03 (Maxxam ID PB7454)
ODP-C16A changed to ODP-C16B-01 (Maxxam ID PB7455)
ODP-C16B changed to ODP-C16B-02 (Maxxam ID PB7456)
ODP-C16C changed to ODP-C16B-03 (Maxxam ID PB7457)
ODP-C16D changed to ODP-C16B-04 (Maxxam ID PB7458)
ODP-C17A changed to ODP-C17B-01 (Maxxam ID PB7459)
ODP-C17B changed to ODP-C17B-02 (Maxxam ID PB7460)

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Sampler Initials: RMP

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
2992941	Decachlorobiphenyl	2012/10/10	83	70 - 130	95	70 - 130	95	%		
2992941	Total PCB	2012/10/10	NC	70 - 130	84	70 - 130	<0.010	mg/kg	2.7	50
2992950	Decachlorobiphenyl	2012/10/10	90	70 - 130	103	70 - 130	100	%		
2992950	Total PCB	2012/10/10	NC	70 - 130	84	70 - 130	<0.010	mg/kg	12.6	50

N/A = Not Applicable
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.

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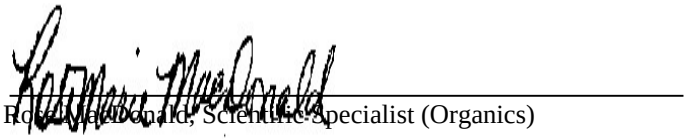
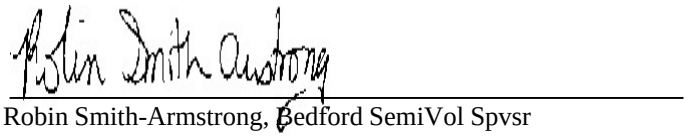
Validation Signature Page

Maxxam Job #: B2F3620

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Rosa MacDonald, Scientific Specialist (Organics)



Robin Smith-Armstrong, Bedford SemiVol Spvsr

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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