Stantec

2021 Environmental Monitoring Program, Resolute Bay Airport Land Treatment Unit, Cornwallis Island, Nunavut

Final Report

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Prepared by:

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Sign-off Sheet

This document entitled 2021 Environmental Monitoring Program, Resolute Bay Airport Land Treatment Unit, Cornwallis Island, Nunavut was prepared by Stantec Consulting Ltd. (“Stantec”) for the account of Public Services and Procurement Canada on behalf of Transport Canada (the “Client”).

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Table of Contents

LIST OF TABLES

LIST OF FIGURES (APPENDIX A)

LIST OF APPENDICES

Executive Summary

Stantec Consulting Ltd. (Stantec) completed the 2021 Environmental Monitoring Program (the Program) at two Land Treatment Units (LTU 1 ant LTU 2) located at the northern portion of the Resolute Bay Airport on Cornwallis Island, Nunavut (the Site). The Program was completed from July 25 to July 27, 2021, with the authorization of Public Services and Procurement Canada (PSPC) on behalf of Transport Canada (TC). The program consisted of groundwater monitoring/assessment activities to meet licensing requirements (Nunavut Water Board (NWB) Licence No. IBR-RLF1520) and a visual assessment of the LTU liners and berms to assess for potential seepage issues. In 2020, the licence was modified to include the requirement for surface water samples to be collected. Groundwater sampling was removed from the licence requirement.

Stantec monitored four groundwater monitoring wells surrounding LTU 1 (MW 1 to MW3 and MW5). None of the monitoring wells contained sufficient groundwater to allow for sampling. Therefore, five surface water samples (SW21-1 through SW21-5 and SW21-6) were collected from accumulated surface water at the Site in the vicinity of the LTUs as substitutes for groundwater samples in order to meet the NWB Licence requirements and assess LTU integrity. A surface water sample was also duplicated in the field for quality assurance, quality control (QA/QC) purposes. The field duplicate was analyzed for the NWB Licence groundwater parameters.

A summary of guideline / standards exceedances is provided below:

Sample Location	Parameter Category	Individual Parameter	Applicable Guideline Exceeded
SW21-4 South of LTU 2 (down-gradient) near MW5 and down-gradient of a low area against the inside berm. Surface water was also observed at this location in 2018 and 2019	Metals	Lead	CCME The lead concentration (6.2 µg/L) was in exceedance of the CCME guideline (5.88 µg/L), the concentration was within one magnitude of the guideline value.

During the 2018 site visit, a weathered drum labelled as containing aviation fuel was observed on the Site west of LTU 2, a weathered 1 m^3 bag containing salt was observed on the Site south of LTU 1, and a pile of construction debris was observed located inside the berms of LTU 1. A similar pile of construction debris was observed at the Site within LTU 2 during the 2018 site visit. The airport authority had committed to removing the waste materials in 2018, but they were still on-site when Stantec returned in 2019 and 2021. While on Site, Stantec again spoke to the airport authority and recommended that they remove these items.

During the program, Stantec personnel estimated the surface water drainage direction at the Site to be generally in southerly and westerly directions in the areas surrounding the LTUs. The groundwater flow

direction in the vicinity of the Site is unknown; however, based on local topography, Stantec inferred the shallow groundwater flow direction to be southerly.

Accumulated surface water was observed immediately northwest of LTU 1 (against the berm), southeast of LTU 1, between LTU 3 and 4, west of LTU 2, south of LTU 2, and inside LTU along the northern portion of the east berm.

While onsite, Stantec personnel visually assessed the condition of the exposed portions geomembrane liners and berms of both LTUs. Eighteen areas with liner deficiencies were observed at LTU 1. The liner deficiencies at LTU 1 consisted of tears ranging in size from 1 to 250 centimetres (cm). Twenty-nine areas with liner deficiencies were observed at LTU 2. The liner deficiencies at LTU 2 consisted of tears ranging in size from less than 5 cm to 400 cm, areas of low berm located north and south of the LTU access ramp on the west side of LTU 2, pooling water against the inside berm (along the east berm in the northern portion of LTU 2), and a low area inside the berm (along the south berm of LTU 2). The liner deficiencies were in similar locations to those observed in 2019. Standing surface water against the inside berms of the LTUs may spill over low berms or accumulate and migrate outside of the LTUs.

Surface water has accumulated adjacent to the outside of the west berm of LTU 2 (adjacent to the low areas). This surface water accumulation was also observed in 2018 and 2019. One sample (SW21-4) located to the south of LTU 2 indicated an exceedance of the applicable guideline for total lead.

The statements made in the Executive Summary are subject to the same limitations included in the Limitations Section 7.0 and are to be read in conjunction with the remainder of this report.

1.0 INTRODUCTION

Stantec Consulting Ltd. (Stantec) completed the 2021 Site Environmental Monitoring Program (the Program) at the Land Treatment Units (LTUs) located at the northern portion of the Resolute Bay Airport on Cornwallis Island, Nunavut (hereinafter referred to as the Site). The Program was completed under the authorization of Public Services and Procurement Canada (PSPC) on behalf of Transport Canada (TC).

The Site location is presented in Figure 1 of **Appendix A.**

1.1 OBJECTIVES

The objectives of the Program were as follows:

- Complete a monitoring program at the Site to assess for dissolved chemicals of concern to meet Nunavut Water Board (NWB) Licence 1BR-RLF2030 Requirements, including the collection of surface water samples.
- Assess LTUs 1 and 2 to visually evaluate the integrity and function of the LTU liners and condition of the Site monitoring well network including documentation with photographs.

1.2 BACKGROUND

The history and background of the Site provided by PSPC, including previous assessments, are summarized below:

- The Resolute Bay Airport has been in operation since 1949. It was originally constructed by the Royal Canadian Air Force. Ownership was transferred to the Government of Canada in 1964 and it was operated by Transport Canada (TC) until July 1, 1995. Ownership was transferred to the Government of the Northwest Territories in 1999 and then to the Government of Nunavut.
- In 2002, Winnipeg Environmental Remediation Inc (WERI) and Eng-Tech Consulting Ltd. supervised the construction of two LTUs (LTUs 1 and 2) that were constructed of 20 mil oil-resistant reinforced polyethylene (RPE) liner to contain and treat petroleum hydrocarbon (PHC) impacted soil from a former above ground storage tank (AST) farm that stored bulk fuel and a former fire mock-up training area (FTA). LTU 1 was subdivided into three (3) cells (numbered 1 to 3 from west to east). Zone 3 occupies the eastern half of LTU 1 and contains lighter petroleum hydrocarbon impacted soils. The two western cells contained heavier fraction petroleum hydrocarbon impacted soil. Approximately 5,500 cubic metres (m^3) of PHC impacted soil was excavated from the FTA and approximately 300 m^3 of PHC impacted soil was excavated from the aboveground storage tank (AST) farm for treatment in the LTUs. The LTUs were filled to an approximate height of 1.3 metres (m). Nutrients were added to both LTUs. 145 kilograms (kg) of 38-0-0 Nitrogen –Phosphous-Potassium was added to LTU 1, and 2,273 kg was added LTU 2. Approximately 40 kg of surfactant (“cyclone white”) was also added to a depth of 0.3 m below the surface of LTU 2.
- In September 2003, a soil monitoring program was completed to assess the effectiveness of the nutrient amendment program. A ground heating system was installed in the northern portion of LTU 2

to conduct a pilot project to enhance bioremediation in northern half of the LTU. The infrastructure of the heating system consisted of pipes, junction boxes, and air exchange housing. The impacted soil was covered and remains covered today by a geomembrane to contain the heat generated by the heating system.

- In August 2004, 400 kg of 38-0-0 (zones 1 and 2 of LTU 1), 600 kg of 38-0-0 nutrients (uncovered LTU 2 area) and 100 kg of surfactants in zone 1 of LTU 1 were applied to the LTUs. The heating system was operated between August to early October of 2004.
- According to TC personnel, the heating system was only operated for two field seasons between 2004 and 2005 and has not been functional since 2005.
- In 2005, a soil sampling program (39 soil samples analyzed for petroleum hydrocarbon) was completed at both LTUs to assess the effectiveness of nutrient amendment under heated conditions and non-heated conditions. The report results concluded bioremediation was occurring; however, the results were inconclusive to the effectiveness of either method being better than the other.
- Two smaller LTUs (LTU 3 and 4) are also present at the Site; however, there is no background information regarding the origin of these LTUs. TC is not the custodian of LTUs 3 and 4, and these LTUs are not included in the scope of work presented herein.
- In 2015, Arcadis Canada conducted the first annual groundwater and soil monitoring program to meet NWB Licensing requirements in late September. Additional soil sampling occurred at LTUs 3 and 4 to assess for contaminants of concern within the LTUs. The maximum soil sample depth investigated was approximately 0.7 m below ground surface (mbgs). One soil sample was collected per test pit excavated at the respective LTUs (five test pits at LTU 1 and four test pits at LTU 2). The soil sampling program confirmed the presence of perfluorooctanesulfonic acid (PFOS), one of the per- and poly-fluorinated alkyl substances (PFAS), exceeding interim federal guidelines in the LTU soils. Concentration exceedances ranged between seven and 22 times the interim guideline value. The 13 soil samples collected contained PHC concentrations exceeding applicable federal guidelines in the LTU soils. The LTUs were also assessed for capacity, and it was determined that no additional impacted soil should be added to the LTUs.
- In 2016-2017 the condition of six existing monitoring wells was inspected (MW1 through MW6), and the liner integrity was also assessed at both LTUs. In 2017, only one groundwater sample could be collected. Surface water samples were also collected around the LTU perimeter to assess for potential impacts to compensate for the lack of groundwater samples. Monitoring wells MW4 and MW6 (located upgradient and downgradient of LTU 2), were reported to have heaved and were not considered viable for future sampling.
- In 2018-2019, Stantec conducted an annual monitoring and inspection program for the two LTUs as well as a Preliminary Quantitative Human Health and Ecological Risk Assessment (PQRA). The six monitoring wells onsite were monitored; however, only one well (MW1) contained sufficient groundwater to sample. The remaining monitoring wells did not contain sufficient water for sampling (MW2 and MW6), were concluded to be compromised as the screen was partially above the surface (MW4 and MW6), were inaccessible due to a frozen bailer within the monitoring well standpipe (MW5) or were dry (MW3). MW4 and MW6 were recommended to be removed from future monitoring programs. Surface water samples from ponded water at the Site were collected as substitutes for groundwater samples to try and meet licence requirements. In addition, shallow soil samples were collected to assess for potential seepage issues at the west side and southwest corner of LTU 2, and

to support the PQRA. During the PQRA, Stantec reviewed the information available from previous environmental investigations to perform a preliminary quantitative evaluation for the potential for human and ecological risks associated with the contaminants of concern (COCs) excluding PFAS at the Site. The PQRA concluded that no unacceptable risks were anticipated for human and ecological receptors at the Site from the LTUs. Should site conditions change (e.g., loss of integrity of the LTUs liners and berms or construction of a building at the Site), the results of the risk assessment may need to be revisited to assess/confirm there are no additional or increased risks to potential receptors.

- In 2020 there were no monitoring or inspection activities completed at the Site due to the COVID-19 pandemic travel restrictions in the Territory.

An operating licence for the historical LTU (LTU 1 and 2) was obtained by TC through the Nunavut Water Board (NWB) in 2015 (Licence No. IBR-RLF1520) and requires annual or semi-annual groundwater monitoring and sampling, depending on site activities. The NWB Licence dictates soil sampling requirements should soil be added to, removed from, or treated (with amendments) in the LTUs. As these activities did not occur since the last monitoring event in 2019, as such soil sampling did not take place in 2021. A renewed licence 1BR-RLF2030 was issued May 19, 2020, that revised the monitoring requirements to the collection of surface water samples. The requirement of groundwater sampling was removed from the license.

1.3 SCOPE OF WORK

The scope of work of the Program is outlined in the sections below.

1.3.1 Task 1 – Health and Safety

- Prepare a site-specific health and safety plan to identify and address site specific hazards

1.3.2 Task 2 – Groundwater/Surface Water Monitoring and Sampling

- Retain a local field assistant to provide support to Stantec staff
- Monitor the existing groundwater monitoring wells (MW1, MW2, MW3, and MW5) for depth to liquid petroleum hydrocarbons (if present), depth to water, and field parameters
- Document the condition of existing groundwater monitoring wells (MW1, MW2, MW3, and MW5)
- Collect surface water samples
- Submit the samples to Bureau Veritas Canada (2019) Inc. (Bureau Veritas) of Ottawa, ON for analysis of the parameters specified in the NWB Licence (and Section 3.4 of this report)
- Georeference monitoring well locations
- Provide a letter from Bureau Veritas confirming review of the quality control sampling plan (**Appendix B**)

1.3.3 Deviations from Scope of Work

Bureau Veritas did not provide blank water to be used for field blanks, so field blanks were not submitted or analysed as part of the Program.

2.0 REGULATORY FRAMEWORK

The NWB Licence provides guidelines for effluent released from the Site. As there was no effluent released from the Site in 2019, the NWB Licence guidelines were not considered applicable to the Site during the Program.

In 2018, the NWB directed TC to use the Ontario Ministry of the Environment, Conservation and Parks (MECP), 2011 Site Condition Standards (under Ontario Regulation 153/04) for evaluation of parameter concentrations in groundwater. A copy of the e-mail communication from the NWB is provided in **Appendix C**.

Per Ontario Regulation 153/04 (Section 35 (3)), properties are considered non-potable when the property, and all other properties located, in whole or in part, within 250 m of the boundaries of the property, are supplied by a municipal drinking water system and have no wells installed. As there are no potable water wells within 250 m of the Site boundary, the Site is considered non-potable. As such, the Table 3 Full Depth Generic Site Condition standards in a Non-Potable Groundwater Condition (Table 3 SCS) were considered applicable to the Site. The Table 3 SCS for groundwater are not dependent on land use.

The NWB Licence does not specify guidelines for evaluation of surface water. To evaluate surface water during the Program, the Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines (CWQG) (CCME, 2014) for freshwater aquatic life were applied to the Site for comparison purposes. It should be noted that the limited accumulated surface water at the Site is not anticipated to support aquatic life. As the Site is located more than 1 kilometre (km) from the ocean, the CWQG for protection of Marine Life were not included for comparison to surface water samples.

The MECP Table 3 SCS are not intended for use when evaluating parameter concentrations in surface water. However, they were provided for reference purposes where the surface water samples were collected in lieu of groundwater samples.

The guidelines and standards considered applicable to the program are summarized in Table 2-1, below and excerpts are provided in **Appendix D**.

Table 2-1 Summary of Applicable Guidelines and Standards

Source	Guidelines / Standards
Groundwater	MECP Table 3 SCS
Surface Water	CCME Canadian Water Quality Guidelines for Freshwater Aquatic Life (CWQG) (For reference only) MECP Table 3 SCS (For reference only)

3.0 METHODOLOGY

3.1 TASK 1 – HEALTH AND SAFETY

Stantec prepared a site-specific health and safety plan (HSP) to address site specific hazards. The HSP was submitted to PSPC on July 19, 2021, prior to the initiation of field activities.

3.2 TASK 2 – GROUNDWATER MONITORING

The groundwater monitoring portion of the Program was completed on July 25, 2021. The depth to groundwater in the existing groundwater monitoring wells (MW1, MW2, MW3, and MW5) was measured using an interface probe, combustible headspace vapour (CHV) concentrations were measured using an RKI Eagle 2™, and the monitoring well locations were georeferenced using a handheld GPS unit with an estimated accuracy of ± 5 m.

Two monitoring wells (MW4 and MW6) at LTU 2 were confirmed as heaved and were not considered to be acceptable for monitoring or sample collection as the well screen was partially above the ground surface; therefore, water within the well was likely influenced by surface water.

Refer to Figures 2 and 3, **Appendix A,** for locations of the monitoring wells at the Site and to Table 1, **Appendix D** for field observations at monitoring well locations. The GPS coordinates of the groundwater monitoring wells are presented in Table 5, **Appendix D**, no groundwater was present in the wells at the time of monitoring.

3.3 TASK 3 – SURFACE WATER SAMPLING

The surface water sampling portion of the Program was completed on July 25, 2021. Multiple locations of accumulated surface water were observed in the vicinity of the LTUs during the site visit. Because the intent of the licence is to monitor the integrity of the LTUs, Stantec took into consideration the following factors when selecting a surface water sampling location:

- Standing water available to sample
- Topography and distance from LTUs and monitoring wells
- Possible locations for berm over-flow
- Proximity of standing water to existing groundwater monitoring wells

The surface water sampling locations were georeferenced using a handheld GPS unit with an estimated accuracy of ± 5 m. The approximate locations of accumulated surface water and surface water samples are depicted on Figures 2 and 3, **Appendix A**. The GPS coordinates of the surface water samples are presented in Table 5, **Appendix D.**

Stantec collected five surface water samples and one blind field duplicate for laboratory analysis of the NWB Licence parameters. The samples were collected by submerging laboratory-provided bottles directly into the surface water.

The samples were stored in an ice-chilled cooler prior to and during transportation to the laboratory. The samples were shipped by air by a private cargo charter to Bureau Veritas's laboratory in Calgary, Alberta, via the Bureau Veritas depot in Yellowknife, Northwest Territories.

The surface water sample locations are summarized in Table 3-1, below and are presented on Figures 2 and 3, **Appendix A**.

Table 3-1 Surface Water Sample Locations

Sample ID	Purpose	Location/Rationale
SW21-1	Licence requirement	South (down-gradient) of LTU 1 and west (cross-gradient) from LTU 2
SW21-2	Licence requirement	Immediately north (up-gradient) of the northwest berm of LTU 1.
SW21-3/Field Duplicate	Licence requirement	Along the west side of LTU 2 (cross-gradient), near a potential berm breach identified by Stantec in 2019. Surface water was also observed at this location in 2019.
SW21-4	Licence requirement	South of LTU 2 (down-gradient) near MW5 and down-gradient of a low area against the inside berm. Surface water was also observed at this location in 2019.
SW21-6	Licence requirement	North (up-gradient) of LTU 2

3.3.1 Laboratory Program

The laboratory analytical program is summarized in Table 3-2, below.

Table 3-2 Laboratory Program Summary

Source	Laboratory Analysis
Surface Water SW21-1 through SW21-4 and SW21-6, Field Duplicate (at SW21-3)	Total Suspended Solids (TSS) Polycyclic Aromatic Hydrocarbons (PAH) Benzene, toluene, ethylbenzene, xylenes (BTEX) Total extractable hydrocarbons (TEH) Oil and Grease Total Phenols Total Metals (aluminum, cadmium, copper, lead, nickel, silver, zinc, arsenic, cobalt, iron, molybdenum, selenium, titanium) Routine parameters (total hardness, conductivity, calcium, sodium, chloride, magnesium, potassium, sulphate, total alkalinity, nitrate-nitrite, ammonia nitrogen, and pH)

3.3.2 Quality Assurance and Quality Control

The following field quality assurance and quality control (QA/QC) procedures were followed during the Program.

- Groundwater monitoring and surface water sample collection equipment decontamination was completed in general accordance with Stantec's standard operating procedures (SOPs)
- Equipment was calibrated by Stantec personnel prior to fieldwork
- Surface water samples were stored in ice-chilled coolers prior to and during transportation to the laboratory
- Surface water samples were delivered to the laboratory following standard chain-of-custody protocols
- Samples selected for analysis were analyzed by Bureau Veritas, which is accredited by the Canadian Association of Laboratory Accreditation (CALA)
- One blind field duplicate surface water sample was collected by Stantec and analyzed by Bureau Veritas. The analytical results were compared to those of the parent sample using the method of relative percent difference (RPD) to evaluate precision

In addition to the Stantec QA/QC procedures, the laboratory analyzes and assesses method blanks, Certified Reference Materials, method spikes, and surrogate recoveries to monitor data quality. These results are presented as part of laboratory certificates of analysis.

3.3.3 Liner Visual Assessment

While at the Site, Stantec personnel visually assessed the condition of the exposed portions of the geomembrane liners and the berms of LTU 1 and LTU 2 for evidence of overflow and visible indications of tearing or material distress. The locations of observed areas of concern (defined as tears or material distress larger than 5 centimetres [cm]) were measured from the corners of the LTUs and their coordinates were recorded using a handheld GPS with an estimated accuracy of ±5 m.

The locations of observed liner deficiencies are indicated on Figures 4 and 5, **Appendix A** and photos are included in the Photographic Log, **Appendix F**.

4.0 RESULTS

The 2021 field program was conducted from July 25 to July 27, 2021.

The results of the Program are presented in the following figures, tables, and appendices of the report, and are presented in detail in subsections presented below:

Description	Figures or Tables and Associated Appendix
Site Features and Surface Water Drainage	Figure 2, **Appendix A**
Groundwater Monitoring Results	Table 1, **Appendix D**
Surface Water Sample Locations and Monitoring Results	Figure 3, **Appendix A** and Table 2, **Appendix D**
Analytical Results (including QA/QC samples)	Table 3, **Appendix D**
GPS Locations of Monitoring Wells and Sample Locations	Table 5, **Appendix D**
Observed Liner Deficiencies at LTU 1	Figure 4, **Appendix A**
Observed Liner and Berm Deficiencies at LTU 2	Figure 5, **Appendix A**
Photographic Log	**Appendix F**
Copies of Laboratory Certificates of Analysis	**Appendix G**

4.1 SITE CONDITIONS

The temperature ranged from 1 degree Celsius (^{0}C) on July 26 to 10 ^{0}C on July 25. Conditions were generally sunny, with scattered showers on July 26, 2021.

During the 2018 site visit, a weathered drum labelled as containing aviation fuel was observed on the Site west of LTU 3, a weathered 1 m^3 bag containing salt was observed on the Site south of LTU 1, and a pile of construction debris was observed located inside the berms of LTU 1. A similar pile of construction debris was observed at the Site within LTU 2 during the 2019 site visit. Stantec had coordinated the removal of that pile with the airport authority in 2018. However, the weathered drum and bag of salt observed during the 2018 site visit had not been removed when Stantec returned to the Site in 2019 (the airport authority had committed to removing the materials in 2018, but they were still onsite). The drum and bag of salt were again observed on Site during the 2021 site visit, and Stantec reminded the airport authority to remove them; they had not been removed by the time Stantec de-mobilized from the Site.

Accumulated surface water was observed immediately northwest of LTU 1 (against the berm), southeast of LTU 1, between LTU 3 and LTU 4, west of LTU 2, and south of LTU 2. Stantec was unable to confirm how long the surface water had been accumulating on the Site. A search of the Government of Canada Daily Weather Data Reports indicated rainfall events observed at the Resolute Weather Station prior to surface water sampling conducted on July 25, 2021 were on July 16, 19, and 20, 2021. The rainfall events consisted of 16.3 millimetres (mm), 5.2 mm, and 2.0 mm, respectively. The weather data reports indicated that the accumulated surface water was likely on site for at least five days prior to surface water

sample collection. Surface water samples were collected from the same locations where accumulated surface water was observed / sampled during previous programs.

A small vegetated area was observed outside of the southwest berm of LTU 1. A second vegetated area was observed southeast and southwest of LTU 1. Vegetated areas were also present along the west berm and to the south of LTU 2.

During the program, Stantec personnel estimated the surface water drainage direction at the Site to be generally in southerly and westerly directions in the areas surrounding the LTUs. The groundwater flow direction in the vicinity of the Site is unknown; however, based on local topography, Stantec estimated the shallow groundwater flow direction to be southerly.

The observed surface water drainage directions, accumulated surface water, and vegetated areas are shown on Figure 2, **Appendix A.**

4.2 GEOLOGY AND SURFICIAL GEOLOGY

The surficial geology in the area of the Site consists of colluvial deposits that are residual materials deposited as veneers and blankets of debris through downslope movement and in-place disintegration of bedrock, including areas of rock outcrop (Arcadis, 2017). The colluvial rubble reportedly contains rubble and silt derived from carbonate and consolidated fine clastic sedimentary rock substrate (Canada-Nunavut Geoscience Office, 2006a). The bedrock of the Site is of Paleozoic era, specifically the Arctic Platform and is composed of Silurian carbonate and siliciclastic rocks (Canada-Nunavut Geoscience Office, 2006b).

Resolute Bay is subject to continuous permafrost, and groundwater is not used as potable water (Arcadis, 2017). The potable water source for the hamlet is Char Lake, located approximately 2 kms southeast and upgradient of the Site.

Surficial soil was not sampled for grain size analysis; however, based on visual observation, the soil was concluded it to be coarse grained, gravelly soil.

4.3 GROUNDWATER MONITORING

Stantec observed the condition of the six groundwater monitoring wells (MW1 through MW6) surrounding LTU 1 and LTU 2. Stantec personnel labelled the inside of the well caps with the monitoring well ID and added a reference marker to the outside of the monitoring well standpipes to indicate where the depth to water and depth to bottom in each well were measured from using a Sharpie™ marker. The reference markers were added to the highest point on the standpipe if the standpipe was cut unevenly.

Four operable monitored wells were monitored for depth to groundwater (MW1, MW2, MW3, and MW5) but did not contain sufficient water for sample collection. Three wells (MW2, MW3, and MW5) were dry, and MW1 contained 0.413 m of standing water in the well at the time of monitoring.

The depth to water in the monitored wells ranged from dry conditions in MW2 and MW5 to 0.769 mBTOC in MW1 on July 25, 2021. Frozen wells were not encountered during the event.

Combustible headspace vapour (CHV) concentrations ranged from 0 ppm in MW5 to 30 parts per million (ppm) in MW1. Volatile headspace vapour (VHV) concentrations and other parameters including temperature, specific conductance, pH, oxidation reduction potential, and dissolved oxygen could not be measured as the required equipment was not available. The groundwater monitoring results are summarized in Table 1, **Appendix D**.

4.4 SURFACE WATER SAMPLING

Stantec collected five surface water samples and one field duplicate sample from accumulated surface water at the Site. Locations of the accumulated surface water were generally consistent with the surface water sample locations collected during the 2019 Program, with the addition of location SW21-6. The 2021 analytical results are compared to 2019 results in Table 4, **Appendix D**. The surface water samples were analyzed for the parameters required by the NWB Licence.

In general, the reported concentrations of the parameters analyzed were below the applicable guidelines, with the exception of those shown in Table 4-1, below.

Table 4-1 Summary of Surface Water Parameters Exceeding Applicable Guidelines from 2021 Sampling Event

Sample Location	Parameter Category	Individual Parameter	Applicable Guideline Exceeded
SW21-4 South of LTU 2 (down-gradient) near MW5 and down-gradient of a low area against the inside berm. Surface water was also observed at this location in 2018 and 2019	Metals	Lead	CCME The lead concentration (6.2 µg/L) exceeded of the CCME guideline (5.88 µg/L), the concentration was of the same order of magnitude as the referenced guideline.

The concentrations of BTEX and petroleum hydrocarbons in the collected surface water samples and duplicate were below the laboratory RDLs.

The concentrations of phenols in the collected surface water samples and duplicate were below the laboratory RDLs and less than the CCME guidelines and MECP SCS.

Where total metals (with the exception of lead) and routine parameter concentrations were detectable but less than the applicable guidelines / standards, the reported concentrations generally ranged from two orders of magnitude below the applicable guidelines/standards/limits to the same order of magnitude as the applicable guidelines/standards/limits. An exceedance in the concentration of total lead of less than one order of magnitude of the guideline was detected in the sample collected at SW21-4.

The surface water analytical results for this program, as compared to the applicable guidelines/standards/limits, are summarized in Table 3, **Appendix A** and are shown on Figure 3, **Appendix A**.

4.5 LINER VISUAL ASSESSMENT

While at the Site, Stantec personnel visually assessed the condition of the exposed portions of the geomembrane liners and berms of LTU 1 and LTU 2.

4.5.1 LTU 1

In LTU 1, liner deficiencies were observed in 18 locations. The liner deficiencies are summarized in Table 4-2, below.

Table 4-2 LTU 1 Observed Liner Deficiencies

Deficiency Number	Location	Deficiency	Deficiency length (cm)	Reference to Photolog in Appendix F
21-1	0-2 m West of Northeast corner	Multiple tears	1-25	Photograph 2
21-2	3 m South of Northwest corner	Multiple tears	1-10	-
21-3	5 m South of Northwest corner	Multiple tears	22, 10, 10, multiple less than 5	-
21-4	3 m West of Southeast corner	Multiple tears	14, multiple less than 5	-
21-5	15 m South of Northeast corner	Multiple tears	35, 25, 20, 12, multiple less than 5	-
21-6	3 m South of Northeast corner	Multiple tears	12, 7, 6, 6, 5, multiple less than 5	-
21-7	16 m South of Northeast corner	Multiple tears	multiple less than 5	-
21-8	17 m South of Northeast corner	Multiple tears	13	-
21-9	6 m West of Southeast corner	Multiple tears	9, 3, 1	-
21-10	8 m West of Southeast corner	1 tear	7	-
21-11	15 m West of Southeast corner	3 tears	5	-
21-12	12 m South of Northwest corner 1	1 tear	37	Photograph 6
21-13	West edge	Low berm	Not Applicable	-
21-14	5 m North of Southwest corner	Liner not keyed in correctly, worn out	70, 10, 3, multiple less than 5	Photograph 5
21-15	5 m South of NW Corner	Multiple tears	45, 30, 10, multiple less than 5	Photograph 4

Table 4-2 LTU 1 Observed Liner Deficiencies

Deficiency Number	Location	Deficiency	Deficiency length (cm)	Reference to Photolog in Appendix F
21-16	13 m South of Northwest corner	Multiple tears	6	-
21-17	3 m South of NW Corner	Multiple tears	38, 35, 20, 3, multiple less than 1	Photograph 3
21-18	19 m West of Northeast corner	1 tear	Not applicable	-

The locations of the observed liner deficiencies in LTU 1 are indicated on Figure 4, **Appendix A** and select deficiencies are shown in photographs 2 through 6 in **Appendix F**.

4.5.2 LTU 2

In LTU 2, liner and berm deficiencies were observed at 29 locations. The LTU 2 liner and berm deficiencies are summarized in Table 4-3, below.

Table 4-3 LTU 2 Observed Liner and Berm Deficiencies

Deficiency Number	Location	Deficiency	Deficiency length (cm)	Reference to Photolog in Appendix F
21-19	Northeast corner	Multiple tears	20, 7, multiple <5	-
21-20	North portion of East berm	1 tear	27	-
21-21	2-2.5 m South of Northeast corner	2 tears	18, 10	-
21-22	5 m South of Northeast corner	1 tear	55	-
21-23	7 m South of Northeast corner	Multiple tears	30, 20, 15, 10, multiple <5	Photograph 8
21-24	9 m South of Northeast corner	1 tear	25	-
21-25	11 m South of Northeast corner	2 tears	25, 30	-
21-26	13-17 m South of Northeast corner	Multiple tears	400, 7, multiple <5	Photograph 7
21-27	20 m South of Northeast corner	2 tears	20, 5	-
21-28	23 m South of Northeast corner	4 tears	12, 10, 5, 5	-
21-29	24 m South of Northeast corner	Multiple tears	10, 7, 5 multiple <5	-
21-30	25 m South of Northeast corner	2 tears	7, 5	-

Table 4-3 LTU 2 Observed Liner and Berm Deficiencies

Deficiency Number	Location	Deficiency	Deficiency length (cm)	Reference to Photolog in Appendix F
21-31	12 m North of Southeast corner	Multiple tears	8, 8, multiple <5	-
21-32	3 m West of Southeast corner	1 tear	75	-
21-33	Southeast corner LTU 2	1 tear	15	-
21-34	South berm	Low area against inside berm	Not applicable	-
21-35	16-17 m East of Southwest corner	6 tears	30, 16, 6, 6, 5, 3	-
21-36	10 m West of Southeast corner	2 tears	6, 5	-
21-37	South edge of access (West side)	1 tear	90	-
21-38	0-13 m North of approach to LTU 2 (West side)	low berm	1300	Photograph 9
21-39	0-15 m South of approach to LTU 2	low berm	1600	Photograph 10
21-40	2-3 m North of approach to LTU 2 (West side)	berm not keyed in	100	-
21-41	37 m South of NW corner	37 m S of NW corner	7	-
21-42	34 m South of Northwest corner	1 tear	6	-
21-43	15-36 m South of Northwest corner	Low area against inside berm with ponded water	Not applicable	-
21-44	26 m South of Northwest corner	4 tears	7, 5, 5, 5	-
21-45	13 m South of Northwest corner	1 tear	7	-
21-46	17 m West of Northeast corner	Low area against inside berm with ponded water and liner not keyed in, on inside of berm	50	-
21-47	11.5 m West of Northeast corner	1 tear	10	-

The locations of the observed liner and berm deficiencies in LTU 2 are indicated on Figure 5, **Appendix A** and select deficiencies are shown in photographs 7 through 10, **Appendix F**.

5.0 QUALITY ASSURANCE / QUALITY CONTROL

A QA/QC program was conducted to assess data reliability. Surface water samples were collected in general accordance with Stantec's SOPs, were uniquely labelled, and control was maintained using chain-of-custody forms. Surface water samples were collected in laboratory-supplied containers and preserved in ice-chilled insulated coolers.

The data quality objective (DQO) of the Program was to collect data that were reproducible, complete, and suitable for comparison with the referenced guidelines / standards.

5.1 SAMPLE HOLD TIMES

Samples submitted to the laboratory were analyzed within the recommended hold times described in the CCME 2016 Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment, Volume 4 Analytical Methods (CCME, 2016b).

5.2 TEMPERATURE

Sample temperatures were recorded upon arrival at the laboratory by measuring up to three random sample container temperatures and calculating the average result to obtain a representative temperature. The ideal temperature should be approximately 4°C. Samples that arrive at the laboratory with temperatures measured above 4°C may have reported concentrations that are biased low as a result of the elevated sample temperatures.

Although it is ideal to have sample temperatures below 4°C, Bureau Veritas has noted the difficulty in maintaining samples below 4°C. As such, Bureau Veritas considers a temperature range of 4°C to 10°C as acceptable. Samples submitted to the laboratory indicated temperatures that were considered acceptable.

5.3 FIELD DUPLICATES

The method of RPD is used to evaluate the sample result variability and is calculated by the following equation:

$$RPD = \left[\frac{|S1 - S2|}{S3} \right] \times 100$$

Where:
RPD = relative percent difference
S1 = original soil or groundwater sample concentration
S2 = duplicate soil or groundwater sample concentration
S3 = average concentration = (S1 + S2)/2

In the event that the analytical result for either sample is less than five times the laboratory reportable detection limit (RDL), any calculated RPD is considered not to be valid, and no conclusion can be made

with respect to the data reproducibility. The generally accepted industry standard for acceptable RPD's analyses is less than or equal to 40% for field duplicated water samples described by the CCME Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment, Volume 1 Guidance Manual (CCME, 2016a).

SW21-DUP was a blind field duplicate surface water sample collected from SW3. RPD values ranged from 0 % (multiple parameters) to 90 % for total suspended solids. The concentration of total suspended solids did not exceed the applicable guideline, and as such did not impact the interpretation of the results.

The RPD results are summarized on Table 3, **Appendix D**

5.4 BLANKS

Trip blanks were not provided by the laboratory. Similarly, suitable water to prepare field blanks was not provided by the laboratory. As such, no comments can be made with respect to the effects sample transportation or field conditions may have had on the analytical results.

5.5 LABORATORY QA/QC

In addition to the Stantec QA/QC procedures, the laboratory analyzes and assesses method blanks, Certified Reference Materials, method spikes, and surrogate recoveries to monitor data quality. In general, the laboratory QA/QC results were considered acceptable with the exception of the following:

- The matrix spike recovery for the following parameters were outside of the control limits:
  - Dissolved nitrate plus nitrite
  - Dissolved antimony
  - D10-Anthracene
  - Flouranthene
  - Pyrene
  - Total Aluminum
  - Total Copper
  - Total Zinc

Bureau Veritas indicated that the overall quality control for this analysis met acceptability criteria. The laboratory concentrations of the above-noted parameters were less than the laboratory RDL which was one order of magnitude below the CCME guidelines. Therefore, these matrix spike recovery issues did not affect the interpretation of the results.

The laboratory QA/QC results are presented as part of the copies of the laboratory certificates of analysis in **Appendix G.**

5.6 SUMMARY

Based on the results of the assessment above, the DQO for the Program was considered to have been met and the data were considered valid.

6.0 SUMMARY AND CONCLUSIONS

Stantec completed the 2021 Site Environmental Monitoring Program at the LTUs located at the Resolute Bay Airport on Cornwallis Island, Nunavut in July 2021. The findings of the Program are summarized below.

Site Conditions

A weathered drum labelled as containing aviation fuel was observed on the Site west of LTU 3, a weathered 1 m^3 bag containing salt was observed on the Site south of LTU 1, and a pile of construction debris was observed located inside the berms of LTU 1 during the 2018 site visit. A similar pile of construction debris was observed at the Site within LTU 2 during the 2018 program. Stantec had coordinated the removal of that pile with the airport authority in 2018. The weathered drum and the bag of salt observed during the 2018 site visit had not been removed when Stantec returned to the Site in 2019 (the airport authority had committed to removing the materials in 2018, but they were still onsite). Stantec reminded the airport authority to remove the materials while on Site in 2021. The materials had not been removed by the time Stantec had left the Site.

The presence of bag of salt, construction debris and a drum of aviation fuel present a potential environmental concern for soil and groundwater at the Site.

Groundwater Monitoring

Stantec observed the condition of, and monitored four groundwater monitoring wells (MW1, MW2, MW3, and MW5) surrounding LTU 1 and 2. The four monitored wells did not contain sufficient water for sample collection, which has been consistent with previous monitoring program completed at the Site.

Surface Water Sampling

Stantec collected five surface water samples and one field duplicate sample from accumulated surface water at the Site in the vicinity of the LTUs.

In general, the reported concentrations of the parameters analyzed in the surface water samples were below the applicable guidelines / standards with the exception of total lead. Total lead concentrations at SW21-4 exceeded the applicable guideline for surface water at location SW21-4 (located down-gradient of LTU 2), the concentration was within one order of magnitude of the referenced guideline. This result is consistent with previous monitoring programs.

Quality Assurance / Quality Control

Based on the results of the field and laboratory QA/QC program, the DQO for the Program was considered to have been met.

2021 ENVIRONMENTAL MONITORING PROGRAM, RESOLUTE BAY AIRPORT LAND TREATMENT UNIT, CORNWALLIS ISLAND, NUNAVUT

Summary and Conclusions
March 2022

LTU Conditions and Liner Visual Assessment

While at the Site, Stantec personnel visually assessed the condition of the exposed portions of the geomembrane liners and berms of the two LTUs. Surface water was observed to be accumulating against the inside berms of LTU 2 at two locations (along the south berm, and along the northern portion of the east berm). Two areas of low berm were observed adjacent to the access ramp of LTU 2.

Numerous rips and tears of the liners were observed at both LTU 1 and LTU 2. The largest tear was located 13 m south of the northeast corner of LTU 2 and measured approximately 4.0 m in length.

LTU Integrity

Based on the results of the surface water sampling and the visual assessment of the LTUs and liners, the following areas of concern for LTU integrity were noted:

- Surface water is accumulated west of LTU 2. The surface water is associated with an area of low berm adjacent to the access ramp to LTU 2.
  - Accumulated surface water was also observed in this location in 2018 and 2019.
- A low area where surface water may accumulate was observed inside the south berm of LTU 2. Accumulated surface water along the inside berm of the LTU has the potential to overflow and/or be blown over the berm during high wind events and accumulate outside of the LTU. This low area inside the berm is associated with an area of low berm observed by Stantec in 2018 and 2019.
  - Accumulated surface water was observed south (down-gradient) of LTU 2 (south of the low area inside the berm). The corresponding surface water sample (SW21-4) indicated parameter concentrations were below the guidelines / standards / limits with the exception of lead which exceeded the CCME guideline.
- Surface water was observed to be pooling against the inside east berm of LTU 2 in the northern portion of the LTU. This area is also associated with an approximately 4.0m tear in the liner.

7.0 LIMITATIONS

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.

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 PSPC and TC 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.

This report is limited by the following:

- The majority of the liners were covered with soil could not be visually assessed

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.

2021 ENVIRONMENTAL MONITORING PROGRAM, RESOLUTE BAY AIRPORT LAND TREATMENT UNIT, CORNWALLIS ISLAND, NUNAVUT

Limitations
March 2022

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.

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.

8.0 REFERENCES

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APPENDIX A

Figures

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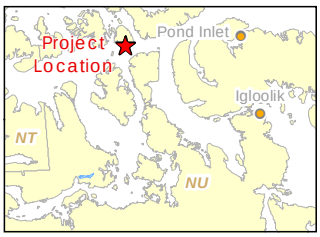

Site Location

Land Parcel

PSPC: Public Services and Procurement Canada

0 600 1,200 metres

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Stantec

Project Location
Cornwallis Island, Nunavut

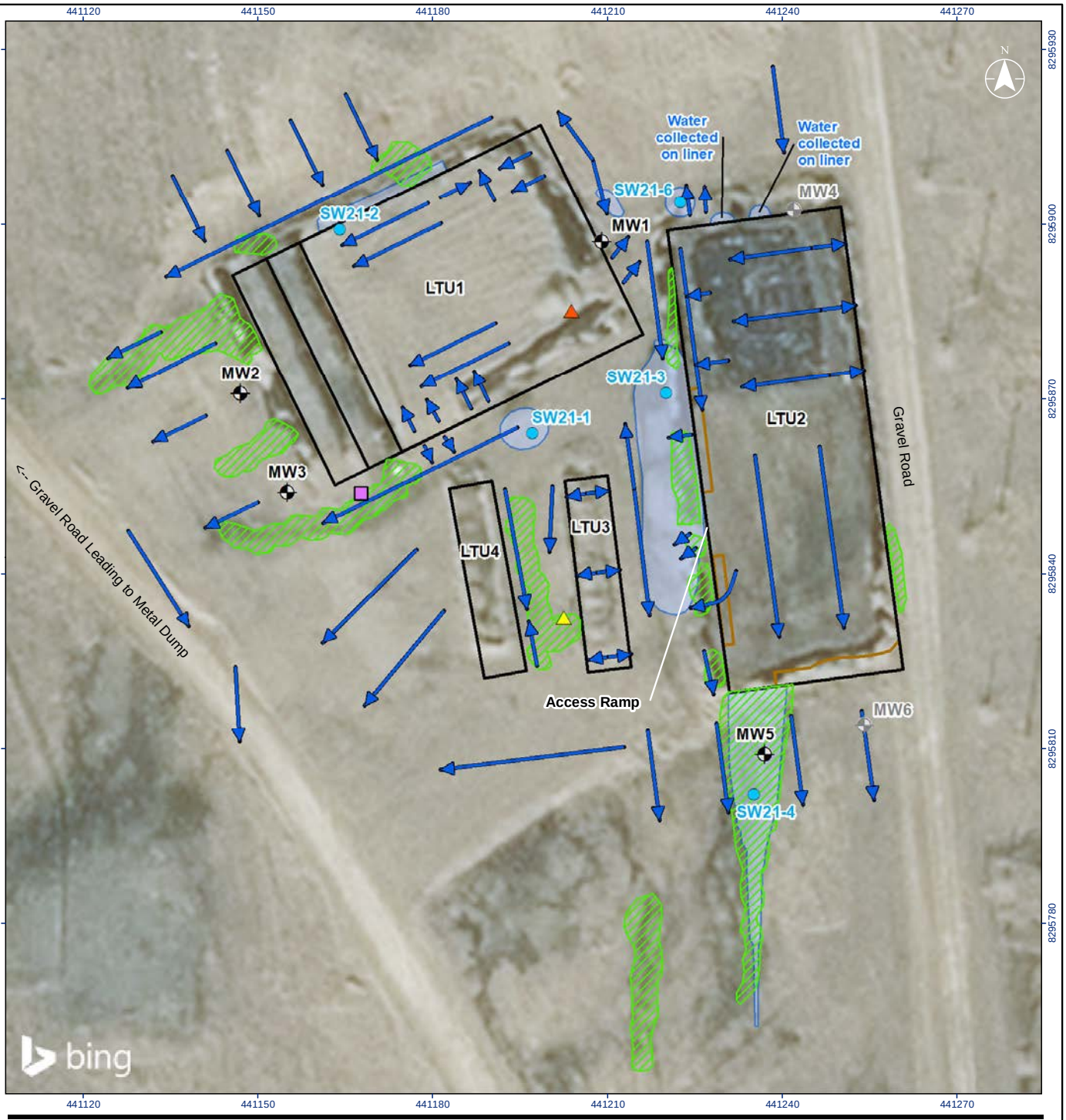
110220771
Prepared by MKuhl on 2021-09-02
Quality Review by MRedmond on 2021-09-10
Approved by TShanoff on 2021-09-15

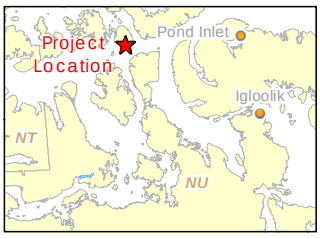
Client/Project
PSPC for Transport Canada
2021 Environmental Monitoring Program
Resolute Bay Airport Land Treatment Unit

Figure No.
1

Title
Site Location Plan

Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
3. Imagery: Microsoft Bing product screen shot(s) reprinted with permission from Microsoft Corporation.
4. Parcels: Canada Lands Digital Cadastral Data,©Her Majesty the Queen in Right of Canada, Department of Natural Resources. All rights reserved.





Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
3. Imagery: Microsoft Bing product screen shot(s) reprinted with ermission from Microsoft Corporation.

- Monitoring Well Location
- Monitoring Well Location - Screen Heaved above surface, Not Suitable for Sample Collection
- Surface Water Sample Location
- Bag of Weathered Salt
- Soil and Construction Debris Pile
- Aviation Fuel Drum
- Observed Surface Drainage Flow Direction Based on Toporgraphy
- Land Treatment Unit (LTU)
- Vegetated Areas
- Accumulated Surface Water
- Approximate Low Berm Location

PSPC: Public Services and Procurement Canada

0 15 30 metres

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Stantec

Project Location
Cornwallis Island, Nunavut

110220771
Prepared by MKuhl on 2021-09-02
Quality Review by MRedmond on 2021-09-10
Approved by TShanoff on 2021-09-15

Client/Project
PSPC for Transport Canada
2021 Environmental Monitoring Program
Resolute Bay Airport Land Treatment Unit

Figure No.
2

Title
Site Plan Showing Site Features

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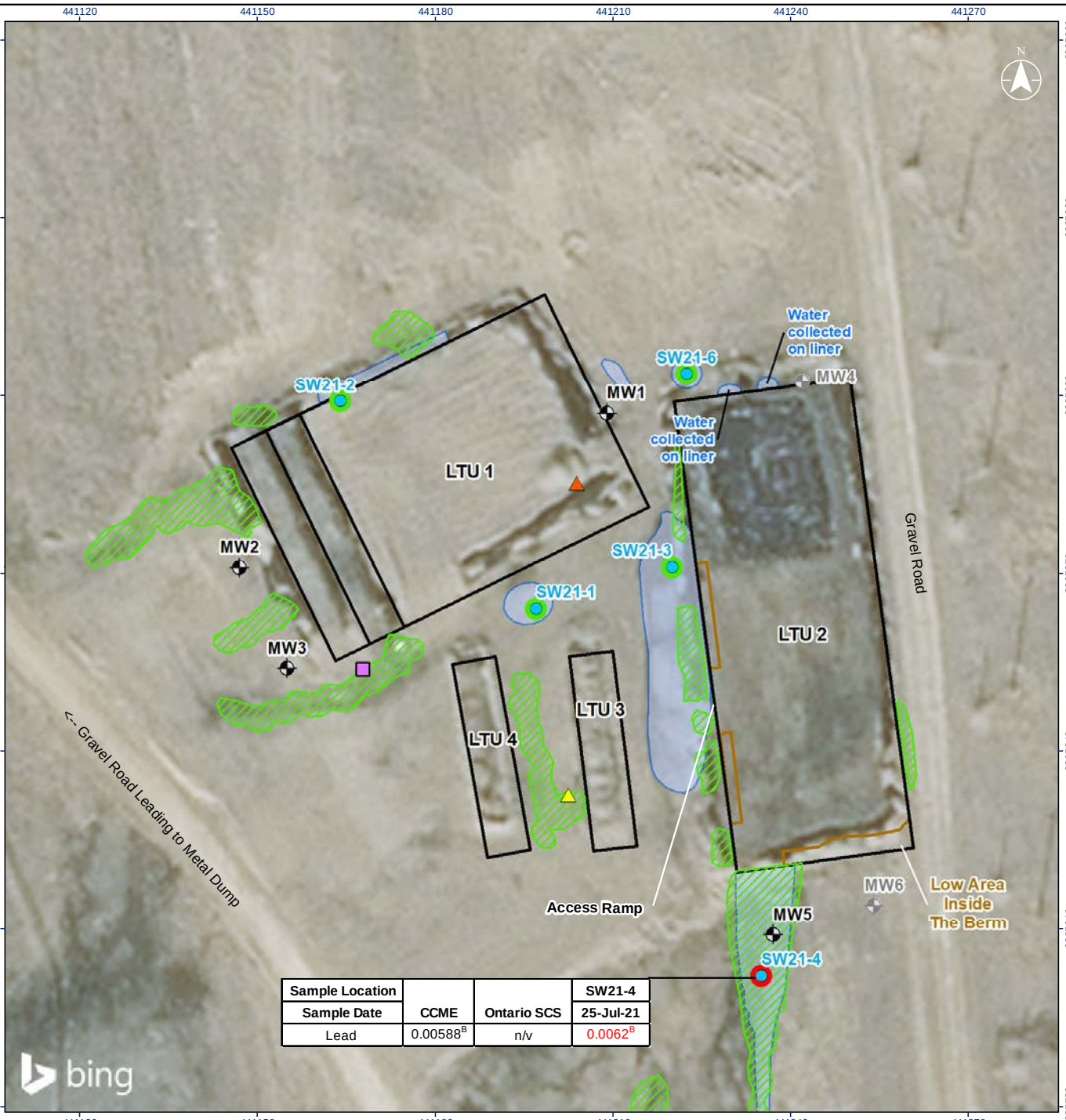
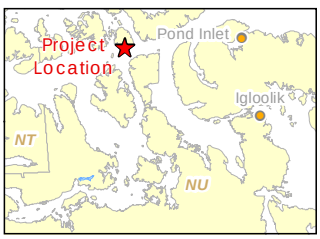


Sample Location			SW21-4
Sample Date	CCME	Ontario SCS	25-Jul-21
Lead	0.00588[B]	n/v	0.0062[B]



- Monitoring Well Location
- Monitoring Well Location - Screen Heaved above surface, Not Suitable for Sample Collection
- Surface Water Sample Location
- Bag of Weathered Salt
- Soil and Construction Debris Pile
- Aviation Fuel Drum
- Concentrations Below Applicable Guidelines / Standards
- Concentrations Above Applicable Guidelines / Standards
- Land Treatment Unit (LTU)
- Vegetated Areas
- Accumulated Surface Water
- Approximate Low Berm Location

PSPC: Public Services and Procurement Canada

0 15 30 metres

1:1,000 (at original document size of 8.5x11)

Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
3. Imagery: Microsoft Bing product screen shot(s) reprinted with ermission from Microsoft Corporation.

CCME Canadian Council of Ministers of the Environment
[A] Canadian Environmental Quality Guidelines, Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater Aquatics Short Term
[B] Canadian Environmental Quality Guidelines, Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater Aquatics Long Term
Ontario SCS Soil, Ground Water and Sediment Standards for Use under Part XV.I of the Environmental Protection Act (MOE, 2011) Site Condition Standards (SCS)
[C] Table 3 - All Types of Property Use - Coarse Textured Soils
NWB Nunavut Water Board License No. 1BR-RLF1520
[D] Nunavut Water Board License No. 1BR-RLF1520 requirements for effluent discharged from a sump at the Land farm Facility.

Stantec

Project Location: Cornwallis Island, Nunavut
110220771
Prepared by MKuhl on 2021-09-02
Quality Review by MRedmond on 2021-09-10
Approved by TShanoff on 2021-09-15

Client/Project
PSPC for Transport Canada
2021 Environmental Monitoring Program
Resolute Bay Airport Land Treatment Unit

Figure No.
3

Title
Site Plan Showing Surface Water Sample Locations and Analytical Results

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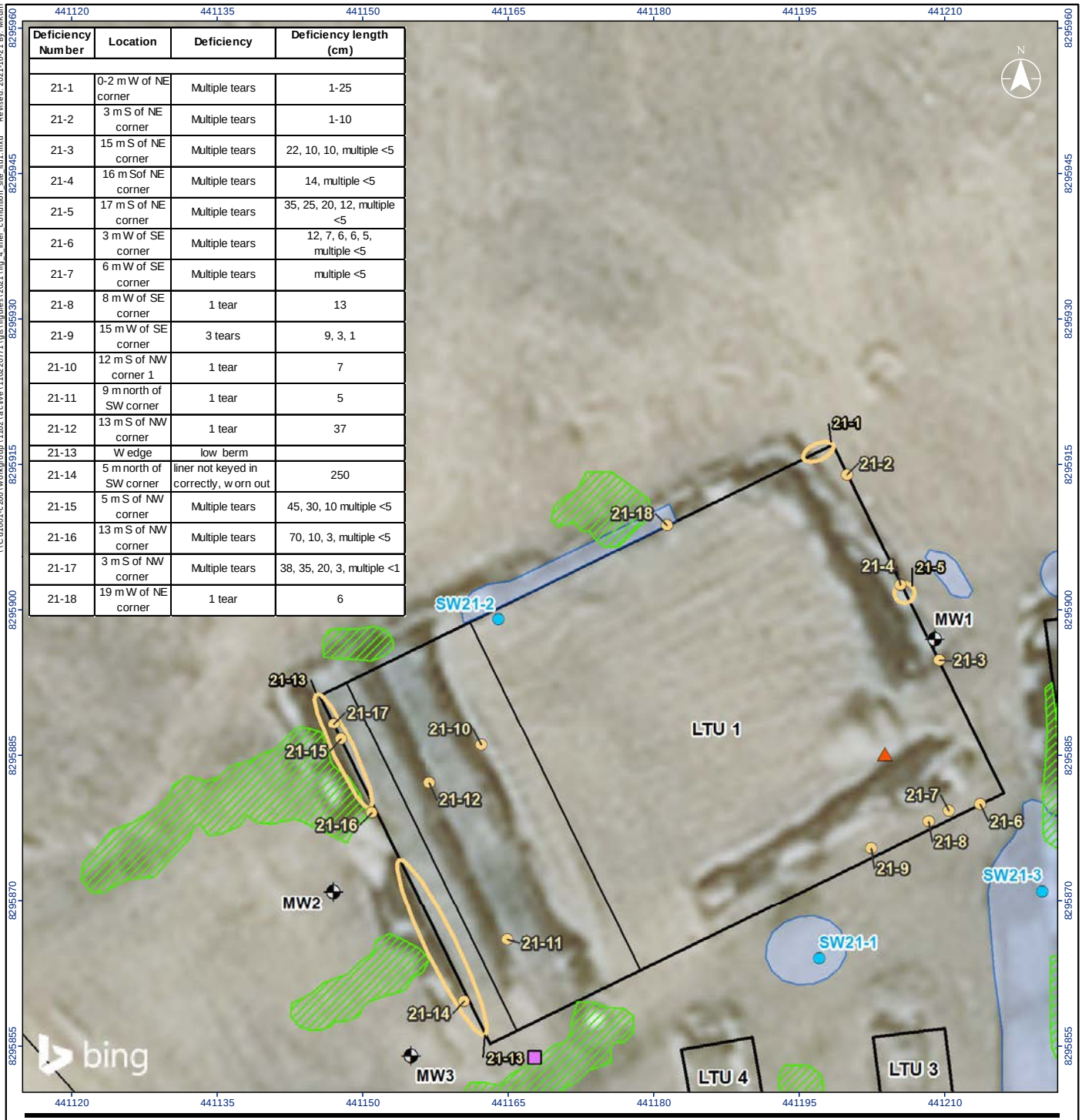
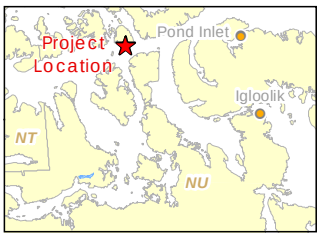


Deficiency Number	Location	Deficiency	Deficiency length (cm)
21-1	0-2 m W of NE corner	Multiple tears	1-25
21-2	3 m S of NE corner	Multiple tears	1-10
21-3	15 m S of NE corner	Multiple tears	22, 10, 10, multiple <5
21-4	16 m Sof NE corner	Multiple tears	14, multiple <5
21-5	17 m S of NE corner	Multiple tears	35, 25, 20, 12, multiple <5
21-6	3 m W of SE corner	Multiple tears	12, 7, 6, 6, 5, multiple <5
21-7	6 m W of SE corner	Multiple tears	multiple <5
21-8	8 m W of SE corner	1 tear	13
21-9	15 m W of SE corner	3 tears	9, 3, 1
21-10	12 m S of NW corner 1	1 tear	7
21-11	9 m north of SW corner	1 tear	5
21-12	13 m S of NW corner	1 tear	37
21-13	W edge	low berm	
21-14	5 m north of SW corner	liner not keyed in correctly, w orn out	250
21-15	5 m S of NW corner	Multiple tears	45, 30, 10 multiple <5
21-16	13 m S of NW corner	Multiple tears	70, 10, 3, multiple <5
21-17	3 m S of NW corner	Multiple tears	38, 35, 20, 3, multiple <1
21-18	19 m W of NE corner	1 tear	6



- Monitoring Well Location
- Surface Water Sample Location
- Liner Deficiency
- Bag of Weathered Salt
- Soil and Construction Debris Pile
- Liner Deficiency Area
- Land Treatment Unit (LTU)
- Vegetated Areas
- Accumulated Surface Water

PSPC: Public Services and Procurement Canada

0 10 20 metres

1:600 (at original document size of 8.5x11)

Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Base features: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
3. Imagery: Microsoft Bing product screen shot(s) reprinted with ermission from Microsoft Corporation.

[A] Nunavut Water Board License No. 1BR-RLF1520 requirements for effluent discharted from a sump at the Landfarm Facility, Part D, Item 6.
[B] Ontario Ministry of the Environment and Climate Change (now refered to as the Ministry of Environment, Conservation, and Parks). Soil, Groundwater, and Sediment Standards for use under Part XV.1 of the Environmental Protection Act. Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition.

Stantec

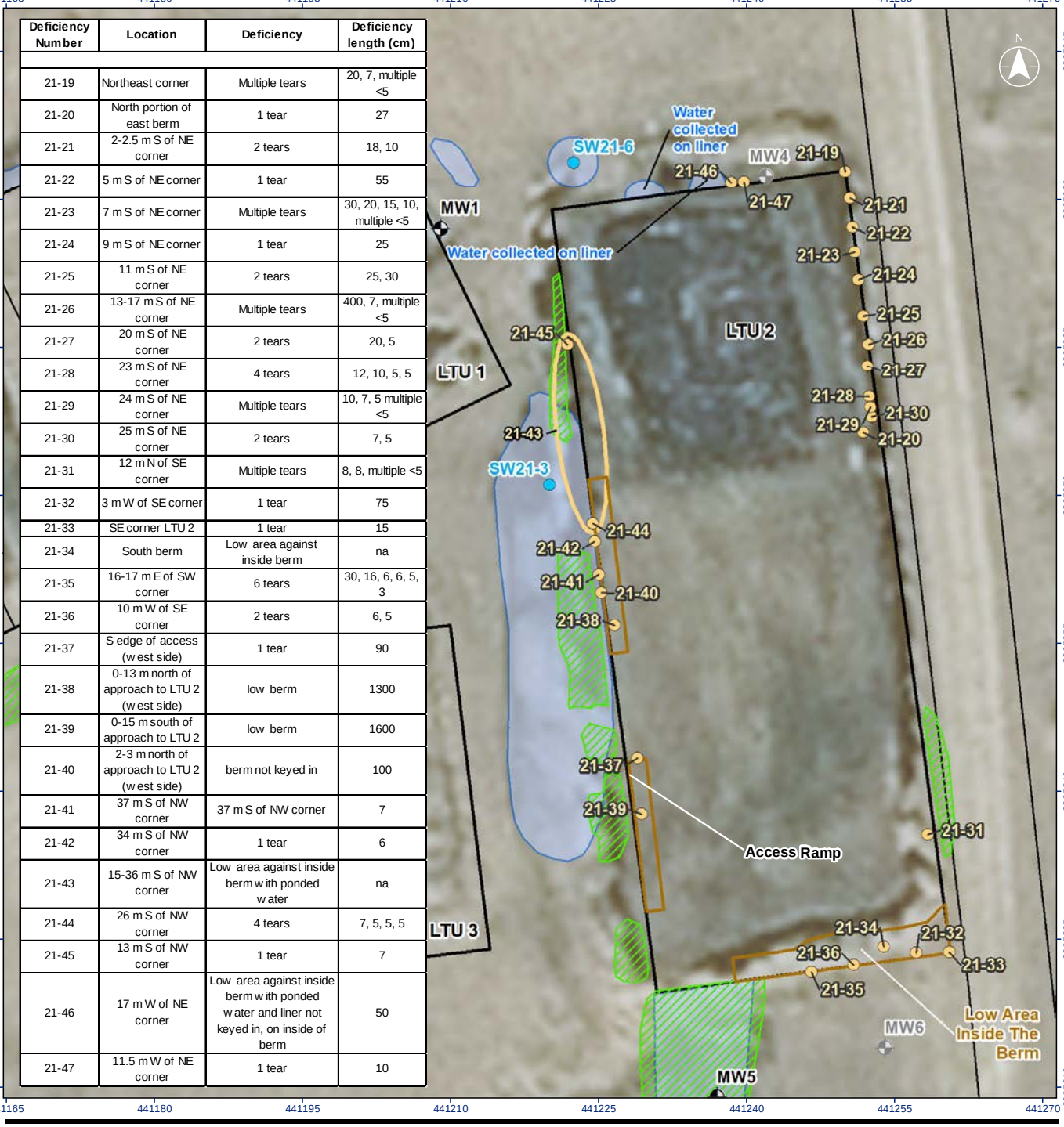
Project Location: Cornwallis Island, Nunavut
110220771
Prepared by MKuhl on 2021-09-02
Quality Review by MRedmond on 2021-09-10
Approved by TShanoff on 2021-09-15

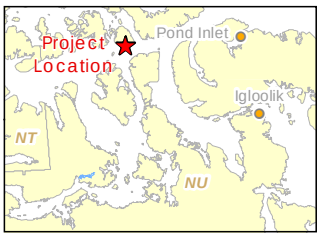
Client/Project
PSPC for Transport Canada
2021 Environmental Monitoring Program
Resolute Bay Airport Land Treatment Unit

Figure No.
4

Title
Site Plan Showing LTU 1 Observed Liner Deficiencies

Deficiency Number	Location	Deficiency	Deficiency length (cm)
21-19	Northeast corner	Multiple tears	20, 7, multiple <5
21-20	North portion of east berm	1 tear	27
21-21	2-2.5 m S of NE corner	2 tears	18, 10
21-22	5 m S of NE corner	1 tear	55
21-23	7 m S of NE corner	Multiple tears	30, 20, 15, 10, multiple <5
21-24	9 m S of NE corner	1 tear	25
21-25	11 m S of NE corner	2 tears	25, 30
21-26	13-17 m S of NE corner	Multiple tears	400, 7, multiple <5
21-27	20 m S of NE corner	2 tears	20, 5
21-28	23 m S of NE corner	4 tears	12, 10, 5, 5
21-29	24 m S of NE corner	Multiple tears	10, 7, 5 multiple <5
21-30	25 m S of NE corner	2 tears	7, 5
21-31	12 m N of SE corner	Multiple tears	8, 8, multiple <5
21-32	3 m W of SE corner	1 tear	75
21-33	SE corner LTU 2	1 tear	15
21-34	South berm	Low area against inside berm	na
21-35	16-17 m E of SW corner	6 tears	30, 16, 6, 6, 5, 3
21-36	10 m W of SE corner	2 tears	6, 5
21-37	S edge of access (west side)	1 tear	90
21-38	0-13 m north of approach to LTU 2 (west side)	low berm	1300
21-39	0-15 m south of approach to LTU 2	low berm	1600
21-40	2-3 m north of approach to LTU 2 (west side)	berm not keyed in	100
21-41	37 m S of NW corner	37 m S of NW corner	7
21-42	34 m S of NW corner	1 tear	6
21-43	15-36 m S of NW corner	Low area against inside berm with ponded water	na
21-44	26 m S of NW corner	4 tears	7, 5, 5, 5
21-45	13 m S of NW corner	1 tear	7
21-46	17 m W of NE corner	Low area against inside berm with ponded water and liner not keyed in, on inside of berm	50
21-47	11.5 m W of NE corner	1 tear	10





- Monitoring Well Location
- Monitoring Well Location - Screen Heaved above surface, Not Suitable for Sample Collection
- Surface Water Sample Location
- Liner Deficiency
- Bag of Weathered Salt
- Soil and Construction Debris Pile
- Aviation Fuel Drum
- Liner Deficiency Area
- Land Treatment Unit (LTU)
- Vegetated Areas
- Accumulated Surface Water
- Approximate Low Berm Location

PSPC: Public Services and Procurement Canada

0 10 20 metres

1:600 (at original document size of 8.5x11)

Notes
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2. Base features: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
3. Imagery: Microsoft Bing product screen shot(s) reprinted with ermission from Microsoft Corporation.

[A] Nunavut Water Board License No. 1BR-RLF1520 requirements for effluent discharted from a sump at the Landfarm Facility, Part D, Item 6.

[B] Ontario Ministry of the Environment and Climate Change (now refered to as the Ministry of Enviornment, Conservation, and Parks). Soil, Groundwater, and Sediment Standards for use under Part XV.1 of the Environmental Protection Act. Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition.

Stantec

Project Location: Cornwallis Island, Nunavut
110220771
Prepared by MKuhl on 2021-09-02
Quality Review by MRedmond on 2021-09-10
Approved by TShanoff on 2021-09-15

Client/Project
PSPC for Transport Canada
2021 Environmental Monitoring Program
Resolute Bay Airport Land Treatment Unit

Figure No.
5

Title
Site Plan Showing LTU 2 Observed Liner and Berm Deficiencies

\\C d1001-c200\workgroup\11021active\110220771\gis\figures\2021\fig_5_liner_condition_site_ltu2.mxd Revised: 2021-10-27 By: MKuhl

APPENDIX B

Laboratory Review of QA/QC Plan

2021/09/07

Stantec
10160 112 Street
Edmonton AB T5K 2L6 CA

Attn: Lindsay van Noortwyk , Associate / Project Manager

Re: Resolute Bay Airport Landfill Treatment Unit – Nunavut 2021 Environmental Monitoring Program (as provided by Stantec)

Dear Ms van Noortwyk

As requested, Bureau Veritas Environmental Laboratories has reviewed the Resolute Bay Airport Landfill Treatment Unit 2021 Sampling Plan (appended). In our opinion the Plan meets or exceeds the CCME requirements for field QC .

I trust this meets your needs. If anything further is required, please do not hesitate to contact me directly at barry.loescher@bureauveritas.com, 250 325-8887.

Sincerely,

Barry Loescher, PhD PChem QP
Quality Systems Specialist
Bureau Veritas Environmental Laboratories

4606 Canada Way
Burnaby, British Columbia V5G 1K5
Tel: +1 604 734-7276

3. 2021 Environmental Monitoring Program, Resolute Bay Airport Landfill Treatment Unit, Nunavut

Source	Location	Laboratory Analysis
Surface Water	Up to eight (8) samples (where possible) up and down gradient from LTUs 1 and 2 Field Duplicate Trip Blank Field Blank	Total Suspended Solids (TSS) Ammonia Nitrogen Oil and Grease Polycyclic Aromatic Hydrocarbons (PAH) Benzene, toluene, ethylbenzene, xylenes (BTEX) Total extractable hydrocarbons (TEH) Oil and Grease Total Phenols Total Metals (aluminum, cadmium, copper, lead, nickel, silver, zinc, arsenic, cobalt, iron, molybdenum, selenium, titanium) Dissolved Metals (aluminum, cadmium, copper, lead, nickel, silver, zinc, arsenic, cobalt, iron, molybdenum, selenium, titanium) Routine parameters (total hardness, conductivity, calcium, sodium, chloride, magnesium, potassium, sulphate, total alkalinity, nitrate-nitrite, ammonia nitrogen, and pH)

4606 Canada Way
Burnaby, British Columbia V5G 1K5
Tel: +1 604 734-7276

APPENDIX C

NWB Licence and Communication

NUNAVUT WATER BOARD
WATER LICENCE

Licence No. 1BR-RLF2030

Pursuant to the Nunavut Waters and Nunavut Surface Rights Tribunal Act and the Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada, the Nunavut Water Board, hereinafter referred to as the Board, hereby grants to

TRANSPORT CANADA

(Licensee)

3rd FLOOR, 344 EDMONTON STREET, WINNIPEG, MANITOBA R3C 0P6

(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use water or dispose of waste for a period subject to restrictions and conditions contained within this Licence renewal:

Licence Number/Type:	**1BR-RLF2030 TYPE "B"**
Water Management Area:	**BATHURST & CORNWALLIS ISLANDS WATERSHED (55)**
Location:	**RESOLUTE BAY LANDFARM MAINTENANCE / MONITORING / DECOMMISSIONING PROJECT QIKIQTANI REGION, NUNAVUT**
Classification:	**INDUSTRIAL UNDERTAKING**
Purpose:	**USE OF WATER AND DEPOSIT OF WASTE**
Quantity of Water use not To Exceed:	**FIVE (5) CUBIC METERS PER ANNUM**
Effective Date:	**AUGUST 17, 2020**
Expiry of Licence:	**AUGUST 16, 2030**

This Licence issued and recorded at Gjoa Haven, Nunavut includes and is subject to the annexed conditions.

Lootie Toomasie,
Nunavut Water Board, Chair

PART A: SCOPE, DEFINITIONS AND ENFORCEMENT

1. Scope

This Licence allows for the use of Water and the deposit of Waste for a Municipal undertaking classified as per Schedule 1 of the *Regulations* at the Resolute Bay Landfarm Maintenance/Monitoring/Decommissioning Project, located near Resolute Bay, within the Qikiqtani Region of Nunavut, generally at the following geographical coordinates:

Latitude: 74° 44' 34.28" N	Longitude: 95° 00' 17.18" W
Latitude: 74° 44' 34.58" N	Longitude: 95° 00' 02.78" W
Latitude: 74° 44' 30.04" N	Longitude: 95° 00' 01.46" W
Latitude: 74° 44' 30.52" N	Longitude: 95° 00' 15.23" W

a. This Licence is issued subject to the conditions contained herein with respect to the taking of water and the depositing of waste of any type in any waters or in any place under any conditions where such waste or any other waste that results from the deposits of such waste may enter any waters. Whenever new Regulations are made or existing *Regulations* are amended by the Governor in Council under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*, or other statutes imposing more stringent conditions relating to the quantity or type of waste that may be so deposited or under which any such waste may be so deposited, this Licence shall be deemed, upon promulgation of such Regulations, to be subject to such requirements; and

b. Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

2. Definitions

"**Act**" means the *Nunavut Waters and Nunavut Surface Rights Tribunal Act;*

"**Addendum**" means the supplemental text that is added to a full plan or report usually included at the end of the document and is not intended to require a full resubmission of the revised report;

"**Amendment**" means a change to original terms and conditions of this Licence requiring correction, addition or deletion of specific terms and conditions of the Licence; modifications inconsistent with the terms of the set terms and conditions of the Licence;

"**Appurtenant Undertaking**" means an undertaking in relation to which a use of water or a deposit of waste is permitted by a licence issued by the Board;

"Board" means the Nunavut Water Board established under the *Nunavut Agreement* and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act;*

"**Effluent**" means treated or untreated liquid waste material that is discharged into the environment from a structure such as a settling pond, landfarm or a treatment plant;

"**Engineer**" means a professional engineer registered to practice in Nunavut in accordance with the *Consolidation of Engineers and Geoscientists Act S. Nu 2008, c.2*d the *Engineering and Geoscience Professions Act S.N.W.T. 2006, c.16 Amended by S.N.W.T. 2009, c.12*;

"**Geotechnical Engineer**" means a professional engineer registered with the Association of Professional Engineers, Geologist and Geophysicists of Nunavut and whose principal field of specialization with the engineering properties of earth materials in dealing with man-made structures and earthworks that will be built on a site. These can include shallow and deep foundations, retaining walls, dams, and embankments;

"**Grab Sample**" means an undiluted quantity of material collected at a particular time and place that may be representative of the total substance being sampled at the time and place it was collected;

"**High Water Mark**" means the usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land (ref. Department of Fisheries and Oceans Canada, Operational Statement: Mineral Exploration Activities);

"**Inspector**" means an Inspector designated by the Minister under Section 85 (1) of the *Act*;
"**Licensee**" means the holder of this Licence;

"**Modification**" means an alteration to a physical work that introduces a new structure or eliminates an existing structure and does not alter the purpose or function of the work, but does not include an expansion;

"**Monitoring Program**" means a monitoring program established to collect data on surface water and groundwater quality to assess impacts to the freshwater aquatic environment of an appurtenant undertaking;

"**Nunavut Agreement**" means the *"Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada*", including its preamble and schedules, and any amendments to that agreement made pursuant to it;

"**Regulations**" means the *Nunavut Waters Regulations SOR/2013-69 18th April, 2013*;

"**Spill Contingency Plan**" means a Plan developed to deal with unforeseen petroleum and hazardous materials events that may occur during the operations conducted under the Licence;

"**Treatment Objective**" means the treatment objective for the Land Treatment Unit which is based on the Canadian Council of Ministers of the Environment (CCME) Canada – Wide Standard for Petroleum Hydrocarbon in Soil, revised January 2008; and as determined by the Government of Nunavut, Environmental Protection Service based on the 2009 Environmental Guideline for Site Remediation; See Table No. 1;

"**Type B Soil**" means soil contaminated with petroleum hydrocarbons in which the primary petroleum product present in the soil as determined by laboratory analysis consists of fuel oil and /or diesel fuel and /or gasoline; this soil does not contain polychlorinated biphenyl (PCB);

"**Waste**" means, as defined in S.4 of the *Act*, any substance that, by itself or in combination with other substances found in water, would have the effect of altering the quality of any water to which the substance is added to an extent that is detrimental to its use by people or by any animal, fish or plant, or any water that would have that effect because of the quantity or concentration of the substances contained in it or because it has been treated or changed, by heat or other means;

"**Waste Disposal Facilities**" means all facilities designated for the disposal of waste, and includes the Sewage Disposal Facilities and Solid Waste Disposal Facilities (including Bulky metal area), as described in the previous Application for Water Licence renewal filed by the Applicant on May 27, 2014;

"**Water**" **or** "**Waters**" means waters as defined in section 4 of the Act; and

3. Enforcement

a. Failure to comply with this Licence will be a violation of the *Act*, subjecting the Licensee to the enforcement measures and the penalties provided for in the *Act*;

b. All inspection and enforcement services regarding this Licence will be provided by Inspectors appointed under the *Act*; and

c. For the purpose of enforcing this Licence and with respect to the use of water and deposit or discharge of waste by the Licensee, Inspectors appointed under the *Act,* hold all powers, privileges and protections that are conferred upon them by the *Act* or by other applicable law.

PART B: GENERAL CONDITIONS

1. The Licensee shall file an Annual Report on the Appurtenant Undertaking with the Board no later than the 31st March of the year following the calendar year being reported, containing the following information:

    a. A summary report of water use and waste disposal activities;
        i. Quantity of water used for sampling purposes;
        ii. Quantity and quality of Effluent discharged from Landfarm;
        iii. Quantity and characterization of soils placed within the Landfarm for treatment.
    b. A list of unauthorized discharges and a summary of follow-up actions taken;
    c. Any revisions to the Spill Contingency Plan, Abandonment and Restoration Plan, and other plans associated with the Licence, as required by Part B, Item 9, submitted in the form of an Addendum;
    d. Description of all progressive and or final reclamation work undertaken, including photographic records of site conditions before, during and after completion of operations;
    e. A summary of all information requested and results of the Monitoring Program;
    f. Any other details on water use or waste disposal requested by the Board by the 1st November of the year being reported.

2. The Licensee shall comply with the Monitoring Program described in this Licence, and any amendments to the Monitoring Program as may be made from time to time, pursuant to the conditions of this Licence.

3. The Licensee shall post signs in the appropriate areas to identify the stations of the Monitoring Program associated with the Landfarm Facility. All signage postings shall be in the Official Languages of Nunavut.

4. The Licensee shall notify the NWB of any changes in operating plans or conditions associated with this Project at least thirty (30) days prior to any such change.

5. The Licensee shall, for all Plans submitted under this Licence, include a proposed timetable for implementation. Plans submitted, cannot be undertaken without subsequent written Board approval and direction. The Board may alter or modify a Plan if necessary to achieve the legislative objectives and will notify the Licensee in writing of acceptance, rejection or alteration of the Plan.

6. The Licensee shall implement suitable methods required for measuring the volumes of soil and water associated with the project as required under Part J, Item 1 and Part J, Item 6, respectively.

7. The Licensee shall, for all Plans submitted under this Licence, implement the Plan as approved by the Board in writing.

8. Every Plan to be carried out pursuant to the terms and conditions of this Licence shall become a part of this Licence, and any additional terms and conditions imposed upon approval of a Plan by the Board become part of this Licence. All terms and conditions of the Licence should be contemplated in the development of a Plan where appropriate.

9. The Licensee shall review the Plans referred to in this Licence as required by changes in operation and/or technology and modify the Plans accordingly. Revisions to the Plans are to be submitted in the form of an Addendum to be included with the Annual Report required by Part B, Item 1, complete with a revisions list detailing where significant content changes are made.

10. The Licensee shall ensure a copy of this Licence is maintained at the site of operations at all times. Any communication with respect to this Licence shall be made in writing to the attention of:

(a) **Manager of Licensing:**
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0
Telephone: (867) 360-6338
Fax: (867) 360-6369
Email: licensing@nwb-oen.ca

(b) **Inspector Contact:**
Manager of Field Operations, AANDC
Nunavut District, Nunavut Region
P.O. Box 100
Iqaluit, NU X0A 0H0
Telephone: (867) 975-4295
Fax: (867) 979-6445

11. The Licensee shall submit one (1) electronic copy of all reports, studies, and plans to the Board. Reports or studies submitted to the Board by the Licensee shall include a detailed executive summary in Inuktitut.

12. The Licensee shall ensure that any document(s) or correspondence submitted by the Licensee to the NWB is received and acknowledged by the Manager of Licensing.

13. This Licence is assignable as provided for in Section 44 of the Act.

14. The expiry or cancellation of this Licence does not relieve the Licensee from any obligation imposed by the Licence, or any other regulatory requirement.

PART C: CONDITIONS APPLYING TO WATER USE

1. The Licensee is authorized to use up to five (5) cubic metres of Water annually for monitoring and related purposes.

2. The use of Water from streams or any Water bodies not identified in Part C, Item 1, is prohibited unless authorized and approved by the Board in writing.

3. The Licensee shall not remove any material from below the ordinary High Water Mark of any water body unless authorized.

4. The Licensee shall not cause erosion to the banks of any body of water and shall provide necessary controls to prevent such erosion.

5. The Licensee shall implement and maintain sediment and erosion control measures prior to and during the operation to prevent entry of sediment and/or dust into Water.

PART D: CONDITIONS APPLYING TO WASTE AND WASTE MANAGEMENT

1. The Licensee shall locate areas designated for Waste disposal at a minimum distance of thirty-one (31) metres from the ordinary High Water Mark of any water body such that the quality, quantity or flow of Water is not impaired, unless otherwise approved by the Board in writing.

2. All waste generated under the Licence shall be removed from site and disposed of in an approved waste disposal facility.

3. The Licensee shall treat Type B soil contained in the Landfarm Facility to meet relevant Treatment Objective, or as otherwise approved by the Board in writing.

4. The Licensee shall maintain the Landfarm to the satisfaction of the Inspector.

5. The Licensee shall provide at least ten (10) days' written notice to the Inspector and the Board prior to any planned discharges from the Landfarm Facility. The notice shall include the estimated discharge volume, Effluent quality or results of monitoring under Part D, Item 6, and the proposed location for the discharge.

6. All Effluent discharged from the sump of the Landfarm Facility, at monitoring station RLF-1, shall not exceed the following Effluent quality limits:

Parameter	Maximum Concentration of any Grab Sample (µg/L)
pH	6 to 9 (pH units)
Oil & Grease	5000
Lead (dissolved)	1
Benzene	370
Toluene	2
Ethyl-benzene	90

7. If Effluent from RLF-1 does not meet the Effluent quality limits in Part D, Item 6, it shall be treated to meet such limits, or it shall be considered hazardous waste and disposed off-site at an approved facility or as otherwise approved by the Board in writing.

8. The discharge location for the Effluent described in Part D, Item 6 shall be situated at a minimum of thirty-one (31) metres from the ordinary High Water Mark of any water body and where direct or indirect flow into a water body is not possible and no additional impacts are created.

9. The Licensee shall dispose of soils containing contaminants in excess of the Treatment Objectives, off site at an approved treatment facility or as otherwise approved by the Board in writing.

10. Licensee shall treat all Petroleum Hydrocarbon Contaminated (PHC) soil associated with the Project at the Landfarm Facility operated by the Licensee. The contaminated soil must be treated to meet appropriate Treatment Objective.

11. The Licensee shall, prior to the removal of any treated soil for future use, confirm with the Government of Nunavut, Environmental Protection Service that the soils have been treated to meet all legislatively-required treatment objectives.

PART E: CONDITIONS APPLYING TO OPERATIONS

1. The Licensee shall implement the Plan entitled *Resolute Bay, Land Farm Operation and Maintenance Plan*, dated January 2012 that was originally approved by the Board.

2. The Licensee shall, within six (6) months of issuance of this Licence submit to the Board for approval a Landfarm Integrity Assessment and Improvement Report to assess and propose engineering options for improving the berms and prevent accumulated surface water from overflowing or blowing over the berm of Landfarm Facility.

3. The Licensee shall implement appropriate measures prior to, during, and following excavation of soil from the Landfarm Facility, to prevent or minimize impact to water.

4. The Licensee shall not mix or blend PHC contaminated soils with non-contaminated soils for the expressed purpose of achieving the Treatment Objective.

5. The Licensee shall implement proper handling, storage and transportation procedures for the management of hazardous materials during execution of the Project.

6. The Licensee shall minimize disturbance to terrain, permafrost and drainage during extraction of granular material, movement of contractor's equipment and personnel around the site and removal of site debris.

PART F: CONDITIONS APPLYING TO DRILLING OPERATIONS

1. Drilling is not authorized under this Licence

PART G: CONDITIONS APPLYING TO MODIFICATIONS AND CONSTRUCTION

1. The Licensee may, without written consent from the Board, carry out Modifications to the Water Supply Facilities and Waste Disposal Facilities provided that such Modifications are consistent with the terms of this Licence and the following requirements are met:

    a. the Licensee has notified the Board in writing of such proposed Modifications at least sixty (60) days prior to beginning the Modifications;
    b. such Modifications do not place the Licensee in contravention of the Licence or the *Act*;
    c. such Modifications are consistent with the NIRB Screening Decision;
    d. the Board has not, during the sixty (60) days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than sixty (60) days; and
    e. the Board has not rejected the proposed Modifications.

2. Modifications for which all of the conditions referred to in Part G, Item 1 have not been met can be carried out only with written approval from the Board.

3. The Licensee shall provide as-built plans and drawings of the Modifications referred to in this Licence within ninety (90) days of completion of the Modification. These plans and drawings shall be stamped by an Engineer.

PART H: CONDITIONS APPLYING TO SPILL CONTINGENCY PLANNING

1. The Licensee shall implement the Plan entitled *Resolute Bay Land Farm Treatment Facility, Spill Contingency Plan,* dated January 2012 that was originally approved by the Board.

2. The Licensee shall update and submit for the NWB's review within the next Annual Report the Plan as referred to in Part H, Item 1, addressing the following issues:

    a. To include updated project details, names of important entities such as CIRNA;
    b. To update the effective date of the project to reflect the term of the Licence.

3. The Licensee shall prevent any chemicals, petroleum products or wastes associated with the project from entering water. All sumps and fuel caches shall be located at a distance of at least thirty-one (31) metres from the ordinary High Water Mark of any adjacent water body and inspected on a regular basis.

4. The Licensee shall carryout any equipment maintenance and servicing in designated areas and shall implement special procedures (such as the use of drip pans) to manage motor fluids and other waste and contain potential spills.

5. If during the term of this Licence, an unauthorized discharge of waste occurs, or if such a discharge is foreseeable, the Licensee shall:

    a. Employ the approved Spill Contingency Plan;
    b. Report the spill immediately to the NWT/NU 24-Hour Spill Line at (867) 920-8130 and to the Inspector at (867) 975-4295; and
    c. For each spill occurrence, submit to the Inspector, no later than thirty (30) days after initially reporting the event, a detailed report that will include the amount and type of spilled product, the GPS location of the spill, and the measures taken to contain and clean up the spill site.

PART I: CONDITIONS APPLYING TO ABANDONEMENT AND RESTORATION

1. The Licensee shall implement the Plan entitled *Stand Alone Abandonment and Restoration Plan, Resolute Bay Airport Land Farm, Nunavut*, dated January 2012 that was originally approved by the Board.

2. The Licensee shall carry out progressive reclamation of any components of the project no longer required for the Licensee's operations.

3. The Licensee shall remove from the site, all infrastructure and site materials, including all fuel caches, drums, barrels, material and equipment prior to the expiry of this Licence.

4. The Licensee shall notify the Board of its intention to proceed with final abandonment of undertaking at least six (6) months prior to the planned dates of closure.

5. The Licensee shall backfill and restore, all temporary containment sumps, to the preexisting natural contours of the land.

6. Areas that have been contaminated by hydrocarbons shall be reclaimed to meet objectives as outlined in the Government of Nunavut's *Environmental Guideline for Site Remediation, January 2009* (Revised March 2009). The use of reclaimed soils for the purpose of backfill or general site grading may be carried out only upon consultation with and approval by the Government of Nunavut – Department of Environment and an Inspector.

7. All disturbed areas shall be stabilized and re-vegetated as required, upon completion of work, and restored as practically as possible to a pre-disturbed state

PART J: CONDITIONS APPLYING TO MONITORING PROGRAM

1. The Licensee shall measure and record the volume of all soil deposited and/or removed from the Landfarm Facility.

2. The Licensee shall maintain the Monitoring Program Stations, and conduct sampling and analysis requirements as described below:

Monitoring Station ID	Description	Frequency	Parameters
RLF-1	Discharge from Landfarm Facility Sump	Prior to discharge	(Volume) Quality in accordance to Parameters in Part D, Item 6)
SW-1	South (down gradient) of LTU 1	Twice/year (After Freshet and the end of treatment season) and runoff water is observed	(Quality) in accordance with Part J, Item 9
SW-2	North of LTU 1	Twice/year (After Freshet and the end of treatment season) and runoff water is observed	(Quality) in accordance with Part J, Item 9
SW-3	West of LTU 2	Twice/year (After Freshet and the end of treatment season)	(Quality) in accordance with Part J, Item 9

		and runoff water is observed	
SW-4	South (down gradient) of LTU 2	Twice/year (After Freshet and the end of treatment season) and runoff water is observed	(Quality) in accordance with Part J, Item 9

3. The Licensee shall determine the GPS co-ordinates (in degrees, minutes and seconds of latitude and longitude) of all locations where remediated soil is deposited.

4. The Licensee shall confirm the locations and GPS coordinates for all Monitoring Program Stations referred to in Part J, Item 2 with an Inspector.

5. The Licensee shall assess and record the concentration of F1 – F4 fractions in petroleum hydrocarbon contaminated soil, according to the CCME *Canada-Wide Standard for Petroleum Hydrocarbons (PHC) in Soil* that is entering and/or removed from the Landfarm Facility.

6. The Licensee shall measure and record the volume of water used for all purposes under this licence.
7. The Licensee shall sample and record the volume of all Effluent discharged from the Landfarm Facility at Monitoring Program Station RLF-1.

8. The Licensee shall sample prior to discharge at Monitoring Program Station RLF-1, to confirm compliance with the Effluent quality limits under Part D, Item 6.

9. The Licensee shall sample Monitoring Stations RLF-1, SW-1, SW-2, SW-3 and SW-4 in accordance with frequencies included under Part J, Item 2, giving consideration to adequate ground thaw and obtaining a representative surface runoff water sample. Samples shall be analyzed for the following parameters:

Total Suspended Solids	pH
Total Hardness	Total Alkalinity
Conductivity	Nitrate-Nitrite
Ammonia Nitrogen	Chloride
Oil and Grease	Total Phenols
Calcium	Magnesium
Sodium	Potassium
Chloride	Sulphate
Total Aluminum	Total Arsenic
Total Cadmium	Total Cobalt
Total Copper	Total Iron
Total Lead	Total Molybdenum
Total Nickel	Total Selenium

Total Silver
Total Titanium
Total Zinc
Total Extractable Hydrocarbons (TEH)
Polycyclic Aromatic Hydrocarbons (PAH)
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)

10. All sampling, sample preservation and analyses shall be conducted in accordance with methods prescribed in the most recent edition of *Standard Methods for the Examination of Water and Wastewater*, or by such other methods approved by the Board.

11. All analyses shall be performed in a laboratory accredited according to ISO/IEC Standard 17025. The accreditation shall be current and in good standing.

12. The Licensee shall implement the Quality Assurance and Quality Control Plan for Resolute Bay Landfarm Facility, Transport Canada, dated January 2016, as accepted by the Board.

13. Additional monitoring requirements may be requested by the Inspector.

14. The Licensee shall include in the Annual Report required under Part B, Item 1 all data, monitoring results and information required by this Part.

15. Modifications to the Monitoring Program may be made only upon written request and subsequent approval of the Board in writing.

TABLES

Table 1 Remediation Requirements

	Soil Texture	Agricultural Land Use	Residential or Parkland Land Use	Commercial Land Use	Industrial Land Use
Fraction 1	Fine	210 (170[a])	210 (170[a])	320 (170[a])	320 (170[a])
	Coarse	30[b]	30[b]	320 (240[a])	320 (240[a])
Fraction 2	Fine	150	150	260 (230[a])	260 (230[a])
	Coarse	150	150	260	260
Fraction 3	Fine	1300	1300	2500	2500
	Coarse	300	300	1700	1700
Fraction 4	Fine	5600	5600	6600	6600
	Coarse	2800	2800	3300	3300
Benzene	Fine	0.0068	0.0068	0.0068	0.0068
	Coarse	0.03	0.03	0.03	0.03
Toluene	Fine	0.08	0.08	0.08	0.08
	Coarse	0.37	0.37	0.37	0.37
Ethylbenzene	Fine	0.018	0.018	0.018	0.018
	Coarse	0.082	0.082	0.082	0.082
Xylene	Fine	2.4	2.4	2.4	2.4
	Coarse	11	11	11	11
Lead	Fine	70	140	260	600
	Coarse				
Polychlorinated Biphenyls	Fine	0.5	1.3	33	33
	Coarse				

Notes: All values are in parts per million (ppm)
a = Where applicable, for protection of potable groundwater
b = Assumes contamination near residence

Data from CCME *Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil,* (2001) Revised January 2008 and the Government of Nunavut *Environmental Guideline for Site remediation* (2009).

From: Karén Kharatyan
To: Barker, Jackie; Assol Kubeisinova
Cc: Licensing Department
Subject: Re: Clarifications requested regarding NWB Licence No. 1BR-FTA1828 - Transport Canada Cambridge Bay Land Treatment Units
Date: October 16, 2018 5:05:44 PM

Hi Jackie,

Thank you for pointing this out. The table included is from the Nunavut Guideline for Contaminated Sites Remediation that provides the requirements for soil remediation. However, I noticed that there are a few oversights of numbers within the table. The NWB will issue an errata letter some time in the next week.

Regarding the question related to groundwater monitoring results: as Nunavut does not have any guidelines the respective Ontario Soil, Groundwater and Sediment standards could be used for comparison and interpretation.

Regards,

On Tue, Oct 16, 2018 at 2:12 PM Barker, Jackie <Jackie.Barker@tc.gc.ca> wrote:

> Good Afternoon,
>
> While reviewing NWB Licence No. 1BR-FTA1828, Transport Canada's consultant noted that they require some clarification from NWB as follows and attached.
>
> ++
>
> With respect to the Cambridge Bay Fire Training Area and Apron LTU's we are requesting clarification from the Board for the following:
>
> 1. While in the process of interpreting results, we noticed that the Remediation Requirements (Table 1 of the licence) do not match the Canada Wide Standards for Petroleum Hydrocarbons in Soil, The Canadian Soil Quality Guidelines, or the Nunavut Guideline for the Management of Contaminated Sites. Please see the attached file. Can you please provide clarification, or a revised table, as to which soil guidelines should be used in our annual report for Petroleum Hydrocarbons in Soil.
>
> 2. While in the process of interpreting results, we noticed that the licence does not specify the use of groundwater guidelines when interpreting the results from the groundwater monitoring wells. Please clarify which guidelines are appropriate for use for the groundwater monitoring wells.
>
> Sincerely,
>
> Jackie Barker
>
> Environmental Officer, Prairie and Northern Region
>
> Transport Canada / Government of Canada
>
> jackie.barker@tc.gc.ca / Tel : 204-979-1739 / TTY : 1-888-675-6863
>
> Agent en environnement, Région des Prairies et du Nord
>
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APPENDIX D

Tables

Table 1 - Summary of Groundwater Monitoring Results
2021 Environmental Monitoring Program
Resolute Bay Airport, Land Treatment Unit
Public Services and Procurement Canada for Transport Canada

Monitoring Well ID	Date	Well Condition	CHV (ppm)	Top of Casing (m AGS)	Water Level (m BTOC)	Total Depth (m BTOC)
MW1	25-Jul-21	Good (no repairs required)	30	0.712	0.769	1.182
MW2	25-Jul-21	Good (no repairs required)	20	0.783	Dry	1.186
MW3	25-Jul-21	Dry (no repairs required)	5	0.813	Dry	1.232
MW5	25-Jul-21	Good (no repairs required)	0	0.904	Dry	0.971

Notes:
*Well was heaved so the screen was above the surface; therefore, groundwater monitoring and sampling was not completed.

CHV	Combustible headspace vapour concentrations
m AGS	Metres above ground surface
m BTOC	Metres below top of casing
ppm	parts per million

Table 2 - Summary of Surface Water Monitoring Results
2021 Environmental Monitoring Program
Resolute Bay Airport, Land Treatment Unit
Public Services and Procurement Canada for Transport Canada

Monitoring Well ID	Date Monitored/Sampled	Temperature (^{o}C)	Conductivity (mS/cm)	pH	ORP (mV)	DO (mg/L)
SW1	25-Jul-21	12.4	295.8	8.55	50.9	9.79
SW2	25-Jul-21	11.0	177.2	8.56	88.6	10.36
SW3	25-Jul-21	11.3	203.7	8.54	63.0	10.20
SW4	25-Jul-21	12.2	356.9	8.28	91.4	12.09
SW5	25-Jul-21	12.4	189.4	8.62	59.8	9.71
SW6	25-Jul-21	10.7	184	8.53	84.4	9.58

Notes:

CHV	Combustible headspace vapour concentrations
m AGS	Metres above ground surface
m BGS	Metres below ground surface
m BTOC	Metres below top of casing
ppm	parts per million
^{o}C	Degrees Celsius
mS/cm	milliSiemens per centimetre
ORP	Oxidation Reduction Potential
mV	milliVolts
DO	Dissolved Oxygen
mg/L	milligrams per litre

Parameters including Temperature, Conductivity, pH, ORP, and DO were measured at the time of sample collection.

Table 3 - Summary of Surface Water Analytical Results - 2021 Samples
2021 Environmental Monitoring Program
Resolute Bay Airport, Land Treatment Unit
Public Services and Procurement Canada for Transport Canada

Sample Location				SW21-1	SW21-2	SW21-3			SW21-4	SW21-6
Sample Date				25-Jul-21	25-Jul-21	25-Jul-21	25-Jul-21		25-Jul-21	25-Jul-21
Sample ID				SW21-1	SW21-2	SW21-3	SW21-DUP		SW21-4	SW21-6
Sampling Company				STANTEC	STANTEC	STANTEC	STANTEC		STANTEC	STANTEC
Laboratory				BV	BV	BV	BV		BV	BV
Laboratory Work Order				C154208	C154208	C154208	C154208		C154208	C154208
Laboratory Sample ID				ACS915	ACS916	ACS917	ACS921	RPD	ACS918	ACS920
Sample Type	Units	CCME	Ontario SCS				Field Duplicate	(%)		
General Chemistry										
Alkalinity (P as CaCO3)	mg/L	n/v	n/v	3.1	<1.0	<1.0	<1.0	nc	<1.0	<1.0
Alkalinity, Bicarbonate (as CaCO3)	mg/L	n/v	n/v	240	150	170	170	0%	300	150
Alkalinity, Carbonate (as CaCO3)	mg/L	n/v	n/v	3.7	<1.0	<1.0	<1.0	nc	<1.0	<1.0
Alkalinity, Hydroxide (as CaCO3)	mg/L	n/v	n/v	<1.0	<1.0	<1.0	<1.0	nc	<1.0	<1.0
Alkalinity, Total (as CaCO3)	mg/L	n/v	n/v	200	120	140	140	0%	250	130
Ammonia (as N)	mg/L	8.47_{TBC2}[B]	n/v	<0.015	<0.015	0.022	0.022	nc	0.021	<0.015
Anion Sum	meq/L	n/v	n/v	4.3	2.8	3.1	3.0	nc	5.4	2.7
Cation Sum	meq/L	n/v	n/v	4.8	2.7	3.2	3.2	nc	5.7	2.6
Chloride	mg/L	640[A] 120[B]	2,300[C]	4.6	11	6.8	6.7	1%	11	5.7
Electrical Conductivity, Lab	µS/cm	n/v	n/a	400	270	280	280	0%	490	260
Hardness (as CaCO3)	mg/L	n/v	n/v	220	110	150	140	7%	260	120
Ion Balance % Difference	%	n/v	n/v	5.0	3.2	1.9	3.1	nc	2.7	1.6
Nitrate	mg/L	550[A] 13[B]	n/v	<0.044	0.28	0.18	0.22	nc	0.37	<0.044
Nitrate (as N)	mg/L	124[A] 3.0[B]	n/v	<0.010	0.062	0.041	0.050	nc	0.083	<0.010
Nitrate + Nitrite (as N)	mg/L	n/v	n/v	<0.010	0.062	0.041	0.050	nc	0.083	<0.010
Nitrite	mg/L	0.197[B]	n/v	<0.033	<0.033	<0.033	<0.033	nc	<0.033	<0.033
Nitrite (as N)	mg/L	0.06[B]	n/v	<0.010	<0.010	<0.010	<0.010	nc	<0.010	<0.010
pH, lab	S.U.	6.5-9.0[B]	n/v	8.35	7.88	7.97	8.09	nc	8.27	7.93
Sulfate	mg/L	n/v	n/v	6.1	5.6	3.0	2.0	nc	7.5	2.2
Total Dissolved Solids	mg/L	n/v	n/v	210	140	150	150	0%	270	130
Total Suspended Solids	mg/L	$_{SN}$[B]	n/v	1.3	6.7	6.1	16	**90%**	2.4	14
Metals, Dissolved										
Aluminum	mg/L	n/a	n/v	<0.0030	<0.0030	<0.0030	<0.0030	nc	<0.0030	0.0051
Antimony	mg/L	n/a	20[C]	<0.00060	<0.00060	<0.00060	<0.00060	nc	<0.00060	<0.00060
Arsenic	mg/L	n/a	1.9[C]	0.00060	0.00048	0.00032	0.00036	nc	0.00060	0.00024
Barium	mg/L	n/a	29[C]	0.019	<0.010	<0.010	<0.010	nc	0.025	<0.010
Beryllium	mg/L	n/a	0.067[C]	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010
Boron	mg/L	n/a	45[C]	0.045	0.052	0.032	0.029	nc	0.047	<0.020
Cadmium	mg/L	n/a	0.0027[C]	<0.000020	<0.000020	<0.000020	<0.000020	nc	<0.000020	<0.000020
Calcium	mg/L	n/a	n/v	46	27	37	37	0%	72	26
Chromium	mg/L	n/a	0.81[C]	0.0011	0.0011	0.0014	0.0011	nc	0.0013	0.0011
Cobalt	mg/L	n/a	0.066[C]	<0.00030	<0.00030	<0.00030	<0.00030	nc	<0.00030	<0.00030
Copper	mg/L	n/a	0.087[C]	0.0049	0.0043	0.0042	0.00075	nc	0.0034	0.0049
Iron	mg/L	n/a	n/v	<0.060	<0.060	<0.060	<0.060	nc	<0.060	<0.060
Lead	mg/L	n/a	0.025[C]	0.00096	<0.00020	0.00090	0.00080	nc	0.0054	<0.00020
Lithium	mg/L	n/a	n/v	<0.020	<0.020	<0.020	<0.020	nc	<0.020	<0.020
Magnesium	mg/L	n/a	n/v	27	11	13	13	0%	19	14
Manganese	mg/L	3.6_{FO3}[A] 0.43_{FO4}[B]	n/v	<0.0040	<0.0040	<0.0040	<0.0040	nc	<0.0040	<0.0040
Molybdenum	mg/L	n/a	9.2[C]	0.00058	0.00087	0.0011	0.0011	0%	0.00080	0.00080
Nickel	mg/L	n/a	0.49[C]	0.0019	<0.00050	0.00051	<0.00050	nc	0.0015	<0.00050
Phosphorus	mg/L	n/a	n/v	<0.10	<0.10	<0.10	<0.10	nc	<0.10	<0.10
Potassium	mg/L	n/a	n/v	1.4	1.3	1.2	1.2	nc	2.7	0.46
Selenium	mg/L	n/a	0.063[C]	<0.00020	<0.00020	<0.00020	<0.00020	nc	<0.00020	<0.00020
Silicon	mg/L	n/a	n/v	0.72	0.41	0.30	0.27	nc	0.97	<0.10
Silver	mg/L	n/a	0.0015[C]	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Sodium	mg/L	n/a	2,300[C]	6.1	8.3	5.4	5.3	2%	9.5	4.1
Strontium	mg/L	n/a	n/v	0.21	0.080	0.11	0.11	0%	0.24	0.069
Sulfur	mg/L	n/a	n/v	2.4	1.5	0.84	0.85	nc	2.1	0.81
Thallium	mg/L	n/a	0.51[C]	<0.00020	<0.00020	<0.00020	<0.00020	nc	<0.00020	<0.00020
Tin	mg/L	n/a	n/v	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010
Titanium	mg/L	n/a	n/v	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010
Uranium	mg/L	n/a	0.42[C]	0.00050	0.00020	0.00041	0.00042	nc	0.00059	0.00013
Vanadium	mg/L	n/a	0.25[C]	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010
Zinc	mg/L	0.037_{FO1}[A] 0.007_{FO2}[B]	1.1[C]	<0.0030	<0.0030	0.0045	<0.0030	nc	<0.0030	0.0039
Metals, Total										
Aluminum	mg/L	0.1_{VAR1}[B]	n/a	0.010	0.027	0.011 NH	0.046	nc	0.0047	0.067
Antimony	mg/L	n/v	n/a	<0.00060	<0.00060	<0.00060	<0.00060	nc	<0.00060	<0.00060
Arsenic	mg/L	0.005[B]	n/a	0.00054	<0.00020	0.00025	0.00023	nc	0.00050	<0.00020
Barium	mg/L	n/v	n/a	0.015	<0.010	<0.010	<0.010	nc	0.021	<0.010
Beryllium	mg/L	n/v	n/a	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010
Boron	mg/L	29[A] 1.5[B]	n/a	0.030	0.053	0.030	0.042	nc	0.045	0.022
Cadmium	mg/L	0.0034_{STR}[A] 0.00024_{ITC}[B]	n/a	<0.000020	<0.000020	<0.000020	<0.000020	nc	<0.000020	<0.000020
Calcium	mg/L	n/v	n/a	44	30	35	36	3%	71	28
Chromium	mg/L	n/v	n/a	<0.0010	0.0015	<0.0010	<0.0010	nc	<0.0010	<0.0010
Cobalt	mg/L	n/v	n/a	<0.00030	<0.00030	<0.00030	<0.00030	nc	<0.00030	<0.00030
Copper	mg/L	0.00357_{TBC1}[B]	n/a	0.00081	0.00028	0.00040 NH	0.00046	nc	0.0011	0.00046
Iron	mg/L	0.3[B]	n/a	<0.060	<0.060	<0.060	<0.060	nc	<0.060	<0.060
Lead	mg/L	0.00588_{TBC1}[B]	n/a	0.0011	<0.00020	0.00095	0.0011	nc	**0.0062**[B]	<0.00020
Lithium	mg/L	n/v	n/a	<0.020	<0.020	<0.020	0.022	nc	<0.020	<0.020
Magnesium	mg/L	n/v	n/a	26	12	13	13	0%	19	16
Manganese	mg/L	n/a	n/a	<0.0040	<0.0040	<0.0040	0.0042	nc	<0.0040	<0.0040
Molybdenum	mg/L	0.073[B]	n/a	0.00064	0.00095	0.0010	0.0012	18%	0.00068	0.00077
Nickel	mg/L	0.13791_{TBC1}[B]	n/a	0.0024	<0.00050	0.0031	0.0016	nc	0.0023	<0.00050
Phosphorus	mg/L	n/v	n/a	<0.10	<0.10	<0.10	<0.10	nc	<0.10	<0.10
Potassium	mg/L	n/v	n/a	1.4	1.6	1.2	1.3	nc	2.8	0.53
Selenium	mg/L	0.001[B]	n/a	<0.00020	<0.00020	<0.00020	<0.00020	nc	<0.00020	<0.00020
Silicon	mg/L	n/v	n/a	0.78	0.60	0.38	0.43	nc	1.1	<0.10
Silver	mg/L	0.00025[B]	n/a	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Sodium	mg/L	n/v	n/a	5.7	8.9	4.9	5.2	6%	9.0	4.4
Strontium	mg/L	n/v	n/a	0.20	0.087	0.098	0.11	nc	0.23	0.073
Sulfur	mg/L	n/v	n/a	2.6	1.8	0.93	0.92	nc	2.3	0.90
Thallium	mg/L	0.0008[B]	n/a	<0.00020	<0.00020	<0.00020	<0.00020	nc	<0.00020	<0.00020
Tin	mg/L	n/v	n/a	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010
Titanium	mg/L	n/v	n/a	<0.0010	0.0014	<0.0010	<0.0010	nc	<0.0010	<0.0010
Uranium	mg/L	0.033[A] 0.015[B]	n/a	0.00048	0.00020	0.00038	0.00040	nc	0.00061	0.00014
Vanadium	mg/L	n/v	n/a	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010
Zinc	mg/L	n/a	n/a	<0.0030	0.0064	0.0054 NH	<0.0030	nc	0.0037	0.0041
BTEX and Petroleum Hydrocarbons										
Benzene	mg/L	0.37[B]	0.044[C]	<0.00040	<0.00040	<0.00040	<0.00040	nc	<0.00040	<0.00040
Toluene	mg/L	0.002[B]	18[C]	<0.00040	<0.00040	<0.00040	<0.00040	nc	<0.00040	<0.00040
Ethylbenzene	mg/L	0.09[B]	2.3[C]	<0.00040	<0.00040	<0.00040	<0.00040	nc	<0.00040	<0.00040
Xylene, m & p-	mg/L	n/v	$_{s1}$[C]	<0.00080	<0.00080	<0.00080	<0.00080	nc	<0.00080	<0.00080
Xylene, o-	mg/L	n/v	$_{s1}$[C]	<0.00040	<0.00040	<0.00040	<0.00040	nc	<0.00040	<0.00040
Xylenes, Total	mg/L	n/v	4.2_{s1}[C]	<0.00089	<0.00089	<0.00089	<0.00089	nc	<0.00089	<0.00089
PHC F1 (C6-C10 range)	mg/L	n/v	$_{s7}$[C]	<0.10	<0.10	<0.10	<0.10	nc	<0.10	<0.10
PHC F1 (C6-C10 range) minus BTEX	mg/L	n/v	0.75_{s7}[C]	<0.10	<0.10	<0.10	<0.10	nc	<0.10	<0.10
PHC F2 (>C10-C16 range)	mg/L	n/v	0.15_{s15}[C]	<0.10	<0.10	<0.10	<0.10	nc	<0.10	<0.10
Oil and Grease, Total	mg/L	n/v	n/v	<2.0	<2.0	<2.0	<2.0	nc	<2.0	<2.0
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	mg/L	0.0058[B]	0.6[C]	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Acenaphthylene	mg/L	n/v	0.0018[C]	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Acridine	mg/L	0.0044[B]	n/v	<0.000040	<0.000040	<0.000040	<0.000040	nc	<0.000040	<0.000040
Anthracene	mg/L	0.000012[AB]	0.0024[C]	<0.000010	<0.000010	<0.000010	<0.000010	nc	<0.000010	<0.000010
Benzo(a)anthracene	mg/L	0.000018[B]	0.0047[C]	<0.0000085	<0.0000085	<0.0000085	<0.0000085	nc	<0.0000085	<0.0000085
Benzo(a)pyrene	mg/L	0.000015[B]	0.00081[C]	<0.0000075	<0.0000075	<0.0000075	<0.0000075	nc	<0.0000075	<0.0000075
Benzo(b)pyridine (Quinoline)	mg/L	0.0034[B]	n/v	<0.00020	<0.00020	<0.00020	<0.00020	nc	<0.00020	<0.00020
Benzo(b/j)fluoranthene	mg/L	n/v	0.00075_{s2}[C]	<0.0000085	<0.0000085	<0.0000085	<0.0000085	nc	<0.0000085	<0.0000085
Benzo(c)phenanthrene	mg/L	n/v	n/v	<0.000050	<0.000050	<0.000050	<0.000050	nc	<0.000050	<0.000050
Benzo(e)pyrene	mg/L	n/v	n/v	<0.000050	<0.000050	<0.000050	<0.000050	nc	<0.000050	<0.000050
Benzo(g,h,i)perylene	mg/L	n/v	0.0002[C]	<0.0000085	<0.0000085	<0.0000085	<0.0000085	nc	<0.0000085	<0.0000085
Benzo(k)fluoranthene	mg/L	n/v	0.0004[C]	<0.0000085	<0.0000085	<0.0000085	<0.0000085	nc	<0.0000085	<0.0000085
Chrysene	mg/L	n/v	0.001[C]	<0.0000085	<0.0000085	<0.0000085	<0.0000085	nc	<0.0000085	<0.0000085
Dibenzo(a,h)anthracene	mg/L	n/v	0.00052[C]	<0.0000075	<0.0000075	<0.0000075	<0.0000075	nc	<0.0000075	<0.0000075
Fluoranthene	mg/L	0.00004[B]	0.13[C]	<0.000010 MSP	<0.000010	<0.000010	<0.000010	nc	<0.000010	<0.000010
Fluorene	mg/L	0.003[B]	0.4[C]	<0.000050	<0.000050	<0.000050	<0.000050	nc	<0.000050	<0.000050
Indeno(1,2,3-cd)pyrene	mg/L	n/v	0.0002[C]	<0.0000085	<0.0000085	<0.0000085	<0.0000085	nc	<0.0000085	<0.0000085
Methylnaphthalene, 1-	mg/L	n/v	$_{s3}$[C]	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Methylnaphthalene, 2-	mg/L	n/v	$_{s3}$[C]	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Naphthalene	mg/L	0.0011[B]	1.4[C]	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Perylene	mg/L	n/v	n/v	<0.000050	<0.000050	<0.000050	<0.000050	nc	<0.000050	<0.000050
Phenanthrene	mg/L	0.0004[B]	0.58[C]	<0.000050	<0.000050	<0.000050	<0.000050	nc	<0.000050	<0.000050
Pyrene	mg/L	0.000025[B]	0.068[C]	<0.000020 MSP	<0.000020	<0.000020	<0.000020	nc	<0.000020	<0.000020
Benzo(a)pyrene Total Potency Equivalents	mg/L	n/v	n/v	<0.000010	<0.000010	<0.000010	<0.000010	nc	<0.000010	<0.000010

See notes on last page.

Table 3 - Summary of Surface Water Analytical Results - 2021 Samples
2021 Environmental Monitoring Program
Resolute Bay Airport, Land Treatment Unit
Public Services and Procurement Canada for Transport Canada

Sample Location				SW21-1	SW21-2	SW21-3			SW21-4	SW21-6
Sample Date				25-Jul-21	25-Jul-21	25-Jul-21	25-Jul-21		25-Jul-21	25-Jul-21
Sample ID				SW21-1	SW21-2	SW21-3	SW21-DUP		SW21-4	SW21-6
Sampling Company				STANTEC	STANTEC	STANTEC	STANTEC		STANTEC	STANTEC
Laboratory				BV	BV	BV	BV		BV	BV
Laboratory Work Order				C154208	C154208	C154208	C154208		C154208	C154208
Laboratory Sample ID				ACS915	ACS916	ACS917	ACS921	RPD	ACS918	ACS920
Sample Type	Units	CCME	Ontario SCS				Field Duplicate	(%)		
Phenols										
Chloro-3-methyl phenol, 4-	mg/L	n/v	n/v	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Chlorophenol, 2- (ortho-Chlorophenol)	mg/L	0.007[B]	3.3[C]	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Chlorophenol, 3 & 4-	mg/L	0.007[B]	n/v	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Cresol (All Isomers)	mg/L	n/v	n/v	<0.00014	<0.00014	<0.00014	<0.00014	nc	0.00040	<0.00014
Cresol, m & p- (Methylphenol, 3&4-)	mg/L	0.004[B]	n/v	0.00010	<0.00010	<0.00010	<0.00010	nc	0.00020	<0.00010
Cresol, o- (Methylphenol, 2-)	mg/L	0.004[B]	n/v	<0.00010	<0.00010	<0.00010	<0.00010	nc	0.00020	<0.00010
Dichlorophenol, 2,4-	mg/L	0.0002[B]	4.6[C]	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Dichlorophenol, 2,6-	mg/L	0.0002[B]	n/v	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Dimethylphenol, 2,4-	mg/L	n/v	39[C]	0.00040	<0.00010	<0.00010	<0.00010	nc	0.00050	<0.00010
Dinitro-o-cresol, 4,6-	mg/L	n/v	n/v	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010
Dinitrophenol, 2,4-	mg/L	n/v	11[C]	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010
Nitrophenol, 2-	mg/L	n/v	n/v	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010
Nitrophenol, 4-	mg/L	n/v	n/v	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010
Pentachlorophenol	mg/L	0.0005[B]	0.062[C]	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Phenol	mg/L	0.004[B]	12[C]	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Tetrachlorophenol, 2,3,4,6-	mg/L	0.001[B]	n/v	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Tetrachlorophenol, 2,3,5,6-	mg/L	0.001[B]	n/v	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Trichlorophenol, 2,3,4-	mg/L	0.018[B]	n/v	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Trichlorophenol, 2,3,5-	mg/L	0.018[B]	n/v	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Trichlorophenol, 2,4,5-	mg/L	0.018[B]	1.6[C]	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010
Trichlorophenol, 2,4,6-	mg/L	0.018[B]	0.23[C]	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010

See notes on last page.

Table 3 - Summary of Surface Water Analytical Results - 2021 Samples
2021 Environmental Monitoring Program
Resolute Bay Airport, Land Treatment Unit
Public Services and Procurement Canada for Transport Canada

Notes:

CCME	Canadian Council of Ministers of the Environment
A	Canadian Environmental Quality Guidelines, Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater Aquatics Short Term
B	Canadian Environmental Quality Guidelines, Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater Aquatics Long Term
Ontario SCS	Soil, Ground Water and Sediment Standards for Use under Part XV.I of the Environmental Protection Act (MOE, 2011) Site Condition Standards (SCS)
C	Table 3 - All Types of Property Use - Coarse Textured Soils
6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
n/a	Not applicable.
n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
EQ1	The short-term benchmark is for dissolved zinc and is calculated using the following equation: Benchmark = exp(0.833[ln(hardness mg·L-1)] + 0.240[ln(DOC mg·L-1)] + 0.526). The value in the table is for surface water of 162 mg CaCO3 average) ·L−1 hardness (2019-2021) and 0.5 mg·L−1 dissolved organic carbon (DOC). The benchmark equation is valid between hardness 13.8 and 250.5 mg CaCO3·L−1 and DOC 0.3 and 17.3 mg·L−1.
EQ2	The long-term CWQG is for dissolved zinc and is calculated using the following equation: CWQG = exp(0.947[ln(hardness mg·L-1)] - 0.815[pH] + 0.398[ln(DOC mg·L-1)] + 4.625). The value in the table is for surface water of 162 mg CaCO3·L−1 hardness, pH of 8 (2019-2021 averages) and 0.5 mg·L−1 DOC. The CWQG equation is valid between hardness 23.4 and 399 mg CaCO3·L−1, pH 6.5 and 8.13 and DOC 0.3 to 22.9 mg·L−1.
EQ3	The short-term benchmark is calculated using the benchmark calculator in Appendix B of the Scientific Criteria Document for the Development of the Canadian Water Quality Guidelines for the Protection of Aquatic Life: Manganese or the following equation: Benchmark = exp(0.878[ln(hardness)] + 4.76) where the benchmark is expressed in dissolved manganese concentration (µg/L), and hardness is measured as CaCO3 equivalents in mg/L. The value in the table is for surface water of 162 mg/L hardness (2019-2021 average). The benchmark equation is valid between hardness 25 and 250 mg/L.
EQ4	The long-term CWQG is found using the look-up table (see Table 5) or the CWQG and benchmark calculator is Appendix B of CCME (2019). The value in the table is for surface water of 162 mg/L hardness and pH of 8 (2019-2021 averages). The CWQG table is valid between hardness 25 and 670 mg/L and pH 5.8 and 8.4.
LTG	The CWQG for cadmium (i.e. long-term guideline) value was calculated using <https://www.ccme.ca/en/summary-table> with a hardness of 162 mg/L (average of 2019 and 2021 samples). The CWQG for cadmium is related to water hardness (as CaCO3): At hardness ≥ 17 to ≤ 280 mg/L, the CWQG is calculated using this equation (CWQG (µg/L) = 10^{0.83(log[hardness]) – 2.46 }); At hardness > 280 mg/L, the CWQG is 0.37 µg/L.
s1	Standard is applicable to total xylenes, and m & p-xylenes and o-xylenes should be summed for comparison.
s2	Standard is for benzo(b)fluoranthene; however, the analytical laboratory can not distinguish between benzo(b)fluoranthene and benzo(j)fluoranthene, and therefore, the result is a combination of the two isomers, against which the standard has been compared.
s3	Standard is applicable to both 1-methylnaphthalene and 2-methylnaphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.
s7	Standard is applicable to PHC in the F1 range minus BTEX.
s15	Standard is applicable to PHC in the F2 range minus naphthalene. If naphthalene was not analyzed, the standard is applied to F2.
SN	see Narrative
STB	The short-term benchmark concentration value was calculated using <https://www.ccme.ca/en/summary-table> with a hardness of 162 mg/L (average of 2019 and 2021 samples). The short-term benchmark for cadmium is related to water hardness (as CaCO3): When the water hardness is 0 to < 5.3 mg/L, the short-term benchmark is 0.11 µg/L, At hardness ≥ 5.3 to ≤ 360 mg/L, the short-term benchmark is calculated using this equation (Short-term benchmark (µg/L) = 10^{1.016(log[hardness]) – 1.71 }); At hardness > 360 mg/L, the short-term benchmark is 7.7 µg/L.
TBC1	Value calculated using <https://www.ccme.ca/en/summary-table> with a hardness of 162 mg/L (average of 2019 and 2021 samples). The temperature is the average temperature measured.
TBC2	Value looked up using <https://www.ccme.ca/en/summary-table> with pH of 8 (average of 2019 and 2021 samples) and tempertaure of 11.7 deg C. The guideline (mg/L NH3) was then converted to mg/L total ammonia-N by multiplying by 0.8224.
VAR1	Variable, 5 µg/L if pH < 6.5 and 100 µg/L if pH > 6.5
MSP	Matrix spike outside acceptance limits, probable matrix interference.
NH	Duplicate exceeds acceptance criteria due to sample non homogeneity. Reanalysis yields similar results.
RPD	Relative Percent Difference.
61%	RPD exceeds data quality objective of 40%.
nc	RPD is not calculated if one or more values is non detect or if one or more values is less than five times the reportable detection limit.

Table 4 - Summary of Surface Water Analytical Results - 2019 and 2021 Samples
2021 Environmental Monitoring Program
Resolute Bay Airport, Land Treatment Unit
Public Services and Procurement Canada for Transport Canada

Sample Location				SW1		SW2		SW3				SW4	SW21-1	SW21-2	SW21-3			SW21-4	SW21-6	FIELD BLANK		TRIP BLANK	
Sample Date				26-Jul-19	26-Jul-19	26-Jul-19	26-Jul-19	26-Jul-19	26-Jul-19		26-Jul-19	26-Jul-19	25-Jul-21	25-Jul-21	25-Jul-21	25-Jul-21		25-Jul-21	25-Jul-21	26-Jul-19	26-Jul-19	26-Jul-19	26-Jul-19
Sample ID				SW1	SW1 Lab-Dup	SW2	SW2 Lab-Dup	SW3	QC19-01		QC19-01 Lab-Dup	SW4	SW21-1	SW21-2	SW21-3	SW21-DUP		SW21-4	SW21-6	QC19-03	QC19-03 Lab-Dup	QC19-02	QC19-02 Lab-Dup
Sampling Company				STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory				BV	BV	BV	BV	BV	BV		BV	BV	BV	BV	BV	BV		BV	BV	BV	BV	BV	BV
Laboratory Work Order				B9K9571	B9K9571	B9K9571	B9K9571	B9K9571	B9K9571		B9K9571	B9K9571	C154208	C154208	C154208	C154208		C154208	C154208	B9K9571	B9K9571	B9K9571	B9K9571
Laboratory Sample ID				KJW017	KJW017	KJW018	KJW018	KJW019	KJW021		KJW021	KJW020	ACS915	ACS916	ACS917	ACS921		ACS918	ACS920	KJW023	KJW023	KJW022	KJW022
Sample Type	Units	CCME	Ontario SCS		Lab Replicate		Lab Replicate		Field Duplicate	RPD (%)	Lab Replicate					Field Duplicate	RPD (%)			Field Blank	Lab Replicate	Trip Blank	Lab Replicate
General Chemistry																							
Alkalinity (P as CaCO3)	mg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	3.1	<1.0	<1.0	<1.0	nc	<1.0	<1.0	-	-	-	-
Alkalinity, Bicarbonate (as CaCO3)	mg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	240	150	170	170	0%	300	150	-	-	-	-
Alkalinity, Carbonate (as CaCO3)	mg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	3.7	<1.0	<1.0	<1.0	nc	<1.0	<1.0	-	-	-	-
Alkalinity, Hydroxide (as CaCO3)	mg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	nc	<1.0	<1.0	-	-	-	-
Alkalinity, Total (as CaCO3)	mg/L	n/v	n/v	180	180	110	-	180	180	0%	-	140	200	120	140	140	0%	250	130	<1.0	-	1.4	-
Ammonia (as N)	mg/L	8.47_{TBC2}[B]	n/v	0.051	-	<0.050	-	0.48	0.46	4%	-	0.12	<0.015	<0.015	0.022	0.022	nc	0.021	<0.015	<0.050	-	0.063	-
Anion Sum	meq/L	n/v	n/v	-	-	-	-	-	-	-	-	-	4.3	2.8	3.1	3.0	nc	5.4	2.7	-	-	-	-
Cation Sum	meq/L	n/v	n/v	-	-	-	-	-	-	-	-	-	4.8	2.7	3.2	3.2	nc	5.7	2.6	-	-	-	-
Chloride	mg/L	640[A] 120[B]	2,300[C]	13	-	4.3	-	4.9	4.7	nc	-	6.3	4.6	11	6.8	6.7	1%	11	5.7	<1.0	-	<1.0	-
Electrical Conductivity, Lab	µS/cm	n/v	n/a	364	367	215	-	345	349	1%	-	292	400	270	280	280	0%	490	260	<1	-	<1	-
Hardness (as CaCO3)	mg/L	n/v	n/v	188	-	96.3	-	174	173	1%	-	153	220	110	150	140	7%	260	120	<0.50	-	<0.50	-
Ion Balance % Difference	%	n/v	n/v	-	-	-	-	-	-	-	-	-	5.0	3.2	1.9	3.1	nc	2.7	1.6	-	-	-	-
Nitrate	mg/L	550[A] 13[B]	n/v	-	-	-	-	-	-	-	-	-	<0.044	0.28	0.18	0.22	nc	0.37	<0.044	-	-	-	-
Nitrate (as N)	mg/L	124[A] 3.0[B]	n/v	<0.10	-	<0.10	<0.10	<0.10	<0.10	nc	<0.10	0.30	<0.010	0.062	0.041	0.050	nc	0.083	<0.010	<0.10	-	<0.10	-
Nitrate + Nitrite (as N)	mg/L	n/v	n/v	<0.10	-	<0.10	<0.10	0.11	0.12	nc	0.12	0.31	<0.010	0.062	0.041	0.050	nc	0.083	<0.010	<0.10	-	<0.10	-
Nitrite	mg/L	0.197[B]	n/v	-	-	-	-	-	-	-	-	-	<0.033	<0.033	<0.033	<0.033	nc	<0.033	<0.033	-	-	-	-
Nitrite (as N)	mg/L	0.06[B]	n/v	<0.010	-	<0.010	<0.010	0.032	0.033	nc	0.033	0.010	<0.010	<0.010	<0.010	<0.010	nc	<0.010	<0.010	<0.010	-	<0.010	-
pH, lab	S.U.	6.5-9.0[B]	n/v	8.71	8.76	7.87	-	7.96	8.03	nc	-	8.38	8.35	7.88	7.97	8.09	nc	8.27	7.93	**5.85[B]**	-	**6.27[B]**	-
Sulfate	mg/L	n/v	n/v	11	-	2.9	-	1.7	1.7	nc	-	6.0	6.1	5.6	3.0	2.0	nc	7.5	2.2	<1.0	-	<1.0	-
Total Dissolved Solids	mg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	210	140	150	150	0%	270	130	-	-	-	-
Total Suspended Solids	mg/L	$_{SN}$[B]	n/v	2	-	13	16	<1	2	nc	2	16	1.3	6.7	6.1	16	**90%**	2.4	14	<1	<1	<1	-
BTEX and Petroleum Hydrocarbons																							
Benzene	mg/L	0.37[B]	0.044[C]	<0.00020	<0.00020	<0.00020	-	0.00047	0.00043	nc	-	<0.00020	<0.00040	<0.00040	<0.00040	<0.00040	nc	<0.00040	<0.00040	<0.00020	-	<0.00020	-
Toluene	mg/L	0.002[B]	18[C]	<0.00020	<0.00020	<0.00020	-	**0.0036[B]**	**0.0036[B]**	0%	-	<0.00020	<0.00040	<0.00040	<0.00040	<0.00040	nc	<0.00040	<0.00040	<0.00020	-	<0.00020	-
Ethylbenzene	mg/L	0.09[B]	2.3[C]	<0.00020	<0.00020	<0.00020	-	<0.00020	<0.00020	nc	-	<0.00020	<0.00040	<0.00040	<0.00040	<0.00040	nc	<0.00040	<0.00040	<0.00020	-	<0.00020	-
Xylene, m & p-	mg/L	n/v	$_{s1}$[C]	0.00073	0.00065	<0.00040	-	0.0013	0.0012	nc	-	<0.00040	<0.00080	<0.00080	<0.00080	<0.00080	nc	<0.00080	<0.00080	<0.00040	-	<0.00040	-
Xylene, o-	mg/L	n/v	$_{s1}$[C]	0.00029	0.00030	<0.00020	-	0.0024	0.0022	9%	-	<0.00020	<0.00040	<0.00040	<0.00040	<0.00040	nc	<0.00040	<0.00040	<0.00020	-	<0.00020	-
Xylenes, Total	mg/L	n/v	4.2_{s1}[C]	0.0010	0.00095	<0.00040	-	0.0036	0.0035	3%	-	<0.00040	<0.00089	<0.00089	<0.00089	<0.00089	nc	<0.00089	<0.00089	<0.00040	-	<0.00040	-
PHC F1 (C6-C10 range)	mg/L	n/v	$_{s7}$[C]	0.110	0.100	<0.025	-	0.034	0.033	nc	-	<0.025	<0.10	<0.10	<0.10	<0.10	nc	<0.10	<0.10	<0.025	-	<0.025	-
PHC F1 (C6-C10 range) minus BTEX	mg/L	n/v	0.75_{s7}[C]	0.110	0.099	<0.025	-	0.026	0.026	nc	-	<0.025	<0.10	<0.10	<0.10	<0.10	nc	<0.10	<0.10	<0.025	-	<0.025	-
PHC F2 (>C10-C16 range)	mg/L	n/v	0.15_{s15}[C]	0.120	-	<0.100	-	<0.100	<0.100	nc	-	<0.100	<0.10	<0.10	<0.10	<0.10	nc	<0.10	<0.10	<0.100	-	<0.100	-
Oil and Grease, Total	mg/L	n/v	n/v	0.80	-	<0.50	-	<0.50	<0.50	nc	-	0.70	<2.0	<2.0	<2.0	<2.0	nc	<2.0	<2.0	<0.50	-	<0.50	-
Metals, Dissolved																							
Aluminum	mg/L	n/a	n/v	-	-	-	-	-	-	-	-	-	<0.0030	<0.0030	<0.0030	<0.0030	nc	<0.0030	0.0051	-	-	-	-
Antimony	mg/L	n/a	20[C]	-	-	-	-	-	-	-	-	-	<0.00060	<0.00060	<0.00060	<0.00060	nc	<0.00060	<0.00060	-	-	-	-
Arsenic	mg/L	n/a	1.9[C]	-	-	-	-	-	-	-	-	-	0.00060	0.00048	0.00032	0.00036	nc	0.00060	0.00024	-	-	-	-
Barium	mg/L	n/a	29[C]	-	-	-	-	-	-	-	-	-	0.019	<0.010	<0.010	<0.010	nc	0.025	<0.010	-	-	-	-
Beryllium	mg/L	n/a	0.067[C]	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010	-	-	-	-
Boron	mg/L	n/a	45[C]	-	-	-	-	-	-	-	-	-	0.045	0.052	0.032	0.029	nc	0.047	<0.020	-	-	-	-
Cadmium	mg/L	n/a	0.0027[C]	-	-	-	-	-	-	-	-	-	<0.000020	<0.000020	<0.000020	<0.000020	nc	<0.000020	<0.000020	-	-	-	-
Calcium	mg/L	n/a	n/v	-	-	-	-	-	-	-	-	-	46	27	37	37	0%	72	26	-	-	-	-
Chromium	mg/L	n/a	0.81[C]	-	-	-	-	-	-	-	-	-	0.0011	0.0011	0.0014	0.0011	nc	0.0013	0.0011	-	-	-	-
Cobalt	mg/L	n/a	0.066[C]	-	-	-	-	-	-	-	-	-	<0.00030	<0.00030	<0.00030	<0.00030	nc	<0.00030	<0.00030	-	-	-	-
Copper	mg/L	n/a	0.087[C]	-	-	-	-	-	-	-	-	-	0.0049	0.0043	0.0042	0.00075	nc	0.0034	0.0049	-	-	-	-
Iron	mg/L	n/a	n/v	-	-	-	-	-	-	-	-	-	<0.060	<0.060	<0.060	<0.060	nc	<0.060	<0.060	-	-	-	-
Lead	mg/L	n/a	0.025[C]	-	-	-	-	-	-	-	-	-	0.00096	<0.00020	0.00090	0.00080	nc	0.0054	<0.00020	-	-	-	-
Lithium	mg/L	n/a	n/v	-	-	-	-	-	-	-	-	-	<0.020	<0.020	<0.020	<0.020	nc	<0.020	<0.020	-	-	-	-
Magnesium	mg/L	n/a	n/v	-	-	-	-	-	-	-	-	-	27	11	13	13	0%	19	14	-	-	-	-
Manganese	mg/L	3.6_{FOX}[A] 0.43_{FO4}[B]	n/v	-	-	-	-	-	-	-	-	-	<0.0040	<0.0040	<0.0040	<0.0040	nc	<0.0040	<0.0040	-	-	-	-
Molybdenum	mg/L	n/a	9.2[C]	-	-	-	-	-	-	-	-	-	0.00058	0.00087	0.0011	0.0011	0%	0.00080	0.00080	-	-	-	-
Nickel	mg/L	n/a	0.49[C]	-	-	-	-	-	-	-	-	-	0.0019	<0.00050	0.00051	<0.00050	nc	0.0015	<0.00050	-	-	-	-
Phosphorus	mg/L	n/a	n/v	-	-	-	-	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	nc	<0.10	<0.10	-	-	-	-
Potassium	mg/L	n/a	n/v	-	-	-	-	-	-	-	-	-	1.4	1.3	1.2	1.2	nc	2.7	0.46	-	-	-	-
Selenium	mg/L	n/a	0.063[C]	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	nc	<0.00020	<0.00020	-	-	-	-
Silicon	mg/L	n/a	n/v	-	-	-	-	-	-	-	-	-	0.72	0.41	0.30	0.27	nc	0.97	<0.10	-	-	-	-
Silver	mg/L	n/a	0.0015[C]	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	-	-	-	-
Sodium	mg/L	n/a	2.300[C]	-	-	-	-	-	-	-	-	-	6.1	8.3	5.4	5.3	2%	9.5	4.1	-	-	-	-
Strontium	mg/L	n/a	n/v	-	-	-	-	-	-	-	-	-	0.21	0.080	0.11	0.11	0%	0.24	0.069	-	-	-	-
Sulfur	mg/L	n/a	n/v	-	-	-	-	-	-	-	-	-	2.4	1.5	0.84	0.85	nc	2.1	0.81	-	-	-	-
Thallium	mg/L	n/a	0.51[C]	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	nc	<0.00020	<0.00020	-	-	-	-
Tin	mg/L	n/a	n/v	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010	-	-	-	-
Titanium	mg/L	n/a	n/v	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010	-	-	-	-
Uranium	mg/L	n/a	0.42[C]	-	-	-	-	-	-	-	-	-	0.00050	0.00020	0.00041	0.00042	nc	0.00059	0.00013	-	-	-	-
Vanadium	mg/L	n/a	0.25[C]	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010	-	-	-	-
Zinc	mg/L	0.037_{EO1}[A] 0.007_{EO2}[B]	1.1[C]	-	-	-	-	-	-	-	-	-	<0.0030	<0.0030	0.0045	<0.0030	nc	<0.0030	0.0039	-	-	-	-

See notes on last page.

Table 4 - Summary of Surface Water Analytical Results - 2019 and 2021 Samples
2021 Environmental Monitoring Program
Resolute Bay Airport, Land Treatment Unit
Public Services and Procurement Canada for Transport Canada

Sample Location				SW1		SW2		SW3				SW4	SW21-1	SW21-2	SW21-3			SW21-4	SW21-6	FIELD BLANK		TRIP BLANK	
Sample Date				26-Jul-19	26-Jul-19	26-Jul-19	26-Jul-19	26-Jul-19	26-Jul-19		26-Jul-19	26-Jul-19	25-Jul-21	25-Jul-21	25-Jul-21	25-Jul-21		25-Jul-21	25-Jul-21	26-Jul-19	26-Jul-19	26-Jul-19	26-Jul-19
Sample ID				SW1	SW1 Lab-Dup	SW2	SW2 Lab-Dup	SW3	QC19-01		QC19-01 Lab-Dup	SW4	SW21-1	SW21-2	SW21-3	SW21-DUP		SW21-4	SW21-6	QC19-03	QC19-03 Lab-Dup	QC19-02	QC19-02 Lab-Dup
Sampling Company				STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory				BV	BV	BV	BV	BV	BV		BV	BV	BV	BV	BV	BV		BV	BV	BV	BV	BV	BV
Laboratory Work Order				B9K9571	B9K9571	B9K9571	B9K9571	B9K9571	B9K9571		B9K9571	B9K9571	C154208	C154208	C154208	C154208		C154208	C154208	B9K9571	B9K9571	B9K9571	B9K9571
Laboratory Sample ID				KJW017	KJW017	KJW018	KJW018	KJW019	KJW021		KJW021	KJW020	ACS915	ACS916	ACS917	ACS921		ACS918	ACS920	KJW023	KJW023	KJW022	KJW022
Sample Type	Units	CCME	Ontario SCS		Lab Replicate		Lab Replicate		Field Duplicate	RPD (%)	Lab Replicate					Field Duplicate	RPD (%)			Field Blank	Lab Replicate	Trip Blank	Lab Replicate
Metals, Total																							
Aluminum	mg/L	0.1 $_{VAR1}$ [B]	n/a	0.0156	-	0.0137	-	0.0071	0.0074	nc	-	**0.138 [B]**	0.010	0.027	0.011 NH	0.046	nc	0.0047	0.067	<0.0030	-	<0.0030	<0.0030
Antimony	mg/L	n/v	n/a	-	-	-	-	-	-	-	-	-	<0.00060	<0.00060	<0.00060	<0.00060	nc	<0.00060	<0.00060	-	-	-	-
Arsenic	mg/L	0.005 [B]	n/a	0.00139	-	0.00012	-	0.00033	0.00032	nc	-	0.00063	0.00054	<0.00020	0.00025	0.00023	nc	0.00050	<0.00020	<0.00010	-	<0.00010	<0.00010
Barium	mg/L	n/v	n/a	-	-	-	-	-	-	-	-	-	0.015	<0.010	<0.010	<0.010	nc	0.021	<0.010	-	-	-	-
Beryllium	mg/L	n/v	n/a	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010	-	-	-	-
Boron	mg/L	29 [A] 1.5 [B]	n/a	-	-	-	-	-	-	-	-	-	0.030	0.053	0.030	0.042	nc	0.045	0.022	-	-	-	-
Cadmium	mg/L	0.0034 $_{INTR}$ [A] 0.00024 $_{TYL}$ [B]	n/a	<0.000010	-	<0.000010	-	0.000014	0.000018	nc	-	0.000012	<0.000020	<0.000020	<0.000020	<0.000020	nc	<0.000020	<0.000020	<0.000010	-	<0.000010	<0.000010
Calcium	mg/L	n/v	n/a	30.9	-	24.0	-	46.6	47.0	1%	-	34.5	44	30	35	36	3%	71	28	<0.050	-	<0.050	-
Chromium	mg/L	n/v	n/a	-	-	-	-	-	-	-	-	-	<0.0010	0.0015	<0.0010	<0.0010	nc	<0.0010	<0.0010	-	-	-	-
Cobalt	mg/L	n/v	n/a	0.00064	-	<0.00020	-	<0.00020	<0.00020	nc	-	0.00031	<0.00030	<0.00030	<0.00030	<0.00030	nc	<0.00030	<0.00030	<0.00020	-	<0.00020	<0.00020
Copper	mg/L	0.00357 $_{TBC1}$ [B]	n/a	0.00150	-	<0.00050	-	<0.00050	<0.00050	nc	-	0.00128	0.00081	0.00028	0.00040 NH	0.00046	nc	0.0011	0.00046	<0.00050	-	<0.00050	<0.00050
Iron	mg/L	0.3 [B]	n/a	0.287	-	<0.010	-	0.012	0.012	nc	-	0.191	<0.060	<0.060	<0.060	<0.060	nc	<0.060	<0.060	<0.010	-	<0.010	<0.010
Lead	mg/L	0.00588 $_{TBC1}$ [B]	n/a	**0.0115 [B]**	-	<0.00020	-	**0.00689 [B]**	**0.00702 [B]**	2%	-	0.00217	0.0011	<0.00020	0.00095	0.0011	nc	**0.0062 [B]**	<0.00020	<0.00020	-	<0.00020	<0.00020
Lithium	mg/L	n/v	n/a	-	-	-	-	-	-	-	-	-	<0.020	<0.020	<0.020	0.022	nc	<0.020	<0.020	-	-	-	-
Magnesium	mg/L	n/v	n/a	26.9	-	8.82	-	13.9	13.5	3%	-	16.1	26	12	13	13	0%	19	16	<0.050	-	<0.050	-
Manganese	mg/L	n/a	n/a	-	-	-	-	-	-	-	-	-	<0.0040	<0.0040	<0.0040	0.0042	nc	<0.0040	<0.0040	-	-	-	-
Molybdenum	mg/L	0.073 [B]	n/a	0.0011	-	0.0010	-	0.0013	0.0013	nc	-	<0.0010	0.00064	0.00095	0.0010	0.0012	18%	0.00068	0.00077	<0.0010	-	<0.0010	<0.0010
Nickel	mg/L	0.13791 $_{TRC1}$ [B]	n/a	0.0068	-	<0.0010	-	<0.0010	<0.0010	nc	-	0.0020	0.0024	<0.00050	0.0031	0.0016	nc	0.0023	<0.00050	<0.0010	-	<0.0010	<0.0010
Phosphorus	mg/L	n/v	n/a	-	-	-	-	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	nc	<0.10	<0.10	-	-	-	-
Potassium	mg/L	n/v	n/a	1.57	-	1.05	-	1.67	1.63	2%	-	3.17	1.4	1.6	1.2	1.3	nc	2.8	0.53	<0.050	-	<0.050	-
Selenium	mg/L	0.001 [B]	n/a	0.00037	-	<0.00010	-	0.00012	0.00011	nc	-	0.00013	<0.00020	<0.00020	<0.00020	<0.00020	nc	<0.00020	<0.00020	<0.00010	-	<0.00010	<0.00010
Silicon	mg/L	n/v	n/a	-	-	-	-	-	-	-	-	-	0.78	0.60	0.38	0.43	nc	1.1	<0.10	-	-	-	-
Silver	mg/L	0.00025 [B]	n/a	<0.000020	-	<0.000020	-	<0.000020	<0.000020	nc	-	<0.000020	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.000020	-	<0.000020 EJ	<0.000020
Sodium	mg/L	n/v	n/a	11.4	-	6.46	-	4.84	4.72	3%	-	7.37	5.7	8.9	4.9	5.2	6%	9.0	4.4	<0.050	-	<0.050	-
Strontium	mg/L	n/v	n/a	-	-	-	-	-	-	-	-	-	0.20	0.087	0.098	0.11	nc	0.23	0.073	-	-	-	-
Sulfur	mg/L	n/v	n/a	-	-	-	-	-	-	-	-	-	2.6	1.8	0.93	0.92	nc	2.3	0.90	-	-	-	-
Thallium	mg/L	0.0008 [B]	n/a	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	nc	<0.00020	<0.00020	-	-	-	-
Tin	mg/L	n/v	n/a	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010	-	-	-	-
Titanium	mg/L	n/v	n/a	<0.0050	-	<0.0050	-	<0.0050	<0.0050	nc	-	0.0056	<0.0010	0.0014	<0.0010	<0.0010	nc	<0.0010	<0.0010	<0.0050	-	<0.0050	<0.0050
Uranium	mg/L	0.033 [A] 0.015 [B]	n/a	-	-	-	-	-	-	-	-	-	0.00048	0.00020	0.00038	0.00040	nc	0.00061	0.00014	-	-	-	-
Vanadium	mg/L	n/v	n/a	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010	-	-	-	-
Zinc	mg/L	n/a	n/a	<0.0050	-	<0.0050	-	<0.0050	<0.0050	nc	-	<0.0050	<0.0030	0.0064	0.0054 NH	<0.0030	nc	0.0037	0.0041	<0.0050	-	<0.0050	<0.0050
Polycyclic Aromatic Hydrocarbons																							
Acenaphthene	mg/L	0.0058 [B]	0.6 [C]	<0.00010	-	<0.00010	-	<0.00010	<0.00010	nc	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.00010	-	<0.00010	-
Acenaphthylene	mg/L	n/v	0.0018 [C]	<0.00010	-	<0.00010	-	<0.00010	<0.00010	nc	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.00010	-	<0.00010	-
Acridine	mg/L	0.0044 [B]	n/v	<0.000040	-	<0.000040	-	<0.000040	<0.000040	nc	-	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	nc	<0.000040	<0.000040	<0.000040	-	<0.000040	-
Anthracene	mg/L	0.000012 [AB]	0.0024 [C]	<0.000010	-	<0.000010	-	<0.000010	<0.000010	nc	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	nc	<0.000010	<0.000010	<0.000010	-	<0.000010	-
Benzo(a)anthracene	mg/L	0.000018 [B]	0.0047 [C]	<0.0000085	-	<0.0000085	-	<0.0000085	<0.0000085	nc	-	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	nc	<0.0000085	<0.0000085	<0.0000085	-	<0.0000085	-
Benzo(a)pyrene	mg/L	0.000015 [B]	0.00081 [C]	<0.0000075	-	<0.0000075	-	<0.0000075	<0.0000075	nc	-	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	nc	<0.0000075	<0.0000075	<0.0000075	-	<0.0000075	-
Benzo(b)pyridine (Quinoline)	mg/L	0.0034 [B]	n/v	<0.00020	-	<0.00020	-	<0.00020	<0.00020	nc	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	nc	<0.00020	<0.00020	<0.00020	-	<0.00020	-
Benzo(b/j)fluoranthene	mg/L	n/v	0.00075 $_{fx2}$ [C]	<0.0000085	-	<0.0000085	-	<0.0000085	<0.0000085	nc	-	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	nc	<0.0000085	<0.0000085	<0.0000085	-	<0.0000085	-
Benzo(c)phenanthrene	mg/L	n/v	n/v	<0.000050	-	<0.000050	-	<0.000050	<0.000050	nc	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	nc	<0.000050	<0.000050	<0.000050	-	<0.000050	-
Benzo(e)pyrene	mg/L	n/v	n/v	<0.000050	-	<0.000050	-	<0.000050	<0.000050	nc	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	nc	<0.000050	<0.000050	<0.000050	-	<0.000050	-
Benzo(g,h,i)perylene	mg/L	n/v	0.0002 [C]	<0.0000085	-	<0.0000085	-	<0.0000085	<0.0000085	nc	-	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	nc	<0.0000085	<0.0000085	<0.0000085	-	<0.0000085	-
Benzo(k)fluoranthene	mg/L	n/v	0.0004 [C]	<0.0000085	-	<0.0000085	-	<0.0000085	<0.0000085	nc	-	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	nc	<0.0000085	<0.0000085	<0.0000085	-	<0.0000085	-
Chrysene	mg/L	n/v	0.001 [C]	<0.0000085	-	<0.0000085	-	<0.0000085	<0.0000085	nc	-	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	nc	<0.0000085	<0.0000085	<0.0000085	-	<0.0000085	-
Dibenzo(a,h)anthracene	mg/L	n/v	0.00052 [C]	<0.0000075	-	<0.0000075	-	<0.0000075	<0.0000075	nc	-	<0.0000075	<0.0000075	<0.0000075	<0.0000075	<0.0000075	nc	<0.0000075	<0.0000075	<0.0000075	-	<0.0000075	-
Fluoranthene	mg/L	0.00004 [B]	0.13 [C]	<0.000010	-	<0.000010	-	<0.000010	<0.000010	nc	-	<0.000010	<0.000010 MSP	<0.000010	<0.000010	<0.000010	nc	<0.000010	<0.000010	<0.000010	-	<0.000010	-
Fluorene	mg/L	0.003 [B]	0.4 [C]	<0.000050	-	<0.000050	-	<0.000050	<0.000050	nc	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	nc	<0.000050	<0.000050	<0.000050	-	<0.000050	-
Indeno(1,2,3-cd)pyrene	mg/L	n/v	0.0002 [C]	<0.0000085	-	<0.0000085	-	<0.0000085	<0.0000085	nc	-	<0.0000085	<0.0000085	<0.0000085	<0.0000085	<0.0000085	nc	<0.0000085	<0.0000085	<0.0000085	-	<0.0000085	-
Methylnaphthalene, 1-	mg/L	n/v	$_{C}^{xs}$ [C]	<0.00010	-	<0.00010	-	0.00013	0.00014	nc	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.00010	-	<0.00010	-
Methylnaphthalene, 2-	mg/L	n/v	$_{C}^{xs}$	<0.00010	-	<0.00010	-	0.00011	0.00011	nc	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.00010	-	<0.00010	-
Naphthalene	mg/L	0.0011 [B]	1.4 [C]	<0.00010	-	<0.00010	-	0.00011	0.00013	nc	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.00010	-	<0.00010	-
Perylene	mg/L	n/v	n/v	<0.000050	-	<0.000050	-	<0.000050	<0.000050	nc	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	nc	<0.000050	<0.000050	<0.000050	-	<0.000050	-
Phenanthrene	mg/L	0.0004 [B]	0.58 [C]	<0.000050	-	<0.000050	-	<0.000050	<0.000050	nc	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	nc	<0.000050	<0.000050	<0.000050	-	<0.000050	-
Pyrene	mg/L	0.000025 [B]	0.068 [C]	<0.000020	-	<0.000020	-	<0.000020	<0.000020	nc	-	<0.000020	<0.000020 MSP	<0.000020	<0.000020	<0.000020	nc	<0.000020	<0.000020	<0.000020	-	<0.000020	-
Benzo(a)pyrene Total Potency Equivalents	mg/L	n/v	n/v	<0.000010	-	<0.000010	-	<0.000010	<0.000010	nc	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	nc	<0.000010	<0.000010	<0.000010	-	<0.000010	-

See notes on last page.

Table 4 - Summary of Surface Water Analytical Results - 2019 and 2021 Samples
2021 Environmental Monitoring Program
Resolute Bay Airport, Land Treatment Unit
Public Services and Procurement Canada for Transport Canada

Sample Location				SW1		SW2		SW3				SW4	SW21-1	SW21-2	SW21-3			SW21-4	SW21-6	FIELD BLANK		TRIP BLANK	
Sample Date				26-Jul-19	26-Jul-19	26-Jul-19	26-Jul-19	26-Jul-19	26-Jul-19		26-Jul-19	26-Jul-19	25-Jul-21	25-Jul-21	25-Jul-21	25-Jul-21		25-Jul-21	25-Jul-21	26-Jul-19	26-Jul-19	26-Jul-19	26-Jul-19
Sample ID				SW1	SW1 Lab-Dup	SW2	SW2 Lab-Dup	SW3	QC19-01		QC19-01 Lab-Dup	SW4	SW21-1	SW21-2	SW21-3	SW21-DUP		SW21-4	SW21-6	QC19-03	QC19-03 Lab-Dup	QC19-02	QC19-02 Lab-Dup
Sampling Company				STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory				BV	BV	BV	BV	BV	BV		BV	BV	BV	BV	BV	BV		BV	BV	BV	BV	BV	BV
Laboratory Work Order				B9K9571	B9K9571	B9K9571	B9K9571	B9K9571	B9K9571		B9K9571	B9K9571	C154208	C154208	C154208	C154208		C154208	C154208	B9K9571	B9K9571	B9K9571	B9K9571
Laboratory Sample ID				KJW017	KJW017	KJW018	KJW018	KJW019	KJW021		KJW021	KJW020	ACS915	ACS916	ACS917	ACS921		ACS918	ACS920	KJW023	KJW023	KJW022	KJW022
Sample Type	Units	CCME	Ontario SCS		Lab Replicate		Lab Replicate		Field Duplicate	RPD (%)	Lab Replicate					Field Duplicate	RPD (%)			Field Blank	Lab Replicate	Trip Blank	Lab Replicate
Phenols																							
Chloro-3-methyl phenol, 4-	mg/L	n/v	n/v	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.0001	-	<0.0001	-
Chlorophenol, 2- (ortho-Chlorophenol)	mg/L	0.007[B]	3.3[C]	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.0001	-	<0.0001	-
Chlorophenol, 3 & 4-	mg/L	0.007[B]	n/v	<0.0001	-	<0.0001	-	<0.0003 MI	<0.0003 MI	nc	-	<0.002 MI	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.0001	-	<0.0001	-
Cresol (All Isomers)	mg/L	n/v	n/v	-	-	-	-	-	-	-	-	-	<0.00014	<0.00014	<0.00014	<0.00014	nc	0.00040	<0.00014	-	-	-	-
Cresol, m & p- (Methylphenol, 3&4-)	mg/L	0.004[B]	n/v	<0.0005	-	<0.0005	-	<0.0005	<0.0005	nc	-	<0.0005	0.00010	<0.00010	<0.00010	<0.00010	nc	0.00020	<0.00010	<0.0005	-	<0.0005	-
Cresol, o- (Methylphenol, 2-)	mg/L	0.004[B]	n/v	<0.0005	-	<0.0005	-	<0.0005	<0.0005	nc	-	<0.0005	<0.00010	<0.00010	<0.00010	<0.00010	nc	0.00020	<0.00010	<0.0005	-	<0.0005	-
Dichlorophenol, 2,3-	mg/L	0.0002[B]	n/v	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	-	-	-	-	-	-	-	<0.0001	-	<0.0001	-
Dichlorophenol, 2,4-	mg/L	0.0002[B]	4.6[C]	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.0001	-	<0.0001	-
Dichlorophenol, 2,5-	mg/L	0.0002[B]	n/v	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	-	-	-	-	-	-	-	<0.0001	-	<0.0001	-
Dichlorophenol, 2,6-	mg/L	0.0002[B]	n/v	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.0001	-	<0.0001	-
Dichlorophenol, 3,4-	mg/L	0.0002[B]	n/v	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	-	-	-	-	-	-	-	<0.0001	-	<0.0001	-
Dichlorophenol, 3,5-	mg/L	0.0002[B]	n/v	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	-	-	-	-	-	-	-	<0.0001	-	<0.0001	-
Dimethylphenol, 2,4-	mg/L	n/v	39[C]	0.002	-	<0.001	-	<0.001	<0.001	nc	-	<0.001	0.00040	<0.00010	<0.00010	<0.00010	nc	0.00050	<0.00010	<0.001	-	<0.001	-
Dinitro-o-cresol, 4,6-	mg/L	n/v	n/v	<0.001	-	<0.001	-	<0.001	<0.001	nc	-	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010	<0.001	-	<0.001	-
Dinitrophenol, 2,4-	mg/L	n/v	11[C]	<0.007 MI	-	<0.001	-	<0.001	<0.001	nc	-	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010	<0.001	-	<0.001	-
Nitrophenol, 2-	mg/L	n/v	n/v	<0.001	-	<0.001	-	<0.001	<0.001	nc	-	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010	<0.001	-	<0.001	-
Nitrophenol, 4-	mg/L	n/v	n/v	<0.001	-	<0.001	-	<0.001	<0.001	nc	-	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	nc	<0.0010	<0.0010	<0.001	-	<0.001	-
Pentachlorophenol	mg/L	0.0005[B]	0.062[C]	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.0001	-	<0.0001	-
Phenol	mg/L	0.004[B]	12[C]	<0.0005	-	<0.0005	-	<0.0005	<0.0005	nc	-	<0.0005	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.0005	-	<0.0005	-
Tetrachlorophenol, 2,3,4,5-	mg/L	0.001[B]	n/v	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	-	-	-	-	-	-	-	<0.0001	-	<0.0001	-
Tetrachlorophenol, 2,3,4,6-	mg/L	0.001[B]	n/v	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.0001	-	<0.0001	-
Tetrachlorophenol, 2,3,5,6-	mg/L	0.001[B]	n/v	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.0001	-	<0.0001	-
Trichlorophenol, 2,3,4-	mg/L	0.018[B]	n/v	<0.0002 MI	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0002 MI	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.0001	-	<0.0001	-
Trichlorophenol, 2,3,5-	mg/L	0.018[B]	n/v	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.0001	-	<0.0001	-
Trichlorophenol, 2,3,6-	mg/L	0.018[B]	n/v	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	-	-	-	-	-	-	-	<0.0001	-	<0.0001	-
Trichlorophenol, 2,4,5-	mg/L	0.018[B]	1.6[C]	<0.0002 MI	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.0001	-	<0.0001	-
Trichlorophenol, 2,4,6-	mg/L	0.018[B]	0.23[C]	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	nc	<0.00010	<0.00010	<0.0001	-	<0.0001	-
Trichlorophenol, 3,4,5-	mg/L	0.018[B]	n/v	<0.0001	-	<0.0001	-	<0.0001	<0.0001	nc	-	<0.0001	-	-	-	-	-	-	-	<0.0001	-	<0.0001	-

Notes:

CCME	Canadian Council of Ministers of the Environment
A	Canadian Environmental Quality Guidelines, Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater Aquatics Short Term
B	Canadian Environmental Quality Guidelines, Canadian Water Quality Guidelines for the Protection of Aquatic Life - Freshwater Aquatics Long Term
Ontario SCS	Soil, Ground Water and Sediment Standards for Use under Part XV.I of the Environmental Protection Act (MOE, 2011) Site Condition Standards (SCS)
C	Table 3 - All Types of Property Use - Coarse Textured Soils
6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
n/a	Not applicable.
n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
EQ1	The short-term benchmark is for dissolved zinc and is calculated using the following equation: Benchmark = exp(0.833[ln(hardness mg·L-1)] + 0.240[ln(DOC mg·L-1)] + 0.526). The value in the table is for surface water of 162 mg CaCO3·L−1 hardness (2019-2021 average) and 0.5 mg·L−1 dissolved organic carbon (DOC). The benchmark equation is valid between hardness 13.8 and 250.5 mg CaCO3·L−1 and DOC 0.3 and 17.3 mg·L−1.
EQ2	The long-term CWQG is for dissolved zinc and is calculated using the following equation: CWQG = exp(0.947[ln(hardness mg·L-1)] - 0.815[pH] + 0.398[ln(DOC mg·L-1)] + 4.625). The value in the table is for surface water of 162 mg CaCO3·L−1 hardness, pH of 8 (2019-2021 averages) and 0.5 mg·L−1 DOC. The CWQG equation is valid between hardness 23.4 and 399 mg CaCO3·L−1, pH 6.5 and 8.13 and DOC 0.3 to 22.9 mg·L−1.
EQ3	The short-term benchmark is calculated using the benchmark calculator in Appendix B of the Scientific Criteria Document for the Development of the Canadian Water Quality Guidelines for the Protection of Aquatic Life: Manganese or the following equation: Benchmark = exp(0.878[ln(hardness)] + 4.76) where the benchmark is expressed in dissolved manganese concentration (µg/L), and hardness is measured as CaCO3 equivalents in mg/L. The value in the table is for surface water of 162 mg/L hardness (2019-2021 average). The benchmark equation is valid between hardness 25 and 250 mg/L.
EQ4	The long-term CWQG is found using the look-up table (see Table 5) or the CWQG and benchmark calculator is Appendix B of CCME (2019). The value in the table is for surface water of 162 mg/L hardness and pH of 8 (2019-2021 averages). The CWQG table is valid between hardness 25 and 670 mg/L and pH 5.8 and 8.4.
LTG	The CWQG for cadmium (i.e. long-term guideline) value was calculated using <https://www.ccme.ca/en/summary-table> with a hardness of 162 mg/L (average of 2019 and 2021 samples). The CWQG for cadmium is related to water hardness (as CaCO3): At hardness ≥ 17 to ≤ 280 mg/L, the CWQG is calculated using this equation (CWQG (µg/L) = 10^{0.83(log[hardness]) – 2.46 }); At hardness > 280 mg/L, the CWQG is 0.37 µg/L.
s1	Standard is applicable to total xylenes, and m & p-xylenes and o-xylenes should be summed for comparison.
s2	Standard is for benzo(b)fluoranthene; however, the analytical laboratory can not distinguish between benzo(b)fluoranthene and benzo(j)fluoranthene, and therefore, the result is a combination of the two isomers, against which the standard has been compared.
s3	Standard is applicable to both 1-methylnaphthalene and 2-methylnaphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.
s7	Standard is applicable to PHC in the F1 range minus BTEX.
s15	Standard is applicable to PHC in the F2 range minus naphthalene. If naphthalene was not analyzed, the standard is applied to F2.
SN	see Narrative
STB	The short-term benchmark concentration value was calculated using <https://www.ccme.ca/en/summary-table> with a hardness of 162 mg/L (average of 2019 and 2021 samples). The short-term benchmark for cadmium is related to water hardness (as CaCO3): When the water hardness is 0 to < 5.3 mg/L, the short-term benchmark is 0.11 µg/L, At hardness ≥ 5.3 to ≤ 360 mg/L, the short-term benchmark is calculated using this equation (Short-term benchmark (µg/L) = 10^{1.016(log[hardness]) – 1.71 }); At hardness > 360 mg/L, the short-term benchmark is 7.7 µg/L.
TBC1	Value calculated using <https://www.ccme.ca/en/summary-table> with a hardness of 162 mg/L (average of 2019 and 2021 samples). The temperature is the average temperature measured.
TBC2	Value looked up using <https://www.ccme.ca/en/summary-table> with pH of 8 (average of 2019 and 2021 samples) and tempertaure of 11.7 deg C. The guideline (mg/L NH3) was then converted to mg/L total ammonia-N by multiplying by 0.8224.
VAR1	Variable, 5 µg/L if pH < 6.5 and 100 µg/L if pH > 6.5
EJ	Matrix Spike outside acceptance criteria due to sample matrix interference.
MI	Detection limit was raised due to matrix interferences.
MSP	Matrix spike outside acceptance limits, probable matrix interference.
NH	Duplicate exceeds acceptance criteria due to sample non homogeneity. Reanalysis yields similar results.
RPD	Relative Percent Difference.
61%	RPD exceeds data quality objective of 40%.
nc	RPD is not calculated if one or more values is non detect or if one or more values is less than five times the reportable detection limit.

Table 5 - GPS Locations of Monitoring Wells and Sample Locations
2021 Environmental Monitoring Program
Resolute Bay Airport, Land Treatment Unit
Public Services and Procurement Canada for Transport Canada

Description	Easting	Northing
SW21-1	441197	8295862
SW21-2	441164	8295899
SW21-3	441221	8295873
SW21-4	441234	8295787
SW21-6	441233	8295901
MW1	441209	8295897
MW2	441147	8295871
MW3	441155	8295854
MW4	441424	8295902
MW5	441237	8295809
MW6	441254	8295814

Notes:
Lattitude / Longitude expressed per NAD 83, Zone 15X
GPS Model: Arrow 100 Submeter GNSS Reciever
Estimated Accuracy: ±1m

APPENDIX E

Applicable Standards and Guidelines

Ontario Ministry of the Environment (Now the Ontario Ministry of the Environment, Conservation and Parks) Soil, Groundwater and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act. 2011. Table 3 Site Condition Standards. Accessed from [https://www.ontario.ca/page/soil-ground-water-and-sediment-standards-use-under-part-xv1-environmental-protection-act] on October 22, 2019.

Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

Contaminant	Soil Standards (other than sediment) µg/g Residential/Parkland/ Institutional Property Use	Soil Standards (other than sediment) µg/g Industrial/Commercial/ Community Property Use	Non-potable ground water µg/L All Types of Property Use
Acenaphthene	(58) 7.9	96	(1700) 600
Acenaphthylene	(0.17) 0.15	(0.17) 0.15	1.8
Acetone	(28) 16	(28) 16	130000
Aldrin	0.05	(0.11) 0.088	8.5
Anthracene	(0.74) 0.67	(0.74) 0.67	2.4
Antimony	7.5	(50) 40	20000
Arsenic	18	18	1900
Barium	390	670	29000
Benzene	(0.17) 0.21	(0.4) 0.32	(430) 44
Benz[a]anthracene	(0.63) 0.5	0.96	4.7
Benzo[a]pyrene	0.3	0.3	0.81
Benzo[b]fluoranthene	0.78	0.96	0.75
Benzo[ghi]perylene	(7.8) 6.6	9.6	0.2
Benzo[k]fluoranthene	0.78	0.96	0.4
Beryllium	(5) 4	(10) 8	67
Biphenyl 1,1'-	(1.1) 0.31	(210) 52	(2200) 1000
Bis(2-chloroethyl)ether	0.5	0.5	300000
Bis(2-chloroisopropyl)ether	(1.8) 0.67	(14) 11	20000
Bis(2-ethylhexyl)phthalate	5	(35) 28	140
Boron (Hot Water Soluble) *	1.5	2	NA
Boron (total)	120	120	45000
Bromodichloromethane	13	18	85000
Bromoform	(0.26) 0.27	(1.7) 0.61	(770) 380
Bromomethane	0.05	0.05	(56) 5.6
Cadmium	1.2	1.9	2.7
Carbon Tetrachloride	(0.12) 0.05	(1.5) 0.21	(8.4) 0.79
Chlordane	0.05	0.05	28
Chloroaniline p-	(0.53) 0.5	(0.53) 0.5	400
Chlorobenzene	(2.7) 2.4	(2.7) 2.4	630
Chloroform	(0.18) 0.05	(0.18) 0.47	(22) 2.4
Chlorophenol, 2-	(2) 1.6	(3.9) 3.1	3300
Chromium Total	160	160	810
Chromium VI	(10) 8	(10) 8	140
Chrysene	(7.8) 7	9.6	1
Cobalt	22	(100) 80	66
Copper	(180) 140	(300) 230	87
Cyanide (CN-)	0.051	0.051	66
Dibenz[a h]anthracene	0.1	0.1	0.52
Dibromochloromethane	9.4	13	82000

Ontario Ministry of the Environment (Now the Ontario Ministry of the Environment, Conservation and Parks) Soil, Groundwater and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act. 2011. Table 3 Site Condition Standards. Accessed from [https://www.ontario.ca/page/soil-ground-water-and-sediment-standards-use-under-part-xv1-environmental-protection-act] on October 22, 2019.

Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

Contaminant	Soil Standards (other than sediment) µg/g Residential/Parkland/ Institutional Property Use	Soil Standards (other than sediment) µg/g Industrial/Commercial/ Community Property Use	Non-potable ground water µg/L All Types of Property Use
Dichlorobenzene, 1,2-	(4.3) 3.4	(8.5) 6.8	(9600) 4600
Dichlorobenzene, 1,3-	(6) 4.8	(12) 9.6	9600
Dichlorobenzene, 1,4-	(0.097) 0.083	(0.84) 0.2	(67) 8
Dichlorobenzidine, 3,3'-	1	1	640
Dichlorodifluoromethane	(25) 16	(25) 16	4400
DDD	3.3	4.6	45
DDE	(0.33) 0.26	(0.65) 0.52	20
DDT	1.4	1.4	2.8
Dichloroethane, 1,1-	(11) 3.5	(21) 17	(3100) 320
Dichloroethane, 1,2-	0.05	0.05	(12) 1.6
Dichloroethylene, 1,1-	0.05	(0.48) 0.064	(17) 1.6
Dichloroethylene, 1,2-cis-	(30) 3.4	(37) 55	(17) 1.6
Dichloroethylene, 1,2-trans-	(0.75) 0.084	(9.3) 1.3	(17) 1.6
Dichlorophenol, 2,4-	(2.1) 1.7	(4.2) 3.4	4600
Dichloropropane, 1,2-	(0.085) 0.05	(0.68) 0.16	(140) 16
Dichloropropene,1,3-	(0.083) 0.05	(0.21) 0.18	(45) 5.2
Dieldrin	0.05	(0.11) 0.088	0.75
Diethyl Phthalate	0.5	0.5	38
Dimethylphthalate	0.5	0.5	38
Dimethylphenol, 2,4-	(420) 390	(440) 390	39000
Dinitrophenol, 2,4-	38	(66) 59	11000
Dinitrotoluene, 2,4 & 2,6-	0.92	1.2	2900
Dioxane, 1,4	1.8	1.8	(7300000)1900000
Dioxin/Furan (TEQ)	0.000013	0.000099	(0.023) 0.014
Endosulfan	0.04	(0.38) 0.3	1.5
Endrin	0.04	0.04	0.48
Ethylbenzene	(15) 2	(19) 9.5	2300
Ethylene dibromide	0.05	0.05	(0.83) 0.25
Fluoranthene	0.69	9.6	130
Fluorene	(69) 62	(69) 62	400
Heptachlor	0.15	0.19	2.5
Heptachlor Epoxide	0.05	0.05	0.048
Hexachlorobenzene	0.52	0.66	3.1
Hexachlorobutadiene	(0.014) 0.012	(0.095) 0.031	(4.5) 0.44
Hexachlorocyclohexane Gamma-	(0.063) 0.056	(0.063) 0.056	1.2
Hexachloroethane	(0.071) 0.089	(0.43) 0.21	(200) 94
Hexane (n)	(34) 2.8	(88) 46	(520) 51
Indeno[1 2 3-cd]pyrene	(0.48) 0.38	(0.95) 0.76	0.2
Lead	120	120	25

Ontario Ministry of the Environment (Now the Ontario Ministry of the Environment, Conservation and Parks) Soil, Groundwater and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act. 2011. Table 3 Site Condition Standards. Accessed from [https://www.ontario.ca/page/soil-ground-water-and-sediment-standards-use-under-part-xv1-environmental-protection-act] on October 22, 2019.

Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

Contaminant	Soil Standards (other than sediment) µg/g Residential/Parkland/ Institutional Property Use	Soil Standards (other than sediment) µg/g Industrial/Commercial/ Community Property Use	Non-potable ground water µg/L All Types of Property Use
Mercury	(1.8) 0.27	(20) 3.9	(2.8) 0.29
Methoxychlor	0.13	1.6	6.5
Methyl Ethyl Ketone	(44) 16	(88) 70	(1500000) 470000
Methyl Isobutyl Ketone	(4.3) 1.7	(210) 31	(580000) 140000
Methyl Mercury **	(0.0094) 0.0084	(0.0094) 0.0084	0.15
Methyl tert-Butyl Ether (MTBE)	(1.4) 0.75	(3.2) 11	(1400) 190
Methylene Chloride	(0.96) 0.1	(2) 1.6	(5500) 610
Methlynaphthalene, 2-(1-) ***	(3.4) 0.99	(85) 76	1800
Molybdenum	6.9	40	9200
Naphthalene	(0.75) 0.6	(28) 9.6	(6400) 1400
Nickel	(130) 100	(340) 270	490
Pentachlorophenol	0.1	(3.3) 2.9	62
Petroleum Hydrocarbons F1 ****	(65) 55	(65) 55	750
Petroleum Hydrocarbons F2	(150) 98	(250) 230	150
Petroleum Hydrocarbons F3	(1300) 300	(2500) 1700	500
Petroleum Hydrocarbons F4	(5600) 2800	(6600) 3300	500
Phenanthrene	(7.8) 6.2	(16) 12	580
Phenol	9.4	9.4	12000
Polychlorinated Biphenyls	0.35	1.1	(15) 7.8
Pyrene	78	96	68
Selenium	2.4	5.5	63
Silver	(25) 20	(50) 40	1.5
Styrene	(2.2) 0.7	(43) 34	(9100) 1300
Tetrachloroethane, 1,1,1,2-	(0.05) 0.058	(0.11) 0.087	(28) 3.3
Tetrachloroethane, 1,1,2,2-	0.05	(0.094) 0.05	(15) 3.2
Tetrachloroethylene	(2.3) 0.28	(21) 4.5	(17) 1.6
Thallium	1	3.3	510
Toluene	(6) 2.3	(78) 68	18000
Trichlorobenzene, 1,2,4-	(1.4) 0.36	(16) 3.2	(850) 180
Trichloroethane, 1,1,1-	(3.4) 0.38	(12) 6.1	(6700) 640
Trichloroethane, 1,1,2-	0.05	(0.11) 0.05	(30) 4.7
Trichloroethylene	(0.52) 0.061	(0.61) 0.91	(17) 1.6
Trichlorofluoromethane	(5.8) 4	(5.8) 4	2500
Trichlorophenol, 2,4,5-	(5.5) 4.4	10	1600
Trichlorophenol, 2,4,6-	(4.2) 3.8	(4.2) 3.8	230
Uranium	23	33	420
Vanadium	86	86	250
Vinyl Chloride	(0.022) 0.02	(0.25) 0.032	(1.7) 0.5

Ontario Ministry of the Environment (Now the Ontario Ministry of the Environment, Conservation and Parks) Soil, Groundwater and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act. 2011. Table 3 Site Condition Standards. Accessed from [https://www.ontario.ca/page/soil-ground-water-and-sediment-standards-use-under-part-xv1-environmental-protection-act] on October 22, 2019.

Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition

Contaminant	Soil Standards (other than sediment) µg/g Residential/Parkland/ Institutional Property Use	Soil Standards (other than sediment) µg/g Industrial/Commercial/ Community Property Use	Non-potable ground water µg/L All Types of Property Use
Xylene Mixture	(25) 3.1	(30) 26	4200
Zinc	340	340	1100
Electrical Conductivity (mS/cm)	0.7	1.4	#N/A
Chloride	NA	NA	2300000
Sodium Adsorption Ratio	5	12	NA
Sodium	NA	NA	2300000

Canadian Environmental Quality GuidelinesSummary Table		Water Quality Guidelinesfor the Protection of Aquatic Life					
		Freshwater			Marine		
		Concentration (ug/L)	Concentration (ug/L)	Date	Concentration (ug/L)	Concentration (ug/L)	Date
Chemical Name	Chemical Groups	Short Term	Long Term		Short Term	Long Term	
Acenaphthene\n\n	*Organic Polyaromatic compounds Polycyclic aromatic hydrocarbons*	*No data*	*5.8*	*1999*	*No data*	*Insufficient data*	*1999*
Acenaphthylene\n\n	*Organic Polyaromatic compounds Polycyclic aromatic hydrocarbons*	*No data*	*No data*	*1999*	*No data*	*No data*	*1999*
Acridine\n\n	*Organic Polyaromatic compounds Polycyclic aromatic hydrocarbons*	*No data*	*4.4*	*1999*	*No data*	*Insufficient data*	*1999*
Aluminium\n\n	*Inorganic Metals*	*No data*	*Variable*	*1987*	*No data*	*No data*	*No data*
Ammonia (total)\n\n	*Inorganic Inorganic nitrogen compounds*	*No data*	*Table*	*2001*	*No data*	*No data*	*No data*

Canadian Environmental Quality GuidelinesSummary Table		Water Quality Guidelinesfor the Protection of Aquatic Life					
		Freshwater			Marine		
		Concentration (ug/L)	Concentration (ug/L)	Date	Concentration (ug/L)	Concentration (ug/L)	Date
Chemical Name	Chemical Groups	Short Term	Long Term		Short Term	Long Term	
Anthracene\n\n	*Organic Polyaromatic compounds Polycyclic aromatic hydrocarbons*	*No data*	*0.012*	*1999*	*No data*	*Insufficient data*	*1999*
Arsenic\n\nCASRN none	*Inorganic Metals*	*No data*	*5*	*1997*	*No data*	*12.5*	*1997*
Benz(a)anthracene\n\n	*Organic Polyaromatic compounds Polycyclic aromatic hydrocarbons*	*No data*	*0.018*	*1999*	*No data*	*Insufficient data*	*1999*
Benzene\n\nCASRN 71432	*Organic Monocyclic aromatic compounds*	*No data*	*370*	*1999*	*No data*	*110*	*1999*
Benzo(a)pyrene\n\n	*Organic Polyaromatic compounds Polycyclic aromatic hydrocarbons*	*No data*	*0.015*	*1999*	*No data*	*Insufficient data*	*1999*

Canadian Environmental Quality GuidelinesSummary Table		Water Quality Guidelinesfor the Protection of Aquatic Life					
		Freshwater			Marine		
		Concentration (ug/L)	Concentration (ug/L)	Date	Concentration (ug/L)	Concentration (ug/L)	Date
Chemical Name	Chemical Groups	Short Term	Long Term		Short Term	Long Term	
Cadmium\n\nCASRN 7440439	*Inorganic Metals*	*1*	*0.09*	*2014*	*NRG*	*0.12*	*2014*
Chloride\n\n	*Inorganic*	*640,000 µg/L or 640 mg/L*	*120,000 µg/L or 120 mg/L*	*2011*	*NRG*	*NRG*	*2011*
Chrysene\n\n	*Organic Polyaromatic compounds Polycyclic aromatic hydrocarbons*	*No data*	*Insufficient data*	*1999*	*No data*	*Insufficient data*	*1999*
Copper\n\n	*Inorganic Metals*	*No data*	*Equation*	*1987*	*No data*	*No data*	*No data*
Ethylbenzene\n\nCASRN 100414	*Organic Monocyclic aromatic compounds*	*No data*	*90*	*1996*	*No data*	*25*	*1996*

Canadian Environmental Quality GuidelinesSummary Table		Water Quality Guidelinesfor the Protection of Aquatic Life					
		Freshwater			Marine		
		Concentration (ug/L)	Concentration (ug/L)	Date	Concentration (ug/L)	Concentration (ug/L)	Date
Chemical Name	Chemical Groups	Short Term	Long Term		Short Term	Long Term	
Fluoranthene\n\n	*Organic Polyaromatic compounds Polycyclic aromatic hydrocarbons*	*No data*	*0.04*	*1999*	*No data*	*Insufficient data*	*1999*
Fluorene\n\n	*Organic Polyaromatic compounds Polycyclic aromatic hydrocarbons*	*No data*	*3*	*1999*	*No data*	*Insufficient data*	*1999*
Iron\n\n	*Inorganic Metals*	*No data*	*300*	*1987*	*No data*	*No data*	*No data*
Lead\n\n	*Inorganic Metals*	*No data*	*Equation*	*1987*	*No data*	*No data*	*No data*
Molybdenum\n\n	*Inorganic Metals*	*No data*	*73*	*1999*	*No data*	*No data*	*No data*

Canadian Environmental Quality GuidelinesSummary Table		Water Quality Guidelinesfor the Protection of Aquatic Life					
		Freshwater			Marine		
		Concentration (ug/L)	Concentration (ug/L)	Date	Concentration (ug/L)	Concentration (ug/L)	Date
Chemical Name	Chemical Groups	Short Term	Long Term		Short Term	Long Term	
Naphthalene\n\n	*Organic Polyaromatic compounds Polycyclic aromatic hydrocarbons*	*No data*	*1.1*	*1999*	*No data*	*1.4*	*1999*
Nickel\n\n	*Inorganic Metals*	*No data*	*Equation*	*1987*	*No data*	*No data*	*No data*
Nitrate\n\nCASRN 14797-55-8	*Inorganic Inorganic nitrogen compounds*	*550,000 µg/L or 550 mg/L*	*13,000 µg/L or 13 mg/L*	*2012*	*1,500,000 µg/L or 1500 mg/L*	*200,000 µg/L or 200 mg/L*	*2012*
Nitrite\n\n	*Inorganic Inorganic nitrogen compounds*	*No data*	*60 NO_2-N*	*1987*	*No data*	*No data*	*No data*
Phenanthrene\n\n	*Organic Polyaromatic compounds Polycyclic aromatic hydrocarbons*	*No data*	*0.4*	*1999*	*No data*	*Insufficient data*	*1999*

Canadian Environmental Quality GuidelinesSummary Table		Water Quality Guidelinesfor the Protection of Aquatic Life					
		Freshwater			Marine		
		Concentration (ug/L)	Concentration (ug/L)	Date	Concentration (ug/L)	Concentration (ug/L)	Date
Chemical Name	Chemical Groups	Short Term	Long Term		Short Term	Long Term	
Phenols (mono-& dihydric)\n\nCASRN 108952	*Organic Aromatic hydroxy compounds*	*No data*	*4*	*1999*	*No data*	*No data*	*No data*
Pyrene\n\n	*Organic Polyaromatic compounds Polycyclic aromatic hydrocarbons*	*No data*	*0.025*	*1999*	*No data*	*Insufficient data*	*1999*
pH\n\n	*Inorganic Acidity, alkalinity and pH*	*No data*	*6.5 to 9.0*	*1987*	*No data*	*7.0 to 8.7 & Narrative*	*1996*
Quinoline\n\n	*Organic Polyaromatic compounds Polycyclic aromatic hydrocarbons*	*No data*	*3.4*	*1999*	*No data*	*Insufficient data*	*1999*
Selenium\n\n	*Inorganic Metals*	*No data*	*1*	*1987*	*No data*	*No data*	*No data*

Canadian Environmental Quality GuidelinesSummary Table		Water Quality Guidelinesfor the Protection of Aquatic Life					
		Freshwater			Marine		
		Concentration (ug/L)	Concentration (ug/L)	Date	Concentration (ug/L)	Concentration (ug/L)	Date
Chemical Name	Chemical Groups	Short Term	Long Term		Short Term	Long Term	
Silver\n\n	*Inorganic Metals*	*NRG*	*0.25*	*2015*	*7.5*	*NRG*	*2015*
Toluene\n\nCASRN 108883	*Organic Monocyclic aromatic compounds*	*No data*	*2*	*1996*	*No data*	*215*	*1996*
Zinc\n\n	*Inorganic Metals*	*37*	*7*	*2018*	*Not assessed*	*Not assessed*	*2018*

APPENDIX F

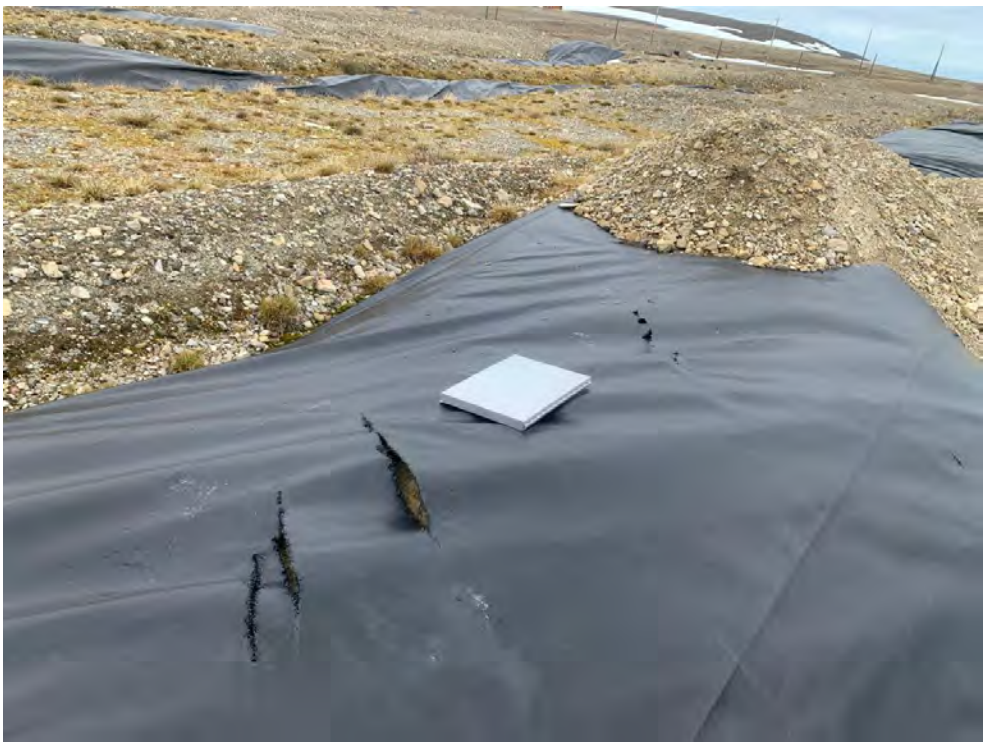
Photographic Log

Client:	**Public Services and Procurement Canada on behalf of Transport Canada**	**Project:**	**2021 Environmental Monitoring Program**
Site Name:	**Resolute Bay Airport Land Treatment Unit**	**Site Location:**	**Cornwallis Island, Nunavut**

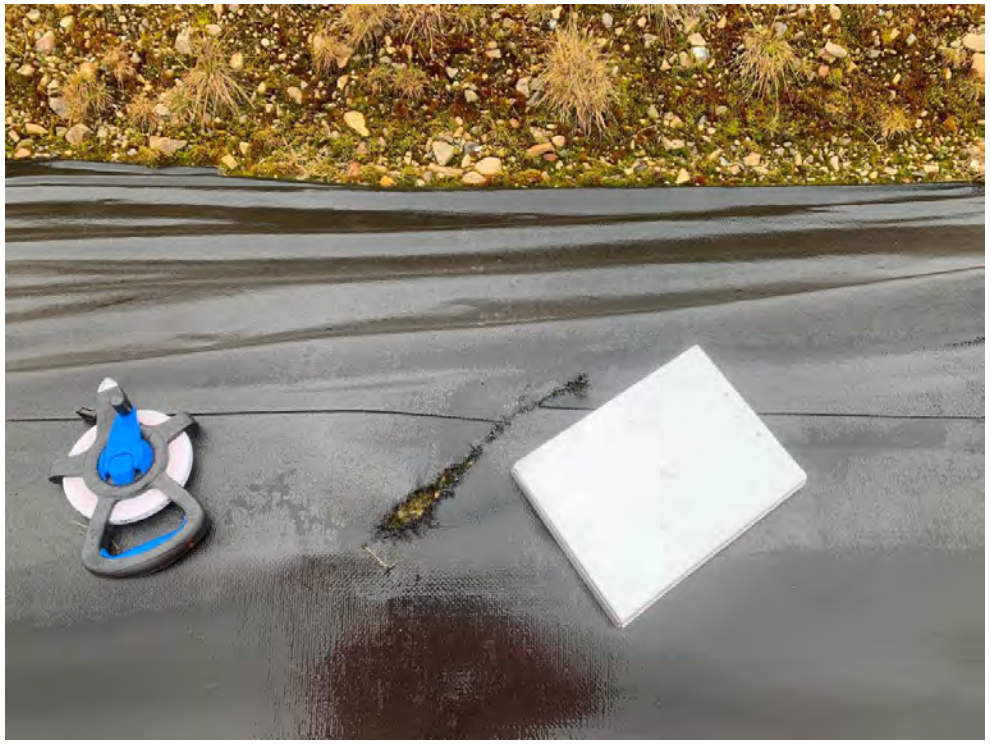
Photograph ID: 1 **Photo Location:** **Direction:** **Survey Date:** 7/26/2021 **Comments:** Aviation fuel drum facing north	

Photograph ID: 2 **Photo Location:** LTU 1 **Direction:** **Survey Date:** 7/26/2021 **Comments:** Liner deficiency 21-1 facing downward	

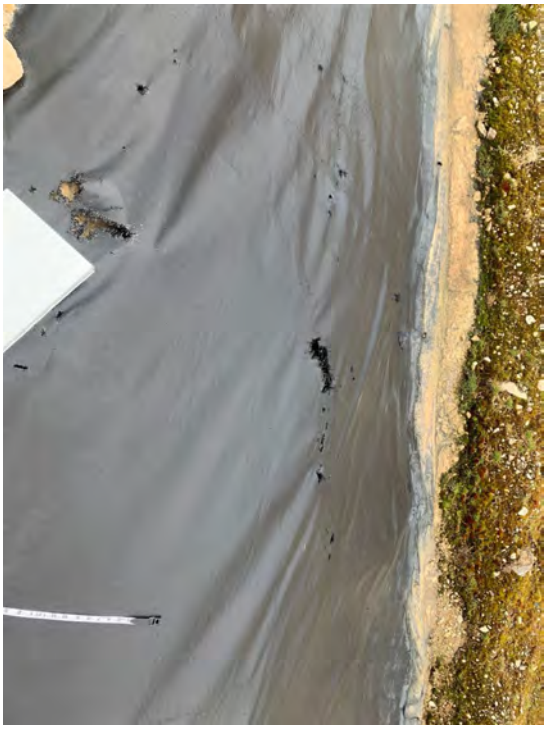
Client:	**Public Services and Procurement Canada on behalf of Transport Canada**	**Project:**	**2021 Environmental Monitoring Program**
Site Name:	**Resolute Bay Airport Land Treatment Unit**	**Site Location:**	**Cornwallis Island, Nunavut**

Photograph ID: 3 **Photo Location:** LTU 1 **Direction:** **Survey Date:** 7/26/2021 **Comments:** Liner deficiency 21-17 facing downward	
Photograph ID: 4 **Photo Location:** LTU 1 **Direction:** **Survey Date:** 7/26/2021 **Comments:** Liner deficiency 21-15 facing northwest	

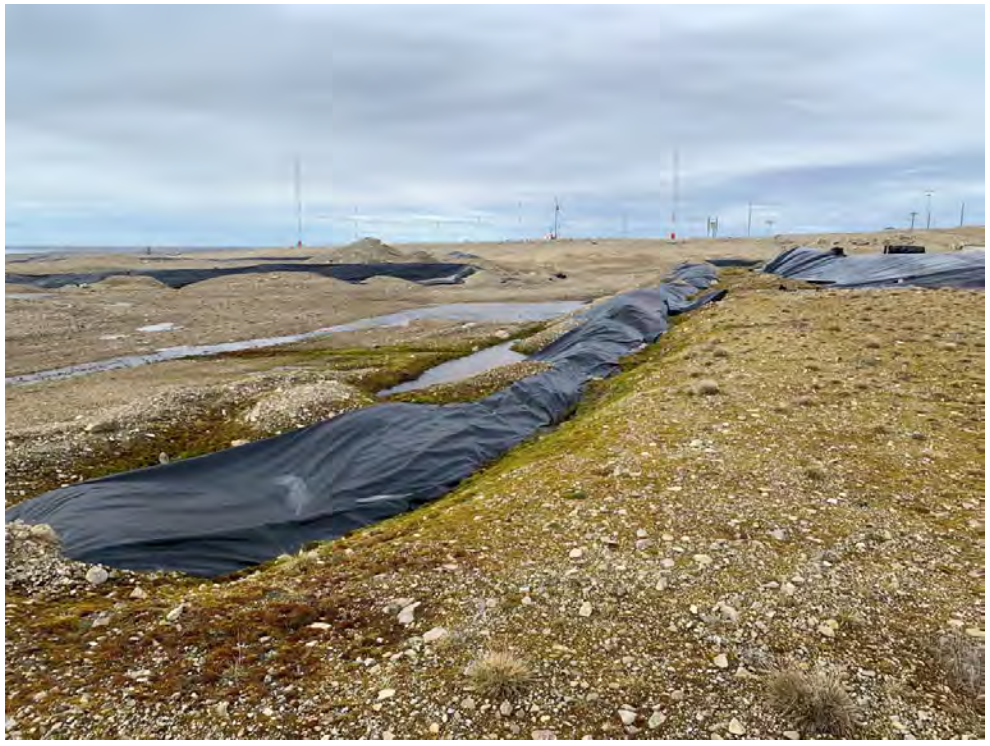
Client:	**Public Services and Procurement Canada on behalf of Transport Canada**	**Project:**	**2021 Environmental Monitoring Program**
Site Name:	**Resolute Bay Airport Land Treatment Unit**	**Site Location:**	**Cornwallis Island, Nunavut**

Photograph ID: 5 **Photo Location:** LTU 1 **Direction:** **Survey Date:** 7/26/2021 **Comments:** Liner deficiency 21-14 facing east	
Photograph ID: 6 **Photo Location:** LTU 1 **Direction:** **Survey Date:** 7/26/2021 **Comments:** Liner deficiency 21-12 facing downward	

Client:	**Public Services and Procurement Canada on behalf of Transport Canada**	**Project:**	**2021 Environmental Monitoring Program**
Site Name:	**Resolute Bay Airport Land Treatment Unit**	**Site Location:**	**Cornwallis Island, Nunavut**

Photograph ID: 7 **Photo Location:** LTU 2 **Direction:** **Survey Date:** 7/26/2021 **Comments:** Liner deficiency 21-26 facing east	
Photograph ID: 8 **Photo Location:** LTU 2 **Direction:** **Survey Date:** 7/26/2021 **Comments:** Liner deficiency 21-23 facing downward	

Client:	**Public Services and Procurement Canada on behalf of Transport Canada**	**Project:**	**2021 Environmental Monitoring Program**
Site Name:	**Resolute Bay Airport Land Treatment Unit**	**Site Location:**	**Cornwallis Island, Nunavut**

Photograph ID: 9 **Photo Location:** LTU 2 **Direction:** **Survey Date:** 7/26/2021 **Comments:** Liner deficiency 21-38 (low berm) facing north	
Photograph ID: 10 **Photo Location:** LTU 2 **Direction:** **Survey Date:** 7/26/2021 **Comments:** Liner deficiency 21-39 (low berm) facing west	

Client:	**Public Services and Procurement Canada on behalf of Transport Canada**	**Project:**	**2021 Environmental Monitoring Program**
Site Name:	**Resolute Bay Airport Land Treatment Unit**	**Site Location:**	**Cornwallis Island, Nunavut**

Photograph ID: 11 **Photo Location:** **Direction:** **Survey Date:** 7/25/2021 **Comments:** MW1 facing south	
Photograph ID: 12 **Photo Location:** **Direction:** **Survey Date:** 7/25/2021 **Comments:** MW2 facing southeast	

Client:	**Public Services and Procurement Canada on behalf of Transport Canada**	**Project:**	**2021 Environmental Monitoring Program**
Site Name:	**Resolute Bay Airport Land Treatment Unit**	**Site Location:**	**Cornwallis Island, Nunavut**

Photograph ID: 13 **Photo Location:** **Direction:** **Survey Date:** 7/25/2021 **Comments:** MW3 facing south	
Photograph ID: 14 **Photo Location:** **Direction:** **Survey Date:** 7/25/2021 **Comments:** MW5 facing west	

Client:	**Public Services and Procurement Canada on behalf of Transport Canada**	**Project:**	**2021 Environmental Monitoring Program**
Site Name:	**Resolute Bay Airport Land Treatment Unit**	**Site Location:**	**Cornwallis Island, Nunavut**

Photograph ID: 15 **Photo Location:** **Direction:** **Survey Date:** 7/25/2021 **Comments:** SW21-1 facing north	
Photograph ID: 16 **Photo Location:** **Direction:** **Survey Date:** 7/25/2021 **Comments:** SW21-2 facing southwest	

Client:	**Public Services and Procurement Canada on behalf of Transport Canada**	**Project:**	**2021 Environmental Monitoring Program**
Site Name:	**Resolute Bay Airport Land Treatment Unit**	**Site Location:**	**Cornwallis Island, Nunavut**

Photograph ID: 17 **Photo Location:** **Direction:** **Survey Date:** 7/25/2021 **Comments:** SW21-3 facing southeast	
Photograph ID: 18 **Photo Location:** **Direction:** **Survey Date:** 7/25/2021 **Comments:** SW21-4 facing southeast	

Client:	**Public Services and Procurement Canada on behalf of Transport Canada**	**Project:**	**2021 Environmental Monitoring Program**
Site Name:	**Resolute Bay Airport Land Treatment Unit**	**Site Location:**	**Cornwallis Island, Nunavut**

Photograph ID: 19

Photo Location:

Direction:

Survey Date:
7/26/2021

Comments:
SW21-6 facing east

APPENDIX G

Copies of Laboratory Analytical Results

Your Project #: 110220771
Site#: Resolute Bay
Your C.O.C. #: 640339-01-01

Attention: LINDSAY VAN NOORTWYK

STANTEC CONSULTING LTD
#400, 10220 - 103 Avenue NW
EDMONTON, AB
CANADA T5J 0K4

Report Date: 2021/08/08
Report #: R3055532
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C154208
Received: 2021/07/26, 04:30

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	6	N/A	2021/07/30	AB SOP-00005	SM 23 2320 B m
BTEX/F1 in Water by HS GC/MS/FID (1)	6	N/A	2021/08/03	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	6	N/A	2021/08/04		Auto Calc
Cadmium - low level CCME - Dissolved (1)	6	N/A	2021/07/31		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	6	N/A	2021/08/05	AB SOP-00020	SM23-4500-Cl/SO4-E m
Total Cresols Calculation (1)	6	N/A	2021/08/03		Auto Calc
Conductivity @25C (1)	6	N/A	2021/07/30	AB SOP-00005	SM 23 2510 B m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 2)	1	2021/08/04	2021/08/05	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 2)	5	2021/08/04	2021/08/06	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Hardness (1)	6	N/A	2021/08/06		Auto Calc
Elements by ICP - Dissolved (1, 3)	6	N/A	2021/08/06	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	6	2021/08/04	2021/08/05	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 3)	5	N/A	2021/07/30	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Dissolved (1, 3)	1	N/A	2021/07/31	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	3	2021/08/04	2021/08/05	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	3	2021/08/04	2021/08/06	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	6	N/A	2021/08/06		Auto Calc
Sum of cations, anions (1)	6	N/A	2021/08/06		Auto Calc
Ammonia-N (Total) (1)	6	N/A	2021/07/31	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	6	N/A	2021/07/30		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	6	N/A	2021/07/29	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	6	2021/07/28	2021/07/30		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	6	2021/07/29	2021/07/29	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 4)	6	N/A	2021/08/05		Auto Calc
PAH in Water by GC/MS (1)	6	2021/08/04	2021/08/05	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 5)	6	N/A	2021/07/30	AB SOP-00005	SM 23 4500-H+B m

Your Project #: 110220771
Site#: Resolute Bay
Your C.O.C. #: 640339-01-01

Attention: LINDSAY VAN NOORTWYK

STANTEC CONSULTING LTD
#400, 10220 - 103 Avenue NW
EDMONTON, AB
CANADA T5J 0K4

Report Date: 2021/08/08
Report #: R3055532
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C154208
Received: 2021/07/26, 04:30

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Phenols (semivolatile) (1)	5	2021/07/30	2021/07/30	CAL SOP-00164	EPA 8270e m
Phenols (semivolatile) (1)	1	2021/07/30	2021/07/31	CAL SOP-00164	EPA 8270e m
Total Dissolved Solids (Calculated) (1)	6	N/A	2021/08/06		Auto Calc
Total Suspended Solids (NFR) (1)	6	2021/07/31	2021/07/31	AB SOP-00061	SM 23 2540 D m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary Environmental
(2) Silica gel clean up employed.
(3) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(4) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(5) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas Laboratories endeavours to analyze samples as soon as possible after receipt.

Bureau Veritas Laboratories Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Your Project #: 110220771
Site#: Resolute Bay
Your C.O.C. #: 640339-01-01

Attention: LINDSAY VAN NOORTWYK

STANTEC CONSULTING LTD
#400, 10220 - 103 Avenue NW
EDMONTON, AB
CANADA T5J 0K4

Report Date: 2021/08/08
Report #: R3055532
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C154208
Received: 2021/07/26, 04:30

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Geraldlyn Gouthro, Key Account Specialist
Email: geraldlyn.gouthro@bureauveritas.com
Phone# (780)577-7173
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

AT1 BTEX AND F1-F2 IN WATER (WATER)

BV Labs ID		ACS915		ACS916		ACS917		ACS918			
Sampling Date		2021/07/25		2021/07/25		2021/07/25		2021/07/25			
COC Number		640339-01-01		640339-01-01		640339-01-01		640339-01-01			
	UNITS	SW21-1	MU	SW21-2	MU	SW21-3	MU	SW21-4	MU	RDL	QC Batch
Ext. Pet. Hydrocarbon											
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	N/A	<0.10	N/A	<0.10	N/A	<0.10	N/A	0.10	A307594
Volatiles											
Benzene	mg/L	<0.00040	N/A	<0.00040	N/A	<0.00040	N/A	<0.00040	N/A	0.00040	A306045
Toluene	mg/L	<0.00040	N/A	<0.00040	N/A	<0.00040	N/A	<0.00040	N/A	0.00040	A306045
Ethylbenzene	mg/L	<0.00040	N/A	<0.00040	N/A	<0.00040	N/A	<0.00040	N/A	0.00040	A306045
m & p-Xylene	mg/L	<0.00080	N/A	<0.00080	N/A	<0.00080	N/A	<0.00080	N/A	0.00080	A306045
o-Xylene	mg/L	<0.00040	N/A	<0.00040	N/A	<0.00040	N/A	<0.00040	N/A	0.00040	A306045
Xylenes (Total)	mg/L	<0.00089	N/A	<0.00089	N/A	<0.00089	N/A	<0.00089	N/A	0.00089	A302164
F1 (C6-C10) - BTEX	mg/L	<0.10	N/A	<0.10	N/A	<0.10	N/A	<0.10	N/A	0.10	A302164
F1 (C6-C10)	mg/L	<0.10	N/A	<0.10	N/A	<0.10	N/A	<0.10	N/A	0.10	A306045
Surrogate Recovery (%)											
1,4-Difluorobenzene (sur.)	%	103	N/A	101	N/A	104	N/A	103	N/A	N/A	A306045
4-Bromofluorobenzene (sur.)	%	103	N/A	105	N/A	103	N/A	105	N/A	N/A	A306045
D4-1,2-Dichloroethane (sur.)	%	104	N/A	103	N/A	102	N/A	104	N/A	N/A	A306045
O-TERPHENYL (sur.)	%	114	N/A	111	N/A	104	N/A	107	N/A	N/A	A307594

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable

Bureau Veritas Laboratories Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

AT1 BTEX AND F1-F2 IN WATER (WATER)

BV Labs ID		ACS920		ACS921			
Sampling Date		2021/07/25		2021/07/25			
COC Number		640339-01-01		640339-01-01			
	UNITS	SW21-6	MU	SW21-DUP	MU	RDL	QC Batch
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	N/A	<0.10	N/A	0.10	A307594
Volatiles							
Benzene	mg/L	<0.00040	N/A	<0.00040	N/A	0.00040	A306045
Toluene	mg/L	<0.00040	N/A	<0.00040	N/A	0.00040	A306045
Ethylbenzene	mg/L	<0.00040	N/A	<0.00040	N/A	0.00040	A306045
m & p-Xylene	mg/L	<0.00080	N/A	<0.00080	N/A	0.00080	A306045
o-Xylene	mg/L	<0.00040	N/A	<0.00040	N/A	0.00040	A306045
Xylenes (Total)	mg/L	<0.00089	N/A	<0.00089	N/A	0.00089	A302164
F1 (C6-C10) - BTEX	mg/L	<0.10	N/A	<0.10	N/A	0.10	A302164
F1 (C6-C10)	mg/L	<0.10	N/A	<0.10	N/A	0.10	A306045
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	105	N/A	104	N/A	N/A	A306045
4-Bromofluorobenzene (sur.)	%	104	N/A	103	N/A	N/A	A306045
D4-1,2-Dichloroethane (sur.)	%	100	N/A	101	N/A	N/A	A306045
O-TERPHENYL (sur.)	%	98	N/A	102	N/A	N/A	A307594

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable

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ROUTINE WATER & DISS. REGULATED METALS (WATER)

BV Labs ID		ACS915		ACS915			
Sampling Date		2021/07/25		2021/07/25			
COC Number		640339-01-01		640339-01-01			
	UNITS	SW21-1	MU	SW21-1 Lab-Dup	MU	RDL	QC Batch
Calculated Parameters							
Anion Sum	meq/L	4.3	N/A	N/A	N/A	N/A	A302189
Cation Sum	meq/L	4.8	N/A	N/A	N/A	N/A	A302189
Hardness (CaCO3)	mg/L	220	N/A	N/A	N/A	0.50	A302180
Ion Balance (% Difference)	%	5.0	N/A	N/A	N/A	N/A	A302185
Dissolved Nitrate (N)	mg/L	<0.010	N/A	N/A	N/A	0.010	A301881
Dissolved Nitrate (NO3)	mg/L	<0.044	N/A	N/A	N/A	0.044	A301880
Dissolved Nitrite (NO2)	mg/L	<0.033	N/A	N/A	N/A	0.033	A301880
Calculated Total Dissolved Solids	mg/L	210	N/A	N/A	N/A	10	A302056
Elements							
Dissolved Cadmium (Cd)	ug/L	<0.020	N/A	N/A	N/A	0.020	A301490
Misc. Inorganics							
Conductivity	uS/cm	400	+/- 11	N/A	N/A	2.0	A306278
pH	pH	8.35	+/- 0.0828	N/A	N/A	N/A	A306277
Anions							
Alkalinity (PP as CaCO3)	mg/L	3.1	+/- <RDL	N/A	N/A	1.0	A306271
Alkalinity (Total as CaCO3)	mg/L	200	+/- 15	N/A	N/A	1.0	A306271
Bicarbonate (HCO3)	mg/L	240	+/- 3.9	N/A	N/A	1.0	A306271
Carbonate (CO3)	mg/L	3.7	N/A	N/A	N/A	1.0	A306271
Hydroxide (OH)	mg/L	<1.0	N/A	N/A	N/A	1.0	A306271
Dissolved Chloride (Cl)	mg/L	4.6	+/- 1.0	N/A	N/A	1.0	A310784
Dissolved Sulphate (SO4)	mg/L	6.1	+/- <RDL	N/A	N/A	1.0	A310784
Nutrients							
Dissolved Nitrite (N)	mg/L	<0.010	N/A	N/A	N/A	0.010	A304228
Dissolved Nitrate plus Nitrite (N)	mg/L	<0.010	N/A	N/A	N/A	0.010	A304228
Elements							
Dissolved Aluminum (Al)	mg/L	<0.0030	N/A	N/A	N/A	0.0030	A306216
Dissolved Antimony (Sb)	mg/L	<0.00060	N/A	N/A	N/A	0.00060	A306216
Dissolved Arsenic (As)	mg/L	0.00060	+/- 0.00021	N/A	N/A	0.00020	A313183
Dissolved Barium (Ba)	mg/L	0.019	+/- <RDL	0.018	+/- <RDL	0.010	A312271
Dissolved Beryllium (Be)	mg/L	<0.0010	N/A	N/A	N/A	0.0010	A306216
Dissolved Boron (B)	mg/L	0.045	+/- <RDL	0.036	+/- <RDL	0.020	A312271
Dissolved Calcium (Ca)	mg/L	46	+/- 3.7	42	+/- 3.5	0.30	A312271

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
MU = Measurement Uncertainty
N/A = Not Applicable

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ROUTINE WATER & DISS. REGULATED METALS (WATER)

BV Labs ID		ACS915		ACS915			
Sampling Date		2021/07/25		2021/07/25			
COC Number		640339-01-01		640339-01-01			
	UNITS	SW21-1	MU	SW21-1 Lab-Dup	MU	RDL	QC Batch
Dissolved Chromium (Cr)	mg/L	0.0011	+/- <RDL	N/A	N/A	0.0010	A306216
Dissolved Cobalt (Co)	mg/L	<0.00030	N/A	N/A	N/A	0.00030	A306216
Dissolved Copper (Cu)	mg/L	0.0049	+/- 0.00079	N/A	N/A	0.00020	A313183
Dissolved Iron (Fe)	mg/L	<0.060	N/A	<0.060	N/A	0.060	A312271
Dissolved Lead (Pb)	mg/L	0.00096	+/- <RDL	N/A	N/A	0.00020	A306216
Dissolved Lithium (Li)	mg/L	<0.020	N/A	<0.020	N/A	0.020	A312271
Dissolved Magnesium (Mg)	mg/L	27	+/- 1.2	25	+/- 1.2	0.20	A312271
Dissolved Manganese (Mn)	mg/L	<0.0040	N/A	<0.0040	N/A	0.0040	A312271
Dissolved Molybdenum (Mo)	mg/L	0.00058	+/- <RDL	N/A	N/A	0.00020	A306216
Dissolved Nickel (Ni)	mg/L	0.0019	+/- <RDL	N/A	N/A	0.00050	A306216
Dissolved Phosphorus (P)	mg/L	<0.10	N/A	<0.10	N/A	0.10	A312271
Dissolved Potassium (K)	mg/L	1.4	+/- <RDL	1.3	+/- <RDL	0.30	A312271
Dissolved Selenium (Se)	mg/L	<0.00020	N/A	N/A	N/A	0.00020	A306216
Dissolved Silicon (Si)	mg/L	0.72	+/- 0.12	0.66	+/- 0.12	0.10	A312271
Dissolved Silver (Ag)	mg/L	<0.00010	N/A	N/A	N/A	0.00010	A306216
Dissolved Sodium (Na)	mg/L	6.1	+/- 0.66	5.7	+/- 0.62	0.50	A312271
Dissolved Strontium (Sr)	mg/L	0.21	+/- <RDL	0.21	+/- <RDL	0.020	A312271
Dissolved Sulphur (S)	mg/L	2.4	+/- 0.24	2.3	+/- 0.24	0.20	A312271
Dissolved Thallium (Tl)	mg/L	<0.00020	N/A	N/A	N/A	0.00020	A306216
Dissolved Tin (Sn)	mg/L	<0.0010	N/A	N/A	N/A	0.0010	A306216
Dissolved Titanium (Ti)	mg/L	<0.0010	N/A	N/A	N/A	0.0010	A306216
Dissolved Uranium (U)	mg/L	0.00050	+/- 0.00021	N/A	N/A	0.00010	A306216
Dissolved Vanadium (V)	mg/L	<0.0010	N/A	N/A	N/A	0.0010	A306216
Dissolved Zinc (Zn)	mg/L	<0.0030	N/A	N/A	N/A	0.0030	A306216

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
MU = Measurement Uncertainty
N/A = Not Applicable

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ROUTINE WATER & DISS. REGULATED METALS (WATER)

BV Labs ID		ACS916			ACS917			
Sampling Date		2021/07/25			2021/07/25			
COC Number		640339-01-01			640339-01-01			
	UNITS	SW21-2	MU	QC Batch	SW21-3	MU	RDL	QC Batch
Calculated Parameters								
Anion Sum	meq/L	2.8	N/A	A302189	3.1	N/A	N/A	A302189
Cation Sum	meq/L	2.7	N/A	A302189	3.2	N/A	N/A	A302189
Hardness (CaCO3)	mg/L	110	N/A	A302180	150	N/A	0.50	A302180
Ion Balance (% Difference)	%	3.2	N/A	A302185	1.9	N/A	N/A	A302185
Dissolved Nitrate (N)	mg/L	0.062	N/A	A301881	0.041	N/A	0.010	A301881
Dissolved Nitrate (NO3)	mg/L	0.28	N/A	A301880	0.18	N/A	0.044	A301880
Dissolved Nitrite (NO2)	mg/L	<0.033	N/A	A301880	<0.033	N/A	0.033	A301880
Calculated Total Dissolved Solids	mg/L	140	N/A	A302056	150	N/A	10	A302056
Elements								
Dissolved Cadmium (Cd)	ug/L	<0.020	N/A	A301490	<0.020	N/A	0.020	A301490
Misc. Inorganics								
Conductivity	uS/cm	270	+/- 7.5	A306278	280	+/- 7.9	2.0	A306286
pH	pH	7.88	+/- 0.0780	A306277	7.97	+/- 0.0789	N/A	A306285
Anions								
Alkalinity (PP as CaCO3)	mg/L	<1.0	N/A	A306271	<1.0	N/A	1.0	A306283
Alkalinity (Total as CaCO3)	mg/L	120	+/- 8.9	A306271	140	+/- 10	1.0	A306283
Bicarbonate (HCO3)	mg/L	150	+/- 2.5	A306271	170	+/- 2.9	1.0	A306283
Carbonate (CO3)	mg/L	<1.0	N/A	A306271	<1.0	N/A	1.0	A306283
Hydroxide (OH)	mg/L	<1.0	N/A	A306271	<1.0	N/A	1.0	A306283
Dissolved Chloride (Cl)	mg/L	11	+/- 1.2	A310784	6.8	+/- 1.1	1.0	A310797
Dissolved Sulphate (SO4)	mg/L	5.6	+/- <RDL	A310784	3.0	+/- <RDL	1.0	A310797
Nutrients								
Dissolved Nitrite (N)	mg/L	<0.010	N/A	A304228	<0.010	N/A	0.010	A304219
Dissolved Nitrate plus Nitrite (N)	mg/L	0.062	+/- 0.013	A304228	0.041	+/- <RDL	0.010	A304219
Elements								
Dissolved Aluminum (Al)	mg/L	<0.0030	N/A	A306216	<0.0030	N/A	0.0030	A313183
Dissolved Antimony (Sb)	mg/L	<0.00060	N/A	A306216	<0.00060	N/A	0.00060	A306216
Dissolved Arsenic (As)	mg/L	0.00048	+/- <RDL	A306216	0.00032	+/- <RDL	0.00020	A306216
Dissolved Barium (Ba)	mg/L	<0.010	N/A	A312271	<0.010	N/A	0.010	A312271
Dissolved Beryllium (Be)	mg/L	<0.0010	N/A	A306216	<0.0010	N/A	0.0010	A306216
Dissolved Boron (B)	mg/L	0.052	+/- <RDL	A312271	0.032	+/- <RDL	0.020	A312271
Dissolved Calcium (Ca)	mg/L	27	+/- 2.3	A312271	37	+/- 3.0	0.30	A312271

RDL = Reportable Detection Limit
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N/A = Not Applicable

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ROUTINE WATER & DISS. REGULATED METALS (WATER)

BV Labs ID		ACS916			ACS917			
Sampling Date		2021/07/25			2021/07/25			
COC Number		640339-01-01			640339-01-01			
	UNITS	SW21-2	MU	QC Batch	SW21-3	MU	RDL	QC Batch
Dissolved Chromium (Cr)	mg/L	0.0011	+/- <RDL	A306216	0.0014	+/- <RDL	0.0010	A306216
Dissolved Cobalt (Co)	mg/L	<0.00030	N/A	A306216	<0.00030	N/A	0.00030	A306216
Dissolved Copper (Cu)	mg/L	0.0043	+/- 0.00070	A313183	0.0042	+/- 0.00069	0.00020	A313183
Dissolved Iron (Fe)	mg/L	<0.060	N/A	A312271	<0.060	N/A	0.060	A312271
Dissolved Lead (Pb)	mg/L	<0.00020	N/A	A306216	0.00090	+/- <RDL	0.00020	A306216
Dissolved Lithium (Li)	mg/L	<0.020	N/A	A312271	<0.020	N/A	0.020	A312271
Dissolved Magnesium (Mg)	mg/L	11	+/- 0.52	A312271	13	+/- 0.62	0.20	A312271
Dissolved Manganese (Mn)	mg/L	<0.0040	N/A	A312271	<0.0040	N/A	0.0040	A312271
Dissolved Molybdenum (Mo)	mg/L	0.00087	+/- <RDL	A306216	0.0011	+/- <RDL	0.00020	A306216
Dissolved Nickel (Ni)	mg/L	<0.00050	N/A	A306216	0.00051	+/- <RDL	0.00050	A306216
Dissolved Phosphorus (P)	mg/L	<0.10	N/A	A312271	<0.10	N/A	0.10	A312271
Dissolved Potassium (K)	mg/L	1.3	+/- <RDL	A312271	1.2	+/- <RDL	0.30	A312271
Dissolved Selenium (Se)	mg/L	<0.00020	N/A	A306216	<0.00020	N/A	0.00020	A306216
Dissolved Silicon (Si)	mg/L	0.41	+/- <RDL	A312271	0.30	+/- <RDL	0.10	A312271
Dissolved Silver (Ag)	mg/L	<0.00010	N/A	A306216	<0.00010	N/A	0.00010	A306216
Dissolved Sodium (Na)	mg/L	8.3	+/- 0.86	A312271	5.4	+/- 0.59	0.50	A312271
Dissolved Strontium (Sr)	mg/L	0.080	+/- <RDL	A312271	0.11	+/- <RDL	0.020	A312271
Dissolved Sulphur (S)	mg/L	1.5	+/- <RDL	A312271	0.84	+/- <RDL	0.20	A312271
Dissolved Thallium (Tl)	mg/L	<0.00020	N/A	A306216	<0.00020	N/A	0.00020	A306216
Dissolved Tin (Sn)	mg/L	<0.0010	N/A	A306216	<0.0010	N/A	0.0010	A306216
Dissolved Titanium (Ti)	mg/L	<0.0010	N/A	A306216	<0.0010	N/A	0.0010	A306216
Dissolved Uranium (U)	mg/L	0.00020	+/- 0.00020	A306216	0.00041	+/- 0.00021	0.00010	A306216
Dissolved Vanadium (V)	mg/L	<0.0010	N/A	A306216	<0.0010	N/A	0.0010	A306216
Dissolved Zinc (Zn)	mg/L	<0.0030	N/A	A306216	0.0045	+/- <RDL	0.0030	A313183

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable

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ROUTINE WATER & DISS. REGULATED METALS (WATER)

BV Labs ID		ACS918			ACS920			
Sampling Date		2021/07/25			2021/07/25			
COC Number		640339-01-01			640339-01-01			
	UNITS	SW21-4	MU	QC Batch	SW21-6	MU	RDL	QC Batch
Calculated Parameters								
Anion Sum	meq/L	5.4	N/A	A302189	2.7	N/A	N/A	A302189
Cation Sum	meq/L	5.7	N/A	A302189	2.6	N/A	N/A	A302189
Hardness (CaCO3)	mg/L	260	N/A	A302180	120	N/A	0.50	A302180
Ion Balance (% Difference)	%	2.7	N/A	A302185	1.6	N/A	N/A	A302185
Dissolved Nitrate (N)	mg/L	0.083	N/A	A301881	<0.010	N/A	0.010	A301881
Dissolved Nitrate (NO3)	mg/L	0.37	N/A	A301880	<0.044	N/A	0.044	A302244
Dissolved Nitrite (NO2)	mg/L	<0.033	N/A	A301880	<0.033	N/A	0.033	A302244
Calculated Total Dissolved Solids	mg/L	270	N/A	A302056	130	N/A	10	A302056
Elements								
Dissolved Cadmium (Cd)	ug/L	<0.020	N/A	A301490	<0.020	N/A	0.020	A301490
Misc. Inorganics								
Conductivity	uS/cm	490	+/- 13	A306286	260	+/- 7.2	2.0	A306278
pH	pH	8.27	+/- 0.0819	A306285	7.93	+/- 0.0786	N/A	A306277
Anions								
Alkalinity (PP as CaCO3)	mg/L	<1.0	N/A	A306283	<1.0	N/A	1.0	A306271
Alkalinity (Total as CaCO3)	mg/L	250	+/- 18	A306283	130	+/- 9.3	1.0	A306271
Bicarbonate (HCO3)	mg/L	300	+/- 4.7	A306283	150	+/- 2.6	1.0	A306271
Carbonate (CO3)	mg/L	<1.0	N/A	A306283	<1.0	N/A	1.0	A306271
Hydroxide (OH)	mg/L	<1.0	N/A	A306283	<1.0	N/A	1.0	A306271
Dissolved Chloride (Cl)	mg/L	11	+/- 1.2	A310797	5.7	+/- 1.0	1.0	A310784
Dissolved Sulphate (SO4)	mg/L	7.5	+/- <RDL	A310797	2.2	+/- <RDL	1.0	A310784
Nutrients								
Dissolved Nitrite (N)	mg/L	<0.010	N/A	A304219	<0.010	N/A	0.010	A304228
Dissolved Nitrate plus Nitrite (N)	mg/L	0.083	+/- 0.017	A304219	<0.010	N/A	0.010	A304228
Elements								
Dissolved Aluminum (Al)	mg/L	<0.0030	N/A	A306216	0.0051	+/- <RDL	0.0030	A306216
Dissolved Antimony (Sb)	mg/L	<0.00060	N/A	A306216	<0.00060	N/A	0.00060	A306216
Dissolved Arsenic (As)	mg/L	0.00060	+/- 0.00021	A306216	0.00024	+/- <RDL	0.00020	A306216
Dissolved Barium (Ba)	mg/L	0.025	+/- <RDL	A312271	<0.010	N/A	0.010	A312271
Dissolved Beryllium (Be)	mg/L	<0.0010	N/A	A306216	<0.0010	N/A	0.0010	A306216
Dissolved Boron (B)	mg/L	0.047	+/- <RDL	A312271	<0.020	N/A	0.020	A312271
Dissolved Calcium (Ca)	mg/L	72	+/- 5.9	A312271	26	+/- 2.1	0.30	A312271

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable

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ROUTINE WATER & DISS. REGULATED METALS (WATER)

BV Labs ID		ACS918			ACS920			
Sampling Date		2021/07/25			2021/07/25			
COC Number		640339-01-01			640339-01-01			
	UNITS	SW21-4	MU	QC Batch	SW21-6	MU	RDL	QC Batch
Dissolved Chromium (Cr)	mg/L	0.0013	+/- <RDL	A306216	0.0011	+/- <RDL	0.0010	A306216
Dissolved Cobalt (Co)	mg/L	<0.00030	N/A	A306216	<0.00030	N/A	0.00030	A306216
Dissolved Copper (Cu)	mg/L	0.0034	+/- 0.00056	A313183	0.0049	+/- 0.00079	0.00020	A313183
Dissolved Iron (Fe)	mg/L	<0.060	N/A	A312271	<0.060	N/A	0.060	A312271
Dissolved Lead (Pb)	mg/L	0.0054	+/- 0.00039	A306216	<0.00020	N/A	0.00020	A306216
Dissolved Lithium (Li)	mg/L	<0.020	N/A	A312271	<0.020	N/A	0.020	A312271
Dissolved Magnesium (Mg)	mg/L	19	+/- 0.91	A312271	14	+/- 0.67	0.20	A312271
Dissolved Manganese (Mn)	mg/L	<0.0040	N/A	A312271	<0.0040	N/A	0.0040	A312271
Dissolved Molybdenum (Mo)	mg/L	0.00080	+/- <RDL	A306216	0.00080	+/- <RDL	0.00020	A306216
Dissolved Nickel (Ni)	mg/L	0.0015	+/- <RDL	A306216	<0.00050	N/A	0.00050	A306216
Dissolved Phosphorus (P)	mg/L	<0.10	N/A	A312271	<0.10	N/A	0.10	A312271
Dissolved Potassium (K)	mg/L	2.7	+/- <RDL	A312271	0.46	+/- <RDL	0.30	A312271
Dissolved Selenium (Se)	mg/L	<0.00020	N/A	A306216	<0.00020	N/A	0.00020	A306216
Dissolved Silicon (Si)	mg/L	0.97	+/- 0.17	A312271	<0.10	N/A	0.10	A312271
Dissolved Silver (Ag)	mg/L	<0.00010	N/A	A306216	<0.00010	N/A	0.00010	A306216
Dissolved Sodium (Na)	mg/L	9.5	+/- 0.98	A312271	4.1	+/- <RDL	0.50	A312271
Dissolved Strontium (Sr)	mg/L	0.24	+/- 0.021	A312271	0.069	+/- <RDL	0.020	A312271
Dissolved Sulphur (S)	mg/L	2.1	+/- 0.22	A312271	0.81	+/- <RDL	0.20	A312271
Dissolved Thallium (Tl)	mg/L	<0.00020	N/A	A306216	<0.00020	N/A	0.00020	A306216
Dissolved Tin (Sn)	mg/L	<0.0010	N/A	A306216	<0.0010	N/A	0.0010	A306216
Dissolved Titanium (Ti)	mg/L	<0.0010	N/A	A306216	<0.0010	N/A	0.0010	A306216
Dissolved Uranium (U)	mg/L	0.00059	+/- 0.00022	A306216	0.00013	+/- 0.00020	0.00010	A306216
Dissolved Vanadium (V)	mg/L	<0.0010	N/A	A306216	<0.0010	N/A	0.0010	A306216
Dissolved Zinc (Zn)	mg/L	<0.0030	N/A	A306216	0.0039	+/- <RDL	0.0030	A306216

RDL = Reportable Detection Limit
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N/A = Not Applicable

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ROUTINE WATER & DISS. REGULATED METALS (WATER)

BV Labs ID		ACS921			
Sampling Date		2021/07/25			
COC Number		640339-01-01			
	UNITS	SW21-DUP	MU	RDL	QC Batch
Calculated Parameters					
Anion Sum	meq/L	3.0	N/A	N/A	A302189
Cation Sum	meq/L	3.2	N/A	N/A	A302189
Hardness (CaCO3)	mg/L	140	N/A	0.50	A302180
Ion Balance (% Difference)	%	3.1	N/A	N/A	A302185
Dissolved Nitrate (N)	mg/L	0.050	N/A	0.010	A301881
Dissolved Nitrate (NO3)	mg/L	0.22	N/A	0.044	A302244
Dissolved Nitrite (NO2)	mg/L	<0.033	N/A	0.033	A302244
Calculated Total Dissolved Solids	mg/L	150	N/A	10	A302248
Elements					
Dissolved Cadmium (Cd)	ug/L	<0.020	N/A	0.020	A301490
Misc. Inorganics					
Conductivity	uS/cm	280	+/- 7.9	2.0	A306278
pH	pH	8.09	+/- 0.0802	N/A	A306277
Anions					
Alkalinity (PP as CaCO3)	mg/L	<1.0	N/A	1.0	A306271
Alkalinity (Total as CaCO3)	mg/L	140	+/- 10	1.0	A306271
Bicarbonate (HCO3)	mg/L	170	+/- 2.8	1.0	A306271
Carbonate (CO3)	mg/L	<1.0	N/A	1.0	A306271
Hydroxide (OH)	mg/L	<1.0	N/A	1.0	A306271
Dissolved Chloride (Cl)	mg/L	6.7	+/- 1.1	1.0	A310784
Dissolved Sulphate (SO4)	mg/L	2.0	+/- <RDL	1.0	A310784
Nutrients					
Dissolved Nitrite (N)	mg/L	<0.010	N/A	0.010	A304228
Dissolved Nitrate plus Nitrite (N)	mg/L	0.050	+/- 0.011	0.010	A304228
Elements					
Dissolved Aluminum (Al)	mg/L	<0.0030	N/A	0.0030	A306223
Dissolved Antimony (Sb)	mg/L	<0.00060	N/A	0.00060	A306223
Dissolved Arsenic (As)	mg/L	0.00036	+/- <RDL	0.00020	A306223
Dissolved Barium (Ba)	mg/L	<0.010	N/A	0.010	A312271
Dissolved Beryllium (Be)	mg/L	<0.0010	N/A	0.0010	A306223
Dissolved Boron (B)	mg/L	0.029	+/- <RDL	0.020	A312271
Dissolved Calcium (Ca)	mg/L	37	+/- 3.0	0.30	A312271

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable

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ROUTINE WATER & DISS. REGULATED METALS (WATER)

BV Labs ID		ACS921			
Sampling Date		2021/07/25			
COC Number		640339-01-01			
	UNITS	SW21-DUP	MU	RDL	QC Batch
Dissolved Chromium (Cr)	mg/L	0.0011	+/- <RDL	0.0010	A306223
Dissolved Cobalt (Co)	mg/L	<0.00030	N/A	0.00030	A306223
Dissolved Copper (Cu)	mg/L	0.00075	+/- 0.00023	0.00020	A313183
Dissolved Iron (Fe)	mg/L	<0.060	N/A	0.060	A312271
Dissolved Lead (Pb)	mg/L	0.00080	+/- <RDL	0.00020	A306223
Dissolved Lithium (Li)	mg/L	<0.020	N/A	0.020	A312271
Dissolved Magnesium (Mg)	mg/L	13	+/- 0.62	0.20	A312271
Dissolved Manganese (Mn)	mg/L	<0.0040	N/A	0.0040	A312271
Dissolved Molybdenum (Mo)	mg/L	0.0011	+/- <RDL	0.00020	A306223
Dissolved Nickel (Ni)	mg/L	<0.00050	N/A	0.00050	A306223
Dissolved Phosphorus (P)	mg/L	<0.10	N/A	0.10	A312271
Dissolved Potassium (K)	mg/L	1.2	+/- <RDL	0.30	A312271
Dissolved Selenium (Se)	mg/L	<0.00020	N/A	0.00020	A313183
Dissolved Silicon (Si)	mg/L	0.27	+/- <RDL	0.10	A312271
Dissolved Silver (Ag)	mg/L	<0.00010	N/A	0.00010	A306223
Dissolved Sodium (Na)	mg/L	5.3	+/- 0.59	0.50	A312271
Dissolved Strontium (Sr)	mg/L	0.11	+/- <RDL	0.020	A312271
Dissolved Sulphur (S)	mg/L	0.85	+/- <RDL	0.20	A312271
Dissolved Thallium (Tl)	mg/L	<0.00020	N/A	0.00020	A306223
Dissolved Tin (Sn)	mg/L	<0.0010	N/A	0.0010	A306223
Dissolved Titanium (Ti)	mg/L	<0.0010	N/A	0.0010	A306223
Dissolved Uranium (U)	mg/L	0.00042	+/- 0.00021	0.00010	A306223
Dissolved Vanadium (V)	mg/L	<0.0010	N/A	0.0010	A306223
Dissolved Zinc (Zn)	mg/L	<0.0030	N/A	0.0030	A306223

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable

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REGULATED METALS (CCME/AT1) - TOTAL

BV Labs ID		ACS915		ACS916		ACS917			
Sampling Date		2021/07/25		2021/07/25		2021/07/25			
COC Number		640339-01-01		640339-01-01		640339-01-01			
	UNITS	SW21-1	MU	SW21-2	MU	SW21-3	MU	RDL	QC Batch
Elements									
Total Aluminum (Al)	mg/L	0.010	+/- <RDL	0.027	+/- 0.0052	0.011 (1)	+/- <RDL	0.0030	A309165
Total Antimony (Sb)	mg/L	<0.00060	N/A	<0.00060	N/A	<0.00060	N/A	0.00060	A309165
Total Arsenic (As)	mg/L	0.00054	+/- <RDL	<0.00020	N/A	0.00025	+/- <RDL	0.00020	A309165
Total Barium (Ba)	mg/L	0.015	+/- <RDL	<0.010	N/A	<0.010	N/A	0.010	A309168
Total Beryllium (Be)	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A309165
Total Boron (B)	mg/L	0.030	+/- <RDL	0.053	+/- <RDL	0.030	+/- <RDL	0.020	A309168
Total Cadmium (Cd)	mg/L	<0.000020	N/A	<0.000020	N/A	<0.000020	N/A	0.000020	A309165
Total Calcium (Ca)	mg/L	44	+/- 4.4	30	+/- 2.9	35	+/- 3.5	0.30	A309168
Total Chromium (Cr)	mg/L	<0.0010	N/A	0.0015	+/- <RDL	<0.0010	N/A	0.0010	A309165
Total Cobalt (Co)	mg/L	<0.00030	N/A	<0.00030	N/A	<0.00030	N/A	0.00030	A309165
Total Copper (Cu)	mg/L	0.00081	+/- 0.00034	0.00028	+/- 0.00033	0.00040 (1)	+/- 0.00033	0.00020	A309165
Total Iron (Fe)	mg/L	<0.060	N/A	<0.060	N/A	<0.060	N/A	0.060	A309168
Total Lead (Pb)	mg/L	0.0011	+/- <RDL	<0.00020	N/A	0.00095	+/- <RDL	0.00020	A309165
Total Lithium (Li)	mg/L	<0.020	N/A	<0.020	N/A	<0.020	N/A	0.020	A309168
Total Magnesium (Mg)	mg/L	26	+/- 1.8	12	+/- 0.83	13	+/- 0.87	0.20	A309168
Total Manganese (Mn)	mg/L	<0.0040	N/A	<0.0040	N/A	<0.0040	N/A	0.0040	A309168
Total Molybdenum (Mo)	mg/L	0.00064	+/- <RDL	0.00095	+/- <RDL	0.0010	+/- 0.00020	0.00020	A309165
Total Nickel (Ni)	mg/L	0.0024	+/- <RDL	<0.00050	N/A	0.0031	+/- <RDL	0.00050	A309165
Total Phosphorus (P)	mg/L	<0.10	N/A	<0.10	N/A	<0.10	N/A	0.10	A309168
Total Potassium (K)	mg/L	1.4	+/- <RDL	1.6	+/- <RDL	1.2	+/- <RDL	0.30	A309168
Total Selenium (Se)	mg/L	<0.00020	N/A	<0.00020	N/A	<0.00020	N/A	0.00020	A309165
Total Silicon (Si)	mg/L	0.78	+/- <RDL	0.60	+/- <RDL	0.38	+/- <RDL	0.10	A309168
Total Silver (Ag)	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A309165
Total Sodium (Na)	mg/L	5.7	+/- <RDL	8.9	+/- 0.63	4.9	+/- <RDL	0.50	A309168
Total Strontium (Sr)	mg/L	0.20	+/- 0.021	0.087	+/- <RDL	0.098	+/- <RDL	0.020	A309168
Total Sulphur (S)	mg/L	2.6	+/- 0.31	1.8	+/- 0.24	0.93	+/- <RDL	0.20	A309168
Total Thallium (Tl)	mg/L	<0.00020	N/A	<0.00020	N/A	<0.00020	N/A	0.00020	A309165
Total Tin (Sn)	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A309165
Total Titanium (Ti)	mg/L	<0.0010	N/A	0.0014	+/- <RDL	<0.0010	N/A	0.0010	A309165
Total Uranium (U)	mg/L	0.00048	+/- <RDL	0.00020	+/- <RDL	0.00038	+/- <RDL	0.00010	A309165
Total Vanadium (V)	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A309165
Total Zinc (Zn)	mg/L	<0.0030	N/A	0.0064	+/- <RDL	0.0054 (1)	+/- <RDL	0.0030	A309165

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable
(1) Duplicate exceeds acceptance criteria due to sample non homogeneity. Reanalysis yields similar results.

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REGULATED METALS (CCME/AT1) - TOTAL

BV Labs ID		ACS917		ACS918		ACS920			
Sampling Date		2021/07/25		2021/07/25		2021/07/25			
COC Number		640339-01-01		640339-01-01		640339-01-01			
	UNITS	SW21-3 Lab-Dup	MU	SW21-4	MU	SW21-6	MU	RDL	QC Batch
Elements									
Total Aluminum (Al)	mg/L	0.047 (1)	+/- <RDL	0.0047	+/- <RDL	0.067	+/- 0.013	0.0030	A309165
Total Antimony (Sb)	mg/L	<0.00060	N/A	<0.00060	N/A	<0.00060	N/A	0.00060	A309165
Total Arsenic (As)	mg/L	0.00025	+/- <RDL	0.00050	+/- <RDL	<0.00020	N/A	0.00020	A309165
Total Barium (Ba)	mg/L	<0.010	N/A	0.021	+/- <RDL	<0.010	N/A	0.010	A309168
Total Beryllium (Be)	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A309165
Total Boron (B)	mg/L	0.035	+/- <RDL	0.045	+/- <RDL	0.022	+/- <RDL	0.020	A309168
Total Cadmium (Cd)	mg/L	<0.000020	N/A	<0.000020	N/A	<0.000020	N/A	0.000020	A309165
Total Calcium (Ca)	mg/L	36	+/- 3.6	71	+/- 7.0	28	+/- 2.8	0.30	A309168
Total Chromium (Cr)	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A309165
Total Cobalt (Co)	mg/L	<0.00030	N/A	<0.00030	N/A	<0.00030	N/A	0.00030	A309165
Total Copper (Cu)	mg/L	0.0028 (1)	+/- 0.00033	0.0011	+/- 0.00036	0.00046	+/- 0.00033	0.00020	A309165
Total Iron (Fe)	mg/L	<0.060	N/A	<0.060	N/A	<0.060	N/A	0.060	A309168
Total Lead (Pb)	mg/L	0.00094	+/- <RDL	0.0062	+/- 0.0011	<0.00020	N/A	0.00020	A309165
Total Lithium (Li)	mg/L	<0.020	N/A	<0.020	N/A	<0.020	N/A	0.020	A309168
Total Magnesium (Mg)	mg/L	13	+/- 0.90	19	+/- 1.3	16	+/- 1.1	0.20	A309168
Total Manganese (Mn)	mg/L	0.0044	+/- <RDL	<0.0040	N/A	<0.0040	N/A	0.0040	A309168
Total Molybdenum (Mo)	mg/L	0.00097	+/- <RDL	0.00068	+/- <RDL	0.00077	+/- <RDL	0.00020	A309165
Total Nickel (Ni)	mg/L	0.0022	+/- <RDL	0.0023	+/- <RDL	<0.00050	N/A	0.00050	A309165
Total Phosphorus (P)	mg/L	<0.10	N/A	<0.10	N/A	<0.10	N/A	0.10	A309168
Total Potassium (K)	mg/L	1.3	+/- <RDL	2.8	+/- <RDL	0.53	+/- <RDL	0.30	A309168
Total Selenium (Se)	mg/L	<0.00020	N/A	<0.00020	N/A	<0.00020	N/A	0.00020	A309165
Total Silicon (Si)	mg/L	0.37	+/- <RDL	1.1	+/- 0.11	<0.10	N/A	0.10	A309168
Total Silver (Ag)	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A309165
Total Sodium (Na)	mg/L	5.1	+/- <RDL	9.0	+/- 0.63	4.4	+/- <RDL	0.50	A309168
Total Strontium (Sr)	mg/L	0.10	+/- <RDL	0.23	+/- 0.023	0.073	+/- <RDL	0.020	A309168
Total Sulphur (S)	mg/L	0.93	+/- <RDL	2.3	+/- 0.29	0.90	+/- <RDL	0.20	A309168
Total Thallium (Tl)	mg/L	<0.00020	N/A	<0.00020	N/A	<0.00020	N/A	0.00020	A309165
Total Tin (Sn)	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A309165
Total Titanium (Ti)	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A309165
Total Uranium (U)	mg/L	0.00040	+/- <RDL	0.00061	+/- <RDL	0.00014	+/- <RDL	0.00010	A309165

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
MU = Measurement Uncertainty
N/A = Not Applicable
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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REGULATED METALS (CCME/AT1) - TOTAL

BV Labs ID		ACS917		ACS918		ACS920			
Sampling Date		2021/07/25		2021/07/25		2021/07/25			
COC Number		640339-01-01		640339-01-01		640339-01-01			
	UNITS	SW21-3 Lab-Dup	MU	SW21-4	MU	SW21-6	MU	RDL	QC Batch
Total Vanadium (V)	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A309165
Total Zinc (Zn)	mg/L	0.025 (1)	+/- <RDL	0.0037	+/- <RDL	0.0041	+/- <RDL	0.0030	A309165

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
MU = Measurement Uncertainty
N/A = Not Applicable
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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REGULATED METALS (CCME/AT1) - TOTAL

BV Labs ID		ACS921			
Sampling Date		2021/07/25			
COC Number		640339-01-01			
	UNITS	SW21-DUP	MU	RDL	QC Batch
Elements					
Total Aluminum (Al)	mg/L	0.046	+/- 0.0088	0.0030	A309165
Total Antimony (Sb)	mg/L	<0.00060	N/A	0.00060	A309165
Total Arsenic (As)	mg/L	0.00023	+/- <RDL	0.00020	A309165
Total Barium (Ba)	mg/L	<0.010	N/A	0.010	A309168
Total Beryllium (Be)	mg/L	<0.0010	N/A	0.0010	A309165
Total Boron (B)	mg/L	0.042	+/- <RDL	0.020	A309168
Total Cadmium (Cd)	mg/L	<0.000020	N/A	0.000020	A309165
Total Calcium (Ca)	mg/L	36	+/- 3.6	0.30	A309168
Total Chromium (Cr)	mg/L	<0.0010	N/A	0.0010	A309165
Total Cobalt (Co)	mg/L	<0.00030	N/A	0.00030	A309165
Total Copper (Cu)	mg/L	0.00046	+/- 0.00033	0.00020	A309165
Total Iron (Fe)	mg/L	<0.060	N/A	0.060	A309168
Total Lead (Pb)	mg/L	0.0011	+/- 0.00020	0.00020	A309165
Total Lithium (Li)	mg/L	0.022	+/- <RDL	0.020	A309168
Total Magnesium (Mg)	mg/L	13	+/- 0.90	0.20	A309168
Total Manganese (Mn)	mg/L	0.0042	+/- <RDL	0.0040	A309168
Total Molybdenum (Mo)	mg/L	0.0012	+/- 0.00023	0.00020	A309165
Total Nickel (Ni)	mg/L	0.0016	+/- <RDL	0.00050	A309165
Total Phosphorus (P)	mg/L	<0.10	N/A	0.10	A309168
Total Potassium (K)	mg/L	1.3	+/- <RDL	0.30	A309168
Total Selenium (Se)	mg/L	<0.00020	N/A	0.00020	A309165
Total Silicon (Si)	mg/L	0.43	+/- <RDL	0.10	A309168
Total Silver (Ag)	mg/L	<0.00010	N/A	0.00010	A309165
Total Sodium (Na)	mg/L	5.2	+/- <RDL	0.50	A309168
Total Strontium (Sr)	mg/L	0.11	+/- <RDL	0.020	A309168
Total Sulphur (S)	mg/L	0.92	+/- <RDL	0.20	A309168
Total Thallium (Tl)	mg/L	<0.00020	N/A	0.00020	A309165
Total Tin (Sn)	mg/L	<0.0010	N/A	0.0010	A309165
Total Titanium (Ti)	mg/L	<0.0010	N/A	0.0010	A309165
Total Uranium (U)	mg/L	0.00040	+/- <RDL	0.00010	A309165
Total Vanadium (V)	mg/L	<0.0010	N/A	0.0010	A309165
Total Zinc (Zn)	mg/L	<0.0030	N/A	0.0030	A309165

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable

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RESULTS OF CHEMICAL ANALYSES OF WATER

BV Labs ID		ACS915		ACS915		ACS916			
Sampling Date		2021/07/25		2021/07/25		2021/07/25			
COC Number		640339-01-01		640339-01-01		640339-01-01			
	UNITS	SW21-1	MU	SW21-1 Lab-Dup	MU	SW21-2	MU	RDL	QC Batch
Misc. Inorganics									
Total Suspended Solids	mg/L	1.3	+/- <RDL	1.6	+/- <RDL	6.7	+/- 1.2	1.0	A306751
Nutrients									
Total Ammonia (N)	mg/L	<0.015	N/A	N/A	N/A	<0.015	N/A	0.015	A307065
Misc. Organics									
Total Oil and grease	mg/L	<2.0	N/A	N/A	N/A	<2.0	N/A	2.0	A302480

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
MU = Measurement Uncertainty
N/A = Not Applicable

BV Labs ID		ACS917		ACS918		ACS920			
Sampling Date		2021/07/25		2021/07/25		2021/07/25			
COC Number		640339-01-01		640339-01-01		640339-01-01			
	UNITS	SW21-3	MU	SW21-4	MU	SW21-6	MU	RDL	QC Batch
Misc. Inorganics									
Total Suspended Solids	mg/L	6.1	+/- 1.2	2.4	+/- <RDL	14	+/- 2.2	1.0	A306751
Nutrients									
Total Ammonia (N)	mg/L	0.022	+/- <RDL	0.021	+/- <RDL	<0.015	N/A	0.015	A307065
Misc. Organics									
Total Oil and grease	mg/L	<2.0	N/A	<2.0	N/A	<2.0	N/A	2.0	A302480

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable

BV Labs ID		ACS921			
Sampling Date		2021/07/25			
COC Number		640339-01-01			
	UNITS	SW21-DUP	MU	RDL	QC Batch
Misc. Inorganics					
Total Suspended Solids	mg/L	16	+/- 2.5	1.0	A306751
Nutrients					
Total Ammonia (N)	mg/L	0.022	+/- <RDL	0.015	A307068
Misc. Organics					
Total Oil and grease	mg/L	<2.0	N/A	2.0	A302480

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		ACS915		ACS916		ACS917			
Sampling Date		2021/07/25		2021/07/25		2021/07/25			
COC Number		640339-01-01		640339-01-01		640339-01-01			
	UNITS	SW21-1	MU	SW21-2	MU	SW21-3	MU	RDL	QC Batch
Polycyclic Aromatics									
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	N/A	<0.000010	N/A	<0.000010	N/A	0.000010	A302245
Acenaphthene	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A307593
Acenaphthylene	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A307593
Acridine	mg/L	<0.000040	N/A	<0.000040	N/A	<0.000040	N/A	0.000040	A307593
Anthracene	mg/L	<0.000010	N/A	<0.000010	N/A	<0.000010	N/A	0.000010	A307593
Benzo(a)anthracene	mg/L	<0.0000085	N/A	<0.0000085	N/A	<0.0000085	N/A	0.0000085	A307593
Benzo(b&j)fluoranthene	mg/L	<0.0000085	N/A	<0.0000085	N/A	<0.0000085	N/A	0.0000085	A307593
Benzo(k)fluoranthene	mg/L	<0.0000085	N/A	<0.0000085	N/A	<0.0000085	N/A	0.0000085	A307593
Benzo(g,h,i)perylene	mg/L	<0.0000085	N/A	<0.0000085	N/A	<0.0000085	N/A	0.0000085	A307593
Benzo(c)phenanthrene	mg/L	<0.000050	N/A	<0.000050	N/A	<0.000050	N/A	0.000050	A307593
Benzo(a)pyrene	mg/L	<0.0000075	N/A	<0.0000075	N/A	<0.0000075	N/A	0.0000075	A307593
Benzo(e)pyrene	mg/L	<0.000050	N/A	<0.000050	N/A	<0.000050	N/A	0.000050	A307593
Chrysene	mg/L	<0.0000085	N/A	<0.0000085	N/A	<0.0000085	N/A	0.0000085	A307593
Dibenz(a,h)anthracene	mg/L	<0.0000075	N/A	<0.0000075	N/A	<0.0000075	N/A	0.0000075	A307593
Fluoranthene	mg/L	<0.000010 (1)	N/A	<0.000010	N/A	<0.000010	N/A	0.000010	A307593
Fluorene	mg/L	<0.000050	N/A	<0.000050	N/A	<0.000050	N/A	0.000050	A307593
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	N/A	<0.0000085	N/A	<0.0000085	N/A	0.0000085	A307593
1-Methylnaphthalene	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A307593
2-Methylnaphthalene	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A307593
Naphthalene	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A307593
Phenanthrene	mg/L	<0.000050	N/A	<0.000050	N/A	<0.000050	N/A	0.000050	A307593
Perylene	mg/L	<0.000050	N/A	<0.000050	N/A	<0.000050	N/A	0.000050	A307593
Pyrene	mg/L	<0.000020 (1)	N/A	<0.000020	N/A	<0.000020	N/A	0.000020	A307593
Quinoline	mg/L	<0.00020	N/A	<0.00020	N/A	<0.00020	N/A	0.00020	A307593
Phenols									
2,3,4-trichlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
Cresols	mg/L	<0.00014	N/A	<0.00014	N/A	<0.00014	N/A	0.00014	A301493
Phenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
3 & 4-chlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2,3,5,6-tetrachlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2,3,4,6-tetrachlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2,4,5-trichlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable
(1) Matrix spike exceeds acceptance limits due to probable matrix interference.

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		ACS915		ACS916		ACS917			
Sampling Date		2021/07/25		2021/07/25		2021/07/25			
COC Number		640339-01-01		640339-01-01		640339-01-01			
	UNITS	SW21-1	MU	SW21-2	MU	SW21-3	MU	RDL	QC Batch
2,4,6-trichlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2,3,5-trichlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2,4-dichlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2,4-dimethylphenol	mg/L	0.00040	+/- 0.00012	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2,4-dinitrophenol	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A305527
2,6-dichlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2-chlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2-methylphenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2-nitrophenol	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A305527
3 & 4-methylphenol	mg/L	0.00010	+/- <RDL	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
4,6-dinitro-2-methylphenol	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A305527
4-chloro-3-methylphenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
4-nitrophenol	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A305527
Pentachlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	113	N/A	112	N/A	117	N/A	N/A	A307593
D8-ACENAPHTHYLENE (sur.)	%	85	N/A	94	N/A	94	N/A	N/A	A307593
D8-NAPHTHALENE (sur.)	%	41 (1)	N/A	75	N/A	68	N/A	N/A	A307593
TERPHENYL-D14 (sur.)	%	95	N/A	87	N/A	90	N/A	N/A	A307593
2,4,6-TRIBROMOPHENOL (sur.)	%	132	N/A	122	N/A	121	N/A	N/A	A305527
2,4-DIBROMOPHENOL (sur.)	%	119	N/A	115	N/A	114	N/A	N/A	A305527

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		ACS918		ACS920		ACS921			
Sampling Date		2021/07/25		2021/07/25		2021/07/25			
COC Number		640339-01-01		640339-01-01		640339-01-01			
	UNITS	SW21-4	MU	SW21-6	MU	SW21-DUP	MU	RDL	QC Batch
Polycyclic Aromatics									
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	N/A	<0.000010	N/A	<0.000010	N/A	0.000010	A302245
Acenaphthene	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A307593
Acenaphthylene	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A307593
Acridine	mg/L	<0.000040	N/A	<0.000040	N/A	<0.000040	N/A	0.000040	A307593
Anthracene	mg/L	<0.000010	N/A	<0.000010	N/A	<0.000010	N/A	0.000010	A307593
Benzo(a)anthracene	mg/L	<0.0000085	N/A	<0.0000085	N/A	<0.0000085	N/A	0.0000085	A307593
Benzo(b&j)fluoranthene	mg/L	<0.0000085	N/A	<0.0000085	N/A	<0.0000085	N/A	0.0000085	A307593
Benzo(k)fluoranthene	mg/L	<0.0000085	N/A	<0.0000085	N/A	<0.0000085	N/A	0.0000085	A307593
Benzo(g,h,i)perylene	mg/L	<0.0000085	N/A	<0.0000085	N/A	<0.0000085	N/A	0.0000085	A307593
Benzo(c)phenanthrene	mg/L	<0.000050	N/A	<0.000050	N/A	<0.000050	N/A	0.000050	A307593
Benzo(a)pyrene	mg/L	<0.0000075	N/A	<0.0000075	N/A	<0.0000075	N/A	0.0000075	A307593
Benzo(e)pyrene	mg/L	<0.000050	N/A	<0.000050	N/A	<0.000050	N/A	0.000050	A307593
Chrysene	mg/L	<0.0000085	N/A	<0.0000085	N/A	<0.0000085	N/A	0.0000085	A307593
Dibenz(a,h)anthracene	mg/L	<0.0000075	N/A	<0.0000075	N/A	<0.0000075	N/A	0.0000075	A307593
Fluoranthene	mg/L	<0.000010	N/A	<0.000010	N/A	<0.000010	N/A	0.000010	A307593
Fluorene	mg/L	<0.000050	N/A	<0.000050	N/A	<0.000050	N/A	0.000050	A307593
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	N/A	<0.0000085	N/A	<0.0000085	N/A	0.0000085	A307593
1-Methylnaphthalene	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A307593
2-Methylnaphthalene	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A307593
Naphthalene	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A307593
Phenanthrene	mg/L	<0.000050	N/A	<0.000050	N/A	<0.000050	N/A	0.000050	A307593
Perylene	mg/L	<0.000050	N/A	<0.000050	N/A	<0.000050	N/A	0.000050	A307593
Pyrene	mg/L	<0.000020	N/A	<0.000020	N/A	<0.000020	N/A	0.000020	A307593
Quinoline	mg/L	<0.00020	N/A	<0.00020	N/A	<0.00020	N/A	0.00020	A307593
Phenols									
2,3,4-trichlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
Cresols	mg/L	0.00040	N/A	<0.00014	N/A	<0.00014	N/A	0.00014	A301493
Phenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
3 & 4-chlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2,3,5,6-tetrachlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2,3,4,6-tetrachlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2,4,5-trichlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID		ACS918		ACS920		ACS921			
Sampling Date		2021/07/25		2021/07/25		2021/07/25			
COC Number		640339-01-01		640339-01-01		640339-01-01			
	UNITS	SW21-4	MU	SW21-6	MU	SW21-DUP	MU	RDL	QC Batch
2,4,6-trichlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2,3,5-trichlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2,4-dichlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2,4-dimethylphenol	mg/L	0.00050	+/- 0.00015	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2,4-dinitrophenol	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A305527
2,6-dichlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2-chlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2-methylphenol	mg/L	0.00020	+/- <RDL	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
2-nitrophenol	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A305527
3 & 4-methylphenol	mg/L	0.00020	+/- <RDL	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
4,6-dinitro-2-methylphenol	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A305527
4-chloro-3-methylphenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
4-nitrophenol	mg/L	<0.0010	N/A	<0.0010	N/A	<0.0010	N/A	0.0010	A305527
Pentachlorophenol	mg/L	<0.00010	N/A	<0.00010	N/A	<0.00010	N/A	0.00010	A305527
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	112	N/A	118	N/A	115	N/A	N/A	A307593
D8-ACENAPHTHYLENE (sur.)	%	90	N/A	93	N/A	89	N/A	N/A	A307593
D8-NAPHTHALENE (sur.)	%	59	N/A	70	N/A	73	N/A	N/A	A307593
TERPHENYL-D14 (sur.)	%	86	N/A	89	N/A	91	N/A	N/A	A307593
2,4,6-TRIBROMOPHENOL (sur.)	%	132	N/A	118	N/A	121	N/A	N/A	A305527
2,4-DIBROMOPHENOL (sur.)	%	119	N/A	114	N/A	114	N/A	N/A	A305527

RDL = Reportable Detection Limit
MU = Measurement Uncertainty
N/A = Not Applicable

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GENERAL COMMENTS

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

Package 1	5.7°C
Package 2	7.7°C

Sample ACS915 [SW21-1] : NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample ACS916 [SW21-2] : NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample ACS917 [SW21-3] : NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample ACS918 [SW21-4] : NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample ACS920 [SW21-6] : NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample ACS921 [SW21-DUP] : NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

The estimate of uncertainty has been reported as an expanded uncertainty and calculated using a coverage factor of 2, which gives a level of confidence of 95%.

Sample ACS915, Elements by ICPMS - Dissolved: Test repeated.
Sample ACS916, Elements by ICPMS - Dissolved: Test repeated.
Sample ACS917, Elements by ICPMS - Dissolved: Test repeated.
Sample ACS918, Elements by ICPMS - Dissolved: Test repeated.
Sample ACS920, Elements by ICPMS - Dissolved: Test repeated.
Sample ACS921, Elements by ICPMS - Dissolved: Test repeated.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A302480	JB9	Spiked Blank	Total Oil and grease	2021/07/29		100	%	70 - 130
A302480	JB9	Method Blank	Total Oil and grease	2021/07/29	<2.0		mg/L	
A304219	SKM	Matrix Spike	Dissolved Nitrite (N)	2021/07/29		99	%	80 - 120
			Dissolved Nitrate plus Nitrite (N)	2021/07/29		103	%	80 - 120
A304219	SKM	Spiked Blank	Dissolved Nitrite (N)	2021/07/29		100	%	80 - 120
			Dissolved Nitrate plus Nitrite (N)	2021/07/29		104	%	80 - 120
A304219	SKM	Method Blank	Dissolved Nitrite (N)	2021/07/29	<0.010		mg/L	
			Dissolved Nitrate plus Nitrite (N)	2021/07/29	<0.010		mg/L	
A304219	SKM	RPD	Dissolved Nitrite (N)	2021/07/29	NC		%	20
			Dissolved Nitrate plus Nitrite (N)	2021/07/29	NC		%	20
A304228	SKM	Matrix Spike	Dissolved Nitrite (N)	2021/07/29		99	%	80 - 120
			Dissolved Nitrate plus Nitrite (N)	2021/07/29		122 (1)	%	80 - 120
A304228	SKM	Spiked Blank	Dissolved Nitrite (N)	2021/07/29		100	%	80 - 120
			Dissolved Nitrate plus Nitrite (N)	2021/07/29		102	%	80 - 120
A304228	SKM	Method Blank	Dissolved Nitrite (N)	2021/07/29	<0.010		mg/L	
			Dissolved Nitrate plus Nitrite (N)	2021/07/29	<0.010		mg/L	
A304228	SKM	RPD	Dissolved Nitrite (N)	2021/07/29	NC		%	20
			Dissolved Nitrate plus Nitrite (N)	2021/07/29	NC		%	20
A305527	SJ1	Spiked Blank	2,3,4-trichlorophenol	2021/07/30		120	%	50 - 140
			2,4,6-TRIBROMOPHENOL (sur.)	2021/07/30		117	%	50 - 140
			2,4-DIBROMOPHENOL (sur.)	2021/07/30		115	%	50 - 140
			Phenol	2021/07/30		64	%	30 - 130
			3 & 4-chlorophenol	2021/07/30		108	%	50 - 140
			2,3,5,6-tetrachlorophenol	2021/07/30		112	%	50 - 140
			2,3,4,6-tetrachlorophenol	2021/07/30		124	%	50 - 140
			2,4,5-trichlorophenol	2021/07/30		120	%	50 - 140
			2,4,6-trichlorophenol	2021/07/30		116	%	50 - 140
			2,3,5-trichlorophenol	2021/07/30		116	%	50 - 140
			2,4-dichlorophenol	2021/07/30		116	%	50 - 140
			2,4-dimethylphenol	2021/07/30		104	%	50 - 140
			2,4-dinitrophenol	2021/07/30		60	%	30 - 130
			2,6-dichlorophenol	2021/07/30		120	%	50 - 140
			2-chlorophenol	2021/07/30		120	%	50 - 140
			2-methylphenol	2021/07/30		104	%	50 - 140
			2-nitrophenol	2021/07/30		116	%	50 - 140
			3 & 4-methylphenol	2021/07/30		100	%	50 - 140
			4,6-dinitro-2-methylphenol	2021/07/30		60	%	30 - 130
			4-chloro-3-methylphenol	2021/07/30		104	%	50 - 140
			4-nitrophenol	2021/07/30		68	%	50 - 140
			Pentachlorophenol	2021/07/30		108	%	50 - 140
A305527	SJ1	Method Blank	2,3,4-trichlorophenol	2021/07/30	<0.00010		mg/L	
			2,4,6-TRIBROMOPHENOL (sur.)	2021/07/30		111	%	50 - 140
			2,4-DIBROMOPHENOL (sur.)	2021/07/30		108	%	50 - 140
			Phenol	2021/07/30	<0.00010		mg/L	
			3 & 4-chlorophenol	2021/07/30	<0.00010		mg/L	
			2,3,5,6-tetrachlorophenol	2021/07/30	<0.00010		mg/L	
			2,3,4,6-tetrachlorophenol	2021/07/30	<0.00010		mg/L	
			2,4,5-trichlorophenol	2021/07/30	<0.00010		mg/L	
			2,4,6-trichlorophenol	2021/07/30	<0.00010		mg/L	
			2,3,5-trichlorophenol	2021/07/30	<0.00010		mg/L	
			2,4-dichlorophenol	2021/07/30	<0.00010		mg/L	
			2,4-dimethylphenol	2021/07/30	<0.00010		mg/L	
			2,4-dinitrophenol	2021/07/30	<0.0010		mg/L	
			2,6-dichlorophenol	2021/07/30	<0.00010		mg/L	
			2-chlorophenol	2021/07/30	<0.00010		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			2-methylphenol	2021/07/30	<0.00010		mg/L	
			2-nitrophenol	2021/07/30	<0.0010		mg/L	
			3 & 4-methylphenol	2021/07/30	<0.00010		mg/L	
			4,6-dinitro-2-methylphenol	2021/07/30	<0.0010		mg/L	
			4-chloro-3-methylphenol	2021/07/30	<0.00010		mg/L	
			4-nitrophenol	2021/07/30	<0.0010		mg/L	
			Pentachlorophenol	2021/07/30	<0.00010		mg/L	
A306045	DO1	Matrix Spike	1,4-Difluorobenzene (sur.)	2021/08/03		93	%	50 - 140
			4-Bromofluorobenzene (sur.)	2021/08/03		100	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2021/08/03		99	%	50 - 140
			Benzene	2021/08/03		95	%	50 - 140
			Toluene	2021/08/03		90	%	50 - 140
			Ethylbenzene	2021/08/03		96	%	50 - 140
			m & p-Xylene	2021/08/03		92	%	50 - 140
			o-Xylene	2021/08/03		95	%	50 - 140
			F1 (C6-C10)	2021/08/03		91	%	60 - 140
A306045	DO1	Spiked Blank	1,4-Difluorobenzene (sur.)	2021/08/03		91	%	50 - 140
			4-Bromofluorobenzene (sur.)	2021/08/03		103	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2021/08/03		103	%	50 - 140
			Benzene	2021/08/03		109	%	60 - 130
			Toluene	2021/08/03		103	%	60 - 130
			Ethylbenzene	2021/08/03		110	%	60 - 130
			m & p-Xylene	2021/08/03		106	%	60 - 130
			o-Xylene	2021/08/03		109	%	60 - 130
			F1 (C6-C10)	2021/08/03		100	%	60 - 140
A306045	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2021/08/03		100	%	50 - 140
			4-Bromofluorobenzene (sur.)	2021/08/03		104	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2021/08/03		103	%	50 - 140
			Benzene	2021/08/03	<0.00040		mg/L	
			Toluene	2021/08/03	<0.00040		mg/L	
			Ethylbenzene	2021/08/03	<0.00040		mg/L	
			m & p-Xylene	2021/08/03	<0.00080		mg/L	
			o-Xylene	2021/08/03	<0.00040		mg/L	
			F1 (C6-C10)	2021/08/03	<0.10		mg/L	
A306045	DO1	RPD	Benzene	2021/08/03	NC		%	30
			Toluene	2021/08/03	NC		%	30
			Ethylbenzene	2021/08/03	NC		%	30
			m & p-Xylene	2021/08/03	NC		%	30
			o-Xylene	2021/08/03	NC		%	30
			F1 (C6-C10)	2021/08/03	NC		%	30
A306216	KH2	Matrix Spike	Dissolved Aluminum (Al)	2021/07/30		97	%	80 - 120
			Dissolved Antimony (Sb)	2021/07/30		125 (1)	%	80 - 120
			Dissolved Arsenic (As)	2021/07/30		NC	%	80 - 120
			Dissolved Beryllium (Be)	2021/07/30		105	%	80 - 120
			Dissolved Chromium (Cr)	2021/07/30		100	%	80 - 120
			Dissolved Cobalt (Co)	2021/07/30		96	%	80 - 120
			Dissolved Lead (Pb)	2021/07/30		98	%	80 - 120
			Dissolved Molybdenum (Mo)	2021/07/30		107	%	80 - 120
			Dissolved Nickel (Ni)	2021/07/30		97	%	80 - 120
			Dissolved Selenium (Se)	2021/07/30		85	%	80 - 120
			Dissolved Silver (Ag)	2021/07/30		82	%	80 - 120
			Dissolved Thallium (Tl)	2021/07/30		102	%	80 - 120
			Dissolved Tin (Sn)	2021/07/30		106	%	80 - 120
			Dissolved Titanium (Ti)	2021/07/30		99	%	80 - 120
			Dissolved Uranium (U)	2021/07/30		101	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Vanadium (V)	2021/07/30		99	%	80 - 120
			Dissolved Zinc (Zn)	2021/07/30		94	%	80 - 120
A306216	KH2	Spiked Blank	Dissolved Aluminum (Al)	2021/07/30		90	%	80 - 120
			Dissolved Antimony (Sb)	2021/07/30		121 (1)	%	80 - 120
			Dissolved Arsenic (As)	2021/07/30		97	%	80 - 120
			Dissolved Beryllium (Be)	2021/07/30		102	%	80 - 120
			Dissolved Chromium (Cr)	2021/07/30		101	%	80 - 120
			Dissolved Cobalt (Co)	2021/07/30		100	%	80 - 120
			Dissolved Lead (Pb)	2021/07/30		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2021/07/30		106	%	80 - 120
			Dissolved Nickel (Ni)	2021/07/30		97	%	80 - 120
			Dissolved Selenium (Se)	2021/07/30		101	%	80 - 120
			Dissolved Silver (Ag)	2021/07/30		103	%	80 - 120
			Dissolved Thallium (Tl)	2021/07/30		105	%	80 - 120
			Dissolved Tin (Sn)	2021/07/30		105	%	80 - 120
			Dissolved Titanium (Ti)	2021/07/30		103	%	80 - 120
			Dissolved Uranium (U)	2021/07/30		101	%	80 - 120
			Dissolved Vanadium (V)	2021/07/30		100	%	80 - 120
			Dissolved Zinc (Zn)	2021/07/30		100	%	80 - 120
A306216	KH2	Method Blank	Dissolved Aluminum (Al)	2021/07/30	<0.0030		mg/L	
			Dissolved Antimony (Sb)	2021/07/30	<0.00060		mg/L	
			Dissolved Arsenic (As)	2021/07/30	<0.00020		mg/L	
			Dissolved Beryllium (Be)	2021/07/30	<0.0010		mg/L	
			Dissolved Chromium (Cr)	2021/07/30	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2021/07/30	<0.00030		mg/L	
			Dissolved Lead (Pb)	2021/07/30	<0.00020		mg/L	
			Dissolved Molybdenum (Mo)	2021/07/30	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2021/07/30	<0.00050		mg/L	
			Dissolved Selenium (Se)	2021/07/30	<0.00020		mg/L	
			Dissolved Silver (Ag)	2021/07/30	<0.00010		mg/L	
			Dissolved Thallium (Tl)	2021/07/30	<0.00020		mg/L	
			Dissolved Tin (Sn)	2021/07/30	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2021/07/30	<0.0010		mg/L	
			Dissolved Uranium (U)	2021/07/30	<0.00010		mg/L	
			Dissolved Vanadium (V)	2021/07/30	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2021/07/30	<0.0030		mg/L	
A306216	KH2	RPD	Dissolved Arsenic (As)	2021/07/30	2.7		%	20
A306223	KH2	Matrix Spike	Dissolved Aluminum (Al)	2021/07/30		90	%	80 - 120
			Dissolved Antimony (Sb)	2021/07/30		124 (1)	%	80 - 120
			Dissolved Arsenic (As)	2021/07/30		90	%	80 - 120
			Dissolved Beryllium (Be)	2021/07/30		100	%	80 - 120
			Dissolved Chromium (Cr)	2021/07/30		93	%	80 - 120
			Dissolved Cobalt (Co)	2021/07/30		92	%	80 - 120
			Dissolved Lead (Pb)	2021/07/30		93	%	80 - 120
			Dissolved Molybdenum (Mo)	2021/07/30		100	%	80 - 120
			Dissolved Nickel (Ni)	2021/07/30		89	%	80 - 120
			Dissolved Silver (Ag)	2021/07/30		84	%	80 - 120
			Dissolved Thallium (Tl)	2021/07/30		95	%	80 - 120
			Dissolved Tin (Sn)	2021/07/30		102	%	80 - 120
			Dissolved Titanium (Ti)	2021/07/30		99	%	80 - 120
			Dissolved Uranium (U)	2021/07/30		94	%	80 - 120
			Dissolved Vanadium (V)	2021/07/30		93	%	80 - 120
			Dissolved Zinc (Zn)	2021/07/30		93	%	80 - 120
A306223	KH2	Spiked Blank	Dissolved Aluminum (Al)	2021/07/30		85	%	80 - 120
			Dissolved Antimony (Sb)	2021/07/30		124 (1)	%	80 - 120

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Arsenic (As)	2021/07/30		94	%	80 - 120
			Dissolved Beryllium (Be)	2021/07/30		98	%	80 - 120
			Dissolved Chromium (Cr)	2021/07/30		97	%	80 - 120
			Dissolved Cobalt (Co)	2021/07/30		97	%	80 - 120
			Dissolved Lead (Pb)	2021/07/30		99	%	80 - 120
			Dissolved Molybdenum (Mo)	2021/07/30		102	%	80 - 120
			Dissolved Nickel (Ni)	2021/07/30		98	%	80 - 120
			Dissolved Silver (Ag)	2021/07/30		99	%	80 - 120
			Dissolved Thallium (Tl)	2021/07/30		101	%	80 - 120
			Dissolved Tin (Sn)	2021/07/30		103	%	80 - 120
			Dissolved Titanium (Ti)	2021/07/30		98	%	80 - 120
			Dissolved Uranium (U)	2021/07/30		97	%	80 - 120
			Dissolved Vanadium (V)	2021/07/30		98	%	80 - 120
			Dissolved Zinc (Zn)	2021/07/30		95	%	80 - 120
A306223	KH2	Method Blank	Dissolved Aluminum (Al)	2021/07/31	<0.0030		mg/L	
			Dissolved Antimony (Sb)	2021/07/31	<0.00060		mg/L	
			Dissolved Arsenic (As)	2021/07/31	<0.00020		mg/L	
			Dissolved Beryllium (Be)	2021/07/31	<0.0010		mg/L	
			Dissolved Chromium (Cr)	2021/07/31	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2021/07/31	<0.00030		mg/L	
			Dissolved Lead (Pb)	2021/07/31	<0.00020		mg/L	
			Dissolved Molybdenum (Mo)	2021/07/31	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2021/07/31	<0.00050		mg/L	
			Dissolved Silver (Ag)	2021/07/31	<0.00010		mg/L	
			Dissolved Thallium (Tl)	2021/07/31	<0.00020		mg/L	
			Dissolved Tin (Sn)	2021/07/31	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2021/07/31	<0.0010		mg/L	
			Dissolved Uranium (U)	2021/07/31	<0.00010		mg/L	
			Dissolved Vanadium (V)	2021/07/31	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2021/07/31	<0.0030		mg/L	
A306223	KH2	RPD	Dissolved Arsenic (As)	2021/07/30	0.40		%	20
A306271	IK0	Spiked Blank	Alkalinity (Total as CaCO3)	2021/07/30		97	%	80 - 120
A306271	IK0	Method Blank	Alkalinity (PP as CaCO3)	2021/07/30	<1.0		mg/L	
			Alkalinity (Total as CaCO3)	2021/07/30	<1.0		mg/L	
			Bicarbonate (HCO3)	2021/07/30	<1.0		mg/L	
			Carbonate (CO3)	2021/07/30	<1.0		mg/L	
			Hydroxide (OH)	2021/07/30	<1.0		mg/L	
A306271	IK0	RPD	Alkalinity (PP as CaCO3)	2021/07/30	NC		%	20
			Alkalinity (Total as CaCO3)	2021/07/30	2.1		%	20
			Bicarbonate (HCO3)	2021/07/30	2.1		%	20
			Carbonate (CO3)	2021/07/30	NC		%	20
			Hydroxide (OH)	2021/07/30	NC		%	20
A306277	IK0	Spiked Blank	pH	2021/07/30		100	%	97 - 103
A306277	IK0	RPD	pH	2021/07/30	2.0		%	N/A
A306278	IK0	Spiked Blank	Conductivity	2021/07/30		99	%	90 - 110
A306278	IK0	Method Blank	Conductivity	2021/07/30	<2.0		uS/cm	
A306278	IK0	RPD	Conductivity	2021/07/30	1.3		%	10
A306283	IK0	Spiked Blank	Alkalinity (Total as CaCO3)	2021/07/30		96	%	80 - 120
A306283	IK0	Method Blank	Alkalinity (PP as CaCO3)	2021/07/30	<1.0		mg/L	
			Alkalinity (Total as CaCO3)	2021/07/30	<1.0		mg/L	
			Bicarbonate (HCO3)	2021/07/30	<1.0		mg/L	
			Carbonate (CO3)	2021/07/30	<1.0		mg/L	
			Hydroxide (OH)	2021/07/30	<1.0		mg/L	
A306283	IK0	RPD	Alkalinity (PP as CaCO3)	2021/07/30	NC		%	20
			Alkalinity (Total as CaCO3)	2021/07/30	0.31		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Bicarbonate (HCO3)	2021/07/30	0.31		%	20
			Carbonate (CO3)	2021/07/30	NC		%	20
			Hydroxide (OH)	2021/07/30	NC		%	20
A306285	IK0	Spiked Blank	pH	2021/07/30		100	%	97 - 103
A306285	IK0	RPD	pH	2021/07/30	0.76		%	N/A
A306286	IK0	Spiked Blank	Conductivity	2021/07/30		100	%	90 - 110
A306286	IK0	Method Blank	Conductivity	2021/07/31	<2.0		uS/cm	
A306286	IK0	RPD	Conductivity	2021/07/30	0		%	10
A306751	JM0	Matrix Spike [ACS916-01]	Total Suspended Solids	2021/07/31		92	%	80 - 120
A306751	JM0	Spiked Blank	Total Suspended Solids	2021/07/31		97	%	80 - 120
A306751	JM0	Method Blank	Total Suspended Solids	2021/07/31	<1.0		mg/L	
A306751	JM0	RPD [ACS915-01]	Total Suspended Solids	2021/07/31	18		%	20
A307065	JFH	Matrix Spike	Total Ammonia (N)	2021/07/31		NC	%	80 - 120
A307065	JFH	Spiked Blank	Total Ammonia (N)	2021/07/31		107	%	80 - 120
A307065	JFH	Method Blank	Total Ammonia (N)	2021/07/31	<0.015		mg/L	
A307065	JFH	RPD	Total Ammonia (N)	2021/07/31	1.1		%	20
A307068	JFH	Matrix Spike	Total Ammonia (N)	2021/07/31		112	%	80 - 120
A307068	JFH	Spiked Blank	Total Ammonia (N)	2021/07/31		100	%	80 - 120
A307068	JFH	Method Blank	Total Ammonia (N)	2021/07/31	<0.015		mg/L	
A307068	JFH	RPD	Total Ammonia (N)	2021/07/31	NC		%	20
A307593	JU2	Matrix Spike [ACS915-07]	D10-ANTHRACENE (sur.)	2021/08/05		154 (1)	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2021/08/05		113	%	50 - 130
			D8-NAPHTHALENE (sur.)	2021/08/05		69	%	50 - 130
			TERPHENYL-D14 (sur.)	2021/08/05		115	%	50 - 130
			Acenaphthene	2021/08/05		102	%	50 - 130
			Acenaphthylene	2021/08/05		104	%	50 - 130
			Acridine	2021/08/05		119	%	50 - 130
			Anthracene	2021/08/05		111	%	50 - 130
			Benzo(a)anthracene	2021/08/05		124	%	50 - 130
			Benzo(b&j)fluoranthene	2021/08/05		116	%	50 - 130
			Benzo(k)fluoranthene	2021/08/05		108	%	50 - 130
			Benzo(g,h,i)perylene	2021/08/05		102	%	50 - 130
			Benzo(c)phenanthrene	2021/08/05		121	%	50 - 130
			Benzo(a)pyrene	2021/08/05		114	%	50 - 130
			Benzo(e)pyrene	2021/08/05		95	%	50 - 130
			Chrysene	2021/08/05		117	%	50 - 130
			Dibenz(a,h)anthracene	2021/08/05		109	%	50 - 130
			Fluoranthene	2021/08/05		136 (1)	%	50 - 130
			Fluorene	2021/08/05		97	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/08/05		102	%	50 - 130
			1-Methylnaphthalene	2021/08/05		71	%	50 - 130
			2-Methylnaphthalene	2021/08/05		82	%	50 - 130
			Naphthalene	2021/08/05		68	%	50 - 130
			Phenanthrene	2021/08/05		122	%	50 - 130
			Perylene	2021/08/05		109	%	50 - 130
			Pyrene	2021/08/05		166 (1)	%	50 - 130
			Quinoline	2021/08/05		99	%	50 - 130
A307593	JU2	Spiked Blank	D10-ANTHRACENE (sur.)	2021/08/05		123	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2021/08/05		121	%	50 - 130
			D8-NAPHTHALENE (sur.)	2021/08/05		105	%	50 - 130
			TERPHENYL-D14 (sur.)	2021/08/05		100	%	50 - 130
			Acenaphthene	2021/08/05		106	%	50 - 130
			Acenaphthylene	2021/08/05		113	%	50 - 130
			Acridine	2021/08/05		108	%	50 - 130
			Anthracene	2021/08/05		106	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(a)anthracene	2021/08/05		114	%	50 - 130
			Benzo(b&j)fluoranthene	2021/08/05		100	%	50 - 130
			Benzo(k)fluoranthene	2021/08/05		98	%	50 - 130
			Benzo(g,h,i)perylene	2021/08/05		96	%	50 - 130
			Benzo(c)phenanthrene	2021/08/05		110	%	50 - 130
			Benzo(a)pyrene	2021/08/05		98	%	50 - 130
			Benzo(e)pyrene	2021/08/05		92	%	50 - 130
			Chrysene	2021/08/05		106	%	50 - 130
			Dibenz(a,h)anthracene	2021/08/05		102	%	50 - 130
			Fluoranthene	2021/08/05		119	%	50 - 130
			Fluorene	2021/08/05		110	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2021/08/05		99	%	50 - 130
			1-Methylnaphthalene	2021/08/05		83	%	50 - 130
			2-Methylnaphthalene	2021/08/05		100	%	50 - 130
			Naphthalene	2021/08/05		99	%	50 - 130
			Phenanthrene	2021/08/05		113	%	50 - 130
			Perylene	2021/08/05		95	%	50 - 130
			Pyrene	2021/08/05		113	%	50 - 130
			Quinoline	2021/08/05		103	%	50 - 130
A307593	JU2	Method Blank	D10-ANTHRACENE (sur.)	2021/08/05		111	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2021/08/05		80	%	50 - 130
			D8-NAPHTHALENE (sur.)	2021/08/05		53	%	50 - 130
			TERPHENYL-D14 (sur.)	2021/08/05		89	%	50 - 130
			Acenaphthene	2021/08/05	<0.00010		mg/L	
			Acenaphthylene	2021/08/05	<0.00010		mg/L	
			Acridine	2021/08/05	<0.000040		mg/L	
			Anthracene	2021/08/05	<0.000010		mg/L	
			Benzo(a)anthracene	2021/08/05	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2021/08/05	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2021/08/05	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2021/08/05	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2021/08/05	<0.000050		mg/L	
			Benzo(a)pyrene	2021/08/05	<0.0000075		mg/L	
			Benzo(e)pyrene	2021/08/05	<0.000050		mg/L	
			Chrysene	2021/08/05	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2021/08/05	<0.0000075		mg/L	
			Fluoranthene	2021/08/05	<0.000010		mg/L	
			Fluorene	2021/08/05	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2021/08/05	<0.0000085		mg/L	
			1-Methylnaphthalene	2021/08/05	<0.00010		mg/L	
			2-Methylnaphthalene	2021/08/05	<0.00010		mg/L	
			Naphthalene	2021/08/05	<0.00010		mg/L	
			Phenanthrene	2021/08/05	<0.000050		mg/L	
			Perylene	2021/08/05	<0.000050		mg/L	
			Pyrene	2021/08/05	<0.000020		mg/L	
			Quinoline	2021/08/05	<0.00020		mg/L	
A307593	JU2	RPD	Acenaphthene	2021/08/05	NC		%	30
			Acenaphthylene	2021/08/05	NC		%	30
			Acridine	2021/08/05	NC		%	30
			Anthracene	2021/08/05	NC		%	30
			Benzo(a)anthracene	2021/08/05	NC		%	30
			Benzo(b&j)fluoranthene	2021/08/05	NC		%	30
			Benzo(k)fluoranthene	2021/08/05	NC		%	30
			Benzo(g,h,i)perylene	2021/08/05	NC		%	30
			Benzo(c)phenanthrene	2021/08/05	NC		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(a)pyrene	2021/08/05	NC		%	30
			Benzo(e)pyrene	2021/08/05	NC		%	30
			Chrysene	2021/08/05	NC		%	30
			Dibenz(a,h)anthracene	2021/08/05	NC		%	30
			Fluoranthene	2021/08/05	NC		%	30
			Fluorene	2021/08/05	NC		%	30
			Indeno(1,2,3-cd)pyrene	2021/08/05	NC		%	30
			1-Methylnaphthalene	2021/08/05	NC		%	30
			2-Methylnaphthalene	2021/08/05	NC		%	30
			Naphthalene	2021/08/05	NC		%	30
			Phenanthrene	2021/08/05	NC		%	30
			Perylene	2021/08/05	NC		%	30
			Pyrene	2021/08/05	NC		%	30
			Quinoline	2021/08/05	NC		%	30
A307594	LL0	Matrix Spike [ACS916-07]	O-TERPHENYL (sur.)	2021/08/05		117	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2021/08/05		113	%	60 - 140
A307594	LL0	Spiked Blank	O-TERPHENYL (sur.)	2021/08/05		119	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2021/08/05		116	%	60 - 140
A307594	LL0	Method Blank	O-TERPHENYL (sur.)	2021/08/05		110	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2021/08/05	<0.10		mg/L	
A307594	LL0	RPD	F2 (C10-C16 Hydrocarbons)	2021/08/05	NC		%	30
A309165	KH2	Matrix Spike [ACS921-03]	Total Aluminum (Al)	2021/08/05		75 (1)	%	80 - 120
			Total Antimony (Sb)	2021/08/05		100	%	80 - 120
			Total Arsenic (As)	2021/08/05		99	%	80 - 120
			Total Beryllium (Be)	2021/08/05		95	%	80 - 120
			Total Cadmium (Cd)	2021/08/05		98	%	80 - 120
			Total Chromium (Cr)	2021/08/05		101	%	80 - 120
			Total Cobalt (Co)	2021/08/05		100	%	80 - 120
			Total Copper (Cu)	2021/08/05		101	%	80 - 120
			Total Lead (Pb)	2021/08/05		97	%	80 - 120
			Total Molybdenum (Mo)	2021/08/05		102	%	80 - 120
			Total Nickel (Ni)	2021/08/05		99	%	80 - 120
			Total Selenium (Se)	2021/08/05		101	%	80 - 120
			Total Silver (Ag)	2021/08/05		98	%	80 - 120
			Total Thallium (Tl)	2021/08/05		98	%	80 - 120
			Total Tin (Sn)	2021/08/05		97	%	80 - 120
			Total Titanium (Ti)	2021/08/05		104	%	80 - 120
			Total Uranium (U)	2021/08/05		103	%	80 - 120
			Total Vanadium (V)	2021/08/05		102	%	80 - 120
			Total Zinc (Zn)	2021/08/05		100	%	80 - 120
A309165	KH2	Spiked Blank	Total Aluminum (Al)	2021/08/05		93	%	80 - 120
			Total Antimony (Sb)	2021/08/05		97	%	80 - 120
			Total Arsenic (As)	2021/08/05		98	%	80 - 120
			Total Beryllium (Be)	2021/08/05		93	%	80 - 120
			Total Cadmium (Cd)	2021/08/05		95	%	80 - 120
			Total Chromium (Cr)	2021/08/05		99	%	80 - 120
			Total Cobalt (Co)	2021/08/05		99	%	80 - 120
			Total Copper (Cu)	2021/08/05		102	%	80 - 120
			Total Lead (Pb)	2021/08/05		98	%	80 - 120
			Total Molybdenum (Mo)	2021/08/05		98	%	80 - 120
			Total Nickel (Ni)	2021/08/05		99	%	80 - 120
			Total Selenium (Se)	2021/08/05		99	%	80 - 120
			Total Silver (Ag)	2021/08/05		96	%	80 - 120
			Total Thallium (Tl)	2021/08/05		98	%	80 - 120
			Total Tin (Sn)	2021/08/05		96	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Titanium (Ti)	2021/08/05		102	%	80 - 120
			Total Uranium (U)	2021/08/05		102	%	80 - 120
			Total Vanadium (V)	2021/08/05		101	%	80 - 120
			Total Zinc (Zn)	2021/08/05		100	%	80 - 120
A309165	KH2	Method Blank	Total Aluminum (Al)	2021/08/06	<0.0030		mg/L	
			Total Antimony (Sb)	2021/08/06	<0.00060		mg/L	
			Total Arsenic (As)	2021/08/06	<0.00020		mg/L	
			Total Beryllium (Be)	2021/08/06	<0.0010		mg/L	
			Total Cadmium (Cd)	2021/08/06	<0.000020		mg/L	
			Total Chromium (Cr)	2021/08/06	<0.0010		mg/L	
			Total Cobalt (Co)	2021/08/06	<0.00030		mg/L	
			Total Copper (Cu)	2021/08/06	<0.00020		mg/L	
			Total Lead (Pb)	2021/08/06	<0.00020		mg/L	
			Total Molybdenum (Mo)	2021/08/06	<0.00020		mg/L	
			Total Nickel (Ni)	2021/08/06	<0.00050		mg/L	
			Total Selenium (Se)	2021/08/06	<0.00020		mg/L	
			Total Silver (Ag)	2021/08/06	<0.00010		mg/L	
			Total Thallium (Tl)	2021/08/06	<0.00020		mg/L	
			Total Tin (Sn)	2021/08/06	<0.0010		mg/L	
			Total Titanium (Ti)	2021/08/06	<0.0010		mg/L	
			Total Uranium (U)	2021/08/06	<0.00010		mg/L	
			Total Vanadium (V)	2021/08/06	<0.0010		mg/L	
			Total Zinc (Zn)	2021/08/06	<0.0030		mg/L	
A309165	KH2	RPD [ACS917-03]	Total Aluminum (Al)	2021/08/05	127 (1)		%	20
			Total Antimony (Sb)	2021/08/05	NC		%	20
			Total Arsenic (As)	2021/08/05	2.8		%	20
			Total Beryllium (Be)	2021/08/05	NC		%	20
			Total Cadmium (Cd)	2021/08/05	NC		%	20
			Total Chromium (Cr)	2021/08/05	NC		%	20
			Total Cobalt (Co)	2021/08/05	NC		%	20
			Total Copper (Cu)	2021/08/05	149 (1)		%	20
			Total Lead (Pb)	2021/08/05	1.3		%	20
			Total Molybdenum (Mo)	2021/08/05	7.4		%	20
			Total Nickel (Ni)	2021/08/05	NC		%	20
			Total Selenium (Se)	2021/08/05	NC		%	20
			Total Silver (Ag)	2021/08/05	NC		%	20
			Total Thallium (Tl)	2021/08/05	NC		%	20
			Total Tin (Sn)	2021/08/05	NC		%	20
			Total Titanium (Ti)	2021/08/05	NC		%	20
			Total Uranium (U)	2021/08/05	4.6		%	20
			Total Vanadium (V)	2021/08/05	NC		%	20
			Total Zinc (Zn)	2021/08/05	129 (1)		%	20
A309168	MAP	Matrix Spike [ACS920-03]	Total Barium (Ba)	2021/08/05		95	%	80 - 120
			Total Boron (B)	2021/08/05		96	%	80 - 120
			Total Calcium (Ca)	2021/08/05		101	%	80 - 120
			Total Iron (Fe)	2021/08/05		106	%	80 - 120
			Total Lithium (Li)	2021/08/05		101	%	80 - 120
			Total Magnesium (Mg)	2021/08/05		106	%	80 - 120
			Total Manganese (Mn)	2021/08/05		104	%	80 - 120
			Total Phosphorus (P)	2021/08/05		98	%	80 - 120
			Total Potassium (K)	2021/08/05		105	%	80 - 120
			Total Silicon (Si)	2021/08/05		98	%	80 - 120
			Total Sodium (Na)	2021/08/05		98	%	80 - 120
			Total Strontium (Sr)	2021/08/05		96	%	80 - 120
			Total Sulphur (S)	2021/08/05		94	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A309168	MAP	Spiked Blank	Total Barium (Ba)	2021/08/05		95	%	80 - 120
			Total Boron (B)	2021/08/05		96	%	80 - 120
			Total Calcium (Ca)	2021/08/05		100	%	80 - 120
			Total Iron (Fe)	2021/08/05		105	%	80 - 120
			Total Lithium (Li)	2021/08/05		100	%	80 - 120
			Total Magnesium (Mg)	2021/08/05		105	%	80 - 120
			Total Manganese (Mn)	2021/08/05		102	%	80 - 120
			Total Phosphorus (P)	2021/08/05		98	%	80 - 120
			Total Potassium (K)	2021/08/05		104	%	80 - 120
			Total Silicon (Si)	2021/08/05		99	%	80 - 120
			Total Sodium (Na)	2021/08/05		95	%	80 - 120
			Total Strontium (Sr)	2021/08/05		96	%	80 - 120
			Total Sulphur (S)	2021/08/05		94	%	80 - 120
A309168	MAP	Method Blank	Total Barium (Ba)	2021/08/05	<0.010		mg/L	
			Total Boron (B)	2021/08/05	<0.020		mg/L	
			Total Calcium (Ca)	2021/08/05	<0.30		mg/L	
			Total Iron (Fe)	2021/08/05	<0.060		mg/L	
			Total Lithium (Li)	2021/08/05	<0.020		mg/L	
			Total Magnesium (Mg)	2021/08/05	<0.20		mg/L	
			Total Manganese (Mn)	2021/08/05	<0.0040		mg/L	
			Total Phosphorus (P)	2021/08/05	<0.10		mg/L	
			Total Potassium (K)	2021/08/05	<0.30		mg/L	
			Total Silicon (Si)	2021/08/05	<0.10		mg/L	
			Total Sodium (Na)	2021/08/05	<0.50		mg/L	
			Total Strontium (Sr)	2021/08/05	<0.020		mg/L	
			Total Sulphur (S)	2021/08/05	<0.20		mg/L	
A309168	MAP	RPD [ACS917-03]	Total Barium (Ba)	2021/08/05	NC		%	20
			Total Boron (B)	2021/08/05	16		%	20
			Total Calcium (Ca)	2021/08/05	2.8		%	20
			Total Iron (Fe)	2021/08/05	NC		%	20
			Total Lithium (Li)	2021/08/05	NC		%	20
			Total Magnesium (Mg)	2021/08/05	3.2		%	20
			Total Manganese (Mn)	2021/08/05	10		%	20
			Total Phosphorus (P)	2021/08/05	NC		%	20
			Total Potassium (K)	2021/08/05	5.0		%	20
			Total Silicon (Si)	2021/08/05	1.0		%	20
			Total Sodium (Na)	2021/08/05	2.9		%	20
			Total Strontium (Sr)	2021/08/05	5.3		%	20
			Total Sulphur (S)	2021/08/05	0.34		%	20
A310784	ZI	Matrix Spike	Dissolved Chloride (Cl)	2021/08/05		114	%	80 - 120
			Dissolved Sulphate (SO4)	2021/08/05		NC	%	80 - 120
A310784	ZI	Spiked Blank	Dissolved Chloride (Cl)	2021/08/05		107	%	80 - 120
			Dissolved Sulphate (SO4)	2021/08/05		104	%	80 - 120
A310784	ZI	Method Blank	Dissolved Chloride (Cl)	2021/08/05	<1.0		mg/L	
			Dissolved Sulphate (SO4)	2021/08/05	<1.0		mg/L	
A310784	ZI	RPD	Dissolved Chloride (Cl)	2021/08/05	1.2		%	20
			Dissolved Sulphate (SO4)	2021/08/05	0.32		%	20
A310797	ZI	Matrix Spike	Dissolved Chloride (Cl)	2021/08/05		NC	%	80 - 120
			Dissolved Sulphate (SO4)	2021/08/05		NC	%	80 - 120
A310797	ZI	Spiked Blank	Dissolved Chloride (Cl)	2021/08/05		107	%	80 - 120
			Dissolved Sulphate (SO4)	2021/08/05		107	%	80 - 120
A310797	ZI	Method Blank	Dissolved Chloride (Cl)	2021/08/05	<1.0		mg/L	
			Dissolved Sulphate (SO4)	2021/08/05	<1.0		mg/L	
A310797	ZI	RPD	Dissolved Chloride (Cl)	2021/08/05	1.3		%	20
			Dissolved Sulphate (SO4)	2021/08/05	0.20		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A312271	MAP	Matrix Spike [ACS915-04]	Dissolved Barium (Ba)	2021/08/06		98	%	80 - 120
			Dissolved Boron (B)	2021/08/06		101	%	80 - 120
			Dissolved Calcium (Ca)	2021/08/06		98	%	80 - 120
			Dissolved Iron (Fe)	2021/08/06		98	%	80 - 120
			Dissolved Lithium (Li)	2021/08/06		97	%	80 - 120
			Dissolved Magnesium (Mg)	2021/08/06		101	%	80 - 120
			Dissolved Manganese (Mn)	2021/08/06		103	%	80 - 120
			Dissolved Phosphorus (P)	2021/08/06		93	%	80 - 120
			Dissolved Potassium (K)	2021/08/06		100	%	80 - 120
			Dissolved Silicon (Si)	2021/08/06		90	%	80 - 120
			Dissolved Sodium (Na)	2021/08/06		101	%	80 - 120
			Dissolved Strontium (Sr)	2021/08/06		94	%	80 - 120
			Dissolved Sulphur (S)	2021/08/06		98	%	80 - 120
A312271	MAP	Spiked Blank	Dissolved Barium (Ba)	2021/08/06		97	%	80 - 120
			Dissolved Boron (B)	2021/08/06		103	%	80 - 120
			Dissolved Calcium (Ca)	2021/08/06		97	%	80 - 120
			Dissolved Iron (Fe)	2021/08/06		105	%	80 - 120
			Dissolved Lithium (Li)	2021/08/06		94	%	80 - 120
			Dissolved Magnesium (Mg)	2021/08/06		98	%	80 - 120
			Dissolved Manganese (Mn)	2021/08/06		110	%	80 - 120
			Dissolved Phosphorus (P)	2021/08/06		97	%	80 - 120
			Dissolved Potassium (K)	2021/08/06		97	%	80 - 120
			Dissolved Silicon (Si)	2021/08/06		97	%	80 - 120
			Dissolved Sodium (Na)	2021/08/06		99	%	80 - 120
			Dissolved Strontium (Sr)	2021/08/06		96	%	80 - 120
			Dissolved Sulphur (S)	2021/08/06		98	%	80 - 120
A312271	MAP	Method Blank	Dissolved Barium (Ba)	2021/08/06	<0.010		mg/L	
			Dissolved Boron (B)	2021/08/06	<0.020		mg/L	
			Dissolved Calcium (Ca)	2021/08/06	<0.30		mg/L	
			Dissolved Iron (Fe)	2021/08/06	<0.060		mg/L	
			Dissolved Lithium (Li)	2021/08/06	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2021/08/06	<0.20		mg/L	
			Dissolved Manganese (Mn)	2021/08/06	<0.0040		mg/L	
			Dissolved Phosphorus (P)	2021/08/06	<0.10		mg/L	
			Dissolved Potassium (K)	2021/08/06	<0.30		mg/L	
			Dissolved Silicon (Si)	2021/08/06	<0.10		mg/L	
			Dissolved Sodium (Na)	2021/08/06	<0.50		mg/L	
			Dissolved Strontium (Sr)	2021/08/06	<0.020		mg/L	
			Dissolved Sulphur (S)	2021/08/06	<0.20		mg/L	
A312271	MAP	RPD [ACS915-04]	Dissolved Barium (Ba)	2021/08/06	7.1		%	20
			Dissolved Boron (B)	2021/08/06	NC		%	20
			Dissolved Calcium (Ca)	2021/08/06	7.6		%	20
			Dissolved Iron (Fe)	2021/08/06	NC		%	20
			Dissolved Lithium (Li)	2021/08/06	NC		%	20
			Dissolved Magnesium (Mg)	2021/08/06	7.4		%	20
			Dissolved Manganese (Mn)	2021/08/06	NC		%	20
			Dissolved Phosphorus (P)	2021/08/06	NC		%	20
			Dissolved Potassium (K)	2021/08/06	5.9		%	20
			Dissolved Silicon (Si)	2021/08/06	7.6		%	20
			Dissolved Sodium (Na)	2021/08/06	7.2		%	20
			Dissolved Strontium (Sr)	2021/08/06	2.4		%	20
			Dissolved Sulphur (S)	2021/08/06	2.2		%	20
A313183	KH2	Matrix Spike	Dissolved Aluminum (Al)	2021/08/07		97	%	80 - 120
			Dissolved Arsenic (As)	2021/08/07		99	%	80 - 120
			Dissolved Copper (Cu)	2021/08/07		101	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Selenium (Se)	2021/08/07		101	%	80 - 120
			Dissolved Zinc (Zn)	2021/08/07		105	%	80 - 120
A313183	KH2	Spiked Blank	Dissolved Aluminum (Al)	2021/08/07		103	%	80 - 120
			Dissolved Arsenic (As)	2021/08/07		97	%	80 - 120
			Dissolved Copper (Cu)	2021/08/07		101	%	80 - 120
			Dissolved Selenium (Se)	2021/08/07		102	%	80 - 120
			Dissolved Zinc (Zn)	2021/08/07		100	%	80 - 120
A313183	KH2	Method Blank	Dissolved Aluminum (Al)	2021/08/07	<0.0030		mg/L	
			Dissolved Arsenic (As)	2021/08/07	<0.00020		mg/L	
			Dissolved Copper (Cu)	2021/08/07	<0.00020		mg/L	
			Dissolved Selenium (Se)	2021/08/07	<0.00020		mg/L	
			Dissolved Zinc (Zn)	2021/08/07	<0.0030		mg/L	
A313183	KH2	RPD	Dissolved Aluminum (Al)	2021/08/07	3.3		%	20

N/A = Not Applicable

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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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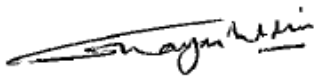
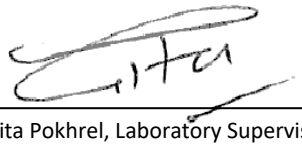
VALIDATION SIGNATURE PAGE

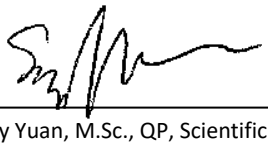
The analytical data and all QC contained in this report were reviewed and validated by:



Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics



Gita Pokhrel, Laboratory Supervisor



Sandy Yuan, M.Sc., QP, Scientific Specialist

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam
A Bureau Veritas Group Company

ADDITIONAL COOLER TEMPERATURE RECORD

CHAIN-OF-CUSTODY RECORD

Page	CHAIN OF CUSTODY #
Page 1 of 1	640339-01-01
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	
Page ___ of ___	

COOLER OBSERVATIONS:

CUSTODY SEAL PRESENT (YES/NO)	INTACT (YES/NO)	ICE PRESENT (YES/NO)	COOLER ID	TEMP 1	TEMP 2	TEMP 3
YES ✓	YES ✓	YES ✓		8	6	9
YES ✓	YES ✓	YES ✓		8	8	8

MAXXAM JOB#: C154208

CUSTODY SEAL PRESENT (YES/NO)	INTACT (YES/NO)	ICE PRESENT (YES/NO)	COOLER ID	TEMP 1	TEMP 2	TEMP 3

RECEIVED BY (SIGN & PRINT)		DATE (YYYY/MM/DD)	TIME (HH:MM)
Reem	Reem Phillipos	2021/07/28	15:10

Bureau Veritas Laboratories
4000 19st N.E, Calgary, Alberta Canada T2E 6P8 Tel:(403) 291-3077 Toll-free:800-563-6266 Fax:(403) 291-9468 www.bvlabs.com

1259

Page of

STANTEC CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION(if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#7122 STANTEC CONSULTING LTD	Company Name:		Quotation #:	C00419	BV Labs Job #: C154208	Bottle Order #: 640339
Contact Name:	ACCOUNTS PAYABLE	Contact Name:	LINDSAY VAN NOORTWYK	Task #:			
Address:	#400, 10220 - 103 Avenue NW EDMONTON AB T5J 0K4	Address:		Project #:	110220771	COC #: C#640339-01-01	Project Manager: Geraldlyn Gouthro
Phone:	(780) 917-7000 Fax: (780) 917-7249	Phone:	Fax:	Profit Centre:			
Email:	SAPinvoices@Stantec.com	Email:	lindsay.vannoortwyk@stantec.com	Site #:	Resolute Bay		
				Sampled By:			

Regulatory Criteria:
- ☐ ATI
- ☐ CCME
- ☐ Other

Special Instructions:

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	Ammonia-N (Total)	AT1 BTEX and F1-F2 in Water	Oil and Grease (Gravimetric, n-Hexane)	Phenols (semivolatile)	Regulated Metals (CCME/AT1) - Total	Routine Water & Diss. Regulated Metals	Total Suspended Solids (NFR)	PAH in Water by GC/MS	# of Bottles	Comments
1		SW21-1	2021/07/25		Water	Y	✓	✓	✓	✓	✓	✓	✓	✓	11	
2		SW21-2					✓	✓	✓	✓	✓	✓	✓	✓		
3		SW21-3					✓	✓	✓	✓	✓	✓		✓		Received in Yellowknife
4		SW21-4					✓	✓	✓	✓	✓	✓	✓	✓		By: J. Mecar
5		SW21-5					✓	✓	✓	✓	✓	✓	✓	✓		@ 4:30 PM
6		SW21-6					✓	✓	✓	✓	✓	✓	✓	✓		JUL 26 2021
7		SW21-DUP					✓	✓	✓	✓	✓	✓	✓	✓		Temp: 3 / 4 / 8
8																7 / 7 / 9
9																
10																ice - yes cs - yes

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: ☐
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Job Specific Rush TAT (if applies to entire submission) ☐
Date Required:
Rush Confirmation Number: *(call lab for #)*

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Nhe Rayanne Pyke	21/07/26	08:00	Reem Phillipos. Reem	2021/07/28	15:10	

Laboratory Use Only: Time Sensitive ☐ | Temperature (°C) on Receipt: see ACTR | Custody Seal Intact on Cooler? ☐ Yes ☐ No

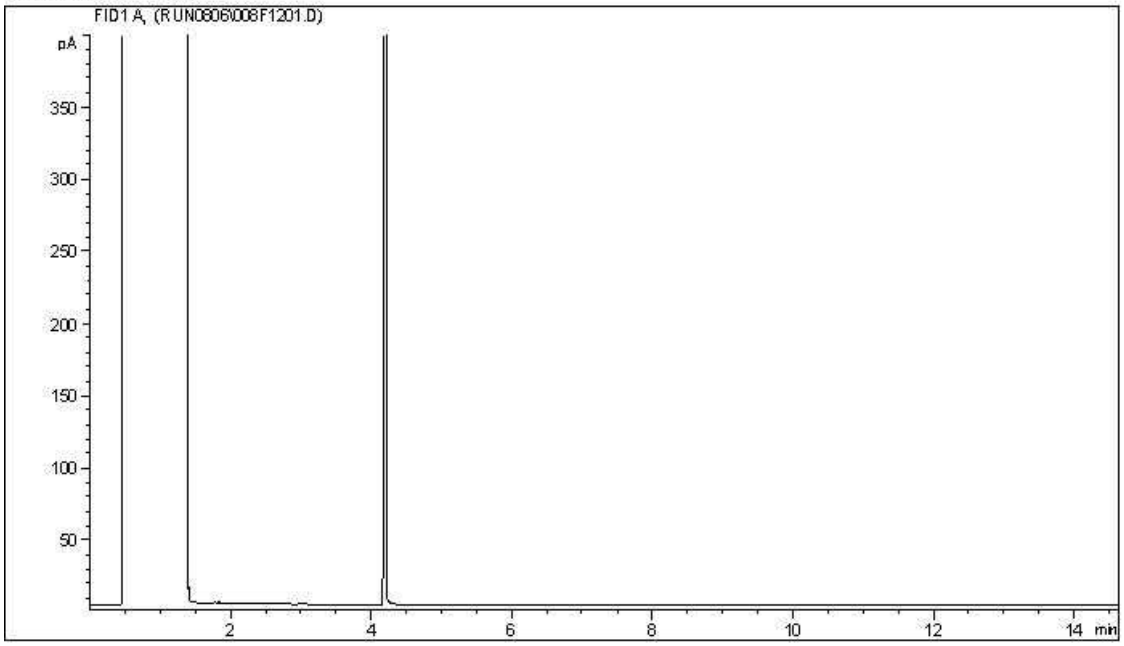
* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER

White: BV Labs Yellow: Client

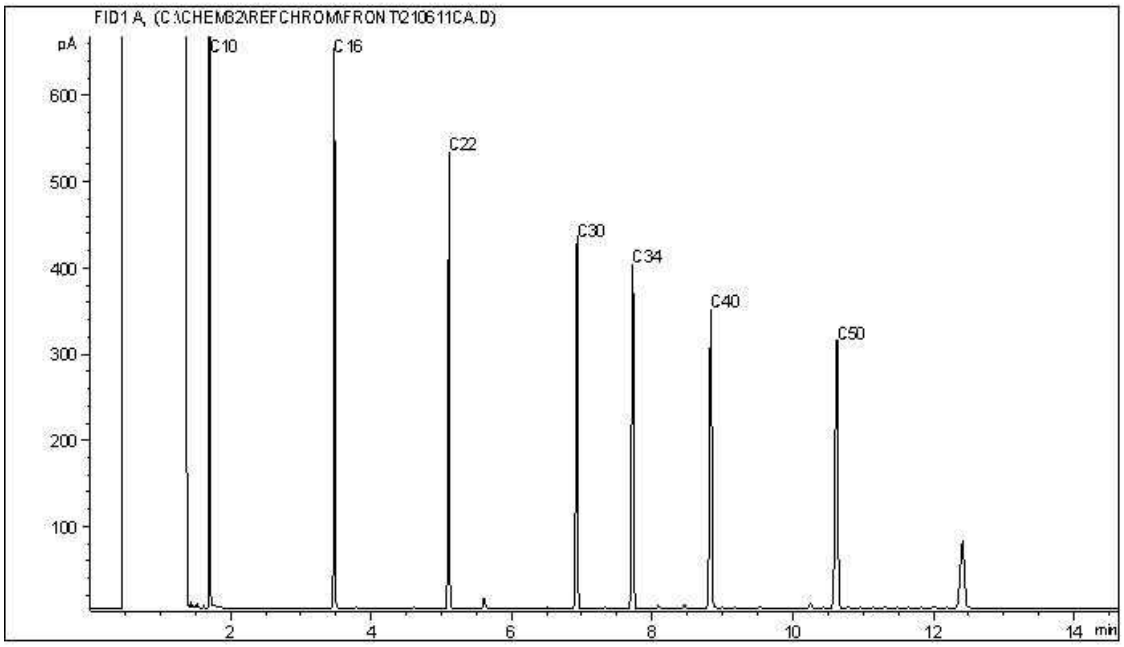
Bureau Veritas Canada (2019) Inc.

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC6



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40
Kerosene:	C7 - C16	Crude Oils:	C3 - C60+

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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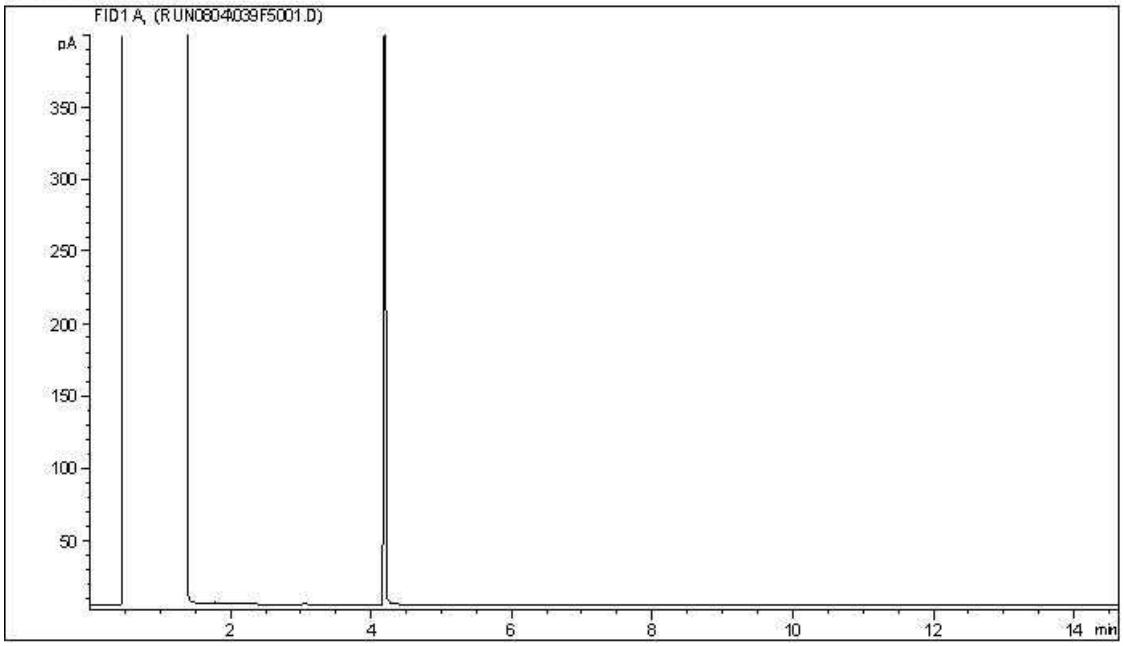

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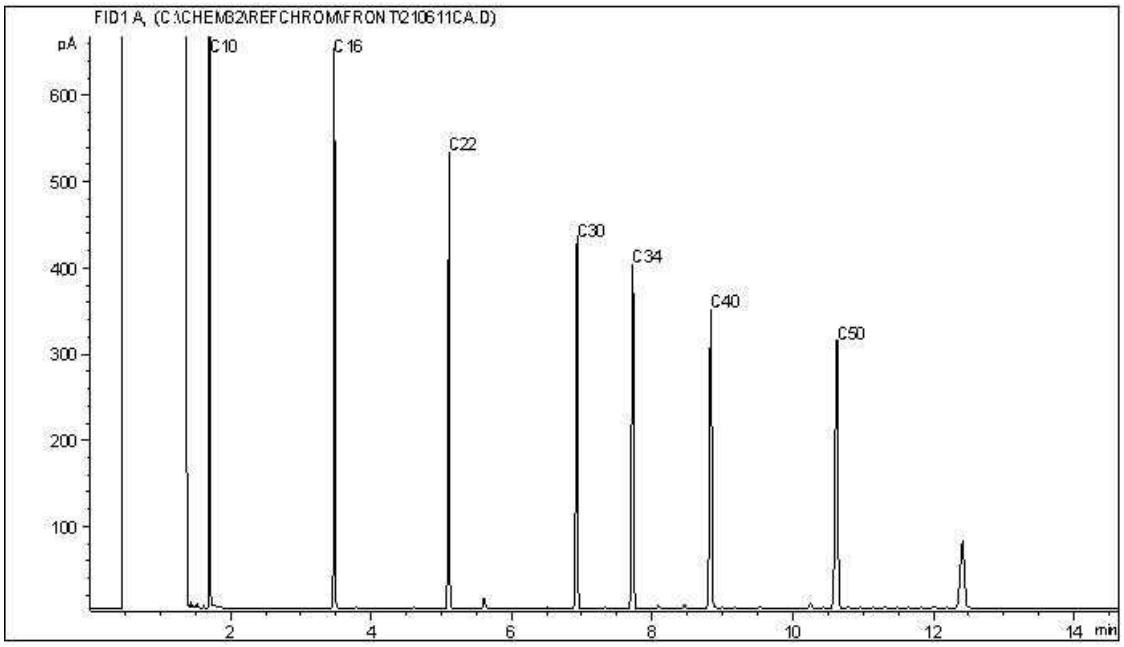

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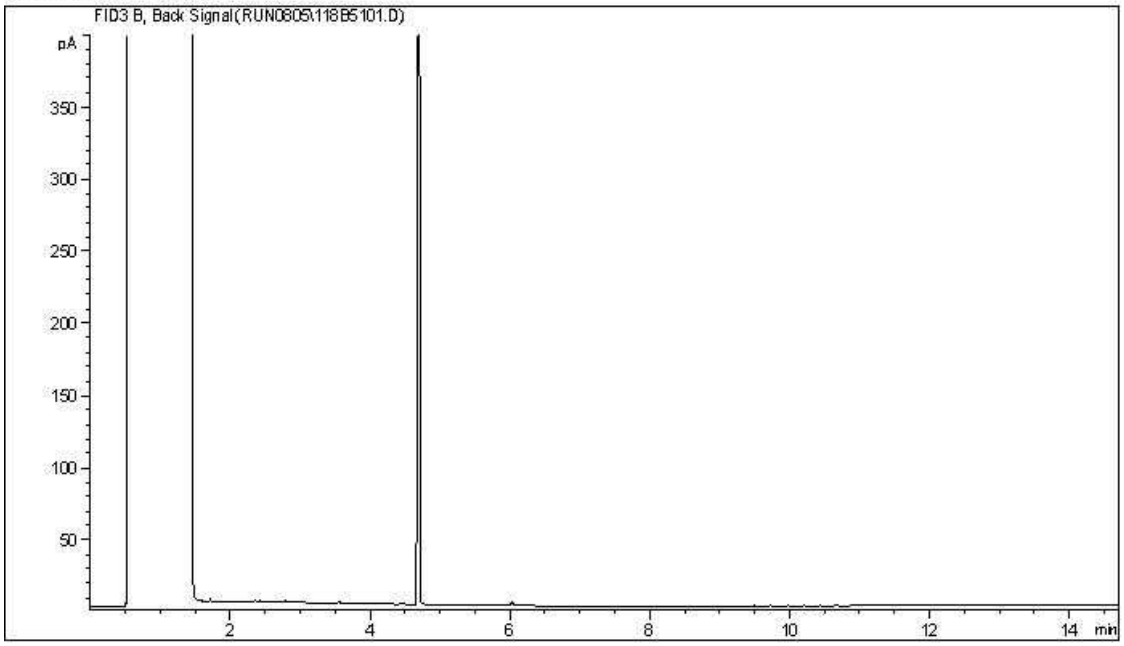
CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Instrument: GC19



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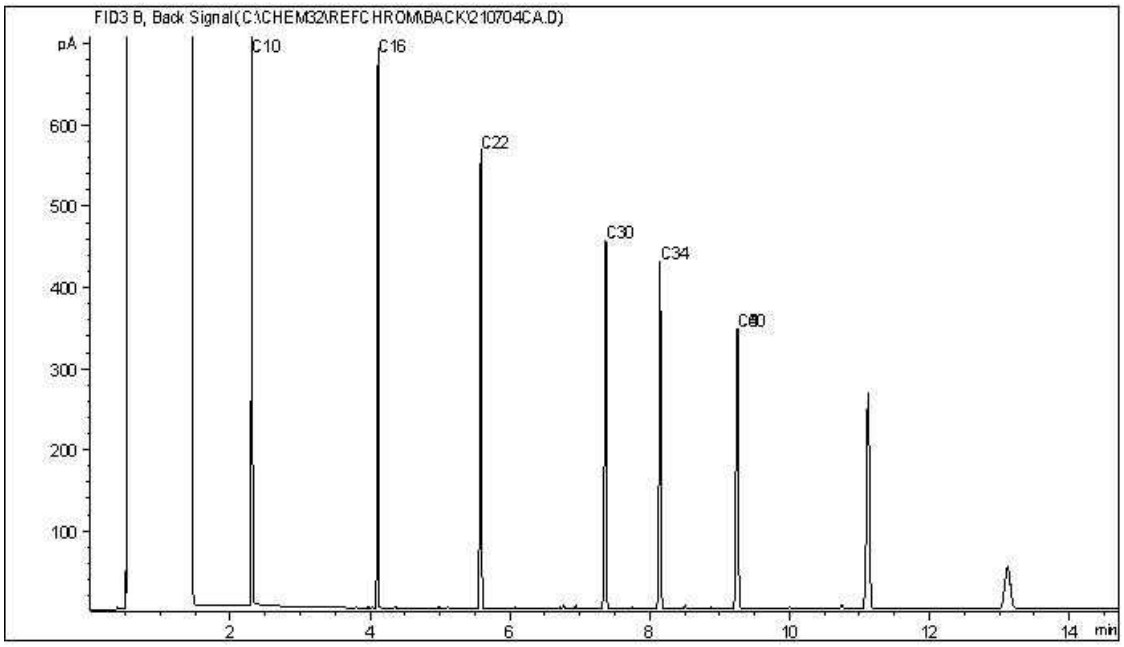

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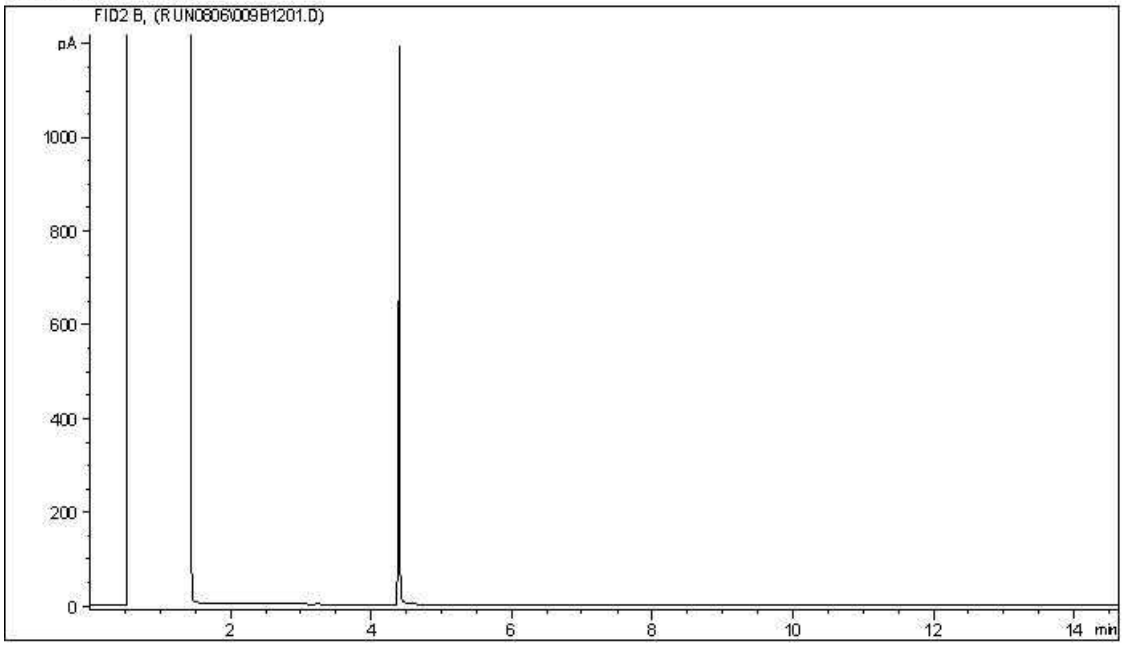

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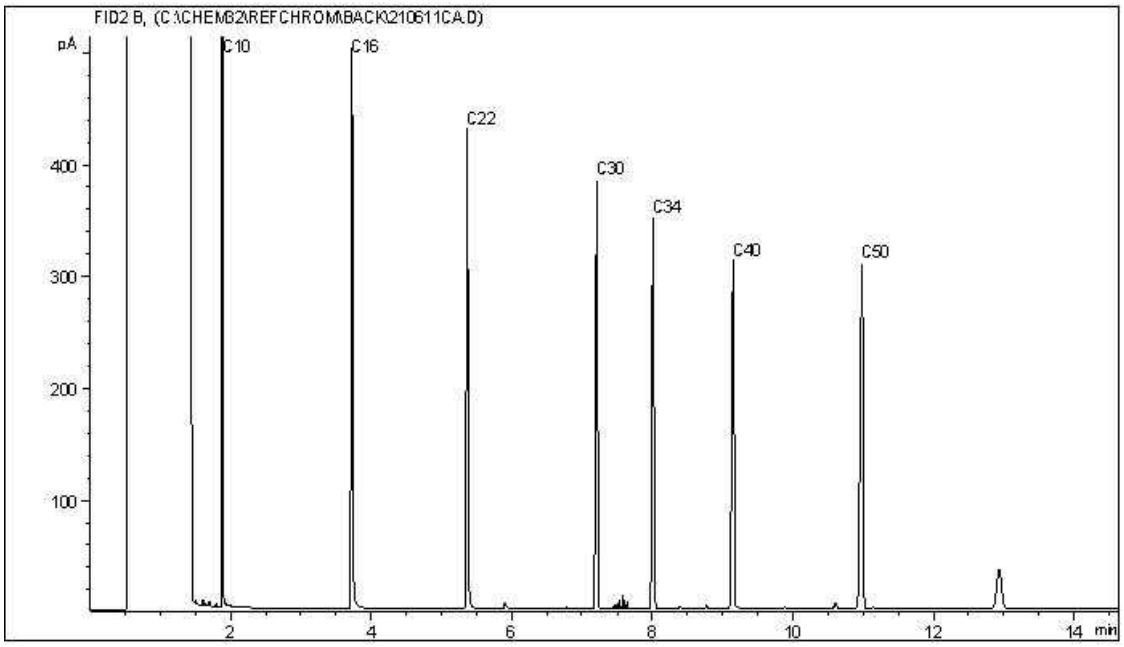

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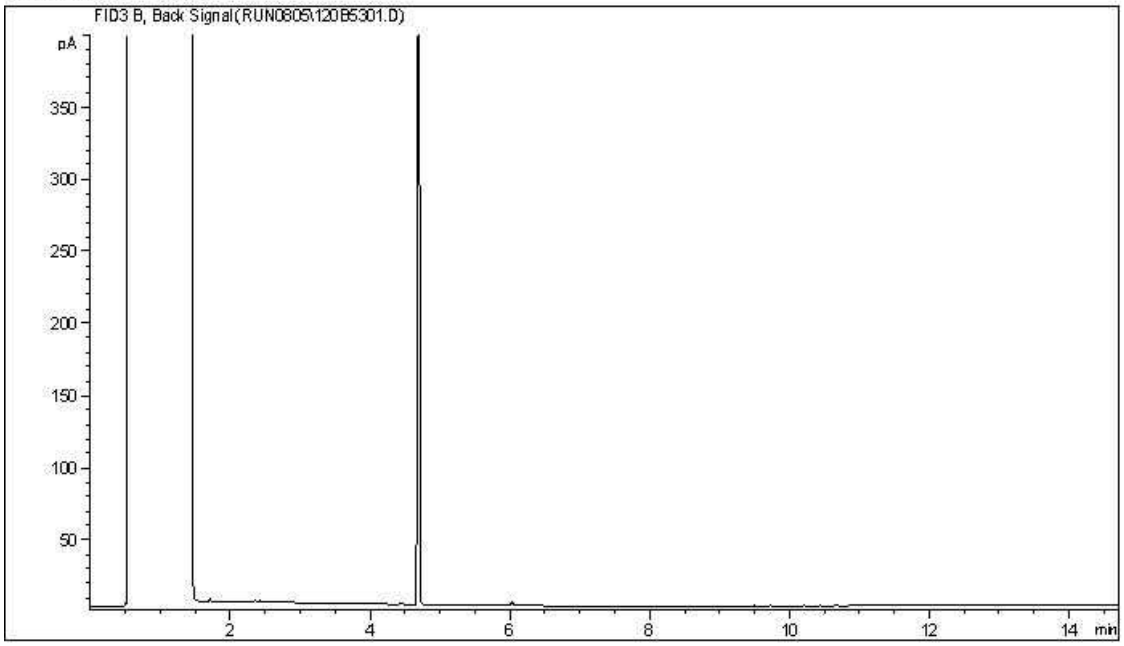

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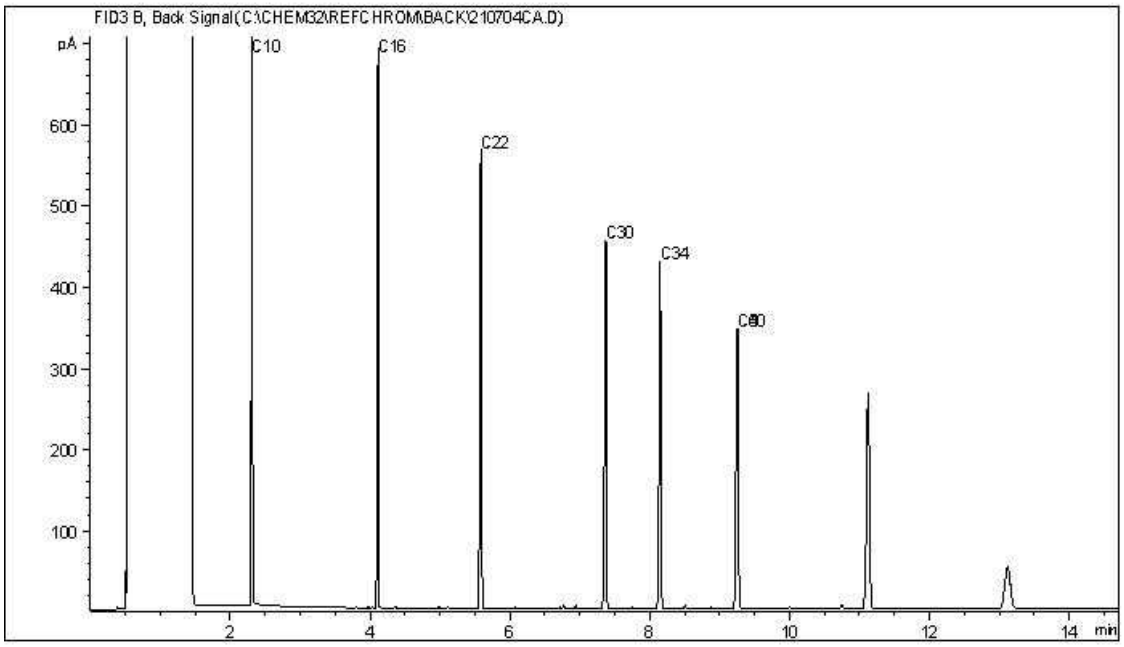

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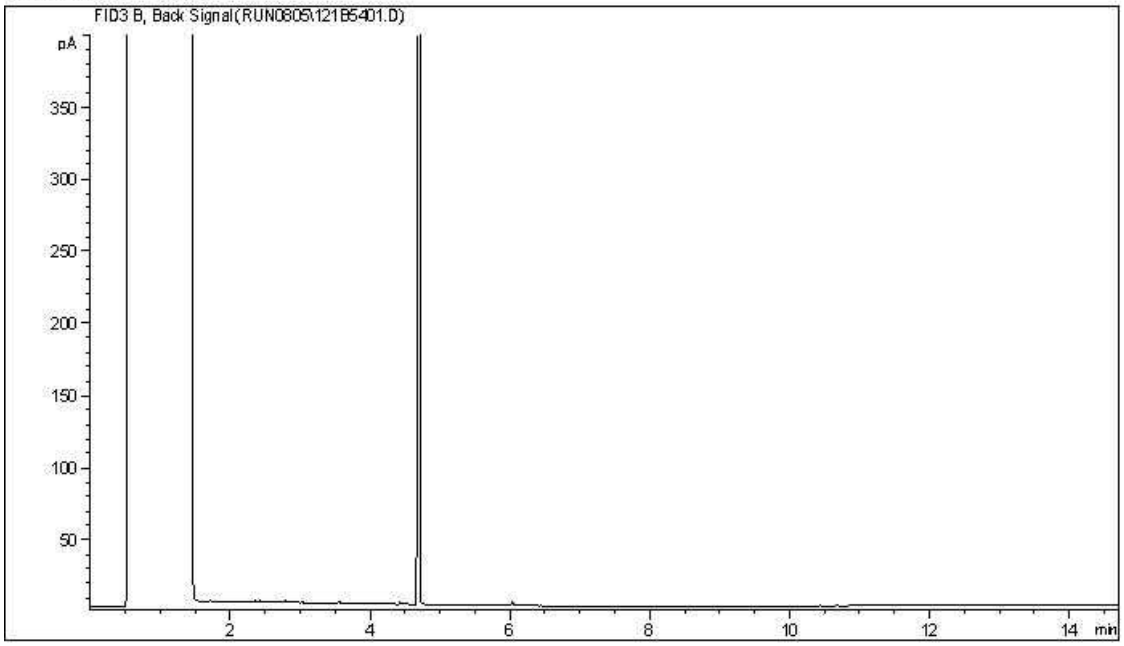

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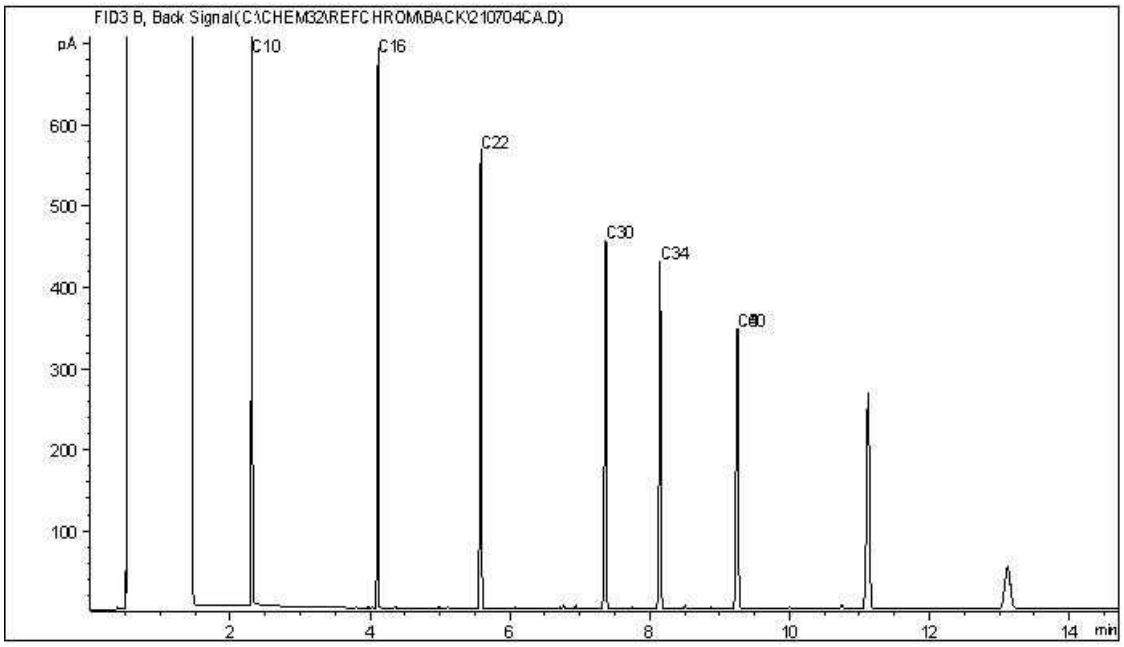

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