PHASE III ENVIRONMENTAL SITE ASSESSMENT
VEHICLE DUMP AND COMMUNITY LANDFILL, IQALUIT, NUNAVUT

FINAL REPORT

Prepared for:
Public Works & Government Services Canada
800 Burrard Street
Vancouver, BC
V6Z 2V8

On behalf of Transport Canada

Prepared by:
Franz Environmental Inc.
308-1080 Mainland Street
Vancouver, BC
V6B 2T4

Project No. 1584-0901
March 2010

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EXECUTIVE SUMMARY

Franz Environmental Inc. (FRANZ) was retained by Public Works and Government Services Canada (PWGSC) and Transport Canada (TC), Prairie & Northern Region and Environmental affairs Division to complete a Phase III Environmental Site Assessment (ESA) of the Vehicle Dump/Community Landfill, Iqaluit, Nunavut. The purpose of this Phase III ESA was to update the 2009 Phase I/II report and determine the current environmental and physical conditions, including a detailed assessment of the site with respect to soil, sediment, surface water and vegetation.

The Iqaluit Vehicle Dump and Community Landfill is situated approximately 1.7 km southwest of the city of Iqaluit, Nunavut. Universal Transverse Mercator (UTM) co-ordinates taken from the center of the site are E521904.94, N7067812.69. Only the top section of the site is accessible by road. The site is located adjacent to Sylvia Grinnell Territorial Park.

The total area of the Landfill and Vehicle dump occupies an area of approximately 7.25 hectares (72,500 m^2), which includes the up-gradient debris area. The area has been used as a military and municipal landfill since the late 1950's to early 1960's.

The United States Air Force (USAF) used this site from between 1955 to 1963 as a metal dump for vehicles, truck bodies, barrels and scrap metal. The majority of materials were deposited in 1963 when the US Military left Frobisher Bay. Shops, buildings, and other materials were simply bulldozed over the cliff. The cliff is a bedrock outcrop rising approximately 50 m above the tidal area where the Sylvia Grinnell River meets Frobisher Bay. The area to the north side of the slope was used by the USAF and the community of Iqaluit as a landfill site for household garbage until sometime in the 1970's. The study area was divided into four Areas of Environmental Concern (AECs).

AEC 1 – Upgradient Buried Debris
AEC 2 – Vehicle Dump
AEC 3 – Main Landfill
AEC 4 – Downgradient, Off-site

The study area was found to contain known and discrete PHC, PCB, metals, and pesticide soil, sediment, and surface water impacts associated with the historical waste disposal activities. Elevated metals (particularly cadmium, copper, lead, and zinc) are widespread; however, spatial distribution appears to be concentrated mostly at the toe of the main landfill and the central portion of the vehicle dump. Volatile Organic Compounds (specifically PCE and TCE) were detected in sediments and surface waters at a discrete area in AEC 3 and 4.

Waste disposal practices have attributed to a slow release of inorganic metals and organic contaminants (e.g PCBs, Pesticides, PHCs) into the environment. It was concluded that the leaching of metals and other organics from the waste debris represents a measureable loading risk to the aquatic environment on site and possibly other surface water bodies (Sylvia Grinnell River).

It is our opinion that remediation/risk management priorities should be based on the removal of physical hazards and source area impacts, as well as the containment and control of metals and organics in the surface water pathways (i.e., Main Drainage through Vehicle Dump) discharging to Sylvia Grinnell River.

The long-term strategy for the Vehicle Dump and Community Landfill should be based on the following goals, in order of priority:

- Removal of Physical Hazards and contaminant source areas;
    a. Vehicles in Vehicle Dump
    b. Waste Debris- Main Landfill
- Containment and control, including risk management, passive treatment systems and monitoring of surface water drainage systems (AEC 3);
- Risk management/remediation of PHC, PCB, and pesticide impacted soils/sediments; and
- Site monitoring and inspections.

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1.0 INTRODUCTION

Franz Environmental Inc. (FRANZ) was retained by Public Works and Government Services Canada (PWGSC) and Transport Canada (TC), Prairie & Northern Region and Environmental affairs Division to complete a Phase III Environmental Site Assessment (ESA) of the Vehicle Dump/Community Landfill, Iqaluit, Nunavut (**Figure 1**).

This project was completed based on FRANZ proposal, P-2962, dated July, 2009 which followed the tasks outlined in PWGSC/TC's Terms of Reference (ToR), dated June, 2009.

1.1 Purpose and Project Objectives

The purpose of this project was to undertake a Phase III Environmental Site Assessment (ESA) at the Vehicle Dump and Community Landfill located adjacent to the Iqaluit Airport. Transport Canada will use this report to demonstrate due diligence and reduce liabilities in order to remediate/risk manage the site to an acceptable level. The purpose of this Phase III ESA was to determine the current environmental and physical conditions, including a detailed assessment of the site with respect to soil, sediment, surface water and vegetation targeting the Landfill site, which has been divided into four Areas of Environmental Concern (AECs).

AEC 1 – Upgradient Buried Debris
AEC 2 – Vehicle Dump
AEC 3 – Main Landfill
AEC 4 – Downgradient, Off-site

1.1.1 Objectives

To accomplish this goal, the objectives included the following:

1. Develop a sampling plan for the collecting soil, sediment, water, vegetation, and hazardous materials to obtain sufficient data for the completion of a Phase III ESA;
2. Conduct a site investigation to:

    - Identify, document, sample, delineate and quantify actual and potential environmental impacts to soil, sediment, surface water, groundwater, and vegetation;
    - Identify, document, sample, delineate and quantify potentially hazardous materials;
    - Identify, document, sample and quantify non-hazardous wastes, including buried or partially buried wastes;
    - Identify and document physical hazards; and
    - Identify and document relevant site conditions and observations.

3. Produce a site visit progress report after the completion of the field visit. The progress report included a summary of field observations, limitations encountered during the site investigation, and analytical budget update;
4. Produce a Phase III ESA Report for the site based on previous Phase I/II ESA reports; and
5. Provide recommendations for future assessment (Phase IIIA) and remediation activities where warranted for the site (provided under a separate cover);

To accomplish this goal, the objectives included the following:

- Obtain representative soil, water, sediment, and vegetation samples in the four AECs; and
- Determine the source, type, and nature of contamination in soil, surface water, sediment, and vegetation.

1.2 Site Features and Background

Iqaluit (formerly named Frobisher Bay) is located on the southern tip of Baffin Island (**Figure 1**). Prior to July 1, 1995 Iqaluit Airport was owned by the Government of Canada and operated by the Quebec Region of the Department of Transport. From July 1, 1995 until April 1, 1999 the airport was owned by the Government of Northwest Territories and operated by the Arctic Airports Division of the Department of Transportation. Since April 1, 1999 the airport has been owned by the Government of Nunavut (GN) and operated by the Nunavut Airports Division of the Nunavut Department of Community Government, Housing and Transportation.

The Hudson's Bay Company set up a trading post along the shores of Frobisher Bay in 1914. Much of the development of the community occurred as a result of both World War II and the Cold War. Between 1941 and 1945, the United States Air Force (USAF) occupied this region as it served as an air base in the North Atlantic Ferry Route to supply Europe during WWII. In the summer of 1942, 550 personnel and 15,000 tons of equipment were shipped to Iqaluit. In 1943, the airport runway was completed and over 300 airport arrivals were recorded. The site was never used as a ferry route and the US military left Iqaluit in 1945. In 1952, construction of the Distant Early Warning (DEW) Line sites began. The US Military returned and used Iqaluit as a Strategic Air Command Base and one of the stations of the Pole Vault communication systems. The site was also used as a major trans-shipment, communications, and construction center for the establishment of the eastern sites of the DEW line (Härtling, 1988).

The study area is located at the West 40 area on the border of Sylvia Grinnell Park and the Sylvia Grinnell River, 1.7 km southwest of the City of Iqaluit. USAF used this site from between 1955 to 1963 as a metal dump for vehicles, truck bodies, barrels and scrap metal. The majority of materials were deposited in 1963 when the US Military left Frobisher Bay. Shops, buildings, and other materials were simply bulldozed over the cliff. The cliff is a bedrock outcrop rising approximately 50 m above the tidal area where the Sylvia Grinnell River meets Frobisher Bay. The area to the north side of the slope was used by the USAF and the community of Iqaluit as a landfill site for household garbage until sometime in the 1970’s.

1.3 Previous Environmental Investigations

Environmental investigations have previously been carried out including chemical analysis of selected media and a volume estimate of metal waste.

Any reference to specific documents is clearly documented in this report. Significant reports for this study include:

- Avati Ltd., 1993. Remediation Options For an Abandoned US Airforce Base and Two Waste Sites at Iqaluit, NWT. October 1993.
- Earth Tech Canada Inc., 2001. Desk Top Review of Scrap Metal Dump Site West of Iqaluit Airport, Iqaluit, Nunavut, Canada. Prepared for Transport Canada, Prairie and Northern Region-Programs.
- Härtling, J., 1988. PCB and Trace Metal Pollution from a Former Military Waste Disposal Site at Iqaluit, Northwest Territories. Master’s Thesis.
- Peramaki, L.A and J.D. Decker, Lead in Soil and Sediment in Iqaluit, Nunavut, Canada and Links with Human Health, Environmental Monitoring and Assessment, 63: 329 – 339, 2000.
- Public Works Canada Literature Review, 1992.
- Royal Military College – Environmental Sciences Group, Victoria, BC, 1995. Environmental Study of a Military Installation and Six Waste Disposal Sites at Iqaluit, NWT. Prepared for Department of Indian and Northern Affairs Canada & Environment Canada.
- Franz Environmental Inc., 2009. Phase I/II Environmental Site Assessment, Vehicle Dump and Community Landfill, Iqaluit, Nunavut. Prepared for Public Works and Government Services Canada on behalf of Transport Canada. February, 2009.

1.4 Project Team

This project was undertaken by a multi-disciplinary team. Key individuals and their respective roles are summarized below:

- Steve Livingstone, M.Sc., P.Geo(l), Project Director
- Ryan Fletcher, C.Tech, CEPIT, Senior Environmental Technician
- Julie Dittburner, BSc, Dipl. Tech, Project Scientist
- Susan Winch, Ph. D, Senior Scientist

1.5 Report Format

The Phase III ESA report presented herein is structured as follows:

Chapter 1 – Introduction: Provides general background information, and outlines the scope and objectives of this study.

Chapter 2 – Study Area Characteristics: Describes the site overview, current land use, and climatic conditions.

Chapter 3 – Physical Site Characteristics: Describes the regional and physical setting of the site and general site characteristics.

Chapter 4 - Historical Review: Summarizes the historical conditions of the property based on the various sources such as air photos, maps and other studies completed on the site.

Chapter 5 – Regulatory Review and Environmental Quality Guidelines: Presents the evaluation guidelines used for the assessment of chemical impacts and provides context to the use of certain environmental quality guidelines used for assessing impacts and screening chemicals of concern.

Chapter 6 – Supplemental Field Investigation: Presents the methodology, level of effort and details of the field investigation.

Chapter 7 – Chemical Distributions and Impacts: Presents an evaluation of the chemical impacts and distributions of contaminants detected at levels exceeding Environmental Quality Guidelines in the areas of concern.

Chapter 8 – Chemical Special Analysis: Presents and evaluation of the chemical impacts and conceptual models

Chapter 9 – Summary and Conclusions

Chapter 10 – Limitations

2.0 STUDY AREA CHARACTERISTICS

2.1 Site Overview

Solid waste disposal both from military activities and the community itself have resulted in the creation of several landfill sites. Historically, the subject site has been referred to as Sylvia Grinnell Park Dump and West 40 – Dump Site # 1. For the purpose of this report, the subject property will be referred to as the Vehicle Dump and Community Landfill or simply “site” or “landfill”.

As shown in **Figure 2**, the study area is divided into two distinct areas:

The main debris/community landfill area, which includes exposed metal debris. A portion of the waste including 45 gallon drum dumps are located at the toe of the bedrock escarpment; and the vehicle dump approximately to the south and parallel with the main landfill;

The landfill site is situated on the slope of an escarpment leading to the Sylvia Grinnell River and has several shallow ravines and coulees partially filled with metal debris. The debris is scattered over a large area and consists of vehicles, equipment, barrels, and scrap metal. Areas of concern include the low areas within the ravines, containing the scrap metal; the base of the escarpment; and the soft bog area where the barrels are stockpiled at the base of the escarpment.

Also, as shown in **Figure 2**, the study area is further divided into four AECs:

AEC 1 – Upgradient Buried Debris
The area of the landfill directly upgradient from the vehicle dump contained buried metal debris identified during the Phase I/II ESA.

AEC 2 – Vehicle Dump
The second area of concern is the vehicle dump located in the drainage feature to the east of the main Landfill area. This area is composed of vehicles, such as trucks, cars, trailers, boilers, tankers, and others. A drainage channel runs directly through the center of this debris pile discharging to the ponds, then the river.

AEC 3 – Main Landfill
The third area is the main landfill area consisting of a mixture of debris spread across a steep graded bedrock slope. The top of the landfill area has been capped with granular material and the toe is left exposed with debris scattered throughout the area.

AEC 4 – Downgradient, Off-site
The fourth AEC is comprised of the downgradient area and areas within Sylvia Grinnell Park. All downgradient and off-site sampling locations were given a separate sampling

nomenclature in order to clearly differentiate their results from those of the on-site sampling locations.

2.2 Current Use of the Landfill Sites and Adjacent Lands

Due to the remote location of the landfill, current use of the site is minimal. Deposition of landfill waste has been discontinued. Local residents occasionally use the site for dumping personal waste and as an access point to Silvia Grinnell Park. The Sylvia Grinnell River is located on the southern side of the landfill site (see **Figure 2**).

Sylvia Grinnell Territorial Park, the oldest of Nunavut's territorial parks, borders the site to the north-western extent. Sylvia Grinnell Park is divided by the Sylvia Grinnell River. The park plays a vital role in the community of Iqaluit by providing an important fishing ground for Arctic Char.

2.3 Current Permit Information and Future Land Use

FRANZ understands that there are no current plans for the use of the property. The property remains undeveloped and part of Transport Canada's inventory of sites. A request put in to INAC mining records department, on November 17, 2008, to search for past and present mineral claims on the property turned up negative. No land claims have been made on the subject property.

2.4 Climate

Iqaluit is located within an arctic climatic zone despite being well outside of the Arctic Circle. The average daily temperature range is -28^{o}C to 7.7 ^{o}C. The area is characterized by very cold winters and short summers that permit the growth of very small, stunted trees. The average monthly temperature is below freezing for eight months of the year. The average annual precipitation is 412.1 mm, which is much wetter than many other localities in the Canadian Arctic islands. There is 198.3 mm annual rainfall and 235.8 mm annual snowfall (www.climate.weatheroffice.ec.gc.ca).

2.5 Natural Environment – Overview

The landfill site covers an area of approximately 72,500 m^2. Iqaluit lies within the low arctic tundra zone, which is ecologically sensitive. The area is underlain by continuous permafrost. Soils are nutrient-poor, silty, shallow and have little, if any, profile development (Peramaki and Decker, 2000). The topography, structural geology and drainage of the study area follow a northwest-southeast trend. Ground cover is a combination of black, silty sand with organic soil, bedrock outcrops, grass and lichens.

Sylvia Grinnell Park is also home to Arctic Hare, Arctic Fox, Caribou, lemmings and other small mammals. Polar Bear have even been sighted on occasion, although they do not frequent the area. The park also plays a significant role in bird migration and over 40 species have been recorded in the park at different times of the year. The park is also the most southern breeding ground for the Ringed Plover. The local vegetation above and below the cliff consists of wet grassland tundra species including mosses, grasses and sedges. On the cliff and bedrock outcrops, vegetation is sparse and consists of lichens with patches of grasses and mosses.

3.0 PHYSICAL SITE CHARACTERISTICS

3.1 Regional and Local Topography

The study area is characterized by rolling terrain that slopes towards the Sylvia Grinnell River. The bedrock over which the metal debris was dumped is approximately 30 m above the River valley. Local terrain consists mainly of bare rocky outcrops with a thin layer of glacial and marine sediments in low lying areas between outcrops.

The elevation of the landfill site is approximately 20 to 30 metres above sea level (m asl) and the Sylvia Grinnell River is at approximately 0 to 5 m asl (http://atlas.nrcan.gc.ca).

3.2 Regional and Local Drainage

The Sylvia Grinnell River is the principal drainage system in the region which discharges into Frobisher Bay. The river is influenced by the tidal action of the ocean which has some of the largest tides in Canada. The river is a major migratory route for Arctic Char.

The natural drainage around the study area is influenced by the bedrock structure and numerous small, elongated ponds that have formed along fault lines and joints. The ponds are shallow (approximately less than 0.5 m deep), and are poorly drained. The high ratio of sediment surface to pond volume allows maximal exchange between the sediment and the water. In the winter, the ponds are frozen to the bottom. There are four large ponds and two smaller ponds. There are small intermittent drainages that join these water bodies (See **Figure 2**).

3.2.1 Tidal Influx

Coastal areas, including Iqaluit, are affected by tidal cycles generating a low and high tide events bi-daily (approximately every 12.5 hours). The water located within three (3) of the ponds onsite are considered brackish marine estuaries. Water within these ponds (Ponds 1, 3, and 4) are intruded with saline water twice daily during high tide. **Figure 3** indicates the water level during the high tide events.

3.2.2 Pond Systems

Pond 1 is located adjacent to the river and is fed from the southeast and north. From the southeast side feed, a metallic sheen in the water and orange staining along the shoreline and water bed was observed. The flow rate is low but sourced directly below the west end of the landfill. The north side feed is of medium flow rate, also with a metallic sheen and orange staining. This north side feed discharges from Pond 2. Surface sediments in Pond 1 consisted of mainly orange-coloured decomposed organic matter mixed with fine black sand. This pond has a discharge into the river with a measured flow rate of 1.10 L/s. Pond 1 is directly affected by the tidal influx and is flushed twice daily with brackish sea water, therefore classifying the pond as a marine estuary.

Pond 2 appears to be fed from the southeast and northeast by slow groundwater discharge that seeps possibly through fractured bedrock. Minor orange staining was observed around the shoreline and debris was present in the pond (tires). The pond is approximately 1 to 1.5 m deep. The pond discharges to the south towards Pond 1. A measured flow rate of 0.60 L/s from Pond 2 into Pond 1 was observed. Sediments in Pond 2 consist of fine brown sand mixed with a thin top layer of decomposed organic matter. Tidal influx does not affect this pond.

Pond 3 is directly down-gradient from the main landfill site. Two gullies are present on the northeast side that would direct rain water and overland flow into the pond. A feed on the northeast side was observed in a flat, low lying area. The discharge is from the southwest corner and is only visibly active during tidal events. Surface sediments in Pond 3 consisted of brown to black decomposed organic matter mixed with brown and black fine sand. Pond 3 is directly affected by the tidal influx and is flushed twice daily with brackish sea water, therefore classifying the pond as a marine estuary.

Pond 4 is at a slightly lower elevation than Pond 3 and does not appear to be hydraulically connected. It is located downstream of the landfill with a high recharge from the vehicle dump area. The main inflow point into Pond 4 had a measured flow rate of 0.90 L/s. Discharge is from the southwest corner of the pond into several small intermittent ponds before discharging to the river. Surface sediments in Pond 4 consisted of black to dark grey fine sand with trace decomposed organic matter. Pond 4 is directly affected by the tidal influx and is flushed twice daily with brackish sea water, therefore classifying the pond as a marine estuary.

Pond 5 was also observed to have orange staining along the shoreline. It is located upgradient of Pond 4, approximately 85 m southwest of the vehicle dump. Pond 5 is heavily vegetated with grasses and contains thick sediment in comparison to the larger ponds (Pond 1, 2, 3, and 4). The flow was measured in the small channel draining into Pond 5 from Pond 6 at a rate of 2.50 L/s. Discharge from the SW side of Pond 5 drains into Pond 4. Tidal influx does not affect this pond.

Pond 6 is located below the escarpment, directly below the vehicle dump. Seeps are present primarily from the north (from vehicle dump), with small seeps from the east and west. Pond 6 is also heavily vegetated with grasses and contains thick sediment in comparison to the larger ponds (Pond 1, 2, 3, and 4). The channel draining directly from the vehicle dump (escarpment) area had a measured flow rate of 0.70 L/s. The flow rate at the discharge point from Pond 6 into Pond 5 was 2.40 L/s. The inflow of surface water and groundwater from the surrounding higher elevations accounts for the increase in discharge at the outflow of Pond 6. Sediments in both Ponds 5 and 6 consisted of 50% decomposed black organic matter and 50% black fine sand. Tidal influx does not affect this pond.

The up gradient area, known as AEC2 - Vehicle Dump, has a large catchment area that drains towards the escarpment, eventually reaching the downgradient ponded areas. Six flow rates were measured within the major drainage channel that runs from the roadway, through the vehicle dump and down the escarpment into Pond 6. The low-lying, upper portion of the vehicle dump with little elevation change had an average measured flow rate of 0.55 L/s. The lower portion of the vehicle dump just upgradient of the escarpment had a greater elevation change. The average measured flow rate here was 2.45 L/s. These flow rates are influenced by an increase of surface water runoff and elevation change at the sample locations.

3.3 Geological Characterization

3.3.1 Regional Bedrock Geology

The southern portion of Baffin Island consists of primarily Precambrian Canadian Shield crystalline rocks. The regional bedrock geology in the study area is part of the Churchill Structural province. The bedrock in the study area is from the Aphebian Era and consists of a variety of metamorphic rocks. Quartz-feldspar-gneissic rocks are the predominant facies in the area around Iqaluit (Härtling, 1988).

The structural geology follows the general northwest – southeast trend of the area. The northwest – southeast aligned fault system in southern Baffin Island were the result of the Upper Cretaceous and early Tertiary rifting associated with the spreading in the Baffin Bay and Davis Strait. The study area lies at the boundary between the Frobisher Bay graben and the Hall Peninsula horst, and the cliff line and the bedrock outcrops follow the overall trend. This structural feature greatly impacts the migration of contaminants from the waste disposal site (Härtling, 1988).

3.3.2 Regional Surficial Soils

The major landforms developed along lines of weakness related to the Upper Cretaceous to Tertiary faulting and along pre-existing draining systems. During the Cenozoic, the area was affected by several glacial advances and retreats. Glacial ice streams flowed to the southeast along the Sylvia Grinnell valley and surrounding areas. The landscape was developed during deglaciation when glacial, glaciofluvial and glaciomarine processes dominated (Mode and Jacobs, 1987). Following glacial retreat of the Frobisher Bay outlet glacier past the study area, the Sylvia Grinnell valley was covered by marine waters until approximately 2 – 3,000 years ago. This would limit the time for modern soil development in the area downslope of the lower cliff line. The area above the cliff line became free of marine influence approximately 5,000 years ago and thus had a longer time for soil development. This time would be too short for substantial bedrock weathering, thus reducing the influence of the bedrock geochemistry on the overlying soils. Both areas would be subject to fluvial and colluvial processes. The predominant weathering process would be mechanical disintegration by differential thermal expansion, frost action and salt weathering in the Sylvia Grinnell estuary (Härtling, 1988).

The shallow soils observed on the site were primarily black sands with some gravel and silts. The soil would have been deposited during glaciation (till) and by marine deposition (silts).

3.3.3 Local Scale Geology

The surficial geology in the region has been described as a thin layer of silty sand with trace to some gravel. The soil is dark brown to black with a high organic content and the presence of rootlets. Bedrock was encountered between 0.8 to 1.6 m bgs (Area 1); 0.1 m bgs (Area 2); between 0.1 and 0.4 m bgs (Area 3); and between 0.3 to 0.8 m bgs (Area 4). Logs for the test pits completed by FRANZ are provided in **Appendix A, Tables A-1 and A-2**.

Grain size analysis was completed on soils and sediments in various locations across the site during the 2008 field investigation. Results of the grain size analysis indicate that both soils and sediments are considered course grained, with the majority of particle size falling in the 2.0mm - 0.063mm range. Detailed grain size data are provided in **Appendix A, Table A-3**.

3.4 Hydrogeological Characterization

3.4.1 Regional Hydrogeology

Overland flow is the primary mode of water transport in the area. Groundwater associated with fractures in the bedrock and through the thin overburden would be likely be minor. Groundwater is not used as a drinking water source in the area. The site lies within the continuous permafrost zone. Permafrost occurs when the ground remains at or below a temperature of 0^{o}C for a minimum of two years. Almost all the moisture in permafrost occurs in the form of ground ice. Within the continuous permafrost zone, permafrost underlies most types of terrain except rivers, lakes and newly consolidated soils, and is at depth under well–drained, coarse-grained landforms such as eskers and kames.

Based on the regional geology, and the presence of permafrost, the groundwater flow directions and velocities are likely complex and controlled by topography, surface water bodies and large faults and fracture zones. It is expected that the surface water bodies are expressions of the water table and are discharge zones for fractured bedrock.

3.4.2 Site Hydrogeology

The shallow soil and presence of bedrock did not allow for the installation of any monitoring wells. Groundwater on site is assumed to flow southwest towards the Sylvia Grinnell River.

4.0 HISTORICAL OVERVIEW

Based on the available historical information, the Vehicle Dump and Community Landfill has had a varied history since the mid 1940s and the construction of the Iqaluit Airport. The known uses, from the past to present, are outlined as follows:

Site Use	Approximate Timelines
1. Vacant Land	1930s to 1940s
2. Airport Runway – End of the old airstrip terminated at this point. Actual site use remained vacant.	1942/43 to late 1940s
3. Landfill and Metal Dump	Late 1950s-Present

The reader is referred to FRANZ (2009) for detailed site-specific historical review and evaluation details.

4.1 Historical Site Features and Overview

Based on a review of the available information, and the interpretation completed by Royal Military College – Environmental Sciences Group in 1995, the historical development is described as follows:

The Iqaluit Airport was constructed in the year of 1942-1943 by the joint effort of a United States and Canadian military initiative known as the "Crimson Route". This route was mandated as a flight path designed to ferry aircraft and equipment to Europe during World War II. The city of Iqaluit was formed as part of an airbase for military support purposes. Activities in Iqaluit eventually diminished with the end of the Second World War.

However, the spark of the Cold War inspired a resurgence of activity at the Iqaluit Airport and the City of Iqaluit as a whole. The main function of this new activity was the construction of the Distant Early Warning (DEW) Line, a series of radar stations stretching from Greenland to the Yukon-Alaska border. The Iqaluit Airport served as a base station for much of the construction activities in the eastern arctic region.

The study area was vacant from the conception of the airbase until a time between 1958 and 1964 as noted during aerial photographs review. According to Härtling, 1988; it is believed that the site was first used as a disposal facility in 1963. These dates concur with the United States Air Force (USAF) withdrawal from the area. The nature of the debris in the main landfill and scrap metal dump suggest that the USAF was likely responsible for depositing a large portion of the wastes currently found on the site.

The site was believed to be used for the disposal of small quantities of municipal waste from the town of Iqaluit in the 1960's, but was abandoned in the early 1970's in favour of the newly constructed Apex dump site. Upon closure of the site, it is believed that a cap consisting of granular material was placed on top and on the face of the landfill site to cover much of the debris (ESG, 1994). A few examples of municipal wastes disposed of at the site include food cans and bottles, kitchen appliances, bicycles, tires, wooden pallets, animal remains, water heaters, toys, etc.

The site has seen little activity since its abandonment in the 1970's. The site is now used as a location for burning of wood debris and a rogue dumping area for residents of the community (these types of activities were observed during the field investigation). Some residents occasionally scavenge the vehicle dump for parts and useful items.

The official site survey for the Vehicle Dump and Community Landfill can be found in Appendix B.

4.2 Aerial Photographs

Aerial photographs (recent and historical) of the study area were obtained from the National Air Photo Library in Ottawa, Ontario. Historical land use changes as well as potential sources of environmental impacts observed from the photographs were noted.

Aerial photographs of the area taken in 1948, 1953, 1955, 1964, 1976, and 1985 were available and are presented in **Appendix C.** The following table 4-1 describes observations about current and historical land use for the subject property and surrounding properties that were noted during review of aerial photographs.

Table 4-1: Summary of Aerial Photographs

Date	Roll # (Scale)	Review
1948 1948/07/23	A11535-43 (1:20,000)	The immediate area does not appear to be impacted by human activity at this point. No evidence of debris or disturbed land is present on the subject property. The runway does not appear to be in use for aircraft at the time of the air photo. This is supported by the presence of debris and drums stacked in rows on the tarmac. One single roadway runs off the center of the runway heading east to the location of the current tank farm and municipal landfill. Visible drainage patterns and water ponding appears to be unchanged with respect to the 2008 site visit observations and the Google (2008) satellite images.

Date	Roll # (Scale)	Review
1952 1952/07/21	A13519-343 (1:15,000)	The immediate area does not appear to be impacted by human activity at this point. No evidence of debris or disturbed land is present on the subject property. The runway is not in use for aircraft at the time of the air photo. There is a large quantity of debris stacked in the center of the airstrip and a roadway is clearly visible down the center of the airstrip. No roadways or paths are visible extending from the southeast extent of the runway. One single roadway runs from the center of the runway heading east to what appears to be three large above ground storage tanks (likely the construction of the current tank farm area). Drainage patterns on site appear in the same as those observed during the 2008 site visit.
1955 1955/07/23	A14869-3 (1:15,000)	The immediate area does not appear to be impacted by human activities. No evidence of debris or disturbed land is evident in the current position of the landfill. The runway is no longer in use for aircraft. Large quantities of debris are present stacked in rows on the far southeast portion of the airstrip. Items visible include vehicles and drums. Vehicle tracks are visible north of the subject property in the marshy area. A small road is beginning off the southeast extent of the runway. Drainage patterns on site appear in the same as those observed during the 2008 site visit.
1964 1964/08/14	VRR2618-195 (1:6000)	The main landfill area (APEC 3) is clearly impacted by dumping activities. The extents of the main landfill appear to coincide with the current landfill extents. The landfill does not appear to be capped and scattered debris is also visible throughout all landfill areas. The vehicle dump (APEC 2) area appears to be more centrally located in the drainage gully than was observed in this past field investigation (2008). The land surrounding the up gradient suspected dumping area (APEC 1) seems to be disturbed by heavy machinery. This is evidenced by many tracks crossing the tundra all throughout the area and clearly disturbed soil in parts of the area. The runway appears to be completely decommissioned and a heavy roadway runs down the center of it. One rough roadway leads from the southeast extent to the vehicle dump and one defined roadway leads from the southeast extent to the main landfill area. Drainage is difficult to see on this aerial photograph, but appears to be the same as that observed during the 2008 site visit.
1976	A24492-70	The main landfill area (APEC 3) is clearly impacted by dumping

Date	Roll # (Scale)	Review
1976/08/19	(1:20,000)	activities. The extents of the main landfill appear to coincide with those observed during the 2008 site investigation. The vehicle dump (APEC 2) area appears to be more centrally located and not spread up the hillside as was observed during the field program. No evidence of dumping is noticeable in the up gradient (APEC 1) area. The runway is no longer in use for aircraft and a defined roadway (in its current position) is seen down the center of the airstrip. One roadway runs off the far southeast end of the runway leading to the landfill area. One other, less defined, roadway also leads off the southeast extent of the airstrip and heads east across the marshy area and to the top of the adjacent hillside. A roadway also leads off to the west (also in its current position). Drainage appears concurrent with 2008 observations.
1985 1985/07/10	A26763-22 (1:10,000)	Observations of the immediate area remain unchanged from the previous (1976) aerial photo. The less defined roadway is now intermittent and does not appear to be in use. It appears that the tank farm has been expanded from the previous aerial photo reviewed. Drainage appears concurrent with 2008 observations.
2008	Google Earth	Observations of the immediate area remain unchanged from the previous (1976 & 1985) aerial photos. The less defined roadway is now gone and no evidence of its use exists. The tank farm appears in its current state. Drainage is as observed during the 2008 site visit.

After a review of the aerial photographs, it appears that the debris was stored for a period of time and then simply bulldozed off the cliff to lie in its current position. The aerial photographs confirmed that the landfill site was created between 1955 and 1964.

4.3 Previous Environmental Investigations and Outcomes

Numerous environmental investigations have been carried out including chemical analysis of selected media. To date, much of the work has focused on historical reviews and the potential for impacted soil and surface water with metals, polychlorinated biphenyls (PCBs), and to a lesser degree with petroleum hydrocarbons (PHCs), pesticides, and polycyclic aromatic hydrocarbons (PAHs).

The following is a brief description of the previous environmental investigations reviewed by FRANZ as well as information obtained from the historical environmental investigations.

Härtling, 1988

Sylvia Grinnell Park was the focus of a thesis paper written by Härtling and Joachim Walter entitled "PCB and Trace Metal Pollution from a Former Military Waste Disposal Site at Iqaluit, Northwest Territories". The purpose of Härtling's thesis was to study the concentrations of PCBs and inorganics in soil, surface water, and sediments within the vicinity of the Sylvia Grinnell Landfill Site.

This thesis states that historical PCB sampling was completed in the fall of 1984 by the Environmental Protection Service. Two of the samples showed "significant" levels of Aroclor 1260 (actual concentration unavailable for review). PCB and inorganic elements in soil and sediments were sampled in the summer of 1987 for the purpose of producing the thesis paper.

It was found that soil concentrations of inorganic elements at the toe of the main landfill (APEC 3), namely arsenic and zinc, exceeded DCC Tier II levels (ESG, 1995). The Härtling thesis did not make comparisons against any specific environmental criteria. Elevated levels of PCBs were detected at the toe of the main landfill and below the vehicle dump site (APEC 2), these PCB levels ranged from 0.02 to 0.5 ppm (µg/g). One elevated surface water sample (in comparison to the remainder of results) was collected from an oily puddle and produced PCB concentrations of 11.1 ppb (µg/L); however, this sample is not expected to be representative of the average surface water conditions at the site.

PCB concentrations were found at minor concentrations in soil and sediments below the main landfill in the area directly impacted by landfill debris. PCB concentrations were also present in the surface sediments of the ponds directly down gradient of the main landfill area and the vehicle dump.

It was concluded that several series of parallel bedrock outcrops are limiting the migration of both PCB and inorganics in soils and surface waters within the site. Minor amounts of the contaminants of concern could be migrating to the River; however, these elements are in trace amounts.

PWGSC, 1992

Public Works and Government Services Canada, Pacific-Western Region, Manitoba Division conducted a literature review in 1992 titled "Literature Review on Abandoned and Waste Disposal Sites in the Iqaluit Area, Northwest Territories." The review focused on all landfill sites around Iqaluit, but summarizes data obtained mainly by Härtling, 1988 on pages 6 and 7 of the review.

During the years of 1986-1989 DIAND initiated a cleanup of the area which included the removal of 97 pieces of electrical equipment and steel drums thought to contain PCBs. These items were removed from the site, stored in barrels in a concrete building near the landfill and then transported to the Ministry of Transport PCB storage facility at the airport. Drums from the landfill were also collected and piled in their current positions at the toe of the main landfill (APEC 3).

Finley, C., 1992

C. Finley from the University of Toronto reviewed the Avati report and the 1992 PWGSC literature review in a publication summary of the state of solid waste disposal in Iqaluit. No new information pertaining to the site was brought to light with this report.

Avati, 1993

Avati Ltd. completed an environmental assessment on Sylvia Grinnell Dump site in 1993 (volume 1993a). During this investigation, four surface water samples and 14 soil samples were collected. Inorganic elements were tested in 11 of the soil samples, none of which exceeded the CCME Residential/Parkland (R/P) criteria at that time. Three of the water samples contained concentrations of inorganic elements that exceeded the CCME FAL criteria at that time. Avati Ltd. also completed a remedial options analysis (volume 1993b). This volume of their report did not address the above mentioned exceedances.

PCBs were detected and exceeded the CCME R/P Remediation Criteria at that time in three soil samples collected during the 1993 investigation.

Remedial options presented included:

- Excavating all debris, sorting, and shipping south all materials or
- Excavating all debris, sorting, and shipping only hazardous materials south and burying remaining debris in local landfill facility.

ESG, 1995

The Royal Military College's Environmental Services Group (ESG) conducted an environmental site assessment of the site in 1995. Eight soil samples, one surface water sample, three vegetation samples, and three sediment samples were collected as part of this investigation.

Inorganics

Four of the seven soil samples analyzed contained elevated concentrations of inorganic elements (specifically lead and zinc) which exceeded the DEW Line Cleanup Criteria (DCC). One vegetation sample analyzed for inorganics contained concentrations of zinc elevated when compared to the soil samples taken in the same location. One of the three sediment samples analyzed contained concentrations of chromium exceeding the Environment Canada Interim Freshwater Sediment Quality Guidelines (ISQG); however, elevated levels of chromium were also detected in background sediment samples.

PCBs

Eight soil samples were analyzed for PCBs and all contained concentrations below the DCC criteria at that time. It should be noted that soil samples were elevated considerably in comparison to background sample locations. One vegetation sample was analyzed for PCBs and contained concentrations that were 41 times the background levels. The three sediment samples contained detectable levels of PCBs, but remained below the Environment Canada ISQG.

Pesticides were tested in one soil sample and contained concentrations below the applicable criteria at that time. Two soil samples were also analyzed for PAHs, most PAH analytes were present, but below the CCME R/P criteria.

Recommendations & Conclusions

Inorganics

It was found that lead (409, 414, and 1140 ug/g) and zinc (720 and 12820 ug/g) were elevated in soils; however, plants remained unaffected by the elevated inorganic elements. Sediments from Sylvia Grinnell River contained trace inorganic elements only slightly elevated when compared to background. It was suggested that sediment loading was not occurring in Sylvia Grinnell River as a result of land filling activities at the site.

PCBs

Soils at the toe of the main landfill (APEC 3) were elevated (mean level of 0.13 ug/g, high of 0.71 ug/g) and approached the DCC criteria, while concentrations elsewhere remained low. PCBs remained undetected in surface water collected below the vehicle dump (APEC 2). Vegetation appeared to be impacted due to the presence of elevated PCB concentrations in soil at the toe of the main landfill. No evidence was established to suggest migration of PCBs to the Sylvia Grinnell River.

Cleanup Recommendations

It was recommended that soil remediation take place at the toe of the landfill site to address the elevated levels of inorganic elements identified through this and previous environmental investigations. Soils should be removed from contact with the arctic ecosystem between the toe of the landfill and the first set of parallel bedrock outcrops.

It was recommended that all metallic debris be removed from the site and be recycled and/or shipped south. The stability of the main landfill (APEC 3) should also be addressed, as it presents an immediate physical hazard and risk to those using the area for recreational purposes. It was proposed that sufficient amounts of granular material be added to the landfill face to achieve a safe and suitable slope angle and ensure that all debris remains buried at an adequate depth. The newly obtained slope should be seeded to prevent erosion and help maintain slope stability.

Peramaki, A., Decker, J.F., 1998

A study was conducted with regard to lead contamination at the Landfill Site. The study was conducted to determine the spatial distribution of soil and sediment-associated lead.

Sylvia Grinnell Park exhibited the highest concentrations of lead found in any of the sites considered during this investigation. These lead concentrations were found to be in the same order of magnitude as previously reported by ESG, 1995.

FRANZ, 2009

In 2008, FRANZ conducted a Phase I/II Environmental Site Assessment (ESA) of the vehicle dump and community landfill, and reported the following findings:

- Various inorganic elements (Al, As, Cd, Cr, Cu, Pb, Zn) and PCBs exceeded applicable guidelines in surface waters and sediments throughout the site, and sediments in APEC 2 also exceeded guidelines for DDT and its degradation products (DDD, DDE).
- Metals (Ba, Cd, Cu, Pb, Zn) were also detected above guideline levels in surficial soils (APECs 1, 2 and 3).
- Soils in APECs 2 and 3 exceeded guidelines for PCBs.
- Some APEC 3 soils contained noncompliant levels of PAHs and F2-F4 petroleum hydrocarbon fractions.
- Surface waters in APEC 4 (downgradient and off-site) exceeded CCME FWAL criteria for cadmium and copper, indicating that the site may contribute low levels of metal loading to the Sylvia Grinnell River.
- One exceedance of trichloroethylene (a volatile organic carbon compound, or VOC) was also detected in surface water collected from the Sylvia Grinnell River (APEC 4).

4.4 Present Conditions

The Vehicle Dump and Community Landfill is not in active use. **Figure 2** presents an aerial view of the site and representative photos for each AEC are shown in **Appendix D**.

The site was abandoned as a landfill in the mid 1970's. Since then it has remained relatively unchanged. The extent of the vehicle dump area has increased and approximately 100 pieces of electrical equipment were removed between 1987 and 1989. No buildings or infrastructure are present on the site. Site use is understood to be strictly recreational with no known development strategies for the future.

The site consists of a main landfill area, a vehicle dump, and a series of streams and ponds meandering their way to the Sylvia Grinnell River via linear surficial features.

4.5 AECs and Contaminants of Concern (COCs)

Based on the previous environmental assessment activities completed to date and the historical records review, the following Areas of Environmental Concern (AECs) and Contaminants of Concern (COCs) formed the basis for the Phase III ESA.

Please note that the AEC/APEC boundaries have been altered from the Areas of Potential Environmental Concern (APECs) defined in FRANZ (2009) to better accommodate contaminant migration evaluation. Therefore, some samples annotated with 'A3' (from the 2008 investigation) are now located in AEC 2. Other small variations in sample nomenclature may also exist.

The Vehicle Dump and Community Landfill has four main areas that contain a zone(s) of contamination and has been divided into four AECs as follows (See **Figure 2**).

AEC 1 – Upgradient Buried Debris

The area of the landfill directly upgradient from the vehicle dump contained evidence of potential buried metal debris during the site visit. The area also appears to be disturbed on the 1964 aerial photographs.

AEC 2 – Vehicle Dump

The second area of concern is the vehicle dump located in the drainage feature to the east of the main Landfill area. This area is composed of vehicles, such as trucks, cars, trailers, boilers, tankers, and others. A drainage channel runs directly through the center of this debris pile discharging to the ponds, then the river.

AEC 3 – Main Landfill

The third area is the main landfill area consisting of a mixture of debris spread across a steep graded bedrock slope. The top of the landfill area has been capped with granular material and the toe is left exposed with debris scattered throughout the area.

AEC 4 – Downgradient, Off-site

The fourth are is comprised of any section of the site that is off-site and in Sylvia Grinnell Park. All downgradient and off-site sampling locations were given a separate sampling nomenclature in order to clearly differentiate their results from those of the on-site sampling locations.

The AECs, PCOCs and COCs are summarized in the following **Table 4-2**:

Table 4-2: Summary of AECs and COCs

AEC	COCs/PCOCs
AEC 1- Up Gradient Buried Debris	PHCs, Metals, PCBs, and Pesticides
AEC 2 – Vehicle Dump	PHCs, PAHs, Volatile Organic Compounds (VOCs), Metals, PCBs, and Pesticides
AEC 3 – Main Landfill	PHCs, PAHs, VOCs, Metals, PCBs, and Pesticides
AEC 4 – Down Gradient, Off Site	PHCs, PAHs, VOCs, Metals, PCBs, and Pesticides

5.0 REGULATORY REVIEW AND ENVIRONMENTAL QUALITY CRITERIA

5.1 Soil, Sediment, Surface Water, and Hazardous Materials Guidelines

5.1.1 Regulatory Framework

The Contaminated Sites Management Working Group for federal government departments has defined a contaminated site as a site at which substances occur in concentrations that either: 1) are above background levels and pose, or are likely to pose, an immediate or long-term hazard to human health or the environment; or 2) exceed levels specified in policies and/or regulations. For the latter, the Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines (CCME, 1999 and annual updates), including the Canada-Wide Standards for Petroleum Hydrocarbons in Soil (CCME, 2001 and updates) were applied in the numerical comparison of laboratory data to determine whether the site should be deemed a contaminated site.

In Nunavut, environmental site assessments and site remediation projects are typically based on the use of federally developed generic guidelines. Risk assessment principles have been used extensively in developing federal generic clean-up criteria for contaminated sites. However, as the term “generic” implies, they are intended for broad applications and are usually over-protective to avoid underestimating potential risks associated with a wide range of site conditions and potential land uses.

The chemical data obtained during this Phase III ESA were preferentially compared to established guidelines from the federal CCME. The federal guidelines are relevant since the site(s) is currently federally managed and Nunavut has adopted the CCME approach.

The federal CCME guidelines were derived based on potential impacts to humans and ecological receptors.

5.1.2 Federal Guidance

The CCME Canadian Environmental Quality Guidelines (1999) publication compiled all previously released soil and groundwater criteria and guidelines into one publication. Updates have been issued for selected chemicals over the past several years. These guidelines for soil, sediment and water are numerical limits intended to maintain, improve or protect environmental quality and human health at contaminated sites And have been derived using toxicological data. There are four separate sets of guidelines for soil quality and five sets of guidelines for water quality. The guidelines are separated into groups for different types of land and water use.

Soil

The soil analytical results were compared to the Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines, specifically the Canadian

Soil Quality Guidelines for the Protection of Environmental and Human Health (CSQG), and with the Canada-Wide Standards (CWS) for Petroleum Hydrocarbons (PHC) in soil. These are applied to most federal contaminated sites. The criteria are numerical limits intended to maintain, improve or protect environmental quality and human health at contaminated sites. The guidelines are derived using toxicological data and aesthetic considerations.

The standards and guidelines adopted for this evaluation are as follows:

- Canadian Environmental Quality Guidelines (CEQGs; CCME, 2007) for commercial/industrial land use (residential/parkland land use standards were also shown for comparison purposes); and
- Canada-Wide Standards for Petroleum Hydrocarbon (CWS) in soil (CCME, 2008a) – Tier 1 Levels for commercial land use (residential/parkland land use standards were also shown for comparison purposes).

The Canada-Wide Standards for Petroleum Hydrocarbon in soil (CCME, 2008a) presents criteria for petroleum hydrocarbons in soil. These numerical standards are based on the assessment and consistent management of risks posed to humans, plants, animals and environmental processes under four common land uses (agricultural, residential/parkland, commercial and industrial). Under Tier 1 of the CWS, specific numerical levels are presented for the four land uses, two soil textures (coarse and fine) and the four defined petroleum hydrocarbon fractions (F1 (nC6-nC10); F2 (nC10-nC16); F3 (NC16-nC34); F4 (nC34+)). There are several additional levels for fractions F1 and F2 to protect surface water where groundwater discharges to surface water, where groundwater is used for potable purposes and where residential buildings have slab-on-grade construction. These levels are deemed to be protective of all receptors based on the defined conditions in all settings.

The CWS also includes the option to generate Tier 2 levels where site-specific information indicates that site conditions exist that modify human or ecological exposure to PHC contamination. Such conditions may alter risks significantly relative to the generic conditions used to derive Tier 1 levels. Furthermore, Tier 3 under the CWS involves developing site-specific cleanup levels and management options using general and site-specific information in conducting a risk assessment.

Given the nature of the work, only the Tier 1 levels are used as comparison criteria. The appropriate levels are presented with the laboratory analytical data in tables.

Sediment

Canadian Sediment Quality Guidelines (CSQGs) are provided in the CCME Canadian Sediment Quality Guidelines for the Protection of Aquatic Life summary tables (Tables 1 and 2), Update 2002. Sediment assessment guidelines depend on the probability of an effect to occur in organisms inhabiting the sediment. The CCME has established Interim Sediment Quality Guidelines (ISQG) and Probable Effect Limits (PEL) for common contaminants in sediment. Sediment quality guidelines are scientific tools that synthesize information regarding the relationships between sediment concentrations of chemicals and any adverse biological effects resulting from exposure to these chemicals. For each parameter, CCME guidelines have identified two numerical limits: the lesser limit is termed the “Interim Sediment Quality Guideline” (ISQG) value and the greater limit is called the “Probable Effect Level” (PEL). Sediment chemical concentrations below ISQG values are not expected to be associated with any adverse biological effects, while concentrations above PEL values are expected to be frequently associated with biological effects. Chemical concentrations between the ISQG and PELs represent the range in which effects are occasionally observed.

The CSQGs include the option to allow comparison against freshwater conditions (Table 1) and marine environments (Table 2). Given the complex conditions at the lower site, both Tables 1 and 2 have been referenced in the sediment summary tables (**Tables 7-13** through **7-18**).

<u>*Surface Water*</u>
Canadian water quality guidelines are intended to provide protection of freshwater and marine life from anthropogenic stressors such as chemical inputs or changes to physical conditions. In 1999, CCME also updated the surface water quality guidelines for the protection of aquatic life. The Freshwater Aquatic Life (FWAL) and Marine Aquatic Life (MWAL) water quality guidelines were applied to the surface waters at the site depending on the location on site.

The guidelines adopted for this evaluation are summarized as follows:

- Surface water quality was compared to the CCME guidelines for the protection of freshwater aquatic life (FWAL) and marine aquatic life (MWAL); 2007 Update.
- CCME 2000 Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil. For the assessment of surface water, the Tier 1 Commercial guidelines for coarse-grained soils were used in addition to the residential/parkland guidelines for comparison purposes.

5.1.3 Chemical Evaluation – Process for Selection of Environmental Criteria

The chemical evaluation was conducted by comparing the detected concentrations for each substance to the CCME guideline for Commercial (CL) and residential/parkland (RD/PL) land use standards. The following selection process was used to identify which EQG to use for the chemical evaluation.

- If only one guideline was available from the federal CCME for a chemical, then it was adopted for use
- If normal average background concentrations for a chemical in the study area were higher than CCME criteria, then the background concentration was selected as the appropriate point of comparison. It should be noted that the average background concentrations were below the CCME guidelines.
- If the guideline was below the laboratory's method detection limit, it was (not worried about as current technology does not allow any lower detection limits).

5.2 Designated Substances

5.2.1 Selection of Environmental Quality Guidelines

Criteria, rationale and regulatory jurisdictions for each component of the designated substances survey are presented below.

Material Type	Classifications	Evaluation Criteria
Lead-Based Paints	Lead-based paints with leachable lead > 5 mg/L are hazardous materials under Schedule 6 of the Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (May 17, 2005) of CEPA (1999).	Paints in excess of 5 mg/L leachable lead (TCLP analysis) were deemed hazardous. Where insufficient paint was available for Pb_{TCLP} analysis, the territorial criteria of 600 mg/kg total lead was used for classification purposes.
PCBs in Soils	PCBs in soils are regulated under the Canadian Environmental Protection Act (CEPA) and transported according to TDGA and CEPA.	PCB content >50 ug/g is considered a hazardous waste. Materials with PCBs above the CCME soil criteria (e.g., 1.3 ug/g) but below 50 ug/g is not hazardous waste
Liquids/Chemicals	Waste solvents and liquids are a contaminant under the EPA of Nunavut and must be managed as a hazardous waste.	Absence/presence of liquids/chemicals in containers.
Batteries	Waste batteries are a contaminant under the EPA of Nunavut and must be managed as a hazardous waste	Absence/presence of waste batteries.

5.3 Vegetation Evaluation Guidelines

The Ontario Ministry of the Environment (MOE) "Upper Limit of Normal" contaminant guidelines (ULN) represent the expected maximum concentrations of contaminants in surface soil (non-agricultural), foliage (deciduous and current year coniferous trees and shrubs), grass, moss bags and/or snow from areas of Ontario not subject to the influence of point sources of emissions. Rural guidelines are based upon samples collected from undeveloped areas.

These guidelines do not represent maximum desirable or allowable levels of contaminants. Rather, they serve as levels which, if exceeded, would prompt further investigation on a case-by-case basis to determine the significance, if any, of above-normal concentrations. Concentrations which exceed the guidelines are not necessarily toxic to plants, animals or humans. Concentrations below the guidelines would not normally be considered toxic (MOEE HCB Phytotoxicology Field Investigation Manual – 014-3511-93).

6.0 SUPPLEMENTAL FIELD INVESTIGATION

6.1 Field Reconnaissance

Following the mobilization of the field sampling crew to the site and a site health and safety briefing, FRANZ completed a brief site reconnaissance tour on September 15, 2009. The purpose of this tour was to assess the current physical site conditions, identify any changes from the 2008 field investigation, locate potential soil, surface water and sediment sampling locations, and to inspect any other potential environmental impacts.

The conditions on site remained consistent with that observed during the 2008 investigation. General site descriptions, as well as AEC designations are provided in Section 4 of this report.

The information collected above, in combination with the complete historical records review, was used in the design of the detailed sampling plan.

6.2 Detailed Sampling Plan

This sampling plan was prepared and designed to perform a detailed assessment of the site with respect to soil, sediment, groundwater, surface water, vegetation and waste material inventory. It is based on discussions with PWGSC/Transport Canada, a review of the Terms of Reference (ToR) dated June 2009 for an Environmental Site Assessment (ESA) and the Franz Environmental Phase I/II Environmental Site Assessment, Vehicle Dump and Community Landfill, Iqaluit, Nunavut, dated February 2009.

The sampling plan described our prescribed sampling methods and types of measurements/tests to be conducted during the Phase III ESA including:

- Proposed sampling locations and quantities
- Proposed sampling or measurement methods
- Parameters being sampled
- Description of objectives with rationale
- Proposed QA/QC methods
- Proposed background sampling protocols
- Proposed health and safety plan (separate)

During the field activities, areas of environmental concern were prioritized and assessed in accordance with the proposed scope of work. In addition, based on visual observations at the time of the field program, sampling locations were refined from the initial sampling plan to target the most likely impacted areas and/or to attempt coarse grid delineation of impacts.

6.3 Health and Safety Procedures

FRANZ field programs are always subject to a site-specific Health and Safety Plan (HSP). We use a Corporate Health and Safety Plan as a general guide in developing the site-specific plan to which all team members and subcontractors must adhere. Protection of the public and personnel from exposure to any contaminated materials at the site was priority during the field program.

Prior to conducting any of the onsite work, a site-specific health and safety plan was developed, distributed and discussed with all field personnel (See **Appendix E**). As a minimum, full personal protective equipment (e.g., hard hats, safety glasses, reflective vests and Nitrile gloves) were worn at all times during field activities. Tyvek overalls and respirators were made available to all field personnel, should the site health and safety officer (SHSO) find their use necessary.

6.4 Sampling Methodology

6.4.1 Test Pit Excavations

Test-pitting was considered the appropriate method for conducting observations of soil conditions and collecting near-surface soil samples in areas of environmental concern (AECs). Between September 14, 2009 and September 18, 2009, 13 test pits were excavated by FRANZ personnel up to a maximum depth of 1.5 m. One soil sample from each test pit was analyzed for various contaminants of concern. All the test pits in AEC 1 were completed with a backhoe to the maximum achievable depth. Several of these test pits encountered refusal at various depths or encountered permafrost. All other test pits were completed with a trowel or spade shovel to the maximum achievable depth.

At each test pit location, composite soil samples were collected using a decontaminated trowel. Depending on the depth of the test pit, the nature of the stratigraphy, and any evidence of contamination, composite samples were generally collected over a range of 50-60 cm. Prior to sampling, soil descriptions including approximate grain size, colour, moisture content, stratigraphy and any evidence of contamination were recorded (**Appendix A, Tables A-1 and A-2**)

Four (4) additional test pits were advanced, though not sampled, at the top of the landfill in AEC 3. The purpose of this test pitting was to determine the approximate thickness of landfill soil capping material and to make observations as to the contents of the landfill. These test pits were also logged and annotated as ‘T1 through T4’ in the test pit logs.

Following the completion of the test pit field log and prior to backfilling the pit to grade, soil samples were collected and stored in sealable polyethylene bags (for soil vapour headspace analysis) and dedicated glass sample containers (for laboratory analysis). Following sample collection, jarred soils were refrigerated and/or stored on ice in laboratory-supplied coolers from the day of collection until delivery to the project laboratory in Ottawa, Ontario.

Test pit locations are indicated on the appropriate site plans (**Figures 4 through 9**).

6.4.1.1 Soil Sampling Field Vapour Screening

Vapour screening is a frequently used method for detecting and measuring the quantity of volatile organic compounds present in soil when dealing with soils potentially impacted with hydrocarbons. When taken continuously from the ground surface to the end of a test pit, vapour readings can provide an indication of the relative level of contamination and whether it originated from a localized source or migrated from a more distant one. As a result, field screening is a useful tool to facilitate selection of samples to be submitted for laboratory analysis.

During the investigation, field vapour screening was completed by partially filling and sealing standard volumes of soil into dedicated polyethylene bags. When stored at room temperature, headspace vapours were allowed to develop and equilibrate in the sealed bag. Gas samples retrieved by inserting a small tube into the bag were then analyzed with an RKI Eagle organic vapour meter (OVM), and the concentration of combustible gases present (other than methane) by volume (ppm) of the calibrating gas (hexane) was measured. Only those soil samples suspected of hydrocarbon contamination were tested for head space vapours. The results of the soil vapour headspace analyses are included in the test pit logs **(Appendix A, Tables A1 and A2)**.

6.4.1.2 Selection Criteria for Soil Chemical Analyses

Soils were analyzed based upon three distinct rationales:

- To delineate, confirm or refute potential soil impacts related to land filling procedures;
- To provide a better understanding of contaminant concentrations in the soil and other native materials across the site; and
- To generate a thorough understanding of environmental receptors, as well as fate and transport of contaminants of concern (COCs).

Soil sample selection for contaminant analyses was based on a detailed review of previous soil analyses completed on the various soil types found on the site and near impacted source areas, as well as visual site inspection of potential source areas and natural environmental pathways and receptors.

All samples were screened for soil vapour concentrations. In general, soil samples submitted for VOC or hydrocarbon analysis were based on their location, odour and/or staining.

All samples were analyzed for metal concentration, and other contaminant analyses were selected based on historical site usage and visual impacts.

6.4.2 Surface Water Characterization

A total of 31 surface water samples were collected from the four (4) AEC areas in 2009. One (1) sample was collected in AEC 1, 11 samples were collected in AEC 2, three (3) samples were collected in AEC 3 and 16 samples were collected from AEC 4 downgradient receptors.

The surface water samples were collected from the shores of the ponded areas and/or streams or by wading into the ponds with rubber hip waders. The surface water sampling locations corresponded with sediment sampling locations in most cases; however, sediment was not collected from stations directly in the Silvia Grinnell River. Specific sample locations for each site are indicated on **Figures 4 through 9**.

The samples were collected at the water surface, into laboratory supplied sample containers. Field parameters including pH, temperature and conductivity were measured at each surface water station at the time of sample collection using a Horiba U-22 multi parameter probe. Each sample was labelled and refrigerated and/or kept on ice until they were relinguished to the project laboratory. Results of the field parameters are presented in **Appendix A, Tables A4 and A5**.

6.4.2.1 Stream Flow Measurements

Measurements of stream flows were taken in several areas where flowing water was present during the 2009 investigation.

Simple stream flow calculations were conducted using the Q=VkA method, where Q = total rate of discharge, V = velocity, A = area and k = correction factor (0.85). The site of the field measurements was selected based on the following available criteria:

- Slope of the stream not too great;
- Roughness of the channel bottom; and
- Not in proximity to backwater effects, eddy currents, or other influencing factors.

The selected site was prepared by first removing any debris or large cobbles from the stream bed and clearing any obstructions from the stream walls.

Velocity measurements were conducted using a Global FP101 Water Flow Probe. Velocity measurements were collected in feet/second and converted to metres/second.

For each station, the area of the stream cross-section was obtained by collecting depth measurements at four (4) locations across the stream transect and averaging out the depth and multiplying that by the stream width.

6.4.3 Sediment Characterization

A total of 25 pond and stream sediment samples were collected across the four (4) AECs. One (1) sample was collected in AEC 1, 11 samples were collected in AEC 2, three (3) samples were collected in AEC 3, and 10 samples were collected in AEC 4. The sediment sampling locations corresponded with surface water sampling locations in most cases; however, sediment was not collected from stations directly in the Silvia Grinnell River. Specific sample locations for each site are indicated on **Figures 4 through 9**.

The sediment sampling was completed using either an Eckman sediment grab sampler or a stainless steel hand trowel. For each sample collected, a depth measurement, GPS coordinates, and description of the sediment (including colour, odour, sheens, staining, water depth, grain size, sample recovery and % natural organic material), the presence of debris and any unusual characteristics were recorded. Sediment samples at each location were collected from the top 0-15 cm of pond and stream sediments into laboratory-supplied containers with the aid of a hand trowel and nitrile gloves. The samples were then refrigerated and/or kept on ice until they could be delivered to the project laboratory in Ottawa, Ontario. Sample locations are indicated on **Figures 4 through 9** and sediment logs are summarized in **Appendix A, Tables A6 and A7**.

6.4.4 Vegetation Sampling

The 2009 field investigation included the collection of 11 vegetation samples throughout the four (4) AECs. Two (2) samples were collected in AEC 1, three (3) in AEC 2, three (3) in AEC 3, and three (3) in AEC 4. Blueberries were collected from the terrestrial vegetation samples, with only the fruit being collected and analyzed. Grasses and algae were collected from aquatic vegetation samples depending on the type of vegetation available in a given area. Each sample location was photographed and mapped. The samples were placed in polyethylene bags and refrigerated and/or kept on ice until they could be delivered to the project laboratory. Specific sample locations are indicated on **Figures 4 through 9** and vegetation is summarized in **Appendix A, Table A8**.

6.4.5 Paint Sampling

In the Northwest Territories, products containing lead over 600 parts per million are considered hazardous waste and must be managed according to the GNWT *Environmental Guideline for Waste Lead and Lead Paint* (April 2004).

Painted surfaces were screened for potential lead content. Paint was sampled by removing paint chips with a stainless steel blade and placing them in a clean re-sealable plastic bag. Paint samples were submitted to Maxxam Analytical Services for lead analysis. The samples were analyzed by inductively coupled plasma using a mass spectral detector (ICP-MS). Lead concentrations are reported in terms of percentage of lead and converted to a weight fraction of paint [micrograms/gram (µg/g) or ppm]. Composite samples of each paint colour were collected from the vehicles present in AEC 2.

6.4.6 Waste Debris Inventory

For the purpose of future landfill decommissioning and potential removal of debris, an inventory of site waste in each AEC was completed. The waste materials were identified as hazardous or non-hazardous to assist in characterizing materials for potentials disposal considerations.

Waste materials associated with the main landfill area and the vehicle dump were quantified by measuring their in-situ dimensions (length and width) using the DGPS system.

The other site waste was itemized as individual scattered pieces (e.g., drums, scrap metal, scrap wood and abandoned vehicles, etc.).

A complete summary of waste material characterization and associated inventories categorized by AEC and location is provided in Section 7.8.1, Table 7-22.

6.4.7 Site Survey

A complete site survey was carried out during the 2009 field program. The site survey consisted of georeferencing site features and sample locations with the use of a Global Positioning System (GPS) unit.

The survey data was placed on a 2006 Google Earth image (2006, Google) and geo-referenced to correspond with data points collected during the field survey.

6.4.8 Background Sampling Program

Background sampling was completed as part of the 2008 investigation (FRANZ, 2009); therefore, no further background sampling was completed in 2009.

6.5 Chemical and Physical Analysis

6.5.1 Chemical and Physical Analysis Program

Maxxam Analytics (Ottawa) was selected to complete the analytical testing for this project. Maxxam is certified by the Canadian Association of Environmental Analytical Laboratories (CAEAL), and follows strict internal quality assurance/quality control (QA/QC) protocols. The

Maxxam quality control program includes replicate analyses, blank spikes, matrix spikes, instrument calibration, internal standards, method blanks and internal QC checks. The standard Maxxam analytical quality control protocols meet or exceed the requirements of all United States and Canadian regulators. A copy of the chain-of-custody forms used for sample submission is provided with the laboratory reports (**Appendix F**).

6.5.2 Selection Process for Chemical Analyses

Samples were analyzed for three reasons: to document pesticide, PCB, metal, VOC, PAH, and PHC concentrations across the sites; to delineate the spatial distribution of impacts for the identified contaminants of concern; and to determine the current environmental and physical conditions which represent the most important potential risks to human and environmental health. Sample locations and analytical parameters were selected on the basis of a review of previous results and site history.

6.5.3 Chemical Analytical Program

The quantity of soil, sediment, surface water, and vegetation samples by parameter, and the associated testing protocols are listed in the following **Table 6-1**:

Table 6-1: 2009 Chemical Analytical Program

Analysis	Medium					
	Soil	Sediment	Surface Water	Vegetation	Material Sampling	Totals
PHCs	11 (2)	18 (2)	7 (1)			36 (5)
Metals	13 (1)	25 (2)	31 (2)	11 (1)	2	82 (6)
VOCs	11 (1)	4 (1)	7 (1)			22 (3)
PAHs	5 (1)	3 (1)	5 (1)			13 (3)
PCBs	6 (2)	18 (2)	9 (1)	2		35 (5)
Pesticides	1 (1)	18 (2)	10 (1)			29 (4)
Total Organic Carbon (TOC)	0	25 (2)	0			25 (2)
Dissolved Organic Carbon (DOC)	0	0	31 (2)			31 (2)
Total number of analyses	47 (8)	111 (12)	100 (9)	13 (1)	2	273 (30)

(XX) Denotes number of QA/QC samples.

6.6 Quality Assurance/Quality Control

The purpose of the quality assurance/quality control (QA/QC) program was to confirm that field sampling methods and laboratory analysis were reliable. In implementing the QA/QC program, FRANZ verified that the quality of the reported results was suitable to support the environmental impact (and human health risk) conclusion drawn from the data.

The 2009 field program included the following QA/QC protocol elements:

- Decontamination (Alcanox wash and distilled water rinse) of sampling equipment / instrumentation between all sample locations;
- Fresh, chemical-resistant nitrile gloves at each sampling location;
- Proper documentation of all aspects of the sampling program, with particular detail to the introduction of potential bias;
- Elimination of headspace for all volatile parameters (soils and water);
- Collection of one blind analytical duplicate for approximately every 10 samples of environmental media;
- Calculation of the relative percent difference between a sample and its duplicate; and
- Calibration of field instruments.

6.6.1 Data Reduction and Validation

Data reduction of the investigation results primarily involved summary tabulation of analytical results and transcription of field observations. Following data reduction, data validation was performed to ensure that the raw data was not altered and that an audit trail was developed for managing the data. Data validation was also performed to verify that the quantitative and qualitative reliability of the information. A comparative review of sample collection records, chain-of-custody records, holding times, dilution factors, Estimated Quantitation Limits (EQLs), and laboratory and field QC sample records were evaluated against original laboratory reports.

6.6.2 Quality Assurance/Quality Control Samples

Laboratory reports detailing the handling and secure storage of samples, and the significant dates with respect to sample delivery, extraction, and analysis were reviewed by FRANZ and found to be within control limits.

External QA/QC samples in the form of blind duplicates were submitted by FRANZ for laboratory analysis. Approximately one duplicate was collected per 10 samples for a given medium. The nomenclature of each duplicate ensured that the sample number corresponding to the blind duplicate was not evident to the lab, allowing the external verification of laboratory accuracy and precision.

6.6.3 Data Validation of QA/QC Samples

Sampling procedures and laboratory analytical precision were evaluated by calculating the relative percent difference (RPD) for a sample and duplicate pair according to the following equation:

$$RPD = | X_1 – X_2 | / X_{avg} \times 100$$

Where X_1 and X_2 are the concentrations and X_{avg} is the mean of these two values.

The duplicate results were evaluated using criteria developed by Zeiner (1994), which draw from several data validation guidelines developed by the United Stated Environmental Protection Agency (USEPA). According to these criteria, the RPD for duplicate samples should be less than 20% for aqueous samples and less than 40% for solid samples. RPDs can only be calculated when the compound is detected in both the original and the duplicate sample at a concentration five times above the reportable detection limit (or method detection limit – MDL).

Criteria for the Evaluation of Blind and Duplicate Sample Results[1]

Scenario	Result A	Result B	Criteria for Acceptance	
			Aqueous (Water)	Soil (Soil)
A	ND	ND	Acceptable precision; no evaluation required	
B	ND	positive	result B - 0.5 x MDL < MDL	result B - 0.5 x MDL < 2 x MDL
C	positive and > 5 x MDL	positive and > 5 x MDL	RPD < 20%	RPD < 40%
D	positive and < or = 5 X MDL	positive	|result B - result A| < MDL	|result B - result A| < 2 x MDL

Notes:
ND – not detected
RPD – relative percent difference, (result A – result B) / (result A + result B) / 2 *100

The results of the data validation are presented in the **Tables** section of this report along with the analytical results. The precision is considered acceptable when evaluation criteria are met, or when both results are below the MDL. When the evaluation criteria are not satisfied, the following apply:

[1] Source: Zeiner, S.T., Realistic Criteria for the Evaluation of Field Duplicate Sample Results, Proceedings of Superfund XV, November 29-December 1, 1994, Sheraton Washington Hotel, Washington, D.C. – modified to use Method Detection Limit (MDL) or Reportable Detection Limit (RDL) in lieu of the Quantitation Limit (QL), the Instrument Detection Limit (IDL) and/or Laboratory Reporting Limit (LRL).

- ND vs positive – unacceptable imprecision: the positive result is considered an estimate and the ND result is considered inconclusive.
- Positive vs positive – unacceptable imprecision: the results are considered an estimate.

6.6.4 Data Evaluation – Results of Duplicate Analysis

Blind field duplicates were submitted for PHC (2), PAHs (1), VOCs (1), metals (1), PCBs (2), and pesticides (1) analysis in soils. Blind field duplicates were submitted for PHC (2), PAHs (1), VOCs (1), metals (2), PCBs (2), and pesticides (2) analysis in sediment. For surface water, blind field duplicates were submitted for PHC (1), PAHs (1), VOCs (1), metals (2), PCBs (1), and pesticides (1). For vegetation, blind field duplicates were submitted for metals (1) analyses.

In general, the results show satisfactory precision. The following discussion presents the results of the RPD calculations.

<u>Soil</u>
In the comparison of soil test samples and their duplicates, VOCs, PCBs, pesticides all showed concentrations within the acceptable precision. PAH's showed concentrations within the acceptable precision with exception to phenanthrene. PHCs showed concentrations within acceptable limits for BTEX F3, and F4; however, the F1 and F2 fractions exhibited unsatisfactory results.

The minor variance in the PAH Phenanthrene sample is likely due to the low concentrations of the analyte. It should also be noted that Phenanthrene was below the selected EQG and therefore is considered acceptable. The variances in the PHC F1 and F2 fractions are likely due to the heterogeneity of the soil and/or presence clay material in the sample medium. The PHC soil samples are above the applicable EQG in the original sample (A1-TP09-3-2) for F1, F2, and F3 and below the EQG for F1 and F2 in the duplicate sample (TP09-DUP1). Field observations noted high hydrocarbon like odour in the sample; therefore the analysis from the original sample (A1-TP09-3-2) is considered valid.

<u>Sediment</u>
In the comparison of sediment test samples and their duplicates, PAHs, PCBs, Pesticides, and VOCs all showed concentrations within the acceptable precision. PHCs showed acceptable precision with exception to sample and duplicate, AEC4-SD09-11/SD09-DUP2, exhibiting unsatisfactory results for F3 and F4 fractions. Metals analysis showed acceptable precision with the exception of sample and duplicate, AEC2-SD09-9/SD09-DUP1, for the analytes arsenic, molybdenum, potassium, and sodium.

The minor variances noted in PHC samples AEC4-SD09-11 and SD09-DUP2 are likely due to the low chemical concentrations and heterogeneity of the soil samples. Note that the PHC results are well below the selected EQG and are therefore are considered acceptable. The variances exhibited in metals samples AEC2-SD09-9 / SD09-DUP1 are due to sample dilution at the laboratory during analytical testing, generating differing detection limits between the two samples. Note that all metal analytes in question were below the selected EQG. The results from the sediment sampling are considered valid.

Surface Water

Surface water duplicate analysis was completed for PHCs, metals, VOCs, PAHs, VOCs, PCBs, and pesticides, and all concentrations were within acceptable precision with the exception to metals analysis for duplicate pair AEC4-SW09-10 / AEC4-SW09-DUP2 nickel analytes, which showed an unsatisfactory result. This variance is likely due to suspended particles in the surface water sample. The variance is minor and the overall results from the surface water sampling are considered valid.

Vegetation

Duplicate analysis was completed on the vegetation samples AEC1-AQ-VEG09-1 /VEG09-DUP1 for metals analysis. All concentrations were within acceptable precision with the exception to sodium, which showed unsatisfactory results between the sample pair. The minor variance is likely due to small amounts of dissimilar plant species in the sample population which may exhibit slightly different up-take characteristics. The variance is minor and the overall results from the vegetation sampling are considered valid.

7.0 CHEMICAL DISTRIBUTIONS AND IMPACTS

7.1 Introduction

Chemical data from the 2009 field program were integrated with the data obtained from the 2008 field investigation. Tables were prepared with the information displayed by medium and location (**Tables 7-1A/B through 7-21A**). The chemical data was compared to the appropriate guidelines for soil (CCME Residential/Parkland (PL) and Commercial (CL)), sediment (CCME Freshwater and Marine ISQG and PEL), surface water (Freshwater and Marine) for protection of aquatic life, vegetation (MOE-ULN) and building materials established by both federal and provincial authorities as indicated in Section 5 and collectively referred to as the Environmental Quality Guidelines (EQGs).

The EQGs are numerical limits or statements which can be used for comparison with measured contaminant levels at a site in order to determine whether further investigation or action is required; however, the definition of impact does not necessarily imply significant risks to human health and the environment. Natural attenuation mechanisms (such as biodegradation and adsorption), exposure pathways, frequency of exposure and proximity to potential receptors must be considered to determine the potential for specific risks and impacts.

Field and laboratory results are discussed in this section. Data are presented in the attached tables and figures, as listed below in **Table 7-1**.

Table 7-1: Summary of Data Presentation

Media	Parameters	Tables (2009)	Tables (2008)	Figures
Soil	Metals	7-1A	7-1B	10, 13, 16, and 19
	PHC	7-2A	7-2B	
	PAHs	7-3A	7-3B	
	PCBs	7-4A	7-4B	
	Pesticides	7-5A	7-5B	
	VOCs	7-6A	7-6B	
Surface Water	Metals	7-7A	7-7B	11, 14, 17, and 20
	PHC	7-8A	7-8B	
	PAHs	7-9A	7-9B	
	PCBs	7-10A	7-10B	
	Pesticides	7-11A	7-11B	
	VOCs	7-12A	7-12B	
Sediment	Metals	7-13A	7-13B	12, 15, 18, and 21
	PHC	7-14A	7-14B	
	PAHs	7-15A	7-15B	
	PCBs	7-16A	7-16B	
	Pesticides	7-17A	7-17B	
	VOCs	7-18A	7-18B	

Media	Parameters	Tables (2009)	Tables (2008)	Figures
Vegetation	Metals	7-19A	7-19B	11, 13, 17, and 20
	PCBs		7-20B	
Paint	Metals (lead)	7-21A	7-21B	N/A

The original analytical reports are included in **Appendix F**.

7.2 AECs

As identified earlier and for the purpose of this discussion, the site was divided into four AECs depending on their setting, historical use, PCOCs and field investigations. The different areas are listed below:

AEC 1 – Up Gradient Buried Debris;
AEC 2 – Vehicle Dump;
AEC 3 – Main Landfill; and
AEC 4 – Down Gradient;

A summary of the AECs and PCOCs is provided in **Table 4-2**; Section 4.8. Sampling locations for the various AECs and sampled media are provided on **Figures 4 through 9**. Analytical results for the various AECs and sampled media are proved on **Figures 10 through 21**.

7.3 Background Sites

7.3.1 Background Sampling Locations

Background sample locations were collected, during the 2008 field investigation, from two sites located up river (Sylvia Grinnell River) from AEC 4 where no evidence of impacts from the community landfill or any other source was visible. Surface water and sediment samples were collected along the shoreline of the river and soil and vegetation samples were collected approximately ten meters inland. All background samples were submitted for metals analysis. (See **Figure 5** for sample locations and analytical results).

7.3.2 Field Observations

Background sample station one (BK-1) was located approximately 2.20 kilometres upriver from the main landfill. Background sample station two (BK-2) was 200 metres downstream of BK-1 at a distance of 2 kilometres from the landfill. At both locations, similar site conditions were observed, including topography and vegetation characteristics. Inland samples (soil and vegetation) were taken from grass areas between the shoreline and the bedrock outcrops approximately 10 metres inland.

Each soil sample was a composite of three sub samples collected from the overburden unit, not including the surface organic layer (0.025 m). There was no visible evidence of point or nonpoint source activities in the area. No debris or other objects were identified during the background sampling activities.

Background vegetation samples were collected in locations corresponding with the soil samples. Composite samples were collected from the low lying blueberry bushes adjacent to TP-BK locations. Three handfuls of blueberries were collected in sterile polyethylene bags.

Surface water and sediment samples were collected from two locations on the shoreline of the Sylvia Grinnell River. SD-BK-1 and SD-BK-2 and their corresponding surface water samples were collected roughly 1.5 m out from the shore where the water depth was approximately 1 m deep. The shoreline was rock outcrop, with no appreciable littoral zone. No aquatic vegetation was collected at either location as no macrophytes were observed.

The pH of both surface water samples was slightly alkaline (>6.5) and hardness was low (31.9 and 15.9 mg/L). The water was clear and colourless, and sediments were characterized by the same fine to coarse, sand and small gravel that was typical of the sediments within the river.

7.3.3 Results of Chemical Analysis

7.3.3.1 Soil

Two background soil samples were submitted for total metals analysis. Samples TP-BK-1 and TP-BK-2 were below the applicable EQGs for all metals parameters.

7.3.3.2 Surface Water

Two background surface water samples were submitted for metals analysis. Samples SW-BK-1 and SW-BK-2 were below the applicable EQGs for all metals parameters.

7.3.3.3 Sediment

Two background sediment samples were submitted for metals analysis. Samples SD-BK-1 and SD-BK-2 were below the applicable EQGs for all metals parameters.

7.3.3.4 Vegetation

Two samples were collected as background reference samples and submitted for metals analysis. Samples VEG-BK-1 and VEG-BK-2 were below the applicable EQGs.

7.4 AEC 1: Up Gradient Buried Debris

7.4.1 Summary of AEC Location and Features

AEC 1 is located up gradient from the vehicle dump (**Figure 6**). AEC 1 is bordered by the property boundary and an access road to the NW and marsh land to the NE and SE. There is a drainage ditch that runs south west on the SW side of the site and then west towards the escarpment. This drainage ditch divides AEC1 from AEC 2.

7.4.2 Sampling/Investigation Rationale

The previous environmental investigation conducted by FRANZ (2009) included the collection of three soil samples, one surface water sample and one vegetation sample. Copper and lead in soil exceeded EQGs, as did aluminum in surface water. Debris was observed in test pits, therefore requiring delineation of sub-surface debris.

7.4.3 Field Observations

There were three large debris mounds dispersed across the site, as well as one larger pool of water towards the northern extent of AEC 1. There is one drainage path located at the southwest side of AEC 1 and oriented in a west to south configuration, leading from AEC 1 towards the vehicle dump (AEC 2). There is a marshy area to the east and southeast side of the site.

Site stratigraphy (0.0 to 1.6 m bgs) can be generalized as a brown fine to coarse sand, gravel and cobble mix with buried debris. Permafrost was encountered at 1.6 to 1.7 m bgs. The buried debris was observed in AEC1-TP09-1 and AEC1-TP09-6 and included tires, drums, wood, iron bracing, vehicle parts, rubber hose, cable wire, and rods. There was visible debris protruding from the ground surface on the debris mounds.

Hydrocarbon odours were observed in AEC1-TP09-3-2. Field vapour screening measured from 0 to 5 ppm.

7.4.4 Results of Chemical Analysis of Environmental Media

7.4.4.1 Soil

<u>2009</u>

A total of seven test pits were excavated using a backhoe. Eight samples and one duplicate were collected in AEC 1. Five samples were submitted for total metals, four samples plus one duplicate for PHCs, two samples plus one duplicate for PAHs, four samples plus one duplicate for PCBs and one sample plus one duplicate for pesticides and herbicides.

The analytical results are provided in **Tables 7-1A** through **7-6A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 10**.

Total Metals Impacts

Sample AEC1-TP09-5-1, collected closest to the drainage ditch on the southwest side of AEC 1 exhibited an exceedance of lead (150 µg/g) greater than the CCME PL EQG but lower than the CCME CL EQG. The remaining samples analyzed for metals did not exceed the EQGs.

Petroleum Hydrocarbon Impacts

Sample AEC1-TP09-3-2 exceeded the F1 CCME PL with a concentration of 180 µg/g but was below the CCME CL EQG. The same sample also exceeded in F2 (1100 µg/g) and F3 (3900 µg/g) for both CCME PL and CL EQGs.

Polycyclic Aromatic Hydrocarbons Impacts

Samples AEC1-TP09-1-1 and AEC1-TP09-3-2 were analyzed for PAHs. Both samples were below the applicable EQGs.

Polychlorinated Biphenyls Impacts

Samples AEC1-TP09-1-2, -3-2, -4-1 and -5-2, plus TP09-DUP1 were analyzed for PCBs. All samples were below the applicable EQGs.

Pesticide/Herbicide Impacts

Samples AEC1-TP09-3-2 and TP09-DUP1 were submitted for pesticide and herbicide analysis. Both samples were below the applicable EQGs.

2008

The sampling program at AEC 1 (formerly APEC 1) included three soil samples (A1-TP08-1, -2 and -3), one surface water sample (A1-SW08-1) and one vegetation sample (VEG-6).

The analytical results are provided in **Tables 7-1B** through **7-6B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 10**.

Total Metals Impacts

Samples A1-TP08-1, A1-TP08-2, and A2-TP09-3 were submitted for metals analysis. Sample A1-TP08-1 exhibited a copper concentration of 103 mg/kg which exceeds both the CCME PL and CL EQGs. The same sample contains a lead concentration (190 mg/kg) which exceeds the CCME PL EQG (140 mg/kg) but remains lower than the CL EQG. Metal analytical results from test pits A1-TP08-2 and 3 were below the CCME PL and CL EQGs.

Petroleum Hydrocarbon Impacts

Sample A1-TP08-3 was submitted for PHCs analysis. The sample was below the applicable EQG.

Polychlorinated biphenyls Impacts

Sample A1-TP08-3 was submitted for PCBs analysis. The sample was below the applicable EQG.

Pesticide/Herbicide Impacts

Sample A1-TP08-3 was submitted for pesticide analysis. The sample was below the applicable EQG.

7.4.4.2 Surface water

2009

One surface water sample was taken from AEC 1 and analyzed for PHCs, metals, PAHs, VOCs, PCBs, pesticides and herbicides. There were no exceedances of PHCs, PAHs, VOCs, PCBs, pesticides or herbicides. AEC1-SW09-1 exceeded the CCME freshwater EQG of 5 µg/L for aluminum with a concentration of 9 µg/L, the chromium guidelines of 1.5 µg/L with a concentration of 2.8 µg/L and the iron guidelines of 300 µg/L with a concentration of 2200 µg/L.

The analytical results are provided in **Tables 7-7A** through **7-12A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 11**.

2008

Metals and PCBs were analyzed from the surface water sample A1-SW08-1 collected at AEC 1 (formerly APEC 1). Metal analytical results indicated that the aluminum concentration (14.4 µg/L) was greater than the CCME FWAL EQG of 5 µg/L. PCB concentrations were below the laboratory detection limit.

The analytical results are provided in **Tables 7-7B** through **7-12B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 11**.

7.4.4.3 Sediment

2009

One sediment sample was collected in AEC 1 and analyzed for PHCs, metals, PAHs, PCBs, VOCs and pesticides and herbicides. AEC1-SD09-1 exceeded both the CCME ISQG and PEL freshwater sediment EQGs for total DDD. DDE and DDT in the same sample exceeded the CCME ISQG freshwater EQG but remained below the PEL. All other parameters were below the selected EQGs.

The analytical results are provided in **Tables 7-13A** through **7-18A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 12**.

7.4.4.4 Vegetation

2009

Two vegetation samples (one terrestrial and one aquatic), and one duplicate sample were collected in AEC 1 (AEC1-AQ-VEG09-1 and AEC1-VEG09-1). AEC1-AQ-VEG09-1 exceeded the MOE-ULN EQGs for manganese, molybdenum and sodium with concentrations of 321 µg/g, 1.52 µg/g and 120 µg/g, where the MOE-ULN guidelines were 50 µg/g, 1.5 µg/g and 50 µg/g, respectively. AEC1-VEG09-1 was analyzed for metals and PCBs and the concentrations were found to be below the EQGs.

The analytical results are provided in **Tables 7-19A** and **7-20A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 11**.

2008

One representative vegetation sample (VEG-6) from AEC 1 (formerly APEC 1) was submitted for metals and PCBs analysis. Metal results are below the MOE-ULN EQGs and PCB results are lower than the laboratory detection limit.

The analytical results are provided in **Tables 7-19B** and **7-20B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 11**.

7.4.5 Chemical Impacts Summary – AEC 1

7.4.5.1 Impacted Soils

Evaluation of Metal Impacts in Soil

Metal impacted soil was identified in AEC 1 in two samples. Exceedances of lead were identified in both samples above the PL EQG. Copper also exceeded both the PL and CL EQG in one of the samples. Elevated metals concentrations are likely associated with the buried metal debris identified in the area and the use of lead paint on metal debris.

Evaluation of Hydrocarbon Impacts in Soil

Hydrocarbon impacts were identified in AEC 1 in one sample location (AEC1-TP09-3-2). Exceedances of PHC F1, F2, and F3 exceeding both the PL and CL EQG were present. Buried drums were noted during test pitting in the area and the identified impacts are likely directly associated with these sources. Two test pits were advanced (AEC1-TP09-6 and -7) in an attempt to delineate the suspected hydrocarbon impacts. Although no chemical analysis was conducted on either of the delineation test pits, field observations and olfactory evidence indicated the absence of PHC impacts. Therefore, it is suspected that the PHC impact identified is a discrete location. It should be noted that no delineation test pitting was possible to the ENE due to wet, boggy conditions.

<u>Evaluation of PAH, PCB & Pesticide Impacts in Soil</u>

PAH, PCB and pesticide exceedances were not identified in soil and therefore are not considered an issue.

The following table summarizes the results of the soil investigation in AEC 1.

COC	Exceeding Analytes	Exceedance of EQG	
		PL	CL
Metals	lead	yes	no
	copper	yes	yes
Petroleum Hydrocarbons	PHC fractions F1, F2, F3	yes	yes
PAHs, PCBs and Pesticides	no impacts reported	no	no

7.4.5.2 Impacted Surface Water

<u>Evaluation of Metal Impacts in Surface Water</u>

Metal impacted surface water was identified in AEC 1 in samples collected in 2008 and 2009. Concentrations exceeded the freshwater EQG for aluminum, lead, and chromium. The only surface water available for surface water sampling in AEC 1 was a stagnant pond with no active recharge or discharge. Elevated metal concentrations are likely due to the dissolution of buried metal waste and chemical loading of the localized surface waters.

<u>Evaluation of PHC, VOC, PAH, PCB & Pesticide Impacts in Surface Water</u>

PHC, VOC, PAH, PCB, and pesticide exceedances were not identified in surface water and therefore are not considered an issue.

The following table summarizes the results of the Surface Water investigation in AEC 1.

COC	Exceeding Analytes	Exceedance of EQG	
		freshwater	marine
Metals	aluminum	yes	N/A
	lead	yes	N/A
	chromium	yes	N/A
Petroleum Hydrocarbons	no impacts reported	yes	N/A
PAHs, VOCs, PCBs and Pesticides	no impacts reported	no	N/A

7.4.5.3 Impacted Sediment

<u>Evaluation of Pesticide Impacts in Sediment</u>

Pesticide impacts in sediment were identified in the one and only sample analyzed in AEC 1. DDD exceeded both the ISQG and PEL freshwater EQGs. DDE and DDT exceeded only the ISQG freshwater EQGs.

<u>Evaluation of Metal, PHC, PAH, & PCB Impacts in Sediment</u>
Metal, PHC, PAH, and PCB exceedances were not identified in sediments and therefore are not considered an issue.

The following table summarizes the results of the Surface Water investigation in AEC 1.

COC	Exceeding Analytes	Exceedance of EQG	
		ISQG	PEL
Pesticides	DDD	yes	yes
	DDE	yes	no
	DDT	yes	no
Metals	no impacts reported	no	no
Petroleum Hydrocarbons	no impacts reported	no	no
PAHs and PCBs	no impacts reported	no	no

7.4.5.4 Impacted Vegetation

Two terrestrial samples and one aquatic vegetation sample were analyzed. The two terrestrial samples contained concentrations below the applicable EQGs, while the one aquatic sample exhibited concentrations of manganese, molybdenum and sodium elevated above the applicable EQG.

The following table summarizes the results of the vegetation investigation in AEC 1.

COC	Description
Metals	• metal concentrations of manganese, molybdenum and sodium as exceedances.
PCBs	• no impacts reported

7.5 AEC 2: Vehicle Dump

7.5.1 Summary of AEC Location and Features

AEC 2 is located to the east of the main Landfill (AEC 3) and downgradient of AEC 1 (**Figure 7**). AEC 2 has been used as a disposal area for trucks, cars, trailers, boilers, tankers and other large mechanical debris. There is a main drainage channel that runs along the AEC1 and AEC 2 divide, through the debris pile towards the escarpment, through two small freshwater ponds (Ponds 5 and 6) and one brackish pond (Pond 6 in AEC 4) eventually discharging into Sylvia Grinnell River. Major features located in AEC 2 include the large vehicle debris pile and the drainage channel that traverses AEC towards the river. Two small ponds (Ponds 5 and 6) are also located in AEC 2.

7.5.2 Sampling/Investigation Rationale

The previous environmental investigation conducted by FRANZ (2009) included the collection of three soil samples, six surface water and sediment samples and one vegetation sample. Analytical results from 2008 found exceedances in soils (metals and PCBs), sediments (metals and pesticides), surface water (metals) and vegetation (metals). Further delineation of impacts and confirmation sampling was required.

7.5.3 Field Observations

The upper portion (adjacent to AEC 1) of AEC 2 is a low-lying wet grassy area. Moving downgradient, the vehicle debris area is encountered, which lies on the bedrock outcrop escarpment. The drainage channel runs parallel to the divide from AEC 1 in the low-lying grassy area through the vehicle debris and down the escarpment. At the bottom of the escarpment are two small ponds (Pond 5 and 6) connected to the drainage channel. Debris is present throughout the AEC. The large vehicles and metal pieces are concentrated along the bedrock outcrops and smaller items of waste are scattered in the low-lying grassy area and throughout the escarpment area.

7.5.4 Sampling

In some instances, sediment and surface water samples were collected in the same locations as in the 2008 field investigation in order to confirm/refute the presence of COCs/PCOCs. Due to the increased sample density of the 2009 field sampling, sample numbers do not correspond. The following **Table 7-2** summarizes the samples collected in AEC 2 and arrows indicate the relationship between sample locations.

Table 7-2: Sample Relationships – AEC 2

Area	Medium	Year	
		2009	2008
APEC 2 / AEC 2 - Vehicle Dump	Sediment	AEC2-SD09-1 -->	A2-SD08-1
		AEC2-SD09-4 -->	A2-SD08-2
		AEC2-SD09-5 -->	A2-SD08-3
		AEC2-SD09-7 -->	A2-SD08-4
		AEC2-SD09-8 -->	A3-SD08-4
		AEC2-SD09-10 -->	A3-SD08-3
	Surface Water	AEC2-SW09-1 -->	A2-SW08-1
		AEC2-SW09-4 -->	A2-SW08-2
		AEC2-SW09-5 -->	A2-SW08-3
		AEC2-SW09-7 -->	A2-SW08-4
		AEC2-SW09-8 -->	A3-SW08-4
		AEC2-SW09-10 -->	A3-SW08-3

Note: Arrow indicates samples collected at the same physical location

Eleven surface water and sediment samples were collected at intermittent locations along the drainage channel. Sediments have been generally characterized as being a dark grey to brown, fine to coarse sand and gravel. Orange staining was also observed at sample locations within the vehicle dump. Three surface soil samples were collected from the flat bedrock area within the vehicle dump. The soils in this AEC have been characterized as being dark brown, fine to medium sand with trace gravel and some organics. The three vegetation samples were collected from the bottom of the escarpment. The aquatic vegetation samples were collected from Ponds 5 and 6, while the terrestrial sample was collected just along the shoreline of Pond 6 beside the inlet from the drainage channel. Two paint samples were also collected from vehicles in AEC 2.

7.5.5 Results of Chemical Analysis of Environmental Media

7.5.5.1 Soil

2009

A total of three shallow test pits were excavated to bedrock by hand. Three samples and one duplicate were submitted for PHCs, PCBs and metals.

The analytical results are provided in **Tables 7-1A** through **7-6A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 13**.

Total Metals Impacts

Samples AEC2-TP09-1 and AEC2-TP09-2 were analyzed for metals. AEC2-TP09-2 reported an exceedance of CCME PL and CL EQG for copper at 93 µg/g. AEC2-TP09-1 did not exceed the EQGs.

Petroleum Hydrocarbon Impacts

Samples AEC2-TP09-1, AEC2-TP09-2, and AEC3-TP09-1 were analyzed for PHCs. All samples were below the applicable EQGs.

Polychlorinated biphenyls Impacts

Samples AEC2-TP09-1, AEC2-TP09-2, and AEC3-TP09-1 were analyzed for PCBs. Two samples (AEC2-TP09-1, -2) exceeded the CCME PL EQG with concentrations of 12 µg/g and 9 µg/g respectively but remained below the CCME CL EQG. AEC3-TP09-1 was below the applicable EQGs.

2008

A total of three shallow test pits (A2-TP08-1, A2-TP08-2 and A3-TP08-2) were excavated to bedrock by hand at AEC 2 (formerly APEC 2). Samples were submitted for PHCs, metals, PCBs, VOCs, PAHs and pesticide analysis.

The analytical results are provided in **Tables 7-1B** through **7-6B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 13**.

<u>Total Metals Impacts</u>
Sample A2-TP08-1 exceeded the CCME PL and CL EQGs for cadmium with a concentration of 22.4 µg/g. A2-TP08-2 and A3-TP08-1 were below the applicable EQGs.

<u>Petroleum Hydrocarbon Impacts</u>
Samples A2-TP08-1 and A2-TP08-2 were analyzed for PHCs. Both samples were below the applicable EQGs. A3-TP08-2 exceeded the PL and CL EQGs for F2, F3, and F4 at 450, 44,400, and 6,960 mg/kg respectively.

<u>Polychlorinated biphenyls Impacts</u>
Samples A2-TP08-1 and A3-TP09-2 were submitted for PCBs analysis. Both samples exceeded the total PCB CCME PL EQG but remained below the CCME CL EQG.

<u>Polycyclic Aromatic Hydrocarbon Impacts</u>
Samples A2-TP08-1 and A2-TP09-2 were submitted for PAH analysis. Both samples were below the applicable EQGs.

<u>Volatile Organic Compound Impacts</u>
Samples A2-TP08-1 and A2-TP09-2 were submitted for VOC analysis. Both samples were below the applicable EQGs.

<u>Pesticide Impacts</u>
Samples A2-TP08-1 and A2-TP09-2 were submitted for pesticide analysis. Both samples were below the applicable EQGs.

7.5.5.2 Surface water

<u>2009</u>
A total of eleven surface water samples and one duplicate sample were submitted at AEC 2 and analyzed for PHCs, metals, PAHs, VOCs, PCBs, pesticides and herbicides. There were no exceedances of CCME freshwater EQGs for PHCs, PAHs, VOCs, pesticides and herbicides. All samples analyzed for PCBs were below detection limits.

The analytical results are provided in **Tables 7-7A** through **7-12A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 14**.

<u>Total Metals Impacts</u>

Four samples submitted for metals analysis exceeded CCME freshwater EQG of 5 µg/L for aluminum and eleven samples exceeded CCME FWAL EQG of 300 µg/L for iron. AEC2-SW09-2 had an aluminum concentration of 6 µg/L and iron concentration of 620 µg/L. AEC2-SW09-3 exceeded with an aluminum concentration of 6 µg/L and iron of 320 µg/L. AEC2-SW09-4 had an aluminum concentration of 45 µg/L, 9x the EQG and iron with a concentration of 1400 µg/L, >4x the EQG. AEC-SW09-5 exceeded for iron with a concentration of 8900 µg/L which is >29x the EQG and AEC2-SW09-6 exceeded with a concentration of 1700 µg/L, >5x the EQG. AEC2-SW09-7 and AEC-SW09-8 exceeded the EQG for iron with concentrations of 560 µg/L and 810 µg/L, respectively. AEC2-SW09-9, and its duplicate SW09-DUP1, both exceeded for iron with concentrations >2x the EQGs. AEC2-SW09-10 and AEC-SW09-11 also exceeded the applicable EQGs with iron concentrations of 790 µg/L and 420 µg/L.

<u>2008</u>

Five surface water samples were collected during the 2008 sampling event. Samples were submitted for PHCs, metals, PCBs and pesticides. All samples that were submitted for PHCs, PCBs and pesticides were found to be below CCME FWAL EQGs.

The analytical results are provided in **Tables 7-7B** through **7-12B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 14**.

<u>Total Metals Impacts</u>

Four samples exceeded EQGs for metals. A2-SW08-1 exceeded the aluminum EQG of 5 µg/L with a concentration of 28.8 µg/L, the cadmium EQG of 0.017 µg/L with a concentration of 0.047 µg/L and the copper EQG of 2 µg/L with a concentration of 3.7 µg/L. A2-SW08-2 exceeded EQGs for aluminum and copper with concentrations of 11.2 µg/L and 3.7 µg/L, respectively. A2-SW08-3 exceeded an EQG of 1 µg/L for lead with a concentration of 2 µg/L. In addition, A2-SW08-3 was also above EQGs for aluminum, cadmium and copper. A2-SW08-4 exceeded for aluminum, cadmium and copper with concentrations of 24.7 µg/L, 0.037 µg/L and 2.3 µg/L.

7.5.5.3 Sediment

<u>2009</u>

A total of eleven sediment samples were collected in AEC 2 and analyzed for PHCs, metals, PCBs, pesticides and herbicides.

The analytical results are provided in **Tables 7-13A** through **7-18A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 15**.

Total Metals Impacts

A total of ten samples, plus one duplicate, contained exceedances for metals. AEC2-SD09-2 exceeded the zinc freshwater sediment ISQG of 123 ug/g with a concentration of 230 ug/g. AEC2-SD09-3 and AEC2-SD09-4 exceeded the CCME CL EQG for chromium IV and ISQG for zinc. AEC2-SD09-5 exceeded the freshwater PEL EQG of 3.5 ug/g for cadmium and 91 ug/g for lead with concentrations of 6.1 ug/g and 150 ug/g respectively, as well as freshwater ISQG EQGs for total chromium and zinc. AEC2-SD09-6 had exceedances of EQGs for cadmium, chromium VI, copper, lead and zinc. Sample AEC2-SD09-7 exceeded the CCME PEL for cadmium and lead with concentrations of 4.4 ug/g and 150 ug/g and CCME ISQG for copper and zinc with concentrations of 42 ug/g and 300 ug/g. Cadmium, lead and zinc exceeded the CCME PEL EQGs for AEC2-SD09-8, as did chromium and copper for the CCME ISQG EQGs. Samples AEC2-SD09-9, AEC2-SD09-10 and AEC2-SD09-11 all were in exceedance of the EQGs for cadmium, lead and zinc.

Petroleum Hydrocarbon Impacts

A total of eleven samples plus one duplicate were submitted for PHC analysis. Six samples had exceedances for PHC fractions F2, F3 or F4. AEC2-SD09-4 exceeded CCME CL use EQGs for F2 (240 µg/g), F3 (1700 µg/g) and F4 (3300 µg/g) with concentrations of 1500 µg/g, 4100 µg/g and 4500 µg/g respectively. AEC2-SD09-6 was in exceedance of CCME PL EQG of 300 µg/g for F3 with a concentration of 620 µg/g. AEC2-SD09-7 had an F3 concentration of 330 µg/g, which was just above the CCME PL EQG. AEC2-SD09-9 exceeded CCME PL use EQGs with concentrations of 180 µg/g for F2 and 1000 µg/g for F3. Sample AEC2-SD09-10 had a F3 concentration of 470 µg/g, just above the EQG of 300 µg/g. AEC2-SD09-11 had a F2 concentration of 1500 µg/g, 10x the EQG of 150 µg/g and a F3 concentration of 1200 ug/g, 4x the CCME PL EQG.

Polychlorinated biphenyls Impacts

A total of eleven samples plus one duplicate were submitted for PCBs analysis. Nine of these were in exceedance of both the CCME ISQG (0.0341 µg/g) and PEL (0.277 µg/g) EQGs. AEC2-SD09-2 and AEC2-SD09-8 were just above the EQG with concentrations of 0.3 µg/g. AEC2-SD09-4 and AEC2-SD09-7 were >2x the EQG with a concentration of 0.7 µg/g. AEC2-SD09-5 exceeded the EQG with a concentration of 0.6 µg/g. AEC2-SD09-6 and AEC2-SD09-11 had concentrations of 2.0 µg/g, >7x the EQG. AEC2-SD09-9 had a concentration of total PCBs at 15 µg/g, which is >54x the EQG. Finally, AEC2-SD09-10 was above the EQG with a concentration of 1.0 µg/g.

Pesticide Impacts

A total of eleven samples plus one duplicate were submitted for pesticides and herbicides analysis. Ten samples exceeded either the CCME ISQG or PEL EQGs for one or more parameters. AEC2-SD09-1, AEC2-SD09-2, AEC2-SD09-3, and AEC2-SD09-6 exceeded both

CCME ISQG and PEL EQGs for total DDD, total DDE and total DDT with the highest concentrations found in AEC2-SD09-2 at 0.26 µg/g for DDD, 0.055 µg/g for DDE, and 0.29 µg/g for DDT. Samples AEC2-SD09-4, AEC2-SD09-9, AEC2-SD09-10, and AEC2-SD09-11 all exceeded both CCME ISQG and PEL EQGs for total DDD and total DDE. Sample AEC2-SD09-7 exceeded CCME ISQG for DDE and both the ISQG and PEL for DDD. Sample AEC2-SD09-8 exceeded CCME ISQG for DDD.

2008

Six sediment samples were collected during the 2008 sampling event. Samples were submitted for PHCs, metals, PCBs, PAHs, VOCs and pesticides. All samples that were submitted for PHCs, PAHs and VOCs were found to be below applicable CCME ISQG and PEL EQGs.

The analytical results are provided in **Tables 7-13B** through **7-18B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 15**.

Total Metals Impacts

All six samples were submitted for metals analysis and had one or more parameters that exceeded either the CCME ISQG or PEL EQGs. A2-SD08-1 exceeded both the ISQG and PEL EQGs for zinc at a concentration of 499 µg/g. A2-SD08-2 exhibited copper exceedances of the CCME PEL EQG with a concentration of 292 µg/g. A2-SD08-3 exceeded both the ISQG and PEL EQGs for lead and the ISQG EQGs for cadmium, chromium, copper. A2-SD08-4 exhibited exceedances of the ISQG EQG for arsenic, cadmium, chromium, and copper, as well as exceedances of both the ISQG and PEL EQGs for lead and zinc. Both A3-SD08-3 and A3-SD08-4 exhibited exceedances of the ISQG EQGs for cadmium, lead, and zinc.

Petroleum Hydrocarbon Impacts

Six samples were submitted for PHC analysis. Sample A3-SD08-3 exhibited concentrations of F2 (535 µg/g) above the CCME CL EQG and F3 (568 µg/g) above the CCME PL EQG. All other samples were below the selected EQGs.

Polychlorinated biphenyls Impacts

Three samples were submitted for PCB analysis. A2-SD08-3 exceeded the CCME ISQG EQG of 0.034 µg/g for total PCBs with a concentration of 0.222 µg/g. A2-SD08-4 exceeded the CCME PEL EQG of 0.277 µg/g for total PCBs with a concentration of 0.56 µg/g. A3-SD08-4 exceeded both the ISQG and PEL EQGs for PCBs at a concentration of 0.496 µg/g.

Pesticide Impacts

One sample (A2-SD08-4) was submitted for pesticides analysis. There were exceedances of CCME ISQG EQG for DDD and CCME PEL EQG for DDE and DDT.

7.5.5.4 Vegetation

2009

There were two aquatic and one terrestrial vegetation samples collected in AEC 2. Samples were submitted for metals analysis. The manganese concentration in AEC2-AQ-VEG09-1 was above the MOE-ULN guideline of 50 µg/g at 68.4 µg/g. AEC2-AQ-VEG09-1 also exceeded for sodium with a concentration of 293 µg/g, >5x the EQG of 50 ug/g. AEC2-AQ-VEG09-2 exceeded EQGs for iron, manganese and sodium, where concentrations were 894 µg/g, 309 µg/g and 1570 µg/g, respectively. AEC2-VEG09-1 had concentrations below all applicable EQGs.

The analytical results are provided in **Tables 7-19A** and **7-20A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 13**.

2008

One vegetation sample (VEG-4) was collected from APEC 2 and submitted for metals and PCBs analysis. VEG-4 exceeded the MOE-ULN sodium EQG of 50 ug/g with a concentration of 55 ug/g. PCB concentrations were below the applicable EQGs.

The analytical results are provided in **Tables 7-19B** and **7-20B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 13**.

7.5.5.5 Paint

Two paint samples were collected from the vehicle pile located at AEC 2. Both samples, AEC2-PB09-1 (ORANGE) and AEC2-PB09-2 (GREEN), exceeded the Northwest Territories (NWT) EQGs for lead in paint of 600 mg/kg at 75,000 mg/kg and 57,000 mg/kg respectively.

7.5.6 Chemical Impacts Summary – AEC 2

7.5.6.1 Impacted Soils

Evaluation of Metal Impacts in Soil

Metal-impacted soil was identified in AEC 2 in two samples. Exceedances of copper were identified in one sample above the PL and CL EQG. Cadmium also exceeded the PL EQG in one sample. Elevated metals concentrations are likely associated with the buried metal debris identified in the area.

Evaluation of Hydrocarbon Impacts in Soil

Hydrocarbon impacts were identified in AEC 2 in one sample location (A3-TP08-2). Exceedances of PHC F2, F3, and F4 exceeding both the PL and CL EQG were present. The impacted soil sample was collected in an area of soil staining directly downgradient of buried waste debris. One delineation test pit was advanced downgradient and reported concentrations below the applicable EQGs. Bedrock outcropping prevented delineation test pitting on the east and west sides of the impacted sample.

Evaluation of PCB Impacts in Soil

PCB impacts were detected in AEC 2 in one sample (A3-TP08-2). Exceedances of the PL EQG were reported. The impacted soil sample was collected in an area of soil staining directly downgradient of buried waste debris. One delineation test pit was advanced downgradient and reported concentrations below the applicable EQGs. Bedrock outcropping prevented delineation test pitting on the east and west sides of the impacted sample.

Evaluation of PAH, VOCs & Pesticide Impacts in Soil

PAH, VOCs and pesticide exceedances were not identified in soil and therefore are not considered an issue.

The following table summarizes the results of the soil investigation in AEC 2.

COC	Exceeding Analytes	Exceedance of EQG	
		PL	CL
Metals	copper	yes	yes
	cadmium	yes	no
Petroleum Hydrocarbons	PHC fractions F2, F3, F4	yes	yes
PCBs	Total PCBs (1260)	yes	no
PAHs, VOCs and Pesticides	no impacts reported	no	no

7.5.6.2 Impacted Surface Water

Evaluation of Metal Impacts in Surface Water

Metal-impacted surface water was identified in AEC 2 in samples collected in 2008 and 2009. Concentrations exceeded the freshwater EQG for aluminum (7), cadmium (3), copper (3), iron (10), and lead (1). Surface water was collected from the drainage running directly through the vehicle dump area. Elevated metal concentrations are believed to be associated with the dissolution of exposed metal waste and chemical loading of the localized soils, sediment, and surface water.

Samples collected during the 2008 event reported exceedances of cadmium (3), copper (3), and lead (1). It should be noted that samples collected during the 2009 event failed to replicate the aforementioned exceedances and only exhibited exceedances in aluminum (3) and iron (10).

Evaluation of PHC, VOC, PAH, PCB & Pesticide Impacts in Surface Water

PHC, VOC, PAH, PCB, and pesticide exceedances were not identified in surface water and therefore are not considered an issue.

The following table summarizes the results of the Surface Water investigation in AEC 2.

COC	Exceeding Analytes	Exceedance of EQG	
		freshwater	marine
Metals	aluminum	yes	N/A
	cadmium	yes	N/A
	copper	yes	N/A
	iron	yes	N/A
	lead	Yes	N/A
PHCs, PAHs, VOCs, PCBs and Pesticides	no impacts reported	no	N/A

7.5.6.3 Impacted Sediment

Evaluation of Metal Impacts in Sediment

Metals impacts in sediment were identified in AEC 2 in sixteen samples from the 2008 and 2009 sampling events. Concentrations exceeded only the ISQG EQG for arsenic (1), cadmium (6), chromium (5), copper (5), lead (5), and zinc (11). Concentrations exceeded both the ISQG and PEL EQGs for copper (1), cadmium (3), lead (5), and zinc (3). Chromium VI exceeded the CCME PL EQG for soil in three sediment samples. Elevated metal concentrations are believed to be associated with the dissolution of exposed metal waste and chemical loading of the localized soils, sediment, and surface water.

Evaluation of PHC Impacts in Sediment

Hydrocarbon impacts in sediment were identified in AEC 2 in six samples collected in the 2009 sampling event; however, the six samples analyzed from the 2008 event reported only one sample with exceedances of the applicable CCME soil criteria. Elevated concentrations above the CCME PL EQG, but below the CL EQG were detected for PHC F2 (1) and F3 (5). Elevated concentrations above the CCME CL EQG were detected for PHC F2 (3), F3 (2), and F4 (1). Elevated PHC concentrations are likely due to the disposal of fuel drums and vehicle fuel tanks in the area and directly in the drainage pathway. Some historical fuel spillage in the area (as indicated by localized soil staining in the vicinity of the drainage) is also likely.

Evaluation of PCB Impacts in Sediment

PCB impacts in sediment were identified in AEC 2 in twelve samples collected during the 2008 and 2009 sampling events. Eleven samples exceeded the PEL EQGs and one sample exceeded only the ISQG EQG for total PCBs. PCB concentrations are higher downgradient of the vehicle dump, indicating that impacts are likely directly related to the disposal of vehicles and associated vehicle fluids in the drainage pathway. Higher PCB concentrations in downgradient sample locations are likely a product of loading over time.

Evaluation of Pesticide Impacts in Sediment

Pesticide impacts in sediment were identified in AEC in eleven samples collected during the 2008 and 2009 sampling events. Pesticide concentrations exceeded the ISQG EQG for DDD (2) and DDE (2). Furthermore, pesticide concentrations exceeded both the ISQG and PEL EQGs for DDD (9), DDE (9), and DDT (5).

Evaluation of PAH and VOC Impacts in Sediment

PAHs and VOCs exceedances were not identified in sediment and therefore are not considered an issue.

The following table summarizes the results of the Sediment investigation in AEC 2.

COC	Exceeding Analytes	Exceedance of EQG	
		ISQG	PEL
Metals	arsenic	yes	no
	cadmium	yes	yes
	chromium	yes	no
	chromium VI	CCME PL Soil EQG	
	copper	yes	yes
	lead	yes	yes
	zinc	yes	yes
PHCs (CCME PL and CL EQGs for soil used for comparison only)	F2 (PL/CL)	N/A	N/A
	F3 (PL/CL)	N/A	N/A
	F4 (CL)	N/A	N/A
PCBs	PCBs	yes	yes
Pesticides	DDD	yes	yes
	DDE	yes	yes
	DDT	yes	yes
PAHs and VOCs	no impacts reported	no	no

7.5.6.4 Impacted Vegetation

Two terrestrial samples and two aquatic vegetation samples were collected in AEC 2 during the 2008 and 2009 sampling events. Samples reported exceedances of manganese (2), iron (1), and sodium (3). Vegetation metals impacts (manganese and iron) were only identified in the aquatic samples and are believed to be related to the disposal of metallic debris in the area. High sodium concentrations are likely a product of the sites close proximity to saline ocean water.

The following table summarizes the results of the vegetation investigation in AEC 2.

COC	Description
Metals	• metal concentrations of manganese, iron, and sodium as exceendances.
PCBs	• no impacts reported

7.6 AEC 3: Main Landfill

7.6.1 Summary of AEC Location and Features

AEC 3 is bordered by AEC 4 to the south, which lies adjacent to Sylvia Grinnell River, and AEC 2 to the east. The main landfill area consists of a mixture of debris and wastes spread across a steep graded bedrock slope (~70%). The top of the landfill has been capped with granular material and the toe is left exposed with debris scattered throughout the area. The majority of the landfill material is located within AEC 3.

Major features located in AEC 3 include the main landfill and Pond 3. At the bottom of the escarpment there are two small barrel caches, approximately 15 m apart, and a stained area is visible between the two caches. There are two low-lying wet areas where ponded water can accumulate. These wet areas are located in the apparent drainage pathways from the west side escarpment/landfill towards Pond 1 and Pond 2. (See **Figure 8**).

7.6.2 Sampling/Investigation Rationale

The previous environmental investigation conducted by FRANZ (2009) included the collection of 18 soil samples, four surface water and sediment samples and four vegetation samples. Analytical results from 2008 found exceedances in soils (PHCs, metals and PCBs), sediments (metals and PCBs), surface water (metals) and vegetation (metals). Further delineation of impacts and confirmation sampling was required.

7.6.3 Field Observations

The main landfill in AEC 3 was created by dumping the debris and wastes on the top of the escarpment and bulldozing it over the edge towards the river. Attempts to cap the landfill were likely accomplished in the same manner. Four exploratory test pits were excavated on top of the landfill to gather information on the depth of the capped material and it was observed that the maximum depth to debris was 0.15 m.

Soil vapour readings measured between 0 and 5 ppm.

7.6.4 Sampling

Five soil samples were collected at the bottom of the escarpment. Two test pits were along the drainage area pathways into Ponds 1 and 2, two adjacent to the barrel cache and stained area and one along the bedrock ridges down the side of the escarpment. The soils at the bottom of the escarpment (toe of landfill) are characterized as black/brown fine to medium sand, some silt and gravel and some organics. Three surface water and sediment samples were collected from

Pond 3. Samples were taken from the north, south and west side of Pond 3. Sediments collected from Pond 3, one of the largest ponds on the site, are characterized as being black, fine to coarse sand and gravel, no organics, no decomposition and no odour. One aquatic vegetation sample was also collected from the middle of Pond 3. The two terrestrial vegetation samples were collected from the drainage area from the escarpment, one towards Pond 1 and one towards Pond 2.

7.6.5 Results of Chemical Analysis of Environmental Media

7.6.5.1 Soil

2009

A total of six samples were submitted at AEC 3. Four samples were analyzed for PHCs and total metals, two samples analyzed for PAHs and VOCs, and one sample analyzed for PCBs.
The analytical results are provided in **Tables 7-1A** through **7-6A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 16**.

Total Metals Impacts

Samples AEC3-TP09-4 through AEC3-TP09-7 were analyzed for total metals. All samples were below the applicable EQGs.

Petroleum Hydrocarbon Impacts

Samples AEC3-TP09-1, AEC3-TP09-3, AEC3-TP09-6 and AEC3-TP09-7 were analyzed for PHCs. All samples were below the applicable EQGs.

Polychlorinated biphenyls Impacts

Sample AEC3-TP09-1 was analyzed for PCBs. The sample was below the applicable EQG.

Polycyclic Aromatic Hydrocarbon Impacts

Samples AEC3-TP09-6 and AEC3-TP09-7 were submitted for PAHs analysis. Both samples were below the applicable EQGs.

Volatile Organic Compound Impacts

Samples AEC3-TP09-6 and AEC3-TP09-7 were submitted for VOCs analysis. Both samples were below the applicable EQGs.

2008

A total of 18 soil samples were collected at APEC 3. Samples were submitted for PHCs, metals, PCBs, VOCs, PAHs and pesticide analysis.

The analytical results are provided in **Tables 7-1B** through **7-6B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 16**.

Total Metals Impacts

A total of 17 samples plus two duplicates were submitted for metals analysis. Sample A3-TP08-12 indicated a copper concentration of 82 µg/g exceeding the CCME PL EQG of 63 µg/g, a lead concentration of 256 µg/g exceeding the CCME PL EQG of 140 µg/g and a zinc concentration of 488 µg/g exceeding the CCME CL EQG of 360 µg/g. A3-TP08-13 exhibited a zinc exceedance of the CCME PL EQG of 200 µg/g with a concentration of 205 µg/g. A number of samples (A3-TP08-2, -4, -6, -7, -10, -11, and -16 through -18) were outside the pH of 6 to 8. These samples all had pHs ranging from 5.03 to 5.98. All remaining samples were below the applicable EQGs.

Petroleum Hydrocarbon Impacts

A total of fifteen samples plus two duplicates were submitted for PHCs analysis. Sample A3-TP08-2 exceeded the CCME CL EGQ for PHC fraction F2 with a concentration of 450 µg/g. A3-TP08-2 also exceeded CCME CL for PHC fraction F3 and F4 with concentrations that were >26x the EQG of 1700 µg/g and >3x the EQG of 3300 µg/g, respectively. A3-TP08-3 was just above the CCME PL EQG for F3 with a concentration of 343 µg/g. All remaining samples were below the applicable EQGs.

Polychlorinated biphenyls Impacts

A total of nine samples and one duplicate were submitted for PCBs analysis. All samples were below the applicable EQGs.

Polycyclic Aromatic Hydrocarbon Impacts

Five samples plus one duplicate were submitted for PAH analysis. Sample A3-TP08-13 exhibited concentrations of benzo(a)anthracene (1.14 µg/g) and benzo(b)flouranthene (1.78 µg/g) that were above the CCME PL EQG. Benzo(a)pyrene, at 1.31 µg/g, reported concentrations above the CL EQGs. All other samples were below the applicable EQGs.

Volatile Organic Compound Impacts

Three samples and one duplicate were submitted for VOC analysis. All samples were below the applicable EQGs.

Pesticide Impacts

Two samples and one duplicate were submitted for pesticide analysis. All samples were below the applicable EQGs.

7.6.5.2 Surface water

2009

Three surface water samples were submitted for AEC 3 and analyzed for metals, PCBs, pesticides, and herbicides. There were no exceedances of EQGs for pesticides and herbicides. All samples analyzed for PCBs were below detection limits.

Two samples submitted for metals analysis exceeded CCME FWAL EQGs. Both AEC3-SW09-1 and AEC3-SW09-3 exceeded the CCME FWAL EQG for iron with concentrations of 330 µg/L and 430 µg/L respectively. AEC3-SW09-3 also exceeded the EQG for lead with a concentration of 1 µg/L.

The analytical results are provided in **Tables 7-7A** through **7-12A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 17**.

2008

Two surface water samples were collected during the 2008 sampling event in AEC 3 (formerly APEC 3). Samples were submitted for PHCs, metals, and PCBs. All samples that were submitted for PHCs and PCBs were found to be below CCME FWAL EQGs.

Sample A3-SW08-1 exceeded for aluminum (43.4 µg/L), cadmium (0.129 µg/L), copper (4.7 µg/L), lead (2.77 µg/L), and zinc (163 µg/L). A3-SW08-3 and A3-SW08-4 both exceeded the EQG for cadmium with concentrations of 0.024 µg/L and 0.018 µg/L respectively. The remaining sample (AEC3-SW09-2) was below the applicable EQGs.

The analytical results are provided in **Tables 7-7B** through **7-12B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 17**.

7.6.5.3 Sediment

2009

Three sediment samples were collected in AEC 3 and analyzed for PHCs, metals, PCBs, pesticides and herbicides. Based on the twice-daily influx of brackish water during high tide events, marine sediment guidelines were applied.

The analytical results are provided in **Tables 7-13A** through **7-18A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 18**.

Total Metals Impacts

Sample AEC3-SD09-1 exceeded both CCME marine ISQG and PEL EQGs for arsenic (2 µg/g), cadmium (0.1 µg/g), chromium (13 µg/g), copper (7.5 µg/g), and lead (18 µg/g). AEC3-SD09-2 exceeded marine ISQG and PEL EQGs for chromium (17 µg/g), copper (4.7 µg/g) and lead (5 µg/g). Sample AEC3-SD09-3 also exceeded marine ISQGs and PELs for arsenic (7 µg/g), cadmium (0.3 µg/g), chromium and copper (18 µg/g) and lead (63 µg/g). AEC3-SD09-3 also exceeded CCME PL use EQG for molybdenum with a concentration of 11 µg/g.

<u>Petroleum Hydrocarbon Impacts</u>
Sample AEC3-SD09-3 exceeded CCME PL use EQG of 300 µg/g for F3 with a concentration of 360 µg/g. The other two samples were both below the applicable EQGs.

<u>Polychlorinated biphenyls Impacts</u>
All three samples were submitted for PCBs analysis. Sample AEC3-SD09-3 exceeded the marine ISQG EQG with a concentration of 0.09 µg/g. The remaining two samples were below the applicable EQGs.

<u>Pesticide Impacts</u>
Sample AEC3-SD09-3 exceeded freshwater PEL EQG for total DDD (0.02 µg/g) and total DDE (0.014 µg/g). Sample AEC3-SD09-1 remained below the applicable EQGs.

<u>2008</u>
One sediment sample was collected during the 2008 sampling event. The sample was submitted for PHCs, metals, and PCBs.

The analytical results are provided in **Tables 7-13B** through **7-18B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 18**.

<u>Total Metals Impacts</u>
Sample AEC3-SD09-2 exceeded the CCME marine ISQGs and PELs for chromium (12.8 µg/g) and copper (4.5 µg/g).

<u>Petroleum Hydrocarbon Impacts</u>
Sample AEC3-SD09-2 was below the applicable EQGs.

<u>Polychlorinated biphenyls Impacts</u>
Sample AEC3-SD09-2 was below the applicable EQGs.

7.6.5.4 Vegetation

<u>2009</u>
There was one aquatic and two terrestrial vegetation samples collected in AEC 3. All three samples were submitted for metals analysis and one sample was submitted for PCBs analysis.

Total Metals Impacts

Sample AEC3-AQ-VEG09-1 exceeded MOE-ULN EQGs for boron with (26.6 µg/g), iron (930 µg/g), manganese (711 µg/g), and sodium (3390 µg/g). The other two samples (AEC3-VEG09-1 and -2) were both below the applicable EQGs.

Polychlorinated biphenyls Impacts

Sample AEC3-AQ-VEG09-1 was below the applicable EQGs.

The analytical results are provided in **Tables 7-19A** and **7-20A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 17**.

2008

Four vegetation samples were collected from AEC 3 (formerly APEC 3) and submitted for metals and PCBs analysis (Veg-1, -2, -3, and -5).

The analytical results are provided in **Tables 7-19B** and **7-20B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 17**.

Total Metals Impacts

Sample VEG-1 exceeded MOE-ULN EQG for sodium (62 µg/g). Sample VEG-2 also exceeded for sodium with a concentration of 53 µg/g.

Polychlorinated biphenyls Impacts

PCBs parameters were below the applicable EQGs for all samples.

7.6.6 Chemical Impacts Summary – AEC 3

7.6.6.1 Impacted Soils

Evaluation of Metal Impacts in Soil

Metal-impacted soil was identified in AEC 3 in two samples during the 2008 sampling event. Exceedances of copper (1), lead (1), and zinc (1) were identified PL EQG. Exceedances of zinc (1) above the CL EQG were also identified. Elevated metals concentrations were taken in heavily stained areas and are likely associated with the metal debris located in the main landfill slope area. Delineation test pitting was completed during the 2009 sampling round and all reported concentrations below the applicable EQGs. Impacts are believed to be isolated to the stained soil areas.

Evaluation of Hydrocarbon Impacts in Soil

Hydrocarbon impacts were identified in AEC 3 in one sample location (A3-TP08-3). Exceedances of PHC F2, F3, and F4 exceeding both the PL and CL EQG were present. The impacted soil sample was collected in a drainage gully at the eastern extent of the main landfill area. One delineation test pit was advanced downgradient and reported concentrations below the applicable EQGs. Bedrock outcropping prevented delineation test pitting on the east and west sides of the impacted sample.

Evaluation of PAH Impacts in Soil

PAH impacts were identified in AEC 3 in one sample location (A3-TP08-13) during the 2008 sampling event. The impacted soil sample was collected directly beneath debris in a heavily orange stained area. The sample location is isolated by bedrock outcropping and no other PAH impacts were detected in surrounding test pits during either the 2008 or 2009 sampling events.

Evaluation of VOCs & Pesticide Impacts in Soil

VOCs and pesticide exceedances were not identified in soil and therefore are not considered an issue.

The following table summarizes the results of the soil investigation in AEC 3.

COC	Exceeding Analytes	Exceedance of EQG	
		PL	CL
Metals	copper	yes	no
	lead	yes	no
	zinc	yes	yes
Petroleum Hydrocarbons	F2	yes	yes
	F3	yes	yes
	F4	yes	yes
PAHs	benzo(a)anthracene, benzo(b)flouranthene	yes	no
	benzo(a)pyrene	yes	yes
PCBs, VOCs and Pesticides	no impacts reported	no	no

7.6.6.2 Impacted Surface Water

Evaluation of Metal Impacts in Surface Water

Metal impacted surface water was identified in AEC 3 in four samples collected in 2008 and 2009. Concentrations exceeded the freshwater EQG for aluminum (1), cadmium (3), copper (1), iron (2), lead (1), and zinc (1). The exceedances for aluminum, copper, and zinc were from sample A3-SW08-3 collected in a small pool of standing water directly adjacent to the toe of the main landfill slope. This small ponded water area was not present during the 2009 sampling event; therefore, no confirmation sampling could be completed. The remaining surface water samples were collected from Pond 3. Elevated metal concentrations are believed to be associated with the dissolution of exposed and buried metal waste and chemical loading of the localized soils, sediment, and surface water.

Evaluation of PHC, PCB & Pesticide Impacts in Surface Water

PHC, PCB, and pesticide exceedances were not identified in surface water and therefore are not considered an issue.

The following table summarizes the results of the Surface Water investigation in AEC 3.

COC	Exceeding Analytes	Exceedance of EQG	
		freshwater	marine
Metals	aluminum	yes	N/A
	cadmium	yes	N/A
	copper	yes	N/A
	iron	yes	N/A
	lead	Yes	N/A
	zinc	Yes	N/A
PHCs, PCBs and Pesticides	no impacts reported	no	no

7.6.6.3 Impacted Sediment

Evaluation of Metal Impacts in Sediment

Metals impacts in sediment were identified in AEC 3 in four samples from the 2008 and 2009 sampling events. Concentrations exceeded the marine ISQG and PEL EQGs for arsenic (2), cadmium (2), chromium (4), copper (4), and lead (3). Molybdenum exceeded the CCME PL EQG for soil in one of the sediment samples. Elevated metal concentrations are believed to be associated with the dissolution of exposed metal waste and chemical loading of the localized soils, sediment, and surface water.

Evaluation of PHC Impacts in Sediment

Hydrocarbon impacts in sediment were identified in AEC 3 in one sample collected during the 2009 sampling event. Elevated concentrations above the CCME PL EQG, but below the CL EQG were detected for PHC F3. Elevated PHC concentrations are likely due to the disposal of fuel drums and vehicle fuel tanks in the area upgradient of Pond 3.

Evaluation of Pesticide Impacts in Sediment

Pesticide impacts in sediment were identified in AEC 3 in one sample collected during the 2009 sampling event. Pesticide concentrations exceeded the freshwater ISQG and PEL EQGs for DDD and DDE.

Evaluation of PCB Impacts in Sediment

PCB impacts in sediment were identified in AEC 3 in one sample collected during the 2009 sampling event. PCB concentrations exceeded the marine ISQG.

The following table summarizes the results of the Sediment investigation for AEC 3.

COC	Exceeding Analytes	Exceedance of EQG	
		ISQG	PEL
Metals	arsenic	yes	yes
	cadmium	yes	yes
	chromium	yes	yes
	copper	yes	yes
	lead	yes	yes
	molybdenum	CCME PL EQG	
PHCs (CCME PL and CL EQGs for soil used for comparison only)	F3 (PL)	N/A	N/A
Pesticides	DDD	yes	yes
	DDE	yes	yes
PCBs	PCBs	yes	no

7.6.6.4 Impacted Vegetation

Five terrestrial samples and one aquatic vegetation sample was collected in AEC 3 during the 2008 and 2009 sampling events. The one aquatic sample reported exceedances of boron, iron, manganese, and sodium. The two terrestrial samples collected during the 2008 event reported exceedances in sodium and the two terrestrial samples collected in 2009 had no exceedances.

The following table summarizes the results of the vegetation investigation for AEC 3.

COC	Description
Metals	• metal concentrations of boron, iron, manganese, and sodium
PCBs	• no impacts reported

7.7 AEC 4: Down Gradient and Off Site Areas

7.7.1 Summary of AEC Location and Features

AEC 4 encompasses two distinct areas, one between AEC 3/AEC 2 and Sylvia Grinnell River and one to the west of AEC 3, on Sylvia Grinnell National Park land. See **Figure 9**. There are three ponds in AEC 4 in which a portion of the surface water, sediment and aquatic vegetation samples were collected. Pond 1 and Pond 2 are located on the downgradient side of the main landfill and receive drainage waters from the landfill and from the Sylvia Grinnell Park off-site. Pond 2 drains into Pond 1 which then discharges into the river. Pond 4 is located on the east side of AEC 4, adjacent and downgradient to AEC 2. This pond is a receptor of upgradient waters from the main drainage channel running through AEC 2 (Vehicle Dump).

Ponds 1 and 4 are directly connected to the Sylvia Grinnell River during times of high tide.

7.7.2 Sampling/Investigation Rationale

The previous environmental investigation conducted by FRANZ (2009) included the collection of two soil samples, eight surface water and sediment samples and three vegetation samples. Analytical results from the 2008 field program found exceedances in surface water (metals and VOCs) and vegetation (metals). Further delineation of impacts and confirmation sampling was required.

7.7.3 Field Observations

It was observed that high tide levels completely submersed the low-lying areas to the southeast of Pond 1, and between Pond 1 and the Sylvia Grinnell River. High tides also completely submersed the area between Pond 4 and the Sylvia Grinnell River.

Heavy orange surface staining was noted to the southeast of Pond 1 in the low-lying area. Areas east of Pond 2 and below the cliff band had dried up and did not contain standing surface water as was observed during the 2008 investigation. Heavy surface staining and sheen was noted in stagnant ponded water, approximately 50 m southeast towards the main landfill area (location of AEC4-SW09-16).

Very little debris was noted in AEC 4, with the exception of small pockets of debris along the grass bedrock interface. An ATV was also found partially submerged along the northeast shoreline of Pond 2.

Soil vapour readings measured between 0 and 5 ppm.

7.7.4 Sampling

Two test pits were excavated in the drainage pathways downgradient from the main landfill into ponds 1 and 2. The soil was characterized as a dark grey/brown fine to medium sand with some organic matter.

Moving from Pond 2 towards Pond 1, two sediment and surface water samples were collected in Pond 2. One sample was collected at the southeast side of the pond, where the main landfill waters drain into the pond, and one sample was collected at the outlet that drains into Pond 1. Three sediment and surface water samples were collected in Pond 1, one sample at the inlet from Pond 2, one sample at the south east side where the drainage pathway from the main landfill is located and one sample at the outlet that drains into Sylvia Grinnell River. Sediments within AEC 4 were characterized as brown, fine to coarse sand/silt, organic matter, and high decomposition with some organic odour.

Three sediment and surface water samples were collected from Pond 4 to encompass all possible drainage into the pond. One sample was collected at the inlet from Pond 5, and one sample each from the northwest and southeast sides of the pond. Two sediment and surface water samples were collected from the intermittent small pools of water that are part of the drainage system from Pond 4 into the Sylvia Grinnell River.

Five surface water samples were collected directly from Sylvia Grinnell River. All were located at locations where drainage from the site enters the river. Three aquatic vegetation samples were collected, one from the center of each pond.

In some instances sediment and surface water samples were collected in the same locations as the 2008 field investigation in order to confirm/refute the presence of COCs/PCOCs. Due to the increased sample density of the 2009 field sampling, sample numbers do not correspond. The following **Table 7-3** summarizes the samples collected in AEC 4 and arrows indicate the relationship between sample locations.

Table 7-3: Sample Relationships – AEC 4

Area	Medium	Year	
		2009	2008
APEC 4 / AEC 4 - Downgradient & Off-Site	Sediment	AEC4-SD09-1 -->	A4-SD08-3
		AEC4-SD09-11 -->	A4-SD08-2
		AEC4-SD09-15 -->	A4-SD08-1
	Surface Water	AEC4-SW09-1 -->	A4-SW08-3
		AEC4-SW09-6 -->	A4-SW08-7
		AEC4-SW09-7 -->	A4-SW08-8
		AEC4-SW09-8 -->	A4-SW08-6
		AEC4-SW09-9 -->	A4-SW08-5
		AEC4-SW09-10 -->	A4-SW08-4
		AEC4-SW09-11 -->	A4-SW08-2
		AEC4-SW09-15 -->	A4-SW08-1

Note: Arrow indicates samples collected at the same physical location

7.7.5 Results of Chemical Analysis of Environmental Media

7.7.5.1 Soil

<u>2009</u>

Two samples were collected in AEC 4. Both samples were submitted for total metals, PHCs, and VOCs. One sample (AEC4-TP09-1) was submitted for PAHs. Both samples were below the applicable EQGs for all parameters tested.

The analytical results are provided in **Tables 7-1A** through **7-6A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 19**.

<u>2008</u>

A total of two shallow test pits (A4-TP08-1 and A4-TP08-2) were excavated at AEC 4 (formerly APEC 4). Both samples were submitted for PHCs, metals, and PCBs analysis. Both samples were below the applicable EQGs for all parameters tested.

The analytical results are provided in **Tables 7-1B** through **7-6B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 19**.

7.7.5.2 Surface water

<u>2009</u>

A total of 16 surface water samples and one duplicate sample were analyzed for PHCs, metals, PAHs, VOCs, PCBs, pesticides and herbicides in AEC 4. There were no exceedances of EQGs for PHCs, PAHs, PCBs, or pesticides and herbicides.

The analytical results are provided in **Tables 7-7A** through **7-12A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 20**.

<u>Total Metals Impacts</u>

All 16 surface water samples were analyzed for metals. Sample AEC4-SW09-2 exceeded the CCME FWAL EQG for iron (330 µg/L). AEC4-SW09-3 exceeded the CCME FWAL EQG for aluminum (27 µg/L), copper (3 µg/L) and iron (610 µg/L). AEC4-SW09-11, AEC4-SW09-13, AEC4-SW09-14, AEC4-SW09-15 all exceeded the CCME FWAL EQG for iron with concentrations of 1,400 µg/L, 310 µg/L, 330 µg/L and 10,000 µg/L, respectively, more than three times the EQG.

<u>Volatile Organic Carbon (VOCs)</u>

Four samples and one duplicate were analyzed for VOCs in surface water. AEC4-SW09-16 exceeded the CCME FWAL EQG for tetrachlorethene (210 µg/L) and trichlorethene (62 µg/L). All remaining samples were below the applicable EQGs.

<u>2008</u>

Eight surface water samples were collected during the 2008 sampling event. Samples were submitted for PHCs, metals, PAHs, VOCs, PCBs and pesticides. All samples that were submitted for PHCs, PAHs, PCBs and pesticides were found to be below CCME FWAL EQGs.

The analytical results are provided in **Tables 7-7B** through **7-12B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 20**.

Total Metals Impacts

Three samples exceeded EQGs for metals. Sample A4-SW08-3 exceeded CCME FWAL for cadmium (0.146 µg/L) and copper EQG (5.7 µg/L). Samples A4-SW08-4 and A4-SW08-7 both exceeded for cadmium with concentrations of 0.044 µg/L and 0.082 µg/L.

Volaite Organic Carbon (VOCs) Impacts

Sample A4-SW08-2 exceeded the EQG for trichloroethylene at a concentration of 22.6 µg/L.

7.7.5.3 Sediment

Based on the twice-daily influx of brackish water during high tide events, marine sediment guidelines were applied.

2009

A total of eleven sediment samples were analyzed for PHCs, metals, PAHs, VOCs, PCBs, pesticides and herbicides in AEC 4. Samples submitted for PHCs and PAHs were below all applicable EQGs.

The analytical results are provided in **Tables 7-13A** through **7-18A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 21**.

Total Metals Impacts

All eleven samples collected, plus one duplicate, were submitted for metals analysis. Samples AEC4-SD09-1 through AEC4-SD09-13 were screened against the CCME sediment marine EQGs. AEC4-SD09-14 and AEC4-SD09-15 were screened against the CCME freshwater marine EQGs. Sample AEC4-SD09-1 exceeded the CCME marine ISQG and PEL EQGs for cadmium (0.2 µg/g), chromium (20 µg/g), copper (7.2 µg/g) and lead (9 µg/g). Sample AEC4-SD09-2 exceeded the marine ISQG and PEL EQGs for arsenic (2 µg/g), cadmium (0.2 µg/g), chromium (15 µg/g), copper (7.6 µg/g), and lead (9 µg/g). AEC4-SD09-3 and AEC4-SD09-4 both exceeded CCME marine EQGs for arsenic (1 and 1 µg/g), cadmium (0.1 and 0.2 µg/g), chromium (17 and 18 µg/g), copper (7.6 and 8 µg/g) and lead (11 and 8 µg/g). Sample AEC4-SD09-3 also exceeded CCME PL EQGs for chromium VI (0.7 µg/g). AEC4-SD09-5 exceeded ISQGs and PELs for chromium (13 µg/g), copper (5.6 µg/g) and lead (2 µg/g). AEC4-SD09-11 exceeded ISQGs and PELs for arsenic (1 µg/g), chromium (17 µg/g), copper (6.3 µg/g) and lead (3 µg/g). AEC4-SD09-12 exceeded ISQGs and PELs for chromium, copper and lead with concentrations of 30 µg/g, 6.3 µg/g and 2 µg/g respectively. AEC4-SD09-13 also exceeded ISQGs and PELs for chromium, copper and lead with concentrations of 20 µg/g, 5.8 µg/g and 3 µg/g respectively. AEC4-SD09-14 and AEC4-SD09-15 did not have measured values above the CCME freshwater EQGs.

<u>Polychlorinated Biphenyls Impacts</u>

Three samples plus one duplicate were submitted for PCBs analysis. Sample AEC4-SD09-1 exceeded the CCME marine ISQG EQG for total PCBs with a concentration of 0.03 µg/g, but remained below the PELs. AEC4-SD09-15 exceeded the CCME freshwater ISQG EQG for total PCBs with a concentration of 0.04 µg/g, but also remained below the PELs. AEC4-SD09-11 was below all applicable EQGs.

<u>Pesticide Impacts</u>

Three samples plus one duplicate were submitted for pesticides and herbicides analysis. AEC4-SD09-1 exceeded CCME marine ISQG EQG for total DDD with a concentration of 0.004 µg/g. AEC4-SD09-15 exceeded CCME freshwater ISQG EQG of 0.00354 µg/g with a concentration of 0.004 µg/g. Both AEC4-SD09-1 and 15 remained below the CCME marine PELs. AEC4-SD09-11 was below all applicable EQGs.

<u>Volatile Organic Carbons (VOCs)</u>

Three samples and one duplicate were analyzed for VOCs. Sample AEC4-SD09-11 was above the CCME PL EQG for tetrachloroethene (0.24 µg/g) and trichloroethene (0.10 µg/g). The remaining samples (AEC4-SD09-1 and -15) were below all applicable EQGs.

<u>2008</u>

Seven sediment samples were collected during the 2008 sampling event. Samples were submitted for PHCs, metals, PCBs, PAHs, VOCs and pesticides. All samples that were submitted for PHCs, PCBs, PAHs, VOCs, and pesticides were found to be below applicable EQGs.

The analytical results are provided in **Tables 7-13B** through **7-18B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 21**.

<u>Total Metals Impacts</u>

All seven samples were submitted for metals analysis. Samples A4-SD08-2 through A4-SD08-8 all exceeded both CCME marine ISQGs and PELs for both chromium and copper. The maximum concentration of chromium that exceeded the EQG was 15.5 µg/g found at A4-SD08-4, the minimum concentration was 9.3 µg/g found at A4-SD08-3. For copper, the maximum exceeded concentration was 6.7 µg/g at A4-SD08-3 and the minimum concentration was 4.6 µg/g.

7.7.5.4 Vegetation

<u>2009</u>

Three aquatic vegetation samples were collected in AEC 4. Samples were submitted for metals analysis. Sample AEC4-AQ-VEG09-1 exceeded the MOE-ULN EQG for iron (1890 µg/g), manganese (57.6 µg/g) and sodium (310 µg/g). Sample AEC4-AQ-VEG09-2 exceeded EQGs for iron, manganese and sodium, with concentrations of 808 µg/g, 119 µg/g and 1180 µg/g, respectively. AEC4-AQ-VEG09-3 exceeded the EQG for arsenic (1.1 µg/g), iron (2410 µg/g) and sodium (241 µg/g).

The analytical results are provided in **Tables 7-19A** and **7-20A**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 20**.

<u>2008</u>

Three terrestrial vegetation samples and one duplicate were collected from AEC 4 (formerly APEC 4) and submitted for metals and PCBs analysis. VEG-1 exceeded MOE-ULN EQG for sodium (2660 µg/g) and the iron (7880 µg/g). VEG-2 was in exceedance of iron and sodium EQGs with concentrations of 627 µg/g and 6790 µg/g (>135x EQG) respectively. VEG-3 exceeded for iron (853 µg/g) and sodium (6180 µg/g) (>123x EQG). PCBs parameters were below the applicable EQGs.

The analytical results are provided in **Tables 7-19B** and **7-20B**. Sampling locations with parameters that exceed applicable EQGs are presented in **Figure 20**.

7.7.6 Chemical Impacts Summary – AEC 4

7.7.6.1 Impacted Soils

<u>Evaluation of Metal, PHC, PAH, PCB, Pesticide, and VOC Impacts in Soil</u>

Metal, PHC, PAH, PCB, Pesticide, and VOCs exceedances were not identified in soil and therefore are not considered an issue.

The following table summarizes the results of the soil investigation in AEC 4.

COC	Exceeding Analytes	Exceedance of EQG	
		PL	CL
Metals, PHC, PAH, PCB, Pesticide, and VOCs	no impacts reported	no	no

7.7.6.2 Impacted Surface Water

<u>Evaluation of Metal Impacts in Surface Water</u>

Metal impacted surface water was identified in AEC 4 in nine samples collected in 2008 and 2009. Concentrations exceeded the freshwater EQG for aluminum (1), cadmium (3), copper (2), and iron (6). Elevated metal concentrations are believed to be associated with the dissolution of exposed and buried metal waste and chemical loading of the localized soils, sediment, and surface water.

Evaluation of VOC Impacts in Surface Water

VOC-impacted surface water was identified in AEC 4 in two samples collected in 2008 and 2009. The 2008 sample (A4-SW08-2) was collected in Pond 1 and contained concentrations of trichloroethene just above the EQG. The 2009 sample (AEC4-SW09-16) was collected upgradient of Pond 1 towards the main landfill, in a small stained ponded water area. The 2009 sample reported concentrations of trichloroethene and tetrachloroethene in exceedance of the EQGs. Higher concentrations in the upgradient sample and the inability to duplicate the 2008 results from the same sample location as A4-SW08-2 in 2009 suggest the VOC source location to be upgradient of Pond 1 towards the main landfill area. This conclusion is further supported by the observation of trichloroethene written on a drum at the toe of the landfill (note that the drums have been moved from their original positions during past remediation attempts).

Evaluation of PHC, PAH, PCB & Pesticide Impacts in Surface Water

PHC, PAH, PCB, and pesticide exceedances were not identified in surface water and therefore are not considered an issue.

The following table summarizes the results of the Surface Water investigation in AEC 4.

COC	Exceeding Analytes	Exceedance of EQG	
		freshwater	marine
Metals	aluminum	yes	N/A
	cadmium	yes	N/A
	copper	yes	N/A
	iron	yes	N/A
VOCs	trichloroethene	yes	N/A
	tetrachloroethene	yes	N/A
PHCs, PAHs, PCBs and Pesticides	no impacts reported	no	no

7.7.6.3 Impacted Sediment

Evaluation of Metal Impacts in Sediment

Metals impacts in sediment were identified in AEC 4 in fourteen samples from the 2008 and 2009 sampling events. Concentrations exceeded the marine ISQG and PEL EQGs for arsenic (4), cadmium (4), chromium (14), copper (14), and lead (8). Chromium VI exceeded the CCME PL EQG for soil in one of the sediment samples. Elevated metal concentrations are believed to be associated with the dissolution of exposed metal waste and chemical loading of the localized soils, sediment, and surface water.

Evaluation of PCB Impacts in Sediment

PCB impacts in sediment were identified in AEC 4 in two samples collected during the 2009 sampling event. Elevated concentrations above the marine ISQG EQG, but below the PEL

EQG were detected for DDD in both samples. One sample was collected from Pond 2 and one from Pond 4.

Evaluation of Pesticide Impacts in Sediment

Pesticide impacts in sediment were identified in AEC 4 in two samples collected during the 2009 sampling event. Pesticide concentrations exceeded the marine ISQG for DDD in both samples. One sample was collected from Pond 2 and one from Pond 4.

Evaluation of VOC Impacts in Sediment

VOC impacts in sediment were identified in AEC 4 in one sample collected during the 2009 sampling event. Tetrachloroethene concentrations above the marine ISQG, but below the PEL EQGs and trichloroethene concentrations above the marine ISQG were reported. These VOC impacts correspond with VOC impacts observed in surface water analytical data. Based on the sediment and surface water data, as well as field observations, the VOC source location is expected to be upgradient of Pond 1 towards the main landfill area.

Evaluation of PHC and PAH Impacts in Sediment

PHC and PAH exceedances were not identified in sediment and therefore are not considered an issue.

The following table summarizes the results of the Sediment investigation for AEC 4.

COC	Exceeding Analytes	Exceedance of EQG	
		ISQG	PEL
Metals	arsenic	yes	yes
	cadmium	yes	yes
	chromium	yes	yes
	copper	yes	yes
	lead	yes	yes
	chromium VI	CCME PL EQG	
PCB	PCB	yes	no
Pesticides	DDD	yes	no
VOCs	tetrachloroethene	yes	no
	trichloroethene	yes	yes
PHC and PAH	no impacts reported	no	no

7.7.6.4 Impacted Vegetation

Three terrestrial and three aquatic vegetation samples were collected in AEC 4 during the 2008 and 2009 sampling events. The aquatic samples reported exceedances of arsenic (1), iron (2), manganese (2), and sodium (3). The terrestrial samples collected during the 2008 event reported exceedances in iron (3) and sodium (3).

The following table summarizes the results of the vegetation investigation for AEC 4.

COC	Description
Metals	• metal concentrations of arsenic, iron, manganese, and sodium in exceedance
PCBs	• no impacts reported

7.8 Overall Findings, Physical Hazards and Chemical Impacts

The results of the physical site conditions, an inventory of the site materials and an evaluation of the chemical distributions indicate that selected media and chemicals of concern are present at concentrations greater than the Environmental Quality Guidelines (EQG).

7.8.1 Inventory of Site Materials

The following (Table 7-22: Summary of Waste Debris) provides a summary of site materials:

AREA	DIMENSIONS/SIZE/AREA	ITEM(S)	DESCRIPTION OF WASTE - COMPONENTS	PAINTED (Y/N)	COLOUR	POTENTIAL HAZARDOUS MATERIALS	OTHER COMMENTS
APEC 1 - UP-GRADIENT DEBRIS AREA							
A1-TP08-1 (mound)	290 m^2	Buried Debris	Drums, sheet metal, piping (steel), steel cable, vehicle parts (axles, bracing, chassis), steel 'I' beams, wheel rims (steel), wood debris	N	N/A	None observed	All metal debris was rusted and contained no paint. Barrels were observed to be crushed. Unable to advance test pit due to intermingled metallic debris.
A1-TP08-2 (mound)	~ 1500 m^2	Buried Debris	Drums, steel rods, sheet metal, wood debris	N	N/A	None observed	All metal debris was rusted and contained no paint. Barrels were crushed. Debris was not as concentrated as A1-TP08-1 mound.
A1-TP08-3 (mound)	450 m^2	Buried Debris	Tires, drums, iron bracing (heavy), vehicle parts (chassis, hinges, axle, springs), rubber hose, steel cable, wire (electrical and bare), steel rods, sheet metal	N	N/A	None observed	All metal debris was rusted and contained no paint. Barrels were crushed. Debris in this mound seemed more concentrated than the previous two areas. Unable to advance test pit due to intermingled debris.
APEC 2 - VEHICLE DUMP							
UPPER SECTION	750 m^2	Vehicles	Water trucks, cars, boilers, flat bed trucks (military), fuel trucks (military and transport), vehicle engines, plows, dump trucks, boat	Y	Military green, blue, yellow, and orangey red	Asbestos may be present (brake lining, insulation materials) Lead-amended paint present on vehicles	The upper section contained vehicles which have recently been removed from the main vehicle pile with intentions of recycling (word of mouth). The upper section contains approximately 23 vehicles.
		Scattered Debris	Partial vehicles, tanks, drums, vehicle parts, brackets, sheet metal, wood debris, material (fabric), steel cables, tires, bicycle frames, electrical parts, leaf springs, radiators, scrap metal debris, inner tubes, batteries, hydraulic cylinders and equipment	Y	Military green, blue, yellow, and orangey red	Vehicle batteries Asbestos may be present (brake lining, insulation materials) Lead-amended paint present on vehicles	
LOWER SECTION	1400 m2	Vehicles	Water trucks, cars, boilers, flat bed trucks (military - green), fuel trucks (military and transport - orange), vehicle engines, plows, dump trucks, boat	Y	military green, Blue, yellow, and orangey red	Asbestos may be present (brake lining, insulation materials) Lead-amended paint present on vehicles	The lower section contains a higher concentration of vehicles and vehicle parts, as well as miscellaneous debris. There are approximately 63 vehicles in the lower section. The vehicles are stacked on top of one another in the drainage gully. Most of the drums on site were found in the lower section (two identifiable as kerosene and lubricating oil). Much scrap and random debris is located within the vehicle pile towards the bottom beneath the vehicles.
		Scattered Debris	Partial vehicles, tanks, drums, vehicle parts, brackets, sheet metal, wood debris, material (fabric), steel cables, tires, bicycle frames, electrical parts, leaf springs, radiators, scrap metal debris, inner tubes, batteries, hydraulic cylinders and equipment	Y	Military green, blue, yellow, and orangey red	Vehicle batteries Asbestos may be present (brake lining, insulation materials) Lead-amended paint present on vehicles	

AREA	DIMENSIONS/SIZE/AREA	ITEM(S)	DESCRIPTION OF WASTE - COMPONENTS	PAINTED (Y/N)	COLOUR	POTENTIAL HAZARDOUS MATERIALS	OTHER COMMENTS
APEC 3 - MAIN LANDFILL							
UPPER SECTION - EAST	1150 m^2	Scattered debris	Tires (~70), metal culverts, food waste (cans, bottles, aluminum, plastic), drums, some vehicle parts, snowmobiles (3), scrap metal, car (1), camp stove, mattress springs, metal strapping, steel studding (construction debris), metal piping, wood debris, plastic debris, pressure tank, sheet metal, re-bar, propane cylinder, tarpaulin, kerosene fuel cans (camping), computer parts, cook stoves (camp - 2), paint cans	Y	Multiple colours	Lead-amended paint likely present on some of the painted surfaces	The upper east section is a small area of exposed debris suspected to have been used recently as a dumping area for locals. Items seemed in newer condition than those observed at the bottom of the landfill area. Faint hydrocarbon odour from area surrounding A3-TP08-2. No capping material applied to this small area.
UPPER SECTION - CENTER	3700 m^2	Buried debris	Scrap metal debris, some plastic, some wood debris.	N	N/A	None observed	This area is well capped with granular fill. Some minor areas of exposed debris exist. The area is heavily vegetated with grass and sedges.
LOWER SECTION	3400 m^2	Buried, exposed, and scattered debris	Drums (~150 crushed), fuel tanks (~15-20), scrap metal, snow machines, steel hut, camp fuel cans (30), cooking stoves/ovens, culverts, piping, refrigerators (several), tires (many), washer/dryers (several), vehicle engines, vehicles (cars, truck, parts), paint thinner jugs, fire extinguishers, compressed gas cylinders (several), radiators, burnt wood debris, wood debris, propane cylinders, electric motors, food waste debris (cans, bottles, plastic, aluminum, etc...), mattress springs, generator (yellow), paint cans (many - some still with contents), pails (unknown contents), oil cans/bottles	Y	Multiple colours	Vehicle batteries Asbestos may be present (brake lining, insulation materials) Lead-amended paint present on vehicles Used paint remaining in cans	This area includes the slope and debris at the toe of the landfill. The debris is mixed with granular fill material. Most of the larger debris has collected at the toe of the slope. Much of the debris appears to be exposed, although it is very difficult to extrapolate debris thicknesses. Heavy orange staining is present at the toe of the slope.
DRUM PILE 1	~ 55 drums	piled drums	No identifiable drums present, metal culvert (18"), large compressed gas cylinder	N	N/A	Unknown, no evidence observed	This drum pile contained rusted drums with no legible writing. Contents of drums unknown. Stressed vegetation was observed on SE corner of drum pile.
DRUM PILE 2	~ 184 drums	piled drums	No identifiable drums present, few contained green paint	Y	Military green	Lead-amended paint may be present drums	This drum pile contained rusted drums with no legible writing. Contents of drums unknown. Large black soil stain was observed on west side of drum pile.
DRUM PILE 3	~ 73 drums	piled drums	Rusted drums, few contained orange and yellow paint	Y	Orange and yellow	Lead-amended paint may be present drums	This drum pile contained mostly rusted drums with no legible writing with the exception of one drum labelled "Kerosene". Very stressed vegetation was observed on the SE corner of the drum pile.
DRUM PILE 4	~ 22 drums	piled drums	Rusted drums, none contained painted surfaces	N	N/A	None observed	This drum pile contained mostly rusted drums with no legible writing with the exception of one drum labelled "Perchloroethylene".
APEC 4 - DOWN GRADIENT AND OFF SITE AREAS							
LOWER BENCH	~ 8 Ha	Scattered Debris	Scrap metal debris, tires, plastic, tent, some wood debris	N	N/A	None observed	This area contains only a very few pieces of scattered debris. Some debris is also present in the bottom of the ponds buried in the sediment.

7.8.2 Summary of Contaminant Impacts

A summary of the contaminant impacts and the associated physical hazards is provided on Table 7-23 below. Within this table, the COCs have been identified with their corresponding degree of hazard and the potential scale of impact based on physical site observations and chemical analyses. Following this summary of finds, details on the impacts and inventories are provided for the main categories of concern.

Notes:

1. Maximum Exceedance - denotes the COCs relative ratio of the contaminant exceedance to the Environmental Quality Guidelines.
2. Contaminant Exceedance Factor - references the CCME National Classification System (2008) section (I) Contaminant Characteristics-3. Contaminant Exceedance Factor. The factor is the ratio between the measured contaminant concentration and the applicable EQGs.
3. Hazard Ranking - references the CCME National Classification System (2008) section (I) *Contaminant Characteristics - 2. Chemical Hazard*. This is based on the FCSAP and list of substances and their associated hazard of low, medium or high.
4. Scale of Impact – is based on professional judgement, site conditions and chemical concentrations to determine if the impact is significant, and as such a primary issue or minor and likely a secondary issue for future delineation and action planning.

Table 7-23: Summary of Findings

AEC/Source	Media	COCs	Maximum Exceedance[1]	2008	2009	Contaminant Exceedance Factor (mobile, L, M or H)[2]	Hazard Ranking (L, M or H)[3]	Scale of Impact [4]		Area of Impact	Delineation Complete? (Y/N)
								Primary	Secondary		
AEC 1 - Upgradient Buried Debris	Soil	F1	6x		*	L	H	√		Likely associated with former activities	Y
		F2	> 4x		*	L	M	√			Y
		F3	> 2x		*	L	L		√		Y
		Lead	> 1x	*	*	L	H	√			Y
		Copper	> 1x	*		L	L		√		Y
	Sediment	Total DDD	> 1x	*		L	H	√		Pesticides associated with former site activities	N
		Total DDE	> 3x	*		L	H	√			N
		Total DDT	> 1x	*		L	H	√			N
	Surface Water	Aluminum	> 1x	*		L	L		√	Metals likely associated with former activities	N
		Chromium (VI)	> 2x		*	L	H	√			N
		Iron	> 7x		*	L	L		√		N
	Vegetation	Manganese	> 4x		*	L	L		√	Metals likely associated with former activities	Y
		Sodium	> 4x		*	L	L		√		Y
		Molybdenum	>1x		*	L	L		√		Y
AEC 2 - Vehicle Dump	Soil	Copper	> 1x		*	L	L		√	Associated with buried debris and former activities	Y
		Cadmium	> 1x	*		L	H	√			Y
		Total PCBs	> 9x		*	L	H	√			Y
	Sediment	F2	> 5x		*	L	M	√		PHCs likely associated with former activities	Y
		F3	> 2x		*	L	L		√		Y
		F4	> 1x		*	L	L		√		Y
		Cadmium	> 4x	*		L	H	√			Y
		Chromium (VI)	> 1x		*	L	H	√		Exceeds CCME CSQG for commercial land use	Y
		Chromium	> 1x	*	*	L	M	√		Associated with metal debris and former activities	Y
		Copper	> 1x	*	*	L	L		√		Y
		Lead	> 1x	*	*	L	H	√			Y
		Zinc	> 1x		*	L	L		√		Y
		Arsenic	> 1x	*		L	H	√			Y
		Total PCBs	> 54x		*	M	H	√			Y
		Total DDD	> 32x		*	M	H	√			Y
		Total DDE	> 20x	*		M	H	√			Y
		Total DDT	> 65x		*	M	H	√			Y

Table 7-23: Summary of Findings (continued)

AEC/Source	Media	COCs	Maximum Exceedance[1]	2008	2009	Contaminant Exceedance Factor (mobile, L, M or H)[2]	Hazard Ranking (L, M or H)[3]	Scale of Impact [4]		Area of Impact	Delineation Complete? (Y/N)
								Primary	Secondary		
AEC 2 - Vehicle Dump Con't	Surface Water	Aluminum	> 23x	*		M	L		√	Metals associated with debris and former activities	Y
		Chromium (VI)	> 3x		*	L	H	√			Y
		Iron	> 29x		*	M	L		√		Y
		Cadmium	> 11x		*	M	H	√			Y
		Copper	> 35x	*		M	L		√		Y
		Lead	> 2x	*		L	H	√			Y
	Vegetation	Manganese	> 6x		*	L	L		√	Associated with former activities	Y
		Sodium	> 31x		*	M	L		√		Y
		Iron	> 1x		*	L	L		√		Y
	Building Mats.	Lead in Paint	> 125x		*	H	H	√		Painted Vehicle Debris	N
AEC 3 - Main Landfill	Soil	F2	> 1x	*		L	M	√		Associated with landfill activities and debris	Y
		F3	> 26x	*		M	L		√		Y
		F4	> 2x	*		L	L		√		Y
		Benz(a)anthracene	> 1x	*		L	H		√		Y
		Benzo(a)pyrene	> 1x	*		L	H		√		Y
		Benzo(b)fluoranthene	> 1x	*		L	H		√		Y
		Total PCBs	> 13x	*		M	H	√			Y
	Sediment	Arsenic	> 1.6 billion x		*	H	H	√		Associated with landfill activities and debris	Y
		Cadmium	> 714 million x		*	H	H	√			Y
		Chromium	> 1.6 billion x		*	H	M	√			Y
		Copper	> 1.6 billion x		*	H	L		√		Y
		Lead	> 5.6 billion x		*	H	H	√			Y
		Molybdenum	> 1x		*	L	L		√	Exceeds CCME CSQG for residential land use	Y
		F3	> 1x		*	L	L		√	Associated with landfill activities and debris	Y
		Total DDD	> 2x		*	L	H	√			N
		Total DDE	> 6x		*	L	H	√			N
		Total PCBs	> 2x	*		L	H	√			N
	Surface Water	Iron	> 2x		*	L	L		√	Associated with landfill activities and debris	Y
		Lead	> 1x	*	*	L	H	√			Y
		Aluminum	> 86x	*		M	L		√		Y
		Cadmium	> 7x	*		L	H	√			Y
		Copper	> 23x	*		M	L		√		Y
	Vegetation	Boron	> 1x		*	L	L		√	Associated with landfill activities and debris	Y
		Iron	> 1x		*	L	L		√		Y
		Manganese	> 14x		*	M	L		√		Y
		Sodium	> 67x		*	M	L		√		Y

Table 7-23: Summary of Findings (continued)

AEC/Source	Media	COCs	Maximum Exceedance[1]	2008	2009	Contaminant Exceedance Factor (mobile, L, M or H)[2]	Hazard Ranking (L, M or H)[3]	Scale of Impact[4]		Area of Impact	Delineation Complete? (Y/N)
								Primary	Secondary		
AEC 4 - Downgradient, Off Site	Soil	None Identified	None Identified			None Identified	None Identified	None Identified	None Identified	None Identified	Y
	Sediment	Arsenic	> 480 million x		*	H	H	√		Associated with landfill activities and debris	Y
		Cadmium	> 476 million x		*	H	H	√			Y
		Chromium	> 1.8 billion x		*	H	M	√			Y
		Chromiun (VI)	> 2x		*	L	H	√		Exceeds CCME CSQG for residential land use	Y
		Copper	> 980 million x		*	H	L		√	Associated with landfill activities and debris	Y
		Lead	> 740 million x		*	H	H	√			Y
		Total PCBs	> 1x		*	L	H	√			N
		Total DDD	> 2x		*	L	H	√			N
		Total DDE	> 1x		*	L	H	√			N
		Total DDT	> 1x		*	L	H	√			N
		Tetrachloroethane	> 1x		*	L	M	√			N
		Trichloroethene	> 1x		*	L	M	√			N
	Surface Water	Iron	> 33x		*	M	L		√	Associated with landfill activities and debris	Y
		Trichloroethylene	> 1x	*		L	H	√			N
	Vegetation	Arsenic	> 2x		*	L	H	√		Associated with landfill activities and debris	Y
		Iron	> 15x	*		M	L		√		Y
		Manganese	> 2x		*	L	L		√		Y
		Sodium	> 135x	*		H	L		√		Y

8.0 CHEMICAL SPATIAL ANALYSES

A variety of spatial analyses were conducted in order to infer the distribution of previously identified contaminants of concern in sediments throughout the site. Sediments were selected as the media of concern as a number of COCs were identified above the EQGs and are directly affecting the long-term contaminant loading at the site. Based on the concentration, chemical persistence and mobility, representative parameters were selected to demonstrate the transport and fate of contaminants from various sources present in AECs 1, 2 and 3. The following steps were taken to develop a site conceptual model.

8.1 Parameters and Identified Potential Source Areas

The major concern associated with landfills is the production and subsequent loss of contaminants in landfill leachate, which can result in environmental impairment. Leachate is produced when moisture enters the landfill waste and/or passes through exposed waste and dissolves contaminants found in the refuse into the liquid phase (i.e., groundwater or surface water). The types, amounts and production rates of contaminants in landfill leachates are influenced by several factors including: physical and chemical composition of the wastes, refuse, density, placement sequence and depth, moisture loading, temperature, and time.

It is generally accepted that there is a finite mass of contaminants in landfills which can be leached from the solid wastes. Leachate contaminants generally reach a peak concentration then decline over time due to dilution, biodegradation and leachate from the landfill. The more soluble the contaminants, including the inorganic components, appear first in the leachate, reach a peak concentration, and then slowly reduce over time. In turn, readily biodegradable organics appear, reach peak concentration then diminish with time. The poorly biodegradable/soluble contaminants are the last to reach peak concentrations resulting in persistence in the leachate over a number of years. In northern climates, low temperatures and precipitation events, prolong the production of leachate which slows the release of contaminants to the environment.

Based on the age of the landfills and dump areas within the study area, it is expected that contaminant concentrations in the surface waters are likely close to peak concentrations and perhaps declining, while the impacts to sediments are likely a result of the historical mass loading events over the contaminating lifespan of the landfills/dumps. The poorly biodegradable/soluble contaminants such as PHCs (F3-F4), PCBs, PAHs, and Pesticides would become sorbed in the highly organic rich sediments and would contribute only minor concentrations to surface water (on a seasonal basis). These chemicals would thus be considered relatively immobile. It would also be expected that the metals would undergo varying degrees of attenuation along the flow path as a result of absorption or chemical precipitation.

PCB, PHC and metals are the three classes of contaminants of concern (COCs) identified in soil at AECs 1, 2 and 3. PCB sources were encountered in AEC 2 (A2-TP08-1) and AEC 3 (A3-TP08-2). Hydrocarbon sources were identified at AEC 1 (AEC1-TP09-3-2) and at two locations in AEC 3 at downgradient of the exposed debris (A3-TP08-2 and 3). Hydrocarbon exceedances included CWS F2 to F4. The main suspected metal soil sources were present in samples collected from test pits A1-TP08-1 (copper), A2-TP08-1 (cadmium) and A3-TP08-12 (lead and zinc). General soil conditions on site consist of course grained soils with a low organic content combined with thin O, A, and B horizons (downgradient of main landfill – AECs 2, 3, and 4), resulting in low contaminant retention rates.

The reader is referred to FRANZ (2009) for details of spatial analyses inferring the connectivity and distribution of contaminants in soil and surface water.

8.2 Contaminant Sources

Metals were one of the COC parameter groups encountered frequently across the site and represented the highest number of suspected source areas. A variety of metals were identified within AECs 1, 2 and 3 and included copper, chromium, lead, cadmium, and zinc.

PCBs and Pesticide parameter groups were also encountered frequently in AECs 1, 2, and 3. Based on the spatial analysis mapping, PCBs and pesticides appear to share source zone(s) as there appears to be a general correlation/overlap of impacts..

The two main source areas for the COCs listed above are the main vehicle dump (AEC 2) and waste debris associated with the main landfill (AEC 3).

It is our interpretation, as discussed previously, that shallow depth hydrocarbon sources in soil are present within AEC 1 and AEC 3. Samples collected from dowgradient surface water receptors, reported hydrocarbon concentrations either below laboratory detection limits or below the applicable EQGs. Therefore, the shallow hydrocarbon sources identified are considered stationary and transport pathways were not included in the site conceptual model and spatial analyses.

8.3 Contaminant Pathways

Samples collected from the main surface water receptors contained concentrations of copper, lead, cadmium, and zinc that are elevated and non-compliant when compared to CCME freshwater guidelines. In comparing the metal results from soil sources and from surface water receptors, it is possible to infer a connection between the exceedances in both media (See FRANZ (2009)). This suggests that metal landfill sources are likely still contributing to the metal concentrations present in some of the surface water drainage channels and ponds. As such, the landfills are likely still producing leachate which is reflected in the surface water chemistry. The connections and relationships mentioned above were hypothesized based strictly on analytical results and it should be noted that large quantities of exposed and buried metal debris still exist on site and are likely the main source zone(s) for the COCs. Considering the shallow depth of the groundwater flow system, it is expected that this pathway could be active but is likely dissolving to surface water with limited residence time.

8.4 Site Conceptual Model

A site conceptual model was developed by plotting the sediment concentrations for metal parameters copper, chromium, lead, cadmium, and zinc, as well as PCBs and Pesticides. These concentration gradients were plotted and presented on **Figures 22** to **27.** In general, chemical impacts appear to be attenuating along the flow path, prior to discharge in Sylvia Grinnell River. The highest concentrations for all parameters reviewed were exhibited in the main drainage channel running though AEC 2 (vehicle dump).

Although surface water and soil concentrations for the parameters reviewed are referenced in the following text, the objective of the spatial analysis for the purpose of this report is to focus on the impacts to sediment quality on site. For a detailed site conceptual model, plotting exceedances of chromium, copper, lead, and zinc in soil and surface water, please refer to FRANZ (2009).

Sediment chemistry reflects the long-term contaminant loading of the landfills and waste areas. Since surface water chemistry is temporal in nature, our model focussed on the sediment impacts. Sediment samples collected were used to reconstruct the loading history and attenuation along the surface water flow path.

8.4.1 Metals

Cadmium Spatial Analysis

The cadmium point source is impacting sediment quality of the main drainage channel present in AEC 2. The cadmium concentrations can likely be attributed to the disposal of metals debris and the dissolution of cadmium alloys and cadmium electronic compounds in the vehicle dump (AEC 2). An example of elevated cadmium soil results were seen at A2-TP08-1 (22.4 mg/kg), which was collected directly beneath the former location of the vehicle pile (prior to 2008). Several surface water samples collected along this drainage channel and at the discharge point to Sylvia Grinnell River contained concentrations of cadmium above the CCME freshwater guideline.

As outlined on **Figure 22**, sediment concentrations along the drainage channel exceeded the PEL EQGs from sample locations AEC2-SD09-5/A2-SD09-3 downgradient to sample AEC2-SD09-8. Concentrations from sample AEC2-SD09-8 downgradient to AEC2SD09-11 exceeded the ISQG EQGs. All sample locations downgradient from AEC2-SD09-11 to the Sylvia Grinnell River, as well as concentrations upgradient of AEC2-SD09-4 into AEC 1 were below the applicable EQGs.

It would appear that Ponds 5 and 6 located along the flow path are having a positive impact on the distribution of contaminants downgradient towards Sylvia Grinnell River. The low energy environment of the ponds likely allows the COCs to precipitate and/or absorb to the organic material, thus acting like a natural trap.

Copper/Chromium Spatial Analysis

Most of the copper and chromium exceedances in sediment were detected within the main drainage channel that runs from AEC 1, through AEC 2 to the Sylvia Grinnell River. Copper and Chromium exhibited near identical distribution characteristics and are therefore grouped together for the purpose of this spatial analysis. These exceedances may potentially be attributed to an upgradient soil source (near A1-TP08-1), where the copper concentration of 103 mg/kg was the highest in comparison to the other sampling locations. The elevated copper and chromium exceedances are more likely attributed to the disposal of vehicles and vehicle parts in AEC 2. Copper was widely used in vehicle manufacture during the WWII era in copper-nickel alloys, vehicle brake lines, brake pads, electrical wire, and radiators. Chromium was used in chrome plating on handles, trim, nuts and bolts, as well as other protective coatings.

As outlined in **Figure 23**, the only elevated levels of chromium and copper were located in AEC 2 between sample AEC2-SD 09-5 and AEC2-SD09-4, which exceeded the ISQG EQGs but remained below the PELs.

The impacts are fully attenuated prior to reaching Pond 6.

Lead Spatial Analysis

The primary source of lead was encountered at soil sample location A3-TP08-12 in AEC 3; however, the sediment samples containing the highest lead concentrations were identified along the drainage channel in AEC 2. It appears that the majority of the lead impacts to sediment are sourced from the disposal of vehicles and vehicle parts in AEC 2. Examples of lead use during the mid 1940’s include lead-amended paint (confirmed through analytical testing), lead-acid batteries, solder, body filler, and leaded fuels.

As outlined in **Figure 24,** sediment concentrations along the drainage channel in AEC 2 reported concentrations below the EQGs from sample AEC2-SD09-1 downgradient to AEC2-SD09-3. Concentrations exceeded the PEL EQG from sample AEC2-SD09-5 downgradient to AEC2-SD09-8. Concentrations between samples AEC2-SD09-8 and AEC2-SD09-11 were reported to exceed the ISQG but remained below the PEL EQGs. Samples downgradient of AEC2-SD09-11 to the Sylvia Grinnell River reported low level concentrations that were below the applicable EQGs. Similar to the cadmium impacts, Ponds 5 and 6 located downgradient of the vehicle dump appear to help attenuate the lead impacts before reaching the river.

In Pond 3 at AEC 3, two of the four samples (AEC3-SD09-3 and A3-SD08-2) reported concentrations exceeding the ISQG but below the PEL EQGs. This secondary impact is likely associated with waste debris from the main landfill (AEC 3). The remaining two samples collected in Pond 3, as well as sample A3-SD08-6 (collected in the Sylvia Grinnell River) remained below the applicable EQGs.

No exceedances of the applicable EQGs were detected in Ponds 1 or 2.

Zinc Spatial Analysis

Zinc is a metal widely used in galvanization, metal alloys (die casting), and auto equipment. The zinc point source is primarily the vehicle dump (AEC 2) and to a lesser extent, the main landfill (AEC 3).

As outlined on **Figure 25**, sediment concentrations along the drainage channel in AEC 2 exceeded the PEL EQGs in the area of sample AEC2-SD09-1 and were reported above the ISQG, but below the PEL EQGs from AEC2-SD09-2 down to AEC2-SD09-6. Concentrations, once again, exceeded the PEL EQGs downgradient of AEC2-SD09-6 to AEC2-SD09-11. Concentrations dowgradient of AEC4-SD09-1 to the Sylvia Grinnell River were reported below the applicable EQGs. It appears that sufficient attenuation of zinc is occurring along the flowpath.

In Pond 3 at AEC 3, sample AEC3-SD09-3 contained an exceedance above the ISQG but below the PEL. This secondary impact is likely associated with the disposal of metal debris in the main landfill (AEC 3). All samples downgradient of AEC3-SD09-3 to the Sylvia Grinnell River were below the applicable EQGs.

No exceedances of the applicable EQGs were detected in Ponds 1 or 2.

8.4.2 PCBs

PCBs were identified in AECs 1, 2, and 3 in sediments. The exact point source for the pesticide impacts is still unknown; however, the sample locations returning elevated pesticide concentrations appear to exist mainly in AEC 2. It is believed that the disposal of transformers and other electronic equipment may have been the cause of the noted PCB impacts (sources have since been removed from the landfill).

As outlined in **Figure 26**, PCB concentrations along the drainage channel in AEC 2 exceeded either the ISQG or PEL EQGs at several sample locations. Sample location AEC2-SD09-1 reported non-detect concentrations, while downgradient sample AEC2-SD09-2 reported concentrations above the ISQG but below the PEL EQGs. Samples from AEC2-SD09-4 downgradient to AEC2-SD09-11 were all above the PEL EQG. Sample AEC4-SD09-1 exhibited concentrations above the ISQG but below the PEL. No further PCB data was collected downgradient from this location. Similar to that observed in the metal impacts, the PCBs appear to be elevated towards the source areas, through the faster moving surface water breaches, then attenuated through the natural tiered pond system (Ponds 5 and 6).

AEC 3 reported one sample (AEC3-SD09-3) in Pond 3 in exceedances of the ISQG but below the PEL EQGs, although two other samples collected from Pond 3 (AEC3-SD09-1 and -2) both returned non-detect concentrations. This secondary impact is likely associated with the disposal of electronic equipment along the main landfill area (AEC 3).

Only one sample was analyzed in Pond 1 (AEC4-SD09-11) and reported a non-detect PCB concentration. One sample was also analyzed in Pond 2 (AEC4-SD09-15) and reported concentrations above the ISQG but below the PEL EQGs. No further PCB testing was conducted at downgradient locations in either Pond 1 or 2.

8.4.3 Pesticides

Pesticides were identified in AECs 1, 2 and 3 in sediments. The exact point source for the pesticide impacts is still unknown, however, the sample locations returning elevated pesticide concentrations appear to exist mainly in AEC 2.

As outlined in **Figure 27**, sediment concentrations along the drainage channel in AEC 2 exceeded the PEL EQGs from sample location AEC2-SD09-1 downgradient to AEC2-SD09-6. Concentrations exceeded the ISQG but remained below the PEL from AEC2-SD09-6 to AEC2-SD09-8, then again exceeded the PEL from AEC2-SD09-6 downgradient to AEC2-SD09-11. Pesticide results for AEC4-SD09-1 were below the EQGs; however, no further pesticide testing was completed downgradient of this location. Similar to the metals and PCB distributions in sediments, pesticides appear to the attenuated along the surface water flow system. Pesticide concentrations were, however, found further along the flow system above the EQGs perhaps due to the initial loading, low detection limits and low regulatory limits.

AEC 3 also contained one sample (AEC3-SD09-3) in Pond 3 which exceeded the PEL EQG, although two other samples collected from Pond 3 (AEC3-SD09-1 and -2) both returned non-detect concentrations. This secondary source is likely associated with residual Pesticides leaching from the main landfill area (AEC 3).

Two samples were analyzed in Pond 1 (AEC4-SD09-11 and A4-SD08-2) and both reported non-detect pesticide concentrations. One sample was also analyzed in Pond 2 (AEC4-SD09-15) and reported low concentrations of pesticides below the applicable EQGs. Given the direct connectivity between the main landfill and Pond 2, this secondary source is likely associated with residual Pesticides leaching from AEC 3.

8.5 Summary

The following is a brief summary outlining the findings of the spatial analysis on sediments at the site. Several salient points were observed and are listed below:

1. Metals, PCBs, and Pesticide impacts appear to correspond spatially (overlap) with one another. As summarized in **Figures 22** through **27**, chemical distributions for the three chemical parameter groups indicate similar environmental behavioural characteristics;
2. Behaviours of metals, PCBs, and Pesticides appear to be attenuating along the natural tiered pond system (i.e. Ponds 6, 5, and 4) flow path. These ponds appear to create ideal low energy environments generating model conditions for chemical precipitation into the organic rich sediments;
3. PCBs and Pesticides appear to be recepted slightly further downgradient than the metal parameters. Potential interpretation for this phenomenon could be attributed to one or all of the following; PCB/Pesticide initial loading, chemical persistence, and/or low EQGs; and
4. Enhanced drainage along the naturally occurring tiered pond system could ensure treatment along the flow path prior to discharge into the Sylvia Grinnell River.

9.0 SUMMARY AND CONCLUSIONS

9.1 Introduction and Purpose

Franz Environmental Inc. (FRANZ) was retained by Public Works and Government Services Canada (PWGSC) Pacific Region and Transport Canada (TC), Prairie and Northern Region and Environmental Affairs Division to complete a Phase III Environmental Site Assessment (ESA) of the Vehicle Dump/Community Landfill, Iqaluit, Nunavut.

9.2 Study Area

The landfill site is situated 1.7 km southwest of the town of Iqaluit, on the slope of an escarpment leading to the Sylvia Grinnell River and contains several shallow ravines and coulees partially filled with metal debris. The site covers an area of approximately 7.25 ha (72,500 m^2) and has central UTM coordinates of E521904.94, N7067812.69. The waste streams consist of vehicles, equipment, barrels, domestic waste, and scrap metal.

The study area is divided into two distinct areas:

- The main debris/community landfill area which includes exposed metal debris. A portion of the waste including 45 gallon drum dumps are located at the toe of the bedrock escarpment; and
- The vehicle dump to the south and parallel with the main landfill.

9.3 Site Investigation

FRANZ conducted a Phase I/II ESA targeting Areas of Potential Environmental Concern (APECs) and potential Contaminants of Concern (COCs) based on the historical review. The field investigation included test pit excavation and soil sampling, surface water sampling, sediment sampling, vegetation sampling and chemical analysis of soil, sediment, surface water, and vegetation.

9.4 Site Characterization

The study area is characterized by rolling terrain that slopes towards the Sylvia Grinnell River. The bedrock over which the metal debris was dumped is approximately 30 m above the River valley. Local terrain consists mainly of bare rocky outcrops with a thin layer of glacial and marine sediments in low lying areas between outcrops.

The elevation of the landfill site is approximately 20 to 30 masl and the Sylvia Grinnell River is at approximately 0 to 5 masl.

The Sylvia Grinnell River is the principal drainage system in the region which discharges to Frobisher Bay. The river is influenced by the tidal action of the ocean, and has some of the highest tides in Canada. The river is a major migratory route for Arctic Char.

The natural surficial drainage around the study area is influenced by the bedrock structure and numerous small, elongated ponds that have formed along fault lines and joints. The ponds are shallow (~ 0.5 m deep), and are poorly drained.

9.5 Environmental Quality Guideline (EQG)

The chemical data obtained through the Phase II ESA were compared to established commercial and residential/parkland guidelines from the federal CCME. The federal guidelines are relevant since the site is currently federally managed and Nunavut has adopted the CCME approach.

9.6 Summary of Impacts

The area covered by the Vehicle Dump and Community Landfill site is extensive. The environmental impacts were associated with disposal of metallic debris, disposal of items containing hydrocarbons (i.e, drums), disposal of PCB containing electronic equipment, disposal of pesticide containing containers. Whereas hydrocarbon and VOCs were localized to small areas near their original sources, apparent contamination from metals, PCBs and Pesticides was more widespread and largely associated with metalloid dissolution and distribution along surface water flow pathways.

1. Metals, PCBs, and Pesticide impacts appear to correspond spatially (overlap) with one another. Chemical distributions for the three chemical parameter groups indicate similar environmental behavioural characteristics;
2. Behaviours of metals, PCBs, and Pesticides appear to be attenuating along the natural tiered pond system flow path. These ponds appear to create ideal low energy environments generating model conditions for chemical precipitation into the organic rich sediments;
3. PCBs and Pesticides appear to be have migrated slightly further downgradient than the metal parameters. Potential interpretation for this phenomenon could be attributed one or all of the following; PCB/Pesticide initial loading, chemical persistence, and/or low EQGs.

The following table summarizes the chemical impacts and media on site:

Area Identification	AEC	Priority (high, medium, low)	Identified Contaminant	Impacted Media
Up-Gradient Debris Area	AEC 1	low	metals	Soil and surface water
		medium	pesticides	Sediment
Vehicle Dump	AEC 2	high	metals	Soil, surface water, and stream sediments
		high	PCBs, Pesticides	Sediment
		lower	PHC, PAHs	Discrete near source impacts - soil and stream sediments
Main Landfill	AEC 3	high	metals	Soil, surface water, and pond sediments
		medium	Pesticides	Sediment
		lower	PHCs and PAHs	Soil, and pond sediments
	AEC 3a		Higher priority- Geotechnical slope stability hazard	
Down-Gradient and Off Site	AEC 4	high	metals	Surface water
		medium	Pesticides and PCBs	Sediments
		lower	VOC's	Surface water, sediment

9.7 PHC, PCB, and pesticides

PHC, PCBs, and pesticides were identified in soil and sediments in AECs 2, 3 and 4. These impacts appeared to be localized to discrete areas of impacts. The PHC fractions were primarily associated with the F2/F3 fractions.

PCBs and pesticides in sediment were identified in AEC 2 down-gradient of the Vehicle Dump and AEC 4.

9.8 Metal Impacts and Evaluation

Leaching of metals from buried and exposed metallic debris has impacted soil, sediment, and surface water on site, as well as to a lesser extent vegetation.

Since the creation of the site (i.e., early 1960's), concentrations of metals and metalloids in environmental media (e.g., soil, sediments) have likely been accumulating slowly over time. Based on analysis conducted on background samples collected in the vicinity and up-gradient of the site, it is unlikely that these elevated metals concentrations can be attributed to naturally occurring geological elements.

Site conceptual models were created and showed that metal concentrations consistently decrease across the site as the preferential pathways (i.e., drainages and ponds) advance further down-gradient from the source areas. A degree of natural attenuation and/or entrapment is currently being demonstrated on site.

9.9 Physical Hazards

The major physical hazards observed during the field program were related to the slope stability of the Main Landfill (AEC 3) and debris piles in the Vehicle Dump (AEC 2). It was found that the Main Landfill slope, in its current state, remains at its maximum angle of repose and presents a physical hazard to humans frequenting the site for recreational purposes and wildlife. The potential for the slope to fail is considered high. The Vehicle Dump (AEC 2) was also found to contain physical hazards of unstable debris piles with potential to slide with added weight or heavy water run-off.

9.10 Conceptual Remedial Objectives

It is our opinion that remediation/risk management priorities should be based on the removal of physical hazards and source area impacts, as well as the containment and control of metals and organics in the surface water pathways (i.e., Main Drainage through Vehicle Dump) discharging to Sylvia Grinnell River.

The long-term strategy for the Vehicle Dump and Community Landfill should be based on the following goals, in order of priority:

- Removal of Physical Hazards and contaminant source areas;
    a. Vehicles in Vehicle Dump
    b. Waste Debris- Main Landfill
- Containment and control, including risk management, passive treatment systems and monitoring of surface water drainage systems (AEC 2);
- Risk management/remediation of PHC, PCB, and pesticide impacted soils/sediments; and
- Site monitoring and inspections.

10.0 LIMITATIONS

The conclusions in this report are based on information collected from the investigation locations chosen for this study. The locations were selected based on the best information available to us at the time of this study. This does not preclude the possibility that different conditions may be present elsewhere on the property. No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information; it can only reduce this possibility to an acceptable level.

Professional judgement was exercised in gathering and analysing the information obtained. Like all professional persons rendering advice, we cannot act as absolute insurers of the conclusions we reach; we commit ourselves to care and competence in reaching those conclusions. Our undertaking therefore, is to perform our work, within the limits prescribed by our client, with the usual thoroughness and competence of the profession. No other warranty or representation, expressed or implied, is included or intended in this report.

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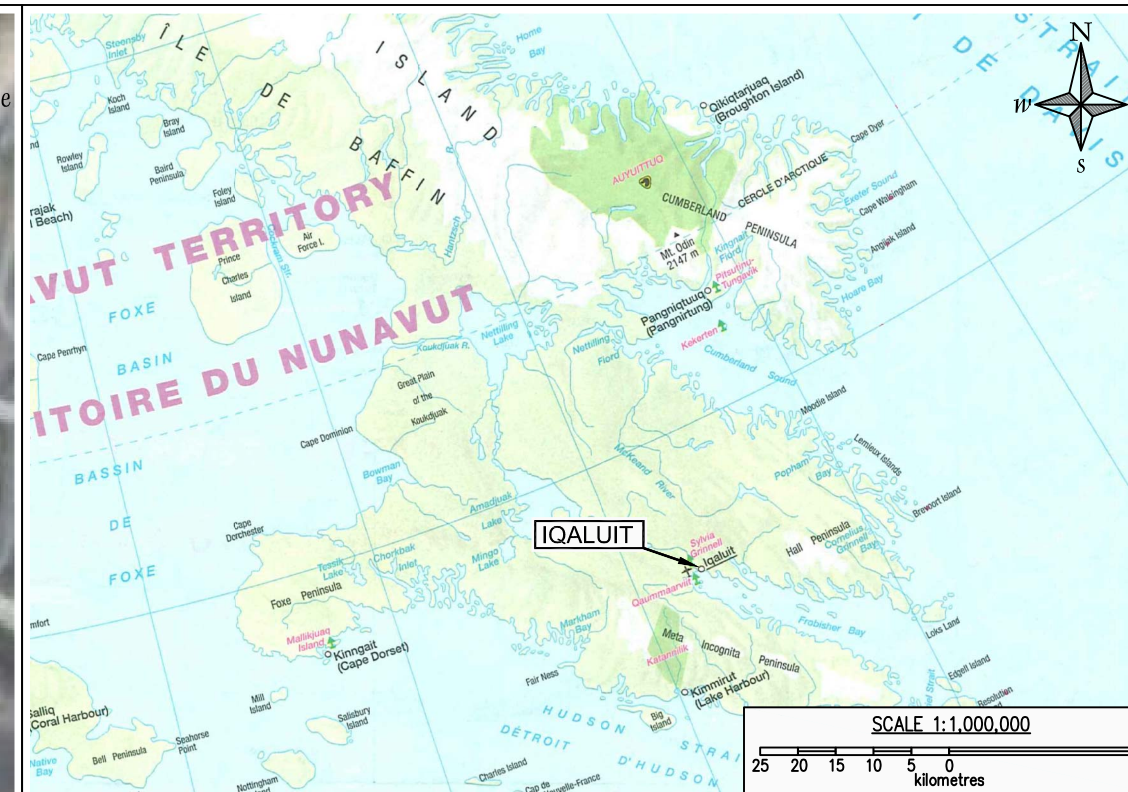
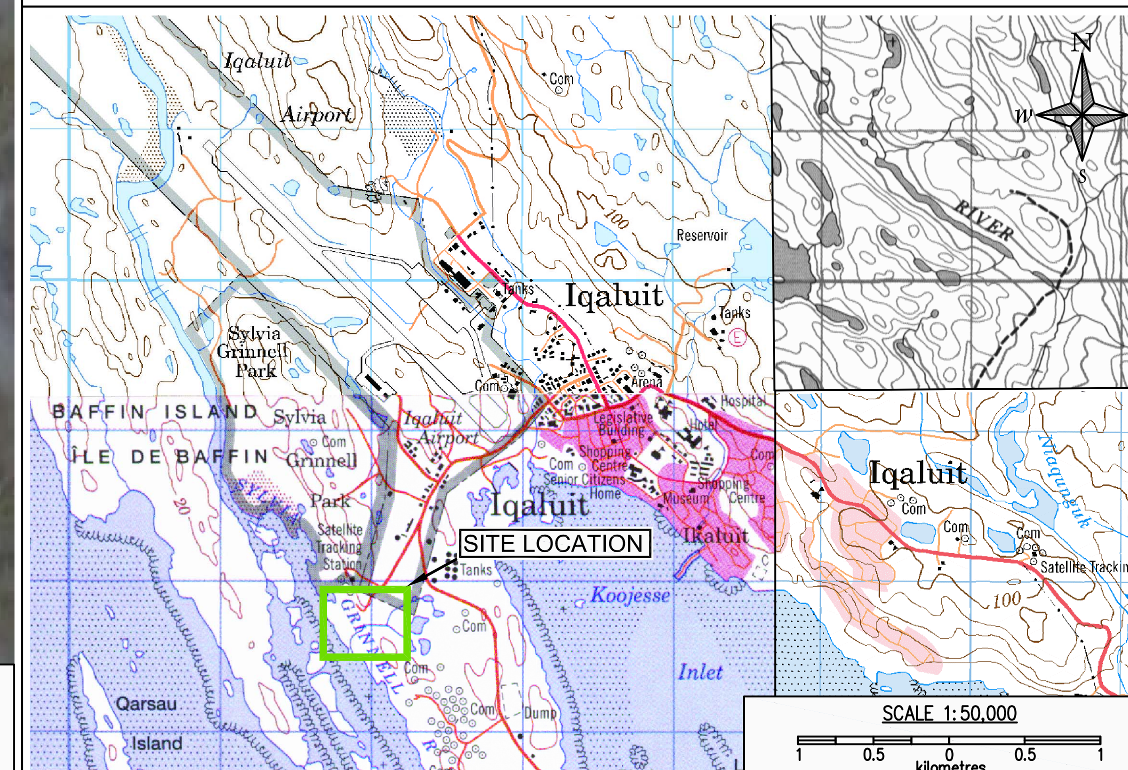
FIGURES





References:

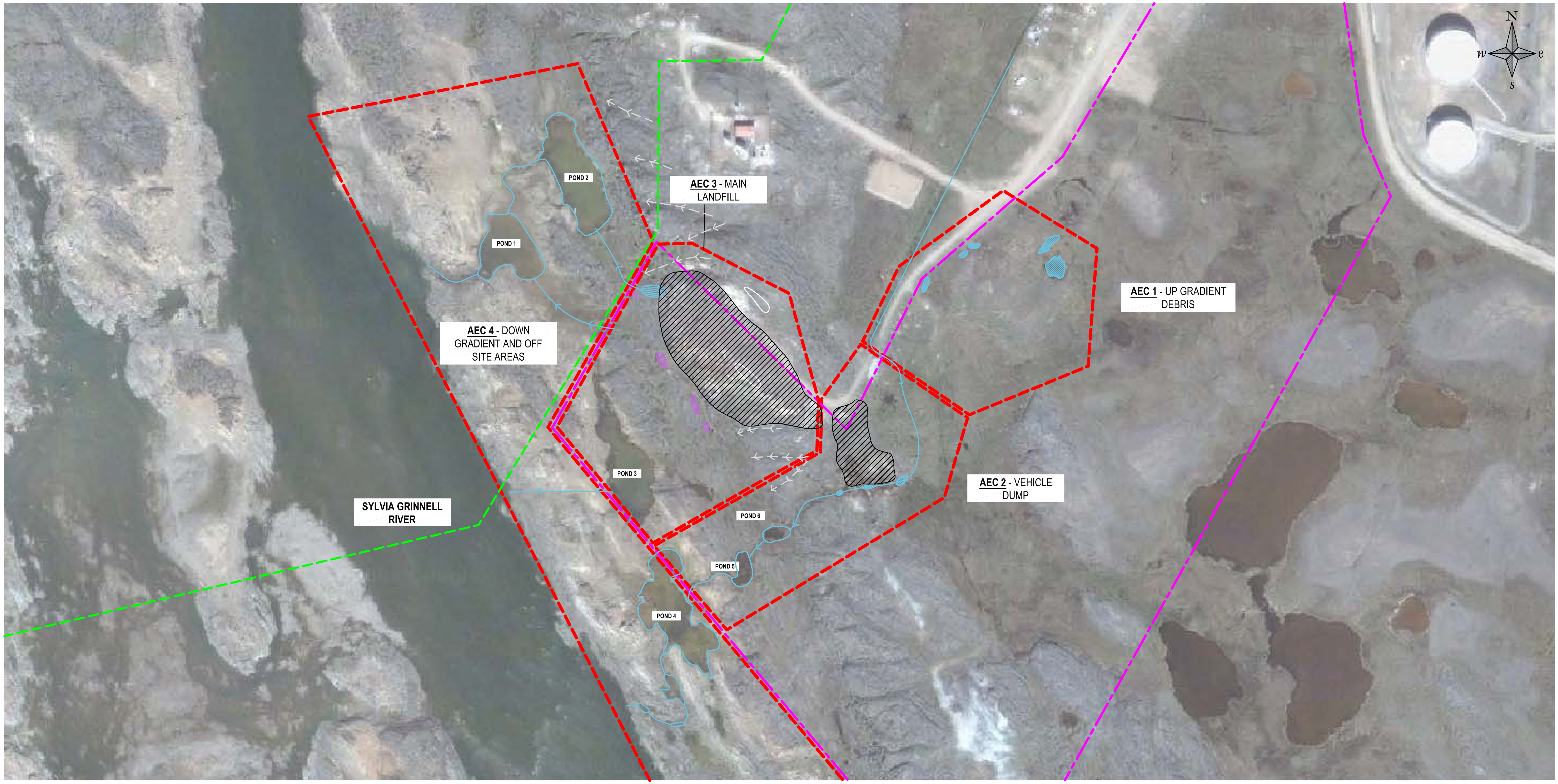
(above) Google Earth satellite image, 2008.

(upper right) "*Canada Road Map*", MapArt Publishing, 2003.

(lower right, composite)
Natural Resources Canada NTS Sheet: 25-N/9 Burton Bay, Nunavut, Edition 3, NAD 83, Series A 713, 2001.
Natural Resources Canada NTS Sheet: 25-N/10 Hill Island, Nunavut, Edition 2, NAD 83, Series A 713, 2001.
Natural Resources Canada NTS Sheet: 25-N/15 Iqaluit, Nunavut, Edition 2, NAD 83, Series A 713, 2001.
Natural Resources Canada NTS Sheet: 25-N/16 [No Title] Nunavut, Edition 2, NAD 83, Series A 701, 2001.
(Note: ground elevations shown in metres above mean sea level).

Title: SITE LOCATION	
FRANZ ENVIRONMENTAL INC. ♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦	Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT
Date: APRIL 2010	Client: PWGSC - TRANSPORT CANADA
SCALES AS SHOWN	FIGURE 1

Z:\Projects\2008\1584-0801 TC Iqaluit dump\Figures



LEGEND:

POOLING WATER

PROPERTY BOUNDARY

PARK BOUNDARY

AREA OF POTENTIAL ENVIRONMENTAL CONCERN (APEC)

BURN AREA

DRUMS

SEEPAGE/GULLY

STREAM/DRAINAGE

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

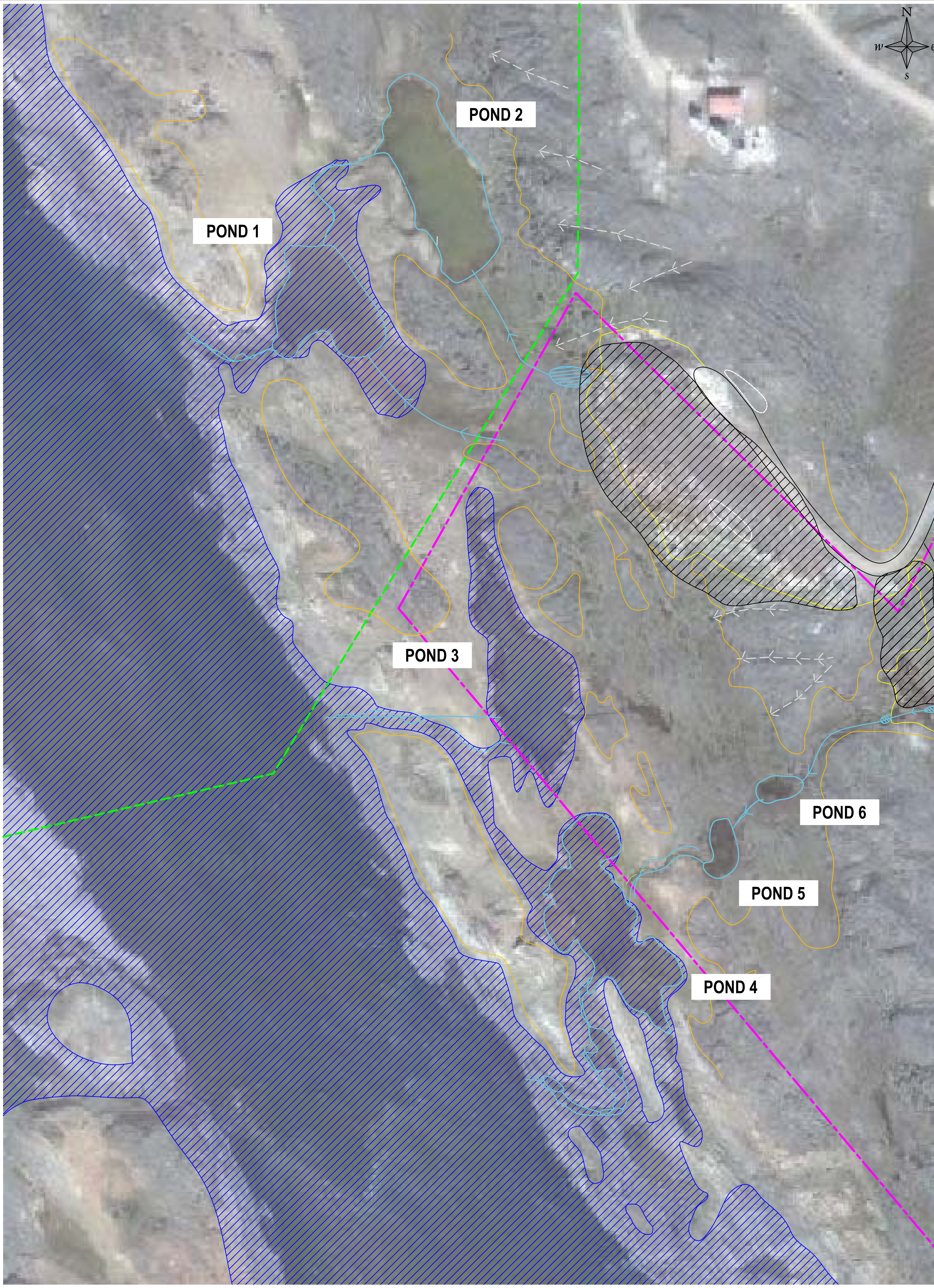
SCALE 1: 3000

75 60 45 30 15 0 metres 75 150

Title:	AECs AND SITE PLAN
Project:	VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT
Client:	PWGSC - TRANSPORT CANADA
FRANZ ENVIRONMENTAL INC. ♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦	Date: MARCH 2010
	FIGURE 2

*Original in colour

Z:\Projects\2009\1584-0901 TC Iqaluit Landfill\Figures\1584-0901_TC IQALUIT_V.2_recover.dwg



LEGEND:

POOLING WATER
PROPERTY BOUNDARY
PARK BOUNDARY
STREAM/DRAINAGE
BURN AREA
AREA COVERED BY HIGH TIDE WATER LEVELS
SEEPAGE/GULLY

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

Title: HIGH TIDE WATER LEVELS

FRANZ ENVIRONMENTAL INC.
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Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Date: MARCH 2010

Client: PWGSC - TRANSPORT CANADA

SCALE 1:1800
50 40 30 20 10 0 50
metres

FIGURE 3

Z:\Projects\2009\1584-0901 TC Iqaluit Landfill\Figures\1584-0901_TC IQALUIT_V.2_recover.dwg (layout)

LEGEND:

- POOLING WATER
- PROPERTY BOUNDARY
- PARK BOUNDARY
- AREA OF ENVIRONMENTAL CONCERN (AEC)
- BURN AREA
- DRUMS
- SEEPAGE/GULLY
- STREAM/DRAINAGE

2008:
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION

2009:
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

SCALE 1: 3000

75 60 45 30 15 0 metres 75 150

Title: AECs AND SAMPLING LOCATIONS

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: PWGSC - TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Date: MARCH 2010

FIGURE 4

*Original in colour

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LEGEND:

- TP SOIL SAMPLE LOCATION
- SW SURFACE WATER SAMPLE LOCATION
- SD SEDIMENT SAMPLE LOCATION
- VEG VEGETATION SAMPLE LOCATION
- SITE LOCATION
- ANALYTICAL PARAMETERS ARE LESS THAN THE CCME PL STANDARD

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

SCALE 1:9500

250 200 150 90 30 0 250

metres

Title: BACKGROUND SAMPLE LOCATIONS

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: PWGSC - TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Date: MARCH 2010

FIGURE 5

*Original in colour

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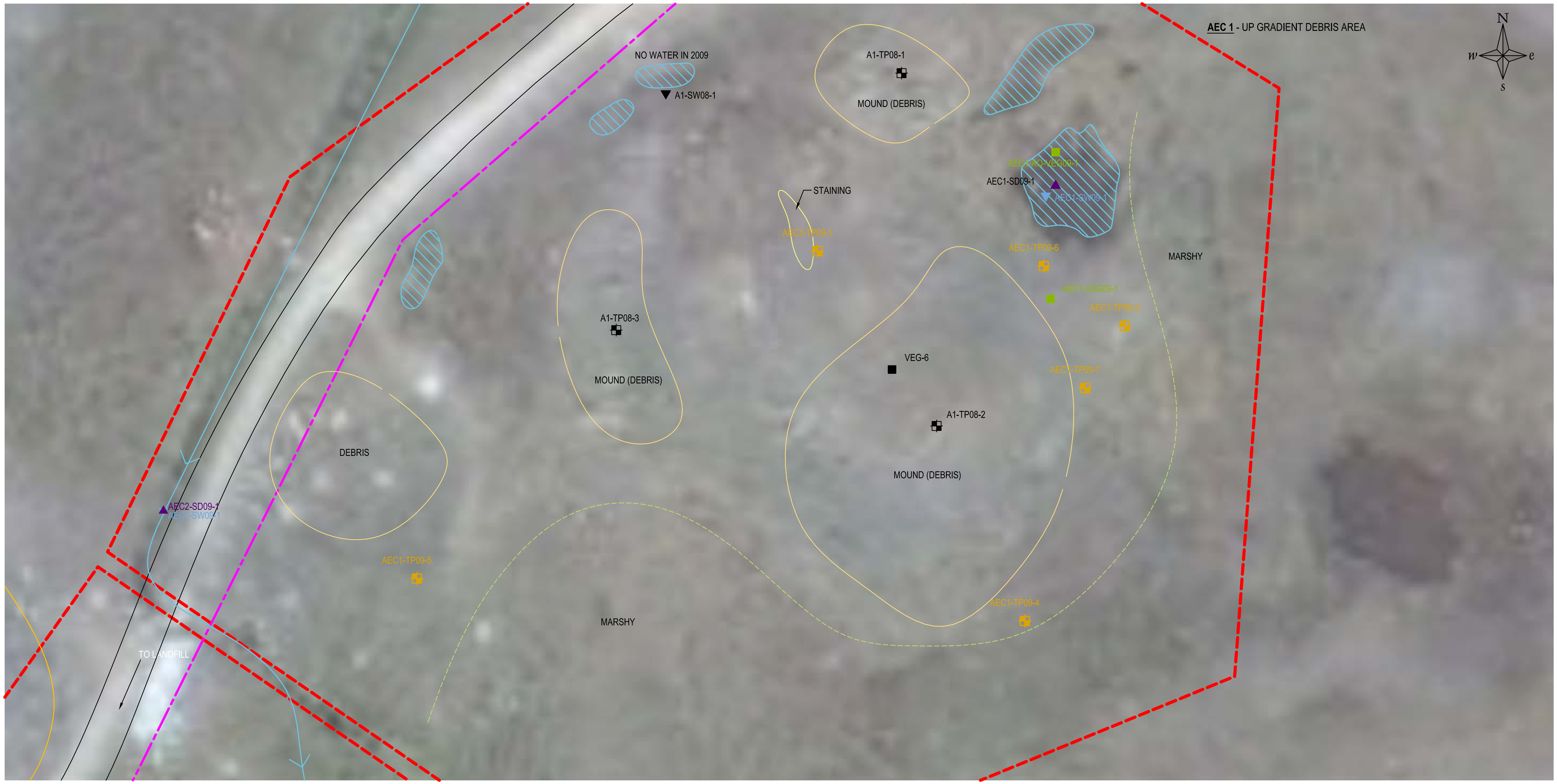

LEGEND:

POOLING WATER

PROPERTY BOUNDARY

AREA OF ENVIRONMENTAL CONCERN (APEC)

2008		2009	
SOIL	SOIL SAMPLE LOCATION	SOIL	SOIL SAMPLE LOCATION
SW	SURFACE WATER SAMPLE LOCATION	SW	SURFACE WATER SAMPLE LOCATION
SD	SEDIMENT SAMPLE LOCATION	SD	SEDIMENT SAMPLE LOCATION
VEG	VEGETATION SAMPLE LOCATION	VEG	VEGETATION SAMPLE LOCATION

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

Horizontal Scale 1:600

12 9 6 0 6 12

metres

Title: AEC 1 - SITE PLAN AND SAMPLE LOCATIONS

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: PWGSC - TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Date: MARCH 2010

FIGURE 6

*Original in colour

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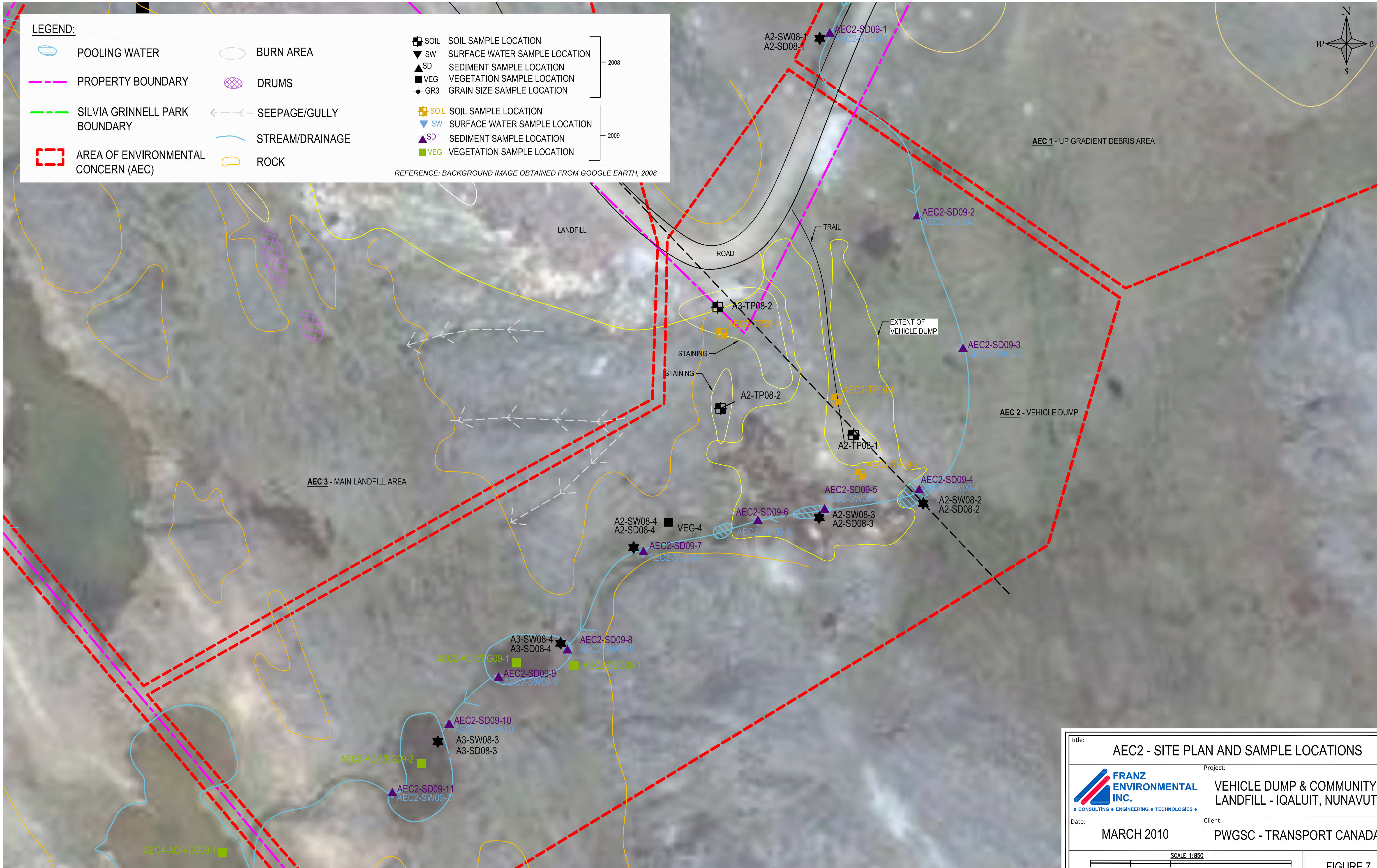

Title:
AEC2 - SITE PLAN AND SAMPLE LOCATIONS

FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Project:
VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Date:
MARCH 2010

Client:
PWGSC - TRANSPORT CANADA

FIGURE 7

*Original in colour

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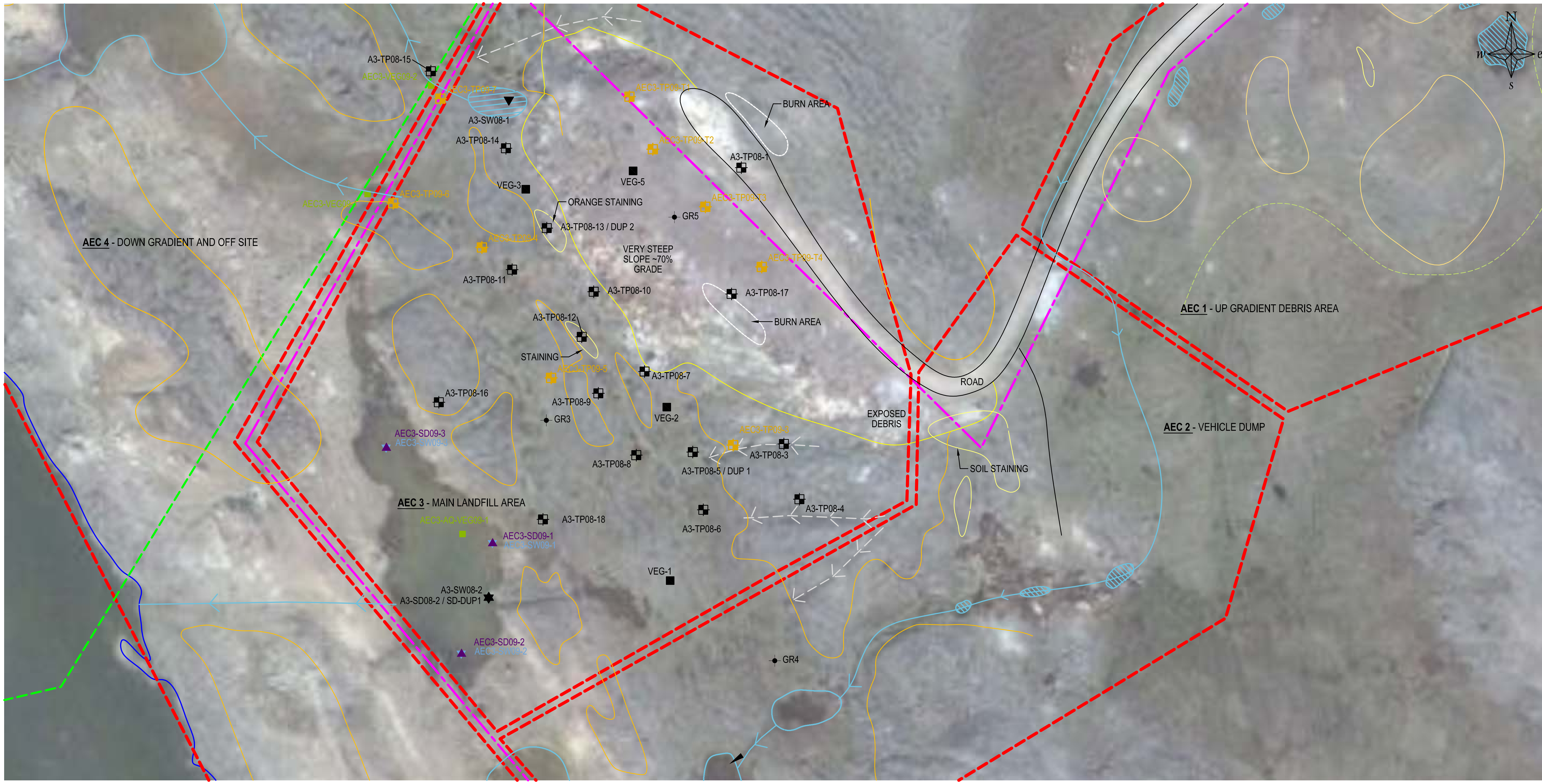

LEGEND:

POOLING WATER
PROPERTY BOUNDARY
SILVIA GRINNELL PARK BOUNDARY
AREA OF ENVIRONMENTAL CONCERN (AEC)

BURN AREA
DRUMS
SEEPAGE/GULLY
STREAM/DRAINAGE
ROCK

2008:
SOIL SOIL SAMPLE LOCATION
SW SURFACE WATER SAMPLE LOCATION
SD SEDIMENT SAMPLE LOCATION
VEG VEGETATION SAMPLE LOCATION
GR3 GRAIN SIZE SAMPLE LOCATION

2009:
SOIL SOIL SAMPLE LOCATION
SW SURFACE WATER SAMPLE LOCATION
SD SEDIMENT SAMPLE LOCATION
VEG VEGETATION SAMPLE LOCATION

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

Horizontal Scale 1:1200
24 18 12 0 12 24
metres

Title: AEC 3 - SITE PLAN AND SAMPLE LOCATIONS

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: PWGSC - TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.
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Date: MARCH 2010

FIGURE 8

*Original in colour

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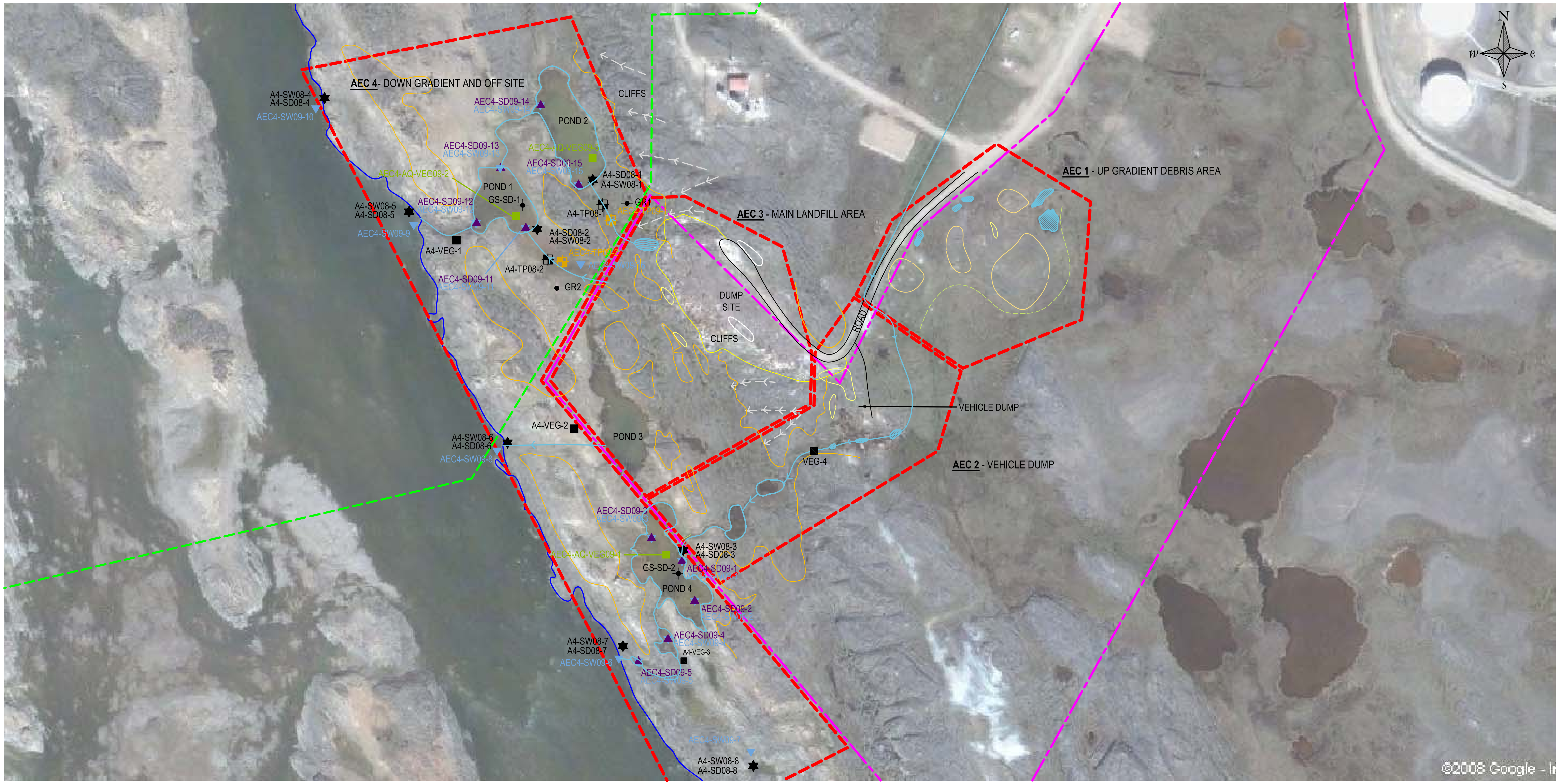

LEGEND:

- POOLING WATER
- PROPERTY BOUNDARY
- SILVIA GRINNELL PARK BOUNDARY
- AREA OF ENVIRONMENTAL CONCERN (AEC)
- BURN AREA
- DRUMS
- SEEPAGE/GULLY
- STREAM/DRAINAGE
- ROCK

2008:
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION
- GR3 — GRAIN SIZE SAMPLE LOCATION

2009:
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

Horizontal Scale 1:3000

60 45 30 0 30 60

metres

Title: AEC 4 - SITE PLAN AND SAMPLE LOCATIONS

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: PWGSC - TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Date: MARCH 2010

FIGURE 9

*Original in colour

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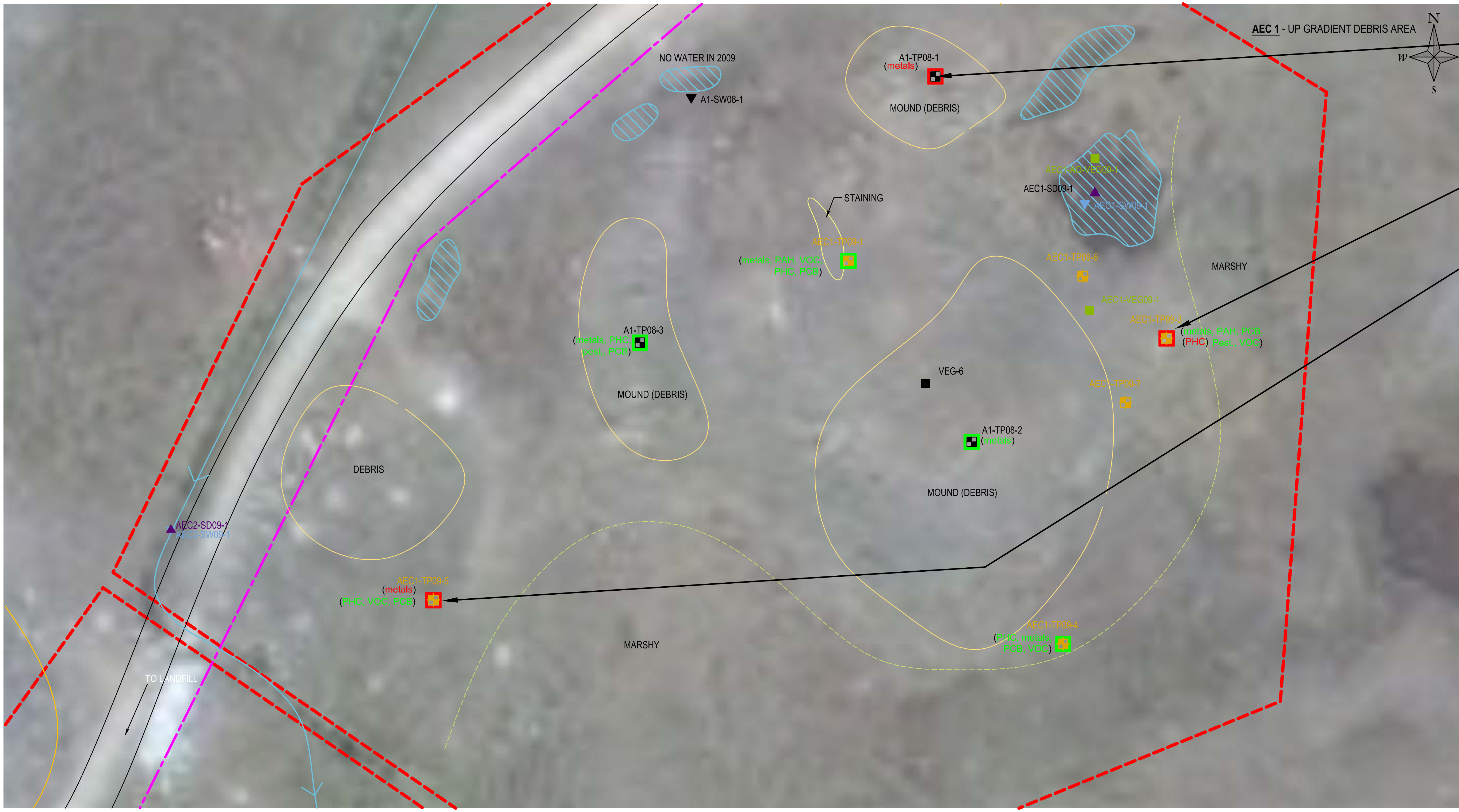


A1-TP08-1	
Prepared by:	FRANZ
Date:	08-SEP-08
Lab ID:	L682335-1
Sample Depth (m):	0.0 - 0.8
Parameter	
Copper (Cu)	103
Lead (Pb)	190

AEC 1-TP09-3	
Prepared by:	FRANZ
Date:	16-SEP-09
Lab ID:	A9C4508
Sample Depth (m):	1 - 1.5
Parameter	
PHC F1	180
PHC F2	1100
PHC F3	3900

AEC 1-TP09-5	
Prepared by:	FRANZ
Date:	16-SEP-09
Lab ID:	A9C4508
Sample Depth (m):	0.0 - 0.3
Parameter	
Lead (Pb)	150

NOTES

1 Soil Concentrations in mg/kg
Canadian Soil Quality Guidelines for the Protection of of Environmental and Human Health CCME, 1999, updated 2001, updated 2002, updated 2004, updated 2007.
Soil Quality Guideline, Parkland (PL) and Commercial (CL), Coarse Grained Soils

LEGEND:

POOLING WATER

PROPERTY BOUNDARY

AREA OF ENVIRONMENTAL CONCERN (APEC)

2008:
- SOIL SOIL SAMPLE LOCATION
- SW SURFACE WATER SAMPLE LOCATION
- SD SEDIMENT SAMPLE LOCATION
- VEG VEGETATION SAMPLE LOCATION

2009:
- SOIL SOIL SAMPLE LOCATION
- SW SURFACE WATER SAMPLE LOCATION
- SD SEDIMENT SAMPLE LOCATION
- VEG VEGETATION SAMPLE LOCATION

APPLICABLE GUIDELINES

Parameter	CCME SOIL CL		CCME SOIL PL	
Copper (Cu)	91	1	63	1
Lead (Pb)	260	1	140	1
PHC F1	30	1	240	1
PHC F2	150	1	260	1
PHC F3	300	1	1700	1

10	*Value is greater than the CCME Cl Guideline*
10	*Value is greater than the CCME PL Guideline*

Analytical Parameters are Lower than the Applicable CCME Soil Guideline

( ) Indicates Parameters Analyzed which were Below the Applicable CCME Soil Guideline

One or More Analytical Parameters are Greater than the Applicable CCME Soil Guideline

( ) Indicates Parameters Analyzed which Exceeded the Applicable CCME S oil Guideline

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

Horizontal Scale 1:600

12 9 6 0 6 12

metres

Title: AEC 1 - ANALYTICAL RESULTS FOR SOIL

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: PWGSC - TRANSPORT CANADA

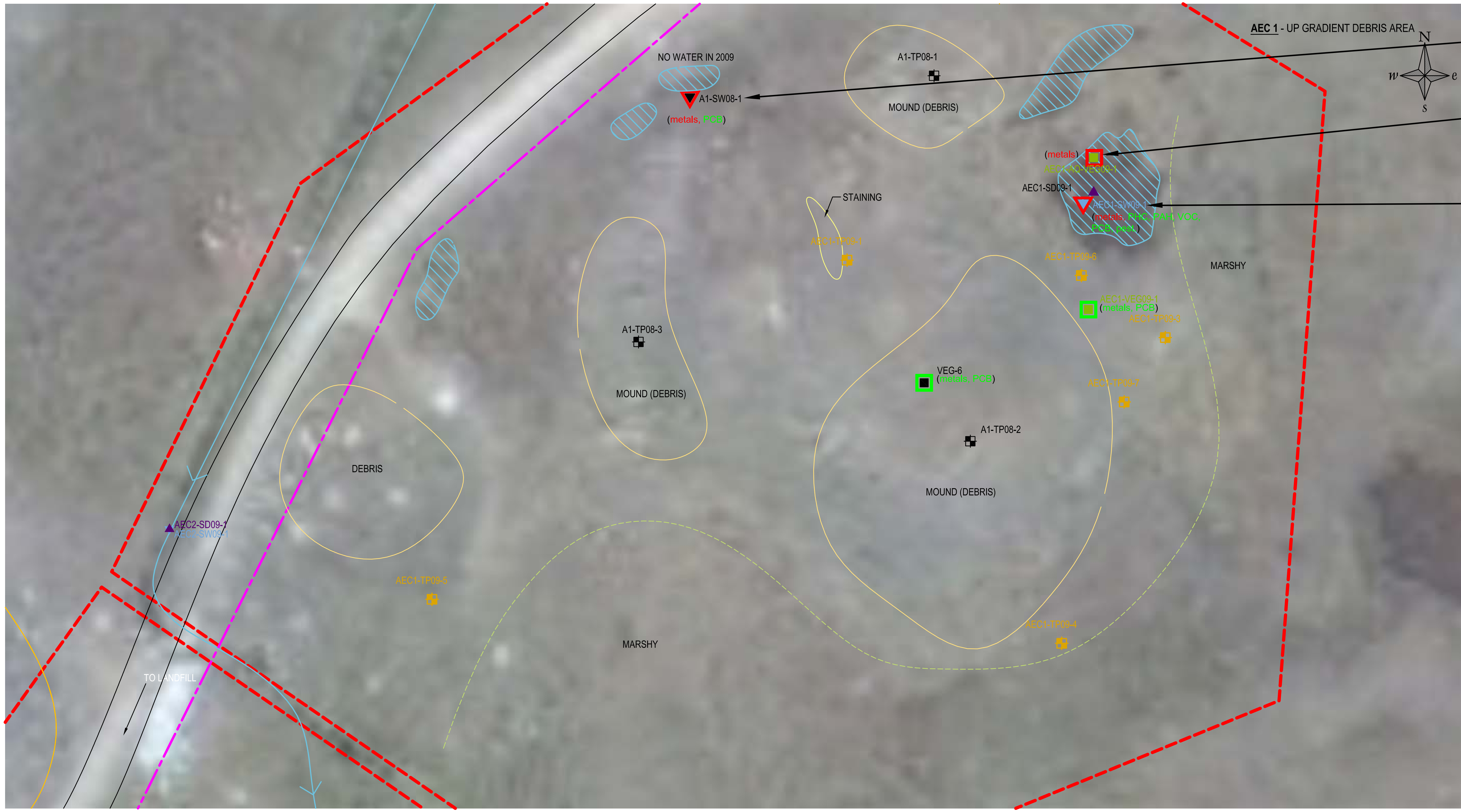
FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Date: MARCH 2010

FIGURE 10

*Original in colour

Z:\Projects\2009\1584-0901 TC Iqaluit Landfill\Figures\1584-0901_TC IQALUIT_V.2_recover.dwg



A1-SW08-1	
Prepared by:	FRANZ
Date:	08-SEP-08
Lab ID:	L682329-1
Parameter	
Aluminum (Al) *a pH<6.5	14.4

AEC1-AQ-VEG09-1	
Prepared by:	FRANZ
Date:	09-SEP-17
Lab ID:	A9C4887
Parameter	
Manganese	231
Molybdenum	1.52
Sodium	120

AEC1-SW09-1	
Prepared by:	FRANZ
Date:	09-SEP-17
Lab ID:	A9C4118
Parameter	
Aluminum (Al) *a pH<6.5	9
Chromium (VI)	2.8
Iron	2200

NOTES

*a Standard is pH dependent

CCME Canadian Water Quality Guidelines for the Protection of Freshwater Aquaitc Life, Updated in 2007
Surface Water Concentrations in ug/L

LEGEND:

POOLING WATER

PROPERTY BOUNDARY

AREA OF ENVIRONMENTAL CONCERN (APEC)

2008:
- SOIL SOIL SAMPLE LOCATION
- SW SURFACE WATER SAMPLE LOCATION
- SD SEDIMENT SAMPLE LOCATION
- VEG VEGETATION SAMPLE LOCATION

2009:
- SOIL SOIL SAMPLE LOCATION
- SW SURFACE WATER SAMPLE LOCATION
- SD SEDIMENT SAMPLE LOCATION
- VEG VEGETATION SAMPLE LOCATION

Analytical Parameters are less than the CCME Freshwater Guideline and/or the Applicable Ontario Vegetation Criteria

( ) Indicates Parameters Analyzed which were below the CCME Freshwater guideline and/or the Applicable Ontario Vegetation Criteria

One or More Analytical Parameters are greater than the CCME Freshwater Guideline and/or the Applicable Ontario Vegetation Criteria

( ) Indicates Parameters Analyzed which exceeded the CCME Freshwater guideline and/or the Applicable Ontario Vegetation Criteria

APPLICABLE GUIDELINES - SURFACE WATER

Parameter	CCME Freshwater
Aluminum (Al) pH<6.5	5
Chromium (VI)	1
Iron	300

APPLICABLE GUIDELINES - VEGETATION

Parameter	Ontario MOE
Manganese	50
Molybdenum	1.5
Sodium	50

10 Value is greater than the CCME freswater Guideline

OR

10 Value is greater than the Ontario MOE vegetation Guideline

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

Horizontal Scale 1:600

12 9 6 0 6 12
metres

Title:
AEC 1 - ANALYTICAL RESULTS FOR SURFACE WATER & VEGETATION

Project:
VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client:
PWGSC - TRANSPORT CANADA

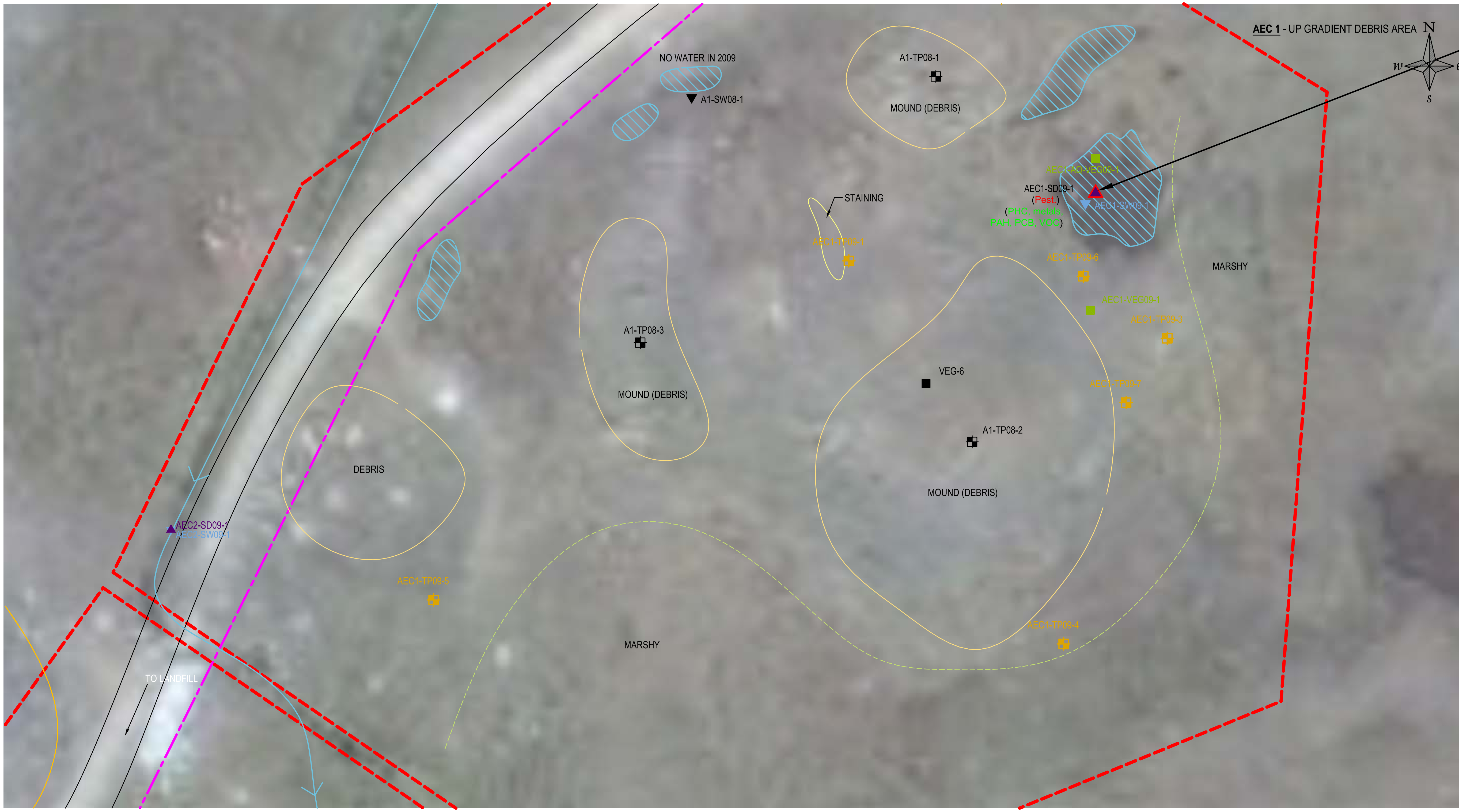
FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Date:
MARCH 2010

FIGURE 11

*Original in colour

Z:\Projects\2009\1584-0901 TC Iqaluit Landfill\Figures\1584-0901_TC IQALUIT_V.2_recover.dwg



AEC 1-SD09-1	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4313
Sample Depth (m):	0.5
Parameter	
DDD	0.009
DDE	0.004
DDT	0.002

NOTES

Canadian Sediment Quality Guidelines for the Protection of Aquatic Life, Updated 2002
Interim Freshwater Sediment Quality Guidelines (ISQG; dry weight), and Probable Effect levels (PELs; dry weight)
Sediment Concentrations in µg/kg

LEGEND:

POOLING WATER

PROPERTY BOUNDARY

AREA OF ENVIRONMENTAL CONCERN (AEC)

2008:
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION

2009:
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION

APPLICABLE GUIDELINES

Parameter	CCME Freshwater Sediment (ISQG)	CCME Freshwater Sediment (PEL)
DDD	0.00354	0.00851
DDE	0.00142	0.00675
DDT	0.00119	0.00477

10	Value is greater than the PEL Guideline
10	Value is greater than the ISQG Guideline

Analytical Parameters are Lower than the Applicable CCME Freshwater Sediment Guideline

( ) Indicates Parameters Analyzed which were Below the Applicable CCME Freshwater Sediment Guideline

One or More Analytical Parameters are Greater than the Applicable CCME Freswater Sediment Guideline

( ) Indicates Parameters Analyzed which Exceeded the Applicable CCME Freshwater Sediment Guideline

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

Horizontal Scale 1:600

12 9 6 0 6 12
metres

Title: AEC 1 - ANALYTICAL RESULTS FOR SEDIMENT

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: PWGSC - TRANSPORT CANADA

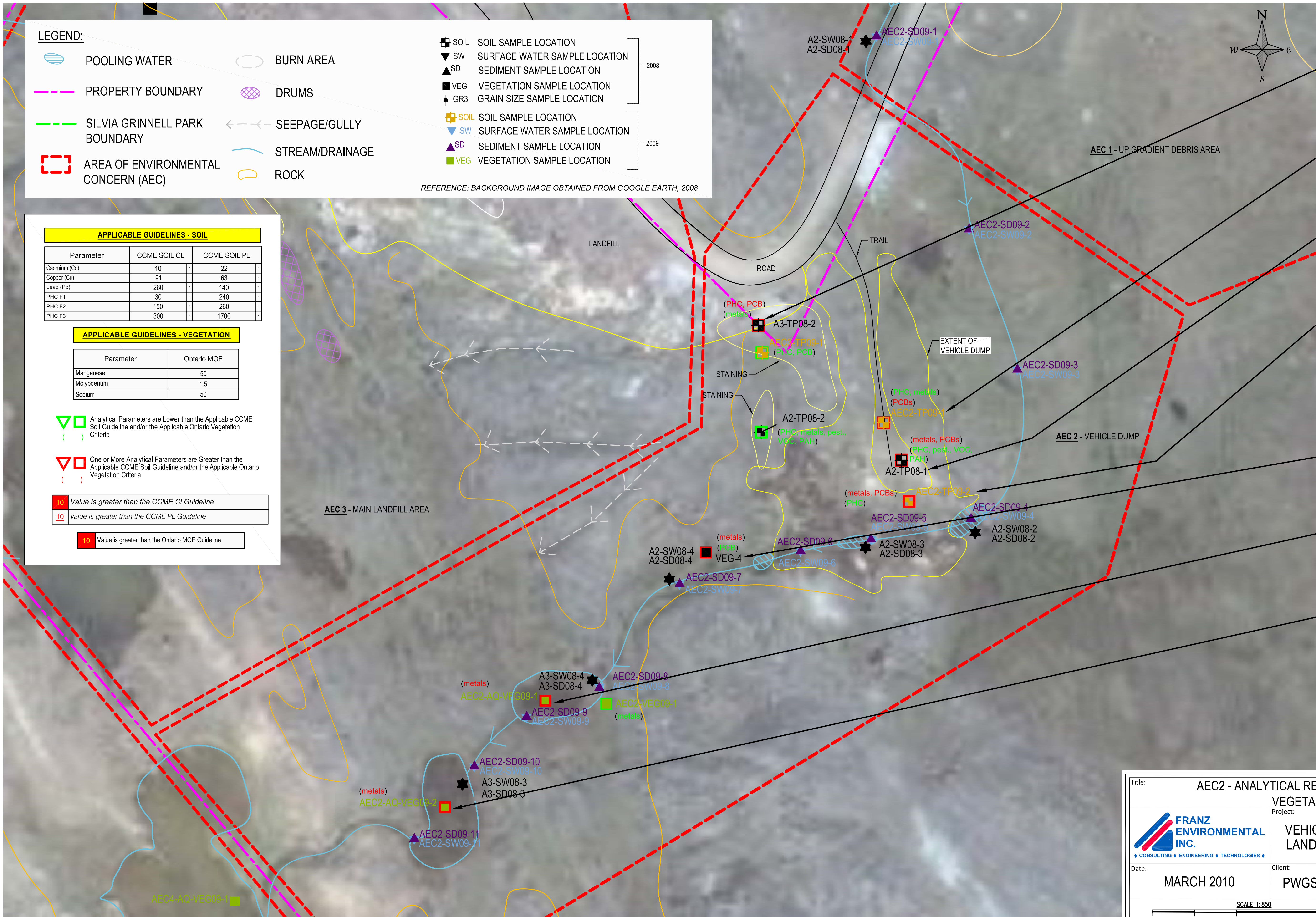
FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Date: MARCH 2010

FIGURE 12

*Original in colour

Z:\Projects\2009\1584-0901 TC Iqaluit Landfill\Figures\1584-0901_TC IQALUIT_V.2_recover.dwg



APPLICABLE GUIDELINES - SOIL

Parameter	CCME SOIL CL		CCME SOIL PL	
Cadmium (Cd)	10	1	22	1
Copper (Cu)	91	1	63	1
Lead (Pb)	260	1	140	1
PHC F1	30	1	240	1
PHC F2	150	1	260	1
PHC F3	300	1	1700	1

APPLICABLE GUIDELINES - VEGETATION

Parameter	Ontario MOE
Manganese	50
Molybdenum	1.5
Sodium	50

( ) Analytical Parameters are Lower than the Applicable CCME Soil Guideline and/or the Applicable Ontario Vegetation Criteria

( ) One or More Analytical Parameters are Greater than the Applicable CCME Soil Guideline and/or the Applicable Ontario Vegetation Criteria

10	*Value is greater than the CCME Cl Guideline*
10	*Value is greater than the CCME PL Guideline*

10	Value is greater than the Ontario MOE Guideline

A3-TP08-2	
Prepared by:	*FRANZ*
Date:	67-Sep-08
Lab ID:	L681400-2
Sample Depth (m):	0.0 - 0.1
Parameter	
PCBs	17.1
PHC F2	450
PHC F3	44400
PHC F4	6960

AEC2-TP09-1	
Prepared by:	*FRANZ*
Date:	16-SEP-09
Lab ID:	A9C4508
Sample Depth (m):	0.0 - 0.1
Parameter	
PCBs	12

A2-TP08-1	
Prepared by:	*FRANZ*
Date:	06-SEP-08
Lab ID:	L681311-1
Sample Depth (m):	0.0 - 0.1
Parameter	
Cadmium (Cd)	22.4
PCBs	4.76

AEC2-TP09-2	
Prepared by:	*FRANZ*
Date:	16-SEP-09
Lab ID:	A9C4508
Sample Depth (m):	0.0 - 0.1
Parameter	
Copper (Cu)	93
PCBs	9

VEG 4	
Prepared by:	*FRANZ*
Date:	09-SEP-08
Lab ID:	L682370-4
Parameter	
Sodium (Na)	55

AEC2-AQ-VEG09-1	
Prepared by:	*FRANZ*
Date:	16-SEP-09
Lab ID:	A9C4887
Sample Depth (m):	N/A
Parameter	
Manganese (Mn)	68.4
Sodium (Na)	293

AEC2-AQ-VEG09-2	
Prepared by:	*FRANZ*
Date:	16-SEP-09
Lab ID:	A9C4887
Sample Depth (m):	N/A
Parameter	
Iron (Fe)	894
Manganese (Mn)	309
Sodium (Na)	1570

NOTES

1 Soil Concentrations in mg/kg
Canadian Soil Quality Guidelines for the Protection of of Environmental and Human Health CCME, 1999, updated 2001, updated 2002, updated 2004, updated 2007.
Soil Quality Guideline, Parkland (PL) and Commercial (CL), Coarse Grained Soils

Title: AEC2 - ANALYTICAL RESULTS FOR SOIL & VEGETATION

FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Date: MARCH 2010

Client: PWGSC - TRANSPORT CANADA

SCALE 1:850
20 10 0 metres 30

FIGURE 13

*Original in colour

Z:\Projects\2009\1584-0901 TC Iqaluit Landfill\Figures\1584-0901_TC IQALUIT_V.2_recover.dwg(layout)

A2-SW08-4	
Prepared by:	FRANZ
Date:	06-SEP-08
Lab ID:	L681303-4
Parameter	
Aluminum (Al) *a pH<6.5	24.7
Cadmium (Cd)	0.037
Copper (Cu) *b H: 0 - 120mg/L	2.3

AEC2-SW09-8	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2507
Parameter	
Iron (Fe)	810

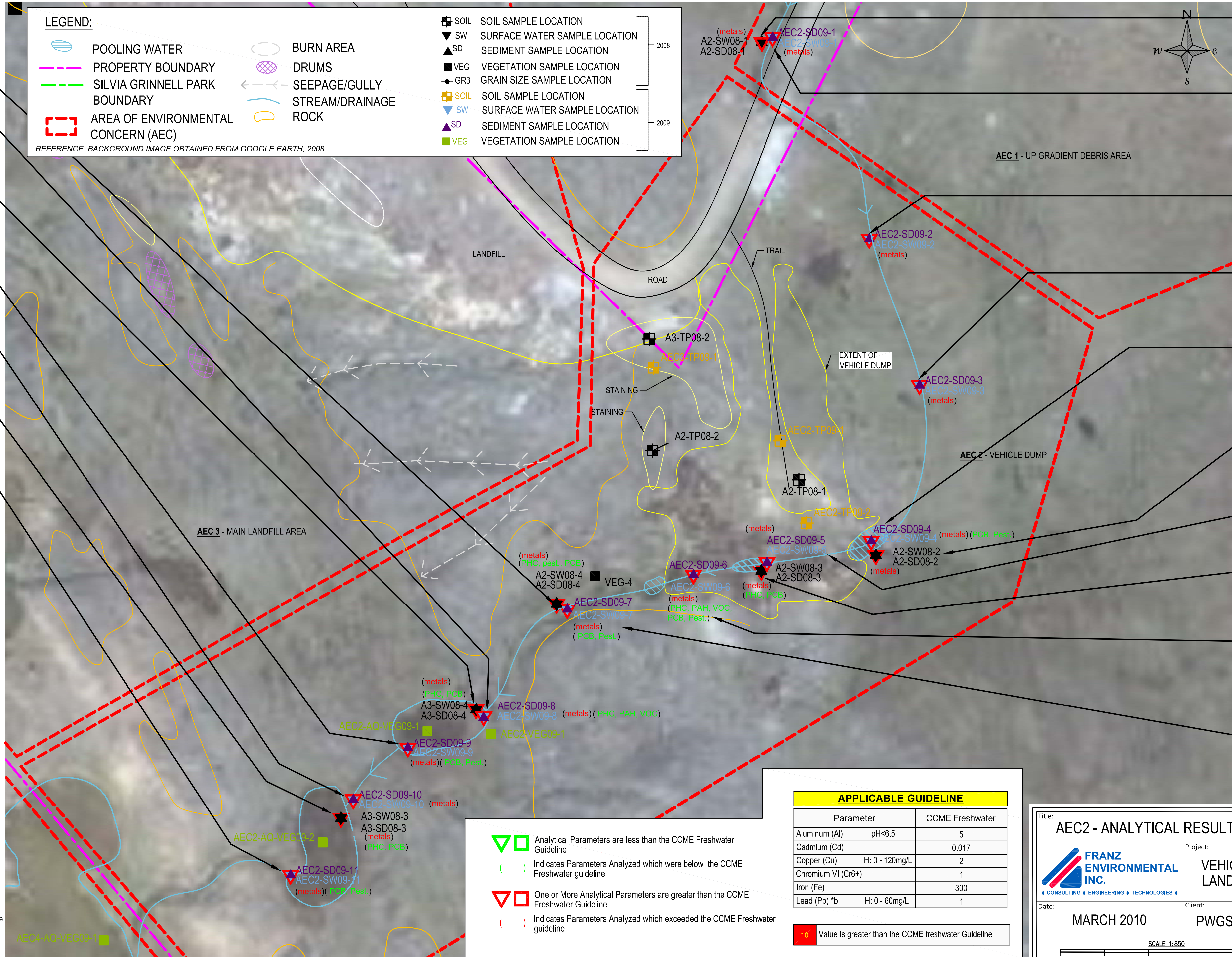
A3-SW08-4	
Prepared by:	FRANZ
Date:	07-SEP-08
Lab ID:	L681064-3
Parameter	
Cadmium (Cd)	0.018

AEC2-SW09-9	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2507
Parameter	
Chromium	2.5
Iron (Fe)	710

AEC2-SW09-10	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2507
Parameter	
Iron (Fe)	790

A3-SW08-3	
Prepared by:	FRANZ
Date:	07-SEP-08
Lab ID:	L681064-2
Parameter	
Cadmium (Cd)	0.024

AEC2-SW09-11	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2507
Parameter	
Iron (Fe)	420



- Analytical Parameters are less than the CCME Freshwater Guideline
- ( ) Indicates Parameters Analyzed which were below the CCME Freshwater guideline
- One or More Analytical Parameters are greater than the CCME Freshwater Guideline
- ( ) Indicates Parameters Analyzed which exceeded the CCME Freshwater guideline

APPLICABLE GUIDELINE

Parameter		CCME Freshwater
Aluminum (Al)	pH<6.5	5
Cadmium (Cd)		0.017
Copper (Cu)	H: 0 - 120mg/L	2
Chromium VI (Cr6+)		1
Iron (Fe)		300
Lead (Pb) *b	H: 0 - 60mg/L	1

10 Value is greater than the CCME freshwater Guideline

A2-SW08-1	
Prepared by:	FRANZ
Date:	06-SEP-08
Lab ID:	L681303-1
Parameter	
Aluminum (Al) *a pH<6.5	28.8
Cadmium (Cd)	0.047
Copper (Cu) *b H: 0 - 120mg/L	3.7

AEC2-SW09-1	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2507
Parameter	
Aluminum (Al) *a pH<6.5	6
Chromium VI (Cr6)	3.7
Iron (Fe)	400

AEC2-SW09-2	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2507
Parameter	
Aluminum (Al) *a pH<6.5	6
Iron (Fe)	620

AEC2-SW09-3	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2507
Parameter	
Aluminum (Al) *a pH<6.5	6
Iron (Fe)	320

AEC2-SW09-4	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2507
Parameter	
Aluminum (Al) *a pH<6.5	45
Iron (Fe)	1400

A2-SW08-2	
Prepared by:	FRANZ
Date:	06-SEP-08
Lab ID:	L681303-2
Parameter	
Aluminum (Al) *a pH<6.5	11.2
Copper (Cu) *b H: 0 - 120mg/L	3.7

AEC2-SW09-5	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2507
Parameter	
Iron (Fe)	8900

A2-SW08-3	
Prepared by:	FRANZ
Date:	06-SEP-08
Lab ID:	L681303-3
Parameter	
Aluminum (Al) *a pH<6.5	119
Cadmium (Cd)	0.087
Copper (Cu) *b H: 0 - 120mg/L	7.1
Lead (Pb) *b H: 0 - 60mg/L	2

AEC2-SW09-6	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2507
Parameter	
Cadmium (Cd)	0.2
Iron (Fe)	1700

AEC2-SW09-7	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2507
Parameter	
Iron (Fe)	560

NOTES

- *a Standard is pH dependent
- *b Standards is hardness dependent
- CCME Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life, Updated in 2007. Surface Water Concentrations in ug/L

Title: AEC2 - ANALYTICAL RESULTS FOR SURFACE WATER

FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Date: MARCH 2010

Client: PWGSC - TRANSPORT CANADA

SCALE 1:850
20 10 0 30 metres

FIGURE 14

*Original in colour

Z:\Projects\2009\1584-0901 TC Iqaluit Landfill\Figures\1584-0901_TC IQALUIT_V.2_recover.dwg(layout)

AEC2-SD09-6	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2285
Parameter	
PHC F3[1]	620
Cadmium (Cd)	6.6
Chromium VI (Cr6)	0.9
Copper (Cu)	38
Lead (Pb)	170
Zinc (Zn)	270
DDD	0.025
DDE	0.009
DDT	0.2
PCBs	2

A2-S008-4	
Prepared by:	FRANZ
Date:	06-SEP-08
Lab ID:	L681311-6
Parameter	
Arsenic (As)	6.3
Cadmium (Cd)	2.83
Chromium (Cr)	50.2
Copper (Cu)	48.9
Lead (Pb)	201
Zinc (Zn)	333
DDD	0.0149
DDE	0.029
DDT	0.0175
PCBs	0.56

AEC2-SD09-7	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2285
Parameter	
PHC F3	330
Cadmium (Cd)	4.4
Copper (Cu)	42
Lead (Pb)	150
Zinc (Zn)	300
DDD	0.013
DDE	0.006
PCB	0.7

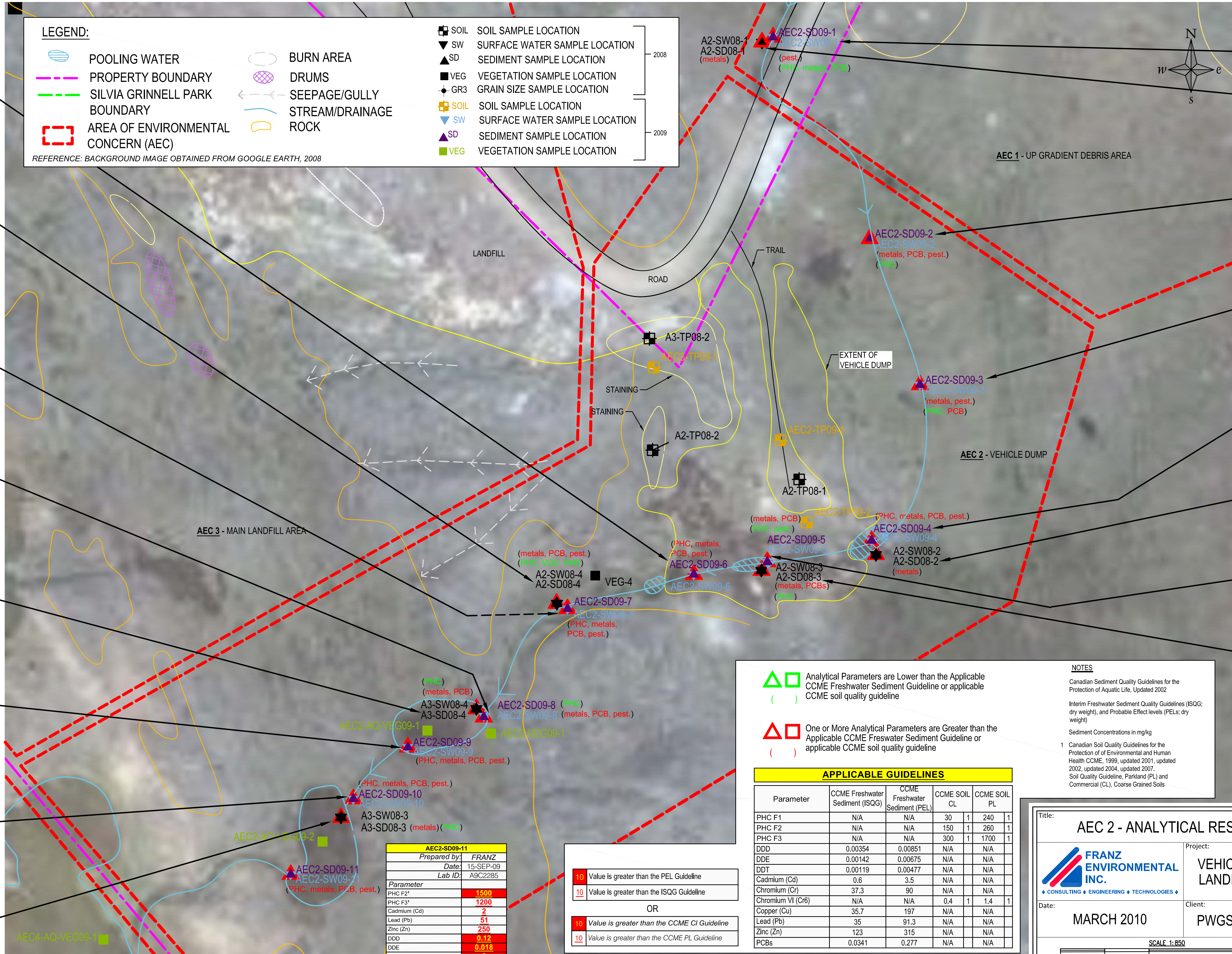
AEC2-SD09-8	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2285
Parameter	
Cadmium (Cd)	5.7
Chromium (Cr)	44
Copper (Cu)	67
Lead (Pb)	150
Zinc (Zn)	440
DDD	0.005
PCBs	0.3

A3-S008-4	
Prepared by:	FRANZ
Date:	07-SEP-08
Lab ID:	L681311-3
Parameter	
Cadmium (Cd)	0.6
Lead (Pb)	57
Zinc (Zn)	139
PCBs	0.496

AEC2-SD09-9	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2285
Parameter	
PHC F2[1]	180
PHC F3[1]	1000
Cadmium (Cd)	3.8
Lead (Pb)	86
Zinc (Zn)	270
DDD	0.06
DDE	0.035
PCBs	15

AEC2-SD09-10	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2285
Parameter	
PHC F3[1]	470
Cadmium (Cd)	2
Lead (Pb)	57
Zinc (Zn)	160
DDD	0.041
DDE	0.012
PCBs	1

A3-S008-3	
Prepared by:	FRANZ
Date:	07-SEP-08
Lab ID:	L681123-2
Parameter	
Cadmium (Cd)	1.38
Lead (Pb)	59
Zinc (Zn)	191



AEC2-SD09-11	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2285
Parameter	
PHC F2[1]	1500
PHC F3[1]	1200
Cadmium (Cd)	2
Lead (Pb)	51
Zinc (Zn)	250
DDD	0.12
DDE	0.018
PCBs	2

10	Value is greater than the PEL Guideline
10	Value is greater than the ISQG Guideline

OR

10	*Value is greater than the CCME Cl Guideline*
10	*Value is greater than the CCME PL Guideline*

△ □ ( ) Analytical Parameters are Lower than the Applicable CCME Freshwater Sediment Guideline or applicable CCME soil quality guideline

△ □ ( ) One or More Analytical Parameters are Greater than the Applicable CCME Freswater Sediment Guideline or applicable CCME soil quality guideline

APPLICABLE GUIDELINES

Parameter	CCME Freshwater Sediment (ISQG)	CCME Freshwater Sediment (PEL)	CCME SOIL CL		CCME SOIL PL	
PHC F1	N/A	N/A	30	1	240	1
PHC F2	N/A	N/A	150	1	260	1
PHC F3	N/A	N/A	300	1	1700	1
DDD	0.00354	0.00851	N/A		N/A	
DDE	0.00142	0.00675	N/A		N/A	
DDT	0.00119	0.00477	N/A		N/A	
Cadmium (Cd)	0.6	3.5	N/A		N/A	
Chromium (Cr)	37.3	90	N/A		N/A	
Chromium VI (Cr6)	N/A	N/A	0.4	1	1.4	1
Copper (Cu)	35.7	197	N/A		N/A	
Lead (Pb)	35	91.3	N/A		N/A	
Zinc (Zn)	123	315	N/A		N/A	
PCBs	0.0341	0.277	N/A		N/A	

NOTES

Canadian Sediment Quality Guidelines for the Protection of Aquatic Life, Updated 2002

Interim Freshwater Sediment Quality Guidelines (ISQG; dry weight), and Probable Effect levels (PELs; dry weight)

Sediment Concentrations in mg/kg

1 Canadian Soil Quality Guidelines for the Protection of of Environmental and Human Health CCME, 1999, updated 2001, updated 2002, updated 2004, updated 2007. Soil Quality Guideline, Parkland (PL) and Commercial (CL), Coarse Grained Soils

AEC2-SD09-1	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2285
Parameter	
DDD	0.046
DDE	0.009
DDT	0.013

A2-S008-1	
Prepared by:	FRANZ
Date:	06-SEP-08
Lab ID:	L681311-3
Parameter	
Zinc (Zn)	499

AEC2-SD09-2	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2285
Parameter	
Zinc (Zn)	230
DDD	0.26
DDE	0.055
DDT	0.26
PCBs	0.3

AEC2-SD09-3	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2285
Parameter	
Chromium VI (Cr6)[1]	2
Zinc (Zn)	230
DDD	0.1
DDE	0.017
DDT	0.048
PCB	0.05

AEC2-SD09-4	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2285
Parameter	
PHC F2[1]	1500
PHC F3[1]	4100
PHC F4	4500
Chromium VI (Cr6)[1]	2.6
Zinc (Zn)	280
DDD	0.11
DDE	0.03
PCBs	0.2

A2-S008-2	
Prepared by:	FRANZ
Date:	06-SEP-08
Lab ID:	L681311-4
Parameter	
Copper (Cu)	292

AEC2-SD09-5	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2285
Parameter	
Cadmium (Cd)	6.1
Chromium (Cr)	41
Lead (Pb)	150
Zinc (Zn)	210
PCBs	0.6

A2-S008-3	
Prepared by:	FRANZ
Date:	06-SEP-08
Lab ID:	L681311-5
Parameter	
Cadmium (Cd)	2.73
Chromium (Cr)	55.4
Copper (Cu)	70.3
Lead (Pb)	96
Zinc (Zn)	145
PCBs	0.222

Title:
AEC 2 - ANALYTICAL RESULTS FOR SEDIMENT

FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Project:
VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Date:
MARCH 2010

Client:
PWGSC - TRANSPORT CANADA

SCALE 1:850
20 10 0 30 metres

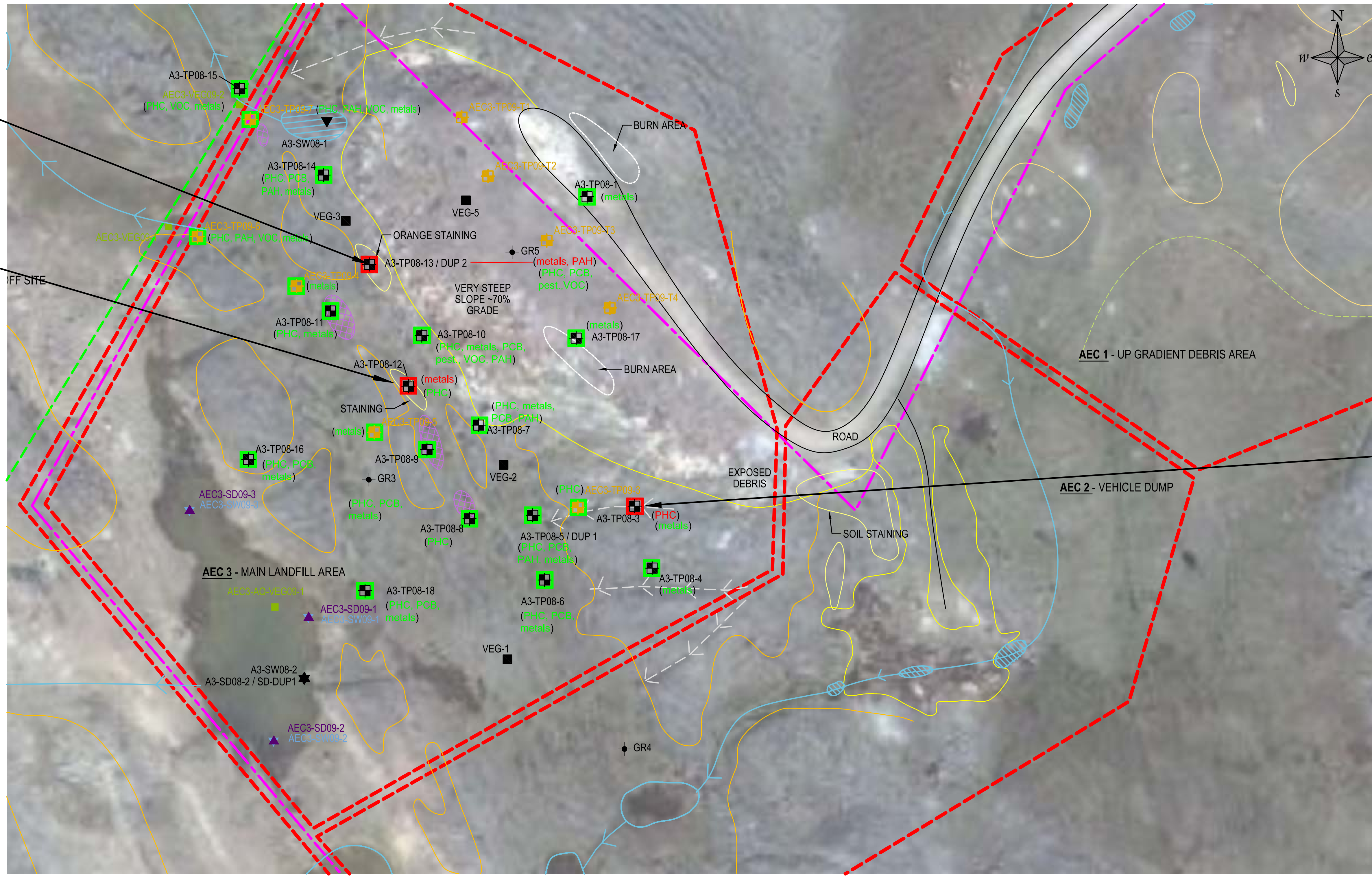
FIGURE 15

*Original in colour

Z:\Projects\2009\1584-0901 TC Iqaluit Landfill\Figures\1584-0901_TC IQALUIT_V.2_recover.dwg(layout)

A3-TP08-13		A3-TP08-DUP2
Prepared by:	FRANZ	FRANZ
Date:	07-Sep-08	07-Sep-08
Lab ID:	L681268-4	L681268-5
Sample Depth (m):	0.0 -0.2	0.0 -0.2
Parameter		
Zinc (Zn)	205	277
Benz(a)anthracene	<0.05	1.14
Benzo(a)pyrene	<0.05	1.31
Benzo(b)fluoranthene	<0.05	1.78

A3-TP08-12	
Prepared by:	FRANZ
Date:	07-Sep-08
Lab ID:	L681268-2
Sample Depth (m):	0.0 - 0.1
Parameter	
Copper (Cu)	82
Lead (Pb)	256
Zinc (Zn)	488



A3-TP08-3	
Prepared by:	FRANZ
Date:	06-SEP-08
Lab ID:	L681400-3
Sample Depth (m):	0.0 - 0.25
Parameter	
CWS F3 (C16-C34)	343

( ) Analytical Parameters are Lower than the Applicable CCME Soil Guideline

( ) One or More Analytical Parameters are Greater than the Applicable CCME Soil Guideline

LEGEND:

- POOLING WATER
- PROPERTY BOUNDARY
- SILVIA GRINNELL PARK BOUNDARY
- AREA OF ENVIRONMENTAL CONCERN (AEC)
- BURN AREA
- DRUMS
- SEEPAGE/GULLY
- STREAM/DRAINAGE
- ROCK

2008:
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION
- GR3 — GRAIN SIZE SAMPLE LOCATION

2009:
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION

APPLICABLE GUIDELINES				
Parameter	CCME SOIL CL		CCME SOIL PL	
Copper (Cu)	91	1	63	1
Lead (Pb)	260	1	140	1
Zinc (Zn)	360	1	200	1
Benz(a)anthracene	10	2	1	2
Benzo(a)pyrene	0.7	1	0.7	1
Benzo(b)fluoranthene	10	2	1	2
PCBs	33	1	1.3	1
PHC F2	33	3	1.3	3
PHC F3	1700	3	300	3
PHC F4	3300	3	2800	3

NOTES

1 Soil Concentrations in mg/kg
Canadian Soil Quality Guidelines for the Protection of of Environmental and Human Health CCME, 1999, updated 2001, updated 2002, updated 2004, updated 2007.
Soil Quality Guideline, Parkland (PL) and Commercial (CL), Coarse Grained Soils

2 Interim remediation criteria for soil, Parkland and (PL) and Commercial (CL)

3 Canadian-Wide Standards (CWS) for Petroleum Hydrocarbons (PHC) in Soil

10 *Value is greater than the CCME Cl Guideline*

10 *Value is greater than the CCME PL Guideline*

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

Horizontal Scale 1:1200

24 18 12 0 12 24 metres

Title: AEC 3 - ANALYTICAL RESULTS FOR SOIL

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: PWGSC - TRANSPORT CANADA

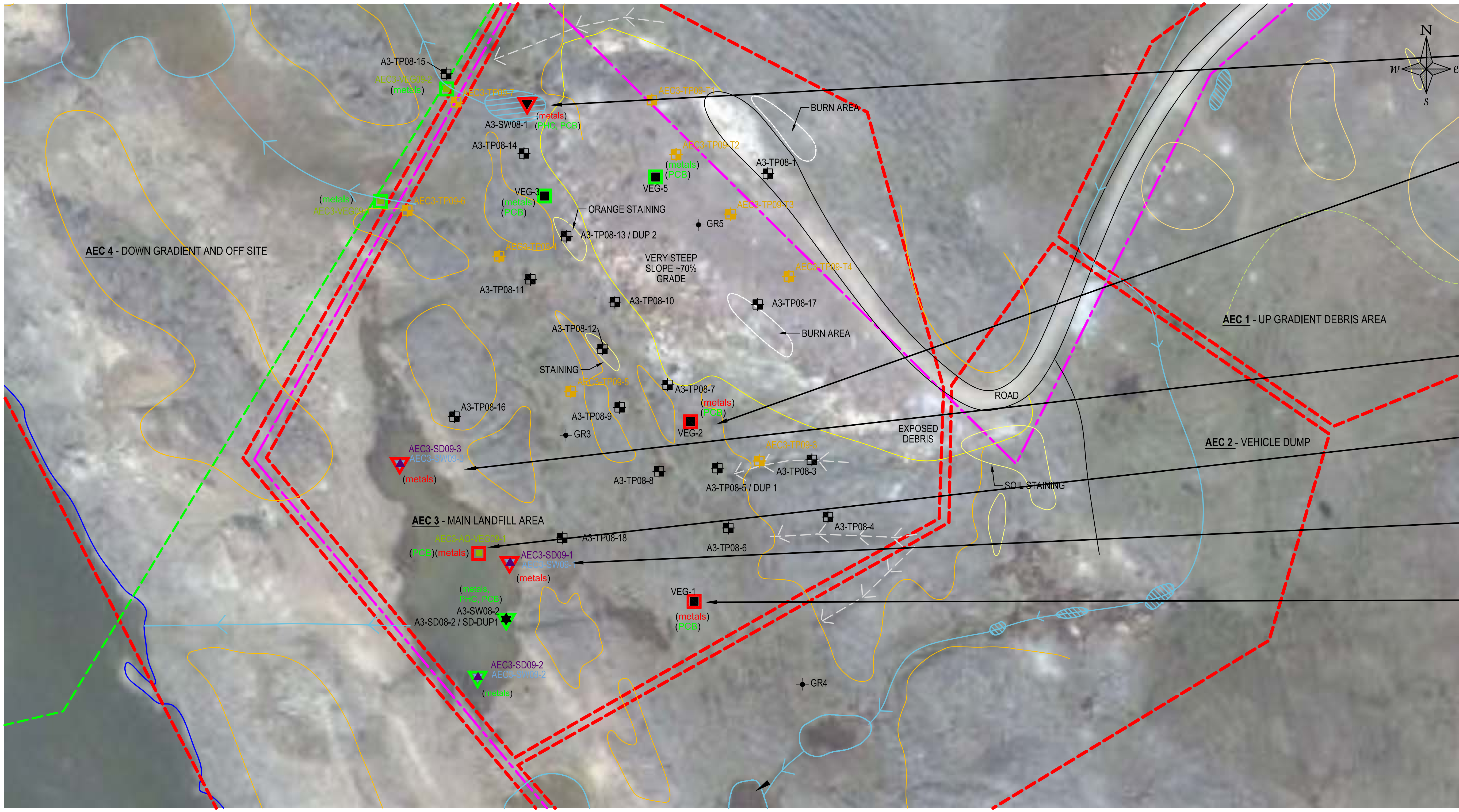
FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Date: MARCH 2010

FIGURE 16

*Original in colour

Z:\Projects\2009\1584-0901 TC Iqaluit Landfill\Figures\1584-0901_TC IQALUIT_V.2_recover.dwg



A3-SW08-1	
Prepared by:	FRANZ
Date:	07-SEP-08
Lab ID:	L681064-5
Parameter	
Aluminum (Al) *a pH<6.5	43.4
Cadmium (Cd)	0.129
Copper (Cu) *b H: 0 - 120mg/L	4.7
Lead (Pb) *b H: 0 - 60mg/L	2.77
Zinc (Zn)	163

VEG-2	
Prepared by:	FRANZ
Date:	09-SEP-08
Lab ID:	L682370-2
Parameter	
Sodium (Na)	53

AEC3-SW09-3	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2507
Parameter	
Iron (Fe)	430

AEC3-AQ-VEG09-1	
Prepared by:	FRANZ
Date:	16-SEP-09
Lab ID:	A9C4887
Parameter	
Boron (B)	26.6
Iron (Fe)	930
Manganese (Mn)	711
Sodium (Na)	3390

AEC3-SW09-1	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2507
Parameter	
Iron (Fe)	330

VEG-1	
Prepared by:	FRANZ
Date:	09-SEP-08
Lab ID:	L682370-1
Parameter	
Sodium (Na)	62

NOTES

*a Standard is pH dependent
*b Standards is hardness dependent
CCME Canadian Water Quality Guidelines for the Protection of Freshwater Aquaitc Life, Updated in 2007
Surface Water Concentrations in ug/L
Vegetation Concentrations in mg/kg

LEGEND:

- POOLING WATER
- PROPERTY BOUNDARY
- SILVIA GRINNELL PARK BOUNDARY
- AREA OF ENVIRONMENTAL CONCERN (AEC)
- BURN AREA
- DRUMS
- SEEPAGE/GULLY
- STREAM/DRAINAGE
- ROCK

2008:
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION
- GR3 — GRAIN SIZE SAMPLE LOCATION

2009:
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION

APPLICABLE GUIDELINES - SURFACE WATER

Parameter	CCME Freshwater
Aluminum (Al) *a pH<6.5	5
Cadmium (Cd)	0.017
Copper (Cu)*b H: 0 - 120mg/L	2
Iron (Fe)	300
Lead (Pb) *b H: 0 - 60mg/L	1
Zinc (Zn)	30

10	Value is greater than the CCME freshwater Guideline
10	Value is greater than the Ontario Vegetation Criteria

APPLICABLE GUIDELINES - VEGETATION

Parameter	Ontario MOE
Boron (B)	20
Iron (Fe)	500
Manganese (Mn)	50
Sodium (Fe)	50

Analytical Parameters are less than the CCME Freshwater Guideline and/or the Applicable Ontario Vegetation Criteria

( ) Indicates Parameters Analyzed which were below the CCME Freshwater guideline and/or the Applicable Ontario Vegetation Criteria

Analytical Parameters are greater than the CCME Freshwater Guideline and/or the Applicable Ontario Vegetation Criteria

( ) Indicates Parameters Analyzed which exceeded the CCME Freshwater guideline and/or the Applicable Ontario Vegetation Criteria

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

Horizontal Scale 1:1200

24 18 12 0 12 24
metres

Title: AEC 3 - ANALYTICAL RESULTS FOR SURFACE WATER & VEGETATION

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: PWGSC - TRANSPORT CANADA

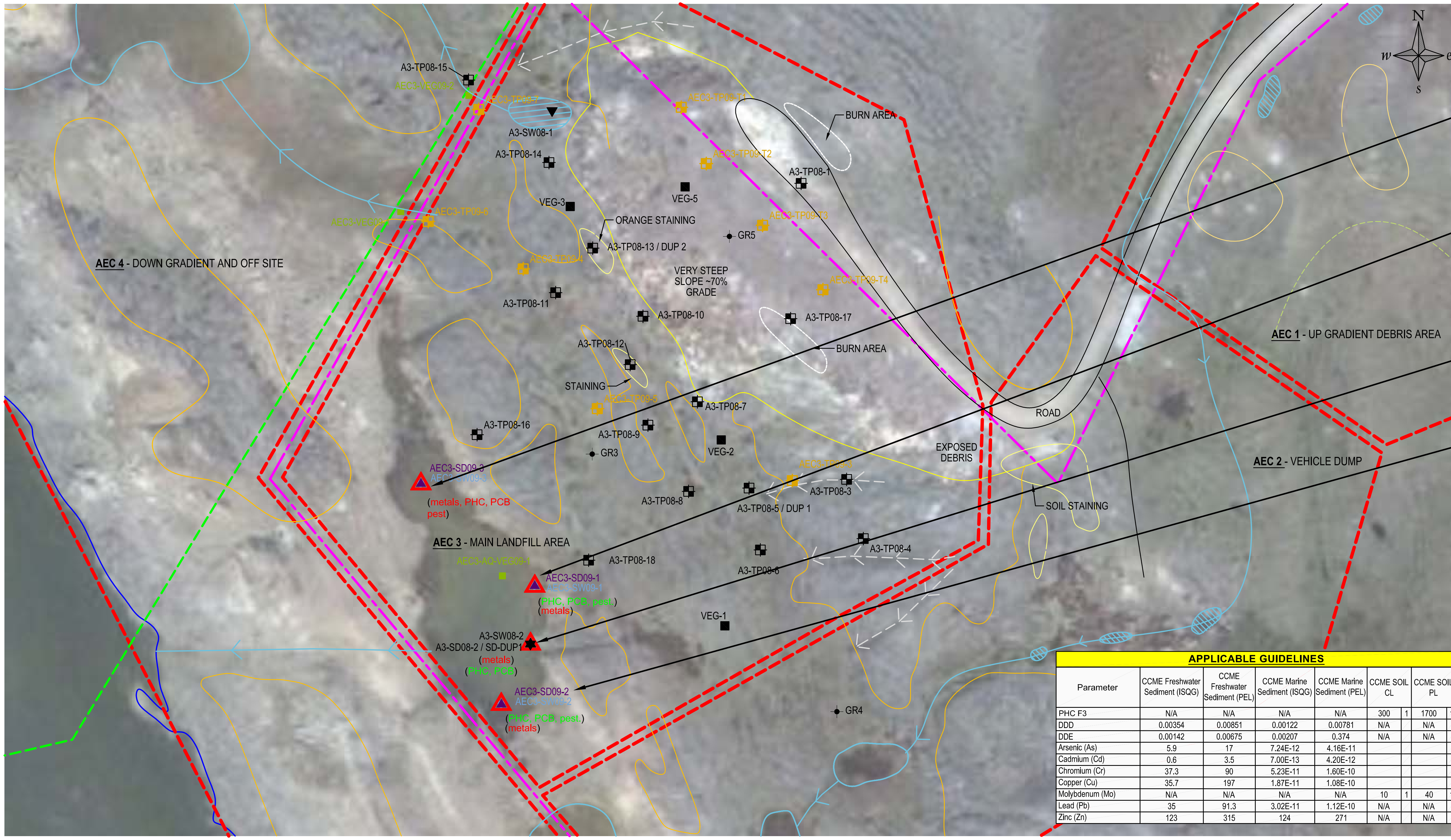
FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Date: MARCH 2010

FIGURE 17

*Original in colour

Z:\Projects\2009\1584-0901 TC Iqaluit Landfill\Figures\1584-0901_TC IQALUIT_V.2_recover.dwg



AEC3-SD09-3	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2285
Parameter	
PHC F3[1]	360
Arsenic (As)	7
Cadmium (Cd)	0.3
Chromium (Cr)	18
Copper (Cu)	18
Lead (Pb)	63
Molybdenum (Mo)[1]	11
Zinc (Zn)	130
DDD	0.02
DDE	0.014
PCB	0.09

AEC3-SD09-1	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2285
Parameter	
Arsenic (As)	2
Cadmium (Cd)	0.1
Chromium (Cr)	13
Copper (Cu)	7.5
Lead (Pb)	18

	A3-S008-2	A3-S008-2-DUP1
Prepared by:	FRANZ	FRANZ
Date:	07-SEP-08	07-SEP-08
Lab ID:	L681123-4	L681123-4
Parameter		
Chromium (Cr)	12.8	14.2
Copper (Cu)	4.5	7.9
Lead (Pb)	-	39

AEC3-SD09-2	
Prepared by:	FRANZ
Date:	15-SEP-09
Lab ID:	A9C2285
Parameter	
Chromium (Cr)	17
Copper (Cu)	4.7
Lead (Pb)	5

APPLICABLE GUIDELINES

Parameter	CCME Freshwater Sediment (ISQG)	CCME Freshwater Sediment (PEL)	CCME Marine Sediment (ISQG)	CCME Marine Sediment (PEL)	CCME SOIL CL		CCME SOIL PL	
PHC F3	N/A	N/A	N/A	N/A	300	1	1700	1
DDD	0.00354	0.00851	0.00122	0.00781	N/A		N/A	
DDE	0.00142	0.00675	0.00207	0.374	N/A		N/A	
Arsenic (As)	5.9	17	7.24E-12	4.16E-11				
Cadmium (Cd)	0.6	3.5	7.00E-13	4.20E-12				
Chromium (Cr)	37.3	90	5.23E-11	1.60E-10				
Copper (Cu)	35.7	197	1.87E-11	1.08E-10				
Molybdenum (Mo)	N/A	N/A	N/A	N/A	10	1	40	1
Lead (Pb)	35	91.3	3.02E-11	1.12E-10	N/A		N/A	
Zinc (Zn)	123	315	124	271	N/A		N/A	

NOTES

Canadian Sediment Quality Guidelines for the Protection of Aquatic Life, Updated 2002

Interim Freshwater/Marine Sediment Quality Guidelines (ISQG; dry weight), and Probable Effect levels (PELs; dry weight)

Sediment Concentrations in mg/kg

1 Canadian Soil Quality Guidelines for the Protection of of Environmental and Human Health CCME, 1999, updated 2001, updated 2002, updated 2004, updated 2007.

Soil Quality Guideline, Parkland (PL) and Commercial (CL), Coarse Grained Soils

LEGEND:

POOLING WATER
PROPERTY BOUNDARY
PARK BOUNDARY
AREA OF ENVIRONMENTAL CONCERN (AEC)
BURN AREA
DRUMS
SEEPAGE/GULLY
STREAM/DRAINAGE
ROCK

2008:
SOIL — SOIL SAMPLE LOCATION
SW — SURFACE WATER SAMPLE LOCATION
SD — SEDIMENT SAMPLE LOCATION
VEG — VEGETATION SAMPLE LOCATION
GR3 — GRAIN SIZE SAMPLE LOCATION

2009:
SOIL — SOIL SAMPLE LOCATION
SW — SURFACE WATER SAMPLE LOCATION
SD — SEDIMENT SAMPLE LOCATION
VEG — VEGETATION SAMPLE LOCATION

10 Value is greater than the PEL Guideline (freshwater)
10 Value is greater than the ISQG Guideline (freshwater)

10 *Value is greater than the CCME Cl Guideline*
10 *Value is greater than the CCME PL Guideline*

10 Value is greater than the PEL Guideline (Marine)
10 Value is greater than the ISQG Guideline (Marine)

Analytical Parameters are Lower than the Applicable CCME Marine Sediment Guideline or applicable CCME soil quality guideline
( )

One or More Analytical Parameters are Greater than the Applicable CCME Marine Sediment Guideline or applicable CCME soil quality guideline
( )

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

Horizontal Scale 1:1200
24 18 12 0 12 24
metres

Title: AEC 3 - ANALYTICAL RESULTS FOR SEDIMENT

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: PWGSC - TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.
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Date: MARCH 2010

FIGURE 18

*Original in colour

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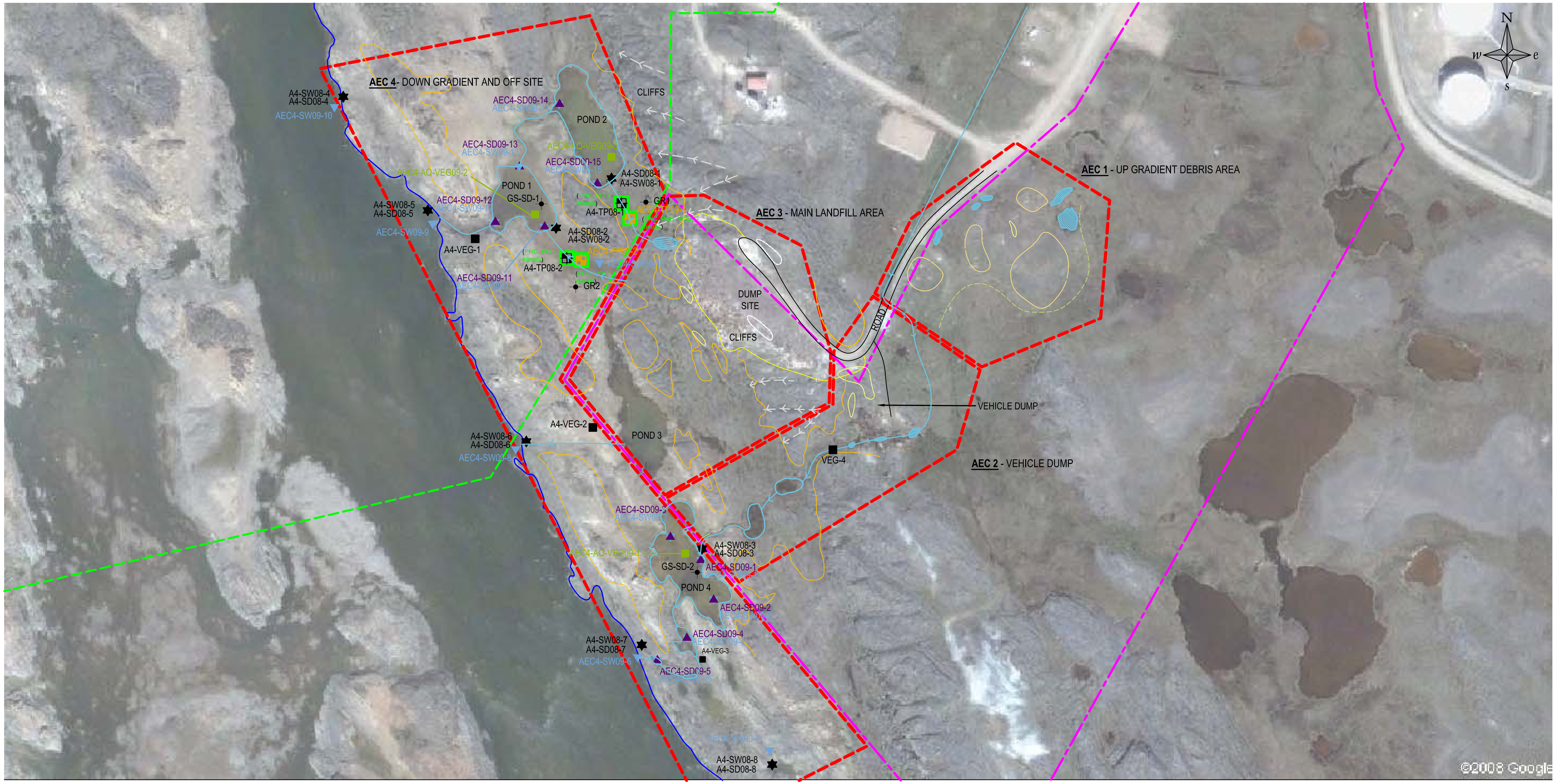


LEGEND:

- POOLING WATER
- PROPERTY BOUNDARY
- SILVIA GRINNELL PARK BOUNDARY
- AREA OF ENVIRONMENTAL CONCERN (AEC)
- BURN AREA
- DRUMS
- SEEPAGE/GULLY
- STREAM/DRAINAGE
- ROCK
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION
- GR3 — GRAIN SIZE SAMPLE LOCATION

Analytical Parameters are Lower than the Applicable CCME Soil Guideline

( ) Indicates Parameters Analyzed which were Below the Applicable CCME Soil Guideline

NOTES

Concentration is mg/kg

Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health CCME, 1999, updated 2001, updated 2002, updated 2004, updated 2007.

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

Horizontal Scale 1:700

14 10.5 7 0 7 14

metres

Title: AEC 4 - ANALYTICAL RESULTS FOR SOIL

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: PWGSC - TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.

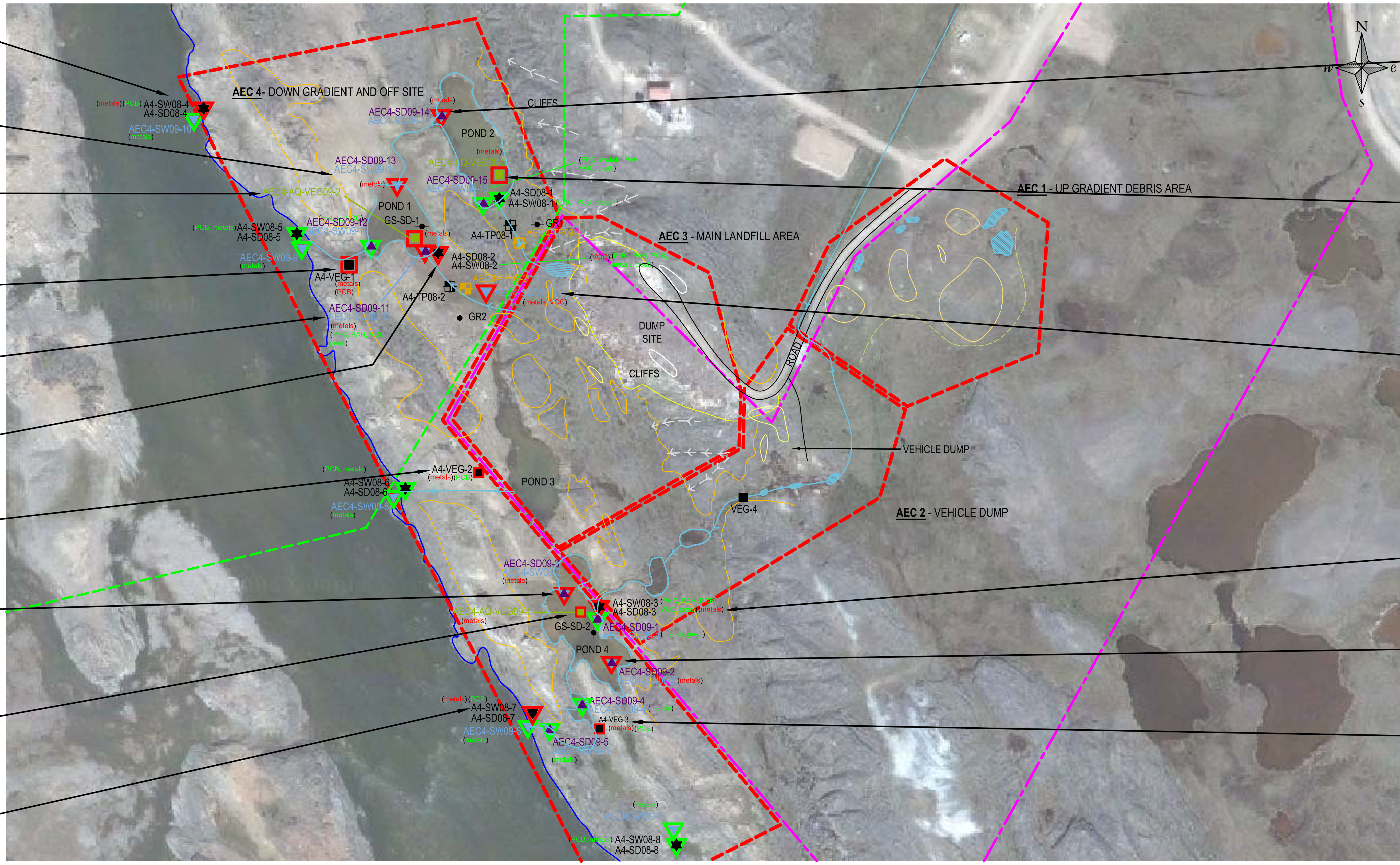
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Date: MARCH 2010

FIGURE 19

*Original in colour

Z:\Projects\2009\1584-0901 TC Iqaluit Landfill\Figures\1584-0901_TC IQALUIT_V.2_recover.dwg



A4- SW08-4	
Prepared by:	FRANZ
Date:	08-SEP-08
Lab ID:	L682349-3
Parameter	
Cadmium (Cd)	0.044

AEC4-SW09-13	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4118
Parameter	
Iron (Fe)	310

AEC4-AQ-VEG09-2	
Prepared by:	FRANZ
Date:	16-SEP-09
Lab ID:	A9C4887
Parameter	
Arsenic (As)	1.1
Iron (Fe)	2410
Sodium (Na)	241

A4-VEG-1	
Prepared by:	FRANZ
Date:	10-SEP-08
Lab ID:	L682370-7
Parameter	
Sodium (Na)	2660
Iron (Fe)	7880

AEC4-SW09-11	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4118
Parameter	
Iron (Fe)	1400

A4-SW08-2	
Prepared by:	FRANZ
Date:	08-SEP-08
Lab ID:	L682349-2
Parameter	
Trichloroethene	22.6

A4-VEG-2	
Prepared by:	FRANZ
Date:	10-SEP-08
Lab ID:	L682370-8
Parameter	
Sodium (Na)	6790
Iron (Fe)	627

AEC4-SW09-3	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4118
Parameter	
Aluminum (Al) *a pH<6.5	27
Copper (Cu)*b H: 0 - 120mg/L	3
Iron (Fe)	610

AEC4-AQ-VEG09-1	
Prepared by:	FRANZ
Date:	16-SEP-09
Lab ID:	A9C4887
Parameter	
Iron (Fe)	1890
Manganese (Mn)	57.6
Sodium (Na)	310

A4-SW08-7	
Prepared by:	FRANZ
Date:	08-SEP-08
Lab ID:	L682329-4
Parameter	
Cadmium (Cd)	0.082

AEC4-SW09-14	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4118
Parameter	
Iron (Fe)	390

AEC4-AQ-VEG09-3	
Prepared by:	FRANZ
Date:	16-SEP-09
Lab ID:	A9C4887
Parameter	
Iron (Fe)	808
Manganese (Mn)	119
Sodium (Na)	1180

AEC4-SW09-16	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4118
Parameter	
Iron (Fe)	10,000
Tetrachloroethene	210
Trichloroethene	62

A4-SW08-3	
Prepared by:	FRANZ
Date:	08-SEP-08
Lab ID:	L682329-2
Parameter	
Cadmium (Cd)	0.146
Copper (Cu)*b H: 0 - 120mg/L	5.7

AEC4-SW09-2	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4118
Parameter	
Iron (Fe)	330

A4-VEG-3	
Prepared by:	FRANZ
Date:	10-SEP-08
Lab ID:	L682370-9
Parameter	
Sodium (Na)	6180
Iron (Fe)	853

NOTES

*a Standard is pH dependent
*b Standards is hardness dependent
CCME Canadian Water Quality Guidelines for the Protection of Freshwater Aquaitc Life, Updated in 2007
Surface Water Concentrations in ug/L
Vegetation Concentrations in mg/kg

LEGEND:

- POOLING WATER
- PROPERTY BOUNDARY
- SILVIA GRINNELL PARK BOUNDARY
- AREA OF ENVIRONMENTAL CONCERN (AEC)
- BURN AREA
- DRUMS
- SEEPAGE/GULLY
- STREAM/DRAINAGE
- ROCK

2008:
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION
- GR3 — GRAIN SIZE SAMPLE LOCATION

2009:
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION

APPLICABLE GUIDELINES - SURFACE WATER

Parameter	CCME Freshwater
Aluminum (Al) pH<6.5	5
Cadmium (Cd)	0.017
Copper (Cu) H: 0 - 120mg/L	2
Iron (Fe)	300
Trichloroethene	21
Tetrachloroethene	111
Sodium (Na)	-

APPLICABLE GUIDELINES - VEGETATION

Parameter	Ontario MOE
Arsenic (As)	0.5
Iron (Fe)	500
Manganese (Mn)	50
Sodium (Fe)	50

10	Value is greater than the CCME freshwater Guideline
10	Value is greater than the Ontario Vegetation

Analytical Parameters are less than the CCME Freshwater Guideline and/or the Applicable Ontario Vegetation Criteria

( ) Indicates Parameters Analyzed which were below the CCME Freshwater guideline and/or the Applicable Ontario Vegetation Criteria

Analytical Parameters are greater than the CCME Freshwater Guideline and/or the Applicable Ontario Vegetation Criteria

( ) Indicates Parameters Analyzed which exceeded the CCME Freshwater guideline and/or the Applicable Ontario Vegetation Criteria

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

Horizontal Scale 1:3000
60 45 30 0 30 60
metres

Title: AEC 4 - ANALYTICAL RESULTS FOR SURFACE WATER & VEGETATION

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: PWGSC - TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Date: MARCH 2010

FIGURE 20

*Original in colour

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A4-SD08-4	
Prepared by:	FRANZ
Date:	8-SEP-08
Lab ID:	L682317-1
Parameter	
Chromium (Cr)	14
Copper (Cu)	4.9

AEC4-SD09-13	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4313
Parameter	
Chromium (Cr)	20
Copper (Cu)	5.8
Lead (Pb)	3

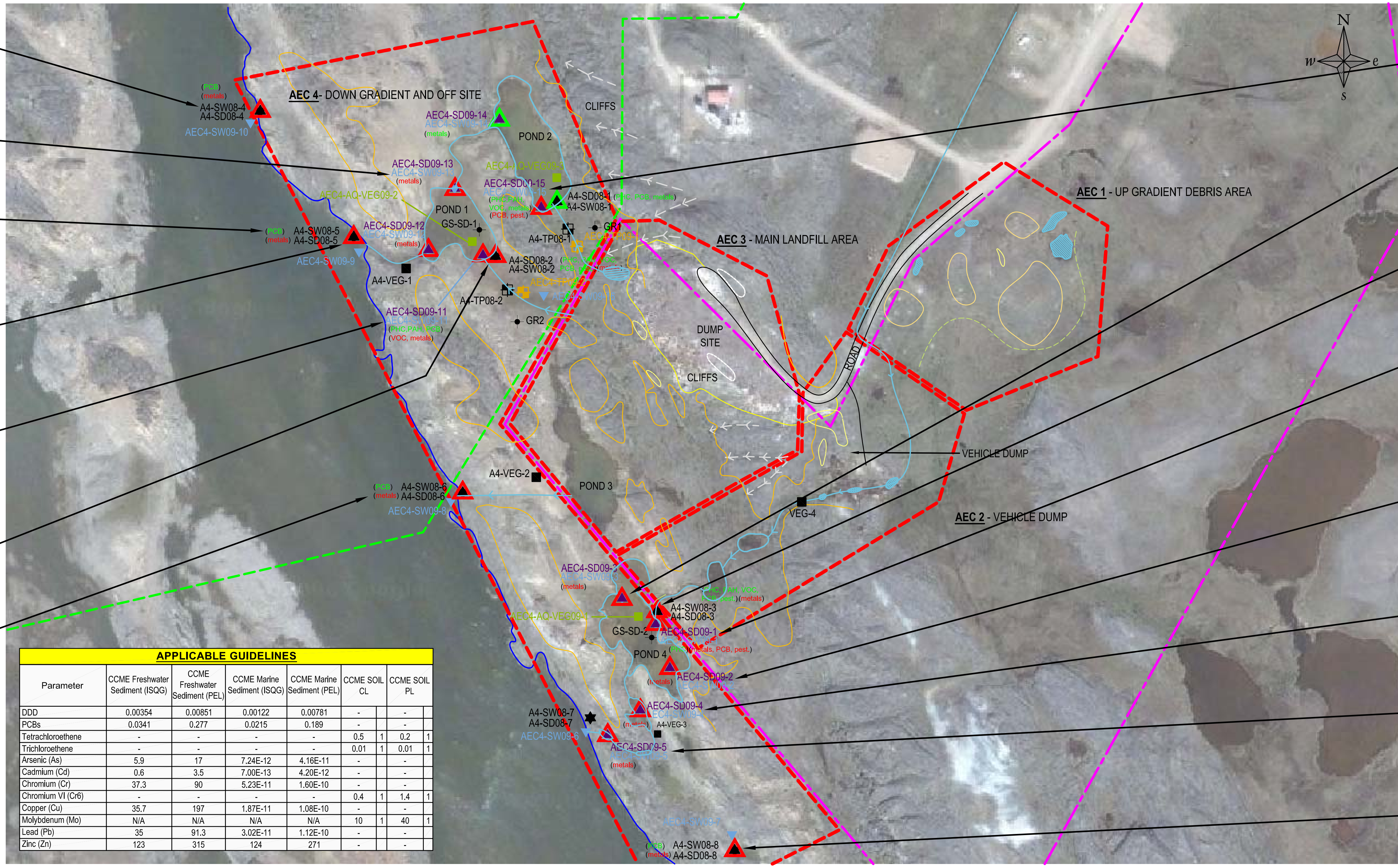
A4-SD08-5	
Prepared by:	FRANZ
Date:	8-SEP-08
Lab ID:	L682317-1
Parameter	
Chromium (Cr)	10.2
Copper (Cu)	4.6

AEC4-SD09-12	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4313
Parameter	
Chromium (Cr)	30
Copper (Cu)	6.3
Lead (Pb)	2

AEC4-SD09-11	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4313
Parameter	
Arsenic (As)	1
Chromium (Cr)	17
Copper (Cu)	5.3
Lead (Pb)	3
Tetrachloroethene	0.24
Trichloroethene	0.1

A4-SD08-2	
Prepared by:	FRANZ
Date:	8-SEP-08
Lab ID:	L682317-1
Parameter	
Chromium (Cr)	15.5
Copper (Cu)	5.4

A4-SD08-6	
Prepared by:	FRANZ
Date:	8-SEP-08
Lab ID:	L682317-1
Parameter	
Chromium (Cr)	11.4
Copper (Cu)	4.9



APPLICABLE GUIDELINES								
Parameter	CCME Freshwater Sediment (ISQG)	CCME Freshwater Sediment (PEL)	CCME Marine Sediment (ISQG)	CCME Marine Sediment (PEL)	CCME SOIL CL		CCME SOIL PL	
DDD	0.00354	0.00851	0.00122	0.00781	-		-	
PCBs	0.0341	0.277	0.0215	0.189	-		-	
Tetrachloroethene	-	-	-	-	0.5	1	0.2	1
Trichloroethene	-	-	-	-	0.01	1	0.01	1
Arsenic (As)	5.9	17	7.24E-12	4.16E-11	-		-	
Cadmium (Cd)	0.6	3.5	7.00E-13	4.20E-12	-		-	
Chromium (Cr)	37.3	90	5.23E-11	1.60E-10	-		-	
Chromium VI (Cr6)	-	-	-	-	0.4	1	1.4	1
Copper (Cu)	35.7	197	1.87E-11	1.08E-10	-		-	
Molybdenum (Mo)	N/A	N/A	N/A	N/A	10	1	40	1
Lead (Pb)	35	91.3	3.02E-11	1.12E-10	-		-	
Zinc (Zn)	123	315	124	271	-		-	

AEC4-SD09-15	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4313
Parameter	
PCBs	0.04
DDD	0.004

AEC4-SD09-3	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4313
Parameter	
Arsenic (As)	1
Cadmium (Cd)	0.2
Chromium (Cr)	17
Chromium VI (Cr6)	0.7
Copper (Cu)	7.6
Lead (Pb)	11

A4-SD08-3	
Prepared by:	FRANZ
Date:	8-SEP-08
Lab ID:	L682317-1
Parameter	
Chromium (Cr)	9.3
Copper (Cu)	6.7

AEC4-SD09-1	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4313
Parameter	
Cadmium (Cd)	0.2
Chromium (Cr)	20
Copper (Cu)	7.2
Lead (Pb)	9
PCB	0.03
DDD	0.004

AEC4-SD09-2	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4313
Parameter	
Arsenic (As)	2
Cadmium (Cd)	0.2
Chromium (Cr)	15
Chromium VI (Cr6)	0.8
Copper (Cu)	7.6
Lead (Pb)	9

AEC4-SD09-4	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4313
Parameter	
Arsenic (As)	1
Cadmium (Cd)	0.1
Chromium (Cr)	18
Copper (Cu)	8
Lead (Pb)	6

AEC4-SD09-5	
Prepared by:	FRANZ
Date:	17-SEP-09
Lab ID:	A9C4313
Parameter	
Chromium (Cr)	13
Copper (Cu)	5.6
Lead (Pb)	2

A4-SD08-8	
Prepared by:	FRANZ
Date:	8-SEP-08
Lab ID:	L682317-1
Parameter	
Chromium (Cr)	10.4
Copper (Cu)	5

LEGEND:

- POOLING WATER
- PROPERTY BOUNDARY
- SILVIA GRINNELL PARK BOUNDARY
- AREA OF ENVIRONMENTAL CONCERN (AEC)
- BURN AREA
- DRUMS
- SEEPAGE/GULLY
- STREAM/DRAINAGE
- ROCK

2008:
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION
- GR3 — GRAIN SIZE SAMPLE LOCATION

2009:
- SOIL — SOIL SAMPLE LOCATION
- SW — SURFACE WATER SAMPLE LOCATION
- SD — SEDIMENT SAMPLE LOCATION
- VEG — VEGETATION SAMPLE LOCATION

10	Value is greater than the PEL Guideline (freshwater)
10	Value is greater than the ISQG Guideline (freshwater)

OR

10	*Value is greater than the CCME Cl Guideline*
10	*Value is greater than the CCME PL Guideline*

OR

10	Value is greater than the PEL Guideline (Marine)
10	Value is greater than the ISQG Guideline (Marine)

( ) Analytical Parameters are Lower than the Applicable CCME Freshwater, Marine Sediment Guideline or applicable CCME soil quality guideline

( ) One or More Analytical Parameters are Greater than the Applicable CCME Freshwater, Marine Sediment Guideline or applicable CCME soil quality guideline

Sediment Concentrations in mg/kg

NOTES

Canadian Sediment Quality Guidelines for the Protection of Aquatic Life, Updated 2002

Interim Freshwater and/or Marine Sediment Quality Guidelines (ISQG; dry weight), and Probable Effect levels (PELs; dry weight)

1 Canadian Soil Quality Guidelines for the Protection of of Environmental and Human Health CCME, 1999, updated 2001, updated 2002, updated 2004, updated 2007.
Soil Quality Guideline, Parkland (PL) and Commercial (CL), Coarse Grained Soils

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

Horizontal Scale 1:700
14 10.5 7 0 7 14
metres

Title: AEC 4 - ANALYTICAL RESULTS FOR SEDIMENT

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: PWGSC - TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.
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Date: MARCH 2010

FIGURE 21

*Original in colour

Z:\Projects\2009\1584-0901 TC Iqaluit Landfill\Figures\1584-0901_TC IQALUIT_V.2_recover.dwg

LEGEND:

- POOLING WATER
- STREAM/DRAINAGE
- AREA OF ENVIRONMENTAL CONCERN (AEC)
- ▲SD SEDIMENT SAMPLE LOCATION (2008)
- ▲SD SEDIMENT SAMPLE LOCATION (2009)

CONCENTRATIONS

	SEDIMENT (µg/g)
Red	>3.5
Orange	0.6 - 3.5
Green	<0.6

APPLICABLE GUIDELINES

	SEDIMENT EQG (µg/g)
ISQG	0.6
PEL	3.5

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

SCALE 1: 3000

75 60 45 30 15 0 metres 75 150

Title: CADMIUM SPATIAL ANALYSIS IN SEDIMENT

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.
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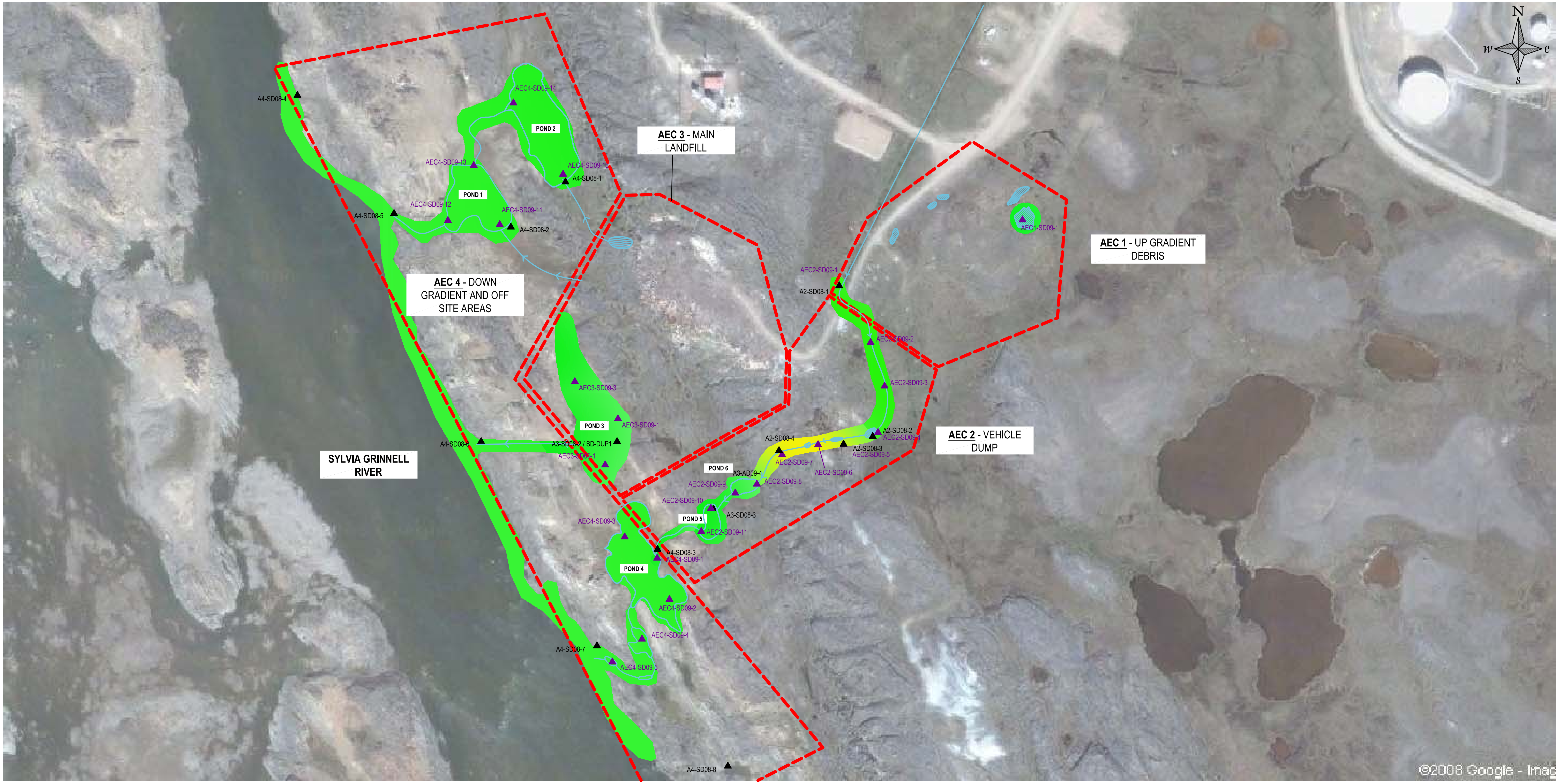
Date: MARCH 2010

FIGURE 22

*Original in colour

Projects\1584-0801\CAD\SG\1584-0901_TC IQALUIT_V.2_recover.dwg



LEGEND:

POOLING WATER

STREAM/DRAINAGE

AREA OF ENVIRONMENTAL CONCERN (AEC)

▲SD SEDIMENT SAMPLE LOCATION (2008)

▲SD SEDIMENT SAMPLE LOCATION (2009)

CHROMIUM

	CONCENTRATIONS
	SEDIMENT (µg/g)
Red	> 90
Orange	37.3 - 90
Green	< 37.5

APPLICABLE GUIDELINES	
	SEDIMENT EQG (µg/g)
ISQG	37.3
PEL	90

COPPER

	CONCENTRATIONS
	SEDIMENT (µg/g)
Red	> 197
Orange	35.7- 197
Green	< 36

APPLICABLE GUIDELINES	
	SEDIMENT EQG (µg/g)
ISQG	35.7
PEL	197

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

SCALE 1: 3000

75 60 45 30 15 0 metres 75 150

Title: CHROMIUM & COPPER SPATIAL ANALYSIS IN SEDIMENT

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: TRANSPORT CANADA

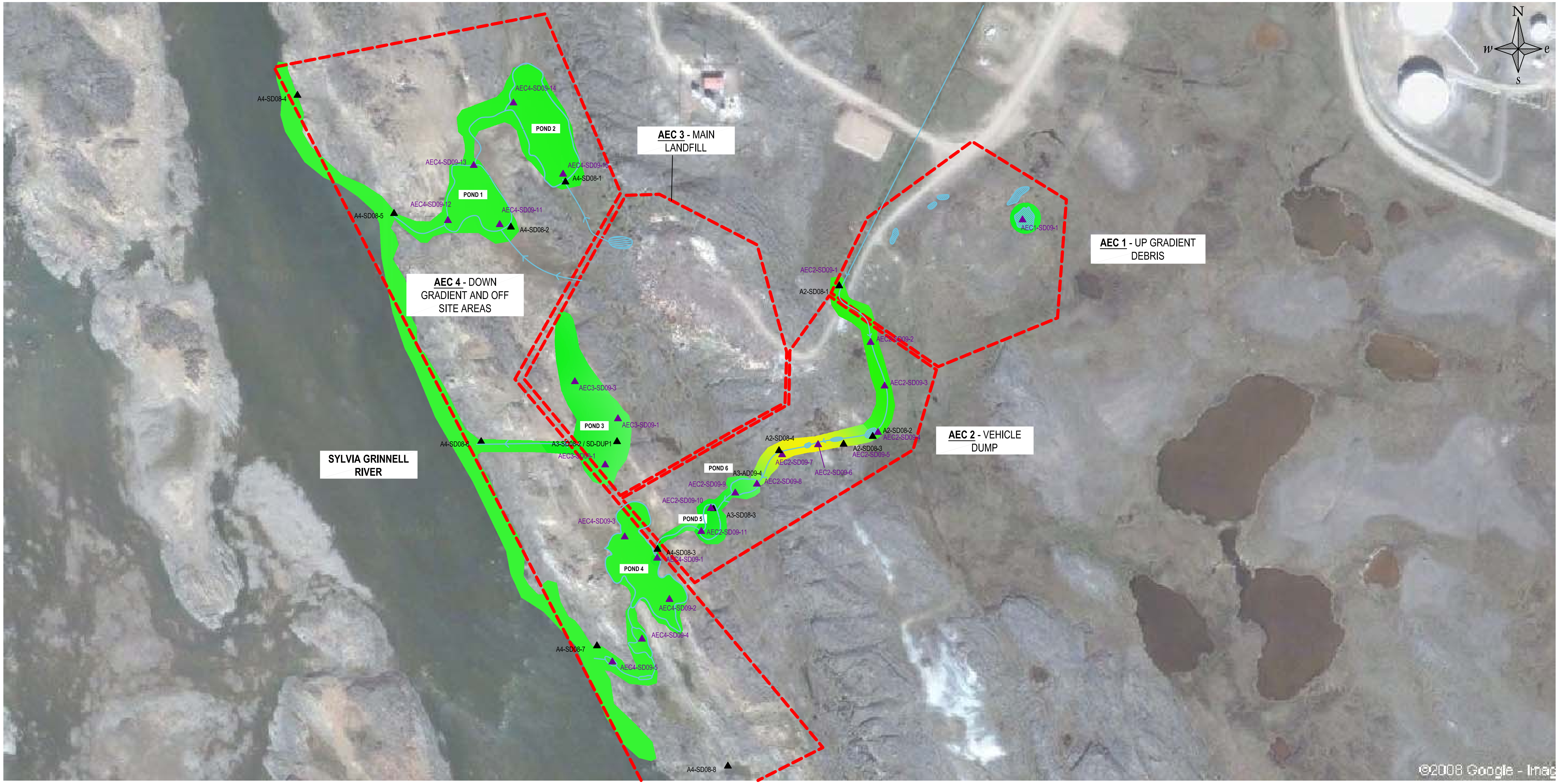
FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Date: MARCH 2010

FIGURE 23

*Original in colour

Projects\1584-0801\CAD\SG\1584-0901_TC IQALUIT_V.2_recover.dwg



LEGEND:

- POOLING WATER
- STREAM/DRAINAGE
- AREA OF ENVIRONMENTAL CONCERN (AEC)
- ▲SD SEDIMENT SAMPLE LOCATION (2008)
- ▲SD SEDIMENT SAMPLE LOCATION (2009)

CHROMIUM

	CONCENTRATIONS
	SEDIMENT (μg/g)
(red)	> 90
(orange)	37.3 - 90
(green)	< 37.5

APPLICABLE GUIDELINES	
	SEDIMENT EQG (μg/g)
ISQG	37.3
PEL	90

COPPER

	CONCENTRATIONS
	SEDIMENT (μg/g)
(red)	> 197
(orange)	35.7- 197
(green)	< 36

APPLICABLE GUIDELINES	
	SEDIMENT EQG (μg/g)
ISQG	35.7
PEL	197

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

SCALE 1: 3000

75 60 45 30 15 0 metres 75 150

Title: CHROMIUM & COPPER SPATIAL ANALYSIS IN SEDIMENT

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.
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Date: MARCH 2010

FIGURE 23

*Original in colour

Projects\1584-0801\CAD\SG\1584-0901_TC IQALUIT_V.2_recover.dwg

LEGEND:

- POOLING WATER
- STREAM/DRAINAGE
- AREA OF ENVIRONMENTAL CONCERN (AEC)
- SD SEDIMENT SAMPLE LOCATION (2008)
- SD SEDIMENT SAMPLE LOCATION (2009)

CONCENTRATIONS

	SEDIMENT (µg/g)
Red	>91
Orange	35-91
Green	<35

APPLICABLE GUIDELINES

	SEDIMENT EQG (µg/g)
ISQG	35
PEL	91

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

SCALE 1: 3000

75 60 45 30 15 0 metres 75 150

Title: LEAD SPATIAL ANALYSIS IN SEDIMENT

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.
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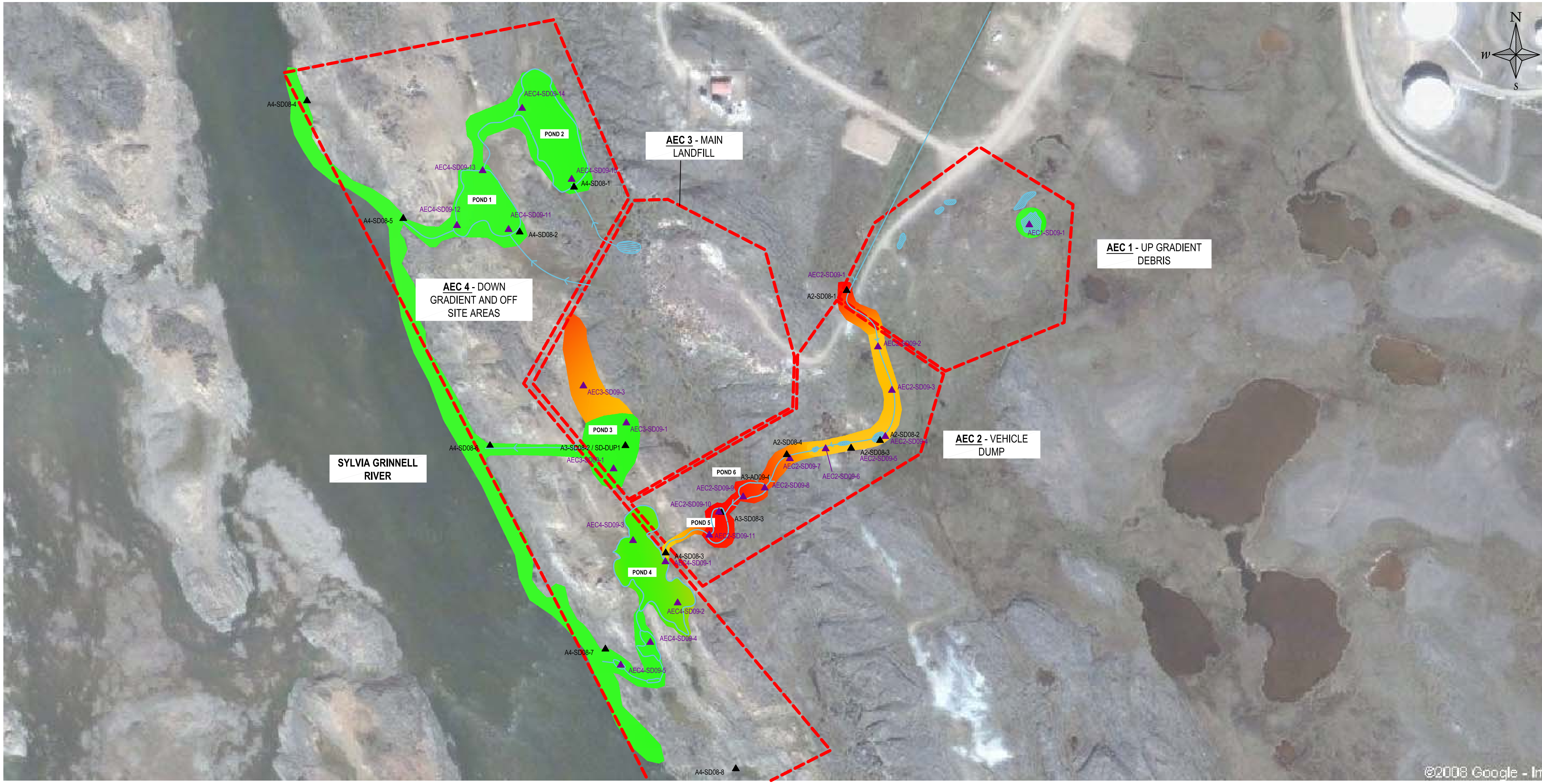
Date: MARCH 2010

FIGURE 24

*Original in colour

Projects\1584-0801\CAD\SG\1584-0901_TC IQALUIT_V.2_recover.dwg



LEGEND:

- POOLING WATER
- STREAM/DRAINAGE
- AREA OF ENVIRONMENTAL CONCERN (AEC)
- SD SEDIMENT SAMPLE LOCATION (2008)
- SD SEDIMENT SAMPLE LOCATION (2009)

CONCENTRATIONS	
	SEDIMENT (µg/g)
(red)	> 315
(orange)	123 - 315
(green)	< 123

APPLICABLE GUIDELINES	
	SEDIMENT EQG (µg/g)
ISQG	123
PEL	315

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

SCALE 1: 3000

75 60 45 30 15 0 metres 75 150

Title: ZINC SPATIAL ANALYSIS IN SEDIMENT

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.
♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦

Date: MARCH 2010

FIGURE 25

*Original in colour

Projects\1584-0801\CAD\SG\1584-0901_TC IQALUIT_V.2_recover.dwg

LEGEND:

POOLING WATER

STREAM/DRAINAGE

AREA OF ENVIRONMENTAL CONCERN (AEC)

SD SEDIMENT SAMPLE LOCATION (2008)

SD SEDIMENT SAMPLE LOCATION (2009)

CONCENTRATIONS

	SEDIMENT (µg/g)
(red)	>0.277
(orange)	0.034 - 0.277
(green)	<0.034

APPLICABLE GUIDELINES

	SEDIMENT EQG (µg/g)
ISQG	0.034
PEL	0.277

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

SCALE 1: 3000

75 60 45 30 15 0 metres 75 150

Title: PCB SPATIAL ANALYSIS IN SEDIMENT

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.
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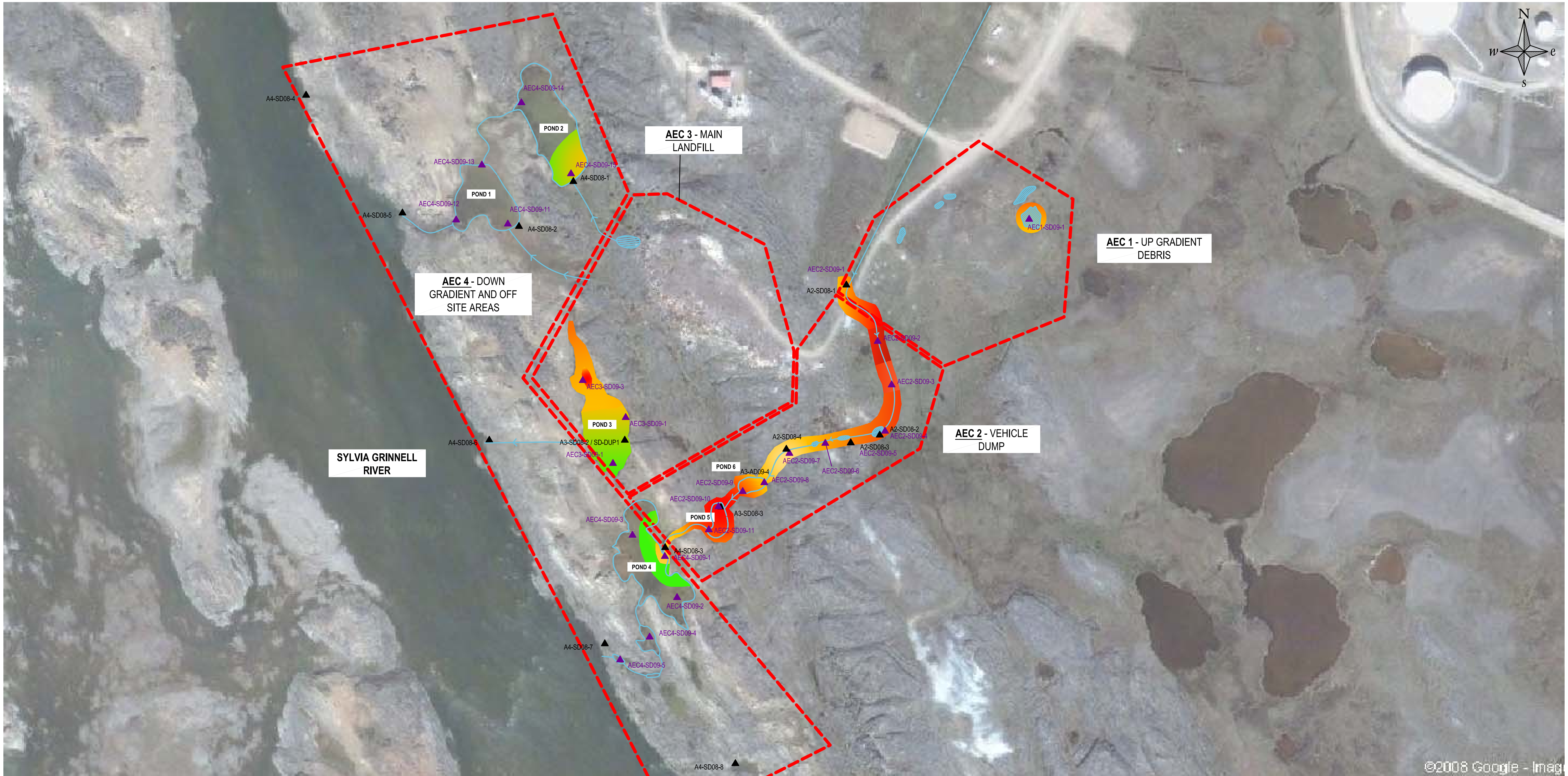
Date: MARCH 2010

FIGURE 26

*Original in colour

Projects\1584-0801\CAD\SG\1584-0901_TC IQALUIT_V.2_recover.dwg



LEGEND:

- POOLING WATER
- STREAM/DRAINAGE
- AREA OF ENVIRONMENTAL CONCERN (AEC)
- SD SEDIMENT SAMPLE LOCATION (2008)
- SD SEDIMENT SAMPLE LOCATION (2009)

CONCENTRATIONS	
	SEDIMENT (µg/g)
red	>0.02
orange	0.0689-0.02
green	<0.00689

APPLICABLE GUIDELINES	
	SEDIMENT EQG (µg/g)
ISQG	0.00689
PEL	0.02

REFERENCE: BACKGROUND IMAGE OBTAINED FROM GOOGLE EARTH, 2008

SCALE 1: 3000

75 60 45 30 15 0 metres 75 150

Title: PESTICIDE SPATIAL ANALYSIS IN SEDIMENT

Project: VEHICLE DUMP & COMMUNITY LANDFILL - IQALUIT, NUNAVUT

Client: TRANSPORT CANADA

FRANZ ENVIRONMENTAL INC.
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Date: MARCH 2010

FIGURE 27

*Original in colour

Projects\1584-0801\CAD\SG\1584-0901_TC IQALUIT_V.2_recover.dwg

TABLES

Soil - Analytical Results

Area ID	CCME Soil PL[1]	CCME Soil CL[2]	**AEC 1**	**AEC 1**	**AEC 1**	**AEC 1**	**AEC 1**	**AEC 2**	**AEC 2**
Station ID			**AEC1-TP09-1**	**AEC1-TP09-1**	**AEC1-TP09-3**	**AEC1-TP09-4**	**AEC1-TP09-5**	**AEC2-TP09-1**	**AEC2-TP09-2**
Field label			AEC1-TP09-1-1	AEC1-TP09-1-2	AEC1-TP09-3-1	AEC1-TP09-4-1	AEC1-TP09-5-1	AEC2-TP09-1	AEC2-TP09-2
Duplicate ID									TP09-DUP2
Date			16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09
Lab report ID			A9C4508	A9C4508	A9C4508	A9C4508	A9C4508	A9C4508	A9C4508
Depth (m)			0.0 – 0.33	0.8 – 1.3	0.0 – 1.0			0.0	0.0 – 0.2
Aluminum	-	-	2600	4900	3700	4800	4700	5100	4700
Antimony	20	40	<0.2	<0.2	<0.2	<0.2	2.0	0.9	1.1
Arsenic	12[a]	12[a]	1	<1	2	<1	1	1	1
Barium	500	2000	17.0	31.0	20.0	33.0	27.0	35.0	36.0
Beryllium	4[a]	8[a]	<0.2	<0.2	<0.2	<0.2	0.3	0.3	<0.2
Cadmium	10	22	<0.1	<0.1	<0.1	<0.1	0.2	0.4	0.7
Calcium	-	-	7700	2200	2000	2400	2300	2600	2200
Chromium	64	87	21	20	19	24	21	20	20
Chromium (VI)	0.4	1.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.4
Cobalt	50[a]	300[a]	4.3	3.8	3.3	5.4	5.9	5.1	4.4
Copper	63	91	11.0	6.7	5.9	9.0	14.0	20.0	**93.0**
Iron	-	-	20000	24000	22000	28000	27000	23000	20000
Lead	140	260	2	3	3	4	150	49	83
Magnesium	-	-	1800	2600	2100	2300	2900	2400	2300
Manganese	-	-	130	88	92	240	250	210	180
Mercury	6.6	24	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	10[a]	40[a]	<0.5	<0.5	<0.5	0.7	0.6	1.1	1.0
Nickel	50	50	6.1	6.4	5.5	7.7	8.0	7.6	6.7
Phosphorus	-	-	630	780	630	650	590	680	650
Potassium	-	-	460	810	530	670	600	720	590
Selenium	1	2.9	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5
Silver	20[a]	40[a]	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sodium	-	-	120	110	<100	<100	<100	170	130
Strontium	-	-	14	4	5	5	7	7	6
Thallium	1	1	<0.05	0.09	<0.05	<0.05	<0.05	<0.05	0.05
Vanadium	130	130	38	52	49	68	58	43	41
Zinc	200	360	26	28	22	30	58	63	74

All units in ug/g, unless otherwise noted.

Notes:

1 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

2 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

a = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 2. Interim remediation criteria for soil.

* = See Methodologies section for Scenario Rationale

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

-' = No Guideline

NC = Not calculated

"-" indicates that there is no applicable regulation or analyses were not performed.

20 = Denotes exceedance of CCME residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

Area ID	**CCME Soil PL[1]**	**CCME Soil CL[2]**	**AEC 2**	**RDL**	**Duplicate Evaluation**				**AEC 3**	**AEC 3**	**AEC 3**	**AEC 3**	**AEC 4**	**AEC 4**
Station ID			**AEC2-TP09-2**						**AEC3-TP09-4**	**AEC3-TP09-5**	**AEC3-TP09-6**	**AEC3-TP09-7**	**AEC4-TP09-1**	**AEC4-TP09-2**
Field label			TP09-DUP2		**Scenario***	**RPD (%)**	**Value (ug/L)**	**Acceptable (Y/N)**	AEC3-TP09-4	AEC3-TP09-5	AEC3-TP09-6	AEC3-TP09-7	AEC4-TP09-1	AEC4-TP09-2
Duplicate ID			AEC2-TP09-2											
Date			16/Sep/09						17/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09
Lab report ID			A9C4508						A9C4508	A9C4508	A9C4508	A9C4508	A9C4508	A9C4508
Depth (m)			0.0 – 0.2						0.0 – 0.2	0.0 – 0.2	0.0 – 0.38	0.0 – 0.4	0.0 – 0.3	0.0 – 0.35
Aluminum	-	-	3900	50.0	C	4.7	NC	Y	3700	4800	4800	4700	4300	4300
Antimony	20	40	0.8	0.2	D	NC	0.3	Y	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	12[a]	12[a]	1	1	D	NC	0.0	Y	2	2	2	2	2	2
Barium	500	2000	28.0	0.5	C	6.3	NC	Y	22.0	26.0	28.0	28.0	29.0	22.0
Beryllium	4[a]	8[a]	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium	10	22	0.6	0.1	C	3.8	NC	Y	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	-	-	2100	50	C	1.2	NC	Y	2300	1900	2300	2400	2200	2500
Chromium	64	87	18	1	C	2.6	NC	Y	16	25	19	19	15	14
Chromium (VI)	0.4	1.4	<0.2	<0.2	B	NC	0.3	Y	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cobalt	50[a]	300[a]	3.7	0.1	C	4.3	NC	Y	2.5	3.7	2.6	2.4	2.2	3.4
Copper	63	91	18.0	0.5	C	33.8	NC	Y	4.0	5.0	6.2	6.0	5.8	6.0
Iron	-	-	19000	50	C	1.3	NC	Y	21000	29000	19000	21000	16000	9900
Lead	140	260	66	1	C	5.7	NC	Y	4	3	4	3	3	2
Magnesium	-	-	1900	50	C	4.8	NC	Y	2100	3100	2700	2700	2400	2600
Manganese	-	-	140	1	C	6.3	NC	Y	45	95	55	50	63	54
Mercury	6.6	24	<0.05	<0.05	A	NC	NC	Y	0.09	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	10[a]	40[a]	0.9	0.5	D	NC	0.1	Y	1.8	1.4	1.8	1.5	1.4	5.6
Nickel	50	50	5.7	0.5	C	4.0	NC	Y	4.5	5.9	5.0	4.7	4.5	6.5
Phosphorus	-	-	520	50	C	5.6	NC	Y	570	770	830	850	710	820
Potassium	-	-	470	200	D	NC	120	Y	640	920	930	960	960	890
Selenium	1	2.9	<0.5	<0.5	A	NC	NC	Y	<0.5	<0.5	<0.5	<0.5	0.6	<0.5
Silver	20[a]	40[a]	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sodium	-	-	120	100	D	NC	10.0	Y	110	130	140	140	120	280
Strontium	-	-	6	1	C	0.0	NC	Y	9	8	7	7	7	8
Thallium	1	1	<0.05	<0.05	A	NC	NC	Y	<0.05	<0.05	<0.05	0.05	0.05	<0.05
Vanadium	130	130	38	5	C	1.9	NC	Y	44	64	47	47	39	29
Zinc	200	360	69	5	C	1.7	NC	Y	31	44	27	27	36	36

All units in ug/g, unless otherwise noted.

Notes:

1 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

2 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

a = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 2. Interim remediation criteria for soil.

* = See Methodologies section for Scenario Rationale

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

-' = No Guideline

NC = Not calculated

"-" indicates that there is no applicable regulation or analyses were not performed.

20 = Denotes exceedance of CCME residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

Parameters	CCME Soil CL	CCME Soil PL	A1-TP08-1	A1-TP08-2	A1-DUP 3	RPD	A1-TP08-3	A2-TP08-1	A2-TP08-2	A3-TP08-1	A3-TP08-2	A3-TP08-3
			APEC 1					APEC 2		APEC 3		
Sample Depth (m)			*0.0 - 0.8*	*0.0 - 1.0*			*0.0 - 0.5*	*0.0 - 0.1*	*0.0 - 0.1*	*0.0 - 0.2*	*0.0 - 0.12*	*0.0 - 0.25*
Lab ID #			*L682335-1*	*L682335-2*	*L682335-4*	***RPD***	*L682335-3*	*L681311-1*	*L681311-2*	*L681400-1*	*L681400-2*	*L681400-3*
Sample Date			*08-SEP-08*	*08-SEP-08*	*08-SEP-08*		*08-SEP-08*	*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	*06-SEP-08*
Prepared by:			**Franz**	**Franz**	**Franz**		**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Physical Tests												
% Moisture	---	---	-	-	-		4.94	20	18.6	-	47.3	53.7
pH	6 to 8 [2]	6 to 8 [2]	6.82	6.66	6.72	1%	6.7	6.03	6.3	7.79	***5.9***	6
Total Metals												
Antimony (Sb)	40 [2]	20 [2]	<10	<10	<10	NC	<10	<10	<10	<10	<10	<10
Arsenic (As)	12 [1]	12 [1]	<5.0	<5.0	<5.0	NC	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Barium (Ba)	2000 [1]	500 [1]	40.7	23	26.2	13%	21.6	134	17.7	24.8	425	18.6
Beryllium (Be)	8 [2]	4 [2]	<0.50	<0.50	<0.50	NC	<0.50	<0.50	1.02	<0.50	0.79	<0.50
Cadmium (Cd)	22 [1]	10 [1]	<0.50	<0.50	<0.50	NC	<0.50	***22.4***	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	87 [1]	64 [1]	20.4	10	12.2	20%	12	22.1	6.4	15.6	8.4	12
Cobalt (Co)	300 [2]	50 [2]	5.9	3.9	4.1	5%	3.4	5.3	2.1	4	2.6	2.4
Copper (Cu)	91 [1]	63 [1]	***103***	8.7	9.2	6%	6.3	29.2	6.4	14.9	18.3	15.1
Lead (Pb)	260 [1]	140 [1]	***190***	<30	<30	NC	<30	100	<30	<30	<30	<30
Mercury (Hg)	24 [1]	6.6 [1]	0.0054	<0.0050	<0.0050	NC	<0.0050	0.0258	0.0474	0.0099	0.0691	0.105
Molybdenum (Mo)	40 [2]	10 [2]	<4.0	<4.0	<4.0	NC	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Nickel (Ni)	50 [1]	50 [1]	8	5.1	5.5	8%	<5.0	7.2	<5.0	5.6	<5.0	<5.0
Selenium (Se)	2.9 [1]	1 [1]	<0.5	<0.5	<0.5	NC	0.5	<2.0	<2.0	<0.5	<0.5	0.51
Silver (Ag)	40 [2]	20 [2]	<2.0	<2.0	<2.0	NC	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Thallium (Tl)	1 [1]	1 [1]	<1.0	<1.0	<1.0	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tin (Sn)	300 [2]	50 [2]	<5.0	<5.0	<5.0	NC	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Vanadium (V)	130 [1]	130 [1]	44.2	32.3	33.4	3%	35.5	40.3	17.9	38	13.9	25.9
Zinc (Zn)	360 [1]	200 [1]	122	36.8	37.6	2%	24.8	92.1	39.2	46.9	126	34.3

Notes (Refer to endnotes for complete list)

10	value is greater than the CCME CL Guideline
10	value is greater than the CCME PL Guideline

--- No Guideline.

NC - Not calculated

Parameters		CCME Soil CL	CCME Soil PL	A3-TP08-4	A3-TP08-5	A3-DUP-1		A3-TP08-6	A3-TP08-7	A3-TP08-9	A3-TP08-10	A3-TP08-11	A3-TP08-12
				APEC 3									
	Sample Depth (m)			*0.0 - 0.05*	*0.0 - 0.3*			*0.0 - 0.30*	*0.0 - 0.25*	*0.01 - 0.2*	*0.0 - 0.15*	*0.0 - 0.2*	*0.0 - 0.1*
	Lab ID #			*L681400-4*	*L681400-5*	*L681400-9*	***RPD***	*L681400-6*	*L681400-7*	*L681268-3*	*L681400-10*	*L681268-10*	*L681268-2*
	Sample Date			*06-SEP-08*	*06-SEP-08*	*06-SEP-08*		*06-SEP-08*	*06-SEP-08*	*07-Sep-08*	*06-SEP-08*	*07-Sep-08*	*07-Sep-08*
	Prepared by:			**Franz**	**Franz**	**Franz**		**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Physical Tests													
% Moisture		---	---	-	10.9	9.54	13%	20.4	27.7	27.5	17.3	10.7	7.73
pH		6 to 8 [2]	6 to 8 [2]	_**5.03**_	6	6.16	3%	_**5.31**_	_**5.8**_	6.28	_**5.98**_	_**5.81**_	6.37
Total Metals													
Antimony (Sb)		40 [2]	20 [2]	<10	<10	<10	NC	<10	<10	<10	<10	<10	<10
Arsenic (As)		12 [1]	12 [1]	<5.0	<5.0	<5.0	NC	5.3	<5.0	<5.0	<5.0	<5.0	<5.0
Barium (Ba)		2000 [1]	500 [1]	24.5	33.6	36.9	9%	44.3	55.9	51	50.3	22.5	25
Beryllium (Be)		8 [2]	4 [2]	<0.50	<0.50	<0.50	NC	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cadmium (Cd)		22 [1]	10 [1]	0.64	<0.50	<0.50	NC	<0.50	<0.50	<0.50	0.76	<0.50	1.53
Chromium (Cr)		87 [1]	64 [1]	15.6	24	25.5	6%	23.1	24	25.2	23.8	15.2	18.7
Cobalt (Co)		300 [2]	50 [2]	3.2	3	3.6	18%	3.2	3	3.8	3.7	2.7	4.4
Copper (Cu)		91 [1]	63 [1]	17.9	5.8	5.7	2%	4.7	6.1	13.9	3.9	3.9	_**82**_
Lead (Pb)		260 [1]	140 [1]	52	<30	<30	NC	<30	<30	60	<30	<30	_**256**_
Mercury (Hg)		24 [1]	6.6 [1]	0.0953	<0.0050	<0.0050	NC	0.0104	0.0104	0.019	0.0073	0.0056	0.285
Molybdenum (Mo)		40 [2]	10 [2]	<4.0	<4.0	<4.0	NC	4.9	<4.0	<4.0	4.9	<4.0	<4.0
Nickel (Ni)		50 [1]	50 [1]	6.3	<5.0	5.3	NC	5.7	6.1	6.4	<5.0	<5.0	8.2
Selenium (Se)		2.9 [1]	1 [1]	<0.5	<0.5	<0.5	NC	<0.5	<0.5	<2.0	<0.5	<2.0	<2.0
Silver (Ag)		40 [2]	20 [2]	<2.0	<2.0	<2.0	NC	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Thallium (Tl)		1 [1]	1 [1]	<1.0	<1.0	<1.0	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tin (Sn)		300 [2]	50 [2]	8.7	<5.0	<5.0	NC	<5.0	<5.0	<5.0	<5.0	<5.0	9.8
Vanadium (V)		130 [1]	130 [1]	32.5	53.6	55.7	4%	56.2	23.4	42.1	55.9	36.9	16.9
Zinc (Zn)		360 [1]	200 [1]	38.7	28.3	30.3	NC	25.8	51	34.4	47.3	34.3	_**488**_

Notes (Refer to endnotes for complete list)

10 (shaded)	value is greater than the CCME CL Guideline
_**10**_	value is greater than the CCME PL Guideline

--- No Guideline.

NC - Not calculated

Parameters		CCME Soil CL	CCME Soil PL	APEC 3								APEC 4			
				A3-TP08-13	**A3-TP08-DUP2**		**A3-TP08-14**	**A3-TP08-15**	**A3-TP08-16**	**A3-TP08-17**	**A3-TP08-18**	**A4-TP08-1**	**A4-TP08-2**	**TP-BK-1**	**TP-BK-2**
	Sample Depth (m)			*0.0 -0.2*		**RPD**	*0.0 - 0.4*	*0.0 -0.3*	*0.0 - 0.3*	*0 - 0.35*	*0.0 - 0.35*	*0.37 - 0.80*	*0.0 - 0.3*	-	-
	Lab ID #			*L681268-4*	*L681268-5*		*L681268-6*	*L681268-7*	*L681268-8*	*L681268-1*	*L681268-9*	*L682335-5*	*L682335-6*	*L682370-11*	*L682370-14*
	Sample Date			*07-Sep-08*	*07-Sep-08*		*07-Sep-08*	*07-Sep-08*	*07-Sep-08*	*07-Sep-08*	*07-Sep-08*	*08-SEP-08*	*08-SEP-08*	*09-SEP-08*	*09-SEP-08*
	Prepared by:			**Franz**	**Franz**		**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Physical Tests															
% Moisture		---	---	9.73	13.4	32%	20.2	29.8	22.4	-	42.3	13.1	28.8		-
pH		6 to 8 [2]	6 to 8 [2]	6.57	6.56	0%	6.59	6.22	***5.9***	***5.23***	***5.4***	6.13	***5.15***	6.93	6.28
Total Metals															
Antimony (Sb)		40 [2]	20 [2]	<10	<10	NC	<10	<10	<10	<10	<10	<10	<10	<10	<10
Arsenic (As)		12 [1]	12 [1]	<5.0	<5.0	NC	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Barium (Ba)		2000 [1]	500 [1]	32.3	27.2	17%	43.3	35.5	43	43.8	31.8	30.7	35	29.8	23.5
Beryllium (Be)		8 [2]	4 [2]	<0.50	<0.50	NC	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cadmium (Cd)		22 [1]	10 [1]	0.52	0.93	57%	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)		87 [1]	64 [1]	22.4	22.2	1%	21.6	20.3	16.8	24.9	19	14.2	18.3	21.8	10.2
Cobalt (Co)		300 [2]	50 [2]	3.9	3.9	0%	3.7	3.8	3.7	3.2	2.9	3	3.6	5.2	3.2
Copper (Cu)		91 [1]	63 [1]	24.5	33.8	32%	8.3	12.3	5.8	9.1	6.7	6.1	7.5	8.8	5.2
Lead (Pb)		260 [1]	140 [1]	41	34	19%	<30	<30	<30	<30	<30	<30	<30	<30	<30
Mercury (Hg)		24 [1]	6.6 [1]	0.0356	0.0534	40%	0.0107	0.0122	<0.0050	0.0058	<0.0050	0.0061	<0.0050	<0.0050	<0.0050
Molybdenum (Mo)		40 [2]	10 [2]	<4.0	<4.0	NC	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Nickel (Ni)		50 [1]	50 [1]	8	8.8	10%	6.6	7.2	6	6.4	5.6	<5.0	6.8	6.2	<5.0
Selenium (Se)		2.9 [1]	1 [1]	<2.0	<2.0	NC	<2.0	<2.0	<2.0	<2.0	<2.0	<0.5	<0.5	<0.5	<0.5
Silver (Ag)		40 [2]	20 [2]	<2.0	<2.0	NC	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Thallium (Tl)		1 [1]	1 [1]	<1.0	<1.0	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tin (Sn)		300 [2]	50 [2]	9.1	7.4	21%	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Vanadium (V)		130 [1]	130 [1]	41.3	45.3	9%	48.8	46.8	34.1	60	40.2	39.9	39.1	55.0	24.2
Zinc (Zn)		360 [1]	200 [1]	***205***	***277***	30%	74.9	33.5	33.8	36.1	35.2	33.6	35.7	35.6	21.1

Notes (Refer to endnotes for complete list)

10	value is greater than the CCME CL Guideline
10	value is greater than the CCME PL Guideline

--- No Guideline.

NC - Not calculated

Area ID	CCME Soil PL[1]	CCME Soil CL[2]	CWS Soil PL[3]	CWS Soil CL[4]	AEC 1	AEC 1	AEC 1	Duplicate Evaluation				AEC 1	AEC 1
Station ID					AEC1-TP09-1	AEC1-TP09-3	AEC1-TP09-3					AEC1-TP09-4	AEC1-TP09-5
Field label					AEC1-TP09-1-1	AEC1-TP09-3-2	TP09-DUP1	Scenario*	RPD (%)	Value (ug/L)	Acceptable (Y/N)	AEC1-TP09-4-1	AEC1-TP09-5-2
Duplicate ID						TP09-DUP1	AEC1-TP09-3-2						
Date					16/Sep/09	16/Sep/09	16/Sep/09					16/Sep/09	16/Sep/09
Lab report ID					A9C4508	A9C4508	A9C4508					A9C4508	A9C4508
Depth (m)					0.0 – 0.33	1.0 – 1.5	1.0 – 1.5						
Moisture content	-	-	-	-	11.0	6.5	9.5	C	9.4	NC	Y	6.3	14.0
Benzene	0.03	0.03	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002	<0.002
Ethylbenzene	0.082	0.082	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002	<0.002
Toluene	0.37	0.37	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002	<0.002
m+p-Xylene	-	-	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002	<0.002
o-Xylene	-	-	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002	<0.002
Xylenes (total)	11	11	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002	<0.002
F1 (C6-C10)	-	-	-	-	<10	180	<10	B	NC	175	N	<10	<10
F1 (C6-C10) minus BTEX	-	-	30	240	<10	180	<10	B	NC	175	N	<10	<10
F2 (C10-C16)	-	-	150	260	<10	**1100**	90	C	42.4	NC	N	<10	<10
F3 (C16-C34)	-	-	300	1700	<10	**3900**	730	C	34.2	NC	Y	<10	<10
F4 (C34-C50)	-	-	2800	3300	<10	830	220	C	29.0	NC	Y	<10	<10
Reached Baseline at C50	-	-	-	-	Yes	Yes	Yes					Yes	Yes

All units in ug/g, unless otherwise noted.

Notes:

1 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

2 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

3 = CCME (2008) Canadian-Wide Standards for Petroleum Hydrocarbons in Soil - Table 1, Tier 1 levels for PHCs, Residential / Parkland Use in coarse-grained surface soils.

4 = CCME (2008) Canadian-Wide Standards for Petroleum Hydrocarbons in Soil - Table 1, Tier 1 levels for PHCs, Commercial Use in coarse-grained surface soils.

* = See Methodologies section for Scenario

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

-' = No Guideline

NC = Not Calculated

"-" indicates that there is no applicable regulation or analyses were not performed.

20 = Denotes exceedance of CCME Residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

Area ID	CCME Soil PL[1]	CCME Soil CL[2]	CWS Soil PL[3]	CWS Soil CL[4]	AEC 2	AEC 2	Duplicate Evaluation				AEC 3	AEC 3	AEC 3	AEC 3	AEC 4	AEC 4
Station ID					**AEC2-TP09-1**	**AEC2-TP09-2**					**AEC3-TP09-1**	**AEC3-TP09-3**	**AEC3-TP09-6**	**AEC3-TP09-7**	**AEC4-TP09-1**	**AEC4-TP09-2**
Field label					AEC2-TP09-1	AEC2-TP09-2	**Scenario***	**RPD (%)**	**Value (ug/L)**	**Acceptable (Y/N)**	AEC3-TP09-1	AEC3-TP09-3	AEC3-TP09-6	AEC3-TP09-7	AEC4-TP09-1	AEC4-TP09-2
Duplicate ID						TP09-DUP2										
Date					16/Sep/09	16/Sep/09					16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09
Lab report ID					A9C4508	A9C4508					A9C4508	A9C4508	A9C4508	A9C4508	A9C4508	A9C4508
Depth (m)					0.0	0.0 – 0.2					0.0 – 0.25	0.0 – 0.1	0.0 – 0.38	0.0 – 0.4	0.0 – 0.3	0.0 – 0.35
Moisture content	-	-	-	-	9.8	13.0	C	7.0	NC	Y	8.6	10.0	16.0	20.0	6.9	34.0
Benzene	0.03	0.03	-	-	<0.002	<0.002	A	NC	NC	Y	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	0.082	0.082	-	-	<0.002	<0.002	A	NC	NC	Y	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Toluene	0.37	0.37	-	-	<0.002	<0.002	A	NC	NC	Y	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
m+p-Xylene	-	-	-	-	<0.002	<0.002	A	NC	NC	Y	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
o-Xylene	-	-	-	-	<0.002	<0.002	A	NC	NC	Y	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Xylenes (total)	11	11	-	-	<0.002	<0.002	A	NC	NC	Y	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
F1 (C6-C10)	-	-	-	-	<10	<10	A	NC	NC	Y	<10	<10	<10	<10	<10	<10
F1 (C6-C10) minus BTEX	-	-	30	240	<10	<10	A	NC	NC	Y	<10	<10	<10	<10	<10	<10
F2 (C10-C16)	-	-	150	260	<10	<10	A	NC	NC	Y	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	-	-	300	1700	77	240	C	25.7	NC	Y	<10	<10	<10	<10	<10	100
F4 (C34-C50)	-	-	2800	3300	70	160	C	19.6	NC	Y	<10	<10	<10	<10	<10	51
Reached Baseline at C50	-	-	-	-	Yes	Yes					Yes	Yes	Yes	Yes	Yes	Yes

All units in ug/g, unless otherwise noted.

Notes:

1 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

2 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

3 = CCME (2008) Canadian-Wide Standards for Petroleum Hydrocarbons in Soil - Table 1, Tier 1 levels for PHCs, Residential / Parkland Use in coarse-grained surface soils.

4 = CCME (2008) Canadian-Wide Standards for Petroleum Hydrocarbons in Soil - Table 1, Tier 1 levels for PHCs, Commercial Use in coarse-grained surface soils.

* = See Methodologies section for Scenario

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

-' = No Guideline

NC = Not Calculated

"-" indicates that there is no applicable regulation or analyses were not performed.

20 = Denotes exceedance of CCME Residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

Parameters	CCME Soil CL (Coarse)	CCME Soil PL (Coarse)	CWS Soil CL (Coarse)	CWS Soil PL (Coarse)	APEC 1	APEC 2		APEC 3				RPD
					A1-TP08-3	A2-TP08-1	A2-TP08-2	A3-TP08-2	A3-TP08-3	A3-TP08-5	A3-DUP-1	
Sample Depth (m)					*0.5 - 1.6*	*0.0 - 0.1*	*0.0 - 0.1*	*0.0 - 0.12*	*0.0 - 0.25*	*0.0 - 0.3*		
Lab ID #					*L682335-3*	*L681311-1*	*L681311-2*	*L681400-2*	*L681400-3*	*L681400-5*	*L681400-9*	
Sample Date					*08-SEP-08*	*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	
Prepared by:					**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	
Volatiles												
Benzene	0.03 [1]	0.03 [1]	---	---	<0.03	<0.040	<0.040	<0.03	<0.03	<0.03	<0.03	NC
Ethylbenzene	0.082 [1]	0.082 [1]	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NC
Methyl t-butyl ether (MTBE)	---	---	---	---	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NC
Styrene	50 [2]	5 [2]	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NC
Toluene	0.37 [1]	0.37 [1]	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NC
o-Xylene	---	---	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NC
m & p-Xylene	---	---	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NC
Xylenes (Total)	11 [1]	11 [1]	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	NC
Extractable Petroleum Hydrocrabons												
F4SG (Heavy Hydrocarbons-SilicaGel)	---	---	---	---	-	<500	-	-	<500	-	-	NC
CWS F2 (C10-C16)	---	---	260 [3]	150 [3]	<30	<30	<30	***450***	35	<30	<30	NC
CWS F3 (C16-C34)	---	---	1700 [3]	300 [3]	<50	180	80	***44400***	***343***	<50	<50	NC
CWS F4 (C34-C50)	---	---	3300 [3]	2800 [3]	<50	93	51	***6960***	213	<50	<50	NC
F1-BTEX	---	---	---	---	<10	<10	<10	<10	<10	<10	<10	NC
CWS F1 (C06-C10)	---	---	320 [3]	30 [3]	<10	<10	<10	<10	<10	<10	<10	NC

(all units mg/kg unless otherwise stated)

Notes (Refer to endnotes for complete list)

10	value is greater than the CCME or CWS CL Guideline
10	value is greater than the CCME or CWS PL Guideline

--- No Guideline.

NC - Not calculated

Parameters	CCME Soil CL (Coarse)	CCME Soil PL (Coarse)	CWS Soil CL (Coarse)	CWS Soil PL (Coarse)	APEC 3						
					A3-TP08-6	**A3-TP08-7**	**A3-TP08-8**	**A3-TP08-9**	**A3-TP08-10**	**A3-TP08-11**	**A3-TP08-12**
Sample Depth (m)					*0.0 - 0.30*	*0.0 - 0.25*	*0.0 - 0.3*	*0.01 - 0.2*	*0.0 - 0.15*	*0.0 - 0.2*	*0.0 - 0.1*
Lab ID #					*L681400-6*	*L681400-7*	*L681400-8*	*L681268-3*	*L681400-10*	*L681268-10*	*L681268-2*
Sample Date					*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	*07-Sep-08*	*06-SEP-08*	*07-Sep-08*	*07-Sep-08*
Prepared by:					**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Volatiles											
Benzene	0.03 [1]	0.03 [1]	---	---	<0.03	<0.03	<0.03	<0.040	<0.03	<0.040	<0.040
Ethylbenzene	0.082 [1]	0.082 [1]	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl t-butyl ether (MTBE)	---	---	---	---	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Styrene	50 [2]	5 [2]	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	0.37 [1]	0.37 [1]	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
o-Xylene	---	---	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
m & p-Xylene	---	---	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Xylenes (Total)	11 [1]	11 [1]	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Extractable Petroleum Hydrocrabons											
F4SG (Heavy Hydrocarbons-SilicaGel)	---	---	---	---	-	-	-	-	-		680
CWS F2 (C10-C16)	---	---	260 [3]	150 [3]	<30	<30	<30	<30	<30	<30	51
CWS F3 (C16-C34)	---	---	1700 [3]	300 [3]	<50	<50	<50	<50	<50	<50	244
CWS F4 (C34-C50)	---	---	3300 [3]	2800 [3]	<50	<50	<50	<50	<50	<50	239
F1-BTEX	---	---	---	---	<10	<10	<10	<10	<10	<10	<10
CWS F1 (C06-C10)	---	---	320 [3]	30 [3]	<10	<10	<10	<10	<10	<10	<10

(all units mg/kg unless otherwise stated)

Notes (Refer to endnotes for complete list)

10	value is greater than the CCME or CWS CL Guideline
10	value is greater than the CCME or CWS PL Guideline

--- No Guideline.

NC - Not calculated

Parameters	CCME Soil CL (Coarse)	CCME Soil PL (Coarse)	CWS Soil CL (Coarse)	CWS Soil PL (Coarse)	APEC 3							APEC 4	
					A3-TP08-13	**A3-TP08-DUP2**		**A3-TP08-14**	**A3-TP08-15**	**A3-TP08-16**	**A3-TP08-18**	**A4-TP08-1**	**A4-TP08-2**
Sample Depth (m)					*0.0 - 0.2*			*0.0 - 0.4*	*0.0 -0.3*	*0.0 - 0.3*	*0.0 - 0.35*	*0.37 - 0.80*	*0.0 - 0.3*
Lab ID #					*L681268-4*	*L681268-5*	***RPD***	*L681268-6*	*L681268-7*	*L681268-8*	*L681268-9*	*L682335-5*	*L682335-6*
Sample Date					*07-Sep-08*	*07-Sep-08*		*07-Sep-08*	*07-Sep-08*	*07-Sep-08*	*07-Sep-08*	*08-SEP-08*	*08-SEP-08*
Prepared by:					**Franz**	**Franz**		**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Volatiles													
Benzene	0.03 [1]	0.03 [1]	---	---	<0.040	<0.040	NC	<0.040	<0.040	<0.040	<0.040	<0.03	<0.03
Ethylbenzene	0.082 [1]	0.082 [1]	---	---	<0.050	<0.050	NC	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl t-butyl ether (MTBE)	---	---	---	---	<0.20	<0.20	NC	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Styrene	50 [2]	5 [2]	---	---	<0.050	<0.050	NC	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	0.37 [1]	0.37 [1]	---	---	<0.050	<0.050	NC	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
o-Xylene	---	---	---	---	<0.050	<0.050	NC	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
m & p-Xylene	---	---	---	---	<0.050	<0.050	NC	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Xylenes (Total)	11 [1]	11 [1]	---	---	<0.10	<0.10	NC	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Extractable Petroleum Hydrocrabons													
F4SG (Heavy Hydrocarbons-SilicaGel)	---	---	---	---	-	<500	NC					-	-
CWS F2 (C10-C16)	---	---	260 [3]	150 [3]	<30	<30	NC	<30	<30	<30	<30	<30	<40
CWS F3 (C16-C34)	---	---	1700 [3]	300 [3]	69	240	111%	<50	<50	<50	<50	<50	<50
CWS F4 (C34-C50)	---	---	3300 [3]	2800 [3]	<50	82	NC	<50	<50	<50	<50	<50	<50
F1-BTEX	---	---	---	---	<10	<10	NC	<10	<10	<10	<10	<10	<10
CWS F1 (C06-C10)	---	---	320 [3]	30 [3]	<10	<10	NC	<10	<10	<10	<10	<10	<10

(all units mg/kg unless otherwise stated)

Notes (Refer to endnotes for complete list)

10	value is greater than the CCME or CWS CL Guideline
10	value is greater than the CCME or CWS PL Guideline

--- No Guideline.

NC - Not calculated

Area ID	CCME Soil PL[1]	CCME Soil CL[2]	AEC 1	AEC 1	AEC 1	Duplicate Evaluation			AEC 3	AEC 3	AEC 4
Station ID			AEC1-TP09-1	AEC1-TP09-3	AEC1-TP09-3	Scenario*	Value (ug/L)	Acceptable (Y/N)	AEC3-TP09-6	AEC3-TP09-7	AEC4-TP09-1
Field label			AEC1-TP09-1-1	AEC1-TP09-3-2	TP09-DUP1				AEC3-TP09-6	AEC3-TP09-7	AEC4-TP09-1
Duplicate ID				TP09-DUP1	AEC1-TP09-3-2						
Date			16/Sep/09	16/Sep/09	16/Sep/09				16/Sep/09	16/Sep/09	16/Sep/09
Lab report ID			A9C4508	A9C4508	A9C4508				A9C4508	A9C4508	A9C4508
Depth (m)			0.0 – 0.33	1.0 – 1.5	1.0 – 1.5				0.0 – 0.38	0.0 – 0.4	0.0 – 0.3
Acenaphthene	-	-	<0.01	<0.1	<0.01	A	NC	Y	<0.01	<0.01	<0.01
Acenaphthylene	-	-	<0.005	<0.05	<0.005	A	NC	Y	<0.005	<0.005	<0.005
Anthracene	-	-	<0.005	<0.05	<0.005	A	NC	Y	<0.005	<0.005	<0.005
Benzo(a)anthracene	1	10	<0.01	<0.1	<0.01	A	NC	Y	<0.01	<0.01	<0.01
Benzo(a)pyrene	0.7[a]	0.7[b]	<0.005	<0.05	<0.005	A	NC	Y	<0.005	<0.005	<0.005
Benzo(g,h,i)perylene	-	-	<0.02	<0.2	<0.02	A	NC	Y	<0.02	<0.02	<0.02
Benzo(k)fluoranthene	1	10	<0.01	<0.1	<0.01	A	NC	Y	<0.01	<0.01	<0.01
Chrysene	-	-	<0.01	<0.1	<0.01	A	NC	Y	<0.01	<0.01	<0.01
Dibenz(a,h)anthracene	1	10	<0.02	<0.2	<0.02	A	NC	Y	<0.02	<0.02	<0.02
Fluoranthene	-	-	<0.005	<0.05	<0.005	A	NC	Y	<0.005	<0.005	<0.005
Fluorene	-	-	<0.005	<0.05	<0.005	A	NC	Y	<0.005	<0.005	<0.005
Indeno(1,2,3-cd)pyrene	1	10	<0.02	<0.2	<0.02	A	NC	Y	<0.02	<0.02	<0.02
2-Methylnaphthalene	-	-	<0.005	<0.05	<0.005	A	NC	Y	<0.005	<0.005	<0.005
Naphthalene	0.6[a]	22[b]	<0.005	<0.05	<0.005	A	NC	Y	<0.005	<0.005	<0.005
Phenanthrene	5	50	<0.005	0.09	<0.005	B	0.0875	N	<0.005	<0.005	<0.005
Pyrene	10	100	<0.005	<0.05	0.005	A	NC	Y	<0.005	<0.005	<0.005

All units in ug/g, unless otherwise noted.

Notes:

1 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 2. Interim remediation criteria for soil, Residential/Parkland Use.

2 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 2. Interim remediation criteria for soil, Commercial Use.

a = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

b = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

* = See Methodologies section for Scenario

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

-' = No Guideline

NC = Not Calculated

"-" indicates that there is no applicable regulation or analyses were not performed.

20 = Denotes exceedance of CCME Residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

TABLE 7-3B: Analytical Results for PAHs in Soil - 2008

Parameters		CCME Soil CL	CCME Soil PL	APEC 2		APEC 3						
				A2-TP08-1	A2-TP08-2	A3-TP08-5	A3-TP08-7	A3-TP08-10	A3-TP08-13	A3-TP08-DUP2	RPD	A3-TP08-14
	Sample Depth (m)			*0.0 - 0.1*	*0.0 - 0.1*	*0.0 - 0.3*	*0.0 - 0.25*	*0.0 - 0.15*	*0.0 - 0.2*			*0.0 - 0.4*
	Lab ID #			*L682370-20*	*L682370-21*	*L681400-5*	*L681400-7*	*L681400-10*	*L681268-4*	*L681268-5*		*L681268-6*
	Sample Date			*09-SEP-08*	*09-SEP-08*	*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	*07-Sep-08*	*07-Sep-08*		*07-Sep-08*
	Prepared by:			**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**		**Franz**
Polycyclic Aromatic Hydrocarbons												
Acenaphthene		---	---	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	NC	<0.040
Acenaphthylene		---	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Anthracene		---	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.10	NC	<0.050
Benz(a)anthracene		10 [2]	1 [2]	<0.050	0.068	<0.050	<0.050	<0.050	<0.050	***1.14***	NC	<0.050
Benzo(a)pyrene		0.7 [1]	0.7 [1]	<0.050	0.072	<0.050	<0.050	<0.050	<0.050	***1.31***	NC	<0.050
Benzo(b)fluoranthene		10 [2]	1 [2]	<0.050	0.13	<0.050	<0.050	<0.050	<0.050	***1.78***	NC	<0.050
Benzo(g,h,i)perylene		---	---	<0.050	0.054	<0.050	<0.050	<0.050	<0.050	0.73	NC	<0.050
Benzo(k)fluoranthene		10 [2]	1 [2]	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.66	NC	<0.050
Chrysene		---	---	<0.050	0.086	<0.050	<0.050	<0.050	<0.050	1.04	NC	<0.050
Dibenz(a,h)anthracene		10 [2]	1 [2]	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.24	NC	<0.050
Fluoranthene		---	---	0.067	0.129	<0.050	<0.050	<0.050	<0.050	1.07	NC	<0.050
Fluorene		---	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Indeno(1,2,3-c,d)pyrene		10 [2]	1 [2]	<0.050	<0.080	<0.050	<0.050	<0.050	<0.050	0.88	NC	<0.050
2-Methylnaphthalene		---	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Naphthalene		22 [1]	0.6 [1]	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Phenanthrene		50 [2]	5 [2]	<0.050	0.091	<0.050	<0.050	<0.050	<0.050	0.17	NC	<0.050
Pyrene		100 [2]	10 [2]	0.055	0.105	<0.050	<0.050	<0.050	<0.050	1.04	NC	<0.050

Notes (Refer to endnotes for complete list)

10 (shaded)	value is greater than the CCME CL Guideline
10	value is greater than the CCME PL Guideline

--- No Guideline.

NC - Not calculated

TABLE 7-4A: Analytical Results for PCBs in Soil - 2009

Area ID	CCME Soil PL[1]	CCME Soil CL[2]	AEC 1	AEC 1	AEC 1	Duplicate Evaluation		AEC 1	AEC 1	AEC 2	AEC 2	Duplicate Evaluation			AEC 3
Station ID			**AEC1-TP09-1**	**AEC1-TP09-3**	**AEC1-TP09-3**			**AEC1-TP09-4**	**AEC1-TP09-5**	**AEC2-TP09-1**	**AEC2-TP09-2**				**AEC3-TP09-1**
Field label			AEC1-TP09-1-1	AEC1-TP09-3-2	TP09-DUP1	**Scenario***	**Acceptable (Y/N)**	AEC1-TP09-4-1	AEC1-TP09-5-2	AEC2-TP09-1	AEC2-TP09-2	**Scenario***	**RPD (%)**	**Acceptable (Y/N)**	AEC3-TP09-1
Duplicate ID				TP09-DUP1	AEC1-TP09-3-2						TP09-DUP2				
Date			16/Sep/09	16/Sep/09	16/Sep/09			16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09				16/Sep/09
Lab report ID			A9C4508	A9C4508	A9C4508			A9C4508	A9C4508	A9C4508	A9C4508				A9C4508
Depth (m)			0.0 – 0.33	1.0 – 1.5	1.0 – 1.5					0.0	0.0 – 0.2				0.0 – 0.25
Aroclor 1016	-	-	<0.01	<0.02	<0.02	A	Y	<0.01	<0.01	<1	<1	A	NC	Y	<0.01
Aroclor 1221	-	-	<0.01	<0.03	<0.03	A	Y	<0.01	<0.01	<1	<1	A	NC	Y	<0.01
Aroclor 1232	-	-	<0.01	<0.02	<0.02	A	Y	<0.01	<0.01	<1	<1	A	NC	Y	<0.01
Aroclor 1242	-	-	<0.01	<0.02	<0.02	A	Y	<0.01	<0.01	<1	<1	A	NC	Y	<0.01
Aroclor 1248	-	-	<0.01	<0.02	<0.02	A	Y	<0.01	<0.01	<1	<1	A	NC	Y	<0.01
Aroclor 1254	-	-	<0.01	<0.02	<0.02	A	Y	<0.01	<0.01	<1	<1	A	NC	Y	<0.01
Aroclor 1260	-	-	<0.01	<0.02	<0.02	A	Y	<0.01	<0.01	12	9	C	7.1	Y	<0.01
Aroclor 1262	-	-	<0.01	<0.02	<0.02	A	Y	<0.01	<0.01	<1	<1	A	NC	Y	<0.01
Aroclor 1268	-	-	<0.01	<0.02	<0.02	A	Y	<0.01	<0.01	<1	<1	A	NC	Y	<0.01
Polychlorinated biphenyls	1.3	33	<0.01	<0.03	<0.03	A	Y	<0.01	<0.01	12	9	C	7.1	Y	<0.01

All units in ug/g, unless otherwise noted.

Notes:

1 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

2 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

* = See Methodologies section for Scenario

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

-' = No Guideline

NC = Not Calculated

"-" indicates that there is no applicable regulation or analyses were not performed.

20 = Denotes exceedance of CCME Residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

Parameters	CCME Soil CL	CCME Soil PL	APEC 1	APEC 2	APEC 3					
			A1-TP08-3	**A2-TP08-1**	**A3-TP08-2**	**A3-TP08-5**	**A3-TP08-6**	**A3-TP08-7**	**A3-TP08-9**	**A3-TP08-10**
Sample Depth (m)			*0.5 - 1.6*	*0.0 - 0.1*	*0.0 - 0.12*	*0.0 - 0.3*	*0.0 - 0.30*	*0.0 - 0.25*	*0.01 - 0.2*	*0.0 - 0.15*
Lab ID #			*L682335-3*	*L681311-1*	*L681400-2*	*L681400-5*	*L681400-6*	*L681400-7*	*L681268-3*	*L681400-10*
Sample Date			*08-SEP-08*	*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	*07-Sep-08*	*06-SEP-08*
Prepared by:			**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Polychlorinated Biphenyls										
PCB-1016	---	---	<0.050	<0.50	<1.5	<0.050	<0.050	<0.060	<0.060	<0.050
PCB-1221	---	---	<0.050	<0.50	<1.5	<0.050	<0.050	<0.060	<0.060	<0.050
PCB-1232	---	---	<0.050	<0.50	<1.5	<0.050	<0.050	<0.060	<0.060	<0.050
PCB-1242	---	---	<0.050	<0.50	<1.5	<0.050	<0.050	<0.060	<0.060	<0.050
PCB-1248	---	---	<0.050	<0.50	<1.5	<0.050	<0.050	<0.060	<0.060	<0.050
PCB-1254	---	---	<0.050	<0.50	<1.5	<0.050	<0.050	<0.060	<0.060	<0.050
PCB-1260	---	---	<0.050	4.76	17.1	<0.050	<0.050	<0.060	<0.060	<0.050
PCB-1262	---	---	<0.050	<0.50	<1.5	<0.050	<0.050	<0.060	<0.060	<0.050
PCB-1268	---	---	<0.050	<0.50	<1.5	<0.050	<0.050	<0.060	<0.060	<0.050
Total Polychlorinated Biphenyls	33 [1]	1.3 [1]	<0.050	***4.76***	***17.1***	<0.050	<0.050	<0.060	<0.060	<0.060

Notes (Refer to endnotes for complete list)

10	value is greater than the CCME CL Guideline
10	value is greater than the CCME PL Guideline

--- No Guideline.

NC - Not calculated

			APEC 3						APEC 4	
Parameters	**CCME Soil CL**	**CCME Soil PL**	**A3-TP08-13**	**A3-TP08-DUP2**		**A3-TP08-14**	**A3-TP08-16**	**A3-TP08-18**	**A4-TP08-1**	**A4-TP08-2**
Sample Depth (m)			*0.0 -0.2*			*0.0 - 0.4*	*0.0 - 0.3*	*0.0 - 0.35*	*0.37 - 0.80*	*0.0 - 0.3*
Lab ID #			*L681268-4*	*L681268-5*	***RPD***	*L681268-6*	*L681268-8*	*L681268-9*	*L682335-5*	*L682335-6*
Sample Date			*07-Sep-08*	*07-Sep-08*		*07-Sep-08*	*07-Sep-08*	*07-Sep-08*	*08-SEP-08*	*08-SEP-08*
Prepared by:			**Franz**	**Franz**		**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Polychlorinated Biphenyls										
PCB-1016	---	---	<0.050	<0.050	NC	<0.050	<0.050	<0.080	<0.050	<0.050
PCB-1221	---	---	<0.050	<0.050	NC	<0.050	<0.050	<0.080	<0.050	<0.050
PCB-1232	---	---	<0.050	<0.050	NC	<0.050	<0.050	<0.080	<0.050	<0.050
PCB-1242	---	---	<0.050	<0.050	NC	<0.050	<0.050	<0.080	<0.050	<0.050
PCB-1248	---	---	<0.050	0.21	NC	<0.050	<0.050	<0.080	<0.050	<0.050
PCB-1254	---	---	<0.050	0.104	NC	<0.050	<0.050	<0.080	<0.050	<0.050
PCB-1260	---	---	0.162	0.127	24%	<0.050	<0.050	<0.080	<0.050	<0.050
PCB-1262	---	---	<0.050	<0.050	NC	<0.050	<0.050	<0.080	<0.050	<0.050
PCB-1268	---	---	<0.050	<0.050	NC	<0.050	<0.050	<0.080	<0.050	<0.050
Total Polychlorinated Biphenyls	33 [1]	1.3 [1]	0.162	0.441	93%	<0.050	<0.050	<0.080	<0.050	<0.050

Notes (Refer to endnotes for complete list)

10	value is greater than the CCME CL Guideline
10	value is greater than the CCME PL Guideline

--- No Guideline.

NC - Not calculated

Area ID	**CCME Soil PL[1]**	**CCME Soil CL[2]**	**AEC 1**	**AEC 1**	**Duplicate Evaluation**		
Station ID			**AEC1-TP09-3**	**AEC1-TP09-3**			
Field label			AEC1-TP09-3-2	TP09-DUP1	**Scenario***	**Value (ug/L)**	**Acceptable (Y/N)**
Duplicate ID			TP09-DUP1	AEC1-TP09-3-2			
Date			16/Sep/09	16/Sep/09			
Lab report ID			A9C4508	A9C4508			
Depth (m)			1.0 – 1.5	1.0 – 1.5			
Aldrin	-	-	<0.03	<0.002	A	NC	Y
Chlordane	-	-	<0.003	<0.002	A	NC	Y
alpha-Chlordane	-	-	<0.002	<0.002	A	NC	Y
trans-Chlordane	-	-	<0.003	<0.002	A	NC	Y
2,4'-DDD	-	-	<0.002	<0.002	A	NC	Y
4,4'-DDD	-	-	<0.002	<0.002	A	NC	Y
DDD (total)	-	-	<0.002	<0.002	A	NC	Y
2,4'-DDE	-	-	<0.003	<0.002	A	NC	Y
4,4'-DDE	-	-	<0.002	<0.002	A	NC	Y
DDE (total)	-	-	<0.003	<0.002	A	NC	Y
2,4'-DDT	-	-	<0.002	<0.002	A	NC	Y
4,4'-DDT	-	-	0.003	<0.002	B	0.002	Y
DDT plus metabolites	-	-	0.003	<0.002	B	0.002	Y
DDT (total)	0.7	12	0.003	<0.002	B	0.002	Y
Dieldrin	-	-	<0.004	<0.002	A	NC	Y
Endosulfan	-	-	<0.006	<0.002	A	NC	Y
alpha-Endosulfan	-	-	<0.002	<0.002	A	NC	Y
beta-Endosulfan	-	-	<0.006	<0.002	A	NC	Y
Endrin	-	-	<0.002	<0.002	A	NC	Y
gamma-HCH	-	-	<0.002	<0.002	A	NC	Y
Heptachlor	-	-	<0.03	<0.002	A	NC	Y
Heptachlor epoxide	-	-	<0.01	<0.002	A	NC	Y
Hexachlorobenzene	2[a]	10[a]	<0.003	<0.002	A	NC	Y
Methoxychlor	-	-	<0.008	<0.008	A	NC	Y

All units in ug/g, unless otherwise noted.

Notes:

1 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

2 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

a = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 2. Interim remediation criteria for soil.

* = See Methodologies section for Scenario

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

-' = No Guideline

NC = Not Calculated

"-" indicates that there is no applicable regulation or analyses were not performed.

20 = Denotes exceedance of CCME Residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

TABLE 7-5B: Analytical Results for Pesticides in Soil - 2008

Parameters	CCME Soil CL	CCME Soil PL	APEC 1	APEC 2		APEC 3			
			A1-TP08-3	**A2-TP08-1**	**A2-TP08-2**	**A3-TP08-10**	**A3-TP08-13**	**A3-TP08-DUP2**	***RPD***
Sample Depth (m)			*0.5 - 1.6*	*0.0 - 0.1*	*0.0 - 0.1*	*0.0 - 0.15*	*0.0 -0.2*		
Lab ID #			*L682335-3*	*L682370-20*	*L682370-21*	*L681400-10*	*L681268-4*	*L681268-5*	
Sample Date			*08-SEP-08*	*09-SEP-08*	*09-SEP-08*	*06-SEP-08*	*07-Sep-08*	*07-Sep-08*	
Prepared by:			**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	
Organochlorine Pesticides									
Aldrin	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
alpha-BHC	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
beta-BHC	---	---	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	NC
Lindane (gamma - BHC)	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
delta-BHC	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
cis-Chlordane (alpha)	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
trans-Chlordane (gamma)	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
2,4'-DDD	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
4,4'-DDD	---	---	0.0037	0.044	0.0045	<0.0015	0.0028	<0.0020	NC
2,4'-DDE	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
4,4'-DDE	---	---	<0.0010	<0.0010	0.0049	<0.0015	0.0024	<0.0020	NC
2,4'-DDT	12 [1a]	0.7 [1a]	0.0062	0.0586	0.0053	<0.0020	<0.0020	<0.0020	NC
4,4'-DDT	12 [1a]	0.7 [1a]	0.0275	0.247	0.0307	<0.0020	0.007	<0.0020	NC
Dieldrin	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
Endosulfan I	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
Endosulfan II	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
Endosulfan Sulfate	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
Endrin	---	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NC
Heptachlor	---	---	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	NC
Heptachlor Epoxide	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
Methoxychlor	---	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NC
Mirex	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
cis-Nonachlor	---	---	<0.0010	<0.020	<0.0010	<0.0015	<0.0020	<0.0020	NC
trans-Nonachlor	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC
Oxychlordane	---	---	<0.0010	<0.0010	<0.0010	<0.0015	<0.0020	<0.0020	NC

Notes (Refer to endnotes for complete list)

10	value is greater than the CCME CL Guideline
10	value is greater than the CCME PL Guideline

--- No Guideline.

NC - Not calculated

a - Standard for DDT (Total)

Area ID	**CCME Soil PL[1]**	**CCME Soil CL[2]**	**AEC 1**	**AEC 1**	**AEC 1**	**Duplicate Evaluation**		
Station ID			**AEC1-TP09-1**	**AEC1-TP09-3**	**AEC1-TP09-3**			
Field label			AEC1-TP09-1-1	AEC1-TP09-3-2	TP09-DUP1	**Scenario***	**Value (ug/L)**	**Acceptable (Y/N)**
Duplicate ID				TP09-DUP1	AEC1-TP09-3-2			
Date			16/Sep/09	16/Sep/09	16/Sep/09			
Lab report ID			A9C4508	A9C4508	A9C4508			
Depth (m)			0.0 – 0.33	1.0 – 1.5	1.0 – 1.5			
Acetone	-	-	<0.1	0.1	<0.1	B	0.05	Y
Benzene	0.03	0.03	<0.002	<0.002	<0.002	A	NC	Y
Bromodichloromethane	-	-	<0.002	<0.002	<0.002	A	NC	Y
Bromoform	-	-	<0.002	<0.002	<0.002	A	NC	Y
Bromomethane	-	-	<0.003	<0.003	<0.003	A	NC	Y
Carbon tetrachloride	5	50	<0.002	<0.002	<0.002	A	NC	Y
Chlorobenzene	1[a]	10[a]	<0.002	<0.002	<0.002	A	NC	Y
Chlorodibromomethane	-	-	<0.002	<0.002	<0.002	A	NC	Y
Chloroform	5	50	<0.002	<0.002	<0.002	A	NC	Y
1,2-Dichlorobenzene	1[a]	10[a]	<0.002	<0.002	<0.002	A	NC	Y
1,3-Dichlorobenzene	1[a]	10[a]	<0.002	<0.002	<0.002	A	NC	Y
1,4-Dichlorobenzene	1[a]	10[a]	<0.002	<0.002	<0.002	A	NC	Y
1,1-Dichloroethane	5	50	<0.002	<0.002	<0.002	A	NC	Y
1,2-Dichloroethane	5	50	<0.002	<0.002	<0.002	A	NC	Y
1,1-Dichloroethene	5	50	<0.002	<0.002	<0.002	A	NC	Y
cis-1,2-Dichloroethene	-	-	<0.002	<0.002	<0.002	A	NC	Y
trans-1,2-Dichloroethene	-	-	<0.002	<0.002	<0.002	A	NC	Y
Dichloromethane	5	50	<0.003	<0.003	<0.003	A	NC	Y
1,2-Dichloropropane	5	50	<0.002	<0.002	<0.002	A	NC	Y
cis-1,3-Dichloropropene	-	-	<0.002	<0.002	<0.002	A	NC	Y
trans-1,3-Dichloropropene	-	-	<0.002	<0.002	<0.002	A	NC	Y
Ethylbenzene	0.082	0.082	<0.002	<0.002	<0.002	A	NC	Y
Ethylene dibromide	-	-	<0.002	<0.002	<0.002	A	NC	Y
Hexachlorobenzene	2	10	-	<0.003	<0.002	A	NC	Y
Hexachlorobutadiene	-	-	-	<0.01	<0.01	A	NC	Y
Methyl ethyl ketone	-	-	<0.03	<0.03	<0.03	A	NC	Y
Methyl isobutyl ketone	-	-	<0.03	<0.03	<0.03	A	NC	Y
Methyl-tert-butylether	-	-	<0.002	<0.002	<0.002	A	NC	Y
Styrene	5[a]	50[a]	<0.002	<0.002	<0.002	A	NC	Y
1,1,1,2-Tetrachloroethane	-	-	<0.002	<0.002	<0.002	A	NC	Y
1,1,2,2-Tetrachloroethane	5	50	<0.002	<0.002	<0.002	A	NC	Y
Tetrachloroethene	0.2	0.5	<0.002	<0.002	<0.002	A	NC	Y
Toluene	0.37	0.37	<0.002	<0.002	<0.002	A	NC	Y
1,1,1-Trichloroethane	5	50	<0.002	<0.002	<0.002	A	NC	Y
1,1,2-Trichloroethane	5	50	<0.002	<0.002	<0.002	A	NC	Y
Trichloroethene	0.01	0.01	<0.002	<0.002	<0.002	A	NC	Y
Vinyl chloride	-	-	<0.002	<0.002	<0.002	A	NC	Y
m+p-Xylene	-	-	<0.002	<0.002	<0.002	A	NC	Y
o-Xylene	-	-	<0.002	<0.002	<0.002	A	NC	Y
Xylenes (total)	2.4	11	<0.002	<0.002	<0.002	A	NC	Y

All units in ug/g, unless otherwise noted.

Notes:

1 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

2 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

a = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 2. Interim remediation criteria for soil.

* = See Methodologies section for Scenario

RDL = Reportable Detection Limit

RDP = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

-' = No Guideline

NC = Not Calculated

"-" indicates that there is no applicable regulation or analyses were not performed.

20 = Denotes exceedance of CCME Residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

Area ID	CCME Soil PL[1]	CCME Soil CL[2]	AEC 1	AEC 1	AEC 2	AEC 2	Duplicate Evaluation	
Station ID			**AEC1-TP09-4**	**AEC1-TP09-5**	**AEC2-TP09-1**	**AEC2-TP09-2**		
Field label			AEC1-TP09-4-1	AEC1-TP09-5-2	AEC2-TP09-1	AEC2-TP09-2	**Scenario***	**Acceptable (Y/N)**
Duplicate ID						TP09-DUP2		
Date			16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09		
Lab report ID			A9C4508	A9C4508	A9C4508	A9C4508		
Depth (m)					0.0	0.0 – 0.2		
Acetone	-	-	-	-	-	-	-	-
Benzene	0.03	0.03	<0.002	<0.002	<0.002	<0.002	A	Y
Bromodichloromethane	-	-	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	-	-
Bromomethane	-	-	-	-	-	-	-	-
Carbon tetrachloride	5	50	-	-	-	-	-	-
Chlorobenzene	1[a]	10[a]	-	-	-	-	-	-
Chlorodibromomethane	-	-	-	-	-	-	-	-
Chloroform	5	50	-	-	-	-	-	-
1,2-Dichlorobenzene	1[a]	10[a]	-	-	-	-	-	-
1,3-Dichlorobenzene	1[a]	10[a]	-	-	-	-	-	-
1,4-Dichlorobenzene	1[a]	10[a]	-	-	-	-	-	-
1,1-Dichloroethane	5	50	-	-	-	-	-	-
1,2-Dichloroethane	5	50	-	-	-	-	-	-
1,1-Dichloroethene	5	50	-	-	-	-	-	-
cis-1,2-Dichloroethene	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	-	-	-	-	-	-	-	-
Dichloromethane	5	50	-	-	-	-	-	-
1,2-Dichloropropane	5	50	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-
Ethylbenzene	0.082	0.082	<0.002	<0.002	<0.002	<0.002	A	Y
Ethylene dibromide	-	-	-	-	-	-	-	-
Hexachlorobenzene	2	10	-	-	-	-	-	-
Hexachlorobutadiene	-	-	-	-	-	-	-	-
Methyl ethyl ketone	-	-	-	-	-	-	-	-
Methyl isobutyl ketone	-	-	-	-	-	-	-	-
Methyl-tert-butylether	-	-	-	-	-	-	-	-
Styrene	5[a]	50[a]	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	5	50	-	-	-	-	-	-
Tetrachloroethene	0.2	0.5	-	-	-	-	-	-
Toluene	0.37	0.37	<0.002	<0.002	<0.002	<0.002	A	Y
1,1,1-Trichloroethane	5	50	-	-	-	-	-	-
1,1,2-Trichloroethane	5	50	-	-	-	-	-	-
Trichloroethene	0.01	0.01	-	-	-	-	-	-
Vinyl chloride	-	-	-	-	-	-	-	-
m+p-Xylene	-	-	<0.002	<0.002	<0.002	<0.002	A	Y
o-Xylene	-	-	<0.002	<0.002	<0.002	<0.002	A	Y
Xylenes (total)	2.4	11	<0.002	<0.002	<0.002	<0.002	A	Y

All units in ug/g, unless otherwise noted.

Notes:

1 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

2 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

a = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 2. Interim remediation criteria for soil.

* = See Methodologies section for Scenario

RDL = Reportable Detection Limit

RDP = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

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NC = Not Calculated

"-" indicates that there is no applicable regulation or analyses were not performed.

20 = Denotes exceedance of CCME Residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

Area ID	CCME Soil PL[1]	CCME Soil CL[2]	AEC 3	AEC 3	AEC 3	AEC 3	AEC 4	AEC 4
Station ID			**AEC3-TP09-1**	**AEC3-TP09-3**	**AEC3-TP09-6**	**AEC3-TP09-7**	**AEC4-TP09-1**	**AEC4-TP09-2**
Field label			AEC3-TP09-1	AEC3-TP09-3	AEC3-TP09-6	AEC3-TP09-7	AEC4-TP09-1	AEC4-TP09-2
Duplicate ID								
Date			16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09
Lab report ID			A9C4508	A9C4508	A9C4508	A9C4508	A9C4508	A9C4508
Depth (m)			0.0 – 0.25	0.0 – 0.1	0.0 – 0.38	0.0 – 0.4	0.0 – 0.3	0.0 – 0.35
Acetone	-	-	-	-	<0.1	<0.1	<0.1	<0.1
Benzene	0.03	0.03	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Bromodichloromethane	-	-	-	-	<0.002	<0.002	<0.002	<0.002
Bromoform	-	-	-	-	<0.002	<0.002	<0.002	<0.002
Bromomethane	-	-	-	-	<0.003	<0.003	<0.003	<0.003
Carbon tetrachloride	5	50	-	-	<0.002	<0.002	<0.002	<0.002
Chlorobenzene	1[a]	10[a]	-	-	<0.002	<0.002	<0.002	<0.002
Chlorodibromomethane	-	-	-	-	<0.002	<0.002	<0.002	<0.002
Chloroform	5	50	-	-	<0.002	<0.002	<0.002	<0.002
1,2-Dichlorobenzene	1[a]	10[a]	-	-	<0.002	<0.002	<0.002	<0.002
1,3-Dichlorobenzene	1[a]	10[a]	-	-	<0.002	<0.002	<0.002	<0.002
1,4-Dichlorobenzene	1[a]	10[a]	-	-	<0.002	<0.002	<0.002	<0.002
1,1-Dichloroethane	5	50	-	-	<0.002	<0.002	<0.002	<0.002
1,2-Dichloroethane	5	50	-	-	<0.002	<0.002	<0.002	<0.002
1,1-Dichloroethene	5	50	-	-	<0.002	<0.002	<0.002	<0.002
cis-1,2-Dichloroethene	-	-	-	-	<0.002	<0.002	<0.002	<0.002
trans-1,2-Dichloroethene	-	-	-	-	<0.002	<0.002	<0.002	<0.002
Dichloromethane	5	50	-	-	<0.003	<0.003	<0.003	<0.003
1,2-Dichloropropane	5	50	-	-	<0.002	<0.002	<0.002	<0.002
cis-1,3-Dichloropropene	-	-	-	-	<0.002	<0.002	<0.002	<0.002
trans-1,3-Dichloropropene	-	-	-	-	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	0.082	0.082	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylene dibromide	-	-	-	-	<0.002	<0.002	<0.002	<0.002
Hexachlorobenzene	2	10	-	-	-	-	-	-
Hexachlorobutadiene	-	-	-	-	-	-	-	-
Methyl ethyl ketone	-	-	-	-	<0.03	<0.03	<0.03	<0.03
Methyl isobutyl ketone	-	-	-	-	<0.03	<0.03	<0.03	<0.03
Methyl-tert-butylether	-	-	-	-	<0.002	<0.002	<0.002	<0.002
Styrene	5[a]	50[a]	-	-	<0.002	<0.002	<0.002	<0.002
1,1,1,2-Tetrachloroethane	-	-	-	-	<0.002	<0.002	<0.002	<0.002
1,1,2,2-Tetrachloroethane	5	50	-	-	<0.002	<0.002	<0.002	<0.002
Tetrachloroethene	0.2	0.5	-	-	0.033	<0.002	<0.002	0.057
Toluene	0.37	0.37	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,1,1-Trichloroethane	5	50	-	-	<0.002	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	5	50	-	-	<0.002	<0.002	<0.002	<0.002
Trichloroethene	0.01	0.01	-	-	<0.002	<0.002	<0.002	0.005
Vinyl chloride	-	-	-	-	<0.002	<0.002	<0.002	<0.002
m+p-Xylene	-	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
o-Xylene	-	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Xylenes (total)	2.4	11	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002

All units in ug/g, unless otherwise noted.

Notes:

1 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

2 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

a = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 2. Interim remediation criteria for soil.

* = See Methodologies section for Scenario

RDL = Reportable Detection Limit

RDP = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

-' = No Guideline

NC = Not Calculated

"-" indicates that there is no applicable regulation or analyses were not performed.

20 = Denotes exceedance of CCME Residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

Parameters	CCME Soil CL (Coarse)	CCME Soil PL (Coarse)	APEC 2		APEC 3				
			A2-TP08-1	**A2-TP08-2**	**A3-TP08-10**	**A3-TP08-13**	**A3-TP08-DUP2**	**RPD**	**A3-TP08-15**
Sample Depth (m)			*0.0 - 0.1*	*0.0 - 0.1*	*0.0 - 0.15*	*0.0 -0.2*			
Lab ID #			*L682370-20*	*L682370-21*	*L681400-10*	*L681268-4*	*L681268-5*		*L681268-7*
Sample Date			*09-SEP-08*	*09-SEP-08*	*06-SEP-08*	*07-Sep-08*	*07-Sep-08*		*07-Sep-08*
Prepared by:			**Franz**	**Franz**	**Franz**	**Franz**	**Franz**		**Franz**
Volatile Organic Compounds									
Benzene	0.03 [1]	0.03 [1]	<0.040	<0.040	<0.040	<0.040	<0.040	NC	<0.040
Bromodichloromethane	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Bromoform	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Carbon Tetrachloride	50 [2a]	5 [2a]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Chlorobenzene	10 [2]	2 [2]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Dibromochloromethane	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Chloroethane	10 [2]	1 [2]	<0.10	<0.10	<0.10	<0.10	<0.10	NC	<0.10
Chloroform *(a)	50 [2a]	5 [2a]	<0.10	<0.10	<0.10	<0.10	<0.10	NC	<0.10
Chloromethane	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	NC	<0.10
1,2-Dichlorobenzene	10 [2]	1 [2]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
1,3-Dichlorobenzene	10 [2]	1 [2]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
1,4-Dichlorobenzene	10 [2]	1 [2]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
1,1-Dichloroethane	50 [2a]	5 [2a]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
1,2-Dichloroethane	50 [2a]	5 [2a]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
1,1-Dichloroethylene	50 [2a]	5 [2a]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
cis-1,2-Dichloroethylene	50 [2a]	5 [2a]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
trans-1,2-Dichloroethylene	50 [2a]	5 [2a]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Dichloromethane	50 [2a]	5 [2a]	<0.30	<0.80	<0.60	<0.30	<0.30	NC	<0.60
1,2-Dichloropropane	50 [2a]	5 [2a]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
cis-1,3-Dichloropropylene	50 [2a]	5 [2a]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
trans-1,3-Dichloropropylene	50 [2a]	5 [2a]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Ethylbenzene	0.082 [1]	0.082 [1]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Methyl t-butyl ether (MTBE)	---	---	<0.20	<0.20	<0.20	<0.20	<0.20	NC	<0.20
Styrene	50 [2]	5 [2]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
1,1,1,2-Tetrachloroethane	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
1,1,2,2-Tetrachloroethane	50 [2a]	5 [2a]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Tetrachloroethylene	0.5 [1]	0.2 [1]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Toluene	0.37 [1]	0.37 [1]	<0.050	0.116	<0.050	<0.050	<0.050	NC	<0.050
1,1,1-Trichloroethane	50 [2a]	5 [2a]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
1,1,2-Trichloroethane	50 [2a]	5 [2a]	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Trichloroethylene	0.01 [1]	0.01 [1]	<0.01	<0.01	<0.01	<0.015	<0.015	NC	<0.01 5
Trichlorofluoromethane	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	NC	<0.10
Vinyl Chloride	---	---	<0.10	<0.10	<0.10	<0.10	<0.10	NC	<0.10
ortho-Xylene	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
meta- & para-Xylene	---	---	<0.050	<0.050	<0.050	<0.050	<0.050	NC	<0.050
Xylenes	11 [1]	11 [1]	<0.10	<0.10	<0.10	<0.10	<0.10	NC	<0.10

Notes (Refer to endnotes for complete list)

10	value is greater than the CCME CL Guideline
10	value is greater than the CCME PL Guideline

--- No Guideline.

NC - Not calculated

(a) - Aliphatic chlorinated hydrocarbons incluede: chloroform; dichloroethane (1,1-1,2-); dichloroethene (1,1-1,2-); dichloromethane; 1,2-dichloropropane; 1,2-dichloropropene (cis and trans); 1,1,2,2-tetrachloroethane; tetrachloroethene; carbon tetrachloride; trichloroethane (1,1,1- 1,1,2-); trichloroethene

General, CWS, and CCME Endnotes for Soil

General Endnotes:

All values are reported as mg/kg unless otherwise indicated.

10	=	value is greater than the CCME CL Guideline
3	=	value is greater than the CCME PL Guideline
'---	=	No guideline
-	=	Not analyzed
NC	=	Not calculated
RPD	=	Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

Laboratory Notes

Refer to Laboratory reports for sample specific notes

< = less then method detection limit (mdl)

General Canadian Council of Ministers of the Environment (CCME) Endnotes

Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health
CCME, 1999, updated 2001, updated 2002, updated 2004, updated 2007.

1 Table 1 - Soil Quality Guideline, Parkland (PL) and Commercial (CL), Coarse Grained Soils

2 Table 2 - Interim remediation criteria for soil, Parkland (PL) and Commercial (CL),

General CWS for Petroleum Hydrocarbons (PHC) in Soil

3 *Canadian-Wide Standards (CWS) for Petroleum Hydrocarbons (PHC) in Soil*,
Endorsed by CCME Council of Ministers, April 30-May 1, 2001, Winnipeg, Revised January 2008

(i) PHC are considered to be comprised of 4 fractions
(ii) PHC exclude known carcinogens such as benzene and benzo(a)pyrene, which are addressed as target compounds.
(iii) PHC exclude toluene , ethylbenzene, and xylenes (TEX), which are addressed as target compounds.

PHC sub-fractions

The relative composition of each carbon (equivalent) range sub-fraction within each fraction, and the relative composition of aliphatics and aromatics within each sub-fraction.

F1 35% $>C_5$ to C_6(100% aliphatics); 35% $>C_6$ to C_8(100% aliphatics); 30% $>C_8$ to C_{10}(80% aliphatics, 20% aromatics);

F2 45% $C_{>10}$ to C_{12}(80% aliphatics, 20% aromatics); 55% $>C_{12}$ to C_{16}(80% aliphatics, 20% aromatics);

F3 70% $>C_{16}$ to C_{21}(80% aliphatics, 20% aromatics); 30% $>C_{21}$ to C_{34}(80% aliphatics, 20% aromatics); and

F4 100% $>C_{34}$(80% aliphatics, 20% aromatics).

Surface Water – Analytical Results

Area ID	CCME AW Freshwater[1]	CCME AW ** Marine[2]	AEC 1	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	Duplicate Evaluation			
Station ID			AEC1-SW09-1	AEC2-SW09-1	AEC2-SW09-2	AEC2-SW09-3	AEC2-SW09-4	AEC2-SW09-5	AEC2-SW09-6	AEC2-SW09-7	AEC2-SW09-8	AEC2-SW09-9	AEC2-SW09-9				
Field label			AEC1-SW09-1	AEC2-SW09-1	AEC2-SW09-2	AEC2-SW09-3	AEC2-SW09-4	AEC2-SW09-5	AEC2-SW09-6	AEC2-SW09-7	AEC2-SW09-8	AEC2-SW09-9	SW09-DUP1	Scenario[A]	RPD (%)	Value (ug/L)	Acceptable (Y/N)
Duplicate ID												SW09-DUP1	AEC2-SW09-9				
Date			17/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09				
Lab report ID			A9C4118	A9C2507	A9C2507	A9C2507	A9C2507	A9C2507	A9C2507	A9C2507	A9C2507	A9C2507	A9C2507				
Aluminum	-	-															
pH<6.5	5[a]	-	9	6	6	6	45	<5	<5	5	<5	<5	<5	A	NC	NC	Y
pH>6.5	100[a]	-															
Antimony	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	A	NC	NC	Y
Arsenic	5	12.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	A	NC	NC	Y
Beryllium	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	A	NC	NC	Y
Boron	-	-	<10	10	<10	<10	<10	<10	<10	<10	<10	11	17	C	10.7	NC	Y
Cadmium	0.017	0.12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	A	NC	NC	Y
Chromium	-	56	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	A	NC	NC	Y
Chromium (VI)	1	1.5	2.8	3.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.5	<0.5	B	NC	2.25	N
Cobalt	-	-	0.6	<0.5	<0.5	<0.5	<0.5	1.3	0.6	<0.5	<0.5	<0.5	<0.5	A	NC	NC	Y
Copper	-	-															
H: 0 - 120,000 ug/L	2[b]	-	<1	<1	1	1	<1	1	<1	<1	<1	<1	<1	A	NC	NC	Y
H: >180,000 ug/L	4[b]	-															
Iron	300	-	2200	400	620	320	1400	8900	1700	560	810	710	1700	C	20.5	NC	Y
Lead	-	-															
H: 0 - 60,000 ug/L	1[b]	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	0.7	B	NC	0.45	Y
H: 60 - 120,000 ug/L	2[b]	-															
Mercury	0.026	0.016	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	A	NC	NC	Y
Molybdenum	73	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	A	NC	NC	Y
Nickel	-	-															
H: 0 - 60,000 ug/L	25[b]	-	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	A	NC	NC	Y
H: 60 - 120,000 ug/L	65[b]	-															
Phosphorus	-	-	72	16	60	14	220	58	24	6	6	7	15	D	NC	8	N
Selenium	1	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	A	NC	NC	Y
Silver	0.1	-	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	A	NC	NC	Y
Thallium	0.8	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	A	NC	NC	Y
Tungsten	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	A	NC	NC	Y
Uranium	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	A	NC	NC	Y
Vanadium	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	B	NC	0.5	Y
Zinc	30	-	<5	11	14	8	6	9	6	<5	<5	<5	6	B	NC	3.5	Y
Zirconium	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	A	NC	NC	Y
Hardness			9400	51000	7200	5500	4800	3900	3900	3700	3800	3900	3700				
pH (field)	6.5-9	7-8.7	7.3	7.47	7.28	7.21	7.02	6.86	7.01	7.02	7.21	7.24	7.24				

All units in ug/L, unless otherwise noted.

Notes

1 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Freshwater.

2 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Marine.

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies section for Scenario Rationale

- indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

NC = Not Calculated

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME freshwater guidelines

20 = Denotes exceedance of CCME marine guidelines

Area ID	CCME AW Freshwater[1]	CCME AW ** Marine[2]	**AEC 2**	**AEC 2**	**AEC 3**	**AEC 3**	**AEC 3**	**AEC 4**	**AEC 4**	**AEC 4**	**AEC 4**	**AEC 4**	**AEC 4**	**AEC 4**	**AEC 4**
Station ID			**AEC2-SW09-10**	**AEC2-SW09-11**	**AEC3-SW09-1**	**AEC3-SW09-2**	**AEC3-SW09-3**	**AEC4-SW09-1**	**AEC4-SW09-2**	**AEC4-SW09-3**	**AEC4-SW09-4**	**AEC4-SW09-5**	**AEC4-SW09-6**	**AEC4-SW09-7**	**AEC4-SW09-8**
Field label			AEC2-SW09-10	AEC2-SW09-11	AEC3-SW09-1	AEC3-SW09-2	AEC3-SW09-3	AEC4-SW09-1	AEC4-SW09-2	AEC4-SW09-3	AEC4-SW09-4	AEC4-SW09-5	AEC4-SW09-6	AEC4-SW09-7	AEC4-SW09-8
Duplicate ID															
Date			15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09
Lab report ID			A9C2507	A9C2507	A9C2507	A9C2507	A9C2507	A9C4118	A9C4118	A9C4118	A9C4118	A9C4118	A9C4118	A9C4118	A9C4118
Aluminum	-	-													
pH<6.5	5[a]	-	<5	<5	<5	<5	<5	<5	<5	27	<5	<5	<5	<5	<5
pH>6.5	100[a]	-													
Antimony	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5
Arsenic	5	12.5	<1	<1	<5	<5	<5	<1	<1	<1	<1	<10	<5	<1	<1
Beryllium	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5
Boron	-	-	22	21	1100	1100	1000	130	220	140	200	1800	210	130	200
Cadmium	0.017	0.12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1
Chromium	-	56	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5
Chromium (VI)	1	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5
Copper	-	-													
H: 0 - 120,000 ug/L	2[b]	-	<1	<1	1	1	<1	<1	<1	3	<1	<10	<1	<1	<1
H: >180,000 ug/L	4[b]	-													
Iron	300	-	790	420	330	270	430	220	330	610	210	<1000	<100	<100	170
Lead	-	-													
H: 0 - 60,000 ug/L	1[b]	-	<0.5	<0.5	0.9	0.7	1.0	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5
H: 60 - 120,000 ug/L	2[b]	-													
Mercury	0.026	0.016	<0.1	<0.1	<0.1	<0.1	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Molybdenum	73	-	<1	<1	3	3	3	<1	<1	1	<1	<10	<1	<1	<1
Nickel	-	-													
H: 0 - 60,000 ug/L	25[b]	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
H: 60 - 120,000 ug/L	65[b]	-													
Phosphorus	-	-	8	7	9	9	15	16	15	13	7	16	3	14	11
Selenium	1	-	<2	<2	<2	<10	<2	<2	<2	<2	<2	<20	<2	<2	<2
Silver	0.1	-	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1
Thallium	0.8	-	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	0.06	0.09	0.05	0.8	<0.05	<0.05	0.05
Tungsten	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Uranium	-	-	<0.1	<0.1	0.6	0.7	0.7	<0.1	0.1	0.2	0.1	1	0.1	<0.1	0.1
Vanadium	-	-	<1	<1	<5	<5	<5	<1	<1	1	<1	<10	<5	2	2
Zinc	30	-	7	<5	<5	<5	<5	<5	<5	9	6	<50	<5	<5	<5
Zirconium	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Hardness			3800	3900	2500	2500	2500	3900	3700	4000	3700	1800	900	800	1200
pH (field)	6.5-9	7-8.7	7.14	7.24	6.94	7.85	7.69	8.07	8.2	7.99	8.05	8.01	8.16	7.95	7.86

All units in ug/L, unless otherwise noted.

Notes

1 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Freshwater.

2 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Marine.

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies section for Scenario Rationale

\- indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

NC = Not Calculated

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME freshwater guidelines

20 = Denotes exceedance of CCME marine guidelines

Area ID	CCME AW Freshwater[1]	CCME AW ** Marine[2]	AEC 4	AEC 4	AEC 4	AEC 4	Duplicate Evaluation				AEC 4	AEC 4	AEC 4	AEC 4	AEC 4
Station ID			AEC4-SW09-9	AEC4-SW09-10	AEC4-SW09-11	AEC4-SW09-11	Scenario[A]	RPD (%)	Value (ug/L)	Acceptable (Y/N)	AEC4-SW09-12	AEC4-SW09-13	AEC4-SW09-14	AEC4-SW09-15	AEC4-SW09-16
Field label			AEC4-SW09-9	AEC4-SW09-10	AEC4-SW09-11	AEC4-SW09-DUP2					AEC4-SW09-12	AEC4-SW09-13	AEC4-SW09-14	AEC4-SW09-15	AEC4-SW09-16
Duplicate ID					AEC4-SW09-DUP2	AEC4-SW09-11									
Date			17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09					17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09
Lab report ID			A9C4118	A9C4118	A9C4118	A9C4118					A9C4118	A9C4118	A9C4118	A9C4118	A9C4118
Aluminum	-	-													
pH<6.5	5[a]	-	<5	<5	<5	<5	A	NC	NC	Y	<5	<5	<5	<5	<5
pH>6.5	100[a]	-													
Antimony	-	-	<0.5	<0.5	<0.5	<0.5	A	NC	NC	Y	<0.5	<0.5	<0.5	<0.5	<0.5
Arsenic	5	12.5	<5	<1	<5	<5	A	NC	NC	Y	<5	<1	<5	<5	<1
Beryllium	-	-	<0.5	<0.5	<0.5	<0.5	A	NC	NC	Y	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	-	-	430	<10	480	470	C	0.5	NC	Y	400	96	320	330	250
Cadmium	0.017	0.12	<0.1	<0.1	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	-	56	<5	<5	<5	<5	A	NC	NC	Y	<5	<5	<5	<5	<5
Chromium (VI)	1	1.5	<0.5	<0.5	<0.5	<0.5	A	NC	NC	Y	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt	-	-	<0.5	<0.5	<0.5	0.5	B	NC	0.25	Y	<0.5	<0.5	<0.5	<0.5	<0.5
Copper	-	-													
H: 0 - 120,000 ug/L	2[b]	-	<1	<1	<1	<1	A	NC	NC	Y	<1	<1	1	1	<1
H: >180,000 ug/L	4[b]	-													
Iron	300	-	170	<100	1400	1400	C	0.0	NC	Y	<100	310	390	210	10000
Lead	-	-													
H: 0 - 60,000 ug/L	1[b]	-	<0.5	<0.5	<0.5	<0.5	A	NC	NC	Y	<0.5	<0.5	<0.5	<0.5	<0.5
H: 60 - 120,000 ug/L	2[b]	-													
Mercury	0.026	0.016	<0.02	<0.02	<0.02	<0.02	A	NC	NC	Y	<0.02	<0.02	<0.02	<0.02	<0.02
Molybdenum	73	-	1	<1	1	<1	B	NC	0.5	Y	1	<1	1	1	<1
Nickel	-	-													
H: 0 - 60,000 ug/L	25[b]	-	<1	<1	3	1	D	NC	2	N	<1	<1	<1	<1	2
H: 60 - 120,000 ug/L	65[b]	-													
Phosphorus	-	-	10	<2	12	22	C	14.7	NC	Y	4	98	7	9	20
Selenium	1	-	<2	<2	<2	<2	A	NC	NC	Y	<2	<2	<2	<2	<2
Silver	0.1	-	<0.1	<0.1	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<0.1	<0.1	<0.1
Thallium	0.8	-	<0.05	0.07	<0.05	<0.05	A	NC	NC	Y	<0.05	<0.05	<0.05	<0.05	0.07
Tungsten	-	-	<1	<1	<1	<1	A	NC	NC	Y	<1	<1	<1	<1	<1
Uranium	-	-	0.3	<0.1	0.2	0.2	D	NC	0	Y	0.2	<0.1	0.2	0.2	<0.1
Vanadium	-	-	<5	<1	<5	<5	A	NC	NC	Y	<5	2	<5	<5	5
Zinc	30	-	<5	<5	<5	<5	A	NC	NC	Y	<5	<5	5	<5	<5
Zirconium	-	-	<1	<1	<1	<1	A	NC	NC	Y	<1	<1	<1	<1	<1
Hardness			1000	800	2100	2000					1200	1300	2400	2600	5500
pH (field)	6.5-9	7-8.7	7.71	8.1	9.07	9.07					8.17	8.71	8.09	8.18	6.99

All units in ug/L, unless otherwise noted.

Notes

1 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Freshwater.

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20 = RDL exceeds guideline

20 = Denotes exceedance of CCME freshwater guidelines

20 = Denotes exceedance of CCME marine guidelines

Parameters		CCME Freshwater		APEC 1	APEC 2				APEC 3
				A1-SW08-1	**A2-SW08-1**	**A2-SW08-2**	**A2-SW08-3**	**A2-SW08-4**	**A3-SW08-1**
	Lab ID #			*L682329-1*	*L681303-1*	*L681303-2*	*L681303-3*	*L681303-4*	*L681064-5*
	Sample Date			*08-SEP-08*	*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	*07-SEP-08*
	Prepared by:			**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Physical Tests									
pH (Field)		---		-	6.11	6.43	6.4	6.35	6.38
Hardness (as CaCO3)		---		91.6	54.2	41.8	39.6	40.1	79.7
Total Metals									
Aluminum (Al)									
	pH<6.5	0.005	a	**0.0144**	**0.0288**	**0.0112**	**0.119**	**0.0247**	**0.0434**
	pH>6.5	0.1	a						
Antimony (Sb)		---		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00062
Arsenic (As)		0.005		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Barium (Ba)		---		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Beryllium (Be)		---		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)		---		<0.10	<0.10	<0.10	<0.10	<0.10	0.23
Cadmium (Cd)		0.000017		<0.000017	**0.000047**	<0.000017	**0.000087**	**0.000037**	**0.000129**
Calcium (Ca)		---		24.7	15.8	11.7	11.2	11.5	25.1
Chromium (Cr)		0.0089	c	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)		---		<0.00030	<0.00030	0.00032	0.00115	0.00046	0.00286
Copper (Cu)									
	H: 0 - 120mg/L	0.002	b	0.0013	**0.0037**	**0.0037**	**0.0071**	**0.0023**	**0.0047**
	H: >180 mg/L	0.004	b						
Iron (Fe)		---		0.086	1.07	0.757	8.37	1.72	2.79
Lead (Pb)									
	H: 0 - 60mg/L	0.001	b		<0.00050	<0.00050	**0.002**	<0.00050	
	H: 60 - 120mg/L	0.002	b	<0.00050					**0.00277**
	H: >180mg/L	0.007	b						
Lithium (Li)		---		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Magnesium (Mg)		---		7.25	3.58	3.05	2.82	2.8	4.14
Manganese (Mn)		---		0.0198	0.0609	0.066	0.151	0.0755	0.0841
Mercury (Hg)		0.000026		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Molybdenum (Mo)		0.073		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nickel (Ni)									
	H: 0 - 60mg/L	0.025	b		<0.0010	<0.0010	<0.0010	<0.0010	
	H: 60 - 120mg/L	0.065	b	<0.0010					0.0037
	H: >180mg/L	0.15	b						
Potassium (K)		---		3.1	<2.0	<2.0	<2.0	<2.0	2.5
Selenium (Se)		0.001		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Silver (Ag)		0.0001		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium (Na)		---		16.9	5.4	5.7	5.2	5.3	8.7
Thallium (Tl)		---		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)		---		<0.00050	<0.00050	<0.00050	0.00057	<0.00050	<0.00050
Titanium (Ti)		---		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)		---		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vanadium (V)		---		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)		0.03		<0.0050	0.0191	<0.0050	0.0083	<0.0050	**0.163**

Notes (Refer to endnotes for complete list)

10 value is greater than the CCME freshwater Guideline

--- No Guideline.

* a - Criteria is pH dependent

* b - Criteria is hardness dependent

* c - Criteria is value for Chromium III

Parameters		CCME Freshwater		APEC 3					APEC 4	
				A3-SW08-2	DUP-1	RPD	A3-SW08-3	A3-SW08-4	A4- SW08-1	A4- SW08-2
	Lab ID #			L681064-1	L681064-4		L681064-2	L681064-3	L682349-1	L682349-2
	Sample Date			07-SEP-08	07-SEP-08		07-SEP-08	07-SEP-08	08-SEP-08	08-SEP-08
	Prepared by:			Franz	Franz		Franz	Franz	Franz	Franz
Physical Tests										
pH (Field)		---		6.77			6.55	6.91	6.98	6.82
Hardness (as CaCO3)		---		1260	1220	3%	42.2	40.2	471	1080
Total Metals										
Aluminum (Al)										
	pH<6.5	0.005	a							
	pH>6.5	0.1	a	<0.25	<0.25	NC	0.0191	0.0119	0.05	<0.10
Antimony (Sb)		---		<0.025	<0.025	NC	<0.00050	<0.00050	<0.0050	<0.010
Arsenic (As)		0.005		<0.025	<0.025	NC	<0.00050	<0.00050	<0.0050	<0.010
Barium (Ba)		---		<0.10	<0.10	NC	<0.020	<0.020	<0.020	<0.040
Beryllium (Be)		---		<0.050	<0.050	NC	<0.0010	<0.0010	<0.010	<0.020
Boron (B)		---		0.95	0.92	3%	<0.10	<0.10	0.34	0.64
Cadmium (Cd)		0.000017		<0.00085	<0.00085	NC	0.000024	0.000018	<0.00017	<0.00034
Calcium (Ca)		---		93.8	91.5	2%	11.6	11.5	35	117
Chromium (Cr)		0.0089	c	<0.050	<0.050	NC	<0.0010	<0.0010	<0.010	<0.020
Cobalt (Co)		---		<0.015	<0.015	NC	<0.00030	<0.00030	<0.0030	<0.0060
Copper (Cu)										
	H: 0 - 120mg/L	0.002	b				<0.0010	<0.0010		
	H: >180 mg/L	0.004	b	<0.050	<0.050	NC			<0.010	<0.020
Iron (Fe)		---		0.9	0.78	14%	0.709	0.809	0.263	1.5
Lead (Pb)										
	H: 0 - 60mg/L	0.001	b				<0.00050	<0.00050		
	H: 60 - 120mg/L	0.002	b							
	H: >180mg/L	0.007	b	<0.025	<0.025	NC			<0.0050	<0.010
Lithium (Li)		---		<0.25	<0.25	NC	<0.0050	<0.0050	<0.050	<0.10
Magnesium (Mg)		---		248	242	2%	3.2	2.8	93.1	190
Manganese (Mn)		---		0.103	0.104	1%	0.0622	0.0534	0.0157	0.381
Mercury (Hg)		0.000026		<0.000020	<0.000020	NC	<0.000020	<0.000020	<0.000020	<0.000020
Molybdenum (Mo)		0.073		<0.050	<0.050	NC	<0.0010	<0.0010	<0.010	<0.020
Nickel (Ni)										
	H: 0 - 60mg/L	0.025	b				<0.0010	<0.0010		
	H: 60 - 120mg/L	0.065	b							
	H: >180mg/L	0.15	b	<0.050	<0.050	NC			<0.010	<0.020
Potassium (K)		---		80	78	3%	<2.0	<2.0	27.4	50.4
Selenium (Se)		0.001		<0.050	<0.050	NC	<0.0010	<0.0010	<0.010	<0.020
Silver (Ag)		0.0001		<0.0010	<0.0010	NC	<0.000020	<0.000020	<0.00020	<0.00040
Sodium (Na)		---		2080	2040	2%	7.5	5.3	861	1090
Thallium (Tl)		---		<0.010	<0.010	NC	<0.00020	<0.00020	<0.0020	<0.0040
Tin (Sn)		---		<0.025	<0.025	NC	<0.00050	<0.00050	<0.0050	<0.010
Titanium (Ti)		---		<0.050	<0.050	NC	<0.010	<0.010	<0.010	<0.020
Uranium (U)		---		<0.010	<0.010	NC	<0.00020	<0.00020	<0.0020	<0.0040
Vanadium (V)		---		<0.050	<0.050	NC	<0.0010	<0.0010	<0.010	<0.020
Zinc (Zn)		0.03		<0.025	<0.025	NC	<0.0050	<0.0050	<0.0050	<0.010

Notes (Refer to endnotes for complete list)

10 value is greater than the CCME freshwater Guideline

--- No Guideline.

* a - Criteria is pH dependent

* b - Criteria is hardness dependent

* c - Criteria is value for Chromium III

Parameters		CCME Freshwater	APEC 4							
			A4-SW08-3	A4- SW08-4	A4- SW08-5	A4-SW08-6	A4-SW08-7	A4-SW08-8	SW-BK-1	SW-BK-2
	Lab ID #		*L682329-2*	*L682349-3*	*L682349-4*	*L682329-3*	*L682329-4*	*L682329-5*	*L682370-13*	*L682370-16*
	Sample Date		*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*09-SEP-08*	*09-SEP-08*
	Prepared by:		**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Physical Tests										
pH (Field)		---	7.88	7.32	6.94	8.07	8.42	7.65	-	-
Hardness (as CaCO3)		---	105	14.6	480	23.6	22.5	27.2	31.9	15.9
Total Metals										
Aluminum (Al)										
	pH<6.5	0.005 [a]								
	pH>6.5	0.1 [a]	0.018	0.0222	<0.10	0.0327	0.0256	0.0275	0.0246	0.0261
Antimony (Sb)		---	<0.0010	<0.00050	<0.010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Arsenic (As)		0.005	<0.0020	<0.00050	<0.010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Barium (Ba)		---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Beryllium (Be)		---	<0.0020	<0.0010	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron (B)		---	<0.10	<0.10	0.49	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)		0.000017	**0.000146**	**0.000044**	<0.00034	<0.000017	**0.000082**	<0.000017	<0.000017	<0.000017
Calcium (Ca)		---	14.4	4.18	33.3	4.67	4.58	4.72	9.75	5.03
Chromium (Cr)		0.0089 [c]	<0.0020	<0.0010	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt (Co)		---	<0.00060	<0.00030	<0.0060	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Copper (Cu)										
	H: 0 - 120mg/L	0.002 [b]	**0.0057**	<0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	H: >180 mg/L	0.004 [b]			<0.020					
Iron (Fe)		---	0.482	<0.030	0.219	0.038	0.04	0.043	0.054	0.037
Lead (Pb)										
	H: 0 - 60mg/L	0.001 [b]		<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	H: 60 - 120mg/L	0.002 [b]	<0.0010							
	H: >180mg/L	0.007 [b]			<0.010					
Lithium (Li)		---	<0.010	<0.0050	<0.10	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Magnesium (Mg)		---	16.9	1	96.3	2.9	2.68	3.75	1.84	0.81
Manganese (Mn)		---	0.0138	0.00075	0.0095	0.001	0.00116	0.00107	0.00212	0.00099
Mercury (Hg)		0.000026	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Molybdenum (Mo)		0.073	<0.0020	<0.0010	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nickel (Ni)										
	H: 0 - 60mg/L	0.025 [b]		<0.0010		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	H: 60 - 120mg/L	0.065 [b]	<0.0020							
	H: >180mg/L	0.15 [b]			<0.020					
Potassium (K)		---	6.8	<2.0	35	<2.0	<2.0	<2.0	<2.0	<2.0
Selenium (Se)		0.001	<0.0040	<0.0010	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Silver (Ag)		0.0001	<0.000040	<0.000020	<0.00040	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium (Na)		---	153	6.9	1020	23.6	22	37.9	5.5	<2.0
Thallium (Tl)		---	<0.00040	<0.00020	<0.0040	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin (Sn)		---	<0.0010	<0.00050	<0.010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Titanium (Ti)		---	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)		---	<0.00040	<0.00020	<0.0040	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vanadium (V)		---	<0.0020	<0.0010	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)		0.03	0.0061	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Notes (Refer to endnotes for complete list)

10 value is greater than the CCME freshwater Guideline

--- No Guideline.

* a - Criteria is pH dependent

* b - Criteria is hardness dependent

* c - Criteria is value for Chromium III

TABLE 7-8A: Analytical Results for PHCs in Water - 2009

Area ID	**CCME AW Freshwater[1]**	**CCME AW Marine[2 **]**	**AEC 1**	**AEC 2**	**AEC 2**	**AEC 4**	**AEC 4**	Duplicate Evaluation		**AEC 4**	**AEC 4**	**AEC 4**
Station ID			**AEC1-SW09-1**	**AEC2-SW09-6**	**AEC2-SW09-8**	**AEC4-SW09-11**	**AEC4-SW09-11**	Scenario[A]	RPD	**AEC4-SW09-12**	**AEC4-SW09-15**	**AEC4-SW09-16**
Field label			AEC1-SW09-1	AEC2-SW09-6	AEC2-SW09-8	AEC4-SW09-11	AEC4-SW09-DUP2			AEC4-SW09-12	AEC4-SW09-15	AEC4-SW09-16
Duplicate ID						AEC4-SW09-DUP2	AEC4-SW09-11					
Date			17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09			17/Sep/09	17/Sep/09	17/Sep/09
Lab report ID			A9C4118	A9C4118	A9C4118	A9C4118	A9C4118			A9C4118	A9C4118	A9C4118
Parameter (ug/L)												
Benzene	370	110	<0.1	<0.1	<0.1	<0.1	<0.1	A	NC	<0.1	<0.1	<1
Ethylbenzene	90	25	<0.1	<0.1	<0.1	<0.1	<0.1	A	NC	<0.1	<0.1	<1
Toluene	2	215	<0.2	<0.2	<0.2	<0.2	<0.2	A	NC	<0.2	<0.2	
m+p-Xylene	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	A	NC	<0.1	<0.1	<1
o-Xylene	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	A	NC	<0.1	<0.1	<1
Xylenes (total)	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	A	NC	<0.1	<0.1	<1
F1 (C6-C10)	-	-	<100	<100	<100	<100	<100	A	NC	-	<100	-
F1 (C6-C10) minus BTEX	-	-	<100	<100	<100	<100	<100	A	NC	-	<100	-
F2 (C10-C16)	-	-	<100	<100	<100	<100	<100	A	NC	-	<100	-
F3 (C16-C34)	-	-	550	<100	<100	<100	<100	A	NC	-	<100	-
F4 (C34-C50)	-	-	230	<100	<100	<100	<100	A	NC	-	<100	-
Reached Baseline at C50	-	-	No	Yes	Yes	Yes	Yes	A	NC	-	Yes	-

All units in ug/L, unless otherwise noted.

Notes

1 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Freshwater.

2 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Marine.

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies section for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5

NC = Not Calculated

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME freshwater guidelines

20 = Denotes exceedance of CCME marine guidelines

TABLE 7-8B: Analytical Results for PHCs in Surface Water - 2008

Parameters	CCME Freshwater	APEC 2		APEC 3						APEC 4		
		A2-SW08-3	**A2-SW08-4**	**A3-SW08-1**	**A3-SW08-2**	**DUP-1**	***RPD***	**A3-SW08-3**	**A3-SW08-4**	**A4- SW08-1**	**A4- SW08-2**	**A4-SW08-3**
Lab ID #		*L681303-3*	*L681303-4*	*L681064-5*	*L681064-1*	*L681064-4*		*L681064-2*	*L681064-3*	*L682349-1*	*L682349-2*	*L682329-2*
Sample Date		*06-SEP-08*	*06-SEP-08*	*07-SEP-08*	*07-SEP-08*	*07-SEP-08*		*07-SEP-08*	*07-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*
Prepared by:		**Franz**	**Franz**	**Franz**	**Franz**	**Franz**		**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Volatiles												
Benzene	0.37	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethylbenzene	0.09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Methyl t-butyl ether (MTBE)	10	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Styrene	0.072	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Toluene	0.002	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
o-Xylene	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
m & p-Xylene	---	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	NC	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Xylenes (Total)	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Extractable Petroleum Hydrocrabons												
CWS F2 (C10-C16)	---	<0.30	<0.30	<0.30	<0.30	<0.30	NC	<0.30	<0.30	<0.30	<0.30	<0.30
CWS F3 (C16-C34)	---	<0.30	<0.30	<0.30	<0.30	<0.30	NC	<0.30	<0.30	<0.30	<0.30	<0.30
F1-BTEX	---	<0.10	<0.10	<0.10	<0.10	<0.10	NC	<0.10	<0.10	<0.10	<0.10	<0.10
CWS F1 (C06-C10)	---	<0.10	<0.10	<0.10	<0.10	<0.10	NC	<0.10	<0.10	<0.10	<0.10	<0.10

Notes (Refer to endnotes for complete list)

10 value is greater than the CCME freshwater Guideline

--- No Guideline.

NC - Not calculated

TABLE 7-9A: Analytical Results for PAHs in Water - 2009

Area ID	**CCME AW Freshwater[1]**	**CCME AW Marine[2 **]**	**AEC 1**	**AEC 2**	**AEC 2**	**AEC 4**	**AEC 4**			**AEC 4**
Station ID			**AEC1-SW09-1**	**AEC2-SW09-6**	**AEC2-SW09-8**	**AEC4-SW09-11**	**AEC4-SW09-11**	**Duplicate Evaluation**		**AEC4-SW09-15**
Field label			AEC1-SW09-1	AEC2-SW09-6	AEC2-SW09-8	AEC4-SW09-11	AEC4-SW09-DUP2	Scenario[A]	**Acceptable (Y/N)**	AEC4-SW09-15
Duplicate ID						AEC4-SW09-DUP2	AEC4-SW09-11			
Date			17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09			17/Sep/09
Lab report ID			A9C4118	A9C4118	A9C4118	A9C4118	A9C4118			A9C4118
Screen depth (m)										
Acenaphthene	5.8	-	<0.05	<0.05	<0.05	<0.05	<0.05	A	Y	<0.05
Acridine	4.4	-	<0.1	<0.1	<0.1	<0.1	<0.1	A	Y	<0.1
Anthracene	0.012	-	<0.05	<0.05	<0.05	<0.05	<0.05	A	Y	<0.05
Benzo(a)anthracene	0.018	-	<0.05	<0.05	<0.05	<0.05	<0.05	A	Y	<0.05
Benzo(a)pyrene	0.015	-	<0.005	<0.005	<0.005	0.005	<0.005	A	Y	<0.005
Fluoranthene	0.04	-	<0.05	<0.05	<0.05	<0.05	<0.05	A	Y	<0.05
Fluorene	3	-	<0.05	<0.05	<0.05	<0.05	<0.05	A	Y	<0.05
Naphthalene	1.1	1.4	<0.05	<0.05	<0.05	<0.05	<0.05	A	Y	<0.05
Phenanthrene	0.4	-	<0.05	<0.05	<0.05	<0.05	<0.05	A	Y	<0.05
Pyrene	0.025	-	<0.05	<0.05	<0.05	<0.05	<0.05	A	Y	<0.05

All units in ug/L, unless otherwise noted.

Notes

1 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Freshwater.
2 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Marine.
** = CCME Marine sediment guidelines apply only to AEC4 samples
A = See Methodologies section for Scenario Rationale
"-" indicates that there is no applicable regulation or analyses were not performed.
RDL = Reportable Detection Limit
RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater
20 = RDL exceeds guideline
20 = Denotes exceedance of CCME freshwater guidelines
20 = Denotes exceedance of CCME marine guidelines

TABLE 7-9B: Analytical Results for PAHs in Surface Water - 2008

Parameters	CCME Freshwater	APEC 4	
		A4- SW08-2	**A4-SW08-3**
Lab ID #		*L682349-2*	*L682329-2*
Sample Date		*08-SEP-08*	*08-SEP-08*
Prepared by:		**Franz**	**Franz**
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.0058	<0.000050	<0.000050
Acenaphthylene	---	<0.000050	<0.000050
Acridine	0.0044	<0.000050	<0.000050
Anthracene	0.000012	<0.000012	<0.000012
Benz(a)anthracene	0.000018	<0.000018	<0.000018
Benzo(a)pyrene	0.000015	<0.000010	<0.000010
Benzo(b)fluoranthene	---	<0.000050	<0.000050
Benzo(g,h,i)perylene	---	<0.000050	<0.000050
Benzo(k)fluoranthene	---	<0.000050	<0.000050
Chrysene	---	<0.000050	<0.000050
Dibenz(a,h)anthracene	---	<0.000050	<0.000050
Fluoranthene	0.00004	<0.00004	<0.000040
Fluorene	0.003	<0.000050	<0.000050
Indeno(1,2,3-c,d)pyrene	---	<0.000050	<0.000050
Naphthalene	0.0011	<0.000050	<0.000050
Phenanthrene	0.0004	<0.000050	<0.000050
Pyrene	0.000025	<0.000025	<0.000025
Quinoline	0.0034	<0.000050	<0.000050

Notes (Refer to endnotes for complete list)

10 value is greater than the CCME freshwater Guideline

--- No Guideline.

TABLE 7-10A: Analytical Results for PCBs in Water - 2009

Area ID	CCME AW Freshwater[1]	CCME AW Marine[2]**	AEC 1	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	Duplicate Evaluation		AEC 2	AEC 3	AEC 4	AEC 4	AEC 4
Station ID			**AEC1-SW09-1**	**AEC2-SW09-4**	**AEC2-SW09-6**	**AEC2-SW09-7**	**AEC2-SW09-9**	**AEC2-SW09-9**	Scenario[A]	**Acceptable (Y/N)**	**AEC2-SW09-11**	**AEC3-SW09-1**	**AEC4-SW09-1**	**AEC4-SW09-11**	**AEC4-SW09-15**
Field label			AEC1-SW09-1	AEC2-SW09-4	AEC2-SW09-6	AEC2-SW09-7	AEC2-SW09-9	SW09-DUP1			AEC2-SW09-11	AEC3-SW09-1	AEC4-SW09-1	AEC4-SW09-11	AEC4-SW09-15
Duplicate ID							SW09-DUP1	AEC2-SW09-9						AEC4-SW09-DUP2	
Date			17/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09			15/Sep/09	15/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09
Lab report ID			A9C4118	A9C2507	A9C2507	A9C2507	A9C2507	A9C2507			A9C2507	A9C2507	A9C4118	A9C4118	A9C4118
Screen depth (m)															
Aroclor 1016	-	-	<0.3	<0.05	<0.05	<0.05	<0.05	<0.05	A	Y	<0.05	<0.05	<0.05	<0.05	<0.05
Aroclor 1221	-	-	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	A	Y	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	-	-	<0.3	<0.05	<0.05	<0.05	<0.05	<0.05	A	Y	<0.05	<0.05	<0.05	<0.05	<0.05
Aroclor 1242	-	-	<0.3	<0.05	<0.05	<0.05	<0.05	<0.05	A	Y	<0.05	<0.05	<0.05	<0.05	<0.05
Aroclor 1248	-	-	<0.3	<0.05	<0.05	<0.05	<0.05	<0.05	A	Y	<0.05	<0.05	<0.05	<0.05	<0.05
Aroclor 1254	-	-	<0.3	<0.05	<0.05	<0.05	<0.05	<0.05	A	Y	<0.05	<0.05	<0.05	<0.05	<0.05
Aroclor 1260	-	-	<0.3	<0.05	<0.05	<0.05	<0.05	<0.05	A	Y	<0.05	<0.05	<0.05	<0.05	<0.05
Aroclor 1262	-	-	<0.3	-	-	-	-	-	A	Y	-	-	<0.05	<0.05	<0.05
Aroclor 1268	-	-	<0.3	-	-	-	-	-	A	Y	-	-	<0.05	<0.05	<0.05
Polychlorinated biphenyls	0.001	0	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	A	Y	<0.1	<0.1	<0.1	<0.1	<0.1

All units in ug/L, unless otherwise noted.

Notes

1 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Freshwater.

2 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Marine.

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies section for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME freshwater guidelines

20 = Denotes exceedance of CCME marine guidelines

		APEC 1	APEC 2		APEC 3					
Parameters	**CCME Freshwater**	**A1-SW08-1**	**A2-SW08-3**	**A2-SW08-4**	**A3-SW08-1**	**A3-SW08-2**	**DUP-1**	***RPD***	**A3-SW08-3**	**A3-SW08-4**
Lab ID #		*L682370-19*	*L681303-3*	*L681303-4*	*L681064-5*	*L681064-1*	*L681064-4*		*L681064-2*	*L681064-3*
Sample Date		*09-SEP-08*	*06-SEP-08*	*06-SEP-08*	*07-SEP-08*	*07-SEP-08*	*07-SEP-08*		*07-SEP-08*	*07-SEP-08*
Prepared by:		**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**		**Franz**	**Franz**
Polychlorinated Biphenyls										
PCB-1016	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010
PCB-1221	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010
PCB-1232	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010
PCB-1242	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010
PCB-1248	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010
PCB-1254	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010
PCB-1260	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010
PCB-1262	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010
PCB-1268	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010
Total Polychlorinated Biphenyls	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NC	<0.0010	<0.0010

Notes (Refer to endnotes for complete list)

10 value is greater than the CCME freshwater Guideline

--- No Guideline.

NC - Not Calculated.

Parameters	CCME Freshwater	APEC 4							
		A4- SW08-1	A4- SW08-2	A4-SW08-3	A4- SW08-4	A4- SW08-5	A4-SW08-6	A4-SW08-7	A4-SW08-8
Lab ID #		*L682349-1*	*L682349-2*	*L682329-2*	*L682349-3*	*L682349-4*	*L682329-3*	*L682329-4*	*L682329-5*
Sample Date		*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*
Prepared by:		**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Polychlorinated Biphenyls									
PCB-1016	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PCB-1221	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PCB-1232	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PCB-1242	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PCB-1248	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PCB-1254	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PCB-1260	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PCB-1262	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
PCB-1268	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Polychlorinated Biphenyls	---	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

Notes (Refer to endnotes for complete list)

10 value is greater than the CCME freshwater Guideline

--- No Guideline.

NC - Not Calculated.

TABLE 7-11A: Analytical Results for PCBs in Water - 2009

Area ID	CCME AW Freshwater[1]	CCME AW Marine[2 **]	AEC 1	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	Duplicate Evaluation		AEC 2	AEC 3	AEC 4	AEC 4	AEC 4
Station ID			AEC1-SW09-1	AEC2-SW09-4	AEC2-SW09-6	AEC2-SW09-7	AEC2-SW09-9	AEC2-SW09-9			AEC2-SW09-11	AEC3-SW09-1	AEC4-SW09-1	AEC4-SW09-11	AEC4-SW09-15
Field label			AEC1-SW09-1	AEC2-SW09-4	AEC2-SW09-6	AEC2-SW09-7	AEC2-SW09-9	SW09-DUP1	Scenario[A]	Acceptable (Y/N)	AEC2-SW09-11	AEC3-SW09-1	AEC4-SW09-1	AEC4-SW09-11	AEC4-SW09-15
Duplicate ID							SW09-DUP1	AEC2-SW09-9						AEC4-SW09-DUP2	
Date			17/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09			15/Sep/09	15/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09
Lab report ID			A9C4118	A9C2507	A9C2507	A9C2507	A9C2507	A9C2507			A9C2507	A9C2507	A9C4118	A9C4118	A9C4118
Screen depth (m)															
Aldrin	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
Chlordane	0.006	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
alpha-Chlordane	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
trans-Chlordane	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
2,4'-DDD	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
4,4'-DDD	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
DDD (total)	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
2,4'-DDE	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
4,4'-DDE	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
DDE (total)	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
2,4'-DDT	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
4,4'-DDT	0.001	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
DDT plus metabolites	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
DDT (total)	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
Dieldrin	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
Endosulfan	0.02	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
alpha-Endosulfan	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
beta-Endosulfan	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
Endosulfan sulphate	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
Endrin	0.0023	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
Endrin aldehyde	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
Endrin ketone	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
alpha-HCH	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
beta-HCH	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
delta-HCH	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
gamma-HCH	0.01	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor epoxide	0.01	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
Hexachlorobenzene	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
Methoxychlor	-	-	<0.07	<0.01	<0.01	<0.01	<0.01	<0.01	A	Y	<0.01	<0.01	<0.01	<0.01	<0.01
Mirex	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
Octachlorostyrene	-	-	<0.03	<0.005	<0.005	<0.005	<0.005	<0.005	A	Y	<0.005	<0.005	<0.005	<0.005	<0.005
Toxaphene	0.008	-	<1	<0.2	<0.2	<0.2	<0.2	<0.2	A	Y	<0.2	<0.2	<0.2	<0.2	<0.2

All units in ug/L, unless otherwise noted.

Notes

1 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Freshwater.
2 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Marine.
** = CCME Marine sediment guidelines apply only to AEC4 samples
A = See Methodologies section for Scenario Rationale
"-" indicates that there is no applicable regulation or analyses were not performed.
RDL = Reportable Detection Limit
RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater
20 = RDL exceeds guideline
20 = Denotes exceedance of CCME freshwater guidelines
20 = Denotes exceedance of CCME marine guidelines

TABLE 7-11B: Analytical Results for Pesticides in Surface Water - 2008

Parameters	CCME Freshwater	APEC 2	APEC 4	
		A2-SW08-4	A4-SW08-3	A4- SW08-2
Lab ID #		*L681303-4*	*L682329-2*	*L682349-2*
Sample Date		*06-SEP-08*	*08-SEP-08*	*08-SEP-08*
Prepared by:		**Franz**	**Franz**	**Franz**
Organochlorine Pesticides				
Aldrin	---	<0.000050	<0.000050	<0.000050
alpha-BHC	---	<0.000050	<0.000050	<0.000050
beta-BHC	---	<0.00010	<0.00010	<0.00010
Lindane (gamma - BHC)	0.00001	<0.000050	<0.000050	<0.000050
delta-BHC	---	<0.000050	<0.000050	<0.000050
cis-Chlordane (alpha)	---	<0.000050	<0.000050	<0.000050
trans-Chlordane (gamma)	---	<0.000050	<0.000050	<0.000050
2,4'-DDD	---	<0.00010	<0.00010	<0.00010
4,4'-DDD	---	<0.000050	<0.000050	<0.000050
2,4'-DDE	---	<0.00010	<0.00010	<0.00010
4,4'-DDE	---	<0.000050	<0.000050	<0.000050
2,4'-DDT	---	<0.00010	<0.00010	<0.00010
4,4'-DDT	---	<0.00010	<0.00010	<0.00010
Dieldrin	---	<0.000050	<0.000050	<0.000050
Endosulfan I	0.00002 [a]	<0.000050	<0.000050	<0.000050
Endosulfan II	0.00002 [a]	<0.000050	<0.000050	<0.000050
Endosulfan Sulfate	0.00002 [a]	<0.000050	<0.000050	<0.000050
Endrin	---	<0.00020	<0.00020	<0.00020
Heptachlor	---	<0.00010	<0.00010	<0.00010
Heptachlor Epoxide	---	<0.000050	<0.000050	<0.000050
Methoxychlor	---	<0.00020	<0.00020	<0.00020
Mirex	---	<0.000050	<0.000050	<0.000050
cis-Nonachlor	---	<0.000050	<0.000050	<0.000050
trans-Nonachlor	---	<0.000050	<0.000050	<0.000050
Oxychlordane	---	<0.000050	<0.000050	<0.000050

Notes (Refer to endnotes for complete list)

10	value is greater than the CCME freshwater Guideline

--- No Guideline.

*(a) Criteria is for Endosulfan

Area ID	**CCME AW Freshwater[1]**	**CCME AW Marine[2 **]**	**AEC 1**	**AEC 2**	**AEC 2**	**AEC 2**	**AEC 2**	**AEC 2**	**AEC 2**	**AEC 2**	**AEC 2**	**AEC 3**	**AEC 4**
Station ID			**AEC1-SW09-1**	**AEC2-SW09-4**	**AEC2-SW09-6**	**AEC2-SW09-6**	**AEC2-SW09-7**	**AEC2-SW09-8**	**AEC2-SW09-9**	**AEC2-SW09-9**	**AEC2-SW09-11**	**AEC3-SW09-1**	**AEC4-SW09-1**
Field label			AEC1-SW09-1	AEC2-SW09-4	AEC2-SW09-6	AEC2-SW09-6	AEC2-SW09-7	AEC2-SW09-8	AEC2-SW09-9	SW09-DUP1	AEC2-SW09-11	AEC3-SW09-1	AEC4-SW09-1
Duplicate ID									SW09-DUP1	AEC2-SW09-9			
Date			17/Sep/09	15/Sep/09	15/Sep/09	17/Sep/09	15/Sep/09	17/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	17/Sep/09
Lab report ID			A9C4118	A9C2507	A9C2507	A9C4118	A9C2507	A9C4118	A9C2507	A9C2507	A9C2507	A9C2507	A9C4118
Screen depth (m)													
Acetone	-	-	<10	-	-	<10	-	<10	-	-	-	-	-
Benzene	370	110	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
Bromodichloromethane	-	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
Bromoform	-	-	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
Bromomethane	-	-	<0.5	-	-	<0.5	-	<0.5	-	-	-	-	-
Carbon tetrachloride	13.3	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
Chlorobenzene	1.3	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
Chlorodibromomethane	-	-	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
Chloroform	1.8	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
1,2-Dichlorobenzene	0.7	42	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
1,3-Dichlorobenzene	150	-	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
1,4-Dichlorobenzene	26	-	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
1,1-Dichloroethane	-	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
1,2-Dichloroethane	100	-	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
1,1-Dichloroethene	-	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
cis-1,2-Dichloroethene	-	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
trans-1,2-Dichloroethene	-	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
Dichloromethane	98.1	-	<0.5	-	-	<0.5	-	<0.5	-	-	-	-	-
1,2-Dichloropropane	-	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
Ethylbenzene	90	25	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
Ethylene dibromide	-	-	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
Hexachlorobenzene	-	-	<0.03	<0.005	<0.005	-	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005
Methyl ethyl ketone	-	-	<5	-	-	<5	-	<5	-	-	-	-	-
Methyl isobutyl ketone	-	-	<5	-	-	<5	-	<5	-	-	-	-	-
Methyl-tert-butylether	10000	5000	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
Styrene	72	-	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
1,1,1,2-Tetrachloroethane	-	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
Tetrachloroethene	111	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
Toluene	2	215	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
1,1,1-Trichloroethane	-	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
1,1,2-Trichloroethane	-	-	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
Trichloroethene	21	-	<0.1	-	-	0.2	-	<0.1	-	-	-	-	-
Vinyl chloride	-	-	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
m+p-Xylene	-	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
o-Xylene	-	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
Xylenes (total)	-	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-

All units in ug/L, unless otherwise noted.

Notes

1 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Freshwater.

2 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Marine.

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies section for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

NC = Not calculated

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME freshwater guidelines

20 = Denotes exceedance of CCME marine guidelines

TABLE 7-12A: Analytical Results for VOCs in Water - 2009

Area ID	**CCME AW Freshwater[1]**	**CCME AW Marine[2]****	**AEC 4**	**AEC 4**	**Duplicate Evaluation**				**AEC 4**	**AEC 4**	**AEC 4**
Station ID			**AEC4-SW09-11**	**AEC4-SW09-11**					**AEC4-SW09-12**	**AEC4-SW09-15**	**AEC4-SW09-16**
Field label			AEC4-SW09-11	AEC4-SW09-DUP2	Scenario[A]	**RPD (%)**	**Value (ug/L)**	**Acceptable (Y/N)**	AEC4-SW09-12	AEC4-SW09-15	AEC4-SW09-16
Duplicate ID			AEC4-SW09-DUP2	AEC4-SW09-11							
Date			17/Sep/09	17/Sep/09					17/Sep/09	17/Sep/09	17/Sep/09
Lab report ID			A9C4118	A9C4118					A9C4118	A9C4118	A9C4118
Screen depth (m)											
Acetone	-	-	<10	<10	A	NC	NC	Y	<10	<10	<100
Benzene	370	110	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1
Bromodichloromethane	-	-	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1
Bromoform	-	-	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<2
Bromomethane	-	-	<0.5	<0.5	A	NC	NC	Y	<0.5	<0.5	<5
Carbon tetrachloride	13.3	-	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1
Chlorobenzene	1.3	-	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1
Chlorodibromomethane	-	-	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<2
Chloroform	1.8	-	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1
1,2-Dichlorobenzene	0.7	42	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<2
1,3-Dichlorobenzene	150	-	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<2
1,4-Dichlorobenzene	26	-	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<2
1,1-Dichloroethane	-	-	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1
1,2-Dichloroethane	100	-	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<2
1,1-Dichloroethene	-	-	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1
cis-1,2-Dichloroethene	-	-	0.3	0.4	D	NC	0.1	Y	<0.1	<0.1	2
trans-1,2-Dichloroethene	-	-	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1
Dichloromethane	98.1	-	<0.5	<0.5	A	NC	NC	Y	<0.5	<0.5	<5
1,2-Dichloropropane	-	-	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1
cis-1,3-Dichloropropene	-	-	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<2
trans-1,3-Dichloropropene	-	-	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<2
Ethylbenzene	90	25	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1
Ethylene dibromide	-	-	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<2
Hexachlorobenzene	-	-	<0.005	-	NC	NC	NC	NC	-	<0.005	-
Methyl ethyl ketone	-	-	<5	<5	A	NC	NC	Y	<5	<5	<50
Methyl isobutyl ketone	-	-	<5	<5	A	NC	NC	Y	<5	<5	<50
Methyl-tert-butylether	10000	5000	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<2
Styrene	72	-	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<2
1,1,1,2-Tetrachloroethane	-	-	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1
1,1,2,2-Tetrachloroethane	-	-	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<2
Tetrachloroethene	111	-	7.7	7.9	C	0.6	NC	Y	0.8	<0.1	210
Toluene	2	215	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<2
1,1,1-Trichloroethane	-	-	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1
1,1,2-Trichloroethane	-	-	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	3
Trichloroethene	21	-	1.5	1.5	C	0.0	NC	Y	<0.1	<0.1	62
Vinyl chloride	-	-	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<2
m+p-Xylene	-	-	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1
o-Xylene	-	-	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1
Xylenes (total)	-	-	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<1

All units in ug/L, unless otherwise noted.

Notes

1 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Freshwater.

2 = CCME (2007), Canadian Water Quality Guidelines for Protection of Aquatic Life, Update 7.1, Summary Table . Summary of Candaian water quality guidelines for the protection of aquatic life. Marine.

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies section for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

NC = Not calculated

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME freshwater guidelines

20 = Denotes exceedance of CCME marine guidelines

TABLE 7-12B: Analytical Results for VOCs in Surface Water - 2008

Parameters	CCME Freshwater	APEC 4	
		A4-SW08-3	A4- SW08-2
Lab ID #		*L682329-2*	*L682349-2*
Sample Date		*08-SEP-08*	*08-SEP-08*
Prepared by:		**Franz**	**Franz**
Volatile Organic Compounds			
Benzene	0.37	<0.00050	<0.00050
Bromodichloromethane	---	<0.0010	<0.0010
Bromoform	---	<0.0010	<0.0010
Carbon Tetrachloride	0.0133	<0.0010	<0.0010
Chlorobenzene	0.0013	<0.0010	<0.0010
Dibromochloromethane	---	<0.0010	<0.0010
Chloroethane	---	<0.0010	<0.0010
Chloroform	0.0018	<0.0010	<0.0010
Chloromethane	---	<0.0010	<0.0010
1,2-Dichlorobenzene	0.0007	0.0007	<0.0007
1,3-Dichlorobenzene	0.15	<0.0010	<0.0010
1,4-Dichlorobenzene	0.026	<0.0010	<0.0010
1,1-Dichloroethane	---	<0.0010	<0.0010
1,2-Dichloroethane	0.1	<0.0010	<0.0010
1,1-Dichloroethylene	---	<0.0010	<0.0010
cis-1,2-Dichloroethylene	---	<0.0010	0.004
trans-1,2-Dichloroethylene	---	<0.0010	<0.0010
Dichloromethane	---	<0.0050	<0.0050
1,2-Dichloropropane	---	<0.0010	<0.0010
cis-1,3-Dichloropropylene	---	<0.0010	<0.0010
trans-1,3-Dichloropropylene	---	<0.0010	<0.0010
Ethylbenzene	0.09	<0.00050	<0.00050
Methyl t-butyl ether (MTBE)	10	<0.0010	<0.0010
Styrene	0.072	<0.00050	<0.00050
1,1,1,2-Tetrachloroethane	---	<0.0010	<0.0010
1,1,2,2-Tetrachloroethane	---	<0.0010	<0.0010
Tetrachloroethylene	0.111	<0.0010	0.0411
Toluene	0.002	<0.0010	<0.0010
1,1,1-Trichloroethane	---	<0.0010	<0.0010
1,1,2-Trichloroethane	---	<0.0010	<0.0010
Trichloroethylene	0.021	<0.0010	**0.0226**
Trichlorofluoromethane	---	<0.0010	<0.0010
Vinyl Chloride	---	<0.0010	<0.0010
ortho-Xylene	---	<0.00050	<0.00050
meta- & para-Xylene	---	<0.00050	<0.00050
Xylenes	---	<0.0010	<0.0010

Notes (Refer to endnotes for complete list)

10 value is greater than the CCME freshwater Guideline

--- No Guideline

General CCME Endnotes for Water

General Endnotes:

All values are reported as mg/L unless otherwise indicated.

10	=	Value is greater than the CCME freshwater Guideline
---	=	No guideline
-	=	Not Analyzed
NC	=	Not Calculated
RPD	=	Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

Laboratory Notes

Refer to Laboratory reports for sample specific notes

< = less then method detection limit (mdl)

General Canadian Council of Ministers of the Environment (CCME) Notes

Summary Table - Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life
CCME, 1999, updated 2001, 2002, 2003, 2005, 2006, and 2007.

Sediment – Analytical Results

TABLE 7-13A: Analytical Results for Metals in Sediment - 2009

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2]**		CCME Soil PL[3]	CCME Soil CL[4]	AEC 1	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2
Station ID							**AEC1-SD09-1**	**AEC2-SD09-1**	**AEC2-SD09-2**	**AEC2-SD09-3**	**AEC2-SD09-4**	**AEC2-SD09-5**	**AEC2-SD09-6**	**AEC2-SD09-7**	**AEC2-SD09-8**
Field label							AEC1-SD09-1	AEC2-SD09-1	AEC2-SD09-2	AEC2-SD09-3	AEC2-SD09-4	AEC2-SD09-5	AEC2-SD09-6	AEC2-SD09-7	AEC2-SD09-8
Duplicate ID															
Date							17/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09
Lab report ID							A9C4313	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285
Depth (m)	**ISQG**	**PEL**	**ISQG**	**PEL**											
TOC							17,000	9,200	110,000	37,000	110,000	33,000	53,000	57,000	50,000
Aluminum	-	-			-	-	4700	3200	4700	3900	3700	3600	5500	4100	10000
Antimony	-	-			20	40	<0.2	<0.2	<1	<0.2	<1	2	2	2	3
Arsenic	5.9	17	7.24E-12	4.16E-11	12	12	<1	<1	<5	2	<5	<5	<5	<5	<5
Barium	-	-			500	2000	26.0	19.0	61.0	120.0	77.0	82.0	95.0	99.0	95.0
Beryllium	-	-			4	8	<0.2	<0.2	<1	<0.2	<1	<1	<1	<1	<1
Cadmium	0.6	3.5	7.00E-13	4.20E-12	10	22	<0.1	<0.1	<0.5	0.2	<0.5	**6.1**	**6.6**	**4.4**	**5.7**
Calcium	-	-			-	-	2200	1700	7600	2400	4200	3400	5400	6700	7000
Chromium	37.3	90	5.23E-11	1.60E-10	64	87	23	17	20	15	13	41	34	30	44
Chromium (VI)	-	-			0.4	1.4	<0.2	<0.2	-	***2.0***	***2.6***	<0.2	***0.9***	<0.4	<0.2
Cobalt	-	-			50	300	5.2	3.4	13.0	28.0	21.0	18.0	19.0	19.0	18.0
Copper	35.7	197	1.87E-11	1.08E-10	63	91	6.1	4.9	20.0	8.9	26.0	28.0	38.0	42.0	67.0
Iron	-	-			-	-	25000	22000	93000	58000	220000	84000	90000	98000	100000
Lead	35	91.3	3.02E-11	1.12E-10	140	260	5	8	24	9	31	**150**	**170**	**150**	**150**
Magnesium	-	-			-	-	2600	1600	3500	1700	1500	1900	2900	2300	6200
Manganese	-	-			-	-	150	110	980	8100	1400	3400	3000	3200	1100
Mercury (ug/g)	0.17	0.49	0.13	0.70	6.6	24	<0.05	<0.05	<0.25	<0.05	<0.25	<0.25	<0.25	<0.25	<0.25
Molybdenum	-	-			10	40	0.8	0.9	<2.5	2.3	4.5	2.8	2.8	<2.5	5.0
Nickel	-	-			50	50	7.1	5.2	17.0	8.5	16.0	15.0	16.0	16.0	22.0
Phosphorus	-	-			-	-	770	780	2100	1400	1400	720	1000	900	1500
Potassium	-	-			-	-	700	410	1200	430	<1000	<1000	<1000	<1000	1900
Selenium	-	-			1	2.9	<0.5	<0.5	<2.5	<0.5	<2.5	<2.5	<2.5	<2.5	<2.5
Silver	-	-			20	40	<0.2	<0.2	<1	<0.2	<1	<1	<1	<1	<1
Sodium	-	-			-	-	130	<100	<500	<100	<500	<500	<500	<500	<500
Strontium	-	-			-	-	6	4	23	12	22	14	21	24	25
Thallium	-	-			1	1	0.07	<0.05	<0.25	<0.05	<0.25	<0.25	<0.25	<0.25	<0.25
Vanadium	-	-			130	130	52	46	40	41	<25	33	38	28	66
Zinc (ug/g)	123	315	124	271	200	360	29	52	230	230	280	210	270	300	**440**

All units in ug/g, unless otherwise noted.

Notes

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

3 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

4 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

** = CCME Marine sediment guidelines apply only to AEC4 samples

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME ISQG guidelines for Freshwater

20 = Denotes exceedance of CCME PEL guidelines for Freshwater

20 = Denotes exceedance of CCME soil guidelines

20 = Denotes exceedance of CCME ISQG guidelines for Marine

20 = Denotes exceedance of CCME PEL guidelines for Marine

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2] **		CCME Soil PL[3]	CCME Soil CL[4]	AEC 2	AEC 2	Duplicate Evaluation				AEC 2	AEC 2	AEC 3	AEC 3	AEC 3	AEC 4
Station ID							**AEC2-SD09-9**	**AEC2-SD09-9**					**AEC2-SD09-10**	**AEC2-SD09-11**	**AEC3-SD09-1**	**AEC3-SD09-2**	**AEC3-SD09-3**	**AEC4-SD09-1**
Field label							AEC2-SD09-9	SD09-DUP1	**Scenario[A]**	**RPD (%)**	**Value (ug/L)**	**Acceptable (Y/N)**	AEC2-SD09-10	AEC2-SD09-11	AEC3-SD09-1	AEC3-SD09-2	AEC3-SD09-3	AEC4-SD09-1
Duplicate ID							SD09-DUP1	AEC2-SD09-9										
Date							15/Sep/09	15/Sep/09					15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	17/Sep/09
Lab report ID							A9C2285	A9C2285					A9C2285	A9C2285	A9C2285	A9C2285	A9C2285	A9C4313
Depth (m)	**ISQG**	**PEL**	**ISQG**	**PEL**														
TOC							67,000	78,000					41,000	46,000	3,400	3,300	52,000	12,000
Aluminum	-	-			-	-	4900	5800	C	4.2	NC	Y	5300	6700	3500	2600	4600	3500
Antimony	-	-			20	40	1.5	2	C	7.1	NC	Y	1.0	0.8	<0.2	<0.2	0.7	<0.2
Arsenic	5.9	17	7.24E-12	4.16E-11	12	12	2	<5	B	NC	1.5	N	<1	2	**2**	<1	**7**	<1
Barium	-	-			500	2000	55.0	68.0	C	5.3	NC	Y	35.0	39.0	18.0	11.0	23.0	16.0
Beryllium	-	-			4	8	0.2	<1	B	NC	0.1	Y	0.3	0.3	<0.2	<0.2	0.3	<0.2
Cadmium	0.6	3.5	7.00E-13	4.20E-12	10	22	**3.8**	**6.7**	C	13.8	NC	Y	2.0	2.0	**0.1**	<0.1	**0.3**	**0.2**
Calcium	-	-			-	-	3900	4600	C	4.1	NC	Y	3400	3900	2600	2000	3500	2500
Chromium	37.3	90	5.23E-11	1.60E-10	64	87	23	31	C	7.4	NC	Y	20	22	**13**	**17**	**18**	**20**
Chromium (VI)	-	-			0.4	1.4	<0.2	<0.8	A	NC	NC	Y	<0.2	<0.2	<0.2	<0.2	<0.4	<0.4
Cobalt	-	-			50	300	11.0	17.0	C	10.7	NC	Y	5.6	6.4	3.4	2.8	5.7	3.1
Copper	35.7	197	1.87E-11	1.08E-10	63	91	22.0	33.0	C	10.0	NC	Y	20.0	18.0	**7.5**	**4.7**	**18.0**	**7.2**
Iron	-	-			-	-	70000	110000	C	11.1	NC	Y	48000	25000	12000	22000	46000	22000
Lead	35	91.3	3.02E-11	1.12E-10	140	260	86	120	C	8.3	NC	Y	57	51	**18**	**5**	**63**	**9**
Magnesium	-	-			-	-	2600	3000	C	3.6	NC	Y	3400	3800	2200	1900	4800	2500
Manganese	-	-			-	-	770	930	C	4.7	NC	Y	160	100	60	130	150	59
Mercury (ug/g)	0.17	0.49	0.13	0.70	6.6	24	<0.05	<0.25	A	NC	NC	Y	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum	-	-			10	40	3.0	<2.5	B	NC	2.75	N	3.4	2.0	4.1	1.6	***11.0***	1.9
Nickel	-	-			50	50	11.0	14.0	C	6.0	NC	Y	9.1	10.0	6.1	4.6	10.0	5.3
Phosphorus	-	-			-	-	750	990	C	6.9	NC	Y	780	770	850	690	1300	880
Potassium	-	-			-	-	710	<1000	B	NC	610	N	1100	1200	690	520	1800	910
Selenium	-	-			1	2.9	<0.5	<2.5	A	NC	NC	Y	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	-	-			20	40	<0.2	<1	A	NC	NC	Y	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sodium	-	-			-	-	270	<500	B	NC	220	N	290	360	260	1100	8800	1400
Strontium	-	-			-	-	14	16	C	3.3	NC	Y	16	16	7	7	37	11
Thallium	-	-			1	1	<0.05	<0.25	A	NC	NC	Y	0.05	0.07	<0.05	<0.05	<0.05	<0.05
Vanadium	-	-			130	130	30	38	C	5.9	NC	Y	33	35	26	46	51	51
Zinc (ug/g)	123	315	124	271	200	360	270	**390**	C	9.1	NC	Y	160	250	35	28	130	51

All units in ug/g, unless otherwise noted.

Notes

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

3 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

4 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

** = CCME Marine sediment guidelines apply only to AEC4 samples

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME ISQG guidelines for Freshwater

20 = Denotes exceedance of CCME PEL guidelines for Freshwater

20 = Denotes exceedance of CCME soil guidelines

20 = Denotes exceedance of CCME ISQG guidelines for Marine

20 = Denotes exceedance of CCME PEL guidelines for Marine

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2] **		CCME Soil PL[3]	CCME Soil CL[4]	AEC 4	AEC 4	AEC 4	AEC 4	AEC 4	AEC 4	Duplicate Evaluation			
Station ID							AEC4-SD09-2	AEC4-SD09-3	AEC4-SD09-4	AEC4-SD09-5	AEC4-SD09-11	AEC4-SD09-11	Scenario[A]	RPD (%)	Value (ug/L)	Acceptable (Y/N)
Field label							AEC4-SD09-2	AEC4-SD09-3	AEC4-SD09-4	AEC4-SD09-5	AEC4-SD09-11	SD09-DUP2				
Duplicate ID											SD09-DUP2	AEC4-SD09-11				
Date							17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09				
Lab report ID							A9C4313	A9C4313	A9C4313	A9C4313	A9C4313	A9C4313				
Depth (m)	ISQG	PEL	ISQG	PEL												
TOC							20,000	12,000	15,000	4,200	4,900	5,300	C	2.0	NC	Y
Aluminum	-	-			-	-	4300	3600	4100	3700	3900	3700	C	1.3	NC	Y
Antimony	-	-			20	40	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	A	NC	NC	Y
Arsenic	5.9	17	7.24E-12	4.16E-11	12	12	**2**	**1**	**1**	<1	**1**	**2**	D	NC	1	Y
Barium	-	-			500	2000	25.0	17.0	20.0	20.0	23.0	22.0	C	1.1	NC	Y
Beryllium	-	-			4	8	<0.2	<0.2	<0.2	<0.2	0.2	0.3	D	NC	0.1	Y
Cadmium	0.6	3.5	7.00E-13	4.20E-12	10	22	**0.2**	**0.2**	**0.1**	<0.1	<0.1	<0.1	A	NC	NC	Y
Calcium	-	-			-	-	2400	2300	2400	1800	2200	2000	C	2.4	NC	Y
Chromium	37.3	90	5.23E-11	1.60E-10	64	87	**15**	**17**	**18**	**13**	**17**	**14**	C	4.8	NC	Y
Chromium (VI)	-	-			0.4	1.4	***0.8***	***0.7***	<0.2	<0.2	<0.2	<0.2	A	NC	NC	Y
Cobalt	-	-			50	300	3.4	3.3	3.0	3.0	3.3	3.5	C	1.5	NC	Y
Copper	35.7	197	1.87E-11	1.08E-10	63	91	**7.6**	**7.6**	**8.0**	**5.6**	**6.3**	**5.3**	C	4.3	NC	Y
Iron	-	-			-	-	16000	22000	19000	15000	28000	28000	C	0.0	NC	Y
Lead	35	91.3	3.02E-11	1.12E-10	140	260	**9**	**11**	**6**	**2**	**3**	**3**	D	NC	0	Y
Magnesium	-	-			-	-	3400	2800	3200	3000	3000	2700	C	2.6	NC	Y
Manganese	-	-			-	-	60	68	55	54	72	74	C	0.7	NC	Y
Mercury (ug/g)	0.17	0.49	0.13	0.70	6.6	24	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	A	NC	NC	Y
Molybdenum	-	-			10	40	4.2	2.5	8.3	0.8	1.3	1.3	C	0.0	NC	Y
Nickel	-	-			50	50	6.4	5.9	6.0	5.8	5.7	5.7	C	0.0	NC	Y
Phosphorus	-	-			-	-	820	770	920	600	800	680	C	4.1	NC	Y
Potassium	-	-			-	-	1200	980	1400	1100	1000	1000	C	0.0	NC	Y
Selenium	-	-			1	2.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	A	NC	NC	Y
Silver	-	-			20	40	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	A	NC	NC	Y
Sodium	-	-			-	-	1400	2400	5100	3000	1200	1000	C	4.5	NC	Y
Strontium	-	-			-	-	14	12	12	10	12	12	C	0.0	NC	Y
Thallium	-	-			1	1	0.09	<0.05	0.05	<0.05	<0.05	<0.05	A	NC	NC	Y
Vanadium	-	-			130	130	32	43	44	29	37	33	C	2.9	NC	Y
Zinc (ug/g)	123	315	124	271	200	360	64	60	48	31	37	35	C	1.4	NC	Y

All units in ug/g, unless otherwise noted.

Notes

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

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A = See Methodologies in Appendix F for Scenario Rationale

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RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME ISQG guidelines for Freshwater

20 = Denotes exceedance of CCME PEL guidelines for Freshwater

20 = Denotes exceedance of CCME soil guidelines

20 = Denotes exceedance of CCME ISQG guidelines for Marine

20 = Denotes exceedance of CCME PEL guidelines for Marine

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2 **]		CCME Soil PL[3]	CCME Soil CL[4]	AEC 4	AEC 4	AEC 4	AEC 4	AEC 5	AEC 6
Station ID							AEC4-SD09-12	AEC4-SD09-13	AEC4-SD09-14	AEC4-SD09-15	SD-BK-1	SD-BK-2
Field label							AEC4-SD09-12	AEC4-SD09-13	AEC4-SD09-14	AEC4-SD09-15	SD-BK-1	SD-BK-2
Duplicate ID												
Date							17/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09	*09-SEP-08*	*09-SEP-08*
Lab report ID							A9C4313	A9C4313	A9C4313	A9C4313	*L682370-12*	*L682370-15*
Depth (m)	ISQG	PEL	ISQG	PEL								
TOC							2,300	4,900	3,200	6,600	-	-
											-	-
Aluminum	-	-			-	-	2700	4000	3900	5500	-	-
Antimony	-	-			20	40	<0.2	<0.2	<0.2	<0.2	<10	<10
Arsenic	5.9	17	7.24E-12	4.16E-11	12	12	<1	<1	1	2	<5.0	<5.0
Barium	-	-			500	2000	11.0	20.0	20.0	34.0	16.7	23.5
Beryllium	-	-			4	8	<0.2	<0.2	<0.2	0.2	<0.50	<0.50
Cadmium	0.6	3.5	7.00E-13	4.20E-12	10	22	<0.1	<0.1	<0.1	0.1	<0.50	<0.50
Calcium	-	-			-	-	1500	2500	2200	2800	-	-
Chromium	37.3	90	5.23E-11	1.60E-10	64	87	**30**	**20**	18	20	13.7	10.2
Chromium (VI)	-	-			0.4	1.4	<0.2	<0.2	<0.2	<0.2	-	-
Cobalt	-	-			50	300	4.8	3.4	3.2	4.6	3.5	3.2
Copper	35.7	197	1.87E-11	1.08E-10	63	91	**6.3**	**5.8**	6.2	9.5	5	5.2
Iron	-	-			-	-	40000	23000	24000	19000	-	-
Lead	35	91.3	3.02E-11	1.12E-10	140	260	**2**	**3**	3	7	<30	<30
Magnesium	-	-			-	-	2100	3100	2800	4000	-	-
Manganese	-	-			-	-	230	67	58	75	-	-
Mercury (ug/g)	0.17	0.49	0.13	0.70	6.6	24	<0.05	<0.05	<0.05	<0.05	<0.0050	<0.0050
Molybdenum	-	-			10	40	1.9	1.4	1.0	2.5	<4.0	<4.0
Nickel	-	-			50	50	6.5	6.3	5.9	7.9	<5.0	<5.0
Phosphorus	-	-			-	-	530	850	820	880	-	-
Potassium	-	-			-	-	590	990	990	1600	-	-
Selenium	-	-			1	2.9	<0.5	<0.5	<0.5	<0.5	<2.0	<2.0
Silver	-	-			20	40	<0.2	<0.2	<0.2	<0.2	<2.0	<2.0
Sodium	-	-			-	-	1800	560	870	1100	-	-
Strontium	-	-			-	-	7	8	10	13	-	-
Thallium	-	-			1	1	<0.05	<0.05	<0.05	0.06	<1.0	<1.0
Vanadium	-	-			130	130	91	52	43	40	-	-
Zinc (ug/g)	123	315	124	271	200	360	32	40	33	50	22	21.1

All units in ug/g, unless otherwise noted.

Notes

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

3 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

4 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

** = CCME Marine sediment guidelines apply only to AEC4 samples

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME ISQG guidelines for Freshwater

20 = Denotes exceedance of CCME PEL guidelines for Freshwater

20 = Denotes exceedance of CCME soil guidelines

20 = Denotes exceedance of CCME ISQG guidelines for Marine

20 = Denotes exceedance of CCME PEL guidelines for Marine

TABLE 7-13B: Analytical Results for Metals in Sediment - 2008

Parameters	CCME Freshwater Sediment (ISQG)	CCME Freshwater Sediment (PEL)	CCME Marine Sediment (ISQG)	CCME Marine Sediment (PEL)	APEC 2				APEC 3				
					A2-S008-1	A2-S008-2	A2-S008-3	A2-S008-4	A3-S008-2	SD-DUP 1	RPD	A3-S008-3	A3-S008-4
Lab ID #					*L681311-3*	*L681311-4*	*L681311-5*	*L681311-6*	*L681123-1*	*L681123-4*		*L681123-2*	*L681123-3*
Sample Date					*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	*06-SEP-08*	*07-SEP-08*	*07-SEP-08*		*07-SEP-08*	*07-SEP-08*
					Franz	Franz	Franz	Franz	Franz	Franz		Franz	Franz
Physical Tests													
% Moisture	---	---			-	-	50	40.3	25.1	23.7	6%	52	15.8
pH	---	---			5.43	5.94	6.55	6.76	6.85	6.89	1%	6.62	6.99
Total Metals													
Antimony (Sb)	---	---			<10	<10	<10	<10	<10	<10	NC	<10	<10
Arsenic (As)	5.9	17	7.24E-12	4.16E-11	<5.0	<5.0	<5.0	***6.3***	<5.0	<5.0	NC	<5.0	<5.0
Barium (Ba)	---	---			84.4	59	61.9	155	13.9	19.4	33%	45.3	21.6
Beryllium (Be)	---	---			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NC	<0.50	<0.50
Cadmium (Cd)	0.6	3.5	7.00E-13	4.20E-12	<0.50	<0.50	***2.73***	***2.83***	<0.50	<0.50	NC	***1.38***	***0.6***
Chromium (Cr)	37.3	90	5.23E-11	1.60E-10	16.3	21.4	***55.4***	***50.2***	12.8	14.2	10%	25.4	24.1
Cobalt (Co)	---	---			13.5	13.3	13.7	20.6	2.8	3.4	19%	5.9	3.9
Copper (Cu)	35.7	197	1.87E-11	1.08E-10	17.6	***292***	***70.3***	***48.9***	4.5	7.9	55%	20.7	13.7
Lead (Pb)	35	91.3	3.02E-11	1.12E-10	<30	<30	***96***	***201***	<30	39	NC	***59***	***57***
Mercury (Hg)	0.17	0.486	0.13	0.70	0.046	0.0575	0.0414	0.0508	<0.0050	0.0064	NC	0.0384	0.0155
Molybdenum (Mo)	---	---			<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	NC	5	<4.0
Nickel (Ni)	---	---			8.8	10.9	23.9	24.6	<5.0	<5.0	NC	8.9	<5.0
Selenium (Se)	---	---			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NC	<2.0	<2.0
Silver (Ag)	---	---			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NC	<2.0	<2.0
Thallium (Tl)	---	---			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NC	<1.0	<1.0
Tin (Sn)	---	---			<5.0	9.8	8.7	8.9	<5.0	<5.0	NC	<5.0	<5.0
Vanadium (V)	---	---			36.8	28.9	23.4	24.1	30.5	41.4	30%	45.1	29.2
Zinc (Zn)	123	315	124	271	***499***	111	***145***	***333***	28.3	42.7	41%	***191***	***139***

Notes (Refer to endnotes for complete list)

10	value is greater than the PEL Guideline
10	value is greater than the ISQG Guideline
10	value is greater than the ISQG Guideline for Marine

--- No Guideline.

\- Not analyzed

NC - Not calculated

TABLE 7-13B: Analytical Results for Metals in Sediment - 2008

Parameters	CCME Freshwater Sediment (ISQG)	APEC 4								
		A4-SD08-1	A4-SD08-2	A4-SD08-3	A4-SD08-4	A4-SD08-5	A4-SD08-6	A4-SD08-8	SD-BK-1	SD-BK-2
Lab ID #		*L682317-1*	*L682317-2*	*L682317-3*	*L682317-4*	*L682317-5*	*L682317-6*	*L682317-7*	*L682370-12*	*L682370-15*
Sample Date		*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*09-SEP-08*	*09-SEP-08*
		Franz	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Physical Tests										
% Moisture	---	29.6	19.4	19	18.9	22	20.7	25.9	-	-
pH	---	7.11	7.95	7.47	8.33	7.66	8.31	8.04	7.56	7.31
Total Metals										
Antimony (Sb)	---	<10	<10	<10	<10	<10	<10	<10	<10	<10
Arsenic (As)	5.9	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Barium (Ba)	---	37.7	19.7	15.7	17.1	13.2	17.5	25.9	16.7	23.5
Beryllium (Be)	---	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cadmium (Cd)	0.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	37.3	17.4	15.5	9.3	14	10.2	11.4	10.4	13.7	10.2
Cobalt (Co)	---	4.7	2.9	2.3	3.3	2.6	3.1	3	3.5	3.2
Copper (Cu)	35.7	8.1	5.4	6.7	4.9	4.6	4.9	5	5	5.2
Lead (Pb)	35	<30	<30	<30	<30	<30	<30	<30	<30	<30
Mercury (Hg)	0.17	0.0067	<0.0050	0.0091	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Molybdenum (Mo)	---	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Nickel (Ni)	---	6.8	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Selenium (Se)	---	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silver (Ag)	---	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Thallium (Tl)	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tin (Sn)	---	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Vanadium (V)	---	39.6	37.2	23.2	41.8	33.2	28.6	24.1	36.9	24.2
Zinc (Zn)	123	52.9	26.8	49.4	21.8	23.2	23.3	36.1	22	21.1

Notes (Refer to endnotes for complete list)

10	value is greater than the PEL Guideline
10	value is greater than the ISQG Guideline
10	value is greater than the ISQG Guideline for M

--- No Guideline.

\- Not analyzed

NC - Not calculated

TABLE 7-14A: Analytical Results for PHCs in Sediments - 2009

Area ID	**CCME Freshwater Sediment[1]**		**CCME Marine Sediment[2] ****		**CCME Soil PL[3]**	**CCME Soil CL[4]**	**AEC 1**	**AEC 2**	**AEC 2**	**AEC 2**	**AEC 2**	**AEC 2**	**AEC 2**	**AEC 2**
Station ID							**AEC1-SD09-1**	**AEC2-SD09-1**	**AEC2-SD09-2**	**AEC2-SD09-3**	**AEC2-SD09-4**	**AEC2-SD09-5**	**AEC2-SD09-6**	**AEC2-SD09-7**
Field label							AEC1-SD09-1	AEC2-SD09-1	AEC2-SD09-2	AEC2-SD09-3	AEC2-SD09-4	AEC2-SD09-5	AEC2-SD09-6	AEC2-SD09-7
Duplicate ID														
Date							17/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09
Lab report ID							A9C4313	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285
Depth (m)	**ISQG**	**PEL**	**ISQG**	**PEL**										
Moisture content	-	-	-	-	-	-	23.0	35.0	75.0	54.0	82.0	55.0	66.0	61.0
Benzene	-	-	-	-	0.03	0.03	<0.002	<0.002	<0.008	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	-	-	-	-	0.082	0.082	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.004	<0.006
Toluene	-	-	-	-	0.37	0.37	<0.002	0.008	<0.008	<0.004	<0.01	<0.004	<0.004	<0.006
m+p-Xylene	-	-	-	-	-	-	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.004	<0.006
o-Xylene	-	-	-	-	-	-	<0.002	<0.002	<0.002	<0.004	<0.01	<0.004	<0.004	<0.006
Xylenes (total)	-	-	-	-	2.4	11	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.004	<0.006
F1 (C6-C10)	-	-	-	-	-	-	<10	<10	<40	<10	<10	<20	<30	<30
F1 (C6-C10) minus BTEX	-	-	-	-	30	240	<10	<10	<40	<10	<10	<20	<30	<30
F2 (C10-C16)	-	-	-	-	150	260	<10	130	<40	<10	**1500**	<10	35	<30
F3 (C16-C34)	-	-	-	-	300	1700	52	110	190	<10	**4100**	160	620	330
F4 (C34-C50)	-	-	-	-	2800	3300	50	<10	<40	<10	**4500**	110	390	390
F4 Gravimetric	-	-	-	-	-	-	-	-	-	-	23000	-	-	-
Reached Baseline at C50	-	-	-	-	-	-	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

All units in ug/g, unless otherwise noted.

Notes:

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

3 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

4 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

20 = Denotes exceedance of CCME Residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

TABLE 7-14A: Analytical Results for PHCs in Sediments - 2009

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2]**		CCME Soil PL[3]	CCME Soil CL[4]	AEC 2	AEC 2	AEC 2	Duplicate Evaluation			AEC 2	AEC 2	AEC 3	AEC 3	AEC 3
Station ID							AEC2-SD09-8	AEC2-SD09-9	AEC2-SD09-9				AEC2-SD09-10	AEC2-SD09-11	AEC3-SD09-1	AEC3-SD09-2	AEC3-SD09-3
Field label							AEC2-SD09-8	AEC2-SD09-9	SD09-DUP1	Scenario[A]	RPD (%)	Acceptable (Y/N)	AEC2-SD09-10	AEC2-SD09-11	AEC3-SD09-1	AEC3-SD09-2	AEC3-SD09-3
Duplicate ID								SD09-DUP1	AEC2-SD09-9								
Date							15/Sep/09	15/Sep/09	15/Sep/09				15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09
Lab report ID							A9C2285	A9C2285	A9C2285				A9C2285	A9C2285	A9C2285	A9C2285	A9C2285
Depth (m)	ISQG	PEL	ISQG	PEL													
Moisture content	-	-	-	-	-	-	11.0	74.0	71.0	C	1.0	Y	67.0	68.0	19.0	23.0	75.0
Benzene	-	-	-	-	0.03	0.03	<0.002	<0.002	<0.002	A	NC	Y	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	-	-	-	-	0.082	0.082	<0.002	<0.008	<0.008	A	NC	Y	<0.006	<0.006	<0.002	<0.002	<0.008
Toluene	-	-	-	-	0.37	0.37	<0.002	<0.008	<0.008	A	NC	Y	<0.006	<0.006	<0.002	<0.002	<0.008
m+p-Xylene	-	-	-	-	-	-	<0.002	<0.008	<0.008	A	NC	Y	<0.006	<0.006	<0.002	<0.002	<0.008
o-Xylene	-	-	-	-	-	-	<0.002	<0.008	<0.008	A	NC	Y	<0.006	<0.006	<0.002	<0.002	<0.008
Xylenes (total)	-	-	-	-	2.4	11	<0.002	<0.008	<0.008	A	NC	Y	<0.006	<0.006	<0.002	<0.002	<0.008
F1 (C6-C10)	-	-	-	-	-	-	<10	<40	<40	A	NC	Y	<30	<30	<50	<10	<40
F1 (C6-C10) minus BTEX	-	-	-	-	30	240	<10	<40	<40	A	NC	Y	<30	<30	<10	<10	<40
F2 (C10-C16)	-	-	-	-	150	260	71	180	**310**	C	13.3	Y	140	**1500**	<10	<10	<40
F3 (C16-C34)	-	-	-	-	300	1700	280	1000	1300	C	6.5	Y	470	1200	43	<10	360
F4 (C34-C50)	-	-	-	-	2800	3300	160	500	620				260	560	<10	<10	470
F4 Gravimetric	-	-	-	-	-	-	-	-	-				-	-	-	-	-
Reached Baseline at C50	-	-	-	-	-	-	Yes	Yes	Yes				Yes	Yes	Yes	Yes	Yes

All units in ug/g, unless otherwise noted.

Notes:

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

3 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

4 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

20 = Denotes exceedance of CCME Residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2] **		CCME Soil PL[3]	CCME Soil CL[4]	AEC 4	AEC 4	AEC 4	Duplicate Evaluation				AEC 4
Station ID							**AEC4-SD09-1**	**AEC4-SD09-11**	**AEC4-SD09-11**					**AEC4-SD09-15**
Field label							AEC4-SD09-1	AEC4-SD09-11	SD09-DUP2	**Scenario[A]**	**RPD (%)**	**Value (ug/L)**	**Acceptable (Y/N)**	AEC4-SD09-15
Duplicate ID								SD09-DUP2	AEC4-SD09-11					
Date							17/Sep/09	17/Sep/09	17/Sep/09					17/Sep/09
Lab report ID							A9C4313	A9C4313	A9C4313					A9C4313
Depth (m)	**ISQG**	**PEL**	**ISQG**	**PEL**										
Moisture content	-	-	-	-	-	-	48.0	33.0	26.0	C	5.9	NC	Y	47.0
Benzene	-	-	-	-	0.03	0.03	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Ethylbenzene	-	-	-	-	0.082	0.082	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Toluene	-	-	-	-	0.37	0.37	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
m+p-Xylene	-	-	-	-	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
o-Xylene	-	-	-	-	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Xylenes (total)	-	-	-	-	2.4	11	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
F1 (C6-C10)	-	-	-	-	-	-	<10	<10	<10	A	NC	NC	Y	<10
F1 (C6-C10) minus BTEX	-	-	-	-	30	240	<10	<10	<10	A	NC	NC	Y	<10
F2 (C10-C16)	-	-	-	-	150	260	<10	<10	<10	A	NC	NC	Y	<10
F3 (C16-C34)	-	-	-	-	300	1700	190	42	<10	B	NC	37	N	21
F4 (C34-C50)	-	-	-	-	2800	3300	180	100	<10	B	NC	95	N	<10
F4 Gravimetric	-	-	-	-	-	-	-	-	-					-
Reached Baseline at C50	-	-	-	-	-	-	Yes	Yes	Yes					Yes

All units in ug/g, unless otherwise noted.

Notes:

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

3 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

4 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performe

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of th two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

20 = Denotes exceedance of CCME Residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

TABLE 7-14B: Analytical Results for PHCs in Sediment - 2008

Parameters	CCME Freshwater Sediment (ISQG)	CCME Freshwater Sediment (PEL)	APEC 2		APEC 3					APEC 4		
			A2-S008-3	A2-S008-4	A3-S008-2	SD-DUP 1	RPD	A3-S008-3	A3-S008-4	A4-SD08-1	A4-SD08-2	A4-SD08-3
Lab ID #			*L681311-5*	*L681311-6*	*L681123-1*	*L681123-4*		*L681123-2*	*L681123-3*	*L682317-1*	*L682317-2*	*L682317-3*
Sample Date			*06-SEP-08*	*06-SEP-08*	*07-SEP-08*	*07-SEP-08*		*07-SEP-08*	*07-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*
			Franz	**Franz**	**Franz**	**Franz**		**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Volatiles												
Benzene	---	---	<0.040	<0.040	<0.040	<0.040	NC	<0.040	<0.040	<0.040	<0.040	<0.040
Ethylbenzene	---	---	<0.050	<0.050	<0.050	<0.050	NC	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl t-butyl ether (MTBE)	---	---	<0.20	<0.20	<0.20	<0.20	NC	<0.20	<0.20	<0.20	<0.20	<0.20
Styrene	---	---	<0.050	<0.050	<0.050	<0.050	NC	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	---	---	<0.050	<0.050	<0.050	<0.050	NC	<0.050	<0.050	<0.050	<0.050	<0.050
o-Xylene	---	---	<0.050	<0.050	<0.050	<0.050	NC	<0.050	<0.050	<0.050	<0.050	<0.050
m & p-Xylene	---	---	<0.050	<0.050	<0.050	<0.050	NC	<0.050	<0.050	<0.050	<0.050	<0.050
Xylenes (Total)	---	---	<0.10	<0.10	<0.10	<0.10	NC	<0.10	<0.10	<0.10	<0.10	<0.10
Extractable Petroleum Hydrocrabons												
F4SG (Heavy Hydrocarbons-SilicaGel)	---	---	<500	<500	-	<500	NC	1040	-	-	-	-
CWS F2 (C10-C16)	---	---	<30	33	<30	<30	NC	535	141	<30	<40	<30
CWS F3 (C16-C34)	---	---	220	248	<50	139	NC	568	177	<50	<50	<50
CWS F4 (C34-C50)	---	---	94	99	<50	89	NC	191	71	<50	<50	<50
F1-BTEX	---	---	<10	<10	<10	10	NC	11	<10	<10	<10	<10
CWS F1 (C06-C10)	---	---	<10	<10	<10	10	NC	11	<10	<10	<10	<10

Notes (Refer to endnotes for complete list)

10	value is greater than the PEL Guideline
10	value is greater than the ISQG Guideline

--- No Guideline.

NC - Not calculated

Area ID	**CCME Freshwater Sediment[1]**		**CCME Marine Sediment[2] ****		**AEC 1**	**AEC 4**	**AEC 4**	**Duplicate Evaluation**		**AEC 4**
Station ID					**AEC1-SD09-1**	**AEC4-SD09-11**	**AEC4-SD09-11**			**AEC4-SD09-15**
Field label					AEC1-SD09-1	AEC4-SD09-11	SD09-DUP2	**Scenario[A]**	**Acceptable (Y/N)**	AEC4-SD09-15
Duplicate ID						SD09-DUP2	AEC4-SD09-11			
Date					17/Sep/09	17/Sep/09	17/Sep/09			17/Sep/09
Lab report ID					A9C4313	A9C4313	A9C4313			A9C4313
Depth (m)	**ISQG**	**PEL**	**ISQG**	**PEL**						
Acenaphthene	0.00671	0.0889	0.00671	0.0889	<0.02	<0.02	<0.02	A	Y	<0.02
Acenaphthylene	0.00587	0.128	0.00587	0.128	<0.01	<0.01	<0.01	A	Y	<0.01
Anthracene	0.0469	0.245	0.0469	0.245	<0.01	<0.01	<0.01	A	Y	<0.01
Benzo(a)anthracene	0.0317	0.385	0.0748	0.693	<0.02	<0.02	<0.02	A	Y	<0.02
Benzo(a)pyrene	0.0319	0.782	0.0888	0.763	<0.01	<0.01	<0.01	A	Y	0.01
Benzo(g,h,i)perylene	-	-	-	-	<0.04	<0.04	<0.04	A	Y	<0.04
Benzo(k)fluoranthene	-	-	-	-	<0.02	<0.02	<0.02	A	Y	<0.02
Chrysene	0.0571	0.862	0.108	0.846	<0.02	<0.02	<0.02	A	Y	<0.02
Dibenz(a,h)anthracene	0.00622	0.135	0.00622	0.135	<0.04	<0.04	<0.04	A	Y	<0.04
Fluoranthene	0.111	2.355	0.113	1.494	0.02	<0.01	<0.01	A	Y	0.03
Fluorene	0.0212	0.144	0.0212	0.144	<0.01	<0.01	<0.01	A	Y	<0.01
Indeno(1,2,3-cd)pyrene	-	-	-	-	<0.04	<0.04	<0.04	A	Y	<0.04
2-Methylnaphthalene	0.0202	0.201	0.0202	0.201	<0.01	<0.01	<0.01	A	Y	<0.01
Naphthalene	0.0346	0.391	0.0346	0.391	<0.01	<0.01	<0.01	A	Y	<0.01
Phenanthrene	0.0419	0.515	0.0867	0.544	0.01	<0.01	<0.01	A	Y	0.02
Pyrene	0.053	0.875	0.153	1.398	0.01	<0.01	<0.01	A	Y	0.02

All units in ug/g, unless otherwise noted.

Notes

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both

20 = Denotes exceedance of CCME ISQG guidelines for Freshwater

20 = Denotes exceedance of CCME PEL guidelines for Freshwater

20 = Denotes exceedance of CCME ISQG guidelines for Marine

20 = Denotes exceedance of CCME PEL guidelines for Marine

Parameters	CCME Freshwater Sediment (ISQG)	CCME Freshwater Sediment (PEL)	CCME Marine Sediment (ISQG)	CCME Marine Sediment (PEL)	APEC 2	APEC 4	
					A2-SD08-4	**A4-SD08-2**	**A4-SD08-3**
Lab ID #					*L682370-22*	*L682317-2*	*L682317-3*
Sample Date					*09-SEP-08*	*08-SEP-08*	*08-SEP-08*
					Franz	**Franz**	**Franz**
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	0.00671	0.0889	0.00671	0.0889	<0.040	<0.00671	<0.00671
Acenaphthylene	0.00587	0.128	0.00587	0.128	<0.050	<0.00587	<0.00587
Anthracene	0.0469	0.245	0.0469	0.245	<0.050	<0.0469	<0.0469
Benz(a)anthracene	0.0317	0.385	0.0748	0.693	<0.050	<0.0317	<0.0317
Benzo(a)pyrene	0.0319	0.782	0.0888	0.763	<0.050	<0.0319	<0.0319
Benzo(b)fluoranthene	---	---	---	---	0.061	<0.050	<0.050
Benzo(g,h,i)perylene	---	---	---	---	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	---	---	---	---	<0.050	<0.050	<0.050
Chrysene	0.0571	0.862	0.108	0.846	<0.050	<0.050	<0.050
Dibenz(a,h)anthracene	0.00622	0.135	0.00622	0.135	<0.050	<0.00622	<0.00622
Fluoranthene	0.111	2.355	0.113	1.494	0.05	<0.05	<0.05
Fluorene	0.0212	0.144	0.0212	0.144	<0.050	<0.0212	<0.0212
Indeno(1,2,3-c,d)pyrene	---	---	---	---	<0.050	<0.050	<0.050
2-Methylnaphthalene	0.0202	0.201	0.0202	0.201	<0.050	<0.0202	<0.0202
Naphthalene	0.0346	0.391	0.0346	0.391	<0.050	<0.0346	<0.0346
Phenanthrene	0.0419	0.515	0.0867	0.544	<0.050	<0.0419	<0.0419
Pyrene	0.053	0.875	0.153	1.398	<0.050	<0.050	<0.050

Notes (Refer to endnotes for complete list)

10	value is greater than the PEL Guideline
10	value is greater than the ISQG Guideline

--- No Guideline.

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2]**		AEC 1	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2
Station ID					**AEC1-SD09-1**	**AEC2-SD09-1**	**AEC2-SD09-2**	**AEC2-SD09-3**	**AEC2-SD09-4**	**AEC2-SD09-5**	**AEC2-SD09-6**	**AEC2-SD09-7**
Field label					AEC1-SD09-1	AEC2-SD09-1	AEC2-SD09-2	AEC2-SD09-3	AEC2-SD09-4	AEC2-SD09-5	AEC2-SD09-6	AEC2-SD09-7
Duplicate ID												
Date					17/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09
Lab report ID					A9C4313	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285
Depth (m)	ISQG	PEL	ISQG	PEL								
Aroclor 1016	-	-	-	-	<0.02	<0.02	<0.06	<0.03	<0.08	<0.3	<0.4	<0.3
Aroclor 1221	-	-	-	-	<0.03	<0.03	<0.1	<0.06	<0.2	<0.6	<1	<0.6
Aroclor 1232	-	-	-	-	<0.02	<0.02	<0.06	<0.03	<0.08	<0.3	<0.4	<0.3
Aroclor 1242	-	-	-	-	<0.02	<0.02	<0.06	<0.03	<0.08	<0.3	<0.4	<0.3
Aroclor 1248	-	-	-	-	<0.02	<0.02	<0.06	<0.03	<0.08	<0.3	<0.4	<0.3
Aroclor 1254	0.06	0.34	0.0633	0.709	<0.02	<0.02	<0.06	<0.03	<0.08	<0.3	<0.4	<0.3
Aroclor 1260	-	-	-	-	<0.02	<0.02	0.27	0.05	0.20	0.6	1.8	0.7
Aroclor 1262	-	-	-	-	<0.02	<0.02	<0.06	<0.03	<0.08	<0.3	<0.4	<0.3
Aroclor 1268	-	-	-	-	<0.02	<0.02	<0.06	<0.03	<0.08	<0.3	<0.4	<0.3
Polychlorinated biphenyls	0.0341	0.277	0.0215	0.189	<0.03	<0.03	**0.3**	<0.06	0.2	**0.6**	2	**0.7**

All units in ug/g, unless otherwise noted.

Notes

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

NC = Not calculated

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME ISQG guidelines for Freshwater

20 = Denotes exceedance of CCME PEL guidelines for Freshwater

20 = Denotes exceedance of CCME ISQG guidelines for Marine

20 = Denotes exceedance of CCME PEL guidelines for Marine

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2]**		AEC 2	AEC 2	AEC 2	Duplicate Evaluation				AEC 2	AEC 2
Station ID					AEC2-SD09-8	AEC2-SD09-9	AEC2-SD09-9					AEC2-SD09-10	AEC2-SD09-11
Field label					AEC2-SD09-8	AEC2-SD09-9	SD09-DUP1	Scenario[A]	RPD (%)	Value (ug/L)	Acceptable (Y/N)	AEC2-SD09-10	AEC2-SD09-11
Duplicate ID						SD09-DUP1	AEC2-SD09-9						
Date					15/Sep/09	15/Sep/09	15/Sep/09					15/Sep/09	15/Sep/09
Lab report ID					A9C2285	A9C2285	A9C2285					A9C2285	A9C2285
Depth (m)	ISQG	PEL	ISQG	PEL									
Aroclor 1016	-	-	-	-	<0.2	<6	<0.4	A	NC	NC	Y	<0.5	<0.5
Aroclor 1221	-	-	-	-	<0.3	<10	<1	A	NC	NC	Y	<1	<1
Aroclor 1232	-	-	-	-	<0.2	<6	<0.4	A	NC	NC	Y	<0.5	<0.5
Aroclor 1242	-	-	-	-	<0.2	<6	<0.4	A	NC	NC	Y	<0.5	<0.5
Aroclor 1248	-	-	-	-	<0.2	<6	<0.4	A	NC	NC	Y	<0.5	<0.5
Aroclor 1254	0.06	0.34	0.0633	0.709	<0.2	<6	<0.4	A	NC	NC	Y	<0.5	<0.5
Aroclor 1260	-	-	-	-	0.3	15	1.9	C	38.8	NC	Y	1.0	1.6
Aroclor 1262	-	-	-	-	<0.2	<6	<0.4	A	NC	NC	Y	<0.5	<0.5
Aroclor 1268	-	-	-	-	<0.2	<6	<0.4	A	NC	NC	Y	<0.5	<0.5
Polychlorinated biphenyls	0.0341	0.277	0.0215	0.189	**0.3**	**15**	2	C	38.2	NC	Y	**1**	**2**

All units in ug/g, unless otherwise noted.

Notes

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

NC = Not calculated

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME ISQG guidelines for Freshwater

20 = Denotes exceedance of CCME PEL guidelines for Freshwater

20 = Denotes exceedance of CCME ISQG guidelines for Marine

20 = Denotes exceedance of CCME PEL guidelines for Marine

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2]**		AEC 3	AEC 3	AEC 3	AEC 4	AEC 4	AEC 4	Duplicate Evaluation		AEC 4
Station ID					**AEC3-SD09-1**	**AEC3-SD09-2**	**AEC3-SD09-3**	**AEC4-SD09-1**	**AEC4-SD09-11**	**AEC4-SD09-11**			**AEC4-SD09-15**
Field label					AEC3-SD09-1	AEC3-SD09-2	AEC3-SD09-3	AEC4-SD09-1	AEC4-SD09-11	SD09-DUP2	**Scenario[A]**	**Acceptable (Y/N)**	AEC4-SD09-15
Duplicate ID									SD09-DUP2	AEC4-SD09-11			
Date					15/Sep/09	15/Sep/09	15/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09			17/Sep/09
Lab report ID					A9C2285	A9C2285	A9C2285	A9C4313	A9C4313	A9C4313			A9C4313
Depth (m)	**ISQG**	**PEL**	**ISQG**	**PEL**									
Aroclor 1016	-	-	-	-	<0.02	<0.02	<0.06	-	<0.02	<0.02	A	Y	<0.02
Aroclor 1221	-	-	-	-	<0.03	<0.03	<0.1	-	<0.03	<0.03	A	Y	<0.03
Aroclor 1232	-	-	-	-	<0.02	<0.02	<0.06	-	<0.02	<0.02	A	Y	<0.02
Aroclor 1242	-	-	-	-	<0.02	<0.02	<0.06	-	<0.02	<0.02	A	Y	<0.02
Aroclor 1248	-	-	-	-	<0.02	<0.02	<0.06	-	<0.02	<0.02	A	Y	<0.02
Aroclor 1254	0.06	0.34	0.0633	0.709	<0.02	<0.02	<0.06	-	<0.02	<0.02	A	Y	<0.02
Aroclor 1260	-	-	-	-	<0.02	<0.02	0.09	-	<0.02	<0.02	A	Y	0.04
Aroclor 1262	-	-	-	-	<0.02	<0.02	<0.06	-	<0.02	<0.02	A	Y	<0.02
Aroclor 1268	-	-	-	-	<0.02	<0.02	<0.06	-	<0.02	<0.02	A	Y	<0.02
Polychlorinated biphenyls	0.0341	0.277	0.0215	0.189	<0.03	<0.03	<0.1	0.03	<0.03	<0.03	A	Y	0.04

All units in ug/g, unless otherwise noted.

Notes

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

NC = Not calculated

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME ISQG guidelines for Freshwater

20 = Denotes exceedance of CCME PEL guidelines for Freshwater

20 = Denotes exceedance of CCME ISQG guidelines for Marine

20 = Denotes exceedance of CCME PEL guidelines for Marine

TABLE 7-16B: Analytical Results for PCBs in Sediment - 2008

Parameters	CCME Freshwater Sediment (ISQG)	CCME Freshwater Sediment (PEL)	CCME Marine Sediment (ISQG)	CCME Marine Sediment (PEL)	APEC 2		APEC 3			
					A2-S008-3	**A2-S008-4**	**A3-S008-2**	**SD-DUP 1**	***RPD***	**A3-S008-4**
Lab ID #					*L681311-5*	*L681311-6*	*L681123-1*	*L681123-4*		*L681123-3*
					06-SEP-08	*06-SEP-08*	*07-SEP-08*	*07-SEP-08*		*07-SEP-08*
Prepared by:					**Franz**	**Franz**	**Franz**	**Franz**		**Franz**
Polychlorinated Biphenyls										
PCB-1016	---	---			<0.01	<0.050	<0.01	<0.01	NC	<0.050
PCB-1221	---	---			<0.01	<0.050	<0.01	<0.01	NC	<0.050
PCB-1232	---	---			<0.01	<0.050	<0.01	<0.01	NC	<0.050
PCB-1242	---	---			<0.01	<0.050	<0.01	<0.01	NC	<0.050
PCB-1248	---	---			<0.01	<0.050	<0.01	<0.01	NC	<0.050
PCB-1254	0.06	0.34	0.0633	0.709	0.024	<0.050	<0.01	<0.01	NC	<0.050
PCB-1260	---	---			0.198	0.56	0.014	<0.01	NC	0.496
PCB-1262	---	---			<0.01	<0.050	<0.01	<0.01	NC	<0.050
PCB-1268	---	---			<0.01	<0.050	<0.01	<0.01	NC	<0.050
Total Polychlorinated Biphenyls	0.0341	0.277	0.0215	0.189	***0.222***	***0.56***	0.014	<0.01	NC	***0.496***

Notes (Refer to endnotes for complete list)

10	value is greater than the PEL Guideline
10	value is greater than the ISQG Guideline

--- No Guideline.

NC - Not calculated

Parameters	**CCME Freshwater Sediment (ISQG)**	**CCME Freshwater Sediment (PEL)**	**APEC 4**						
			A4-SD08-1	**A4-SD08-2**	**A4-SD08-3**	**A4-SD08-4**	**A4-SD08-5**	**A4-SD08-6**	**A4-SD08-8**
Lab ID #			*L682317-1*	*L682317-2*	*L682317-3*	*L682317-4*	*L682317-5*	*L682317-6*	*L682317-7*
			08-SEP-08	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*	*08-SEP-08*
Prepared by:			**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Polychlorinated Biphenyls									
PCB-1016	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB-1221	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB-1232	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB-1242	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB-1248	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB-1254	0.06	0.34	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
PCB-1260	---	---	0.011	<0.01	0.01	<0.01	<0.01	<0.01	<0.01
PCB-1262	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB-1268	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Polychlorinated Biphenyls	0.0341	0.277	0.011	<0.01	0.01	<0.01	<0.01	0.01	<0.01

Notes (Refer to endnotes for complete list)

10	value is greater than the PEL Guideline
<u>10</u>	value is greater than the ISQG Guideline

--- No Guideline.

NC - Not calculated

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2]**		AEC 1	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2
Station ID					AEC1-SD09-1	AEC2-SD09-1	AEC2-SD09-2	AEC2-SD09-3	AEC2-SD09-4	AEC2-SD09-5	AEC2-SD09-6	AEC2-SD09-7
Field label					AEC1-SD09-1	AEC2-SD09-1	AEC2-SD09-2	AEC2-SD09-3	AEC2-SD09-4	AEC2-SD09-5	AEC2-SD09-6	AEC2-SD09-7
Duplicate ID												
Date					17/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09
Lab report ID					A9C4313	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285
Depth (m)	ISQG	PEL	ISQG	PEL								
Aldrin	-	-			<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.006	<0.004
Chlordane	0.0045	0.00887	0.00226	0.00479	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.006	<0.004
alpha-Chlordane	-	-	-	-	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.006	<0.004
trans-Chlordane	-	-	-	-	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.006	<0.004
2,4'-DDD	-	-	-	-	<0.002	0.009	0.04	0.014	<0.03	<0.004	<0.006	<0.004
4,4'-DDD	-	-	-	-	0.009	0.037	0.22	0.09	0.09	<0.01	0.025	0.013
DDD (total)	0.00354	0.00851	0.00122	0.00781	**0.009**	**0.046**	**0.26**	**0.10**	**0.11**	<0.01	**0.025**	**0.013**
2,4'-DDE	-	-	-	-	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.006	<0.004
4,4'-DDE	-	-	-	-	0.004	0.009	0.055	0.017	0.03	<0.004	0.009	0.006
DDE (total)	0.00142	0.00675	0.00207	0.374	0.004	**0.009**	**0.055**	**0.017**	**0.03**	<0.004	**0.009**	0.006
2,4'-DDT	-	-	-	-	<0.002	<0.002	0.014	0.005	<0.01	<0.02	0.036	0.015
4,4'-DDT	-	-	-	-	0.002	0.013	0.25	0.043	<0.03	<0.06	0.16	<0.07
DDT plus metabolites	-	-	-	-	0.015	0.068	0.58	0.17	0.14	<0.06	0.23	<0.07
DDT (total)	0.00119	0.00477	0.00119	0.00477	0.002	**0.013**	**0.26**	**0.048**	<0.03	<0.06	**0.20**	<0.07
Dieldrin	0.00285	0.00667	0.000071	0.0043	<0.002	<0.002	<0.008	<0.004	<0.01	<0.006	<0.01	<0.004
Endosulfan	-	-	-	-	<0.002	<0.002	<0.008	<0.004	<0.01	<0.006	<0.006	<0.004
alpha-Endosulfan	-	-	-	-	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.006	<0.004
beta-Endosulfan	-	-	-	-	<0.002	<0.002	<0.008	<0.004	<0.01	<0.006	<0.006	<0.004
Endrin	0.00267	0.0624	0.00267	0.00624	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.006	<0.004
gamma-HCH	0.00094	0.00138	0.000032	0.000099	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.006	<0.004
Heptachlor	-	-	-	-	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.006	<0.004
Heptachlor epoxide	0.0006	0.00274	0.00006	0.000274	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.006	<0.004
Hexachlorobenzene	-	-	-	-	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.006	<0.004
Methoxychlor	-	-	-	-	<0.008	<0.008	<0.03	<0.02	<0.04	<0.02	<0.02	<0.02

All units in ug/g, unless otherwise noted.

Notes

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

NC = Not calculated

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME ISQG guidelines for Freshwater

20 = Denotes exceedance of CCME PEL guidelines for Freshwater

20 = Denotes exceedance of CCME ISQG guidelines for Marine

20 = Denotes exceedance of CCME PEL guidelines for Marine

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2]**		AEC 2	AEC 2	AEC 2	Duplicate Evaluation				AEC 2	AEC 2	AEC 3	AEC 3
Station ID					**AEC2-SD09-8**	**AEC2-SD09-9**	**AEC2-SD09-9**					**AEC2-SD09-10**	**AEC2-SD09-11**	**AEC3-SD09-1**	**AEC3-SD09-2**
Field label					AEC2-SD09-8	AEC2-SD09-9	SD09-DUP1	**Scenario[A]**	**RPD (%)**	**Value (ug/L)**	**Acceptable (Y/N)**	AEC2-SD09-10	AEC2-SD09-11	AEC3-SD09-1	AEC3-SD09-2
Duplicate ID						SD09-DUP1	AEC2-SD09-9								
Date					15/Sep/09	15/Sep/09	15/Sep/09					15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09
Lab report ID					A9C2285	A9C2285	A9C2285					A9C2285	A9C2285	A9C2285	A9C2285
Depth (m)	**ISQG**	**PEL**	**ISQG**	**PEL**											
Aldrin	-	-			<0.002	<0.008	<0.006	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
Chlordane	0.0045	0.00887	0.00226	0.00479	<0.002	<0.008	<0.006	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
alpha-Chlordane	-	-	-	-	<0.002	<0.008	<0.006	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
trans-Chlordane	-	-	-	-	<0.002	<0.008	<0.006	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
2,4'-DDD	-	-	-	-	<0.002	<0.03	<0.04	A	NC	NC	Y	0.007	0.02	<0.002	<0.002
4,4'-DDD	-	-	-	-	0.005	0.06	0.045	C	7.1	NC	Y	0.034	0.10	<0.002	<0.002
DDD (total)	0.00354	0.00851	0.00122	0.00781	0.005	**0.06**	**0.05**	C	4.5	NC	Y	**0.041**	**0.12**	<0.002	<0.002
2,4'-DDE	-	-	-	-	<0.002	<0.008	<0.006	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
4,4'-DDE	-	-	-	-	<0.002	0.035	0.020	D	NC	0.015	N	0.012	0.018	<0.002	<0.002
DDE (total)	0.00142	0.00675	0.00207	0.374	<0.002	**0.035**	**0.020**	D	NC	0.015	N	**0.012**	**0.018**	<0.002	<0.002
2,4'-DDT	-	-	-	-	0.003	<0.02	<0.006	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
4,4'-DDT	-	-	-	-	<0.04	<0.1	<0.05	A	NC	NC	Y	<0.02	<0.04	<0.002	<0.002
DDT plus metabolites	-	-	-	-	<0.04	0.1	0.07	D	NC	0.03	Y	0.05	0.14	<0.002	<0.002
DDT (total)	0.00119	0.00477	0.00119	0.00477	<0.04	<0.1	<0.05	A	NC	NC	Y	<0.02	<0.04	<0.002	<0.002
Dieldrin	0.00285	0.00667	0.000071	0.0043	<0.002	<0.02	<0.02	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
Endosulfan	-	-	-	-	<0.002	<0.008	<0.006	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
alpha-Endosulfan	-	-	-	-	<0.002	<0.008	<0.006	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
beta-Endosulfan	-	-	-	-	<0.002	<0.008	<0.006	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
Endrin	0.00267	0.0624	0.00267	0.00624	<0.002	<0.06	<0.006	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
gamma-HCH	0.00094	0.00138	0.000032	0.000099	<0.002	<0.008	<0.006	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
Heptachlor	-	-	-	-	<0.002	<0.008	<0.006	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
Heptachlor epoxide	0.0006	0.00274	0.00006	0.000274	<0.002	<0.008	<0.006	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
Hexachlorobenzene	-	-	-	-	<0.002	<0.008	<0.006	A	NC	NC	Y	<0.006	<0.006	<0.002	<0.002
Methoxychlor	-	-	-	-	<0.008	<0.03	<0.02	A	NC	NC	Y	<0.02	<0.02	<0.008	<0.008

All units in ug/g, unless otherwise noted.

Notes

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

NC = Not calculated

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME ISQG guidelines for Freshwater

20 = Denotes exceedance of CCME PEL guidelines for Freshwater

20 = Denotes exceedance of CCME ISQG guidelines for Marine

20 = Denotes exceedance of CCME PEL guidelines for Marine

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2**]		AEC 3	AEC 4	AEC 4	AEC 4	Duplicate Evaluation		AEC 4
Station ID					**AEC3-SD09-3**	**AEC4-SD09-1**	**AEC4-SD09-11**	**AEC4-SD09-11**			**AEC4-SD09-15**
Field label					AEC3-SD09-3	AEC4-SD09-1	AEC4-SD09-11	SD09-DUP2	Scenario[A]	Acceptable (Y/N)	AEC4-SD09-15
Duplicate ID							SD09-DUP2	AEC4-SD09-11			
Date					15/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09			17/Sep/09
Lab report ID					A9C2285	A9C4313	A9C4313	A9C4313			A9C4313
Depth (m)	**ISQG**	**PEL**	**ISQG**	**PEL**							
Aldrin	-	-			<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
Chlordane	0.0045	0.00887	0.00226	0.00479	<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
alpha-Chlordane	-	-	-	-	<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
trans-Chlordane	-	-	-	-	<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
2,4'-DDD	-	-	-	-	<0.01	<0.002	<0.002	<0.002	A	Y	<0.002
4,4'-DDD	-	-	-	-	0.018	0.004	<0.002	<0.002	A	Y	0.004
DDD (total)	0.00354	0.00851	0.00122	0.00781	**0.02**	0.004	<0.002	<0.002	A	Y	0.004
2,4'-DDE	-	-	-	-	<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
4,4'-DDE	-	-	-	-	0.014	<0.002	<0.002	<0.002	A	Y	<0.002
DDE (total)	0.00142	0.00675	0.00207	0.374	0.014	<0.002	<0.002	<0.002	A	Y	<0.002
2,4'-DDT	-	-	-	-	<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
4,4'-DDT	-	-	-	-	<0.03	<0.002	<0.002	<0.002	A	Y	<0.002
DDT plus metabolites	-	-	-	-	0.03	0.004	<0.002	<0.002	A	Y	0.004
DDT (total)	0.00119	0.00477	0.00119	0.00477	<0.03	<0.002	<0.002	<0.002	A	Y	<0.002
Dieldrin	0.00285	0.00667	0.000071	0.0043	<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
Endosulfan	-	-	-	-	<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
alpha-Endosulfan	-	-	-	-	<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
beta-Endosulfan	-	-	-	-	<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
Endrin	0.00267	0.0624	0.00267	0.00624	<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
gamma-HCH	0.00094	0.00138	0.000032	0.000099	<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
Heptachlor	-	-	-	-	<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
Heptachlor epoxide	0.0006	0.00274	0.00006	0.000274	<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
Hexachlorobenzene	-	-	-	-	<0.008	<0.002	<0.002	<0.002	A	Y	<0.002
Methoxychlor	-	-	-	-	<0.03	<0.008	<0.008	<0.008	A	Y	<0.008

All units in ug/g, unless otherwise noted.

Notes

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

NC = Not calculated

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME ISQG guidelines for Freshwater

20 = Denotes exceedance of CCME PEL guidelines for Freshwater

20 = Denotes exceedance of CCME ISQG guidelines for Marine

20 = Denotes exceedance of CCME PEL guidelines for Marine

TABLE 7-17B: Analytical Results for Pesticides in Sediment - 2008

Parameters	CCME Freshwater Sediment (ISQG)	CCME Freshwater Sediment (PEL)	CCME Marine Sediment (ISQG)	CCME Marine Sediment (PEL)	APEC 2	APEC 4	
					A2-S008-4	**A4-SD08-2**	**A4-SD08-3**
Lab ID #					*L681311-6*	*L682317-2*	*L682317-3*
Sample Date					*06-SEP-08*	*08-SEP-08*	*08-SEP-08*
					Franz	**Franz**	**Franz**
Organochlorine Pesticides							
Aldrin	---	---			<0.0020	<0.0010	<0.0010
alpha-BHC	---	---			<0.0020	<0.0010	<0.0010
beta-BHC	---	---			<0.0020	<0.0020	<0.0020
Lindane (gamma - BHC)	0.00094	0.00138			<0.0020	<0.00094	<0.00094
delta-BHC	---	---			<0.0020	<0.0010	<0.0010
cis-Chlordane (alpha)	0.0045 [a]	0.00887 [a]			<0.0020	<0.0010	<0.0010
trans-Chlordane (gamma)	0.0045 [a]	0.00887 [a]			<0.0020	<0.0010	<0.0010
2,4'-DDD	0.00354 [b]	0.0851 [b]			<0.0020	<0.0010	<0.0010
4,4'-DDD	0.00354 [b]	0.0851 [b]			***0.0149***	<0.0010	<0.0010
Total DDD	0.00354 [b]	0.0851 [b]	0.00122	0.00781			
2,4'-DDE	0.00142 [c]	0.00675 [c]			<0.0020	<0.0010	<0.0010
4,4'-DDE	0.00142 [c]	0.00675 [c]			***0.029***	<0.0010	<0.0010
Total DDE	0.00142 [c]	0.00675	0.00207	0.374			
2,4'-DDT	0.00119 [d]	0.00477 [d]			<0.0020	<0.00119	<0.002
4,4'-DDT	0.00119 [d]	0.00477 [d]			***0.0175***	<0.00119	<0.002
Total DDT	0.00119 [d]	0.00477	0.00119	0.00477			
Dieldrin	0.00285	0.00667	0.000071	0.0043	<0.0020	<0.0010	<0.0010
Endosulfan I	---	---			<0.0020	<0.0010	<0.0010
Endosulfan II	---	---			<0.0020	<0.0010	<0.0010
Endosulfan Sulfate	---	---			<0.0020	<0.0010	<0.0010
Endrin	0.00267	0.0624	0.00267	0.00624	<0.0050	<0.00267	<0.0050
Heptachlor	---	---			<0.0020	<0.0020	<0.0020
Heptachlor Epoxide	0.0006	0.00274	0.00006	0.000274	<0.0020	<0.0006	<0.0010
Methoxychlor	---	---			<0.0050	<0.0050	<0.0050
Mirex	---	---			<0.0020	<0.0010	<0.0010
cis-Nonachlor	---	---			<0.0020	<0.0010	<0.0010
trans-Nonachlor	---	---			<0.0020	<0.0010	<0.0010
Oxychlordane	---	---			<0.0020	<0.0010	<0.0010

Notes (Refer to endnotes for complete list)

10	value is greater than the PEL Guideline
10	value is greater than the ISQG Guideline

--- No Guideline.

*a - Standard for Chlordane

*b - Standard for DDD (2,2-Bis(p-chlorophenyl)-1,1-dichloroethane; Dichloro diphenyl dichloroethane)

*c - Standard for DDE (1,1-Dichloro-2,2,bis(p-chlorophenyl)-ethene; Diphenyl dichloro ethylene)

*d - Standard for DDT (2,2-Bis(p-chlorophenyl)-1,1,1-trichloroethane; Dichloro diphenyl trichloroethane)

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2**]		CCME Soil PL[2]	CCME Soil CL[3]	AEC 1	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2	AEC 2
Station ID							**AEC1-SD09-1**	**AEC2-SD09-1**	**AEC2-SD09-2**	**AEC2-SD09-3**	**AEC2-SD09-4**	**AEC2-SD09-5**	**AEC2-SD09-6**
Field label							AEC1-SD09-1	AEC2-SD09-1	AEC2-SD09-2	AEC2-SD09-3	AEC2-SD09-4	AEC2-SD09-5	AEC2-SD09-6
Duplicate ID													
Date							17/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09
Lab report ID							A9C4313	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285	A9C2285
Depth (m)	**ISQG**	**PEL**	**ISQG**	**PEL**									
Acetone	-	-	-	-	-	-	<0.1	-	-	-	-	-	-
Benzene	-	-	-	-	0.03	0.03	<0.002	<0.002	<0.008	<0.002	<0.002	<0.002	<0.002
Bromodichloromethane	-	-	-	-	-	-	<0.002	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	<0.002	-	-	-	-	-	-
Bromomethane	-	-	-	-	-	-	<0.003	-	-	-	-	-	-
Carbon tetrachloride	-	-	-	-	5	50	<0.002	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	1	10	<0.002	-	-	-	-	-	-
Chlorodibromomethane	-	-	-	-	-	-	<0.002	-	-	-	-	-	-
Chloroform	-	-	-	-	5	50	<0.002	-	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	1	10	<0.002	-	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	1	10	<0.002	-	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	1	10	<0.002	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	5	50	<0.002	-	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	5	50	<0.002	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	5	50	<0.002	-	-	-	-	-	-
cis-1,2-Dichloroethene	-	-	-	-	-	-	<0.002	-	-	-	-	-	-
trans-1,2-Dichloroethene	-	-	-	-	-	-	<0.002	-	-	-	-	-	-
Dichloromethane	-	-	-	-	5	50	<0.003	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	5	50	<0.002	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	<0.002	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-	-	<0.002	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	0.082	0.082	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.004
Ethylene dibromide	-	-	-	-	-	-	<0.002	-	-	-	-	-	-
Hexachlorobenzene	-	-	-	-	2	10	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.006
Hexachlorobutadiene	-	-	-	-	-	-	<0.01	<0.01	<0.04	<0.02	<0.05	<0.02	<0.03
Methyl ethyl ketone	-	-	-	-	-	-	<0.03	-	-	-	-	-	-
Methyl isobutyl ketone	-	-	-	-	-	-	<0.03	-	-	-	-	-	-
Methyl-tert-butylether	-	-	-	-	-	-	<0.002	-	-	-	-	-	-
Styrene	-	-	-	-	5	50	<0.002	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	<0.002	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	-	-	5	50	<0.002	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	0.2	0.5	<0.002	-	-	-	-	-	-
Toluene	-	-	-	-	0.37	0.37	<0.002	0.008	<0.008	<0.004	<0.01	<0.004	<0.004
1,1,1-Trichloroethane	-	-	-	-	5	50	<0.002	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	5	50	<0.002	-	-	-	-	-	-
Trichloroethene	-	-	-	-	0.01	0.01	<0.002	-	-	-	-	-	-
Vinyl chloride	-	-	-	-	-	-	<0.002	-	-	-	-	-	-
m+p-Xylene	-	-	-	-	-	-	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.004
o-Xylene	-	-	-	-	-	-	<0.002	<0.002	<0.002	<0.004	<0.01	<0.004	<0.004
Xylenes (total)	-	-	-	-	2.4	11	<0.002	<0.002	<0.008	<0.004	<0.01	<0.004	<0.004

All units in ug/g, unless otherwise noted.

Notes

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

3 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

NC = Not calculated

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME Residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2]**		CCME Soil PL[2]	CCME Soil CL[3]	AEC 2	AEC 2	AEC 2	AEC 2	Duplicate Evaluation		AEC 2	AEC 2	AEC 3	AEC 3
Station ID							AEC2-SD09-7	AEC2-SD09-8	AEC2-SD09-9	AEC2-SD09-9			AEC2-SD09-10	AEC2-SD09-11	AEC3-SD09-1	AEC3-SD09-2
Field label							AEC2-SD09-7	AEC2-SD09-8	AEC2-SD09-9	SD09-DUP1	Scenario[A]	Acceptable (Y/N)	AEC2-SD09-10	AEC2-SD09-11	AEC3-SD09-1	AEC3-SD09-2
Duplicate ID									SD09-DUP1	AEC2-SD09-9						
Date							15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09			15/Sep/09	15/Sep/09	15/Sep/09	15/Sep/09
Lab report ID							A9C2285	A9C2285	A9C2285	A9C2285			A9C2285	A9C2285	A9C2285	A9C2285
Depth (m)	ISQG	PEL	ISQG	PEL												
Acetone	-	-	-	-	-	-	-	-	-	-			-	-	-	-
Benzene	-	-	-	-	0.03	0.03	<0.002	<0.002	<0.002	<0.002	A	Y	<0.002	<0.002	<0.002	<0.002
Bromodichloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	-	-	-	-	5	50	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	1	10	-	-	-	-	-	-	-	-	-	-
Chlorodibromomethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	-	-	-	-	5	50	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	1	10	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	1	10	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	1	10	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	5	50	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	5	50	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	5	50	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	-	-	-	-	5	50	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	5	50	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	0.082	0.082	<0.006	<0.002	<0.008	<0.008	A	Y	<0.006	<0.006	<0.002	<0.002
Ethylene dibromide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	-	-	-	-	2	10	<0.004	<0.002	<0.008	<0.006	A	Y	<0.006	<0.006	<0.002	<0.002
Hexachlorobutadiene	-	-	-	-	-	-	<0.02	<0.01	<0.04	<0.03	A	Y	<0.03	<0.03	<0.01	<0.01
Methyl ethyl ketone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl isobutyl ketone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl-tert-butylether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	-	-	-	-	5	50	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	-	-	5	50	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	0.2	0.5	-	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	0.37	0.37	<0.006	<0.002	<0.008	<0.008	A	Y	<0.006	<0.006	<0.002	<0.002
1,1,1-Trichloroethane	-	-	-	-	5	50	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	5	50	-	-	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	0.01	0.01	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
m+p-Xylene	-	-	-	-	-	-	<0.006	<0.002	<0.008	<0.008	A	Y	<0.006	<0.006	<0.002	<0.002
o-Xylene	-	-	-	-	-	-	<0.006	<0.002	<0.008	<0.008	A	Y	<0.006	<0.006	<0.002	<0.002
Xylenes (total)	-	-	-	-	2.4	11	<0.006	<0.002	<0.008	<0.008	A	Y	<0.006	<0.006	<0.002	<0.002

All units in ug/g, unless otherwise noted.

Notes

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

3 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

NC = Not calculated

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME Residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

Area ID	CCME Freshwater Sediment[1]		CCME Marine Sediment[2 **]		CCME Soil PL[2]	CCME Soil CL[3]	AEC 3	AEC 4	AEC 4	AEC 4	Duplicate Evaluation				AEC 4
Station ID							AEC3-SD09-3	AEC4-SD09-1	AEC4-SD09-11	AEC4-SD09-11					AEC4-SD09-15
Field label							AEC3-SD09-3	AEC4-SD09-1	AEC4-SD09-11	SD09-DUP2	Scenario[A]	RPD (%)	Value (ug/L)	Acceptable (Y/N)	AEC4-SD09-15
Duplicate ID									SD09-DUP2	AEC4-SD09-11					
Date							15/Sep/09	17/Sep/09	17/Sep/09	17/Sep/09					17/Sep/09
Lab report ID							A9C2285	A9C4313	A9C4313	A9C4313					A9C4313
Depth (m)	ISQG	PEL	ISQG	PEL											
Acetone	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	A	NC	NC	Y	<0.1
Benzene	-	-	-	-	0.03	0.03	<0.002	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Bromodichloromethane	-	-	-	-	-	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Bromoform	-	-	-	-	-	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Bromomethane	-	-	-	-	-	-	-	<0.003	<0.003	<0.003	A	NC	NC	Y	<0.003
Carbon tetrachloride	-	-	-	-	5	50	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Chlorobenzene	-	-	-	-	1	10	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Chlorodibromomethane	-	-	-	-	-	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Chloroform	-	-	-	-	5	50	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
1,2-Dichlorobenzene	-	-	-	-	1	10	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
1,3-Dichlorobenzene	-	-	-	-	1	10	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
1,4-Dichlorobenzene	-	-	-	-	1	10	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
1,1-Dichloroethane	-	-	-	-	5	50	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
1,2-Dichloroethane	-	-	-	-	5	50	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
1,1-Dichloroethene	-	-	-	-	5	50	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
cis-1,2-Dichloroethene	-	-	-	-	-	-	-	<0.002	0.008	0.004	D	NC	0.004	Y	<0.002
trans-1,2-Dichloroethene	-	-	-	-	-	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Dichloromethane	-	-	-	-	5	50	-	<0.003	<0.003	<0.003	A	NC	NC	Y	<0.003
1,2-Dichloropropane	-	-	-	-	5	50	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Ethylbenzene	-	-	-	-	0.082	0.082	<0.008	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Ethylene dibromide	-	-	-	-	-	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Hexachlorobenzene	-	-	-	-	2	10	<0.008	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Hexachlorobutadiene	-	-	-	-	-	-	<0.04	<0.01	<0.01	<0.01	A	NC	NC	Y	<0.01
Methyl ethyl ketone	-	-	-	-	-	-	-	<0.03	<0.03	<0.03	A	NC	NC	Y	<0.03
Methyl isobutyl ketone	-	-	-	-	-	-	-	<0.03	<0.03	<0.03	A	NC	NC	Y	<0.03
Methyl-tert-butylether	-	-	-	-	-	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Styrene	-	-	-	-	5	50	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
1,1,2,2-Tetrachloroethane	-	-	-	-	5	50	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Tetrachloroethene	-	-	-	-	0.2	0.5	-	<0.002	0.24	0.38	C	11.3	NC	Y	<0.002
Toluene	-	-	-	-	0.37	0.37	<0.008	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
1,1,1-Trichloroethane	-	-	-	-	5	50	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
1,1,2-Trichloroethane	-	-	-	-	5	50	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Trichloroethene	-	-	-	-	0.01	0.01	-	<0.002	**0.10**	**0.072**	C	8.1	NC	Y	<0.002
Vinyl chloride	-	-	-	-	-	-	-	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
m+p-Xylene	-	-	-	-	-	-	<0.008	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
o-Xylene	-	-	-	-	-	-	<0.008	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002
Xylenes (total)	-	-	-	-	2.4	11	<0.008	<0.002	<0.002	<0.002	A	NC	NC	Y	<0.002

All units in ug/g, unless otherwise noted.

Notes

1 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 1. Interim freshwater sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2002), Canadian Sediment Quality Guidelines for Protection of Aquatic Life, Update 2002, Table 2. Interim marine sediment quality guidelines (ISQGs; dry weight), probable effect levels (PELs; dry weight).

2 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Residential / Parkland Use, coarse-grained soils.

3 = CCME (2007), Canadian Soil Quality Guidelines, Update 7.0, Table 1. Canadian Soil Quality Guidelines, Commercial Use, coarse-grained soils.

** = CCME Marine sediment guidelines apply only to AEC4 samples

A = See Methodologies in Appendix F for Scenario Rationale

"-" indicates that there is no applicable regulation or analyses were not performed.

RDL = Reportable Detection Limit

RPD = Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

NC = Not calculated

20 = RDL exceeds guideline

20 = Denotes exceedance of CCME Residential/Parkland Use guidelines

20 = Denotes exceedance of CCME Commercial Use guidelines

TABLE 7-18B: Analytical Results for VOCs in Sediment - 2008

Parameters	CCME Freshwater Sediment (ISQG)	CCME Freshwater Sediment (PEL)	APEC 2	APEC 4	
			A2-SD08-4	A4-SD08-2	A4-SD08-3
Lab ID #			*L682370-22*	*L682317-2*	*L682317-3*
Sample Date			*09-SEP-08*	*08-SEP-08*	*08-SEP-08*
			Franz	**Franz**	**Franz**
Volatile Organic Compounds					
Benzene	---	---	<0.040	<0.040	<0.040
Bromodichloromethane	---	---	<0.050	<0.050	<0.050
Bromoform	---	---	<0.050	<0.050	<0.050
Carbon Tetrachloride	---	---	<0.050	<0.050	<0.050
Chlorobenzene	---	---	<0.050	<0.050	<0.050
Dibromochloromethane	---	---	<0.050	<0.050	<0.050
Chloroethane	---	---	<0.10	<0.10	<0.10
Chloroform	---	---	<0.10	<0.10	<0.10
Chloromethane	---	---	<0.10	<0.10	<0.10
1,2-Dichlorobenzene	---	---	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	---	---	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	---	---	<0.050	<0.050	<0.050
1,1-Dichloroethane	---	---	<0.050	<0.050	<0.050
1,2-Dichloroethane	---	---	<0.050	<0.050	<0.050
1,1-Dichloroethylene	---	---	<0.050	<0.050	<0.050
cis-1,2-Dichloroethylene	---	---	<0.050	<0.050	<0.050
trans-1,2-Dichloroethylene	---	---	<0.050	<0.050	<0.050
Dichloromethane	---	---	<0.60	<0.30	<0.30
1,2-Dichloropropane	---	---	<0.050	<0.050	<0.050
cis-1,3-Dichloropropylene	---	---	<0.050	<0.050	<0.050
trans-1,3-Dichloropropylene	---	---	<0.050	<0.050	<0.050
Ethylbenzene	---	---	<0.050	<0.050	<0.050
Methyl t-butyl ether (MTBE)	---	---	<0.20	<0.20	<0.20
Styrene	---	---	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	---	---	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	---	---	<0.050	<0.050	<0.050
Tetrachloroethylene	---	---	<0.050	<0.050	<0.050
Toluene	---	---	0.12	<0.050	<0.050
1,1,1-Trichloroethane	---	---	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	---	---	<0.050	<0.050	<0.050
Trichloroethylene	---	---	<0.015	<0.040	<0.015
Trichlorofluoromethane	---	---	<0.10	<0.10	<0.10
Vinyl Chloride	---	---	<0.10	<0.10	<0.10
ortho-Xylene	---	---	<0.050	<0.050	<0.050
meta- & para-Xylene	---	---	<0.050	<0.050	<0.050
Xylenes	---	---	<0.10	<0.10	<0.10

Notes (Refer to endnotes for complete list)

10	value is greater than the PEL Guideline
10	value is greater than the ISQG Guideline

--- No Guideline.

General Endnotes:

All values are reported as mg/kg unless otherwise indicated.

10	=	value is greater than the PEL Guideline
3	=	value is greater than the ISQG Guideline
'---	=	No guideline
-	=	Not analyzed
NC		Not calculated
RPD	=	Relative percent difference is calculated as the difference over the average of the two values and is only calculated when both concentrations are greater than 5 times the method detection limit.

Laboratory Notes

Refer to Laboratory reports for sample specific notes

< = less then method detection limit (mdl)

General Canadian Council of Ministers of the Environment (CCME) Endnotes

Canadian Sediment Quality Guidelines for the Protection of Aquatic Life
CCME, 1999, updated 2001 and 2002.

Table 1 Interim Freshwater Sediment Quality Guidelines (ISQG; dry weight), and
Probable Effect Levels (PELs; dry weight)

Vegetation – Analytical Results

Area ID	Foliage (Rural)[1]	Grass (Rural)[1]	AEC 1	AEC 1	Duplicate Evaluation				AEC 1	AEC 2	AEC 2	AEC 2	AEC 3	AEC 3	AEC 3	AEC 4	AEC 4	AEC 4
Station ID			AEC1-AQ-VEG09-1	AEC1-AQ-VEG09-1					AEC1-VEG09-1	AEC2-AQ-VEG09-1	AEC2-VEG09-1	AEC2-AQ-VEG09-2	AEC3-AQ-VEG09-1	AEC3-VEG09-1	AEC3-VEG09-2	AEC4-AQ-VEG09-1	AEC4-AQ-VEG09-2	AEC4-AQ-VEG09-3
Field label			AEC1-AQ-VEG09-1	VEG09-DUP1	Scenario[A]	RPD (%)	Value (ug/L)	Acceptable (Y/N)	AEC1-VEG09-1	AEC2-AQ-VEG09-1	AEC2-VEG09-1	AEC2-AQ-VEG09-2	AEC3-AQ-VEG09-1	AEC3-VEG09-1	AEC3-VEG09-2	AEC4-AQ-VEG09-1	AEC4-AQ-VEG09-2	AEC4-AQ-VEG09-3
Duplicate ID			VEG09-DUP1	AEC1-AQ-VEG09-1														
Date			16/Sep/09	16/Sep/09					16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09	16/Sep/09
Lab report ID			A9C4887	A9C4887					A9C4887	A9C4887	A9C4887	A9C4887	A9C4887	A9C4887	A9C4887	A9C4887	A9C4887	A9C4887
Aluminum	**500**	---	12.6	10.6	C	4.3	NC	Y	3.5	7.0	2.6	17.9	99.1	1.2	1.7	175.0	486.0	158.0
Antimony	**0.3***	---	<0.05	<0.05	A	NC	NC	Y	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic	**0.5**,2*	---	<0.1	<0.1	A	NC	NC	Y	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	0.4	1.1	0.2
Barium	---	---	4.1	3.5	C	3.9	NC	Y	0.9	2.6	0.6	2.6	1.1	0.6	0.8	1.4	3.7	1.2
Beryllium	---	---	<0.05	<0.05	A	NC	NC	Y	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth	---	---	<0.05	<0.05	A	NC	NC	Y	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Boron	75	**20**	2.2	2.0	D	NC	0.2	Y	1.1	2.1	0.8	2.1	26.6	1.1	1.0	12.8	5.2	19.0
Cadmium	1*	**0.5**, 2*	<0.01	<0.01	A	NC	NC	Y	0.01	0.04	<0.01	0.06	0.01	<0.01	<0.01	0.03	0.01	0.02
Calcium	---	---	1080	1040	C	0.9	NC	Y	114	616	110	889	824	79	83	876	464	617
Chromium	8	**5**	<0.3	<0.3	A	NC	NC	Y	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.5	1.0	0.4
Cobalt	**2**	2, 8*	0.779	0.456	C	13.1	NC	Y	0.011	0.130	0.006	0.848	0.294	0.007	0.005	0.248	0.470	0.439
Copper	20	**7,** 20*	0.6	0.6	D	NC	0.0	Y	0.8	0.8	0.9	0.7	0.8	0.8	1.0	0.5	1.0	0.7
Iron	**500**	500	416	235	C	13.9	NC	Y	9	212	8	894	930	<3	6	1890	2410	808
Lead	30	**20**	0.11	0.09	D	NC	0.0	Y	7.53	0.07	3.69	0.17	1.67	2.64	5.20	0.79	0.48	0.95
Magnesium	---	---	297	240	D	NC	57	Y	<100	244	<100	308	1140	<100	<100	895	588	895
Manganese	---	**50**	231.0	187.0	C	5.3	NC	Y	5.2	68.4	1.8	309	711	2.6	8.0	57.6	39.2	119.0
Mercury	**0.3**	---	<0.01	<0.01	A	NC	NC	Y	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Molybdenum	**1.5**	6	1.52	1.40	C	2.1	NC	Y	<0.05	0.10	<0.05	0.16	0.36	<0.05	<0.05	0.09	0.27	0.15
Nickel	**5**, 30*	5, 25*	0.20	0.12	D	NC	0.08	Y	0.08	0.11	<0.05	0.15	0.29	<0.05	<0.05	0.34	0.87	0.27
Phosphorus	---	---	496	319	C	10.9	NC	Y	141	410	114	132	55	131	149	72	213	55
Potassium	---	---	2660	2100	C	5.9	NC	Y	1190	2550	1020	3020	440	1250	1140	263	1390	286
Selenium	**0.5**	0.5	<0.2	<0.2	A	NC	NC	Y	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Silver	---	---	<0.05	<0.05	A	NC	NC	Y	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium	**50**	---	120	226	D	NC	106	N	<50	293	<50	1570	3390	<50	<50	310	241	1180
Strontium	---	---	4.1	3.6	C	3.2	NC	Y	<0.5	1.9	<0.5	4.3	11.9	<0.5	<0.5	8.9	5.7	7.9
Thallium	---	---	<0.003	<0.003	A	NC	NC	Y	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.005	<0.003
Tin	---	---	<0.3	<0.3	A	NC	NC	Y	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium	---	---	0.8	0.7	D	NC	0.1	Y	1.1	<0.5	<0.5	0.8	8.4	<0.5	<0.5	14	45	13
Uranium	---	---	<0.005	<0.005	A	NC	NC	Y	<0.005	<0.005	<0.005	0.009	0.192	<0.005	<0.005	0.038	0.071	0.025
Vanadium	**5**	6	<0.05	<0.05	A	NC	NC	Y	<0.05	<0.05	<0.05	0.30	1.27	<0.05	<0.05	1.68	2.76	1.12
Zinc	250	**40**, 100*	16	17	C	1.5	NC	Y	3	17	<2	11	5	2	<2	6	6	4

Notes:

1= The Ontario Ministry of the Environment and Energy (MOEE) HCB Phytotoxicology Field Investigation Manual (014-3511-93). "Upper Limit of Normal" , contaminant guidelines (ULN) for concentrations of contaminants in foliage, grass, and moss bags in Ontario.

* Max RDL used

A = See Methodologies in Appendix F for Scenario Rationale

NC = Not Calculated

---' = No Guidelines exist

All units in ug/g.

20 = Guidelines Used

20 = Denotes exceedance of guidelines

		APEC 1	APEC 2	APEC 3				APEC 4						
Parameters	**Vegetation Foliage (Rural)**	**VEG-6**	**VEG-4**	**VEG-1**	**VEG-2**	**VEG-3**	**VEG-5**	**A4-VEG-1**	**VEG-DUP**	**RPD**	**A4-VEG-2**	**A4-VEG-3**	**VEG-BK-1**	**VEG-BK-2**
Lab ID #		*L682370-6*	*L682370-4*	*L682370-1*	*L682370-2*	*L682370-3*	*L682370-5*	*L682370-7*	*L682370-10*		*L682370-8*	*L682370-9*	*L682370-17*	*L682370-18*
Sample Date		*09-SEP-08*	*09-SEP-08*	*09-SEP-08*	*09-SEP-08*	*09-SEP-08*	*09-SEP-08*	*10-SEP-08*	*10-SEP-08*		*10-SEP-08*	*10-SEP-08*	*09-SEP-08*	*09-SEP-08*
Prepared by:		**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**		**Franz**	**Franz**	**Franz**	**Franz**
Physical Tests														
Hardness (as CaCO3)	---	-	-	-	-	-	-	-	-		-	-	-	-
% Moisture	---	62.4	56.5	59.8	69.5	67.8	68.4	78.8	77.3	2%	71.8	71.7	74	76.1
pH	---	-	-	-	-	-	-	-	-		-	-	-	-
Metals														
Aluminum (Al)	500	108	88.4	31	36.1	45.7	24	271	303	11%	199	255	34.7	10.5
Antimony (Sb)	0.3*	<0.010	<0.010	<0.010	0.013	<0.010	0.023	<0.010	<0.010	NC	<0.010	<0.010	<0.010	<0.010
Arsenic (As)	0.5,2*	<0.010	0.013	<0.010	<0.010	<0.010	0.012	0.428	0.428	0%	0.074	0.426	0.016	<0.010
Barium (Ba)	---	34.8	26.4	9.07	7.88	13.2	36.2	2.17	2.15	1%	1.4	1.96	11.6	5.73
Beryllium (Be)	---	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	NC	<0.10	<0.10	<0.10	<0.10
Bismuth (Bi)	---	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	NC	<0.030	<0.030	<0.030	<0.030
Cadmium (Cd)	1*	0.241	0.495	0.467	0.14	0.118	0.0206	0.0072	0.0076	5%	0.0087	0.0131	0.0967	0.0171
Calcium (Ca)	---	2070	3390	3750	2000	1590	7300	458	530	15%	1940	899	1320	918
Chromium (Cr)	8	0.19	0.2	0.11	<0.10	0.1	0.12	0.9	1.06	16%	0.72	0.8	0.11	<0.10
Cobalt (Co)	2	0.065	0.062	0.027	0.105	0.04	<0.020	0.236	0.259	9%	0.405	0.209	0.023	0.036
Copper (Cu)	20	2.43	3.4	2.52	1.38	1.7	2.89	0.663	0.663	0%	0.797	1.21	1.1	0.726
Iron (Fe)	500	106	133	28.3	35.6	38.2	47.6	7880	7320	7%	627	853	21.7	8.9
Lead (Pb)	30	0.287	0.358	0.095	0.283	0.2	1.45	0.233	0.223	4%	0.17	0.315	0.053	<0.020
Lithium (Li)	---	<0.10	0.11	<0.10	<0.10	<0.10	0.13	0.37	0.38	3%	0.36	0.41	<0.10	<0.10
Magnesium (Mg)	---	734	1030	817	463	484	343	621	731	16%	2070	1410	395	212
Manganese (Mn)	---	93.1	261	25.9	31.7	90.4	4.02	41.3	42.7	3%	122	32.9	56.7	10.8
Mercury (Hg)	---	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	1.5	0.071	0.094	0.12	0.258	0.066	1.09	0.44	0.522	17%	0.184	0.392	0.022	<0.010
Nickel (Ni)	5, 30*	0.61	0.34	0.18	0.16	0.27	0.3	0.39	0.41	5%	0.58	0.44	0.18	0.47
Phosphorus (P)	---	465	365	245	350	397	520	248	324	27%	167	292	241	177
Potassium (K)	---	1730	3210	2340	1780	2170	1690	1710	2050	18%	6390	3450	1560	1710
Selenium (Se)	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NC	<0.20	<0.20	<0.20	<0.20
Silver (Ag)	---	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium (Na)	50	34	55	62	53	36	21	2660	3300	21%	6790	6180	32	<20
Strontium (Sr)	---	4.67	7.75	16.4	6.51	4.37	26.7	6.46	6.78	5%	15.6	10.8	1.78	1.7
Thallium (Tl)	---	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	NC	<0.010	<0.010	<0.010	<0.010
Tin (Sn)	---	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.054	NC	<0.050	<0.050	<0.050	0.084
Titanium (Ti)	---	4.35	4.7	0.91	1.6	1.77	2.62	26.8	33.2	21%	26.8	21.5	1.08	0.2
Uranium (U)	---	0.0023	0.004	<0.0020	<0.0020	<0.0020	<0.0020	0.106	0.0917	14%	0.0414	0.0792	<0.0020	<0.0020
Vanadium (V)	5	0.16	0.13	<0.10	<0.10	<0.10	<0.10	2.04	2.5	20%	1.25	1.84	<0.10	<0.10
Zinc (Zn)	250	17.8	29.8	46.5	19.1	14.1	22.3	4.24	4.66	9%	19.5	8.13	11.3	10.2

Notes (Refer to endnotes for complete list)

10 value is greater than the Ontario Vegetation Criteria

--- No guideline.

NC - Not calculated

- Not Analysed

Where two values shown, the first is based on Southern Ontario data while the second is based on Northeastern Region data.

Area ID	Foliage (Rural)[1]	Grass (Rural)[1]	AEC 1	AEC 3
Station ID			**AEC1-VEG09-1**	**AEC3-AQ-VEG09-1**
Field label			AEC1-VEG09-1	AEC3-AQ-VEG09-1
Duplicate ID				
Date			16/Sep/09	16/Sep/09
Lab report ID			A9C4887	A9C4887
Aroclor 1016	---	---	<0.1	<0.1
Aroclor 1221	---	---	<0.1	<0.1
Aroclor 1232	---	---	<0.1	<0.1
Aroclor 1242	---	---	<0.1	<0.1
Aroclor 1248	---	---	<0.1	<0.1
Aroclor 1254	---	---	<0.1	<0.1
Aroclor 1260	---	---	<0.1	<0.1
Aroclor 1262	---	---	<0.1	<0.1
Aroclor 1268	---	---	<0.1	<0.1
Polychlorinated biphenyls	---	---	<0.1	<0.1

Notes:

1= The Ontario Ministry of the Environment and Energy (MOEE) HCB Phytotoxicology Field Investigation Manual (014-3511-93). "Upper Limit of Normal" , contaminant guidelines (ULN) for concentrations of contaminants in foliage, grass, and moss bags in Ontario.

---' = No Guidelines exist

All units in ug/g.

20 = Guidelines Used

20 = Denotes exceedance of guidelines

TABLE 7-20B: Analytical Results for PCBs in Vegetation - 2008

		APEC 1	APEC 2	APEC 3				APEC 4				
Parameters	**Vegetation Foliage (Rural)**	**VEG-6**	**VEG-4**	**VEG-1**	**VEG-2**	**VEG-3**	**VEG-5**	**A4-VEG-1**	**VEG-DUP**	***RPD***	**A4-VEG-2**	**A4-VEG-3**
Lab ID #		*L682370-6*	*L682370-4*	*L682370-1*	*L682370-2*	*L682370-3*	*L682370-5*	*L682370-7*	*L682370-10*		*L682370-8*	*L682370-9*
Sample Date		*09-SEP-08*	*09-SEP-08*	*09-SEP-08*	*09-SEP-08*	*09-SEP-08*	*09-SEP-08*	*10-SEP-08*	*10-SEP-08*		*10-SEP-08*	*10-SEP-08*
Prepared by:		**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**		**Franz**	**Franz**
Polychlorinated Biphenyls												
PCB-1016	---	<0.20	<0.25	<0.50	<0.10	<0.10	<0.050	<0.050	<0.050	NC	<0.050	<0.050
PCB-1221	---	<0.20	<0.25	<0.50	<0.10	<0.10	<0.050	<0.050	<0.050	NC	<0.050	<0.050
PCB-1232	---	<0.20	<0.25	<0.50	<0.10	<0.10	<0.050	<0.050	<0.050	NC	<0.050	<0.050
PCB-1242	---	<0.20	<0.25	<0.50	<0.10	<0.10	<0.050	<0.050	<0.050	NC	<0.050	<0.050
PCB-1248	---	<0.20	<0.25	<0.50	<0.10	<0.10	<0.050	<0.050	<0.050	NC	<0.050	<0.050
PCB-1254	---	<0.20	<0.25	<0.50	<0.10	<0.10	<0.050	<0.050	<0.050	NC	<0.050	<0.050
PCB-1260	---	<0.20	<0.25	<0.50	<0.10	<0.10	<0.050	<0.050	<0.050	NC	<0.050	<0.050
PCB-1262	---	<0.20	<0.25	<0.50	<0.10	<0.10	<0.050	<0.050	<0.050	NC	<0.050	<0.050
PCB-1268	---	<0.20	<0.25	<0.50	<0.10	<0.10	<0.050	<0.050	<0.050	NC	<0.050	<0.050
Total Polychlorinated Biphenyls	---	<0.20	<0.25	<0.50	<0.10	<0.10	<0.050	<0.050	<0.050	NC	<0.050	<0.050

Notes (Refer to endnotes for complete list)

10 value is greater than the Ontario Vegetation Criteria

--- No Standard.

NC - Not calculated

Building Materials – Analytical Results

TABLE 7-21: Analytical Results for Lead in Paint - 2009

PARAMETER	Designated Substances Criteria				AEC 2	
Sampling Number	Territorial		Federal		AEC2-PB09-1 (ORANGE)	AEC2-PB09-2 (GREEN)
Sampling Date					16/09/2009	16/09/2009
Sample Description	Government of NWT[1]	Government of NWT[2]	Health Canada[3]	CEPA[4]	Orange	Green
Material						
Total Lead in Paint (mg/kg)	**600**	---	---	---	75,000	57,000

Notes:
1= Government of Northwest Territories (2004), Guideline for Management of Waste Lead and Lead Paint.
2= Guideline for Industrial Waste Discharges in the NWT, 1998, Schedule IV Standards for Solid Waste/Process Residuals Suitable for Landfill (based on Leachate Quality criteria test results).
3= Health Canada's Hazardous Products Act, R.S.C, 1985, c. H-3.
4= Canadian Environmental Protection Act (1999), Export and Import of Hazardous Waste and Hazardous RecyclableMaterial Regulations (May, 2005), Schedule 6.
*= Inadequate sample size to perform analysis.
ND = Denotes Non-Detectable.
--- = No criteria.
20 = Denotes guidelines used to determine exceedanc
20 = Denotes exceedances of Designated Substances

APPENDIX A

FIELD LOGS

Date: 16-Sep-09		Test Pit: AEC1-TP09-1	SAMPLES					COMMENTS
Logged by: Ryan Fletcher Method: Excavator Location: AEC 1 - Up Gradient			Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Potential Buried Debris	0 - 0.33	SAND - fine, reddish brown, moist to wet, no odour, roots and rootlets	GR	AEC1-TP09-1-1	0.8	0	PHCs, metals, PAHs, PCBs, VOCs	Water encountered @ 0.8m, EOH - Sluffing @ 1.3m
	0.33 - 0.8	SAND AND GRAVEL - fine to coarse, grey, some cobbles and boulders at 0.8m, wet						
	0.8 - 1.3	SAND AND GRAVEL - fine to coarse, grey, some cobbles and boulders, saturated	GR	AEC1-TP09-1-2	1.3	0	Metals	

Date: 16-Sep-09		Test Pit: AEC1-TP09-2	SAMPLES					COMMENTS
Logged by: Ryan Fletcher Method: Excavator Location: AEC 1 - Up Gradient			Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Potential Buried Debris	0 - 0.2	SAND - fine to medium, reddish brown, moist, no odour, rootlets	GR	AEC1-TP09-2-1	0.75	0		Water encountered @ 0.6m, EOH - Frost @ 0.8m
	0.2 - 0.8	SAND - fine, grey, some silt, wet, no odour						

Date: 16-Sep-09		Test Pit: AEC1-TP09-3	SAMPLES					COMMENTS
Logged by: Ryan Fletcher Method: Excavator Location: AEC 1 - Up Gradient			Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Potential Buried Debris	0 - 1.0	SAND - fine to medium, brown, moist, no odour, metal debris	GR	AEC1-TP09-3-1	1	0	metals	hydrocarbon odour @ 1.2m, metal debris - drums, pipe, cable
	1.0 - 1.5	SAND - fine to medium, brown, moist, hydrocarbon odour, metal debris, EOH - frost	GR	AEC1-TP09-3-2	1.5	0	PHCs, PAHs, PCBs, VOCs, Pest/Herb	

Date: 16-Sep-09		Test Pit: AEC1-TP09-4	SAMPLES					COMMENTS
Logged by: Ryan Fletcher Method: Excavator Location: AEC 1 - Up Gradient			Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Potential Buried Debris	0 - 1.0	SAND AND GRAVEL - fine to coarse, brown, moist to wet, no odour	GR	AEC1-TP09-4-1	0.9	0	PHCs, PCBs & metals	Water encountered @ 0.9m, EOH - Frost @ 1.1m
	1.0 - 1.1	SILTY SAND - fine to coarse, yellow/beige, wet, no odour	GR	AEC1-TP09-4-2	no sample	N/A		

Date:	16-Sep-09	**Test Pit: AEC1-TP09-5**	SAMPLES					COMMENTS
Logged by:	Ryan Fletcher							
Method:	Excavator							
Location:	AEC 1 - Up Gradient		Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Potential Buried Debris	0 - 0.8	SAND AND GRAVEL - fine to coarse, brown, moist, no odour	GR	AEC1-TP09-5-1	0.8	0	PHCs & metals	EOH - Frost @ 1.5m
	0.8 - 1.0	SAND - some silt, fine, moist, no odour	GR	AEC1-TP09-5-2	1	0	metals	
	1.0 - 1.5		GR	AEC1-TP09-5-3	1.5	5		

Date:	16-Sep-09	**Test Pit: AEC1-TP09-6**	SAMPLES					COMMENTS
Logged by:	Ryan Fletcher							
Method:	Excavator							
Location:	AEC 1 - Up Gradient		Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Potential Buried Debris	0 - 0.2	SAND - fine, brown, moist, no odour, rootlets	GR	N/A	N/A	N/A	N/A	EOH - Frost @ 1.5m
	0.2 - 1.0	SAND - fine, grey, trace silt, moist, no odour	GR	AEC1-TP09-6-1	1	0	N/A	
	0.1 - 1.5		GR	AEC1-TP09-6-2	1.5	N/A	N/A	

Date:	16-Sep-09	**Test Pit: AEC1-TP09-7**	SAMPLES					COMMENTS
Logged by:	Ryan Fletcher							
Method:	Excavator							
Location:	AEC 1 - Up Gradient		Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Potential Buried Debris	0 - 1.1	SAND - fine to medium, brown, moist, no odour, rootlets, some cobbles and boulders at 1.0m	GR	AEC1-TP09-7-1	1.1	0	N/A	EOH - Sluffing @ 1.1m

Date:	16-Sep-09	**Test Pit: AEC2-TP09-1**	SAMPLES					COMMENTS
Logged by:	Julie Dittburner							
Method:	Hand Excavation							
Location:	AEC 2 - Vehicle Dump		Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Vehicles and Debris, Stain	Surface	SAND AND GRAVEL- fine to coarse, brown, dry, no odour	GR	AEC2-TP09-1	Surface	0	PHCs, Metals, PCBs	EOH - Bedrock @ 0.1m

Date:	16-Sep-09	**Test Pit: AEC2-TP09-2**	SAMPLES					COMMENTS
Logged by:	Julie Dittburner		Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Method:	Hand Excavation							
Location:	AEC 2 - Vehicle Dump							
Issue	Depth (m)	Description						
Vehicles and Debris, Stain	0 - 0.2	SAND AND GRAVEL- fine to coarse, brown, dry, no odour, some rootlets	GR	AEC2-TP09-2	0.2	0	PHCs, Metals, PCBs	EOH - Bedrock @ 0.2m, Duplicate AEC2-DUP3

Date:	16-Sep-09	**Test Pit: AEC3-TP09-T1**
Logged by:	Ryan Fletcher	
Method:	Excavator	
Location:	AEC 3 - Landfill - Top of Escarpment	
Issue	Depth (m)	Description
Observation Pit	<0.1	Debris , <0.1m of soil, sand and gravel

Date:	16-Sep-09	**Test Pit: AEC3-TP09-T2**
Logged by:	Ryan Fletcher	
Method:	Excavator	
Location:	AEC 3 - Landfill - Top of Escarpment	
Issue	Depth (m)	Description
Observation Pit	<0.1	Debris, <0.1m of soil, sand and gravel

Date:	16-Sep-09	**Test Pit: AEC3-TP09-T3**
Logged by:	Ryan Fletcher	
Method:	Excavator	
Location:	AEC 3 - Landfill - Top of Escarpment	
Issue	Depth (m)	Description
Observation Pit	<0.15	Debris, <0.15m of soil, sand and gravel

Date:	16-Sep-09	**Test Pit: AEC3-TP09-T4**
Logged by:	Ryan Fletcher	
Method:	Excavator	
Location:	AEC 3 - Landfill - Top of Escarpment	
Issue	Depth (m)	Description
Observation Pit	<0.15	Debris, <0.15m of soil, sand and gravel

Date: 16-Sep-09		**Test Pit: AEC3-TP09-1**	SAMPLES					COMMENTS
Logged by: Julie Dittburner Method: Hand Excavation Location: AEC 3 - Landfill			Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Exposed Debris	0 - 0.25	SAND AND GRAVEL - fine to coarse, dark brown, some organic matter at surface, dry, no odour, rootlets	GR	AEC3-TP09-1	0.25	N/A	PCBs, PHCs	

Date: 16-Sep-09		**Test Pit: AEC3-TP09-3**	SAMPLES					COMMENTS
Logged by: Julie Dittburner Method: Hand Excavation Location: AEC 3 - Landfill			Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Escarpment Runoff	0 - 0.1	SAND - fine to coarse, brown, some organic matter, dry, no odour, rootlets	GR	AEC3-TP09-3	Surface	10	PHCs	

Date: 17-Sep-09		**Test Pit: AEC3-TP09-4**	SAMPLES					COMMENTS
Logged by: Julie Dittburner Method: Hand Excavation Location: AEC 3 - Landfill			Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Barrel Cache Stained Area	0 - 0.2	SAND AND GRAVEL - fine to coarse, some silt, brown, dry, no odour, rootlets	GR	AEC3-TP09-4	0.2	N/A	Metals	

Date: 16-Sep-09		**Test Pit: AEC3-TP09-5**	SAMPLES					COMMENTS
Logged by: Julie Dittburner Method: Hand Excavation Location: AEC 3 - Landfill			Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Barrel Cache Area	0 - 0.2	SAND AND GRAVEL- fine to coarse, some silt, brown, dry, no odour, some rootlets	GR	AEC3-TP09-5	0.2	10	Metals	

Date: 16-Sep-09		Test Pit: AEC3-TP09-6	SAMPLES					COMMENTS
Logged by: Julie Dittburner Method: Hand Excavation Location: AEC 3 - Landfill			Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Landfill Leachate	0 - 0.38	SAND AND SILT - fine to medium, some gravel, brown, dry, no odour, rootlets	GR	AEC3-TP09-6	0.38	N/A	PAHs, VOCs, PHCs, metals	

Date: 16-Sep-09		Test Pit: AEC3-TP09-7	SAMPLES					COMMENTS
Logged by: Julie Dittburner Method: Hand Excavation Location: AEC 3 - Landfill			Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Landfill Leachate	0 - 0.4	SAND - fine to coarse, some silt, some clay, brown, dry, no odour, organic layer at 0.05m, rootlets	GR	AEC3-TP09-7	0.4	N/A	VOCs, PHCs, PAHs, metals	

Date: 16-Sep-09		Test Pit: AEC4-TP09-1	SAMPLES					COMMENTS
Logged by: Julie Dittburner Method: Hand Excavation Location: AEC 4 - Down Gradient			Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Landfill Leachate	0 - 0.3	SAND AND SILT - fine to coarse, some clay, reddish brown, moist, no odour, rootlets, organic layer on surface	GR	AEC4-TP09-1	0.3	0	PHCs, metals, PAHs, VOCs	

Date: 16-Sep-09		Test Pit: AEC4-TP09-2	SAMPLES					COMMENTS
Logged by: Julie Dittburner Method: Hand Excavation Location: AEC 4 - Down Gradient			Type	Sample I.D.	Depth of sample	OVM (ppm)	Analysis	
Issue	Depth (m)	Description						
Landfill Leachate and small Barrel Cache	0 - 0.35	ORGANIC MATTER- some sand and gravel, some silt, fine to medium, grey brown, moist, organic odour, rootlets, rust color horizon just below surface	GR	AEC4-TP09-2	0.35	10	PHCs, metals, VOCs	

TEST PIT	DEPTH (m)	SAMPLE ID	VAPOUR READINGS (ppm)	SOIL DESCRIPTION	DEBRIS
APEC 1 - UP-GRADIENT DEBRIS					
A1-TP08-1	0.0 - 0.80	A1-TP08-1	110	Brown fine to coarse SAND and GRAVEL.	Drums, metal, piping, cable, vehicle parts, wheel rims, wood
A1-TP08-2	0.0 - 1.0	A1-TP08-2	-	Brown fine to coarse SAND and GRAVEL, no odour.	Drums, steel rods, metal, wood
A1-TP08-3	0.0 - 1.6	A1-TP08-3	-	Brown fine to coarse SAND and GRAVEL, no odour.	Tires, drums, wood, iron bracing, vehicle parts, rubber hose, cable wire, rods
APEC 2 - VEHICLE DUMP					
A2-TP08-1	0.0 - 0.1	A2-TP08-1	55	Dark brown fine to medium silty SAND, trace gravel, some organic matter, black staining, organic odour. Overlain bedrock	No
A2-TP08-2	0.0 - 0.1	A2-TP08-2	140	Dark brown SAND, trace gravel, some organic matter, organic odour.	No
APEC 3 - LANDFILL					
A3-TP08-1	0.0 - 0.2	A3-TP08-1	-	Dark brown fine to medium SAND, some organic matter, no odour, black staining.	Yes, metal debris
A3-TP08-2	0.0 - 0.12	A3-TP08-2	15	Black medium to coarse SAND, trace gravel, some organic matter, hydrocarbon odour. Overlain bedrock	No
A3-TP08-3	0.0 - 0.25	A3-TP08-3	20	Black SAND, organic matter, no odour. Overlain bedrock	No
A3-TP08-4	0.0 - 0.05	A3-TP08-4	-	Black SAND, organic matter, no odour. Overlain bedrock	No
A3-TP08-5	0.0 - 0.3	A3-TP08-5 / DUP - 1	70	Light brown fine to medium SAND, some organic matter, no odour, orange staining. Overlain bedrock. Slightly stressed vegetaion on surface.	No
A3-TP08-6	0.0 - 0.3	A3-TP08-6	80	Dark brown fine to medium silty SAND, no odour. Overlain bedrock	No
A3-TP08-7	0.0 - 0.25	A3-TP08-7	70	Dark brown/beige fine silty SAND, organic matter, paint odour. Overlain bedrock	No
A3-TP08-8	0.0 - 0.30	A3-TP08-8	60	Gry/brown silty SAND, some organic matter, no odour. Overlain bedrock	No
A3-TP08-9	0.0 - 0.20	A3-TP08-9	0	Gry/brown silty SAND, some organic matter, hydrocarbon odour. Overlain bedrock	No
A3-TP08-10	0.0 - 0.15	A3-TP08-10	-	Light brown fine to medium silty SAND, some organic matter, no odour. Overlain bedrock	No
A3-TP08-11	0.0 - 0.20	A3-TP08-11	50	Brown silty SAND, fine to medium, no odour. Overlain bedrock	No
A3-TP08-12	0.0 - 0.10	A3-TP08-12	20	Brown/grey SAND and GRAVEL, hydrocarbon odour. Overlain bedrock	No
A3-TP08-13	0.0 - 0.20	A3-TP08-13 / DUP-2	75	Bronw SAND and GRAVEL, heavy orange staining, unidentified odour.	No
A3-TP08-14	0.0 - 0.40	A3-TP08-14	75	Dark grey fine to medium silty SAND, trace gravel, trace organic matter, paint odour. Overlain bedrock	No
A3-TP08-15	0.0 - 0.30	A3-TP08-15	70	Brown fine to medium silty SAND, trace organic matter, no odour. Overlain bedrock	No
A3-TP08-16	0.0 - 0.30	A3-TP08-16	60	Light brown fine to medium SAND, some silt, trace organic matter, no odour. Overlain bedrock	No
A3-TP08-17	0.0 - 0.5	A3-TP08-17	-	Dark grey silty SAND, trace gravel, some organic matter. Overlain bedrock	No
A3-TP08-18	0.0 - 0.35	A3-TP08-18	45	Black fine to coarse SAND, trace gravel, some organic matter, no odour. Overlain bedrock	Metal debris
APEC 4 - DOWN-GRADIENT					
A4-TP08-1	0.0 - 0.80	A4-TP08-1	70	Dark brown fine to medium SAND, organic matter, no odour. Overlain bedrock	No
A4-TP08-2	0.0 - 0.33	A4-TP08-2	40	Dark grey/brown fine to medium SAND, organic matter, no odour. Overlain bedrock	No

TABLE A3 - Grain Size Analysis
(all units % unless otherwise stated)

Parameters	GS-1	GS-2	GS-3	GS-4	GS-5	GS-SD-1	GS-SD-2
Lab ID #	*L682370-23*	*L682370-24*	*L682370-25*	*L682370-26*	*L682370-27*	*L682370-28*	*L682370-29*
Sample Date	*09-SEP-08*	*09-SEP-08*	*09-SEP-08*	*09-SEP-08*	*09-SEP-08*	*09-SEP-08*	*09-SEP-08*
Prepared by:	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**	**Franz**
Particle Size							
% Gravel (>2mm)	17	13	1	4	6	2	4
% Sand (2.0mm - 0.063mm)	68	75	70	63	55	84	55
% Silt (0.063mm - 4um)	12	1	16	19	35	13	33
% Clay (<4um)	2	11	13	13	4	2	8

FIELD CHEMISTRY PARAMETERS - 2009						
SURFACE WATER STATION	**pH (UpH)**	**TEMPERATURE (°C)**	**CONDUCTIVITY (mS/cm)**	**DO**	**ORP**	**TURBINITY**
APEC 1 - UP-GRADIENT DEBRIS						
AEC1-SW09-1	7.35	5.97	0.071	8	89	91.3
	7.31	5.95	0.071	7.92	93	86.1
	7.29	5.91	0.072	7.81	97	75.3
	7.26	5.9	0.072	7.77	99	70.2
AVERAGE	**7.30**	**5.93**	**0.07**	**7.88**	**94.50**	**80.73**
APEC 2 - VEHICLE DUMP						
AEC2-SW09-1	7.63	1.03	0.083	0	203	19
	7.5	1.31	0.083	1.98	197	18.9
	7.41	1.29	0.084	3.47	191	19.1
	7.34	1.29	0.084	3.86	188	19.2
AVERAGE	**7.47**	**1.23**	**0.084**	**2.33**	**194.75**	**19.05**
AEC2-SW09-2	7.3	1.37	0.075	6.17	95	41.8
	7.28	1.37	0.075	6.2	95	44.6
	7.27	1.38	0.075	6.23	96	44.1
	7.26	1.39	0.075	6.27	96	44.5
AVERAGE	**7.28**	**1.38**	**0.08**	**6.22**	**95.50**	**43.75**
AEC2-SW09-3	7.23	2.29	0.082	4.4	80	20.2
	7.21	2.21	0.082	4.67	80	19.1
	7.2	2.15	0.082	4.78	81	19.8
	7.19	2.13	0.082	4.84	82	19.9
AVERAGE	**7.21**	**2.20**	**0.082**	**4.67**	**80.75**	**19.75**
AEC2-SW09-4	7.06	2.7	0.064	4.89	0	12.3
	7.02	2.58	0.063	4.93	0	44.3
	7.01	2.5	0.063	4.83	2	16.9
	6.99	2.46	0.063	4.78	4	44.6
AVERAGE	**7.02**	**2.56**	**0.06**	**4.86**	**1.50**	**29.53**
AEC2-SW09-5	6.85	2.07	0.059	6.08	57.0	127.0
	6.85	2.05	0.059	7.18	47.0	127.0
	6.87	2.05	0.059	5.26	46.0	125.0
	6.85	2.04	0.059	4.30	45.0	120.0
AVERAGE	**6.86**	**2.05**	**0.06**	**5.71**	**48.75**	**124.75**
AEC2-SW09-6	7.01	2.34	0.059	4.35	34.0	22.3
	7.01	2.35	0.059	4.69	34.0	22.0
	7.00	2.35	0.059	4.82	34.0	21.3
	7.00	2.36	0.059	4.93	34.0	21.5
AVERAGE	**7.01**	**2.35**	**0.06**	**4.70**	**34.00**	**21.78**
AEC2-SW09-7	7.00	3.57	0.064	7.52	41.0	21.1
	7.02	3.54	0.064	6.55	29.0	21.0
	7.04	3.54	0.065	6.86	23.0	20.0
AVERAGE	**7.02**	**3.55**	**0.06**	**6.98**	**31.00**	**20.70**
AEC2-SW09-8	7.18	3.75	0.063	6.75	29.0	35.4
	7.20	3.74	0.063	7.47	26.0	24.3
	7.22	3.74	0.063	8.01	23.0	32.7
	7.23	3.75	0.063	8.20	22.0	32.9
AVERAGE	**7.21**	**3.75**	**0.06**	**7.61**	**25.00**	**31.33**
AEC2-SW09-9	7.30	4.40	0.071	0.55	7.5	86.6
	7.23	4.47	0.071	4.60	79.5	82.9
	7.22	4.50	0.071	5.90	66.0	79.5
	7.21	4.51	0.071	6.55	64.0	81.0
AVERAGE	**7.24**	**4.47**	**0.07**	**4.40**	**54.25**	**82.50**
AEC2-SW09-10	7.15	4.96	0.075	8.54	30.0	21.1
	7.15	4.98	0.075	8.72	32.0	20.9
	7.14	4.98	0.075	8.90	34.0	20.8
	7.13	5.00	0.075	9.06	37.0	20.8
AVERAGE	**7.14**	**4.98**	**0.08**	**8.81**	**33.25**	**20.90**
AEC2-SW09-11	7.23	4.79	0.078	6.15	127.0	21.8
	7.22	4.85	0.077	8.82	125.0	19.8
	7.24	4.89	0.077	9.49	124.0	19.7
	7.26	4.91	0.077	9.98	123.0	19.2
AVERAGE	**7.24**	**4.86**	**0.08**	**8.61**	**124.75**	**20.13**

FIELD CHEMISTRY PARAMETERS - 2009						
SURFACE WATER STATION	**pH (UpH)**	**TEMPERATURE (^{o}C)**	**CONDUCTIVITY (mS/cm)**	**DO**	**ORP**	**TURBINITY**
AEC 3 - LANDFILL						
AEC3-SW09-1	6.69	3.63	9.02	0	100	24.9
	6.86	3.63	9.05	1.42	39	22
	6.97	3.61	9	3.19	17	17.6
	7.06	3.59	8.92	3.95	19	17.5
	7.14	3.58	8.96	4.4	20	17.3
AVERAGE	**6.94**	**3.61**	**8.99**	**2.59**	**39.00**	**19.86**
AEC3-SW09-2	7.84	3.3	9.11	5.71	125	18.8
	7.86	3.3	9.11	5.8	123	23
	7.86	3.3	9.11	5.86	126	20.5
AVERAGE	**7.85**	**3.30**	**9.11**	**5.79**	**124.67**	**20.77**
AEC3-SW09-3	7.61	3.64	9.14	4.98	97	25.8
	7.63	3.65	9.19	5.35	97	25.2
	7.66	3.65	9.19	5.58	98	24.8
	7.86	3.65	9.15	5.71	98	24.9
AVERAGE	**7.69**	**3.65**	**9.17**	**5.41**	**97.50**	**25.18**
APEC 4 - DOWN-GRADIENT						
AEC4-SW09-1	8.06	3.79	1.3	3.74	172	21.9
	8.06	3.81	1.3	3.84	172	21.7
	8.07	3.82	1.3	3.95	172	21.8
	8.07	3.81	1.31	4.08	171	21.8
AVERAGE	**8.07**	**3.81**	**1.30**	**3.90**	**171.75**	**21.80**
AEC4-SW09-2	8.18	3.98	1.45	3.43	168	21.9
	8.2	4	1.45	3.6	168	22.4
	8.21	4.02	1.45	3.69	167	22.2
	8.22	4.03	1.46	3.76	167	21.9
AVERAGE	**8.20**	**4.01**	**1.45**	**3.62**	**167.50**	**22.10**
AEC4-SW09-3	7.99	3.22	0.94	2.96	175	45.5
	7.99	3.24	0.94	3.02	175	35
	7.99	3.25	0.94	3.05	175	34.9
	7.99	3.27	0.94	3.08	174	32
AVERAGE	**7.99**	**3.25**	**0.94**	**3.03**	**174.75**	**36.85**
AEC4-SW09-4	8.1	3.72	1.81	4.24	187	29.2
	8.14	3.73	1.91	3.72	196	30.2
	8.07	3.74	1.84	3.77	198	29.6
	7.88	3.74	1.89	4.21	195	28.4
AVERAGE	**8.05**	**3.73**	**1.86**	**3.99**	**194.00**	**29.35**
AEC4-SW09-5	7.97	2.74	19.1	4.09	174	17.2
	8	2.75	19	4.21	173	17.2
	8.02	2.76	18.8	4.31	173	17.1
	8.03	2.76	18.8	4.37	172	17.2
AVERAGE	**8.01**	**2.75**	**18.93**	**4.25**	**173.00**	**17.18**
AEC4-SW09-6	8.25	3.32	1.41	3.95	164	17.2
	8.19	3.33	1.38	4.2	164	17
	8.12	3.32	1.4	4.45	164	17
	8.09	3.33	1.38	4.5	164	17.1
AVERAGE	**8.16**	**3.33**	**1.39**	**4.28**	**164.00**	**17.08**
AEC4-SW09-7	7.97	3.38	1.05	4.21	161	17
	7.96	3.39	1.05	4.47	160	17
	7.95	3.39	1.03	4.6	159	17.1
	7.93	3.38	1.05	4.66	158	17.2
AVERAGE	**7.95**	**3.39**	**1.05**	**4.49**	**159.50**	**17.08**
AEC4-SW09-8	7.84	3.39	1.1	1.76	186	17.70
	7.86	3.39	1.1	1.86	184	18.00
	7.88	3.41	1.1	2.59	183	17.30
	7.87	3.41	1.1	3.14	182	17.20
AVERAGE	**7.86**	**3.40**	**1.1**	**2.34**	**184**	**17.55**

FIELD CHEMISTRY PARAMETERS - 2009						
SURFACE WATER STATION	**pH (UpH)**	**TEMPERATURE (^oC)**	**CONDUCTIVITY (mS/cm)**	**DO**	**ORP**	**TURBIDITY**
APEC 4 - DOWN-GRADIENT CON'T						
AEC4-SW09-9	7.7	4.23	1.71	4.12	158	16.9
	7.73	4.26	2.49	4.27	158	24.6
	7.76	4.37	2.65	4.36	149	18.2
	7.65	4.28	3.32	4.93	140	19.4
AVERAGE	**7.71**	**4.29**	**2.54**	**4.42**	**151.25**	**19.78**
AEC4-SW09-10	8.13	4	0.139	7.11	150	54.1
	8.1	4	0.139	7.14	151	54.8
	8.08	3.99	0.139	7.17	151	55.2
	8.07	3.98	0.138	7.19	152	54.6
AVERAGE	**8.10**	**3.99**	**0.14**	**7.15**	**151.00**	**54.68**
AEC4-SW09-11	9.03	6.39	1.13	5.74	154	15.9
	9.06	6.49	1.13	5.84	153	16
	9.09	6.57	1.12	5.9	152	15.9
	9.1	6.55	1.13	5.95	150	15.9
AVERAGE	**9.07**	**6.50**	**1.13**	**5.86**	**152.25**	**15.93**
AEC4-SW09-12	8.07	5.62	17.5	5.25	169	16.2
	8.15	5.67	17.6	5.56	169	16.1
	8.2	5.75	17.7	6.13	168	16.3
	8.27	5.75	17.7	6.23	168	16
AVERAGE	**8.17**	**5.70**	**17.63**	**5.79**	**168.50**	**16.15**
AEC4-SW09-13	8.73	6.68	1.12	5.88	166	17.2
	8.7	6.85	1.08	6.5	166	16.3
	8.69	6.93	1.06	6.72	166	16.5
AVERAGE	**8.71**	**6.82**	**1.09**	**6.37**	**166.00**	**16.67**
AEC4-SW09-14	8.09	5.13	2.78	5.88	180	17.4
	8.09	5.15	2.78	5.94	180	17.1
	8.09	5.15	2.78	5.98	179	17.2
	8.08	5.18	2.78	6.01	179	17.1
AVERAGE	**8.09**	**5.15**	**2.78**	**5.95**	**179.50**	**17.20**
AEC4-SW09-15	8.19	5.69	2.88	5.21	174	18.8
	8.18	5.7	2.88	5.39	174	18.8
	8.18	5.7	2.88	5.48	174	18.8
	8.17	5.69	2.88	5.54	174	18.8
AVERAGE	**8.18**	**5.70**	**2.88**	**5.41**	**174.00**	**18.80**
AEC4-SW09-16	7.08	8.30	0.9	3.38	16	39.70
	6.98	8.40	0.9	3.47	18	39.90
	6.90	8.41	0.9	3.47	18	39.40
AVERAGE	**6.99**	**8.37**	**0.9**	**3.44**	**17**	**39.67**

	FIELD CHEMISTRY PARAMETERS					
SURFACE WATER STATION	**pH (UpH)**	**TEMPERATURE (^{o}C)**	**CONDUCTIVITY (mS/cm)**	**DO**	**ORP**	**TURBINITY**
APEC 1 - UP-GRADIENT DEBRIS						
A1-SW08-1	-	-	-	-	-	-
APEC 2 - VEHICLE DUMP						
A2-SW08-1	6.2	6.25	0.139	10.52	1.27	16.8
	6.16	6.22	0.138	10.39	1.43	15.9
	6.14	6.21	0.138	10.3	1.56	15.3
	6.11	6.2	0.138	10.2	1.67	15.1
	6.11	6.2	0.138	10.15	1.43	15.1
	6.11	6.17	0.137	10.12	1.81	14.9
AVERAGE	**6.14**	**6.21**	**0.138**	**10.28**	**1.53**	**15.52**
A2-SW08-2	6.37	7.25	0.116	10.67	78	45.9
	6.37	7.23	0.116	10.65	73	46.5
	6.4	7.23	0.117	10.66	71	40.62
	6.43	7.23	0.116	10.64	69	46.7
AVERAGE	**6.39**	**7.24**	**0.12**	**10.66**	**72.75**	**44.93**
A2-SW08-3	6.56	6.7	0.116	11	85	47.8
	6.51	6.7	0.116	10.99	85	42.9
	6.48	6.77	0.115	10.94	83	35.8
	6.74	6.8	0.115	10.92	82	43
	6.43	6.77	0.115	10.96	82	32
	6.75	6.8	0.115	10.96	83	
AVERAGE	**6.58**	**6.76**	**0.115**	**10.96**	**83.33**	**40.30**
A2-SW08-4	6.37	6.54	0.115	11.57	59	24.9
	6.35	6.59	0.114	11.59	58	21.2
	6.35	6.61	0.114	11.57	58	19.4
	6.6	6.62	0.114	11.57	57	18.2
	6.35	6.62	0.114	11.57	52	18.9
	6.35	6.62		11.55	57	19.6
AVERAGE	**6.40**	**6.60**	**0.11**	**11.57**	**56.83**	**20.37**
APEC 3 - LANDFILL						
A3-SW08-1	6.92	7.23	0.46	11.41	292	46
	6.75	7.25	0.458	11.77	290	42.59
	6.6	7.27	0.455	11.94	288	31.2
	6.53	7.3	0.455	12.18	286	39.4
	6.38	7.31	0.45	12.2	285	38.2
AVERAGE	**6.64**	**7.27**	**0.46**	**11.90**	**288.20**	**39.48**
A3-SW08-2	6.48	6.77	14.9	11.6	3.43	11.2
	6.56	6.76	14.9	11.66	3.4	9.9
	6.62	6.75	14.9	11.66	3.38	10.1
	6.77	6.75	14.9	11.74	3.36	10.1
AVERAGE	**6.61**	**6.76**	**14.90**	**11.67**	**3.39**	**10.33**
A3-SW08-3	6.31	6.47	0.141	11.77	306	14.7
	6.49	6.52	0.14	11.78	303	14.2
	6.51	6.57	0.14	11.8	301	14.2
	6.55	6.6	0.141	12.07	298	14.2
AVERAGE	**6.47**	**6.54**	**0.14**	**11.86**	**302.00**	**14.33**
A3-SW08-4	6.92	5.83	0.9	11.51	60	98.8
	6.82	5.84	0.9	11.54	53	99
	6.9	5.83	0.99	11.45	48	98.8
	5.83	5.82	0.99	11.48	49	99.2
	6.9	5.83	0.99	11.5	49	99.4
	6.91	5.83	0.9	11.49	49	99.3
AVERAGE	**6.71**	**5.83**	**0.95**	**11.50**	**51.33**	**99.08**

	FIELD CHEMISTRY PARAMETERS					
SURFACE WATER STATION	**pH (UpH)**	**TEMPERATURE (^oC)**	**CONDUCTIVITY (mS/cm)**	**DO**	**ORP**	**TURBINITY**
APEC 4 - DOWN-GRADIENT						
A4-SW08-1	6.93	5.66	5.26	11.68	237	11.2
	6.94	5.68	5.26	11.52	237	10.8
	6.95	5.69	5.26	11.5	237	11.5
	6.97	5.69	5.26	11.45	236	11
	6.98	5.71	5.26	11.45	236	11
AVERAGE	**6.95**	**5.69**	**5.26**	**11.52**	**236.60**	**11.10**
A4-SW08-2	6.66	4.88	6.25	11.15	288	11.9
	6.7	4.53	6.25	12	262	11.2
	6.76	4.61	6.28	12.07	252	11.4
	6.78	4.66	6.29	11.98	248	11
	6.8	4.69	6.3	11.9	243	11.1
	6.82	4.7	6.31	11.86	239	11.3
AVERAGE	**6.75**	**4.68**	**6.28**	**11.83**	**255.33**	**11.32**
A4-SW08-3	7.76	9.09	0.775	14.01	252	14
	7.79	9.14	0.788	13.06	248	13.94
	7.81	9.18	0.801	13.2	246	13.93
	7.84	9.18	0.826	13.87	243	12.5
	7.85	9.21	0.851	13.82	240	12.6
	7.88	9.22	0.857	13.85	237	12.8
AVERAGE	**7.82**	**9.17**	**0.82**	**13.64**	**244.33**	**13.30**
A4-SW08-4	7.67	6.26	0.069	12.66	257	9
	7.61	6.14	0.064	12.61	259	9.1
	7.55	6.14	0.062	12.59	261	8.9
	7.48	6.17	0.063	12.47	265	9.5
	7.39	6.12	0.06	12.52	267	9.5
	7.32	6.13	0.06	12.46	269	9.7
AVERAGE	**7.50**	**6.16**	**0.06**	**12.55**	**263.00**	**9.28**
A4-SW08-5	7.07	6.19	0.061	12.53	277	9
	7	6.19	0.06	12.52	280	9
	6.96	6.2	0.061	12.51	281	9
	6.94	6.2	0.06	12.49	282	9
AVERAGE	**6.99**	**6.20**	**0.06**	**12.51**	**280.00**	**9.00**
A4-SW08-6	8.25	7.23	0.138	13.67	255	10.3
	8.11	7.23	0.138	13.72	255	10.4
	8.1	7.23	0.136	13.65	254	10.4
	8.07	7.23	0.136	13.72	254	10.5
	8.07	7.24	0.137	13.76	254	10.4
AVERAGE	**8.12**	**7.23**	**0.14**	**13.70**	**254.40**	**10.40**
A4-SW08-7	8.61	7.53	0.394	12.97	240	14.9
	8.7	7.61	0.05	12.08	242	7.7
	8.57	7.51	0.458	12.72	244	14.3
	8.49	7.56	0.042	12.72	242	16.8
	8.55	7.48	0.046	12.61	244	7.5
	8.42	7.62		12.52	243	13.9
AVERAGE	**7.53**	**7.55**	**0.20**	**12.60**	**242.50**	**12.52**
A4-SW08-8	7.61	7.03	50.0	18.50	302	13.80
	7.51	7.00	50.1	18.89	299	13.90
	7.56	6.98	50.1	18.83	297	14.20
	7.48	6.98	50.2	18.83	295	14.60
AVERAGE	**7.62**	**7.00**	**50.1**	**18.76**	**298**	**14.13**

Project: 1584-0901
Iqaluit TC Landfill

Franz Personnel: Ryan Fletcher and Julie Dittburner
Weather: Overcast to partly sunny, 3 to 5 degrees, windy

Sample ID	Coordinates Easting/Northing	H_2O depth (m)	Organics (%)	Recov. %	Sheen	Comments (Benthic species, colour, grain size, decomposition, odour, Sheen², staining, etc..)
AEC 1 - Up Gradien Debris						
AEC1-SD09-1 notes:	522136 7067957	0.4	55	100	no	No visible benthos, dark brown, fine to coarse grained, sand and organics, medium decomposition, no odour
AEC 2 - Vehicle Dump						
AEC2-SD09-1 notes: @ A2-SD08-1	522018 7067913	0.3	50	100	no	No visible benthos, dark brown, coarse sand, some silt, low decomposition, slight organic sheen, no odour
AEC2-SD09-2 notes: New for 2009	522033 7067875	0.1	60-80	100	no	No visible benthos, dark brown, highly organic, trace angluar rocks, little sand/silt, high decomposition, no odour
AEC2-SD09-3 notes: New for 2009	522060 7067832	0.07	40	100	no	No visible benthos, dark brown, fine sand, trace gravel, high decomposition, organic odour
AEC2-SD09-4 notes: @ A2-SD08-2	522035 7067784	0.3	40	100	no	No visible benthos, dark brown/black, slightly organic, trace sand, high decomposition, no odour, slight staining
AEC2-SD09-5 notes: @ A2-SD09-3	522011 7067780	0.1	none	100	no	No visible benthos, brown, fine to course sand and gravel, no organics, no decomposition, no odour

NO= No hydrocarbon odour   Decomposition = high/medium/low   Organic odour (marshy/swampy)= high/medium/low   1= sheen on water surface   2= sheen on sediment sample

Project: 1584-0901
Iqaluit TC Landfill

Franz Personnel: Ryan Fletcher and Julie Dittburner
Weather: Overcast to partly sunny, 3 to 5 degrees, windy

Sample ID	Coordinates Easting/Northing	H_2O depth (m)	Organics (%)	Recov. %	Sheen	Comments (Benthic species, colour, grain size, decomposition, odour, Sheen², staining, etc..)
AEC 2 - Vehicle Dump Con't						
AEC2-SD09-6 notes: New for 2009	521998 7067786	0.1	none	100	no	No visible benthos, brown, fine to coarse sand and gravel, no organics, no decomposition, stained orange on sediment surface, slight metallic odour
AEC2-SD09-7 notes: @ A2-SD08-4	521960 7067772	0.15	30	100	slight	No visible benthos, reddish brown, fine to coarse sand and gravel, very little organics, some decomposition, orangey-red staining on sediment surface, no odour
AEC2-SD09-8 notes: @ A3-SD08-4	521942 7067751	0.1	none	100	no	No visible benthos, dark brown, coarse gravel, some sand, no organics, no decomposition, no odour
AEC2-SD09-9 notes: New for 2009 SD09-DUP1	521928 7067743	0.45	45	100	yes	No benthos visible, light reddish brown, organic matter preset, some sand and gravel, medium decomposition, organic sheen, black staining, slight odour
AEC2-SD09-10 notes: @ A3-SD08-3	521917 7067730	0.3	50	100	slight	No visible benthos, black, fine to coarse, some sand/silt, organic matter, medium decomposition, organic sheen on water surface, no odour

NO= No hydrocarbon odour   Decomposition = high/medium/low   Organic odour (marshy/swampy)= high/medium/low   1= sheen on water surface   2= sheen on sediment sample

Project: 1584-0901
Iqaluit TC Landfill

Franz Personnel: Ryan Fletcher and Julie Dittburner
Weather: Overcast to partly sunny, 3 to 5 degrees, windy

Sample ID	Coordinates Easting/Northing	H_2O depth (m)	Organics (%)	Recov. %	Sheen	Comments (Benthic species, colour, grain size, decomposition, odour, Sheen², staining, etc..)
AEC 2 - Vehicle Dump Con't						
AEC2-SD09-11 notes: New for 2009	521900 7067714	0.25	85	100	no	No visible benthos, brown with black portions, some fine to coarse sand and gravel, organics, high decomposition,no odour
AEC 3 - Landfill						
AEC3-SD09-1 notes: New for 2009	521844 7067802	0.25	none	100	no	No visible benthos, black, fine to coarse sand and gravel, no organics, no decomposition, no odour
AEC3-SD09-2 notes: New for 2209	N/A	0.3	none	100	no	No visible benthos, black, fine to coarse sand, some gravel, no organics, no decomposition, no odour
AEC3-SD09-3 notes: New for 2009	521812 7067777	0.4	none	100	no	No visible benthos, black, fine to coarse sand and gravel, no organics, no decomposition, no odour
AEC 4 - Down-Gradient						
AEC4-SD09-1 notes: @ pond 4 inlet	521868 7067699	0.4	45	100	no	No visible benthos, brown with black colored cells, fine to coarse sand and gravel, some organics, high decomposition, no odour

NO= No hydrocarbon odour   Decomposition = high/medium/low   Organic odour (marshy/swampy)= high/medium/low   1= sheen on water surface   2= sheen on sediment sample

Project: 1584-0901
Iqaluit TC Landfill

Franz Personnel: Ryan Fletcher and Julie Dittburner
Weather: Overcast to partly sunny, 3 to 5 degrees, windy

Sample ID	**Coordinates** Easting/Northing	**H_2O depth (m)**	**Organics (%)**	**Recov. %**	**Sheen**	**Comments** (Benthic species, colour, grain size, decomposition, odour, Sheen², staining, etc..)
AEC 4 - Down-Gradient Con't						
AEC4-SD09-2 notes: @ pond 4	521886 7067648	0.3	70	100	no	No visible benthos, black, fine to medium sand and gravel, organics, high decomposition, organic odour, slight organic sheen
AEC4-SD09-3 notes: @ pnod 4	521845 7067734	0.45	70	100	no	No visible benthos, black, fine to medium sand and gravel, organics, high decomposition, organic odour, slight organic sheen
AEC4-SD09-4 notes: adjacent to pond 4	N/A	0.25	70	100	no	No visible benthos, black, some sand and silt, high organics, high decomposition, organic odour, no organic sheen
AEC4-SD09-5 notes: adjacent to Silvia Grinnell River	N/A	0.45	60	100	no	No benthos visible, black, medium grained sand, organics, high decomposition, organic odour
AEC4-SD09-12 notes:	N/A	0.3	none	100	no	No benthos visible, brown, fine to coarse grained sand, no organics, no decomposition, no odour, small cells of black sand intermixed

NO= No hydrocarbon odour   Decomposition = high/medium/low   Organic odour (marshy/swampy)= high/medium/low   1= sheen on water surface   2= sheen on sediment sample

Project: 1584-0901
Iqaluit TC Landfill

Franz Personnel: Ryan Fletcher and Julie Dittburner
Weather: Overcast to partly sunny, 3 to 5 degrees, windy

Sample ID	Coordinates Easting/Northing	H_2O depth (m)	Organics (%)	Recov. %	Sheen	Comments (Benthic species, colour, grain size, decomposition, odour, Sheen², staining, etc..)
AEC 4 - Down-Gradient Con't						
AEC4-SD09-11 notes: SD09-DUP2	N/A	0.15	none	100	no	No visible benthos, black/brown, fine to medium sand, no organics, no decomposition, no odour, oranged stain on surface of sediments
AEC4-SD09-13 notes:	N/A	0.1	none	100	no	No visible benthos, black/brown, fine to medium sand, no organics, no decomposition, no odour, oranged stain on surface of sediments
AEC4-SD09-14 notes:	N/A	0.5	none	100	no	No visible benthos, black/brown, fine to coarse sand, no organics, no decomposition, no odour
AEC4-SD09-15 notes:	N/A	0.5	60	100	slight	No visible benthos, brown, fine to coarse sand/silt, organic matter, high decomposition, organic odour, brown layer of 'mush' on surface of sand

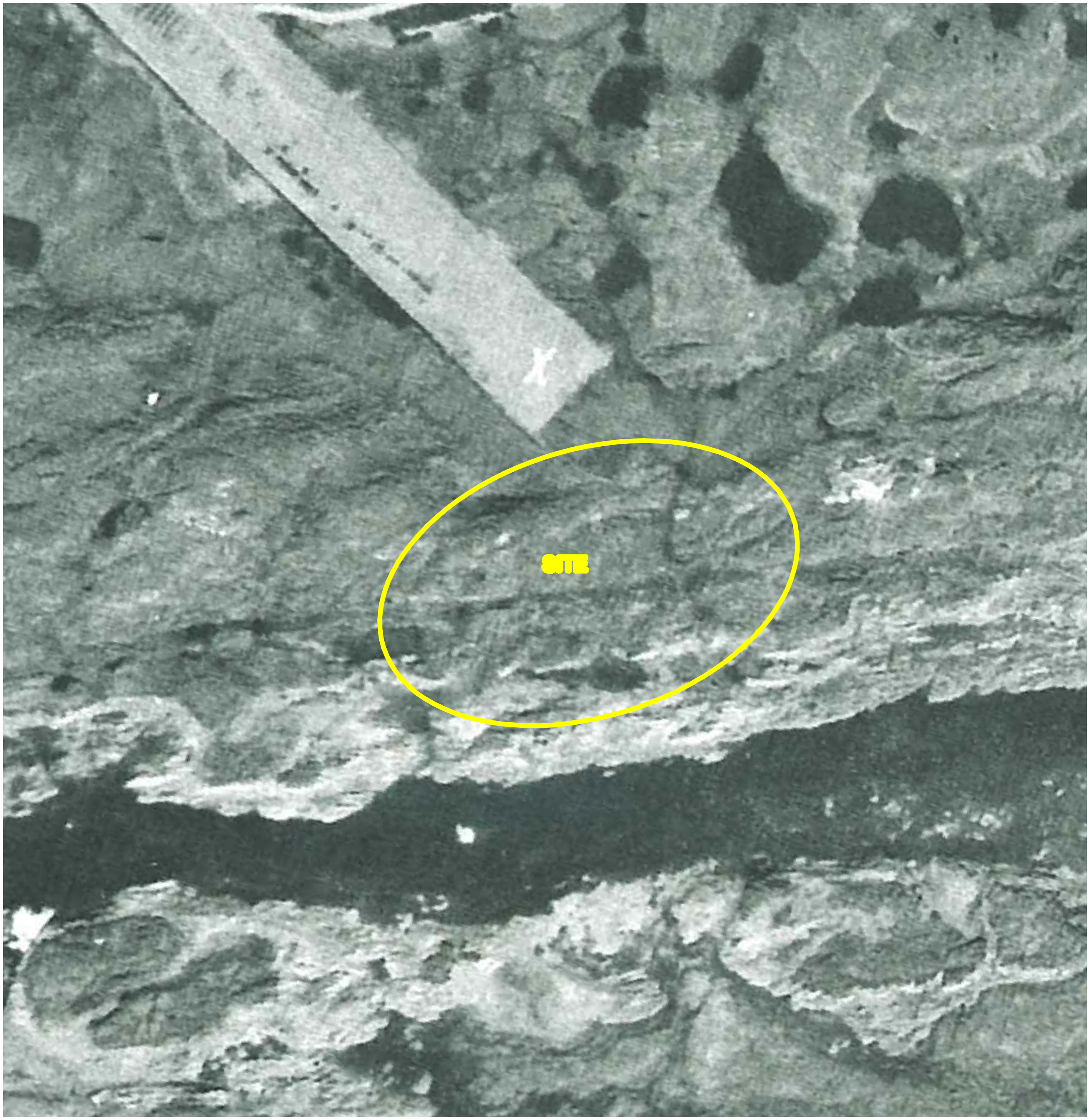
SAMPLE ID	WATER DEPTH (m)	ORGANIC MATTER (%)	RECOVERY (%)	DESCRIPTION	ORGANISMS	DEBRIS
APEC 2 - VEHICLE DUMP						
A2-S008-1	0.04	50	100	Brown fine to medium SAND, no odour, trace orange staining	No	No
A2-S008-2	0.04	70	100	Dark grey fine to coarse SAND , some gravel, no odour, orange staining	No	No
A2-S008-3	0.02	10	100	Dark grey fine to coarse SAND and GRAVEL, some odour, orange staining	No	No
A2-S008-4	0.05	60	100	Brown SAND and GRAVEL, organic odour, heavy orange staining	No	No
APEC 3 - LANDFILL						
A3-S008-2	0.4	10	100	Dark grey fine SAND, organic odour	No	No
A3-S008-3	0.5	30	100	Dark grey/black SAND, no odour or sheen	No	No
A3-S008-4	-	-	-	-	-	-
APEC 4 - DOWN-GRADIENT						
A4-SD08-1	0.35	trace	100	Brown/grey fine SAND, no odour or sheen	Shrimps	Metal debris
A4-SD08-2	0.1	10	100	Brown/grey fine to medium SAND, no odour or sheen	Shrimps, fish, algae	Some debris
A4-SD08-3	0.17	trace	100	Brown fine to coarse SAND and GRAVEL, no odour or staining	Fish	No
A4-SD08-4	0.25	0	100	Brown fine to medium SAND, no odour, sheen or staining	Slight algae growth	No
A4-SD08-5	0.32	0	100	Brown fine to medium SAND, no odour, sheen or staining	Slight algae growth	No
A4-SD08-6	0.2	trace	100	Brown fine to medium SAND and GRAVEL, no odour or staining	Fish	No
A4-SD08-8	0.22	5	100	Dark grey fine SAND, no odour, sheen or staining	Fish and algae growth	No

APPENDIX B

OFFICIAL SITE SURVEY

APPENDIX C

AERIAL PHOTOS



REFERENCE:
Aerial photo A11535-43, (original scale 1:15000). Taken 1948/07/23. Scanned photocopy. National Airphoto Library, Ottawa, Ontario

Title: 1948 AERIAL PHOTOGRAPH	
FRANZ ENVIRONMENTAL INC. • CONSULTING • ENGINEERING • TECHNOLOGIES •	Project: DUMP SITE IQALUIT, NUNAVUT
Date: JANUARY 2010	Client: PWGSC - TRANSPORT CANADA
NO SCALE	

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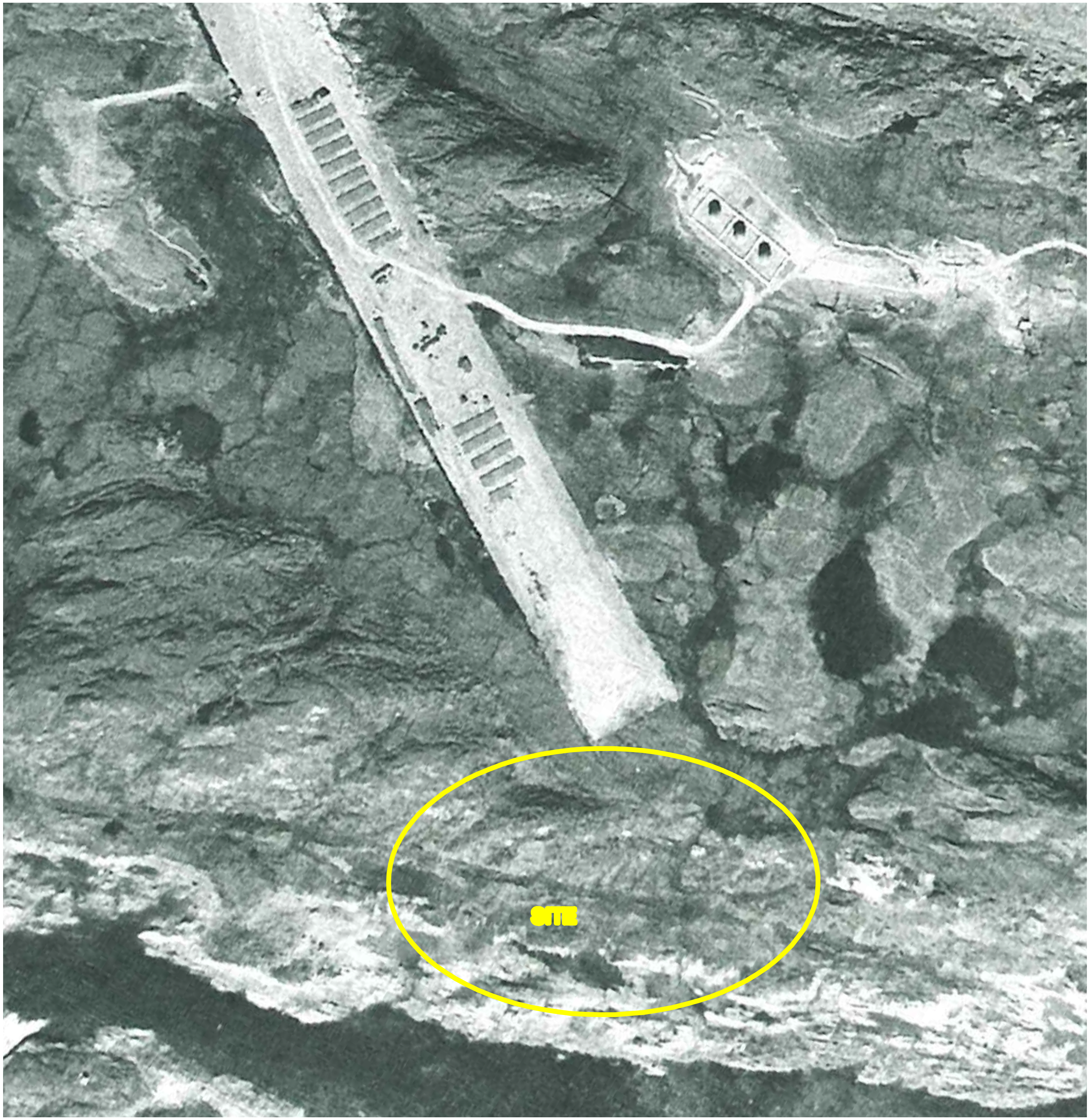

REFERENCE:
Aerial photo A13519-343, (original scale 1:15000). Taken 1952/07/21. Scanned photocopy. National Airphoto Library, Ottawa, Ontario

Title: 1952 AERIAL PHOTOGRAPH	
FRANZ ENVIRONMENTAL INC.	Project: DUMP SITE IQALUIT, NUNAVUT
Date: JANUARY 2010	Client: PWGSC - TRANSPORT CANADA
NO SCALE	

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REFERENCE:
Aerial photo A14869-3, (original scale 1:15000).
Taken 1955/07/23. Scanned from negetive. National
Airphoto Library, Ottawa, Ontario

Title: 1955 AERIAL PHOTOGRAPH

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Project: DUMP SITE
IQALUIT, NUNAVUT

Date: JANUARY 2010

Client: PWGSC - TRANSPORT CANADA

NO SCALE

Z:\Projects\2008\1584-0801 TC Iqaluit dump\Figures

REFERENCE:
Aerial photo VRR2618-195, (original scale 1:6000). Taken 1964/08/14. Scanned from negetive. National Airphoto Library, Ottawa, Ontario

Title: 1964 AERIAL PHOTOGRAPH

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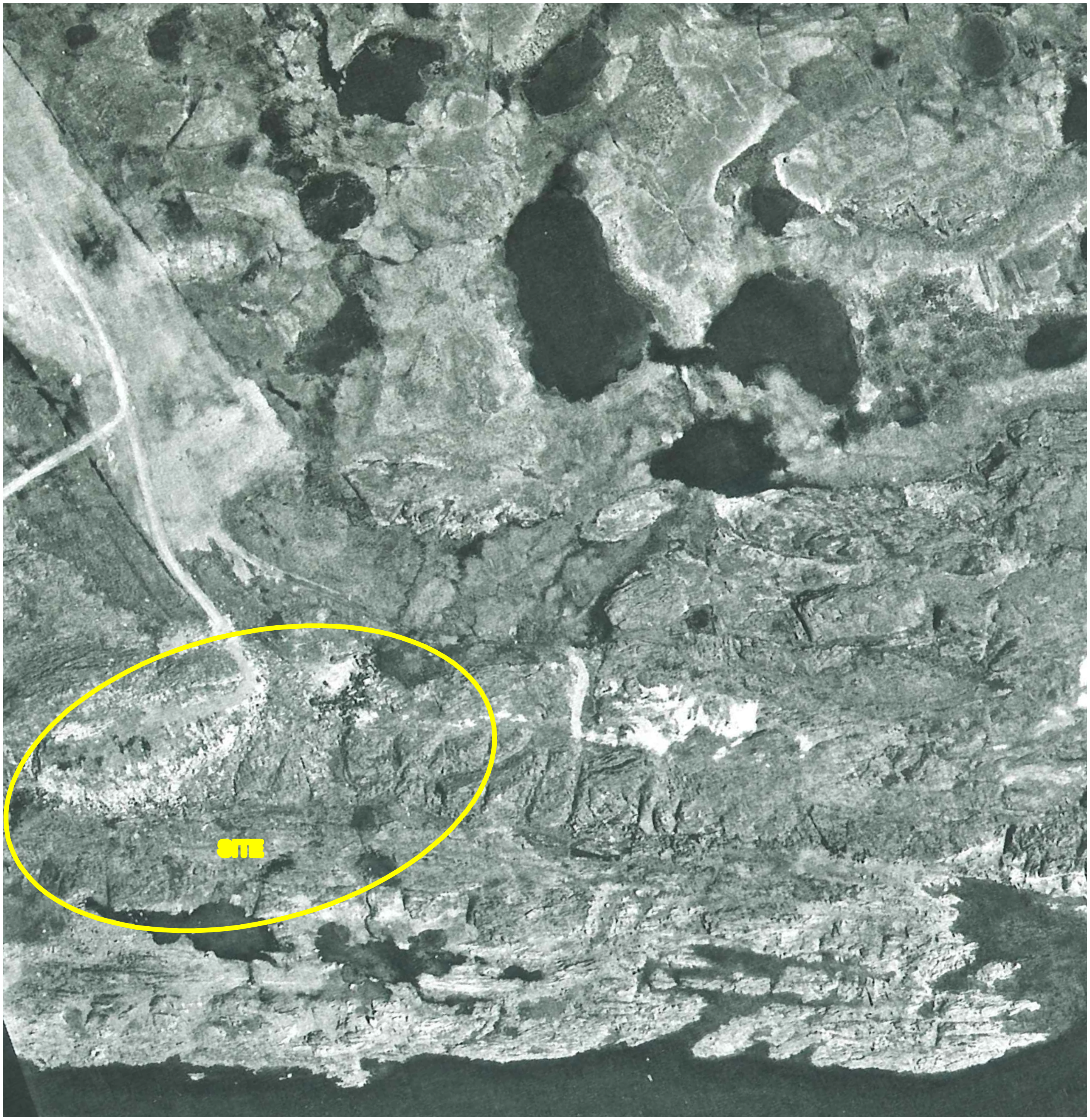
Project: DUMP SITE
IQALUIT, NUNAVUT

Date: JANUARY 2010

Client: PWGSC - TRANSPORT CANADA

NO SCALE

Z:\Projects\2008\1584-0801 TC Iqaluit dump\Figures



REFERENCE:
Aerial photo A24492-70 (original scale 1:20000). Taken 1976/08/19. Scanned photocopy. National Airphoto Library, Ottawa, Ontario

Title: 1976 AERIAL PHOTOGRAPH

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Project: DUMP SITE
IQALUIT, NUNAVUT

Date: JANUARY 2010

Client: PWGSC - TRANSPORT CANADA

NO SCALE

Z:\Projects\2008\1584-0801 TC Iqaluit dump\Figures

REFERENCE:
Aerial photo A26763-22, (original scale 1:10000). Taken 1985/07/10. Scanned photocopy. National Airphoto Library, Ottawa, Ontario

Title: 1985 AERIAL PHOTOGRAPH	
FRANZ ENVIRONMENTAL INC. ♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦	Project: DUMP SITE IQALUIT, NUNAVUT
Date: JANUARY 2010	Client: PWGSC - TRANSPORT CANADA
NO SCALE	

Z:\Projects\2008\1584-0801 TC Iqaluit dump\Figures

REFERENCE:
Satellite Image. Google Earth, 2008.

Title: GOOGLE EARTH SATELLITE IMAGE	
FRANZ ENVIRONMENTAL INC. ♦ CONSULTING ♦ ENGINEERING ♦ TECHNOLOGIES ♦	Project: DUMP SITE IQALUIT, NUNAVUT
Date: JANUARY 2010	Client: PWGSC - TRANSPORT CANADA
NO SCALE	

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APPENDIX D

CURRENT SITE PHOTOS

PHOTOGRAPHIC LOG (A1) – AEC 1

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A1-1

Date: 2008

Direction Photo taken: NW

Description:

Showing A1-SW08-1, facing northwest.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A1-2

Date: 2008

Direction Photo taken: NE

Description:

Showing Veg-6 in APEC 1, facing northeast. Some metal debris visible in background.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A1-3

Date: 2008

Direction Photo taken: NW

Description:

Showing A1-TP08-1, facing northwest.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A1-4

Date: 2008

Direction Photo taken: ESE

Description:

Showing A1-TP08-2, facing ESE. Metal debris in foreground and marshy area top left.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A1-5	
Date: 2008	
Direction Photo taken: NE	
Description: Showing A1-TP08-3, facing northeast. Some debris if visible in foreground.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A1-6	
Date: 2008	
Direction Photo taken: NE	
Description: Panorama showing APEC 1 in background.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A1-7

Date: 2009

Direction Photo taken: SE

Description:

Test Pit excavation at AEC1-TP09-6.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A1-8

Date: 2009

Direction Photo taken: SW

Description:

AEC3-T3 – Test Pit on top (capped area) of landfill adjacent to roadway. Debris encountered at 0.10m.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A1-9

Date: 2009

Direction Photo taken: SE

Description:

Vegetation sample collected at AEC1-AQ-VEG09-1.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A1-10

Date: 2009

Direction Photo taken: SW

Description:

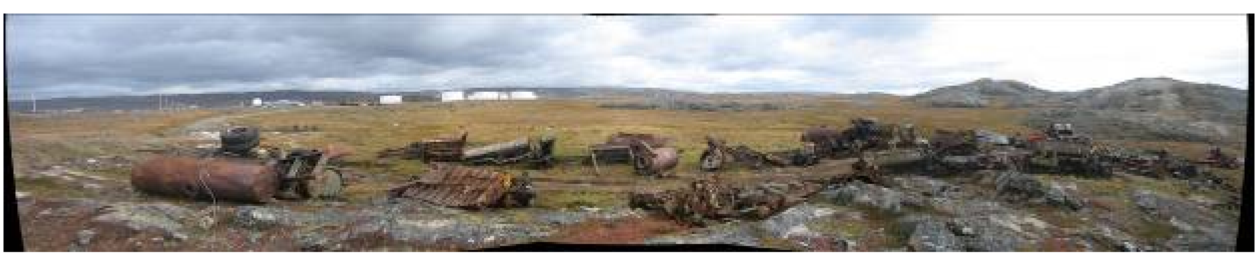
Sediment sample collected at AEC1-SD09-1.

PHOTOGRAPHIC LOG (A2) - AEC 2

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-1	
Date: 2008	
Direction Photo taken: N	
Description: Panorama showing scrap vehicles.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-2	
Date: 2008	
Direction Photo taken: NE	
Description: Panorama showing western extent of vehicle dump, APEC 1 in background.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

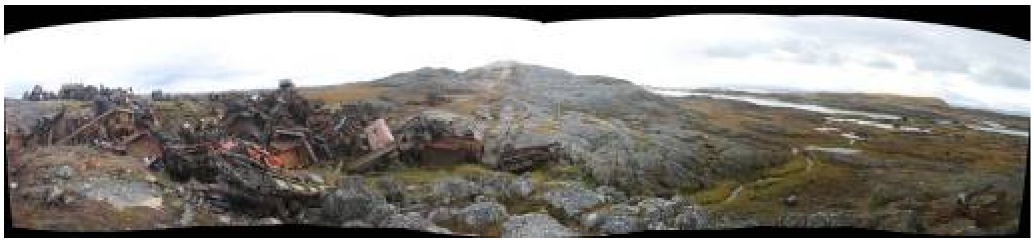
Photo No. A2-3

Date: 2008

Direction Photo taken: SE

Description:

Panorama showing vehicle dump center, drainage visible at right of photo.



Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-4

Date: 2008

Direction Photo taken: S

Description:

Panorama taken from center of vehicle pile, drainage visible at center left.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-5

Date: 2008

Direction Photo taken: **NE**

Description:

View down center of vehicle pile where vehicles have been dragged out of the gully area, staining along trail.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-6

Date: 2008

Direction Photo taken: **ESE**

Description:

Old boiler located along trail northwest of main vehicle dump.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-7

Date: 2008

Direction Photo taken: **ESE**

Description:

End of trail before main vehicle pile, staining. A2-TP08-1 taken in center of photo.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-8

Date: 2008

Direction Photo taken: **SSW**

Description:

Showing southwestern extent of vehicle pile, staining visible at far right of photo.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-9

Date: 2008

Direction Photo taken: NE

Description:

Old tanker at pooled water above vehicle dump. Bottom right of photo is where the main vehicle dump drainage begins.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-10

Date: 2008

Direction Photo taken: SE

Description:

Beginning of main vehicle dump drainage**.**

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-11	
Date: 2008	
Direction Photo taken: W	
Description: Showing examples of metals found in vehicle dump. Note drums and military vehicles.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-12	
Date: 2008	
Direction Photo taken: SW	
Description: Another example of scrap metal types found in dump.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-13

Date: 2008

Direction Photo taken: W

Description:

Drainage running through centre eastern extent of vehicle pile, orange staining visible. A2-SW08-3 and A2-SD08-2 taken here.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-14

Date: 2008

Direction Photo taken: WNW

Description:

Showing vehicle dump with main landfill at top left in background

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-15

Date: 2008

Direction Photo taken: NE

Description:

Location where drainage exits vehicle dump. Veg 4 collected just off left extent of photo.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-16

Date: 2008

Direction Photo taken: NE

Description:

Taken from below vehicle dump, showing types of metals found. Note vegetation regeneration on slopes.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-17

Date: 2008

Direction Photo taken: SE

Description:

Showing staining between main landfill (APEC 3) and vehicle dump, soil staining at bottom right. A2-TP08-2 collected in stained area.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-18

Date: 2008

Direction Photo taken: NNE

Description:

Showing discharge from pond 5 into pond 4.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-19

Date: 2008

Direction Photo taken: NE

Description:

Showing pond 5 with vehicle dump visible in top left.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-20

Date: 2008

Direction Photo taken: SW

Description:

Showing pond 5.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-21

Date: 2008

Direction Photo taken: NE

Description:

Showing feed for pond 5 from pond 6 and vehicle dump drainage.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-22

Date: 2008

Direction Photo taken: NNE

Description:

Showing pond 6 and vehicle dump discharge drainage.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-23	
Date: 2008	
Direction Photo taken: NE	
Description: Showing main drainage through vehicle dump. Vehicle dump clearly visible at top right**.**	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-24	
Date: 2008	
Direction Photo taken: ENE	
Description: Showing panoramic view of pond 5. Vehicle dump visible in top left.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-25	
Date: 2008	
Direction Photo taken: SW	
Description: Showing wide angle view of pond 6.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-26	
Date: 2009	
Direction Photo taken: SE	
Description: Example of soil sample collected at AEC2-TP09-1.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-27

Date: 2009

Direction Photo taken: NW

Description:

Sediment substrate along the drainage ditch within the vehicle dump. Note the rust color staining. AEC2-SD09-5 sample location.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-28

Date: 2009

Direction Photo taken: ESE

Description:

Sediment sample collected from outlet of Pond 6. Sampling location AEC2-SD09-9.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-29

Date: 2009

Direction Photo taken: NE

Description:

Example of a terrestrial vegetation sample. Sample location AEC2-VEG09-1 adjacent to Pond 6.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-30

Date: 2009

Direction Photo taken: SW

Description:

Example of aquatic vegetation collected for sample AEC2-AQ-VEG09-1.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-31	
Date: 2009	
Direction Photo taken: SW	
Description: Example of aquatic vegetation collected for sample AEC2-AQ-VEG09-2.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-32	
Date: 2009	
Direction Photo taken: SW	
Description: Sediment sample AEC2-SED09-11.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A2-33

Date: 2009

Direction Photo taken: SE

Description:

Soil sample AEC2-TP09-2.

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PHOTOGRAPHIC LOG (A3) - AEC 3

Client Name: Public Works and Government Services Canada	**Site Location: Sylvia Grinnell Park Dump**	**Project No. 1584-0901**

Photo No. A3-1	
Date: 2008	
Direction Photo taken: NW	
Description: Showing the top of the landfill area from the east side.	

Client Name: Public Works and Government Services Canada	**Site Location: Sylvia Grinnell Park Dump**	**Project No. 1584-0901**

Photo No. A3-2	
Date: 2008	
Direction Photo taken: NW	
Description: Showing east extent of landfill and rock outcrops.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-3	
Date: 2008	
Direction Photo taken: N	
Description: Showing area used for burning of wood and other debris. Currently active.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-4	
Date: 2008	
Direction Photo taken: SW	
Description: Showing bottom of landfill and main slope from the top looking down. Note barrel piles and ponds.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-5	
Date: 2008	
Direction Photo taken: NE	
Description: Showing extent of landfill area taken from bottom center of landfill area.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-6	
Date: 2008	
Direction Photo taken: ENE	
Description: Showing western extent of landfill, photo taken from bottom plateau. Note cliff bands at left.	

Client Name: Public Works and Government Services Canada	**Site Location: Sylvia Grinnell Park Dump**	**Project No. 1584-0901**

Photo No. A3-7	
Date: 2008	
Direction Photo taken: NE	
Description: Wide angle of western extent of landfill. Small pond and barrels at left below cliff bands.	

Client Name: Public Works and Government Services Canada	**Site Location: Sylvia Grinnell Park Dump**	**Project No. 1584-0901**

Photo No. A3-8	
Date: 2008	
Direction Photo taken: NE	
Description: Close up of western extent of landfill.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-9	
Date: 2008	
Direction Photo taken: N	
Description: Showing close up of center of landfill area.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-10	
Date: 2008	
Direction Photo taken: NNW	
Description: Showing center right of landfill extent.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-11	
Date: 2008	
Direction Photo taken: NW	
Description: Showing eastern extent of landfill area. Note bedrock features at bottom left trending parallel to landfill.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-12	
Date: 2008	
Direction Photo taken: SW	
Description: Showing gully leading from top of landfill to lower section.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-13

Date: 2008

Direction Photo taken: W

Description:

Showing another gully leading from top of landfill to lower section.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-14

Date: 2008

Direction Photo taken: W

Description:

Showing top of landfill. Burn area at middle right.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-15

Date: 2008

Direction Photo taken: S

Description:

Showing example of some exposed debris at top of landfill.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-16

Date: 2008

Direction Photo taken: NW

Description:

Showing re-vegetation on top of landfill area.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-17	
Date: 2008	
Direction Photo taken: NW	
Description: Showing barrel piles stacked by INAC in the 1980's. Photo taken on lower section of landfill.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-18	
Date: 2008	
Direction Photo taken: NE	
Description: Showing rock outcrop ramp diverting drainage down towards the center of the landfill from the top.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-19	
Date: 2008	
Direction Photo taken: E	
Description: Showing barrel piles created by INAC in the 1980's.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-20	
Date: 2008	
Direction Photo taken: NE	
Description: Showing small barrel pile at west extent of lower landfill area. Perchloroethelyne printed on one of the barrels was observed.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-21	
Date: 2008	
Direction Photo taken: N	
Description: Showing scattered barrels beneath cliff band at western extent of landfill area. Area of water pooling.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-22	
Date: 2008	
Direction Photo taken: WSW	
Description: Showing water pooling at western extent of landfill area with some scattered debris beneath cliff bands.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-23	
Date: 2008	
Direction Photo taken: N	
Description: Showing debris and tanker at bottom of landfill area.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-24	
Date: 2008	
Direction Photo taken: N	
Description: Showing rusting and staining associated with landfill debris. A3-TP08-13 collected in this area.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-25

Date: 2008

Direction Photo taken: E

Description:

Showing example of debris at the toe of the landfill. Note slope is greater than appears.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-26

Date: 2008

Direction Photo taken: NW

Description:

Showing example of debris located at bottom toe of landfill area. Note linear bedrock outcrops running parallel with the toe of the landfill.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-27	
Date: 2009	
Direction Photo taken: NE	
Description: Hand excavated test pit AEC3-TP09-4.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-28	
Date: 2009	
Direction Photo taken: NW	
Description: Soil sample that was collected at AEC3-TP09-7, from drainage pathway into Pond 2.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-29

Date: 2009

Direction Photo taken: NW

Description:

Example of the aquatic vegetation collected at AEC3-AQ-VEG09-1. Taken from the bottom of Pond 3.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-30

Date: 2009

Direction Photo taken: SW

Description:

High Tide in Pond 3. In the background is Pond 4, which is connected to Pond 3 and Sylvia Grinnell River during times of High Tide.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-31	
Date: 2009	
Direction Photo taken: SW	
Description: High Tide at Pond 3.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A3-32	
Date: 2009	
Direction Photo taken: SW	
Description: Low Tide at Pond 3 (right) and Pond 4 (left). There is very little connection between Pond 3 and 4 and Sylvia Grinnell River.	

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PHOTOGRAPHIC LOG (A4) - AEC 4

Client Name: Public Works and Government Services Canada	**Site Location: Sylvia Grinnell Park Dump**	**Project No. 1584-0901**

Photo No. A4-1	
Date: 2008	
Direction Photo taken: **NE**	
Description: Showing panoramic view of pond 1 with main landfill in background.	

Client Name: Public Works and Government Services Canada	**Site Location: Sylvia Grinnell Park Dump**	**Project No. 1584-0901**

Photo No. A4-2	
Date: 2008	
Direction Photo taken: **SE**	
Description: Showing panoramic view of Pond 2.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-3

Date: 2008

Direction Photo taken: NE

Description:

Showing panoramic view of pond 3. Main landfill in background (left).

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-4

Date: 2008

Direction Photo taken: NE

Description:

Showing panoramic view of pond 4 and discharge drainage. Main landfill visible at far left.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-5

Date: 2008

Direction Photo taken: E

Description:

Showing pond 1 and eastern feed with main landfill in background.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-6

Date: 2008

Direction Photo taken: NNE

Description:

Showing pond 1 discharge into Silvia Grinnell. Western extent of main landfill visible at right.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-7	
Date: 2008	
Direction Photo taken: W	
Description: Showing discharge from pond 1 to Sylvia Grinnell.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-8	
Date: 2008	
Direction Photo taken: SE	
Description: Showing eastern feed to pond 1 with some metallic sheen present and orange staining. Some debris is also noted.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-9

Date: 2008

Direction Photo taken: NA

Description:

Showing metallic sheen present at eastern feed to pond 1.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-10

Date: 2008

Direction Photo taken: SE

Description:

Showing eastern feed of pond 1. Note orange staining on banks of feed.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-11

Date: 2008

Direction Photo taken: NW

Description:

Showing western feed to pond 1 from pond 2.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-12

Date: 2008

Direction Photo taken: NE

Description:

Showing discharge from pond 2 to pond 1.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-13	
Date: 2008	
Direction Photo taken: SE	
Description: Showing pond 2, western extent of landfill at rocky outcrop to top left.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-14	
Date: 2008	
Direction Photo taken: NW	
Description: Showing precipitation even feed into pond 2. No up gradient sources of potential impact were noted.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-15	
Date: 2008	
Direction Photo taken: ENE	
Description: Showing pond 2 with main landfill visible top center.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-16	
Date: 2008	
Direction Photo taken: ENE	
Description: Showing pond 2 with eastern feed from main landfill visible in center of photo.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-17	
Date: 2008	
Direction Photo taken: NE	
Description: Showing eastern extent of pond 2. A4-SW08 -1 and A4-SD08-1 collected here.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-18	
Date: 2008	
Direction Photo taken: SE	
Description: Showing western arm of pond 3 with some metallic debris.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-19

Date: 2008

Direction Photo taken: E

Description:

Showing western up-gradient feed area for pond 3. A3-TP08-16 collected here.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-20

Date: 2008

Direction Photo taken: ESE

Description:

Showing pond 3.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-21	
Date: 2008	
Direction Photo taken: NE	
Description: Showing pond 3 with main landfill visible to left and vehicle dump to right.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-22	
Date: 2008	
Direction Photo taken: SSE	
Description: Showing discharge from pond 3 into Sylvia Grinnell.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-23	
Date: 2008	
Direction Photo taken: W	
Description: Showing discharge from pond 3 into Sylvia Grinnell.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-24	
Date: 2008	
Direction Photo taken: NW	
Description: Showing eastern feed for pond 3. A3-TP08-18 collected here.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-25

Date: 2008

Direction Photo taken: **SE**

Description:

Showing pond 4.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-26

Date: 2008

Direction Photo taken: **NE**

Description:

Showing pond 4 with vehicle dump visible in center top of photo.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-27	
Date: 2008	
Direction Photo taken: NA	
Description: Showing orange staining on shores of pond 4.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-28	
Date: 2008	
Direction Photo taken: SE	
Description: Showing discharge from pond 4 into Sylvia Grinnell through several smaller pondings.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-29	
Date: 2008	
Direction Photo taken: W	
Description: Showing final discharge from pond 4 into Sylvia Grinnell.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-30	
Date: 2008	
Direction Photo taken: NW	
Description: Showing feed into pond 4 from pond 5 and 6, as well as from the vehicle dump drainage.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-31

Date: 2009

Direction Photo taken: SW

Description:

Low Tide at Pond 3 (right) and Pond 4 (left). Very little connection between Pond 3 and 4 and Sylvia Grinnell River.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-32

Date: 2009

Direction Photo taken: NW

Description:

Low Tide at Pond 1 (center pond). Small drainage channel visible from Pond 1 into Sylvia Grinnell River.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-33	
Date: 2009	
Direction Photo taken: SW	
Description: High Tide at Pond 4.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-34	
Date: 2009	
Direction Photo taken: SW	
Description: High Tide at Pond 4. Sylvia Grinnell River connection to Pond 4 visible in background.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-35	
Date: 2009	
Direction Photo taken: SW	
Description: High Tide at Pond 4.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-36	
Date: 2009	
Direction Photo taken: NW	
Description: High Tide at Pond 1. Pond 1 on the right and Sylvia Grinnell River center left.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-37	
Date: 2009	
Direction Photo taken: NW	
Description: High Tide at Pond 1. Connection between Pond 1 and Sylvia Grinnell apparent.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-38	
Date: 2009	
Direction Photo taken: NE	
Description: Example of the aquatic vegetation collected in AEC 4. Sample AEC4-AQ-VEG09-1.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-39	
Date: 2009	
Direction Photo taken: NW	
Description: Sediment sample AEC4-SD09-3 collected from Pond 4.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-40	
Date: 2009	
Direction Photo taken: NW	
Description: Sediment sample AEC4-SD09-11 collected from Pond 1.	

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-41

Date: 2009

Direction Photo taken: NW

Description:

Sediment sample AEC4-SD09-14 collected from Pond 2.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-42

Date: 2009

Direction Photo taken: NW

Description:

Surface water sample location AEC4-SW09-10 at Sylvia Grinnell River. Taken during low tide.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-43

Date: 2009

Direction Photo taken: NW

Description:

Surface water sample location AEC4-SW09-16. Note the metallic sheen present.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-44

Date: 2009

Direction Photo taken: NW

Description:

Test pit AEC4-TP09-2 located in the drainage pathway into Pond 1.

Client Name: Public Works and Government Services Canada	Site Location: Sylvia Grinnell Park Dump	Project No. 1584-0901

Photo No. A4-45

Date: 2009

Direction Photo taken: NE

Description:

Drainage pathway from south east side of Pond 4 into Sylvia Grinnell River. During high tide this area is submerged. Note the wetness of the rocks in the top right corner.

APPENDIX E

HEALTH AND SAFETY PLAN

SITE SAFETY PLAN

SAFETY POLICY STATEMENT

All operations will comply with all applicable Territorial guidelines other specified safety protocol's and/or operating procedure specified by the site owner and/or operator and will be conducted in a safe and professional manner. No site work will be undertaken prior to the safety meeting will be conducted on the site prior to commencement of work.

Site Name	Dump Site 1 – Sylvia Grinnel Park Dump (West 40)
Site Location	Southwest of old airstrip, Iqaluit Airport, Iqaluit, Nunavut
Site Description	Scrap metal dump site, landfill area, and downstream ponding areas
Owner/Operator	Transport Canada

SITE MAP ATTACHED

LOCAL EMERGENCY AND PROJECT TELEPHONE NUMBERS

I

EMERGENCY NUMBERS	Name	Telephone Number
Hospital	Baffin Regional Hospital	(867) 979-7300
Ambulance	Iqaluit Dispatch Center	(867) 979-5662
Police	RCMP	(867) 899-8832
Fire	Same as Ambulance	(867) 979-5662
UTILITY EMERGENCY NUMBERS		
PROJECT PERSONNEL NUMBERS		
Site Health and Safety Officer	Ryan Fletcher	Office: (613) 721-0555
Project Manager	Richard Wells (Vancouver)/ Steve Livingstone (Ottawa)	Office: (613) 721-0555 (Ottawa) Office: (604) 632-9941 (Vancouver) Cell (S. Livingstone): 613-791-8515 Cell (R. Wells): 778-834-0447
Site Contact		
Client Contacts	PWGSC: Andrew Smith	PWGSC: Office: (250) 363-8441
Regulatory Agency		

EMERGENCY ROUTES

Route from off-site property to hospital

Head north on Hubbard to Akilliq, continue straight ahead on Akkiliq to Mivvik, turn right (east) on Mivvik. Follow Mivvik to the "four corners" continue straight through (the road now turns into Niaqunngusiariaq). The Hospital is on the left (west) side of the road (0.4 km past the four corners)

HOSPITAL LOCATION MAP ATTACHED

PERSONAL PROTECTIVE EQUIPMENT

Hard hat	☒	Steel toed boots	☒
Safety glasses	☒	Visible vest	☒
Hearing protection (as required)	☒	Respirator (as required)	☒
Fire retardant coveralls	☒		

SAFETY EQUIPMENT

Fire extinguisher	☒	First aid kit	☒
Eye wash	☒	Kill switch	☒

Note: Fire Extinguisher and First Aid Kit supplied by excavation contractor.

POTENTIAL CONTAMINANTS OF CONCERN

Petroleum Hydrocarbons, PAHs, metals, PCBs, VOCs

Hazard	dermal contact, and inhalation

Mitigation	Wear the appropriate protective equipment and avoid skin contact with soil
samples.	

SCOPE OF WORK AND HEALTH AND SAFETY RESPONSIBILITY

Scope of Work

Test pitting (excavator and hand).
Gather soil samples from test pits and collect soil/sediment/water samples.

Survey (horizontally) in the test pit, surface water, and sediment locations.

Responsibilities

The Site Health and Safety Officer will implement the Plan. He/She has the authority to stop work or prohibit any personnel from working on the site at any time for not complying with any aspect of the Plan.

The Subcontractor Field Supervisor is directly responsible for implementing the Plan for his/her own employees.

Each person on the site has responsibility for their own health and safety, as well as, assisting others in carrying out the Plan. Any person observed to be in violation of the Plan should be assisted in complying with the Plan, or reported to the Site Health and Safety Officer or the Subcontractor Field Supervisor.

Any site personnel may shut down field activities if there is a real or perceived immediate danger to life or health.

SITE HAZARDS AND MITGATION

TYPE OF HAZARD	DESCRIPTION OF HAZARD	MITIGATION	YES	NO
Overhead Hazards	Overhead power lines	<Contractor> locate and ensure equipment maintains safe distance	☐	☒
Underground Hazards	Water and storm lines and High Pressure Gas and Fluid lines	Do not excavate until all utilities have been located	☐	☒
Equipment Hazards	Trucks	Stay out of equipment work zone or inform the operator before entering work zone.	☒	☐
Drilling Hazards	No drilling to be conducted	NA	☐	☒
Excavation Hazards	No underground utilities expected	NA	☐	☒
Machinery Hazards	Excavation equipment	Stay out of equipment work zone or inform the operator before entering work zone. Discuss hand signals and approach protocols with operator	☒	☐
Heat Exposure	Warm temperatures are not very likely during the project duration.	If temperatures are warm use sunscreen and drink fluids to prevent dehydration.	☒	☐
Cold Exposure	Cold temperatures or raining	Dress appropriately; take frequent breaks as needed to stay warm. Do not work in wet clothing	☒	☐
Electrical Hazards	None expected	NA	☐	☒
Oxygen Deficiency			☐	☒
Noise Hazards	Trucks	Wear proper personal protective equipment	☒	☐
Ionizing Radiation			☐	☒
Non-Ionizing Radiation			☐	☒
Fire/Explosion Hazards	Drilling abandoned fuel tanks, or pipelines.	Conduct utility locates prior to drilling	☒	☐

SITE SAFETY PLAN

TYPE OF HAZARD	DESCRIPTION OF HAZARD	MITIGATION	YES	NO
Chemical Hazards	Petroleum Hydrocarbons, metals, PAHs	Wear personal protective equipment at all times during field investigations	☒	☐
Other (please specify)			☐	☒
Holes/Ditches	Open excavations		☒	☐
Steep Grades			☐	☒
Slippery Surfaces			☐	☒
Uneven Terrain			☐	☒
Unstable Surfaces			☒	☐
Elevated Work Surfaces			☒	☐
Shoring/Scaffolding				☒
Public Risk			☐	☒
Vehicular			☐	☒

POTENTIAL WASTE GENERATION
Waste Generation (Types and Quantities Expected) **TO BE DETERMINED (GROUND WATER DISSPOSAL MAY BE REQUIRED**

TYPE	QUANTITY	TYPE	QUANTITY	TYPE	QUANTITY

Other (describe)

CHARACTERISTICS EXPECTED
Waste Generation (Types and Quantities Expected)

TYPE	QUANTITY	TYPE	QUANTITY
Corrosive			
Reactive			
Toxic			

Other (describe)

PACKAGING REQUIREMENT FOR WASTE MATERIAL EXPECTED

Open head 55 gallon drum	
Closed head 55 gallon drum	
Overpack drum	
Baker tanks	
Lined waste bins	
Other (Specify)	

DISPOSAL AND/OR TREATMENT METHODS PROPOSED

The person signing will be responsible for characterizing, packaging, labelling, storing and disposing of suspected or known waste	
Signature	

RISKS FROM THE PUBLIC

This section is for any personal risks from the public at secluded site, high profile sites etc.

UNDERGROUND AND OVERHEAD UTILITIES AND INSTALLATIONS

Utility locate undertaken	☒ Yes	❑ No	Information attached	❑ Yes	☒ No
Private locate undertaken	☒ Yes	❑ No	Information attached	❑ Yes	☒ No

Sewer mains	❑ Yes	❑ No	❑ n/a
Water mains	❑Yes	❑ No	❑ n/a
Underground telecommunications and telephone utilities	❑ Yes	❑ No	❑ n/a
Cable utilities	❑ Yes	❑ No	❑ n/a
Electrical utilities	❑ Yes	❑ No	❑ n/a
Gas mains	❑ Yes	❑ No	❑ n/a
Steam heat mains	❑ Yes	❑ No	❑ n/a
Transit utilities	❑ Yes	❑ No	❑ n/a
Street lights and traffic signals incl. connections and appurtenances	❑ Yes	❑ No	❑ n/a
All pipes, cables, valves, and all facilities associated	❑ Yes	❑ No	❑ n/a
Equipment incidental thereto located in the roads	❑ Yes	❑ No	❑ n/a

Location cleared by Site Owner/Operator ☒ Yes ❑ No

Name of Locator	
Hazard	
Mitigation	Do not drill/excavate where utilities are located (maintain proper
clearance from utilities).	

SITE SAFETY PLAN

SITE SAFETY PLAN REVIEWED BY

Project Manager — Date

Senior Review — Date

SIGNATURES OF AGREEMENT

By signing below, I have read and understood the safety policy statement and site hazards and mitigation as outlined above

Ryan Fletcher — Sept. 15/09
FRANZ . Representative — Date

Darryl Pedersen — Sept 15 '09
Site Owner/Operator Representative — Date

Contractor — Date

Julie Dittburner — Sept 15/09
Contractor Representative — Date
FRANZ

Contractor Representative — Date

Contractor Representative — Date

Contractor Representative — Date

APPENDIX F

CERTIFIED LABORATORY REPORTS
(INTENTIONALLY LEFT BLANK)

Your P.O. #: 2078
Your Project #: 1584-0901
Site: TC IQALUIT NU
Your C.O.C. #: 16261502, 162615-0

Attention: Ryan Fletcher
Franz Environmental Inc
329 Churchill Ave N
Suite 200
Ottawa, ON
K1Z 5B8

Report Date: 2009/10/01

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9C2285
Received: 2009/09/17, 07:30

Sample Matrix: Soil
Samples Received: 15

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Chromium (VI) in Soil	14	2009/09/29	2009/09/30	CAM SOP-00420	EPA 3060A
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	8	2009/09/21	2009/09/21	CAM SOP-00315	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	7	2009/09/21	2009/09/22	CAM SOP-00315	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (1)	7	2009/09/21	2009/09/21	CAM SOP-00316	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (1)	6	2009/09/21	2009/09/22	CAM SOP-00316	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (1)	2	2009/09/21	2009/09/23	CAM SOP-00316	CCME CWS
F4G (CCME Hydrocarbons Gravimetric) (1)	1	2009/09/23	2009/09/28	CAM SOP-00316	CCME CWS
Acid Extr. Metals (aqua regia) by ICPMS	15	2009/09/23	2009/09/23	CAM SOP-00447	EPA 6020
MOISTURE (1)	15	N/A	2009/09/21	CAM SOP-00445	MOE HANDBOOK(1983)
MOISTURE	15	N/A	2009/09/22	CAM SOP-00445	McKeague 2nd ed 1978
OC Pesticides (Selected) & PCB (2)	15	2009/09/25	2009/09/25	CAM SOP-00307	SW846 8081, 8082
Total Organic Carbon in Soil	15	N/A	2009/09/23	CAM SOP-00468	LECO Combustion
Volatile Organic Compounds in Soil (1)	6	2009/09/20	2009/09/21	CAM SOP-00226	EPA 8260 modified
Volatile Organic Compounds in Soil (1)	8	2009/09/20	2009/09/22	CAM SOP-00226	EPA 8260 modified
Volatile Organic Compounds in Soil (1)	1	2009/09/20	2009/09/23	CAM SOP-00226	EPA 8260 modified

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

(1) This test was performed by Maxxam Ottawa
(2) Chlordane (Total) = Alpha Chlordane + Gamma Chlordane

Encryption Key

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

MELISSA MORRISON, Project Manager
Email: Melissa.Morrison@maxxamanalytics.com
Phone# (613) 274-0573

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

O'REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		DS6131		DS6132		DS6133	DS6134		DS6135		DS6136		
Sampling Date		2009/09/15		2009/09/15		2009/09/15	2009/09/15		2009/09/15		2009/09/15		
	Units	**AEC2-SD09-1**	**RDL**	**AEC2-SD09-2**	**RDL**	**AEC2-SD09-3**	**AEC2-SD09-4**	**RDL**	**AEC2-SD09-5**	**RDL**	**AEC2-SD09-6**	**RDL**	**QC Batch**
Inorganics													
Moisture	%	35	0.2	75	0.2	54	82	0.2	55	0.2	66	0.2	1944725
BTEX & F1 Hydrocarbons													
F1 (C6-C10)	ug/g	<10	10	<40	40	<10	<10	10	<20	20	<30	30	1945133
F1 (C6-C10) - BTEX	ug/g	<10	10	<40	40	<10	<10	10	<20	20	<30	30	1945133
F2-F4 Hydrocarbons													
F2 (C10-C16 Hydrocarbons)	ug/g	130	10	<40	40	<10	1500	10	<10	10	35	10	1945353
F3 (C16-C34 Hydrocarbons)	ug/g	110	10	190	40	<10	4100	10	160	20	620	30	1945353
F4 (C34-C50 Hydrocarbons)	ug/g	<10	10	<40	40	<10	4500	10	110	10	390	10	1945353
Reached Baseline at C50	ug/g	YES		YES		YES	NO		YES		YES		1945353
Surrogate Recovery (%)													
1,4-Difluorobenzene	%	115		119		124	119		118		100		1945133
4-Bromofluorobenzene	%	105		104		103	104		102		107		1945133
D10-Ethylbenzene	%	73		65		69	69		78		70		1945133
D4-1,2-Dichloroethane	%	111		102		115	104		102		84		1945133
o-Terphenyl	%	92		91		87	79		73		73		1945353

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

O'REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		DS6137		DS6138		DS6139		DS6140		
Sampling Date		2009/09/15		2009/09/15		2009/09/15		2009/09/15		
	Units	**AEC2-SD09-7**	**RDL**	**AEC2-SD09-8**	**RDL**	**AEC2-SD09-9**	**RDL**	**AEC2-SD09-10**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	61	0.2	11	0.2	74	0.2	67	0.2	1944725
BTEX & F1 Hydrocarbons										
F1 (C6-C10)	ug/g	<30	30	<10	10	<40	40	<30	30	1945133
F1 (C6-C10) - BTEX	ug/g	<30	30	<10	10	<40	40	<30	30	1945133
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/g	<30	30	71	10	180	40	140	30	1945353
F3 (C16-C34 Hydrocarbons)	ug/g	330	30	280	10	1000	40	470	30	1945353
F4 (C34-C50 Hydrocarbons)	ug/g	390	30	160	10	500	40	260	30	1945353
Reached Baseline at C50	ug/g	YES		YES		YES		YES		1945353
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	107		120		117		122		1945133
4-Bromofluorobenzene	%	105		103		104		105		1945133
D10-Ethylbenzene	%	75		87		67		66		1945133
D4-1,2-Dichloroethane	%	117		102		100		118		1945133
o-Terphenyl	%	88		95		89		87		1945353

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

O'REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		DS6141		DS6142		DS6143		DS6144	DS6145		
Sampling Date		2009/09/15		2009/09/15		2009/09/15		2009/09/15	2009/09/15		
	Units	**AEC2-SD09-11**	**RDL**	**AEC3-SD09-1**	**RDL**	**AEC3-SD09-2**	**RDL**	**AEC3-SD09-3**	**SD09-DUP1**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	68	0.2	19	0.2	23	0.2	75	71	0.2	1944725
BTEX & F1 Hydrocarbons											
F1 (C6-C10)	ug/g	<30	30	<50	50	<10	10	<40	<40	40	1945133
F1 (C6-C10) - BTEX	ug/g	<30	30	<10	10	<10	10	<40	<40	40	1945133
F2-F4 Hydrocarbons											
F2 (C10-C16 Hydrocarbons)	ug/g	1500	30	<10	10	<10	10	<40	310	40	1945353
F3 (C16-C34 Hydrocarbons)	ug/g	1200	30	43	10	<10	10	360	1300	40	1945353
F4 (C34-C50 Hydrocarbons)	ug/g	560	30	<10	10	<10	10	470	620	40	1945353
Reached Baseline at C50	ug/g	YES		YES		YES		YES	YES		1945353
Surrogate Recovery (%)											
1,4-Difluorobenzene	%	117		120		112		115	122		1945133
4-Bromofluorobenzene	%	106		99		102		100	99		1945133
D10-Ethylbenzene	%	67		92		75		73	70		1945133
D4-1,2-Dichloroethane	%	102		137		97		122	126		1945133
o-Terphenyl	%	86		85		82		85	92		1945353

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

LOW LEVEL BTEX - TABLE 1, O'REG 153 (SOIL)

Maxxam ID		DS6131		DS6132		DS6133		DS6134		DS6135	DS6136		
Sampling Date		2009/09/15		2009/09/15		2009/09/15		2009/09/15		2009/09/15	2009/09/15		
	Units	**AEC2-SD09-1**	**RDL**	**AEC2-SD09-2**	**RDL**	**AEC2-SD09-3**	**RDL**	**AEC2-SD09-4**	**RDL**	**AEC2-SD09-5**	**AEC2-SD09-6**	**RDL**	**QC Batch**
Volatile Organics													
Benzene	ug/g	<0.002	0.002	<0.008	0.008	<0.002	0.002	<0.002	0.002	<0.002	<0.002	0.002	1944729
Ethylbenzene	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	<0.004	0.004	1944729
Toluene	ug/g	0.008	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	<0.004	0.004	1944729
p+m-Xylene	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	<0.004	0.004	1944729
o-Xylene	ug/g	<0.002	0.002	<0.002	0.002	<0.004	0.004	<0.01	0.01	<0.004	<0.004	0.004	1944729
Xylene (Total)	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	<0.004	0.004	1944729
Surrogate Recovery (%)													
4-Bromofluorobenzene	%	80		77		80		80		73	81		1944729
D4-1,2-Dichloroethane	%	83		85		72		74		74	72		1944729
D8-Toluene	%	107		111		109		112		117	107		1944729

Maxxam ID		DS6137		DS6138		DS6139		DS6140		
Sampling Date		2009/09/15		2009/09/15		2009/09/15		2009/09/15		
	Units	**AEC2-SD09-7**	**RDL**	**AEC2-SD09-8**	**RDL**	**AEC2-SD09-9**	**RDL**	**AEC2-SD09-10**	**RDL**	**QC Batch**
Volatile Organics										
Benzene	ug/g	<0.002	0.002	<0.002	0.002	<0.002	0.002	<0.002	0.002	1944729
Ethylbenzene	ug/g	<0.006	0.006	<0.002	0.002	<0.008	0.008	<0.006	0.006	1944729
Toluene	ug/g	<0.006	0.006	<0.002	0.002	<0.008	0.008	<0.006	0.006	1944729
p+m-Xylene	ug/g	<0.006	0.006	<0.002	0.002	<0.008	0.008	<0.006	0.006	1944729
o-Xylene	ug/g	<0.006	0.006	<0.002	0.002	<0.008	0.008	<0.006	0.006	1944729
Xylene (Total)	ug/g	<0.006	0.006	<0.002	0.002	<0.008	0.008	<0.006	0.006	1944729
Surrogate Recovery (%)										
4-Bromofluorobenzene	%	79		86		80		83		1944729
D4-1,2-Dichloroethane	%	65		74		68		71		1944729
D8-Toluene	%	111		106		111		108		1944729

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

LOW LEVEL BTEX - TABLE 1, O'REG 153 (SOIL)

Maxxam ID		DS6141		DS6142	DS6143		DS6144	DS6145		
Sampling Date		2009/09/15		2009/09/15	2009/09/15		2009/09/15	2009/09/15		
	Units	**AEC2-SD09-11**	**RDL**	**AEC3-SD09-1**	**AEC3-SD09-2**	**RDL**	**AEC3-SD09-3**	**SD09-DUP1**	**RDL**	**QC Batch**
Volatile Organics										
Benzene	ug/g	<0.002	0.002	<0.002	<0.002	0.002	<0.002	<0.002	0.002	1944729
Ethylbenzene	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	<0.008	0.008	1944729
Toluene	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	<0.008	0.008	1944729
p+m-Xylene	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	<0.008	0.008	1944729
o-Xylene	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	<0.008	0.008	1944729
Xylene (Total)	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	<0.008	0.008	1944729
Surrogate Recovery (%)										
4-Bromofluorobenzene	%	87		91	95		89	89		1944729
D4-1,2-Dichloroethane	%	82		63	71		83	93		1944729
D8-Toluene	%	109		97	101		107	110		1944729

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DS6131	DS6132	DS6133	DS6134	DS6135	DS6136	DS6137	DS6138		
Sampling Date		2009/09/15	2009/09/15	2009/09/15	2009/09/15	2009/09/15	2009/09/15	2009/09/15	2009/09/15		
	Units	**AEC2-SD09-1**	**AEC2-SD09-2**	**AEC2-SD09-3**	**AEC2-SD09-4**	**AEC2-SD09-5**	**AEC2-SD09-6**	**AEC2-SD09-7**	**AEC2-SD09-8**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	35	75	54	82	55	66	61	11	0.2	1946809
Total Organic Carbon	mg/kg	9200	110000	37000	110000	33000	53000	57000	50000	500	1946220

Maxxam ID		DS6139	DS6140	DS6141	DS6142	DS6143	DS6144	DS6145		
Sampling Date		2009/09/15	2009/09/15	2009/09/15	2009/09/15	2009/09/15	2009/09/15	2009/09/15		
	Units	**AEC2-SD09-9**	**AEC2-SD09-10**	**AEC2-SD09-11**	**AEC3-SD09-1**	**AEC3-SD09-2**	**AEC3-SD09-3**	**SD09-DUP1**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	74	67	68	19	23	75	71	0.2	1946809
Total Organic Carbon	mg/kg	67000	41000	46000	3400	3300	52000	78000	500	1946220

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
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Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		DS6131		DS6132		DS6133		DS6134		DS6135		
Sampling Date		2009/09/15		2009/09/15		2009/09/15		2009/09/15		2009/09/15		
	Units	**AEC2-SD09-1**	**RDL**	**AEC2-SD09-2**	**RDL**	**AEC2-SD09-3**	**RDL**	**AEC2-SD09-4**	**RDL**	**AEC2-SD09-5**	**RDL**	**QC Batch**
Metals												
Chromium (VI)	ug/g	<0.2	0.2			2.0(1)	0.4	2.6(1)	0.8	<0.2	0.2	1954529
Acid Extractable Aluminum (Al)	ug/g	3200	50	4700	250	3900	50	3700	250	3600	250	1947872
Acid Extractable Antimony (Sb)	ug/g	<0.2	0.2	<1	1	<0.2	0.2	<1	1	2	1	1947872
Acid Extractable Arsenic (As)	ug/g	<1	1	<5	5	2	1	<5	5	<5	5	1947872
Acid Extractable Barium (Ba)	ug/g	19	0.5	61	2.5	120	0.5	77	2.5	82	2.5	1947872
Acid Extractable Beryllium (Be)	ug/g	<0.2	0.2	<1	1	<0.2	0.2	<1	1	<1	1	1947872
Acid Extractable Cadmium (Cd)	ug/g	<0.1	0.1	<0.5	0.5	0.2	0.1	<0.5	0.5	6.1	0.5	1947872
Acid Extractable Calcium (Ca)	ug/g	1700	50	7600	250	2400	50	4200	250	3400	250	1947872
Acid Extractable Chromium (Cr)	ug/g	17	1	20	5	15	1	13	5	41	5	1947872
Acid Extractable Cobalt (Co)	ug/g	3.4	0.1	13	0.5	28	0.1	21	0.5	18	0.5	1947872
Acid Extractable Copper (Cu)	ug/g	4.9	0.5	20	2.5	8.9	0.5	26	2.5	28	2.5	1947872
Acid Extractable Iron (Fe)	ug/g	22000	50	93000	250	58000	50	220000	250	84000	250	1947872
Acid Extractable Lead (Pb)	ug/g	8	1	24	5	9	1	31	5	150	5	1947872
Acid Extractable Magnesium (Mg)	ug/g	1600	50	3500	250	1700	50	1500	250	1900	250	1947872
Acid Extractable Manganese (Mn)	ug/g	110	1	980	5	8100	10	1400	5	3400	5	1947872
Acid Extractable Molybdenum (Mo)	ug/g	0.9	0.5	<2.5	2.5	2.3	0.5	4.5	2.5	2.8	2.5	1947872
Acid Extractable Nickel (Ni)	ug/g	5.2	0.5	17	2.5	8.5	0.5	16	2.5	15	2.5	1947872
Acid Extractable Phosphorus (P)	ug/g	780	50	2100	250	1400	50	1400	250	720	250	1947872
Acid Extractable Potassium (K)	ug/g	410	200	1200	1000	430	200	<1000	1000	<1000	1000	1947872
Acid Extractable Selenium (Se)	ug/g	<0.5	0.5	<2.5	2.5	<0.5	0.5	<2.5	2.5	<2.5	2.5	1947872
Acid Extractable Silver (Ag)	ug/g	<0.2	0.2	<1	1	<0.2	0.2	<1	1	<1	1	1947872
Acid Extractable Sodium (Na)	ug/g	<100	100	<500	500	<100	100	<500	500	<500	500	1947872
Acid Extractable Strontium (Sr)	ug/g	4	1	23	5	12	1	22	5	14	5	1947872
Acid Extractable Thallium (Tl)	ug/g	<0.05	0.05	<0.25	0.25	<0.05	0.05	<0.25	0.25	<0.25	0.25	1947872
Acid Extractable Vanadium (V)	ug/g	46	5	40	25	41	5	<25	25	33	25	1947872
Acid Extractable Zinc (Zn)	ug/g	52	5	230	25	230	5	280	25	210	25	1947872
Acid Extractable Mercury (Hg)	ug/g	<0.05	0.05	<0.25	0.25	<0.05	0.05	<0.25	0.25	<0.25	0.25	1947872

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

Sample contained a high amount of moisture. Reporting limits were adjusted for dry weight of sample.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		DS6136		DS6137		DS6138		DS6139	DS6140	DS6141		
Sampling Date		2009/09/15		2009/09/15		2009/09/15		2009/09/15	2009/09/15	2009/09/15		
	Units	**AEC2-SD09-6**	**RDL**	**AEC2-SD09-7**	**RDL**	**AEC2-SD09-8**	**RDL**	**AEC2-SD09-9**	**AEC2-SD09-10**	**AEC2-SD09-11**	**RDL**	**QC Batch**
Metals												
Chromium (VI)	ug/g	0.9(1)	0.8	<0.4(1)	0.4	<0.2	0.2	<0.2	<0.2	<0.2	0.2	1954529
Acid Extractable Aluminum (Al)	ug/g	5500	250	4100	250	10000	250	4900	5300	6700	50	1947872
Acid Extractable Antimony (Sb)	ug/g	2	1	2	1	3	1	1.5	1.0	0.8	0.2	1947872
Acid Extractable Arsenic (As)	ug/g	<5	5	<5	5	<5	5	2	<1	2	1	1947872
Acid Extractable Barium (Ba)	ug/g	95	2.5	99	2.5	95	2.5	55	35	39	0.5	1947872
Acid Extractable Beryllium (Be)	ug/g	<1	1	<1	1	<1	1	0.2	0.3	0.3	0.2	1947872
Acid Extractable Cadmium (Cd)	ug/g	6.6	0.5	4.4	0.5	5.7	0.5	3.8	2.0	2.0	0.1	1947872
Acid Extractable Calcium (Ca)	ug/g	5400	250	6700	250	7000	250	3900	3400	3900	50	1947872
Acid Extractable Chromium (Cr)	ug/g	34	5	30	5	44	5	23	20	22	1	1947872
Acid Extractable Cobalt (Co)	ug/g	19	0.5	19	0.5	18	0.5	11	5.6	6.4	0.1	1947872
Acid Extractable Copper (Cu)	ug/g	38	2.5	42	2.5	67	2.5	22	20	18	0.5	1947872
Acid Extractable Iron (Fe)	ug/g	90000	250	98000	250	100000	250	70000	48000	25000	50	1947872
Acid Extractable Lead (Pb)	ug/g	170	5	150	5	150	5	86	57	51	1	1947872
Acid Extractable Magnesium (Mg)	ug/g	2900	250	2300	250	6200	250	2600	3400	3800	50	1947872
Acid Extractable Manganese (Mn)	ug/g	3000	5	3200	5	1100	5	770	160	100	1	1947872
Acid Extractable Molybdenum (Mo)	ug/g	2.8	2.5	<2.5	2.5	5.0	2.5	3.0	3.4	2.0	0.5	1947872
Acid Extractable Nickel (Ni)	ug/g	16	2.5	16	2.5	22	2.5	11	9.1	10	0.5	1947872
Acid Extractable Phosphorus (P)	ug/g	1000	250	900	250	1500	250	750	780	770	50	1947872
Acid Extractable Potassium (K)	ug/g	<1000	1000	<1000	1000	1900	1000	710	1100	1200	200	1947872
Acid Extractable Selenium (Se)	ug/g	<2.5	2.5	<2.5	2.5	<2.5	2.5	<0.5	<0.5	<0.5	0.5	1947872
Acid Extractable Silver (Ag)	ug/g	<1	1	<1	1	<1	1	<0.2	<0.2	<0.2	0.2	1947872
Acid Extractable Sodium (Na)	ug/g	<500	500	<500	500	<500	500	270	290	360	100	1947872
Acid Extractable Strontium (Sr)	ug/g	21	5	24	5	25	5	14	16	16	1	1947872
Acid Extractable Thallium (Tl)	ug/g	<0.25	0.25	<0.25	0.25	<0.25	0.25	<0.05	0.05	0.07	0.05	1947872
Acid Extractable Vanadium (V)	ug/g	38	25	28	25	66	25	30	33	35	5	1947872
Acid Extractable Zinc (Zn)	ug/g	270	25	300	25	440	25	270	160	250	5	1947872
Acid Extractable Mercury (Hg)	ug/g	<0.25	0.25	<0.25	0.25	<0.25	0.25	<0.05	<0.05	<0.05	0.05	1947872

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

Sample contained a high amount of moisture. Reporting limits were adjusted for dry weight of sample.

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Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		DS6142		DS6143			DS6144			DS6145		
Sampling Date		2009/09/15		2009/09/15			2009/09/15			2009/09/15		
	Units	**AEC3-SD09-1**	**QC Batch**	**AEC3-SD09-2**	**RDL**	**QC Batch**	**AEC3-SD09-3**	**RDL**	**QC Batch**	**SD09-DUP1**	**RDL**	**QC Batch**
Metals												
Chromium (VI)	ug/g	<0.2	1954529	<0.2	0.2	1954529	<0.4(1)	0.4	1954529	<0.8	0.8	1954529
Acid Extractable Aluminum (Al)	ug/g	3500	1947613	2600	50	1947872	4600	50	1947613	5800	250	1947865
Acid Extractable Antimony (Sb)	ug/g	<0.2	1947613	<0.2	0.2	1947872	0.7	0.2	1947613	2	1	1947865
Acid Extractable Arsenic (As)	ug/g	2	1947613	<1	1	1947872	7	1	1947613	<5	5	1947865
Acid Extractable Barium (Ba)	ug/g	18	1947613	11	0.5	1947872	23	0.5	1947613	68	2.5	1947865
Acid Extractable Beryllium (Be)	ug/g	<0.2	1947613	<0.2	0.2	1947872	0.3	0.2	1947613	<1	1	1947865
Acid Extractable Cadmium (Cd)	ug/g	0.1	1947613	<0.1	0.1	1947872	0.3	0.1	1947613	6.7	0.5	1947865
Acid Extractable Calcium (Ca)	ug/g	2600	1947613	2000	50	1947872	3500	50	1947613	4600	250	1947865
Acid Extractable Chromium (Cr)	ug/g	13	1947613	17	1	1947872	18	1	1947613	31	5	1947865
Acid Extractable Cobalt (Co)	ug/g	3.4	1947613	2.8	0.1	1947872	5.7	0.1	1947613	17	0.5	1947865
Acid Extractable Copper (Cu)	ug/g	7.5	1947613	4.7	0.5	1947872	18	0.5	1947613	33	2.5	1947865
Acid Extractable Iron (Fe)	ug/g	12000	1947613	22000	50	1947872	46000	50	1947613	110000	250	1947865
Acid Extractable Lead (Pb)	ug/g	18	1947613	5	1	1947872	63	1	1947613	120	5	1947865
Acid Extractable Magnesium (Mg)	ug/g	2200	1947613	1900	50	1947872	4800	50	1947613	3000	250	1947865
Acid Extractable Manganese (Mn)	ug/g	60	1947613	130	1	1947872	150	1	1947613	930	5	1947865
Acid Extractable Molybdenum (Mo)	ug/g	4.1	1947613	1.6	0.5	1947872	11	0.5	1947613	<2.5	2.5	1947865
Acid Extractable Nickel (Ni)	ug/g	6.1	1947613	4.6	0.5	1947872	10	0.5	1947613	14	2.5	1947865
Acid Extractable Phosphorus (P)	ug/g	850	1947613	690	50	1947872	1300	50	1947613	990	250	1947865
Acid Extractable Potassium (K)	ug/g	690	1947613	520	200	1947872	1800	200	1947613	<1000	1000	1947865
Acid Extractable Selenium (Se)	ug/g	<0.5	1947613	<0.5	0.5	1947872	<0.5	0.5	1947613	<2.5	2.5	1947865
Acid Extractable Silver (Ag)	ug/g	<0.2	1947613	<0.2	0.2	1947872	<0.2	0.2	1947613	<1	1	1947865
Acid Extractable Sodium (Na)	ug/g	260	1947613	1100	100	1947872	8800	100	1947613	<500	500	1947865
Acid Extractable Strontium (Sr)	ug/g	7	1947613	7	1	1947872	37	1	1947613	16	5	1947865
Acid Extractable Thallium (Tl)	ug/g	<0.05	1947613	<0.05	0.05	1947872	<0.05	0.05	1947613	<0.25	0.25	1947865
Acid Extractable Vanadium (V)	ug/g	26	1947613	46	5	1947872	51	5	1947613	38	25	1947865
Acid Extractable Zinc (Zn)	ug/g	35	1947613	28	5	1947872	130	5	1947613	390	25	1947865
Acid Extractable Mercury (Hg)	ug/g	<0.05	1947613	<0.05	0.05	1947872	<0.05	0.05	1947613	<0.25	0.25	1947865

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Due to colour interferences, sample required dilution. Detection limit was adjusted accordingly.

Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
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Sampler Initials: RF

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		DS6134		
Sampling Date		2009/09/15		
	Units	**AEC2-SD09-4**	**RDL**	**QC Batch**
F2-F4 Hydrocarbons				
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	23000	100	1948796

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

ORGANOCHLORINATED PESTICIDES BY GC-ECD (SOIL)

Maxxam ID		DS6131		DS6132		DS6133		DS6134		DS6135		
Sampling Date		2009/09/15		2009/09/15		2009/09/15		2009/09/15		2009/09/15		
	Units	**AEC2-SD09-1**	**RDL**	**AEC2-SD09-2**	**RDL**	**AEC2-SD09-3**	**RDL**	**AEC2-SD09-4**	**RDL**	**AEC2-SD09-5**	**RDL**	**QC Batch**
Pesticides & Herbicides												
Aroclor 1262	ug/g	<0.02	0.02	<0.06	0.06	<0.03	0.03	<0.08	0.08	<0.3	0.3	1951186
Aroclor 1268	ug/g	<0.02	0.02	<0.06	0.06	<0.03	0.03	<0.08	0.08	<0.3	0.3	1951186
Hexachlorobutadiene	ug/g	<0.01	0.01	<0.04	0.04	<0.02	0.02	<0.05	0.05	<0.02	0.02	1951186
Aldrin	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	0.004	1951186
a-Chlordane	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	0.004	1951186
g-Chlordane	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	0.004	1951186
Chlordane (Total)	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	0.004	1951186
o,p-DDD	ug/g	0.009	0.002	0.04	0.01	0.014	0.007	<0.03	0.03	<0.004	0.004	1951186
p,p-DDD	ug/g	0.037	0.002	0.22	0.08	0.09	0.04	0.09	0.01	<0.01	0.01	1951186
o,p-DDD + p,p-DDD	ug/g	0.046	0.002	0.26	0.08	0.10	0.04	0.11	0.03	<0.01	0.01	1951186
o,p-DDE	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	0.004	1951186
p,p-DDE	ug/g	0.009	0.002	0.055	0.008	0.017	0.004	0.03	0.01	<0.004	0.004	1951186
o,p-DDE + p,p-DDE	ug/g	0.009	0.002	0.055	0.008	0.017	0.004	0.03	0.01	<0.004	0.004	1951186
o,p-DDT	ug/g	<0.002	0.002	0.014	0.008	0.005	0.004	<0.01	0.01	<0.02	0.02	1951186
p,p-DDT	ug/g	0.013	0.002	0.25	0.08	0.043	0.004	<0.03	0.03	<0.06	0.06	1951186
o,p-DDT + p,p-DDT	ug/g	0.013	0.002	0.26	0.08	0.048	0.004	<0.03	0.03	<0.06	0.06	1951186
DDT+ Metabolites	ug/g	0.068	0.002	0.58	0.08	0.17	0.04	0.14	0.03	<0.06	0.06	1951186
Dieldrin	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.006	0.006	1951186
Endosulfan I	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	0.004	1951186
Endosulfan II	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.006	0.006	1951186
Total Endosulfan	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.006	0.006	1951186
Endrin	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	0.004	1951186
Heptachlor	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	0.004	1951186
Heptachlor epoxide	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	0.004	1951186
Hexachlorobenzene	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	0.004	1951186
Lindane	ug/g	<0.002	0.002	<0.008	0.008	<0.004	0.004	<0.01	0.01	<0.004	0.004	1951186
Methoxychlor	ug/g	<0.008	0.008	<0.03	0.03	<0.02	0.02	<0.04	0.04	<0.02	0.02	1951186
Total PCB	ug/g	<0.03	0.03	0.3	0.1	<0.06	0.06	0.2	0.2	0.6	0.6	1951186
Aroclor 1016	ug/g	<0.02	0.02	<0.06	0.06	<0.03	0.03	<0.08	0.08	<0.3	0.3	1951186
Aroclor 1221	ug/g	<0.03	0.03	<0.1	0.1	<0.06	0.06	<0.2	0.2	<0.6	0.6	1951186
Aroclor 1232	ug/g	<0.02	0.02	<0.06	0.06	<0.03	0.03	<0.08	0.08	<0.3	0.3	1951186
Aroclor 1242	ug/g	<0.02	0.02	<0.06	0.06	<0.03	0.03	<0.08	0.08	<0.3	0.3	1951186
Aroclor 1248	ug/g	<0.02	0.02	<0.06	0.06	<0.03	0.03	<0.08	0.08	<0.3	0.3	1951186
Aroclor 1254	ug/g	<0.02	0.02	<0.06	0.06	<0.03	0.03	<0.08	0.08	<0.3	0.3	1951186

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

ORGANOCHLORINATED PESTICIDES BY GC-ECD (SOIL)

Maxxam ID		DS6131		DS6132		DS6133		DS6134		DS6135		
Sampling Date		2009/09/15		2009/09/15		2009/09/15		2009/09/15		2009/09/15		
	Units	**AEC2-SD09-1**	**RDL**	**AEC2-SD09-2**	**RDL**	**AEC2-SD09-3**	**RDL**	**AEC2-SD09-4**	**RDL**	**AEC2-SD09-5**	**RDL**	**QC Batch**
Aroclor 1260	ug/g	<0.02	0.02	0.27	0.06	0.05	0.03	0.20	0.08	0.6	0.3	1951186
Surrogate Recovery (%)												
2,4,5,6-Tetrachloro-m-xylene	%	80		110		95		102		73		1951186
Decachlorobiphenyl	%	103		130		116		121		83		1951186

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
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Sampler Initials: RF

ORGANOCHLORINATED PESTICIDES BY GC-ECD (SOIL)

Maxxam ID		DS6136		DS6137		DS6138		DS6139		DS6140		
Sampling Date		2009/09/15		2009/09/15		2009/09/15		2009/09/15		2009/09/15		
	Units	**AEC2-SD09-6**	**RDL**	**AEC2-SD09-7**	**RDL**	**AEC2-SD09-8**	**RDL**	**AEC2-SD09-9**	**RDL**	**AEC2-SD09-10**	**RDL**	**QC Batch**
Pesticides & Herbicides												
Aroclor 1262	ug/g	<0.4	0.4	<0.3	0.3	<0.2	0.2	<6	6	<0.5	0.5	1951186
Aroclor 1268	ug/g	<0.4	0.4	<0.3	0.3	<0.2	0.2	<6	6	<0.5	0.5	1951186
Hexachlorobutadiene	ug/g	<0.03	0.03	<0.02	0.02	<0.01	0.01	<0.04	0.04	<0.03	0.03	1951186
Aldrin	ug/g	<0.006	0.006	<0.004	0.004	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
a-Chlordane	ug/g	<0.006	0.006	<0.004	0.004	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
g-Chlordane	ug/g	<0.006	0.006	<0.004	0.004	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Chlordane (Total)	ug/g	<0.006	0.006	<0.004	0.004	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
o,p-DDD	ug/g	<0.006	0.006	<0.004	0.004	<0.002	0.002	<0.03	0.03	0.007	0.007	1951186
p,p-DDD	ug/g	0.025	0.006	0.013	0.004	0.005	0.002	0.06	0.02	0.034	0.006	1951186
o,p-DDD + p,p-DDD	ug/g	0.025	0.006	0.013	0.004	0.005	0.002	0.06	0.03	0.041	0.007	1951186
o,p-DDE	ug/g	<0.006	0.006	<0.004	0.004	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
p,p-DDE	ug/g	0.009	0.006	0.006	0.004	<0.002	0.002	0.035	0.008	0.012	0.006	1951186
o,p-DDE + p,p-DDE	ug/g	0.009	0.006	0.006	0.004	<0.002	0.002	0.035	0.008	0.012	0.006	1951186
o,p-DDT	ug/g	0.036	0.006	0.015	0.004	0.003	0.002	<0.02	0.02	<0.006	0.006	1951186
p,p-DDT	ug/g	0.16	0.06	<0.07	0.07	<0.04	0.04	<0.1	0.1	<0.02	0.02	1951186
o,p-DDT + p,p-DDT	ug/g	0.20	0.06	<0.07	0.07	<0.04	0.04	<0.1	0.1	<0.02	0.02	1951186
DDT+ Metabolites	ug/g	0.23	0.06	<0.07	0.07	<0.04	0.04	0.1	0.1	0.05	0.02	1951186
Dieldrin	ug/g	<0.01	0.01	<0.004	0.004	<0.002	0.002	<0.02	0.02	<0.006	0.006	1951186
Endosulfan I	ug/g	<0.006	0.006	<0.004	0.004	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Endosulfan II	ug/g	<0.006	0.006	<0.004	0.004	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Total Endosulfan	ug/g	<0.006	0.006	<0.004	0.004	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Endrin	ug/g	<0.006	0.006	<0.004	0.004	<0.002	0.002	<0.06	0.06	<0.006	0.006	1951186
Heptachlor	ug/g	<0.006	0.006	<0.004	0.004	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Heptachlor epoxide	ug/g	<0.006	0.006	<0.004	0.004	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Hexachlorobenzene	ug/g	<0.006	0.006	<0.004	0.004	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Lindane	ug/g	<0.006	0.006	<0.004	0.004	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Methoxychlor	ug/g	<0.02	0.02	<0.02	0.02	<0.008	0.008	<0.03	0.03	<0.02	0.02	1951186
Total PCB	ug/g	2	1	0.7	0.6	0.3	0.3	15	10	1	1	1951186
Aroclor 1016	ug/g	<0.4	0.4	<0.3	0.3	<0.2	0.2	<6	6	<0.5	0.5	1951186
Aroclor 1221	ug/g	<1	1	<0.6	0.6	<0.3	0.3	<10	10	<1	1	1951186
Aroclor 1232	ug/g	<0.4	0.4	<0.3	0.3	<0.2	0.2	<6	6	<0.5	0.5	1951186
Aroclor 1242	ug/g	<0.4	0.4	<0.3	0.3	<0.2	0.2	<6	6	<0.5	0.5	1951186
Aroclor 1248	ug/g	<0.4	0.4	<0.3	0.3	<0.2	0.2	<6	6	<0.5	0.5	1951186
Aroclor 1254	ug/g	<0.4	0.4	<0.3	0.3	<0.2	0.2	<6	6	<0.5	0.5	1951186

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

ORGANOCHLORINATED PESTICIDES BY GC-ECD (SOIL)

Maxxam ID		DS6136		DS6137		DS6138		DS6139		DS6140		
Sampling Date		2009/09/15		2009/09/15		2009/09/15		2009/09/15		2009/09/15		
	Units	**AEC2-SD09-6**	**RDL**	**AEC2-SD09-7**	**RDL**	**AEC2-SD09-8**	**RDL**	**AEC2-SD09-9**	**RDL**	**AEC2-SD09-10**	**RDL**	**QC Batch**
Aroclor 1260	ug/g	1.8	0.4	0.7	0.3	0.3	0.2	15	6	1.0	0.5	1951186
Surrogate Recovery (%)												
2,4,5,6-Tetrachloro-m-xylene	%	98		93		76		95		98		1951186
Decachlorobiphenyl	%	124		110		96		139(1)		136(1)		1951186

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Surrogate recovery was above the upper control limit. This may represent a high bias in some results.

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Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

ORGANOCHLORINATED PESTICIDES BY GC-ECD (SOIL)

Maxxam ID		DS6141		DS6142	DS6143		DS6144		DS6145		
Sampling Date		2009/09/15		2009/09/15	2009/09/15		2009/09/15		2009/09/15		
	Units	**AEC2-SD09-11**	**RDL**	**AEC3-SD09-1**	**AEC3-SD09-2**	**RDL**	**AEC3-SD09-3**	**RDL**	**SD09-DUP1**	**RDL**	**QC Batch**
Pesticides & Herbicides											
Aroclor 1262	ug/g	<0.5	0.5	<0.02	<0.02	0.02	<0.06	0.06	<0.4	0.4	1951186
Aroclor 1268	ug/g	<0.5	0.5	<0.02	<0.02	0.02	<0.06	0.06	<0.4	0.4	1951186
Hexachlorobutadiene	ug/g	<0.03	0.03	<0.01	<0.01	0.01	<0.04	0.04	<0.03	0.03	1951186
Aldrin	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
a-Chlordane	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
g-Chlordane	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Chlordane (Total)	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
o,p-DDD	ug/g	0.02	0.01	<0.002	<0.002	0.002	<0.01	0.01	<0.04	0.04	1951186
p,p-DDD	ug/g	0.10	0.06	<0.002	<0.002	0.002	0.018	0.008	0.045	0.006	1951186
o,p-DDD + p,p-DDD	ug/g	0.12	0.06	<0.002	<0.002	0.002	0.02	0.01	0.05	0.04	1951186
o,p-DDE	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
p,p-DDE	ug/g	0.018	0.006	<0.002	<0.002	0.002	0.014	0.008	0.020	0.006	1951186
o,p-DDE + p,p-DDE	ug/g	0.018	0.006	<0.002	<0.002	0.002	0.014	0.008	0.020	0.006	1951186
o,p-DDT	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
p,p-DDT	ug/g	<0.04	0.04	<0.002	<0.002	0.002	<0.03	0.03	<0.05	0.05	1951186
o,p-DDT + p,p-DDT	ug/g	<0.04	0.04	<0.002	<0.002	0.002	<0.03	0.03	<0.05	0.05	1951186
DDT+ Metabolites	ug/g	0.14	0.06	<0.002	<0.002	0.002	0.03	0.03	0.07	0.05	1951186
Dieldrin	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.02	0.02	1951186
Endosulfan I	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Endosulfan II	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Total Endosulfan	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Endrin	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Heptachlor	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Heptachlor epoxide	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Hexachlorobenzene	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Lindane	ug/g	<0.006	0.006	<0.002	<0.002	0.002	<0.008	0.008	<0.006	0.006	1951186
Methoxychlor	ug/g	<0.02	0.02	<0.008	<0.008	0.008	<0.03	0.03	<0.02	0.02	1951186
Total PCB	ug/g	2	1	<0.03	<0.03	0.03	<0.1	0.1	2	1	1951186
Aroclor 1016	ug/g	<0.5	0.5	<0.02	<0.02	0.02	<0.06	0.06	<0.4	0.4	1951186
Aroclor 1221	ug/g	<1	1	<0.03	<0.03	0.03	<0.1	0.1	<1	1	1951186
Aroclor 1232	ug/g	<0.5	0.5	<0.02	<0.02	0.02	<0.06	0.06	<0.4	0.4	1951186
Aroclor 1242	ug/g	<0.5	0.5	<0.02	<0.02	0.02	<0.06	0.06	<0.4	0.4	1951186
Aroclor 1248	ug/g	<0.5	0.5	<0.02	<0.02	0.02	<0.06	0.06	<0.4	0.4	1951186
Aroclor 1254	ug/g	<0.5	0.5	<0.02	<0.02	0.02	<0.06	0.06	<0.4	0.4	1951186

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C2285
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Franz Environmental Inc
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ORGANOCHLORINATED PESTICIDES BY GC-ECD (SOIL)

Maxxam ID		DS6141		DS6142	DS6143		DS6144		DS6145		
Sampling Date		2009/09/15		2009/09/15	2009/09/15		2009/09/15		2009/09/15		
	Units	**AEC2-SD09-11**	**RDL**	**AEC3-SD09-1**	**AEC3-SD09-2**	**RDL**	**AEC3-SD09-3**	**RDL**	**SD09-DUP1**	**RDL**	**QC Batch**
Aroclor 1260	ug/g	1.6	0.5	<0.02	<0.02	0.02	0.09	0.06	1.9	0.4	1951186
Surrogate Recovery (%)											
2,4,5,6-Tetrachloro-m-xylene	%	83		74	75		92		66		1951186
Decachlorobiphenyl	%	127		101	92		115		98		1951186

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Package 1	4.0°C
Package 2	2.3°C

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

GENERAL COMMENTS

OC Pesticide Analysis: Due to high concentrations of the target analytes, samples required dilution. Detection limits were adjusted accordingly. Detection limits were adjusted for high moisture content.

F2-F4 Analysis: Samples DS6131, DS6132, DS6133, DS6134, DS6137, and DS6141 were analysed using the triple silica gel clean up procedure.

Sample DS6132-01: F1/BTEX & F2-F4 & VOC Analysis :
Sample has a high percent of moisture. Reporting limits were adjusted for the dry weight of the sample.

Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample DS6133-01: F1/BTEX & F2-F4 & VOC Analysis :
Sample has a high percent of moisture. Reporting limits were adjusted for the dry weight of the sample.

OC Pesticide Analysis: Detection limits for some compounds were raised due to matrix interferences.

Sample DS6134-01: F1/BTEX & F2-F4 & VOC Analysis :
Sample has a high percent of moisture. Reporting limits were adjusted for the dry weight of the sample.

Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

OC Pesticide Analysis: Detection limits for some compounds were raised due to matrix interferences.

Sample DS6135-01: F1/BTEX & F2-F4 & VOC Analysis :
Sample has a high percent of moisture. Reporting limits were adjusted for the dry weight of the sample.

Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

OC Pesticide Analysis: Detection limits for some compounds were raised due to matrix interferences.

Sample DS6136-01: F1/BTEX & F2-F4 & VOC Analysis :
Sample has a high percent of moisture. Reporting limits were adjusted for the dry weight of the sample.

Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

OC Pesticide Analysis: Detection limits for some compounds were raised due to matrix interferences.

Sample DS6137-01: F1/BTEX & F2-F4 & VOC Analysis :
Sample has a high percent of moisture. Reporting limits were adjusted for the dry weight of the sample.

Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

OC Pesticide Analysis: Detection limits for some compounds were raised due to matrix interferences.

Sample DS6138-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

OC Pesticide Analysis: Detection limits for some compounds were raised due to matrix interferences.

Sample DS6139-01: F1/BTEX & F2-F4 & VOC Analysis :
Sample has a high percent of moisture. Reporting limits were adjusted for the dry weight of the sample.

OC Pesticide Analysis: Detection limits for some compounds were raised due to matrix interferences.

Sample DS6140-01: F1/BTEX & F2-F4 & VOC Analysis :
Sample has a high percent of moisture. Reporting limits were adjusted for the dry weight of the sample.

OC Pesticide Analysis: Detection limits for some compounds were raised due to matrix interferences.

Sample DS6141-01: F1/BTEX & F2-F4 & VOC Analysis :
Sample has a high percent of moisture. Reporting limits were adjusted for the dry weight of the sample.

OC Pesticide Analysis: Detection limits for some compounds were raised due to matrix interferences.

Sample DS6144-01: F1/BTEX & F2-F4 & VOC Analysis :
Sample has a high percent of moisture. Reporting limits were adjusted for the dry weight of the sample.

OC Pesticide Analysis: Detection limits for some compounds were raised due to matrix interferences.

Sample DS6145-01: F1/BTEX & F2-F4 & VOC Analysis :
Sample has a high percent of moisture. Reporting limits were adjusted for the dry weight of the sample.

Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

OC Pesticide Analysis: Detection limits for some compounds were raised due to matrix interferences.

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Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1944725	Moisture	2009/09/21							7.0	50		
1944729	4-Bromofluorobenzene	2009/09/21	96	60 - 140	100	60 - 140	89	%				
1944729	D4-1,2-Dichloroethane	2009/09/21	101	60 - 140	103	60 - 140	103	%				
1944729	D8-Toluene	2009/09/21	100	60 - 140	100	60 - 140	102	%				
1944729	Benzene	2009/09/21	101	39 - 137	103	60 - 140	<0.002	ug/g	NC	50		
1944729	Ethylbenzene	2009/09/21	101	46 - 150	104	60 - 140	<0.002	ug/g	NC	50		
1944729	Toluene	2009/09/21	102	30 - 158	99	60 - 140	<0.002	ug/g	NC	50		
1944729	p+m-Xylene	2009/09/21	109	29 - 161	106	60 - 140	<0.002	ug/g	NC	50		
1944729	o-Xylene	2009/09/21	101	45 - 150	107	60 - 140	<0.002	ug/g	NC	50		
1944729	Xylene (Total)	2009/09/21					<0.002	ug/g	NC	50		
1945133	1,4-Difluorobenzene	2009/09/21	119	60 - 140	106	60 - 140	109	%				
1945133	4-Bromofluorobenzene	2009/09/21	103	60 - 140	106	60 - 140	106	%				
1945133	D10-Ethylbenzene	2009/09/21	67	30 - 130	80	30 - 130	88	%				
1945133	D4-1,2-Dichloroethane	2009/09/21	115	60 - 140	112	60 - 140	111	%				
1945133	F1 (C6-C10)	2009/09/21	78	60 - 140	84	60 - 140	<10	ug/g	NC	50		
1945133	F1 (C6-C10) - BTEX	2009/09/21					<10	ug/g	NC	50		
1945353	o-Terphenyl	2009/09/21	77	30 - 130	86	30 - 130	88	%				
1945353	F2 (C10-C16 Hydrocarbons)	2009/09/21	110	60 - 130	95	60 - 130	<10	ug/g	1.7	50		
1945353	F3 (C16-C34 Hydrocarbons)	2009/09/21	110	60 - 130	95	60 - 130	<10	ug/g	14.1	50		
1945353	F4 (C34-C50 Hydrocarbons)	2009/09/21	110	60 - 130	95	60 - 130	<10	ug/g	NC	50		
1946220	Total Organic Carbon	2009/09/23					<500	mg/kg	1.1	50	92	80 - 120
1946809	Moisture	2009/09/22							0.6	50		
1947613	Acid Extractable Aluminum (Al)	2009/09/23	NC	75 - 125			<50	ug/g			102	75 - 125
1947613	Acid Extractable Antimony (Sb)	2009/09/23	91	75 - 125			<0.2	ug/g			89	75 - 125
1947613	Acid Extractable Arsenic (As)	2009/09/23	97	75 - 125			<1	ug/g			97	75 - 125
1947613	Acid Extractable Barium (Ba)	2009/09/23	NC	75 - 125			<0.5	ug/g			94	75 - 125
1947613	Acid Extractable Beryllium (Be)	2009/09/23	99	75 - 125			<0.2	ug/g			93	75 - 125
1947613	Acid Extractable Cadmium (Cd)	2009/09/23	98	75 - 125			<0.1	ug/g			97	75 - 125
1947613	Acid Extractable Calcium (Ca)	2009/09/23	NC	75 - 125			<50	ug/g			100	75 - 125
1947613	Acid Extractable Chromium (Cr)	2009/09/23	NC	75 - 125			<1	ug/g			96	75 - 125
1947613	Acid Extractable Cobalt (Co)	2009/09/23	97	75 - 125			<0.1	ug/g			96	75 - 125
1947613	Acid Extractable Copper (Cu)	2009/09/23	NC	75 - 125			<0.5	ug/g			105	75 - 125
1947613	Acid Extractable Iron (Fe)	2009/09/23	NC	75 - 125			<50	ug/g			102	75 - 125
1947613	Acid Extractable Lead (Pb)	2009/09/23	98	75 - 125			<1	ug/g			102	75 - 125
1947613	Acid Extractable Magnesium (Mg)	2009/09/23	NC	75 - 125			<50	ug/g			100	75 - 125
1947613	Acid Extractable Manganese (Mn)	2009/09/23	NC	75 - 125			<1	ug/g			104	75 - 125
1947613	Acid Extractable Molybdenum (Mo)	2009/09/23	97	75 - 125			<0.5	ug/g			97	75 - 125
1947613	Acid Extractable Nickel (Ni)	2009/09/23	NC	75 - 125			<0.5	ug/g			98	75 - 125
1947613	Acid Extractable Phosphorus (P)	2009/09/23	NC	75 - 125			<50	ug/g			96	75 - 125

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Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1947613	Acid Extractable Potassium (K)	2009/09/23	NC	75 - 125			<200	ug/g			98	75 - 125
1947613	Acid Extractable Selenium (Se)	2009/09/23	99	75 - 125			<0.5	ug/g			82	50 - 150
1947613	Acid Extractable Silver (Ag)	2009/09/23	94	75 - 125			<0.2	ug/g			86	75 - 125
1947613	Acid Extractable Sodium (Na)	2009/09/23	91	75 - 125			<100	ug/g			91	75 - 125
1947613	Acid Extractable Strontium (Sr)	2009/09/23	101	75 - 125			<1	ug/g			99	75 - 125
1947613	Acid Extractable Thallium (Tl)	2009/09/23	95	75 - 125			<0.05	ug/g			89	75 - 125
1947613	Acid Extractable Vanadium (V)	2009/09/23	NC	75 - 125			<5	ug/g			100	75 - 125
1947613	Acid Extractable Zinc (Zn)	2009/09/23	NC	75 - 125			<5	ug/g			96	75 - 125
1947613	Acid Extractable Mercury (Hg)	2009/09/23	109	75 - 125			<0.05	ug/g	NC	35	94	75 - 125
1947865	Acid Extractable Aluminum (Al)	2009/09/23	NC	75 - 125			<50	ug/g			103	75 - 125
1947865	Acid Extractable Antimony (Sb)	2009/09/23	89	75 - 125			<0.2	ug/g	NC	35	95	75 - 125
1947865	Acid Extractable Arsenic (As)	2009/09/23	92	75 - 125			<1	ug/g	0.3	35	96	75 - 125
1947865	Acid Extractable Barium (Ba)	2009/09/23	NC	75 - 125			<0.5	ug/g	0.9	35	96	75 - 125
1947865	Acid Extractable Beryllium (Be)	2009/09/23	93	75 - 125			<0.2	ug/g	NC	35	84	75 - 125
1947865	Acid Extractable Cadmium (Cd)	2009/09/23	99	75 - 125			<0.1	ug/g	NC	35	92	75 - 125
1947865	Acid Extractable Calcium (Ca)	2009/09/23	NC	75 - 125			67, RDL=50	ug/g			93	75 - 125
1947865	Acid Extractable Chromium (Cr)	2009/09/23	93	75 - 125			<1	ug/g	1.1	35	89	75 - 125
1947865	Acid Extractable Cobalt (Co)	2009/09/23	88	75 - 125			<0.1	ug/g	7.0	35	91	75 - 125
1947865	Acid Extractable Copper (Cu)	2009/09/23	88	75 - 125			<0.5	ug/g	2.5	35	96	75 - 125
1947865	Acid Extractable Iron (Fe)	2009/09/23	NC	75 - 125			<50	ug/g			93	75 - 125
1947865	Acid Extractable Lead (Pb)	2009/09/23	96	75 - 125			<1	ug/g	1.4	35	97	75 - 125
1947865	Acid Extractable Magnesium (Mg)	2009/09/23	NC	75 - 125			<50	ug/g			98	75 - 125
1947865	Acid Extractable Manganese (Mn)	2009/09/23	NC	75 - 125			<1	ug/g			93	75 - 125
1947865	Acid Extractable Molybdenum (Mo)	2009/09/23	96	75 - 125			<0.5	ug/g	4.0	35	93	75 - 125
1947865	Acid Extractable Nickel (Ni)	2009/09/23	90	75 - 125			<0.5	ug/g	3.5	35	89	75 - 125
1947865	Acid Extractable Phosphorus (P)	2009/09/23	NC	75 - 125			<50	ug/g			94	75 - 125
1947865	Acid Extractable Potassium (K)	2009/09/23	NC	75 - 125			<200	ug/g			97	75 - 125
1947865	Acid Extractable Selenium (Se)	2009/09/23	91	75 - 125			<0.5	ug/g	NC	35	70	50 - 150
1947865	Acid Extractable Silver (Ag)	2009/09/23	94	75 - 125			<0.2	ug/g	NC	35	92	75 - 125
1947865	Acid Extractable Sodium (Na)	2009/09/23	98	75 - 125			<100	ug/g	NC	35	95	75 - 125
1947865	Acid Extractable Strontium (Sr)	2009/09/23	NC	75 - 125			<1	ug/g			92	75 - 125
1947865	Acid Extractable Thallium (Tl)	2009/09/23	91	75 - 125			<0.05	ug/g	NC	35	86	75 - 125
1947865	Acid Extractable Vanadium (V)	2009/09/23	NC	75 - 125			<5	ug/g	NC	35	96	75 - 125
1947865	Acid Extractable Zinc (Zn)	2009/09/23	NC	75 - 125			8, RDL=5	ug/g	1.2	35	90	75 - 125
1947865	Acid Extractable Mercury (Hg)	2009/09/23	108	75 - 125			<0.05	ug/g	NC	35	101	75 - 125
1947872	Acid Extractable Aluminum (Al)	2009/09/23	NC	75 - 125			<50	ug/g	2.2	35	104	75 - 125
1947872	Acid Extractable Antimony (Sb)	2009/09/23	88	75 - 125			<0.2	ug/g	10.9	35	103	75 - 125
1947872	Acid Extractable Arsenic (As)	2009/09/23	88	75 - 125			<1	ug/g	NC	35	95	75 - 125
1947872	Acid Extractable Barium (Ba)	2009/09/23	NC	75 - 125			<0.5	ug/g	5.9	35	101	75 - 125

Maxxam Job #: A9C2285
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QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1947872	Acid Extractable Beryllium (Be)	2009/09/23	97	75 - 125			<0.2	ug/g	NC	35	102	75 - 125
1947872	Acid Extractable Cadmium (Cd)	2009/09/23	103	75 - 125			<0.1	ug/g	10.8	35	93	75 - 125
1947872	Acid Extractable Calcium (Ca)	2009/09/23	NC	75 - 125			75, RDL=50	ug/g	3.6	35	100	75 - 125
1947872	Acid Extractable Chromium (Cr)	2009/09/23	95	75 - 125			<1	ug/g	5.0	35	93	75 - 125
1947872	Acid Extractable Cobalt (Co)	2009/09/23	91	75 - 125			<0.1	ug/g	8.2	35	92	75 - 125
1947872	Acid Extractable Copper (Cu)	2009/09/23	92	75 - 125			<0.5	ug/g	8.8	35	103	75 - 125
1947872	Acid Extractable Iron (Fe)	2009/09/23	NC	75 - 125			<50	ug/g	9.1	35	98	75 - 125
1947872	Acid Extractable Lead (Pb)	2009/09/23	NC	75 - 125			<1	ug/g	0.3	35	103	75 - 125
1947872	Acid Extractable Magnesium (Mg)	2009/09/23	NC	75 - 125			<50	ug/g	0.5	35	99	75 - 125
1947872	Acid Extractable Manganese (Mn)	2009/09/23	NC	75 - 125			<1	ug/g	11.6	35	98	75 - 125
1947872	Acid Extractable Molybdenum (Mo)	2009/09/23	96	75 - 125			<0.5	ug/g	6.8	35	107	75 - 125
1947872	Acid Extractable Nickel (Ni)	2009/09/23	90	75 - 125			<0.5	ug/g	1.8	35	87	75 - 125
1947872	Acid Extractable Phosphorus (P)	2009/09/23	NC	75 - 125			<50	ug/g	4.8	35	97	75 - 125
1947872	Acid Extractable Potassium (K)	2009/09/23	NC	75 - 125			<200	ug/g	NC	35	100	75 - 125
1947872	Acid Extractable Selenium (Se)	2009/09/23	94	75 - 125			<0.5	ug/g	NC	35	103	50 - 150
1947872	Acid Extractable Silver (Ag)	2009/09/23	95	75 - 125			<0.2	ug/g	NC	35	83	75 - 125
1947872	Acid Extractable Sodium (Na)	2009/09/23	96	75 - 125			<100	ug/g	NC	35	96	75 - 125
1947872	Acid Extractable Strontium (Sr)	2009/09/23	94	75 - 125			<1	ug/g	1.7	35	97	75 - 125
1947872	Acid Extractable Thallium (Tl)	2009/09/23	93	75 - 125			<0.05	ug/g	NC	35	88	75 - 125
1947872	Acid Extractable Vanadium (V)	2009/09/23	NC	75 - 125			<5	ug/g	3.1	35	103	75 - 125
1947872	Acid Extractable Zinc (Zn)	2009/09/23	NC	75 - 125			<5	ug/g	7.2	35	94	75 - 125
1947872	Acid Extractable Mercury (Hg)	2009/09/23	110	75 - 125			<0.05	ug/g	NC	35	116	75 - 125
1948796	F4G-sg (Grav. Heavy Hydrocarbons)	2009/09/28			92	65 - 135	<100	ug/g	1.1	50		
1951186	2,4,5,6-Tetrachloro-m-xylene	2009/09/25	68	40 - 130	62	40 - 130	89	%				
1951186	Decachlorobiphenyl	2009/09/25	94	40 - 130	97	40 - 130	83	%				
1951186	Hexachlorobutadiene	2009/09/25	62	N/A	50	N/A	<0.01	ug/g				
1951186	Aldrin	2009/09/25	84	40 - 130	86	40 - 130	<0.002	ug/g	NC	50		
1951186	a-Chlordane	2009/09/25	95	40 - 130	89	40 - 130	<0.002	ug/g	NC	50		
1951186	g-Chlordane	2009/09/25	88	40 - 130	89	40 - 130	<0.002	ug/g	NC	50		
1951186	o,p-DDD	2009/09/25	96	40 - 130	107	40 - 130	<0.002	ug/g	NC	50		
1951186	p,p-DDD	2009/09/25	104	40 - 130	109	40 - 130	<0.002	ug/g	NC	50		
1951186	o,p-DDE	2009/09/25	95	40 - 130	93	40 - 130	<0.002	ug/g	NC	50		
1951186	p,p-DDE	2009/09/25	101	40 - 130	96	40 - 130	<0.002	ug/g	NC	50		
1951186	o,p-DDT	2009/09/25	89	40 - 130	88	40 - 130	<0.002	ug/g	NC	50		
1951186	p,p-DDT	2009/09/25	94	40 - 130	95	40 - 130	<0.002	ug/g	NC	50		
1951186	Dieldrin	2009/09/25	101	40 - 130	104	40 - 130	<0.002	ug/g	NC	50		
1951186	Endosulfan I	2009/09/25	94	40 - 130	92	40 - 130	<0.002	ug/g	NC	50		
1951186	Endosulfan II	2009/09/25	101	40 - 130	102	40 - 130	<0.002	ug/g	NC	50		
1951186	Endrin	2009/09/25	103	40 - 130	106	40 - 130	<0.002	ug/g	NC	50		

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Maxxam Job #: A9C2285
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT NU
Your P.O. #: 2078
Sampler Initials: RF

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1951186	Heptachlor	2009/09/25	74	40 - 130	77	40 - 130	<0.002	ug/g	NC	50		
1951186	Heptachlor epoxide	2009/09/25	89	40 - 130	91	40 - 130	<0.002	ug/g	NC	50		
1951186	Hexachlorobenzene	2009/09/25	73	20 - 130	68	20 - 130	<0.002	ug/g	NC	50		
1951186	Lindane	2009/09/25	82	40 - 130	87	40 - 130	<0.002	ug/g	NC	50		
1951186	Methoxychlor	2009/09/25	101	40 - 130	103	40 - 130	<0.008	ug/g	NC	50		
1951186	Total PCB	2009/09/25					<0.03	ug/g	NC	50		
1951186	Aroclor 1242	2009/09/25					<0.015	ug/g	NC	50		
1951186	Aroclor 1262	2009/09/25					<0.015	ug/g	NC	50		
1951186	Aroclor 1268	2009/09/25					<0.015	ug/g	NC	50		
1951186	Chlordane (Total)	2009/09/25					<0.002	ug/g	NC	50		
1951186	o,p-DDD + p,p-DDD	2009/09/25					<0.002	ug/g	NC	50		
1951186	o,p-DDE + p,p-DDE	2009/09/25					<0.002	ug/g	NC	50		
1951186	o,p-DDT + p,p-DDT	2009/09/25					<0.002	ug/g	NC	50		
1951186	DDT+ Metabolites	2009/09/25					<0.002	ug/g	NC	50		
1951186	Total Endosulfan	2009/09/25					<0.002	ug/g	NC	50		
1951186	Aroclor 1016	2009/09/25					<0.015	ug/g	NC	50		
1951186	Aroclor 1221	2009/09/25					<0.03	ug/g	NC	50		
1951186	Aroclor 1232	2009/09/25					<0.015	ug/g	NC	50		
1951186	Aroclor 1248	2009/09/25					<0.015	ug/g	NC	50		
1951186	Aroclor 1254	2009/09/25					<0.015	ug/g	NC	50		
1951186	Aroclor 1260	2009/09/25					<0.015	ug/g	NC	50		
1954529	Chromium (VI)	2009/09/30	23(1, 2)	75 - 125	101	75 - 125	<0.2	ug/g	NC	35	96	85 - 115

N/A = Not Applicable
RDL = Reportable Detection Limit
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) - Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
(2) - The recovery was below the lower control limit. This may be due in part to the reducing environment of the sample.

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Validation Signature Page

Maxxam Job #: A9C2285

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

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CHEMIST

TROY CARRIERE, B.Sc., C.Chem, Scientific Specialist

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Validation Signature Page

Maxxam Job #: A9C2285

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

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

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Maxxam Analytics

Maxxam Analytics International Corporation o/a Maxxam Analytics
32 Colonnade Unit 1000, Nepean, Ontario Canada K2E 7J6 Tel:(613) 274-0573 Toll-free:877-480-7272 Fax:613-274-0574 www.maxxamanalytics.com

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:	
Company Name:	#10988 Franz Environmental Inc	Company Name:	Same	Quotation #:	A93902
Contact Name:	Ryan Fletcher	Contact Name:		P.O. #:	2078
Address:	329 Churchill Ave N Suite 200	Address:		Project #:	1584-0901
	Ottawa ON K1Z 5B8		and Jdittawa@franz...	Project Name:	TC Iqaluit
Phone:	(613)721-0555 Fax: (613)721-0029	Phone:	Fax:	Site Location:	Iqaluit, NU
Email:	rfletcher@franzenvironmental.com	Email:		Sampled By:	RF

Laboratory Use Only:

MAXXAM JOB #:	BOTTLE ORDER #:
	162615
CHAIN OF CUSTODY #:	PROJECT MANAGER:
C#162615-02-01	MELISSA MORRISON

REGULATORY CRITERIA:

- [ ] MISA — Reg. 153/04 — Sewer Use: [ ] Sanitary [ ] Storm [ ] Combined
- [ ] PWQO — [x] Table 1 [ ] Table 2 [ ] Table 3 [ ] Table 6 — [x] Residential/Parkland [ ] Industrial/Commercial [ ] Medium/Fine [ ] Coarse
- [ ] Reg. 558 — Municipality ______
- Other (specify) ______ — Report Criteria on C of A? [ ]

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10ºC) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]
(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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ______ Time Required: ______ [ ]
Rush Confirmation Number: ______ (call lab for #)

ANALYSIS REQUESTED (Please be specific):

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Petroleum Hydrocarbons BTEX / F1 - F4	Metals ICP	TOC	PCB	Pesticides	Silica Gel				Hold	# of Bottles	Comments
1		AEC2-SD09-1	Sept. 15/09		SOIL			X	X	X	X	X	X				X	7	Must meet
2		AEC2-SD09-2			SOIL			X	X	X			X				X	5	ISQG
3		AEC2-SD09-3			SOIL			X	X	X	X	X	X				X	7	
4		AEC2-SD09-4			SOIL			X	X	X	X	X	X				X	7	Metals in
5		AEC2-SD09-5			SOIL			X	X	X	X	X					X	7	bags
6		AEC2-SD09-6			SOIL			X	X	X	X	X					X	7	
7		AEC2-SD09-7			SOIL			X	X	X	X	X	X				X	7	
8		AEC2-SD09-8			SOIL			X	X	X	X	X					X	7	
9		AEC2-SD09-9			SOIL			X	X	X	X	X					X	7	
10		AEC2-SD09-10			SOIL			X	X	X							X	7	

17-Sep-09 07:30
MELISSA MORRISON
A9C2285
JOE OTT-014

REC'D IN OTTAWA

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Ryan Fletcher	Sept 16/09		J. Clement	09/09/17	7:30	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
[ ]	3/5/4 2/3/2	[ ] Yes [ ] No

* 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.

White: Maxxam Yellow: Client

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Maxxam Analytics

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:	
Company Name:	#10988 Franz Environmental Inc	Company Name:	Same	Quotation #:	A93902
Contact Name:	Ryan Fletcher	Contact Name:		P.O. #:	2078
Address:	329 Churchill Ave N Suite 200	Address:	and Jdittburner@franz...	Project #:	1584-0901
	Ottawa ON K1Z 5B8			Project Name:	TC Iqaluit
Phone:	(613)721-0555 Fax: (613)721-0029	Phone:	Fax:	Site Location:	Iqaluit, NU
Email:	rfletcher@franzenvironmental.com	Email:		Sampled By:	RF

Laboratory Use Only:

MAXXAM JOB #:	BOTTLE ORDER #:
	162615
CHAIN OF CUSTODY #:	**PROJECT MANAGER:**
C#162615-01-01	MELISSA MORRISON

REGULATORY CRITERIA:

- [ ] MISA
- Reg. 153/04
- [ ] PWQO
- [x] Table 1
- [ ] Table 2
- [ ] Table 3
- [ ] Table 6
- [x] Residential/Parkland
- [ ] Industrial/Commercial
- [ ] Medium/Fine
- [ ] Coarse
- [ ] Reg. 558
- Sewer Use: [ ] Sanitary [ ] Storm [ ] Combined
- Municipality ______
- Other (specify) ______
- Report Criteria on C of A ? [ ]

SPECIAL INSTRUCTIONS

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SAMPLES MUST BE KEPT COOL (< 10ºC) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Petroleum Hydrocarbons BTEX / F1 - F4	Metals ICP	TOC	PCB	Pesticides	Silica Gel				Hold	# of Bottles	Comments
1		AEC2-SD09-11	Sept.15/09		SOIL			X	X	X	X	X	X				X	7	Must meet ISQG
2		AEC3-SD09-1	↓		SOIL			X	X	X	X	X					X	7	
3		AEC3-SD09-2	↓		SOIL			X	X	X							X	7	
4		AEC3-SD09-3	↓		SOIL			X	X	X							X	7	
5		SD09-DUP1	Sept.15/09		SOIL			X	X	X	X	X					X	7	Metals in bags
6					SOIL												X		
7					SOIL												X		
8					SOIL												X		
9					SOIL												X		REC'D IN OTTAWA
10					SOIL												X		

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]

(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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission) [ ]

Date Required: ______ Time 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
Ryan Fletcher	Sept.16/09		K. Clement	09/09/17	7:30	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
[ ]	3/5/4 2/3/2	[ ] Yes [ ] No

*** 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.**

White: Maxxam Yellow: Client

Your P.O. #: 2078
Your Project #: 1584-0901
Site: TC, IQALUIT, NU
Your C.O.C. #: 16260602, 162606-0

Attention: Ryan Fletcher
Franz Environmental Inc
329 Churchill Ave N
Suite 200
Ottawa, ON
K1Z 5B8

Report Date: 2009/09/28

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9C2507
Received: 2009/09/17, 07:30

Sample Matrix: Water
Samples Received: 15

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Dissolved Aluminum (0.2 u, clay free)	15	N/A	2009/09/25	CAM SOP-00447	SW846, 6020
Chromium (VI) in Water	15	N/A	2009/09/25	BRL SOP-00106	EPA 7199
Dissolved Organic Carbon (DOC)	8	N/A	2009/09/22	CAM SOP-00446	SM 5310 B
Dissolved Organic Carbon (DOC)	4	N/A	2009/09/23	CAM SOP-00446	SM 5310 B
Dissolved Organic Carbon (DOC)	3	N/A	2009/09/24	CAM SOP-00446	SM 5310 B
Hardness (calculated as CaCO3)	15	N/A	2009/09/28	CAM SOP 0102	SM 2340 B
Mercury	10	2009/09/21	2009/09/22	CAM SOP-00453	EPA 7470
Mercury	5	2009/09/22	2009/09/22	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	15	N/A	2009/09/25	CAM SOP-00447	EPA 6020
OC Pesticides (Selected) & PCB (1)	6	2009/09/21	2009/09/22	CAM SOP-00307	SW846 8081,8082
OC Pesticides (Selected) & PCB (1)	1	2009/09/23	2009/09/24	CAM SOP-00307	SW846 8081,8082
Total Phosphorus (Colourimetric)	15	2009/09/24	2009/09/28	CAM SOP-00407	APHA 4500 P,B,F

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

(1) Chlordane (Total) = Alpha Chlordane + Gamma Chlordane

Encryption Key

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

MELISSA MORRISON, Project Manager
Email: Melissa.Morrison@maxxamanalytics.com
Phone# (613) 274-0573

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Analytics

Maxxam Job #: A9C2507
Report Date: 2009/09/28

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC, IQALUIT, NU
Your P.O. #: 2078

PWQO METALS (WATER)

Maxxam ID		DS7460	DS7461		DS7462	DS7463		DS7464		
Sampling Date		2009/09/15	2009/09/15		2009/09/15	2009/09/15		2009/09/15		
	Units	**AEC2-SW09-1**	**AEC2-SW09-2**	**QC Batch**	**AEC2-SW09-3**	**AEC2-SW09-4**	**QC Batch**	**AEC2-SW09-5**	**RDL**	**QC Batch**
Inorganics										
Total Phosphorus	mg/L	0.016	0.060	1949280	0.014	0.22	1949280	0.058	0.002	1949280
Metals										
Dissolved (0.2u) Aluminum (Al)	ug/L	6	6	1950641	6	45	1950641	ND	5	1950641
Chromium (VI)	ug/L	3.7	ND	1949810	ND	ND	1949810	ND	0.5	1949810
Mercury (Hg)	ug/L	ND	ND	1945544	ND	ND	1946101	ND	0.1	1945544
Total Antimony (Sb)	ug/L	ND	ND	1950160	ND	ND	1950160	ND	0.5	1950160
Total Arsenic (As)	ug/L	ND	ND	1950160	ND	ND	1950160	ND	1	1950160
Total Beryllium (Be)	ug/L	ND	ND	1950160	ND	ND	1950160	ND	0.5	1950160
Total Boron (B)	ug/L	10	ND	1950160	ND	ND	1950160	ND	10	1950160
Total Cadmium (Cd)	ug/L	ND	ND	1950160	ND	ND	1950160	ND	0.1	1950160
Total Chromium (Cr)	ug/L	ND	ND	1950160	ND	ND	1950160	ND	5	1950160
Total Cobalt (Co)	ug/L	ND	ND	1950160	ND	ND	1950160	1.3	0.5	1950160
Total Copper (Cu)	ug/L	ND	1	1950160	1	ND	1950160	1	1	1950160
Total Iron (Fe)	ug/L	400	620	1950160	320	1400	1950160	8900	100	1950160
Total Lead (Pb)	ug/L	ND	ND	1950160	ND	ND	1950160	0.7	0.5	1950160
Total Molybdenum (Mo)	ug/L	ND	ND	1950160	ND	ND	1950160	ND	1	1950160
Total Nickel (Ni)	ug/L	ND	ND	1950160	ND	ND	1950160	ND	1	1950160
Total Selenium (Se)	ug/L	ND	ND	1950160	ND	ND	1950160	ND	2	1950160
Total Silver (Ag)	ug/L	0.1	ND	1950160	ND	ND	1950160	ND	0.1	1950160
Total Thallium (Tl)	ug/L	ND	ND	1950160	ND	ND	1950160	ND	0.05	1950160
Total Tungsten (W)	ug/L	ND	ND	1950160	ND	ND	1950160	ND	1	1950160
Total Uranium (U)	ug/L	ND	ND	1950160	ND	ND	1950160	ND	0.1	1950160
Total Vanadium (V)	ug/L	ND	ND	1950160	ND	ND	1950160	ND	1	1950160
Total Zinc (Zn)	ug/L	11	14	1950160	8	6	1950160	9	5	1950160
Total Zirconium (Zr)	ug/L	ND	ND	1950160	ND	ND	1950160	ND	1	1950160

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C2507
Report Date: 2009/09/28

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC, IQALUIT, NU
Your P.O. #: 2078

PWQO METALS (WATER)

Maxxam ID		DS7465	DS7466		DS7467		DS7468		DS7469		
Sampling Date		2009/09/15	2009/09/15		2009/09/15		2009/09/15		2009/09/15		
	Units	**AEC2-SW09-6**	**AEC2-SW09-7**	**QC Batch**	**AEC2-SW09-8**	**QC Batch**	**AEC2-SW09-9**	**QC Batch**	**AEC2-SW09-10**	**RDL**	**QC Batch**
Inorganics											
Total Phosphorus	mg/L	0.024	0.006	1949280	0.006	1949280	0.007	1949280	0.008	0.002	1949280
Metals											
Dissolved (0.2u) Aluminum (Al)	ug/L	ND	5	1950641	ND	1950641	ND	1950641	ND	5	1950641
Chromium (VI)	ug/L	ND	ND	1949810	ND	1949810	2.5	1949810	ND	0.5	1949810
Mercury (Hg)	ug/L	ND	ND	1945544	ND	1945544	ND	1946101	ND	0.1	1945544
Total Antimony (Sb)	ug/L	ND	ND	1950695	ND	1950160	ND	1950160	ND	0.5	1950695
Total Arsenic (As)	ug/L	ND	ND	1950695	ND	1950160	ND	1950160	ND	1	1950695
Total Beryllium (Be)	ug/L	ND	ND	1950695	ND	1950160	ND	1950160	ND	0.5	1950695
Total Boron (B)	ug/L	ND	ND	1950695	ND	1950160	11	1950160	22	10	1950695
Total Cadmium (Cd)	ug/L	0.2	ND	1950695	ND	1950160	ND	1950160	ND	0.1	1950695
Total Chromium (Cr)	ug/L	ND	ND	1950695	ND	1950160	ND	1950160	ND	5	1950695
Total Cobalt (Co)	ug/L	0.6	ND	1950695	ND	1950160	ND	1950160	ND	0.5	1950695
Total Copper (Cu)	ug/L	ND	ND	1950695	ND	1950160	ND	1950160	ND	1	1950695
Total Iron (Fe)	ug/L	1700	560	1950695	810	1950160	710	1950160	790	100	1950695
Total Lead (Pb)	ug/L	ND	ND	1950695	ND	1950160	ND	1950160	ND	0.5	1950695
Total Molybdenum (Mo)	ug/L	ND	ND	1950695	ND	1950160	ND	1950160	ND	1	1950695
Total Nickel (Ni)	ug/L	ND	ND	1950695	ND	1950160	ND	1950160	ND	1	1950695
Total Selenium (Se)	ug/L	ND	ND	1950695	ND	1950160	ND	1950160	ND	2	1950695
Total Silver (Ag)	ug/L	ND	ND	1950695	ND	1950160	ND	1950160	ND	0.1	1950695
Total Thallium (Tl)	ug/L	0.08	ND	1950695	ND	1950160	ND	1950160	ND	0.05	1950695
Total Tungsten (W)	ug/L	ND	ND	1950695	ND	1950160	ND	1950160	ND	1	1950695
Total Uranium (U)	ug/L	ND	ND	1950695	ND	1950160	ND	1950160	ND	0.1	1950695
Total Vanadium (V)	ug/L	ND	ND	1950695	ND	1950160	ND	1950160	ND	1	1950695
Total Zinc (Zn)	ug/L	6	ND	1950695	ND	1950160	ND	1950160	7	5	1950695
Total Zirconium (Zr)	ug/L	ND	ND	1950695	ND	1950160	ND	1950160	ND	1	1950695

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C2507
Report Date: 2009/09/28

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC, IQALUIT, NU
Your P.O. #: 2078

PWQO METALS (WATER)

Maxxam ID		DS7471		DS7472			DS7473		DS7474		DS7475		
Sampling Date		2009/09/15		2009/09/15			2009/09/15		2009/09/15		2009/09/15		
	Units	**AEC2-SW09-11**	**RDL**	**AEC3-SW09-1**	**RDL**	**QC Batch**	**AEC3-SW09-2**	**RDL**	**AEC3-SW09-3**	**RDL**	**SW09-DUP1**	**RDL**	**QC Batch**
Inorganics													
Total Phosphorus	mg/L	0.007	0.002	0.009	0.002	1949280	0.009	0.002	0.015	0.002	0.015	0.002	1949280
Metals													
Dissolved (0.2u) Aluminum (Al)	ug/L	ND	5	ND	5	1950641	ND	5	ND	5	ND	5	1950641
Chromium (VI)	ug/L	ND	0.5	ND	0.5	1949810	ND	0.5	ND	0.5	ND	0.5	1949810
Mercury (Hg)	ug/L	ND	0.1	ND	0.1	1946101	ND	0.1	ND	0.1	ND	0.1	1945544
Total Antimony (Sb)	ug/L	ND	0.5	ND	0.5	1950160	ND	0.5	ND	0.5	ND	0.5	1950160
Total Arsenic (As)	ug/L	ND	1	ND(1)	5	1950160	ND(1)	5	ND(1)	5	ND	1	1950160
Total Beryllium (Be)	ug/L	ND	0.5	ND	0.5	1950160	ND	0.5	ND	0.5	ND	0.5	1950160
Total Boron (B)	ug/L	21	10	1100	10	1950160	1100	10	1000	10	17	10	1950160
Total Cadmium (Cd)	ug/L	ND	0.1	ND	0.1	1950160	ND	0.1	ND	0.1	ND	0.1	1950160
Total Chromium (Cr)	ug/L	ND	5	ND	5	1950160	ND	5	ND	5	ND	5	1950160
Total Cobalt (Co)	ug/L	ND	0.5	ND	0.5	1950160	ND	0.5	ND	0.5	ND	0.5	1950160
Total Copper (Cu)	ug/L	ND	1	1	1	1950160	1	1	ND	1	ND	1	1950160
Total Iron (Fe)	ug/L	420	100	330	100	1950160	270	100	430	100	1700	100	1950160
Total Lead (Pb)	ug/L	ND	0.5	0.9	0.5	1950160	0.7	0.5	1.0	0.5	0.7	0.5	1950160
Total Molybdenum (Mo)	ug/L	ND	1	3	1	1950160	3	1	3	1	ND	1	1950160
Total Nickel (Ni)	ug/L	ND	1	ND	1	1950160	ND	1	ND	1	ND	1	1950160
Total Selenium (Se)	ug/L	ND	2	ND	2	1950160	ND(1)	10	ND	2	ND	2	1950160
Total Silver (Ag)	ug/L	ND	0.1	ND	0.1	1950160	ND	0.1	0.1	0.1	ND	0.1	1950160
Total Thallium (Tl)	ug/L	ND	0.05	ND	0.05	1950160	ND	0.05	ND	0.05	ND	0.05	1950160
Total Tungsten (W)	ug/L	ND	1	ND	1	1950160	ND	1	ND	1	ND	1	1950160
Total Uranium (U)	ug/L	ND	0.1	0.6	0.1	1950160	0.7	0.1	0.7	0.1	ND	0.1	1950160
Total Vanadium (V)	ug/L	ND	1	ND(1)	5	1950160	ND(1)	5	ND(1)	5	1	1	1950160
Total Zinc (Zn)	ug/L	ND	5	ND	5	1950160	ND	5	ND	5	6	5	1950160
Total Zirconium (Zr)	ug/L	ND	1	ND	1	1950160	ND	1	ND	1	ND	1	1950160

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Detection Limit was raised due to matrix interferences.

Maxxam Job #: A9C2507
Report Date: 2009/09/28

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC, IQALUIT, NU
Your P.O. #: 2078

RESULTS OF ANALYSES OF WATER

Maxxam ID		DS7460	DS7461	DS7462		DS7463		DS7464		
Sampling Date		2009/09/15	2009/09/15	2009/09/15		2009/09/15		2009/09/15		
	Units	**AEC2-SW09-1**	**AEC2-SW09-2**	**AEC2-SW09-3**	**QC Batch**	**AEC2-SW09-4**	**QC Batch**	**AEC2-SW09-5**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	51	51	51	1943979	36	1943979	35	1	1943979
Inorganics										
Dissolved Organic Carbon	mg/L	6.0	7.2	5.5	1946768	4.8	1948071	3.9	0.2	1946768

Maxxam ID		DS7465	DS7466		DS7467		DS7468		DS7469		
Sampling Date		2009/09/15	2009/09/15		2009/09/15		2009/09/15		2009/09/15		
	Units	**AEC2-SW09-6**	**AEC2-SW09-7**	**QC Batch**	**AEC2-SW09-8**	**QC Batch**	**AEC2-SW09-9**	**QC Batch**	**AEC2-SW09-10**	**RDL**	**QC Batch**
Calculated Parameters											
Hardness (CaCO3)	mg/L	35	37	1943979	37	1943979	39	1943979	41	1	1943979
Inorganics											
Dissolved Organic Carbon	mg/L	3.9	3.7	1948071	3.8	1946768	3.9	1948071	3.8	0.2	1946768

Maxxam ID		DS7471	DS7472	DS7473		DS7474	DS7475		
Sampling Date		2009/09/15	2009/09/15	2009/09/15		2009/09/15	2009/09/15		
	Units	**AEC2-SW09-11**	**AEC3-SW09-1**	**AEC3-SW09-2**	**QC Batch**	**AEC3-SW09-3**	**SW09-DUP1**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	38	1400	1400	1943979	1400	37	1	1943979
Inorganics									
Dissolved Organic Carbon	mg/L	3.9	2.5	2.5	1949786	2.5	3.7	0.2	1946768

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C2507
Report Date: 2009/09/28

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC, IQALUIT, NU
Your P.O. #: 2078

ORGANOCHLORINATED PESTICIDES BY GC-ECD (WATER)

Maxxam ID		DS7463		DS7465		
Sampling Date		2009/09/15		2009/09/15		
	Units	**AEC2-SW09-4**	**QC Batch**	**AEC2-SW09-6**	**RDL**	**QC Batch**
Pesticides & Herbicides						
Aldrin	ug/L	ND	1945630	ND	0.005	1948691
a-BHC	ug/L	ND	1945630	ND	0.005	1948691
b-BHC	ug/L	ND	1945630	ND	0.005	1948691
d-BHC	ug/L	ND	1945630	ND	0.005	1948691
a-Chlordane	ug/L	ND	1945630	ND	0.005	1948691
g-Chlordane	ug/L	ND	1945630	ND	0.005	1948691
Chlordane (Total)	ug/L	ND	1945630	ND	0.005	1948691
o,p-DDD	ug/L	ND	1945630	ND	0.005	1948691
p,p-DDD	ug/L	ND	1945630	ND	0.005	1948691
o,p-DDD + p,p-DDD	ug/L	ND	1945630	ND	0.005	1948691
o,p-DDE	ug/L	ND	1945630	ND	0.005	1948691
p,p-DDE	ug/L	ND	1945630	ND	0.005	1948691
o,p-DDE + p,p-DDE	ug/L	ND	1945630	ND	0.005	1948691
o,p-DDT	ug/L	ND	1945630	ND	0.005	1948691
p,p-DDT	ug/L	ND	1945630	ND	0.005	1948691
o,p-DDT + p,p-DDT	ug/L	ND	1945630	ND	0.005	1948691
DDT+ Metabolites	ug/L	ND	1945630	ND	0.005	1948691
Dieldrin	ug/L	ND	1945630	ND	0.005	1948691
Endosulfan I	ug/L	ND	1945630	ND	0.005	1948691
Endosulfan II	ug/L	ND	1945630	ND	0.005	1948691
Endosulfan sulfate	ug/L	ND	1945630	ND	0.005	1948691
Total Endosulfan	ug/L	ND	1945630	ND	0.005	1948691
Endrin	ug/L	ND	1945630	ND	0.005	1948691
Endrin aldehyde	ug/L	ND	1945630	ND	0.005	1948691
Endrin ketone	ug/L	ND	1945630	ND	0.005	1948691
Heptachlor	ug/L	ND	1945630	ND	0.005	1948691
Heptachlor epoxide	ug/L	ND	1945630	ND	0.005	1948691
Hexachlorobenzene	ug/L	ND	1945630	ND	0.005	1948691
Lindane	ug/L	ND	1945630	ND	0.005	1948691
Methoxychlor	ug/L	ND	1945630	ND	0.01	1948691
Mirex	ug/L	ND	1945630	ND	0.005	1948691
Octachlorostyrene	ug/L	ND	1945630	ND	0.005	1948691
Total PCB	ug/L	ND	1945630	ND	0.1	1948691

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C2507
Report Date: 2009/09/28

Franz Environmental Inc
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Project name: TC, IQALUIT, NU
Your P.O. #: 2078

ORGANOCHLORINATED PESTICIDES BY GC-ECD (WATER)

Maxxam ID		DS7463		DS7465		
Sampling Date		2009/09/15		2009/09/15		
	Units	**AEC2-SW09-4**	**QC Batch**	**AEC2-SW09-6**	**RDL**	**QC Batch**
Aroclor 1016	ug/L	ND	1945630	ND	0.05	1948691
Aroclor 1221	ug/L	ND	1945630	ND	0.1	1948691
Aroclor 1232	ug/L	ND	1945630	ND	0.05	1948691
Aroclor 1242	ug/L	ND	1945630	ND	0.05	1948691
Aroclor 1248	ug/L	ND	1945630	ND	0.05	1948691
Aroclor 1254	ug/L	ND	1945630	ND	0.05	1948691
Aroclor 1260	ug/L	ND	1945630	ND	0.05	1948691
Toxaphene	ug/L	ND	1945630	ND	0.2	1948691
Surrogate Recovery (%)						
2,4,5,6-Tetrachloro-m-xylene	%	67	1945630	41		1948691
Decachlorobiphenyl	%	85	1945630	77		1948691

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C2507
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Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC, IQALUIT, NU
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ORGANOCHLORINATED PESTICIDES BY GC-ECD (WATER)

Maxxam ID		DS7466	DS7468	DS7471	DS7472	DS7475		
Sampling Date		2009/09/15	2009/09/15	2009/09/15	2009/09/15	2009/09/15		
	Units	**AEC2-SW09-7**	**AEC2-SW09-9**	**AEC2-SW09-11**	**AEC3-SW09-1**	**SW09-DUP1**	**RDL**	**QC Batch**
Pesticides & Herbicides								
Aldrin	ug/L	ND	ND	ND	ND	ND	0.005	1945630
a-BHC	ug/L	ND	ND	ND	ND	ND	0.005	1945630
b-BHC	ug/L	ND	ND	ND	ND	ND	0.005	1945630
d-BHC	ug/L	ND	ND	ND	ND	ND	0.005	1945630
a-Chlordane	ug/L	ND	ND	ND	ND	ND	0.005	1945630
g-Chlordane	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Chlordane (Total)	ug/L	ND	ND	ND	ND	ND	0.005	1945630
o,p-DDD	ug/L	ND	ND	ND	ND	ND	0.005	1945630
p,p-DDD	ug/L	ND	ND	ND	ND	ND	0.005	1945630
o,p-DDD + p,p-DDD	ug/L	ND	ND	ND	ND	ND	0.005	1945630
o,p-DDE	ug/L	ND	ND	ND	ND	ND	0.005	1945630
p,p-DDE	ug/L	ND	ND	ND	ND	ND	0.005	1945630
o,p-DDE + p,p-DDE	ug/L	ND	ND	ND	ND	ND	0.005	1945630
o,p-DDT	ug/L	ND	ND	ND	ND	ND	0.005	1945630
p,p-DDT	ug/L	ND	ND	ND	ND	ND	0.005	1945630
o,p-DDT + p,p-DDT	ug/L	ND	ND	ND	ND	ND	0.005	1945630
DDT+ Metabolites	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Dieldrin	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Endosulfan I	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Endosulfan II	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Endosulfan sulfate	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Total Endosulfan	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Endrin	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Endrin aldehyde	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Endrin ketone	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Heptachlor	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Heptachlor epoxide	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Hexachlorobenzene	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Lindane	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Methoxychlor	ug/L	ND	ND	ND	ND	ND	0.01	1945630
Mirex	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Octachlorostyrene	ug/L	ND	ND	ND	ND	ND	0.005	1945630
Total PCB	ug/L	ND	ND	ND	ND	ND	0.1	1945630

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C2507
Report Date: 2009/09/28

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC, IQALUIT, NU
Your P.O. #: 2078

ORGANOCHLORINATED PESTICIDES BY GC-ECD (WATER)

Maxxam ID		DS7466	DS7468	DS7471	DS7472	DS7475		
Sampling Date		2009/09/15	2009/09/15	2009/09/15	2009/09/15	2009/09/15		
	Units	**AEC2-SW09-7**	**AEC2-SW09-9**	**AEC2-SW09-11**	**AEC3-SW09-1**	**SW09-DUP1**	**RDL**	**QC Batch**
Aroclor 1016	ug/L	ND	ND	ND	ND	ND	0.05	1945630
Aroclor 1221	ug/L	ND	ND	ND	ND	ND	0.1	1945630
Aroclor 1232	ug/L	ND	ND	ND	ND	ND	0.05	1945630
Aroclor 1242	ug/L	ND	ND	ND	ND	ND	0.05	1945630
Aroclor 1248	ug/L	ND	ND	ND	ND	ND	0.05	1945630
Aroclor 1254	ug/L	ND	ND	ND	ND	ND	0.05	1945630
Aroclor 1260	ug/L	ND	ND	ND	ND	ND	0.05	1945630
Toxaphene	ug/L	ND	ND	ND	ND	ND	0.2	1945630
Surrogate Recovery (%)								
2,4,5,6-Tetrachloro-m-xylene	%	68	70	61	67	67		1945630
Decachlorobiphenyl	%	84	84	77	84	82		1945630

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Package 1	4.7°C
Package 2	2.3°C
Package 3	3.3°C

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

GENERAL COMMENTS

Sample DS7460-: Total Chromium < Hexavalent Chromium: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample DS7468-: Total Chromium < Hexavalent Chromium: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

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Maxxam Job #: A9C2507
Report Date: 2009/09/28

Franz Environmental Inc
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QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1945544	Mercury (Hg)	2009/09/22	101	75 - 125	101	84 - 113	ND, RDL=0.1	ug/L	NC	25		
1945630	2,4,5,6-Tetrachloro-m-xylene	2009/09/22	69	40 - 130	81	40 - 130	77	%				
1945630	Decachlorobiphenyl	2009/09/22	78	40 - 130	77	40 - 130	77	%				
1945630	Aldrin	2009/09/22	88	30 - 130	100	30 - 130	ND, RDL=0.005	ug/L				
1945630	a-BHC	2009/09/22	71	30 - 130	91	30 - 130	ND, RDL=0.005	ug/L				
1945630	b-BHC	2009/09/22	73	30 - 130	90	30 - 130	ND, RDL=0.005	ug/L				
1945630	d-BHC	2009/09/22	79	30 - 130	98	30 - 130	ND, RDL=0.005	ug/L				
1945630	a-Chlordane	2009/09/22	91	30 - 130	110	30 - 130	ND, RDL=0.005	ug/L				
1945630	g-Chlordane	2009/09/22	89	30 - 130	108	30 - 130	ND, RDL=0.005	ug/L				
1945630	o,p-DDD	2009/09/22	93	40 - 130	110	40 - 130	ND, RDL=0.005	ug/L				
1945630	p,p-DDD	2009/09/22	100	30 - 130	117	30 - 130	ND, RDL=0.005	ug/L				
1945630	o,p-DDE	2009/09/22	100	40 - 130	117	40 - 130	ND, RDL=0.005	ug/L				
1945630	p,p-DDE	2009/09/22	92	30 - 130	108	30 - 130	ND, RDL=0.005	ug/L				
1945630	o,p-DDT	2009/09/22	85	40 - 130	100	40 - 130	ND, RDL=0.005	ug/L				
1945630	p,p-DDT	2009/09/22	93	30 - 130	105	30 - 130	ND, RDL=0.005	ug/L				
1945630	Dieldrin	2009/09/22	98	36 - 130	118	36 - 130	ND, RDL=0.005	ug/L				
1945630	Endosulfan I	2009/09/22	91	30 - 130	100	30 - 130	ND, RDL=0.005	ug/L				
1945630	Endosulfan II	2009/09/22	83	30 - 130	75	30 - 130	ND, RDL=0.005	ug/L				
1945630	Endosulfan sulfate	2009/09/22	94	30 - 130	110	30 - 130	ND, RDL=0.005	ug/L				
1945630	Endrin	2009/09/22	107	30 - 130	104	30 - 130	ND, RDL=0.005	ug/L				
1945630	Endrin aldehyde	2009/09/22	52	40 - 130	99	40 - 130	ND, RDL=0.005	ug/L				
1945630	Endrin ketone	2009/09/22	97	40 - 130	111	40 - 130	ND, RDL=0.005	ug/L				
1945630	Heptachlor	2009/09/22	78	30 - 130	101	30 - 130	ND, RDL=0.005	ug/L				
1945630	Heptachlor epoxide	2009/09/22	84	30 - 130	100	30 - 130	ND, RDL=0.005	ug/L				
1945630	Hexachlorobenzene	2009/09/22	76	30 - 130	92	30 - 130	ND, RDL=0.005	ug/L				
1945630	Lindane	2009/09/22	86	30 - 130	109	30 - 130	ND, RDL=0.003	ug/L	NC	40		
1945630	Methoxychlor	2009/09/22	91	40 - 130	104	40 - 130	ND, RDL=0.014	ug/L				
1945630	Mirex	2009/09/22	84	40 - 130	94	40 - 130	ND, RDL=0.005	ug/L				
1945630	Octachlorostyrene	2009/09/22	85	30 - 130	98	30 - 130	ND, RDL=0.005	ug/L				
1945630	Total PCB	2009/09/22					ND, RDL=0.1	ug/L	NC	40		
1945630	Aroclor 1242	2009/09/22					ND, RDL=0.05	ug/L	NC	40		
1945630	Toxaphene	2009/09/22					ND, RDL=0.2	ug/L	NC	40		
1945630	Chlordane (Total)	2009/09/22					ND, RDL=0.005	ug/L				
1945630	o,p-DDD + p,p-DDD	2009/09/22					ND, RDL=0.005	ug/L				
1945630	o,p-DDE + p,p-DDE	2009/09/22					ND, RDL=0.005	ug/L				
1945630	o,p-DDT + p,p-DDT	2009/09/22					ND, RDL=0.005	ug/L				
1945630	DDT+ Metabolites	2009/09/22					ND, RDL=0.005	ug/L				
1945630	Total Endosulfan	2009/09/22					ND, RDL=0.005	ug/L				
1945630	Aroclor 1016	2009/09/22					ND, RDL=0.05	ug/L				

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Driven by Service and Science

Maxxam Job #: A9C2507
Report Date: 2009/09/28

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC, IQALUIT, NU
Your P.O. #: 2078

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1945630	Aroclor 1221	2009/09/22					ND, RDL=0.1	ug/L				
1945630	Aroclor 1232	2009/09/22					ND, RDL=0.05	ug/L				
1945630	Aroclor 1248	2009/09/22					ND, RDL=0.05	ug/L				
1945630	Aroclor 1254	2009/09/22					ND, RDL=0.05	ug/L				
1945630	Aroclor 1260	2009/09/22					ND, RDL=0.05	ug/L				
1946101	Mercury (Hg)	2009/09/22	101	75 - 125	105	84 - 113	ND, RDL=0.1	ug/L	NC	25		
1946768	Dissolved Organic Carbon	2009/09/22	NC(1)	75 - 125	97	75 - 125	ND, RDL=0.2	mg/L	0.3	20		
1948071	Dissolved Organic Carbon	2009/09/23	NC	75 - 125	108	75 - 125	ND, RDL=0.2	mg/L	2.0	20		
1948691	2,4,5,6-Tetrachloro-m-xylene	2009/09/24	62	40 - 130	72	40 - 130	73	%				
1948691	Decachlorobiphenyl	2009/09/24	83	40 - 130	84	40 - 130	79	%				
1948691	Aldrin	2009/09/24	83	30 - 130	85	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	a-BHC	2009/09/24	78	30 - 130	96	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	b-BHC	2009/09/24	83	30 - 130	98	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	d-BHC	2009/09/24	85	30 - 130	104	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	a-Chlordane	2009/09/24	91	30 - 130	115	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	g-Chlordane	2009/09/24	92	30 - 130	117	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	o,p-DDD	2009/09/24	93	40 - 130	115	40 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	p,p-DDD	2009/09/24	93	30 - 130	120	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	o,p-DDE	2009/09/24	98	40 - 130	120	40 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	p,p-DDE	2009/09/24	90	30 - 130	113	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	o,p-DDT	2009/09/24	99	40 - 130	122	40 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	p,p-DDT	2009/09/24	98	30 - 130	109	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Dieldrin	2009/09/24	92	36 - 130	117	36 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Endosulfan I	2009/09/24	86	30 - 130	104	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Endosulfan II	2009/09/24	87	30 - 130	94	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Endosulfan sulfate	2009/09/24	89	30 - 130	112	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Endrin	2009/09/24	102	30 - 130	130	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Endrin aldehyde	2009/09/24	87	40 - 130	103	40 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Endrin ketone	2009/09/24	98	40 - 130	117	40 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Heptachlor	2009/09/24	90	30 - 130	113	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Heptachlor epoxide	2009/09/24	96	30 - 130	103	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Hexachlorobenzene	2009/09/24	82	30 - 130	99	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Lindane	2009/09/24	98	30 - 130	117	30 - 130	ND, RDL=0.003	ug/L	NC	40		
1948691	Methoxychlor	2009/09/24	77	40 - 130	83	40 - 130	ND, RDL=0.014	ug/L	NC	40		
1948691	Mirex	2009/09/24	88	40 - 130	99	40 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Octachlorostyrene	2009/09/24	99	30 - 130	109	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Total PCB	2009/09/24					ND, RDL=0.1	ug/L	NC	40		
1948691	Aroclor 1242	2009/09/24					ND, RDL=0.05	ug/L	NC	40		
1948691	Toxaphene	2009/09/24					ND, RDL=0.2	ug/L	NC	40		

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QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1948691	Chlordane (Total)	2009/09/24					ND, RDL=0.005	ug/L	NC	40		
1948691	o,p-DDD + p,p-DDD	2009/09/24					ND, RDL=0.005	ug/L	NC	40		
1948691	o,p-DDE + p,p-DDE	2009/09/24					ND, RDL=0.005	ug/L	NC	40		
1948691	o,p-DDT + p,p-DDT	2009/09/24					ND, RDL=0.005	ug/L	NC	40		
1948691	DDT+ Metabolites	2009/09/24					ND, RDL=0.005	ug/L	NC	40		
1948691	Total Endosulfan	2009/09/24					ND, RDL=0.005	ug/L	NC	40		
1948691	Aroclor 1016	2009/09/24					ND, RDL=0.05	ug/L	NC	40		
1948691	Aroclor 1221	2009/09/24					ND, RDL=0.1	ug/L	NC	40		
1948691	Aroclor 1232	2009/09/24					ND, RDL=0.05	ug/L	NC	40		
1948691	Aroclor 1248	2009/09/24					ND, RDL=0.05	ug/L	NC	40		
1948691	Aroclor 1254	2009/09/24					ND, RDL=0.05	ug/L	NC	40		
1948691	Aroclor 1260	2009/09/24					ND, RDL=0.05	ug/L	NC	40		
1949280	Total Phosphorus	2009/09/28	NC	75 - 125	110	75 - 125	ND, RDL=0.002	mg/L	1.5(2)	25	108	85 - 115
1949786	Dissolved Organic Carbon	2009/09/24	NC	75 - 125	95	75 - 125	ND, RDL=0.2	mg/L	0.2	20		
1949810	Chromium (VI)	2009/09/25	96	75 - 125	95	75 - 125	ND, RDL=0.5	ug/L	NC	25		
1950160	Total Antimony (Sb)	2009/09/25	111	80 - 120	113	82 - 120	ND, RDL=0.5	ug/L				
1950160	Total Arsenic (As)	2009/09/25	99	80 - 120	102	86 - 119	ND, RDL=1	ug/L	NC	25		
1950160	Total Beryllium (Be)	2009/09/25	98	75 - 125	102	85 - 132	ND, RDL=0.5	ug/L				
1950160	Total Boron (B)	2009/09/25	101	75 - 125	105	78 - 133	ND, RDL=10	ug/L	1.8	25		
1950160	Total Cadmium (Cd)	2009/09/25	105	80 - 120	105	85 - 116	ND, RDL=0.1	ug/L	NC	25		
1950160	Total Chromium (Cr)	2009/09/25	99	80 - 120	103	80 - 120	ND, RDL=5	ug/L	NC	25		
1950160	Total Cobalt (Co)	2009/09/25	99	80 - 120	103	82 - 117	ND, RDL=0.5	ug/L				
1950160	Total Copper (Cu)	2009/09/25	92	80 - 120	98	80 - 117	ND, RDL=1	ug/L	NC	25		
1950160	Total Iron (Fe)	2009/09/25	97	80 - 120	99	80 - 120	ND, RDL=100	ug/L	NC	25		
1950160	Total Lead (Pb)	2009/09/25	92	80 - 120	95	80 - 120	ND, RDL=0.5	ug/L	NC	25		
1950160	Total Molybdenum (Mo)	2009/09/25	102	80 - 120	103	82 - 117	ND, RDL=1	ug/L				
1950160	Total Nickel (Ni)	2009/09/25	94	80 - 120	99	81 - 117	ND, RDL=1	ug/L	NC	25		
1950160	Total Selenium (Se)	2009/09/25	100	75 - 125	105	82 - 118	ND, RDL=2	ug/L	NC	25		
1950160	Total Silver (Ag)	2009/09/25	94	80 - 120	95	80 - 120	ND, RDL=0.1	ug/L	NC	25		
1950160	Total Thallium (Tl)	2009/09/25	93	80 - 120	96	80 - 129	ND, RDL=0.05	ug/L				
1950160	Total Tungsten (W)	2009/09/25	99	75 - 125	102	81 - 123	ND, RDL=1	ug/L				
1950160	Total Uranium (U)	2009/09/25	95	80 - 120	98	82 - 120	ND, RDL=0.1	ug/L				
1950160	Total Vanadium (V)	2009/09/25	101	80 - 120	103	82 - 118	ND, RDL=1	ug/L	NC	25		
1950160	Total Zinc (Zn)	2009/09/25	96	80 - 120	102	80 - 120	ND, RDL=5	ug/L	NC	25		
1950160	Total Zirconium (Zr)	2009/09/25	103	75 - 125	104	84 - 118	ND, RDL=1	ug/L				
1950641	Dissolved (0.2u) Aluminum (Al)	2009/09/25	100	80 - 120	101	90 - 110	ND, RDL=5	ug/L	NC	25		
1950695	Total Antimony (Sb)	2009/09/25	103	80 - 120	101	82 - 120	ND, RDL=0.5	ug/L				
1950695	Total Arsenic (As)	2009/09/25	98	80 - 120	100	86 - 119	ND, RDL=1	ug/L				
1950695	Total Beryllium (Be)	2009/09/25	98	75 - 125	99	85 - 132	ND, RDL=0.5	ug/L				

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: A9C2507
Report Date: 2009/09/28

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC, IQALUIT, NU
Your P.O. #: 2078

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1950695	Total Boron (B)	2009/09/25	102	75 - 125	100	78 - 133	ND, RDL=10	ug/L				
1950695	Total Cadmium (Cd)	2009/09/25	96	80 - 120	98	85 - 116	ND, RDL=0.1	ug/L				
1950695	Total Chromium (Cr)	2009/09/25	98	80 - 120	100	80 - 120	ND, RDL=5	ug/L				
1950695	Total Cobalt (Co)	2009/09/25	97	80 - 120	97	82 - 117	ND, RDL=0.5	ug/L				
1950695	Total Copper (Cu)	2009/09/25	95	80 - 120	98	80 - 117	ND, RDL=1	ug/L				
1950695	Total Iron (Fe)	2009/09/25	97	80 - 120	98	80 - 120	ND, RDL=100	ug/L				
1950695	Total Lead (Pb)	2009/09/25	94	80 - 120	98	80 - 120	ND, RDL=0.5	ug/L	NC	25		
1950695	Total Molybdenum (Mo)	2009/09/25	100	80 - 120	100	82 - 117	ND, RDL=1	ug/L				
1950695	Total Nickel (Ni)	2009/09/25	96	80 - 120	98	81 - 117	1, RDL=1	ug/L				
1950695	Total Selenium (Se)	2009/09/25	97	75 - 125	100	82 - 118	ND, RDL=2	ug/L				
1950695	Total Silver (Ag)	2009/09/25	93	80 - 120	94	80 - 120	ND, RDL=0.1	ug/L				
1950695	Total Thallium (Tl)	2009/09/25	95	80 - 120	97	80 - 129	ND, RDL=0.05	ug/L				
1950695	Total Tungsten (W)	2009/09/25	101	75 - 125	102	81 - 123	ND, RDL=1	ug/L				
1950695	Total Uranium (U)	2009/09/25	96	80 - 120	101	82 - 120	ND, RDL=0.1	ug/L				
1950695	Total Vanadium (V)	2009/09/25	98	80 - 120	99	82 - 118	ND, RDL=1	ug/L				
1950695	Total Zinc (Zn)	2009/09/25	96	80 - 120	99	80 - 120	ND, RDL=5	ug/L				
1950695	Total Zirconium (Zr)	2009/09/25	104	75 - 125	102	84 - 118	ND, RDL=1	ug/L				

N/A = Not Applicable
RDL = Reportable Detection Limit
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) - The recovery in the matrix spike was not calculated (NC). Spiked concentration was less than 2x that native to the sample.
(2) - Result was obtained from the high level Total P method, as sample result was significantly higher than analytical range of the low level method.

Validation Signature Page

Maxxam Job #: A9C2507

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

CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst

CHARTERED
Eva Pranjic
CHEMIST

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Analytics

Maxxam Analytics International Corporation o/a Maxxam Analytics
32 Colonnade Unit 1000, Nepean, Ontario Canada K2E 7J6 Tel:(613) 274-0573 Toll-free:877-480-7272 Fax:613-274-0574 www.maxxamanalytics.com

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#10988 Franz Environmental Inc	Company Name:	Same	Quotation #:	A93902	MAXXAM JOB #:	BOTTLE ORDER #: 162606
Contact Name:	Ryan Fletcher	Contact Name:		P.O. #:	2078		
Address:	329 Churchill Ave N Suite 200	Address:		Project #:	1584-0901	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	Ottawa ON K1Z 5B8			Project Name:	TC Iqaluit	C#162606-02-01	MELISSA MORRISON
Phone:	(613)721-0555 Fax: (613)721-0029	Phone:	and Jdittmer@franz Fax: -	Site Location:	Iqaluit, NV		
Email:	rfletcher@franzenvironmental.com	Email:		Sampled By:	RF		

REGULATORY CRITERIA:

- [ ] MISA — Reg. 153/04
- [ ] PWQO — [X] Table 1 — [X] Residential/Parkland
- [ ] Table 2 — [ ] Industrial/Commercial
- [ ] Reg. 558 — [ ] Table 3 — [ ] Medium/Fine
- [ ] Table 6 — [ ] Coarse
- Sewer Use: [ ] Sanitary [ ] Storm [ ] Combined
- Municipality ______
- Other (specify) ______
- Report Criteria on C of A ? [ ]

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10ºC) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [X]
(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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission) [ ]
Date Required: ______ Time Required: ______
Rush Confirmation Number: ______ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Petroleum Hydrocarbons BTEX / F1 - F4	Polychlorinated Biphenyl in Water	Dissolved Organic Carbon (DOC)	PWQO Metals inc Al, Hg, Cr6, & TPhosphor	Volatile Organic Compounds in Water	PAH Compounds in Water by GC/MS (SIM)	OC Pesticides (Selected) ~~PCB~~	Hardness		Hold	# of Bottles	Comments
1		AEC2-SW09-1	Sept.15/09		SW	N	N			X	X				X		X	5	to meet FWAL
2		AEC2-SW09-2			SW					X	X				X		X	5	
3		AEC2-SW09-3			SW					X	X				X		X	5	
4		AEC2-SW09-4			SW				X	X	X			X	X		X	9	
5		AEC2-SW09-5			SW					X	X				X		X	5	
6		AEC2-SW09-6			SW				X	X	X			X	X		X	9	
7		AEC2-SW09-7			SW				X	X	X			X	X		X	9	
8		AEC2-SW09-8			SW					X	X				X		X	5	
9		AEC2-SW09-9			SW				X	X	X			X	X		X	9	
10		AEC2-SW09-10			SW					X	X				X		X	5	

17-Sep-09 07:30
MELISSA MORRISON
A9C2507
JOE OTT-001

REC'D IN OTTAWA

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Ryan Fletcher	Sept.16/09		J. Clement	09/09/17	7:30	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
[ ]	5/4/5 2/3/2	[ ] Yes [ ] No

2/3/5

* 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.

White: Maxxam Yellow: Client

Maxxam Analytics

Maxxam Analytics International Corporation o/a Maxxam Analytics
32 Colonnade Unit 1000, Nepean, Ontario Canada K2E 7J6 Tel:(613) 274-0573 Toll-free:877-480-7272 Fax:613-274-0574 www.maxxamanalytics.com

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:	
Company Name:	#10988 Franz Environmental Inc	Company Name:	Same	Quotation #:	A93902
Contact Name:	Ryan Fletcher	Contact Name:		P.O. #:	2078
Address:	329 Churchill Ave N Suite 200	Address:		Project #:	1584-0901
	Ottawa ON K1Z 5B8		and Jdittharner@franz...	Project Name:	TC Iqaluit
Phone:	(613)721-0555 Fax: (613)721-0029	Phone:	Fax:	Site Location:	Iqaluit, NU
Email:	rfletcher@franzenvironmental.com	Email:		Sampled By:	RF

Laboratory Use Only:

MAXXAM JOB #:	BOTTLE ORDER #:
	162606
CHAIN OF CUSTODY #:	PROJECT MANAGER:
C#162606-03-01	MELISSA MORRISON

REGULATORY CRITERIA:

- [ ] MISA — Reg. 153/04
- [ ] PWQO — [x] Table 1 — [x] Residential/Parkland
- Table 2 — Industrial/Commercial
- [ ] Reg. 558 — Table 3 — Medium/Fine
- Table 6 — Coarse

Sewer Use: [ ] Sanitary [ ] Storm [ ] Combined

Municipality ______

Other (specify) ______ Report Criteria on C of A ? [ ]

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10ºC) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]
(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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

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

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Petroleum Hydrocarbons BTEX / F1 - F4	Polychlorinated Biphenyl in Water	Dissolved Organic Carbon (DOC)	PWQO Metals inc Al, Hg, Cr6, & TPhosphor	Volatile Organic Compounds in Water	PAH Compounds in Water by GC/MS (SIM)	OC Pesticides (Selected)	Hardness	Hold	# of Bottles	Comments
1		AEC2-SW09-11	Sept.15/09		SW	N	N		X	X	X			X	X	X	9	
2		AEC3-SW09-1	↓		SW	↓	↓		X	X	X			X	X	X	9	to meet
3		AEC3-SW09-2	↓		SW	↓	↓			X	X				X	X	5	FWAL
4		AEC3-SW09-3	↓		SW	↓	↓			X	X				X	X	5	
5		SW09-DUP1			SW	↓	↓		X	X	X			X	X	X	9	
6					SW													
7					SW													
8					SW													
9					SW													REC'D IN OTTAWA
10					SW													

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Ryan Fletcher	Sept.16/09			09/09/17	7:30	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
[ ]	5/4/5 2/3/2	[ ] Yes [ ] No

* 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.

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

2/3/5

Maxxam Analytics — Driven by Service and Science

Your P.O. #: 2078
Your Project #: 1584-0901
Site: TC IQALUIT, NU
Your C.O.C. #: 16260607, 162606-0

Attention: Ryan Fletcher
Franz Environmental Inc
329 Churchill Ave N
Suite 200
Ottawa, ON
K1Z 5B8

Report Date: 2009/09/30

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9C4118
Received: 2009/09/21, 07:30

Sample Matrix: Water
Samples Received: 21

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Dissolved Aluminum (0.2 u, clay free)	19	N/A	2009/09/28	CAM SOP-00447	SW846, 6020
Low level Benzo(a)pyrene by GC/MS (SIM)	6	2009/09/26	2009/09/27	EPA 8270	GC/MS
Chromium (VI) in Water	19	N/A	2009/09/29	BRL SOP-00106	EPA 7199
Dissolved Organic Carbon (DOC)	8	N/A	2009/09/26	CAM SOP-00446	SM 5310 B
Dissolved Organic Carbon (DOC)	11	N/A	2009/09/29	CAM SOP-00446	SM 5310 B
Petroleum Hydro. CCME F1 & BTEX in Water (1)	6	N/A	2009/09/24	CAM SOP-00315	CCME CWS
Petroleum Hydrocarbons F2-F4 in Water (1)	6	2009/09/22	2009/09/24	CAM SOP-00316	CCME Hydrocarbons
Hardness (calculated as CaCO3)	19	N/A	2009/09/30	CAM SOP 0102	SM 2340 B
Mercury (low level)	19	2009/09/24	2009/09/25	CAM SOP-00453	EPA 7470
Total Metals Analysis by ICPMS	19	N/A	2009/09/29	CAM SOP-00447	EPA 6020
OC Pesticides (Selected) & PCB (2)	4	2009/09/23	2009/09/24	CAM SOP-00307	SW846 8081,8082
PAH Compounds in Water by GC/MS (SIM)	1	2009/09/24	2009/09/27	CAM SOP-00318	EPA 8270
PAH Compounds in Water by GC/MS (SIM)	5	2009/09/26	2009/09/27	CAM SOP-00318	EPA 8270
Total Phosphorus (Colourimetric)	19	2009/09/28	2009/09/29	CAM SOP-00407	APHA 4500 P,B,F
Volatile Organic Compounds in Water (1)	8	N/A	2009/09/24	CAM SOP-00226	EPA 8260 modified

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

(1) This test was performed by Maxxam Ottawa
(2) Chlordane (Total) = Alpha Chlordane + Gamma Chlordane

Encryption Key

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

MELISSA MORRISON, Project Manager
Email: Melissa.Morrison@maxxamanalytics.com
Phone# (613) 274-0573

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Job #: A9C4118
Report Date: 2009/09/30

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

O'REG 153 PETROLEUM HYDROCARBONS (WATER)

Maxxam ID		DT6715	DT6767	DT6771	DT6773	DT6774	DT6775		
Sampling Date		2009/09/17	2009/09/17	2009/09/17	2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC1-SW09-1**	**AEC4-SW09-11**	**AEC4-SW09-15**	**AEC4-SW09-DUP2**	**AEC2-SW09-8**	**AEC2-SW09-6**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons									
F1 (C6-C10)	ug/L	ND	ND	ND	ND	ND	ND	100	1947732
F1 (C6-C10) - BTEX	ug/L	ND	ND	ND	ND	ND	ND	100	1947732
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/L	ND	ND	ND	ND	ND	ND	100	1946180
F3 (C16-C34 Hydrocarbons)	ug/L	550	ND	ND	ND	ND	ND	100	1946180
F4 (C34-C50 Hydrocarbons)	ug/L	230	ND	ND	ND	ND	ND	100	1946180
Reached Baseline at C50	ug/L	NO	YES	YES	YES	YES	YES		1946180
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	112	107	115	110	114	113		1947732
4-Bromofluorobenzene	%	99	97	97	98	99	98		1947732
D10-Ethylbenzene	%	82	96	110	98	95	90		1947732
D4-1,2-Dichloroethane	%	120	103	125	115	111	123		1947732
o-Terphenyl	%	82	83	77	65	85	90		1946180

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C4118
Report Date: 2009/09/30

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

O'REG 153 PAH'S TABLE 1 (WATER)

Maxxam ID		DT6715	DT6767		DT6771		
Sampling Date		2009/09/17	2009/09/17		2009/09/17		
	Units	**AEC1-SW09-1**	**AEC4-SW09-11**	**QC Batch**	**AEC4-SW09-15**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons							
Acridine	ug/L	ND	ND	1952283	ND	0.1	1952283
Acenaphthene	ug/L	ND	ND	1952283	ND	0.05	1952283
Anthracene	ug/L	ND	ND	1952283	ND	0.05	1952283
Benzo(a)anthracene	ug/L	ND	ND	1952283	ND	0.05	1952283
Benzo(a)pyrene	ug/L	ND	ND	1952283	ND	0.01	1952283
Fluoranthene	ug/L	ND	ND	1952283	ND	0.05	1952283
Fluorene	ug/L	ND	ND	1952283	ND	0.05	1952283
Naphthalene	ug/L	ND	ND	1952283	ND	0.05	1952283
Phenanthrene	ug/L	ND	ND	1952283	ND	0.05	1952283
Pyrene	ug/L	ND	ND	1952283	ND	0.05	1952283
Surrogate Recovery (%)							
D10-Anthracene	%	96	101	1952292	99		1952283
D14-Terphenyl (FS)	%	101	105	1952283	103		1952292
D7-Quinoline	%	97	104	1952292	100		1952283
D8-Acenaphthylene	%	85	97	1952283	93		1952292

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C4118
Report Date: 2009/09/30

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

O'REG 153 PAH'S TABLE 1 (WATER)

Maxxam ID		DT6773			DT6774		DT6775		
Sampling Date		2009/09/17			2009/09/17		2009/09/17		
	Units	**AEC4-SW09-DUP2**	**RDL**	**QC Batch**	**AEC2-SW09-8**	**QC Batch**	**AEC2-SW09-6**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons									
Acridine	ug/L	ND	0.1	1952283	ND	1952283	ND	0.1	1952283
Acenaphthene	ug/L	ND	0.05	1952283	ND	1952283	ND	0.05	1952283
Anthracene	ug/L	ND	0.05	1952283	ND	1952283	ND	0.05	1952283
Benzo(a)anthracene	ug/L	ND	0.05	1952283	ND	1952283	ND	0.05	1952283
Benzo(a)pyrene	ug/L	ND	0.01	1952283	ND	1952292	ND	0.005	1952292
Fluoranthene	ug/L	ND	0.05	1952283	ND	1952283	ND	0.05	1952283
Fluorene	ug/L	ND	0.05	1952283	ND	1952283	ND	0.05	1952283
Naphthalene	ug/L	ND	0.05	1952283	ND	1952283	ND	0.05	1952283
Phenanthrene	ug/L	ND	0.05	1952283	ND	1952283	ND	0.05	1952283
Pyrene	ug/L	ND	0.05	1952283	ND	1952283	ND	0.05	1952283
Surrogate Recovery (%)									
D10-Anthracene	%	98		1952292	102	1952292	98		1952283
D14-Terphenyl (FS)	%	103		1952283	106	1952283	102		1952292
D7-Quinoline	%	102		1952292	102	1952283	101		1952283
D8-Acenaphthylene	%	95		1952283	95	1952292	93		1952292

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C4118
Report Date: 2009/09/30

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Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

PWQO METALS (WATER)

Maxxam ID		DT6715	DT6716	DT6717	DT6718	DT6719		DT6720		
Sampling Date		2009/09/17	2009/09/17	2009/09/17	2009/09/17	2009/09/17		2009/09/17		
	Units	**AEC1-SW09-1**	**AEC4-SW09-1**	**AEC4-SW09-2**	**AEC4-SW09-3**	**AEC4-SW09-4**	**RDL**	**AEC4-SW09-5**	**RDL**	**QC Batch**
Inorganics										
Total Phosphorus	mg/L	0.072	0.016	0.015	0.013	0.007	0.002	0.016	0.002	1953187
Metals										
Dissolved (0.2u) Aluminum (Al)	ug/L	9	ND	ND	27	ND	5	ND	5	1952780
Chromium (VI)	ug/L	2.8	ND	ND	ND	ND	0.5	ND	0.5	1952286
Total Antimony (Sb)	ug/L	ND	ND	ND	ND	ND	0.5	ND	5	1954394
Total Arsenic (As)	ug/L	ND	ND	ND	ND	ND	1	ND	10	1954394
Total Beryllium (Be)	ug/L	ND	ND	ND	ND	ND	0.5	ND	5	1954394
Total Boron (B)	ug/L	ND	130	220	140	200	10	1800	100	1954394
Total Cadmium (Cd)	ug/L	ND	ND	ND	ND	ND	0.1	ND	1	1954394
Total Chromium (Cr)	ug/L	ND	ND	ND	ND	ND	5	ND	50	1954394
Total Cobalt (Co)	ug/L	0.6	ND	ND	ND	ND	0.5	ND	5	1954394
Total Copper (Cu)	ug/L	ND	ND	ND	3	ND	1	ND	10	1954394
Total Iron (Fe)	ug/L	2200	220	330	610	210	100	ND	1000	1954394
Total Lead (Pb)	ug/L	ND	ND	ND	ND	ND	0.5	ND	5	1954394
Total Molybdenum (Mo)	ug/L	ND	ND	ND	1	ND	1	ND	10	1954394
Total Nickel (Ni)	ug/L	1	ND	ND	ND	ND	1	ND	10	1954394
Total Selenium (Se)	ug/L	ND	ND	ND	ND	ND	2	ND	20	1954394
Total Silver (Ag)	ug/L	ND	ND	ND	ND	ND	0.1	ND	1	1954394
Total Thallium (Tl)	ug/L	ND	0.06	0.06	0.09	0.05	0.05	0.8	0.5	1954394
Total Tungsten (W)	ug/L	ND	ND	ND	ND	ND	1	ND	10	1954394
Total Uranium (U)	ug/L	ND	ND	0.1	0.2	0.1	0.1	1	1	1954394
Total Vanadium (V)	ug/L	ND	ND	ND	1	ND	1	ND	10	1954394
Total Zinc (Zn)	ug/L	ND	ND	ND	9	6	5	ND	50	1954394
Total Zirconium (Zr)	ug/L	ND	ND	ND	ND	ND	1	ND	10	1954394

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C4118
Report Date: 2009/09/30

Franz Environmental Inc
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PWQO METALS (WATER)

Maxxam ID		DT6721		DT6722	DT6723		DT6724		DT6766		
Sampling Date		2009/09/17		2009/09/17	2009/09/17		2009/09/17		2009/09/17		
	Units	**AEC4-SW09-6**	**RDL**	**AEC4-SW09-7**	**AEC4-SW09-8**	**RDL**	**AEC4-SW09-9**	**RDL**	**AEC4-SW09-10**	**RDL**	**QC Batch**
Inorganics											
Total Phosphorus	mg/L	0.003	0.002	0.014	0.011	0.002	0.010	0.002	ND	0.002	1953187
Metals											
Dissolved (0.2u) Aluminum (Al)	ug/L	ND	5	ND	ND	5	ND	5	ND	5	1952780
Chromium (VI)	ug/L	ND	0.5	ND	ND	0.5	ND	0.5	ND	0.5	1952286
Total Antimony (Sb)	ug/L	ND	0.5	ND	ND	0.5	ND	0.5	ND	0.5	1954394
Total Arsenic (As)	ug/L	ND(1)	5	ND	ND	1	ND(1)	5	ND	1	1954394
Total Beryllium (Be)	ug/L	ND	0.5	ND	ND	0.5	ND	0.5	ND	0.5	1954394
Total Boron (B)	ug/L	210	10	130	200	10	430	10	ND	10	1954394
Total Cadmium (Cd)	ug/L	ND	0.1	ND	ND	0.1	ND	0.1	ND	0.1	1954394
Total Chromium (Cr)	ug/L	ND	5	ND	ND	5	ND	5	ND	5	1954394
Total Cobalt (Co)	ug/L	ND	0.5	ND	ND	0.5	ND	0.5	ND	0.5	1954394
Total Copper (Cu)	ug/L	ND	1	ND	ND	1	ND	1	ND	1	1954394
Total Iron (Fe)	ug/L	ND	100	ND	170	100	170	100	ND	100	1954394
Total Lead (Pb)	ug/L	ND	0.5	ND	ND	0.5	ND	0.5	ND	0.5	1954394
Total Molybdenum (Mo)	ug/L	ND	1	ND	ND	1	1	1	ND	1	1954394
Total Nickel (Ni)	ug/L	ND	1	ND	ND	1	ND	1	ND	1	1954394
Total Selenium (Se)	ug/L	ND	2	ND	ND	2	ND	2	ND	2	1954394
Total Silver (Ag)	ug/L	ND	0.1	ND	ND	0.1	ND	0.1	ND	0.1	1954394
Total Thallium (Tl)	ug/L	ND	0.05	ND	0.05	0.05	ND	0.05	0.07	0.05	1954394
Total Tungsten (W)	ug/L	ND	1	ND	ND	1	ND	1	ND	1	1954394
Total Uranium (U)	ug/L	0.1	0.1	ND	0.1	0.1	0.3	0.1	ND	0.1	1954394
Total Vanadium (V)	ug/L	ND(1)	5	2	2	1	ND(1)	5	ND	1	1954394
Total Zinc (Zn)	ug/L	ND	5	ND	ND	5	ND	5	ND	5	1954394
Total Zirconium (Zr)	ug/L	ND	1	ND	ND	1	ND	1	ND	1	1954394

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Detection Limit was raised due to matrix interferences.

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Maxxam Job #: A9C4118
Report Date: 2009/09/30

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

PWQO METALS (WATER)

Maxxam ID		DT6767	DT6768		DT6769		DT6770		
Sampling Date		2009/09/17	2009/09/17		2009/09/17		2009/09/17		
	Units	**AEC4-SW09-11**	**AEC4-SW09-12**	**RDL**	**AEC4-SW09-13**	**RDL**	**AEC4-SW09-14**	**RDL**	**QC Batch**
Inorganics									
Total Phosphorus	mg/L	0.012	0.004	0.002	0.098	0.002	0.007	0.002	1953187
Metals									
Dissolved (0.2u) Aluminum (Al)	ug/L	ND	ND	5	ND	5	ND	5	1952780
Chromium (VI)	ug/L	ND	ND	0.5	ND	0.5	ND	0.5	1952286
Total Antimony (Sb)	ug/L	ND	ND	0.5	ND	0.5	ND	0.5	1954394
Total Arsenic (As)	ug/L	ND(1)	ND(1)	5	ND	1	ND(1)	5	1954394
Total Beryllium (Be)	ug/L	ND	ND	0.5	ND	0.5	ND	0.5	1954394
Total Boron (B)	ug/L	480	400	10	96	10	320	10	1954394
Total Cadmium (Cd)	ug/L	ND	ND	0.1	ND	0.1	ND	0.1	1954394
Total Chromium (Cr)	ug/L	ND	ND	5	ND	5	ND	5	1954394
Total Cobalt (Co)	ug/L	ND	ND	0.5	ND	0.5	ND	0.5	1954394
Total Copper (Cu)	ug/L	ND	ND	1	ND	1	1	1	1954394
Total Iron (Fe)	ug/L	1400	ND	100	310	100	390	100	1954394
Total Lead (Pb)	ug/L	ND	ND	0.5	ND	0.5	ND	0.5	1954394
Total Molybdenum (Mo)	ug/L	1	1	1	ND	1	1	1	1954394
Total Nickel (Ni)	ug/L	3	ND	1	ND	1	ND	1	1954394
Total Selenium (Se)	ug/L	ND	ND	2	ND	2	ND	2	1954394
Total Silver (Ag)	ug/L	ND	ND	0.1	ND	0.1	ND	0.1	1954394
Total Thallium (Tl)	ug/L	ND	ND	0.05	ND	0.05	ND	0.05	1954394
Total Tungsten (W)	ug/L	ND	ND	1	ND	1	ND	1	1954394
Total Uranium (U)	ug/L	0.2	0.2	0.1	ND	0.1	0.2	0.1	1954394
Total Vanadium (V)	ug/L	ND(1)	ND(1)	5	2	1	ND(1)	5	1954394
Total Zinc (Zn)	ug/L	ND	ND	5	ND	5	5	5	1954394
Total Zirconium (Zr)	ug/L	ND	ND	1	ND	1	ND	1	1954394

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Detection Limit was raised due to matrix interferences.

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Maxxam Job #: A9C4118
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Client Project #: 1584-0901
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Sampler Initials: RF

PWQO METALS (WATER)

Maxxam ID		DT6771		DT6772		DT6773		DT6784		
Sampling Date		2009/09/17		2009/09/17		2009/09/17		2009/09/17		
	Units	**AEC4-SW09-15**	**RDL**	**AEC4-SW09-16**	**RDL**	**AEC4-SW09-DUP2**	**RDL**	**SW09-DUP3**	**RDL**	**QC Batch**
Inorganics										
Total Phosphorus	mg/L	0.009	0.002	0.020	0.002	0.022	0.002	0.12	0.002	1953187
Metals										
Dissolved (0.2u) Aluminum (Al)	ug/L	ND	5	ND	5	ND	5	11	5	1952780
Chromium (VI)	ug/L	ND	0.5	ND	0.5	ND	0.5	ND	0.5	1952286
Total Antimony (Sb)	ug/L	ND	0.5	ND	0.5	ND	0.5	ND	0.5	1954394
Total Arsenic (As)	ug/L	ND(1)	5	ND	1	ND(1)	5	ND	1	1954394
Total Beryllium (Be)	ug/L	ND	0.5	ND	0.5	ND	0.5	ND	0.5	1954394
Total Boron (B)	ug/L	330	10	250	10	470	10	10	10	1954394
Total Cadmium (Cd)	ug/L	ND	0.1	ND	0.1	ND	0.1	ND	0.1	1954394
Total Chromium (Cr)	ug/L	ND	5	ND	5	ND	5	ND	5	1954394
Total Cobalt (Co)	ug/L	ND	0.5	ND	0.5	0.5	0.5	0.6	0.5	1954394
Total Copper (Cu)	ug/L	1	1	ND	1	ND	1	ND	1	1954394
Total Iron (Fe)	ug/L	210	100	10000	100	1400	100	2100	100	1954394
Total Lead (Pb)	ug/L	ND	0.5	ND	0.5	ND	0.5	ND	0.5	1954394
Total Molybdenum (Mo)	ug/L	1	1	ND	1	ND	1	ND	1	1954394
Total Nickel (Ni)	ug/L	ND	1	2	1	1	1	ND	1	1954394
Total Selenium (Se)	ug/L	ND	2	ND	2	ND	2	ND	2	1954394
Total Silver (Ag)	ug/L	ND	0.1	ND	0.1	ND	0.1	ND	0.1	1954394
Total Thallium (Tl)	ug/L	ND	0.05	0.07	0.05	ND	0.05	0.08	0.05	1954394
Total Tungsten (W)	ug/L	ND	1	ND	1	ND	1	ND	1	1954394
Total Uranium (U)	ug/L	0.2	0.1	ND	0.1	0.2	0.1	ND	0.1	1954394
Total Vanadium (V)	ug/L	ND(1)	5	5	1	ND(1)	5	1	1	1954394
Total Zinc (Zn)	ug/L	ND	5	ND	5	ND	5	ND	5	1954394
Total Zirconium (Zr)	ug/L	ND	1	ND	1	ND	1	ND	1	1954394

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Detection Limit was raised due to matrix interferences.

Maxxam Job #: A9C4118
Report Date: 2009/09/30

Franz Environmental Inc
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RESULTS OF ANALYSES OF WATER

Maxxam ID		DT6715	DT6716	DT6717		DT6718	DT6719		DT6720		
Sampling Date		2009/09/17	2009/09/17	2009/09/17		2009/09/17	2009/09/17		2009/09/17		
	Units	**AEC1-SW09-1**	**AEC4-SW09-1**	**AEC4-SW09-2**	**QC Batch**	**AEC4-SW09-3**	**AEC4-SW09-4**	**QC Batch**	**AEC4-SW09-5**	**RDL**	**QC Batch**
Calculated Parameters											
Hardness (CaCO3)	mg/L	24	140	210	1945703	85	220	1945703	2000	1	1945703
Inorganics											
Dissolved Organic Carbon	mg/L	9.4	3.9	3.7	1952782	4.0	3.7	1951599	1.8	0.2	1952782

Maxxam ID		DT6721		DT6722		DT6723		DT6724	DT6766		
Sampling Date		2009/09/17		2009/09/17		2009/09/17		2009/09/17	2009/09/17		
	Units	**AEC4-SW09-6**	**QC Batch**	**AEC4-SW09-7**	**QC Batch**	**AEC4-SW09-8**	**QC Batch**	**AEC4-SW09-9**	**AEC4-SW09-10**	**RDL**	**QC Batch**
Calculated Parameters											
Hardness (CaCO3)	mg/L	220	1945703	160	1945703	150	1945703	110	23	1	1945703
Inorganics											
Dissolved Organic Carbon	mg/L	0.9	1951599	0.8	1952782	1.2	1951599	1.0	0.8	0.2	1952782

Maxxam ID		DT6767		DT6768		DT6769	DT6770		
Sampling Date		2009/09/17		2009/09/17		2009/09/17	2009/09/17		
	Units	**AEC4-SW09-11**	**QC Batch**	**AEC4-SW09-12**	**QC Batch**	**AEC4-SW09-13**	**AEC4-SW09-14**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	310	1945703	400	1945703	110	370	1	1945703
Inorganics									
Dissolved Organic Carbon	mg/L	2.1	1952782	1.2	1951599	1.3	2.4	0.2	1952782

Maxxam ID		DT6771	DT6772	DT6773		DT6784		
Sampling Date		2009/09/17	2009/09/17	2009/09/17		2009/09/17		
	Units	**AEC4-SW09-15**	**AEC4-SW09-16**	**AEC4-SW09-DUP2**	**QC Batch**	**SW09-DUP3**	**RDL**	**QC Batch**
Calculated Parameters								
Hardness (CaCO3)	mg/L	370	180	300	1945703	24	1	1945703
Inorganics								
Dissolved Organic Carbon	mg/L	2.6	5.5	2.0	1951599	9.1	0.2	1952782

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C4118
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Franz Environmental Inc
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Your P.O. #: 2078
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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		DT6715		DT6716		DT6717		DT6718	DT6719		
Sampling Date		2009/09/17		2009/09/17		2009/09/17		2009/09/17	2009/09/17		
	Units	**AEC1-SW09-1**	**QC Batch**	**AEC4-SW09-1**	**QC Batch**	**AEC4-SW09-2**	**QC Batch**	**AEC4-SW09-3**	**AEC4-SW09-4**	**RDL**	**QC Batch**
Metals											
Mercury (Hg)	ug/L	ND	1949551	ND	1949536	ND	1949551	ND	ND	0.02	1949536

Maxxam ID		DT6720	DT6721		DT6722	DT6723	DT6724		
Sampling Date		2009/09/17	2009/09/17		2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC4-SW09-5**	**AEC4-SW09-6**	**QC Batch**	**AEC4-SW09-7**	**AEC4-SW09-8**	**AEC4-SW09-9**	**RDL**	**QC Batch**
Metals									
Mercury (Hg)	ug/L	ND	ND	1949536	ND	ND	ND	0.02	1949551

Maxxam ID		DT6766		DT6767		DT6768		DT6769		
Sampling Date		2009/09/17		2009/09/17		2009/09/17		2009/09/17		
	Units	**AEC4-SW09-10**	**QC Batch**	**AEC4-SW09-11**	**QC Batch**	**AEC4-SW09-12**	**QC Batch**	**AEC4-SW09-13**	**RDL**	**QC Batch**
Metals										
Mercury (Hg)	ug/L	ND	1949536	ND	1949551	ND	1949536	ND	0.02	1949551

Maxxam ID		DT6770	DT6771	DT6772	DT6773	DT6784		
Sampling Date		2009/09/17	2009/09/17	2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC4-SW09-14**	**AEC4-SW09-15**	**AEC4-SW09-16**	**AEC4-SW09-DUP2**	**SW09-DUP3**	**RDL**	**QC Batch**
Metals								
Mercury (Hg)	ug/L	ND	ND	ND	ND	ND	0.02	1949551

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C4118
Report Date: 2009/09/30

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VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DT6715	DT6767	DT6768	DT6771		
Sampling Date		2009/09/17	2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC1-SW09-1**	**AEC4-SW09-11**	**AEC4-SW09-12**	**AEC4-SW09-15**	**RDL**	**QC Batch**
Volatile Organics							
Acetone (2-Propanone)	ug/L	ND	ND	ND	ND	10	1945658
Benzene	ug/L	ND	ND	ND	ND	0.1	1945658
Bromodichloromethane	ug/L	ND	ND	ND	ND	0.1	1945658
Bromoform	ug/L	ND	ND	ND	ND	0.2	1945658
Bromomethane	ug/L	ND	ND	ND	ND	0.5	1945658
Carbon Tetrachloride	ug/L	ND	ND	ND	ND	0.1	1945658
Chlorobenzene	ug/L	ND	ND	ND	ND	0.1	1945658
Chloroform	ug/L	ND	ND	ND	ND	0.1	1945658
Dibromochloromethane	ug/L	ND	ND	ND	ND	0.2	1945658
1,2-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.2	1945658
1,3-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.2	1945658
1,4-Dichlorobenzene	ug/L	ND	ND	ND	ND	0.2	1945658
1,1-Dichloroethane	ug/L	ND	ND	ND	ND	0.1	1945658
1,2-Dichloroethane	ug/L	ND	ND	ND	ND	0.2	1945658
1,1-Dichloroethylene	ug/L	ND	ND	ND	ND	0.1	1945658
cis-1,2-Dichloroethylene	ug/L	ND	0.3	ND	ND	0.1	1945658
trans-1,2-Dichloroethylene	ug/L	ND	ND	ND	ND	0.1	1945658
1,2-Dichloropropane	ug/L	ND	ND	ND	ND	0.1	1945658
cis-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	0.2	1945658
trans-1,3-Dichloropropene	ug/L	ND	ND	ND	ND	0.2	1945658
Ethylbenzene	ug/L	ND	ND	ND	ND	0.1	1945658
Ethylene Dibromide	ug/L	ND	ND	ND	ND	0.2	1945658
Methylene Chloride(Dichloromethane)	ug/L	ND	ND	ND	ND	0.5	1945658
Methyl Isobutyl Ketone	ug/L	ND	ND	ND	ND	5	1945658
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	ND	ND	ND	5	1945658
Methyl t-butyl ether (MTBE)	ug/L	ND	ND	ND	ND	0.2	1945658
Styrene	ug/L	ND	ND	ND	ND	0.2	1945658
1,1,1,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	0.1	1945658
1,1,2,2-Tetrachloroethane	ug/L	ND	ND	ND	ND	0.2	1945658
Tetrachloroethylene	ug/L	ND	7.7	0.8	ND	0.1	1945658
Toluene	ug/L	ND	ND	ND	ND	0.2	1945658
1,1,1-Trichloroethane	ug/L	ND	ND	ND	ND	0.1	1945658
1,1,2-Trichloroethane	ug/L	ND	ND	ND	ND	0.2	1945658

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C4118
Report Date: 2009/09/30

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DT6715	DT6767	DT6768	DT6771		
Sampling Date		2009/09/17	2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC1-SW09-1**	**AEC4-SW09-11**	**AEC4-SW09-12**	**AEC4-SW09-15**	**RDL**	**QC Batch**
Trichloroethylene	ug/L	ND	1.5	ND	ND	0.1	1945658
Vinyl Chloride	ug/L	ND	ND	ND	ND	0.2	1945658
p+m-Xylene	ug/L	ND	ND	ND	ND	0.1	1945658
o-Xylene	ug/L	ND	ND	ND	ND	0.1	1945658
Xylene (Total)	ug/L	ND	ND	ND	ND	0.1	1945658
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	100	96	99	100		1945658
D4-1,2-Dichloroethane	%	98	90	105	107		1945658
D8-Toluene	%	99	98	100	101		1945658

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C4118
Report Date: 2009/09/30

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VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DT6772		DT6773	DT6774	DT6775		
Sampling Date		2009/09/17		2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC4-SW09-16**	**RDL**	**AEC4-SW09-DUP2**	**AEC2-SW09-8**	**AEC2-SW09-6**	**RDL**	**QC Batch**
Volatile Organics								
Acetone (2-Propanone)	ug/L	ND	100	ND	ND	ND	10	1945658
Benzene	ug/L	ND	1	ND	ND	ND	0.1	1945658
Bromodichloromethane	ug/L	ND	1	ND	ND	ND	0.1	1945658
Bromoform	ug/L	ND	2	ND	ND	ND	0.2	1945658
Bromomethane	ug/L	ND	5	ND	ND	ND	0.5	1945658
Carbon Tetrachloride	ug/L	ND	1	ND	ND	ND	0.1	1945658
Chlorobenzene	ug/L	ND	1	ND	ND	ND	0.1	1945658
Chloroform	ug/L	ND	1	ND	ND	ND	0.1	1945658
Dibromochloromethane	ug/L	ND	2	ND	ND	ND	0.2	1945658
1,2-Dichlorobenzene	ug/L	ND	2	ND	ND	ND	0.2	1945658
1,3-Dichlorobenzene	ug/L	ND	2	ND	ND	ND	0.2	1945658
1,4-Dichlorobenzene	ug/L	ND	2	ND	ND	ND	0.2	1945658
1,1-Dichloroethane	ug/L	ND	1	ND	ND	ND	0.1	1945658
1,2-Dichloroethane	ug/L	ND	2	ND	ND	ND	0.2	1945658
1,1-Dichloroethylene	ug/L	ND	1	ND	ND	ND	0.1	1945658
cis-1,2-Dichloroethylene	ug/L	2	1	0.4	ND	ND	0.1	1945658
trans-1,2-Dichloroethylene	ug/L	ND	1	ND	ND	ND	0.1	1945658
1,2-Dichloropropane	ug/L	ND	1	ND	ND	ND	0.1	1945658
cis-1,3-Dichloropropene	ug/L	ND	2	ND	ND	ND	0.2	1945658
trans-1,3-Dichloropropene	ug/L	ND	2	ND	ND	ND	0.2	1945658
Ethylbenzene	ug/L	ND	1	ND	ND	ND	0.1	1945658
Ethylene Dibromide	ug/L	ND	2	ND	ND	ND	0.2	1945658
Methylene Chloride(Dichloromethane)	ug/L	ND	5	ND	ND	ND	0.5	1945658
Methyl Isobutyl Ketone	ug/L	ND	50	ND	ND	ND	5	1945658
Methyl Ethyl Ketone (2-Butanone)	ug/L	ND	50	ND	ND	ND	5	1945658
Methyl t-butyl ether (MTBE)	ug/L	ND	2	ND	ND	ND	0.2	1945658
Styrene	ug/L	ND	2	ND	ND	ND	0.2	1945658
1,1,1,2-Tetrachloroethane	ug/L	ND	1	ND	ND	ND	0.1	1945658
1,1,2,2-Tetrachloroethane	ug/L	ND	2	ND	ND	ND	0.2	1945658
Tetrachloroethylene	ug/L	210	1	7.9	ND	ND	0.1	1945658
Toluene	ug/L	ND	2	ND	ND	ND	0.2	1945658
1,1,1-Trichloroethane	ug/L	ND	1	ND	ND	ND	0.1	1945658
1,1,2-Trichloroethane	ug/L	3	2	ND	ND	ND	0.2	1945658

ND = Not detected
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QC Batch = Quality Control Batch

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VOLATILE ORGANICS BY GC/MS (WATER)

Maxxam ID		DT6772		DT6773	DT6774	DT6775		
Sampling Date		2009/09/17		2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC4-SW09-16**	**RDL**	**AEC4-SW09-DUP2**	**AEC2-SW09-8**	**AEC2-SW09-6**	**RDL**	**QC Batch**
Trichloroethylene	ug/L	62	1	1.5	ND	0.2	0.1	1945658
Vinyl Chloride	ug/L	ND	2	ND	ND	ND	0.2	1945658
p+m-Xylene	ug/L	ND	1	ND	ND	ND	0.1	1945658
o-Xylene	ug/L	ND	1	ND	ND	ND	0.1	1945658
Xylene (Total)	ug/L	ND	1	ND	ND	ND	0.1	1945658
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	100		99	102	100		1945658
D4-1,2-Dichloroethane	%	109		108	111	108		1945658
D8-Toluene	%	99		99	101	99		1945658

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ORGANOCHLORINATED PESTICIDES BY GC-ECD (WATER)

Maxxam ID		DT6715		DT6716	DT6767	DT6771		
Sampling Date		2009/09/17		2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC1-SW09-1**	**RDL**	**AEC4-SW09-1**	**AEC4-SW09-11**	**AEC4-SW09-15**	**RDL**	**QC Batch**
Pesticides & Herbicides								
Aroclor 1262	ug/L	ND	0.3	ND	ND	ND	0.05	1948691
Aroclor 1268	ug/L	ND	0.3	ND	ND	ND	0.05	1948691
Aldrin	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
a-BHC	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
b-BHC	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
d-BHC	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
a-Chlordane	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
g-Chlordane	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Chlordane (Total)	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
o,p-DDD	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
p,p-DDD	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
o,p-DDD + p,p-DDD	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
o,p-DDE	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
p,p-DDE	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
o,p-DDE + p,p-DDE	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
o,p-DDT	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
p,p-DDT	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
o,p-DDT + p,p-DDT	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
DDT+ Metabolites	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Dieldrin	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Endosulfan I	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Endosulfan II	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Endosulfan sulfate	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Total Endosulfan	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Endrin	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Endrin aldehyde	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Endrin ketone	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Heptachlor	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Heptachlor epoxide	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Hexachlorobenzene	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Lindane	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Methoxychlor	ug/L	ND	0.07	ND	ND	ND	0.01	1948691
Mirex	ug/L	ND	0.03	ND	ND	ND	0.005	1948691

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ORGANOCHLORINATED PESTICIDES BY GC-ECD (WATER)

Maxxam ID		DT6715		DT6716	DT6767	DT6771		
Sampling Date		2009/09/17		2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC1-SW09-1**	**RDL**	**AEC4-SW09-1**	**AEC4-SW09-11**	**AEC4-SW09-15**	**RDL**	**QC Batch**
Octachlorostyrene	ug/L	ND	0.03	ND	ND	ND	0.005	1948691
Total PCB	ug/L	ND	0.5	ND	ND	ND	0.1	1948691
Aroclor 1016	ug/L	ND	0.3	ND	ND	ND	0.05	1948691
Aroclor 1221	ug/L	ND	0.5	ND	ND	ND	0.1	1948691
Aroclor 1232	ug/L	ND	0.3	ND	ND	ND	0.05	1948691
Aroclor 1242	ug/L	ND	0.3	ND	ND	ND	0.05	1948691
Aroclor 1248	ug/L	ND	0.3	ND	ND	ND	0.05	1948691
Aroclor 1254	ug/L	ND	0.3	ND	ND	ND	0.05	1948691
Aroclor 1260	ug/L	ND	0.3	ND	ND	ND	0.05	1948691
Toxaphene	ug/L	ND	1	ND	ND	ND	0.2	1948691
Surrogate Recovery (%)								
2,4,5,6-Tetrachloro-m-xylene	%	52		51	63	56		1948691
Decachlorobiphenyl	%	72		76	92	88		1948691

ND = Not detected
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QC Batch = Quality Control Batch

Package 1	5.0°C
Package 2	3.3°C
Package 3	5.0°C
Package 4	3.7°C
Package 5	4.7°C
Package 6	3.7°C
Package 7	6.7°C
Package 8	5.7°C
Package 9	4.0°C
Package 10	3.7°C

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

GENERAL COMMENTS

Sample DT6715-01: OC Pesticide Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly. Total Chromium < Hexavalent Chromium: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

Sample DT6720-01: Metal analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample DT6772-01: VOCs analysis- Due to high concentration of target analytes, the sample required dilution. The detection limits were adjusted accordingly.

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Report Date: 2009/09/30

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QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1945658	4-Bromofluorobenzene	2009/09/24			101	70 - 130	99	%				
1945658	D4-1,2-Dichloroethane	2009/09/24			91	70 - 130	88	%				
1945658	D8-Toluene	2009/09/24			102	70 - 130	101	%				
1945658	Acetone (2-Propanone)	2009/09/24			84	60 - 140	ND, RDL=10	ug/L	NC	40		
1945658	Benzene	2009/09/24			90	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	Bromodichloromethane	2009/09/24			77	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	Bromoform	2009/09/24			79	70 - 130	ND, RDL=0.2	ug/L	NC(1)	40		
1945658	Bromomethane	2009/09/24			71	60 - 140	ND, RDL=0.5	ug/L	NC	40		
1945658	Carbon Tetrachloride	2009/09/24			92	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	Chlorobenzene	2009/09/24			98	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	Chloroform	2009/09/24			94	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	Dibromochloromethane	2009/09/24			85	70 - 130	ND, RDL=0.2	ug/L	NC	40		
1945658	1,2-Dichlorobenzene	2009/09/24			88	70 - 130	ND, RDL=0.2	ug/L	NC	40		
1945658	1,3-Dichlorobenzene	2009/09/24			93	70 - 130	ND, RDL=0.2	ug/L	NC	40		
1945658	1,4-Dichlorobenzene	2009/09/24			91	70 - 130	ND, RDL=0.2	ug/L	NC	40		
1945658	1,1-Dichloroethane	2009/09/24			94	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	1,2-Dichloroethane	2009/09/24			83	70 - 130	ND, RDL=0.2	ug/L	NC	40		
1945658	1,1-Dichloroethylene	2009/09/24			122	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	cis-1,2-Dichloroethylene	2009/09/24			98	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	trans-1,2-Dichloroethylene	2009/09/24			97	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	1,2-Dichloropropane	2009/09/24			87	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	cis-1,3-Dichloropropene	2009/09/24			80	70 - 130	ND, RDL=0.2	ug/L	NC	40		
1945658	trans-1,3-Dichloropropene	2009/09/24			84	70 - 130	ND, RDL=0.2	ug/L	NC	40		
1945658	Ethylbenzene	2009/09/24			99	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	Ethylene Dibromide	2009/09/24			84	70 - 130	ND, RDL=0.2	ug/L	NC	40		
1945658	Methylene Chloride(Dichloromethane)	2009/09/24			85	70 - 130	ND, RDL=0.5	ug/L	NC	40		
1945658	Methyl Isobutyl Ketone	2009/09/24			70	60 - 140	ND, RDL=5	ug/L	NC(1)	40		
1945658	Methyl Ethyl Ketone (2-Butanone)	2009/09/24			73	60 - 140	ND, RDL=5	ug/L	NC	40		
1945658	Methyl t-butyl ether (MTBE)	2009/09/24			79	70 - 130	ND, RDL=0.2	ug/L	NC	40		
1945658	Styrene	2009/09/24			101	70 - 130	ND, RDL=0.2	ug/L	NC	40		
1945658	1,1,1,2-Tetrachloroethane	2009/09/24			91	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	1,1,2,2-Tetrachloroethane	2009/09/24			77	70 - 130	ND, RDL=0.2	ug/L	NC(1)	40		
1945658	Tetrachloroethylene	2009/09/24			86	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	Toluene	2009/09/24			92	70 - 130	ND, RDL=0.2	ug/L	NC	40		
1945658	1,1,1-Trichloroethane	2009/09/24			90	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	1,1,2-Trichloroethane	2009/09/24			85	70 - 130	ND, RDL=0.2	ug/L	NC	40		
1945658	Trichloroethylene	2009/09/24			91	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	Vinyl Chloride	2009/09/24			NC	70 - 130	ND, RDL=0.2	ug/L	NC	40		
1945658	p+m-Xylene	2009/09/24			104	70 - 130	ND, RDL=0.1	ug/L	NC	40		

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QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1945658	o-Xylene	2009/09/24			98	70 - 130	ND, RDL=0.1	ug/L	NC	40		
1945658	Xylene (Total)	2009/09/24					ND, RDL=0.1	ug/L	NC	40		
1946180	o-Terphenyl	2009/09/24	83	30 - 130	85	30 - 130	84	%				
1946180	F2 (C10-C16 Hydrocarbons)	2009/09/24	75	60 - 130	79	60 - 130	ND, RDL=100	ug/L	NC	50		
1946180	F3 (C16-C34 Hydrocarbons)	2009/09/24	75	60 - 130	79	60 - 130	ND, RDL=100	ug/L	NC	50		
1946180	F4 (C34-C50 Hydrocarbons)	2009/09/24	75	60 - 130	79	60 - 130	ND, RDL=100	ug/L	NC	50		
1947732	1,4-Difluorobenzene	2009/09/24	113	70 - 130	118	70 - 130	115	%				
1947732	4-Bromofluorobenzene	2009/09/24	100	70 - 130	99	70 - 130	97	%				
1947732	D10-Ethylbenzene	2009/09/24	89	70 - 130	88	70 - 130	90	%				
1947732	D4-1,2-Dichloroethane	2009/09/24	123	70 - 130	119	70 - 130	118	%				
1947732	F1 (C6-C10)	2009/09/24	80	70 - 130	79	70 - 130	ND, RDL=100	ug/L	NC	40		
1947732	F1 (C6-C10) - BTEX	2009/09/24					ND, RDL=100	ug/L	NC	40		
1948691	2,4,5,6-Tetrachloro-m-xylene	2009/09/24	62	40 - 130	72	40 - 130	73	%				
1948691	Decachlorobiphenyl	2009/09/24	83	40 - 130	84	40 - 130	79	%				
1948691	Aldrin	2009/09/24	83	30 - 130	85	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	a-BHC	2009/09/24	78	30 - 130	96	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	b-BHC	2009/09/24	83	30 - 130	98	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	d-BHC	2009/09/24	85	30 - 130	104	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	a-Chlordane	2009/09/24	91	30 - 130	115	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	g-Chlordane	2009/09/24	92	30 - 130	117	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	o,p-DDD	2009/09/24	93	40 - 130	115	40 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	p,p-DDD	2009/09/24	93	30 - 130	120	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	o,p-DDE	2009/09/24	98	40 - 130	120	40 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	p,p-DDE	2009/09/24	90	30 - 130	113	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	o,p-DDT	2009/09/24	99	40 - 130	122	40 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	p,p-DDT	2009/09/24	98	30 - 130	109	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Dieldrin	2009/09/24	92	36 - 130	117	36 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Endosulfan I	2009/09/24	86	30 - 130	104	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Endosulfan II	2009/09/24	87	30 - 130	94	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Endosulfan sulfate	2009/09/24	89	30 - 130	112	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Endrin	2009/09/24	102	30 - 130	130	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Endrin aldehyde	2009/09/24	87	40 - 130	103	40 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Endrin ketone	2009/09/24	98	40 - 130	117	40 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Heptachlor	2009/09/24	90	30 - 130	113	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Heptachlor epoxide	2009/09/24	96	30 - 130	103	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Hexachlorobenzene	2009/09/24	82	30 - 130	99	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Lindane	2009/09/24	98	30 - 130	117	30 - 130	ND, RDL=0.003	ug/L	NC	40		
1948691	Methoxychlor	2009/09/24	77	40 - 130	83	40 - 130	ND, RDL=0.014	ug/L	NC	40		
1948691	Mirex	2009/09/24	88	40 - 130	99	40 - 130	ND, RDL=0.005	ug/L	NC	40		

Maxxam Job #: A9C4118
Report Date: 2009/09/30

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1948691	Octachlorostyrene	2009/09/24	99	30 - 130	109	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1948691	Total PCB	2009/09/24					ND, RDL=0.1	ug/L	NC	40		
1948691	Aroclor 1242	2009/09/24					ND, RDL=0.05	ug/L	NC	40		
1948691	Toxaphene	2009/09/24					ND, RDL=0.2	ug/L	NC	40		
1948691	Aroclor 1262	2009/09/24					ND, RDL=0.05	ug/L				
1948691	Aroclor 1268	2009/09/24					ND, RDL=0.05	ug/L				
1948691	Chlordane (Total)	2009/09/24					ND, RDL=0.005	ug/L	NC	40		
1948691	o,p-DDD + p,p-DDD	2009/09/24					ND, RDL=0.005	ug/L	NC	40		
1948691	o,p-DDE + p,p-DDE	2009/09/24					ND, RDL=0.005	ug/L	NC	40		
1948691	o,p-DDT + p,p-DDT	2009/09/24					ND, RDL=0.005	ug/L	NC	40		
1948691	DDT+ Metabolites	2009/09/24					ND, RDL=0.005	ug/L	NC	40		
1948691	Total Endosulfan	2009/09/24					ND, RDL=0.005	ug/L	NC	40		
1948691	Aroclor 1016	2009/09/24					ND, RDL=0.05	ug/L	NC	40		
1948691	Aroclor 1221	2009/09/24					ND, RDL=0.1	ug/L	NC	40		
1948691	Aroclor 1232	2009/09/24					ND, RDL=0.05	ug/L	NC	40		
1948691	Aroclor 1248	2009/09/24					ND, RDL=0.05	ug/L	NC	40		
1948691	Aroclor 1254	2009/09/24					ND, RDL=0.05	ug/L	NC	40		
1948691	Aroclor 1260	2009/09/24					ND, RDL=0.05	ug/L	NC	40		
1949536	Mercury (Hg)	2009/09/25	101	75 - 125	99	82 - 122	ND, RDL=0.02	ug/L	NC	25		
1949551	Mercury (Hg)	2009/09/25	102	75 - 125	89	82 - 122	ND, RDL=0.02	ug/L	NC	25		
1951599	Dissolved Organic Carbon	2009/09/26	NC	75 - 125	99	75 - 125	ND, RDL=0.2	mg/L	1.7	20		
1952283	D10-Anthracene	2009/09/27	99	30 - 130	97	30 - 130	86	%				
1952283	D14-Terphenyl (FS)	2009/09/27	103	30 - 130	99	30 - 130	90	%				
1952283	D7-Quinoline	2009/09/27	100	30 - 130	98	30 - 130	84	%				
1952283	D8-Acenaphthylene	2009/09/27	90	30 - 130	90	30 - 130	74	%				
1952283	Acridine	2009/09/27	116	30 - 130	114	30 - 130	ND, RDL=0.1	ug/L	NC	40		
1952283	Acenaphthene	2009/09/27	88	30 - 130	89	30 - 130	ND, RDL=0.05	ug/L	NC	40		
1952283	Anthracene	2009/09/27	96	30 - 130	96	30 - 130	ND, RDL=0.05	ug/L	NC	40		
1952283	Benzo(a)anthracene	2009/09/27	105	30 - 130	107	30 - 130	ND, RDL=0.05	ug/L	NC	40		
1952283	Benzo(a)pyrene	2009/09/27	107	30 - 130	107	30 - 130	ND, RDL=0.01	ug/L	NC	40		
1952283	Fluoranthene	2009/09/27	103	30 - 130	103	30 - 130	ND, RDL=0.05	ug/L	NC	40		
1952283	Fluorene	2009/09/27	96	30 - 130	96	30 - 130	ND, RDL=0.05	ug/L	NC	40		
1952283	Naphthalene	2009/09/27	83	30 - 130	84	30 - 130	ND, RDL=0.05	ug/L	NC	40		
1952283	Phenanthrene	2009/09/27	93	30 - 130	93	30 - 130	ND, RDL=0.05	ug/L	NC	40		
1952283	Pyrene	2009/09/27	103	30 - 130	103	30 - 130	ND, RDL=0.05	ug/L	NC	40		
1952286	Chromium (VI)	2009/09/29	114	75 - 125	105	75 - 125	ND, RDL=0.5	ug/L	NC	25		
1952292	D10-Anthracene	2009/09/27	99	30 - 130	97	30 - 130	86	%				
1952292	D14-Terphenyl (FS)	2009/09/27	103	30 - 130	99	30 - 130	90	%				
1952292	D7-Quinoline	2009/09/27	100	30 - 130	98	30 - 130	84	%				

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: A9C4118
Report Date: 2009/09/30

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1952292	D8-Acenaphthylene	2009/09/27	90	30 - 130	90	30 - 130	74	%				
1952292	Benzo(a)pyrene	2009/09/27	107	30 - 130	107	30 - 130	ND, RDL=0.005	ug/L	NC	40		
1952780	Dissolved (0.2u) Aluminum (Al)	2009/09/28	104	80 - 120	103	90 - 110	ND, RDL=5	ug/L	NC	25		
1952782	Dissolved Organic Carbon	2009/09/28	92	75 - 125	99	75 - 125	ND, RDL=0.2	mg/L	NC	20		
1953187	Total Phosphorus	2009/09/29	102	75 - 125	108	75 - 125	ND, RDL=0.002	mg/L	3.8	25	107	85 - 115
1954394	Total Antimony (Sb)	2009/09/29	108	80 - 120	105	82 - 120	ND, RDL=0.5	ug/L	NC	25		
1954394	Total Arsenic (As)	2009/09/29	104	80 - 120	102	86 - 119	ND, RDL=1	ug/L	NC	25		
1954394	Total Beryllium (Be)	2009/09/29	105	75 - 125	105	85 - 132	ND, RDL=0.5	ug/L	NC	25		
1954394	Total Boron (B)	2009/09/29	108	75 - 125	106	78 - 133	ND, RDL=10	ug/L	NC	25		
1954394	Total Cadmium (Cd)	2009/09/29	102	80 - 120	100	85 - 116	ND, RDL=0.1	ug/L	NC	25		
1954394	Total Chromium (Cr)	2009/09/29	101	80 - 120	103	80 - 120	ND, RDL=5	ug/L	NC	25		
1954394	Total Cobalt (Co)	2009/09/29	98	80 - 120	99	82 - 117	ND, RDL=0.5	ug/L	NC	25		
1954394	Total Copper (Cu)	2009/09/29	99	80 - 120	99	80 - 117	ND, RDL=1	ug/L	NC	25		
1954394	Total Iron (Fe)	2009/09/29	102	80 - 120	101	80 - 120	ND, RDL=100	ug/L	NC	25		
1954394	Total Lead (Pb)	2009/09/29	102	80 - 120	99	80 - 120	ND, RDL=0.5	ug/L	NC	25		
1954394	Total Molybdenum (Mo)	2009/09/29	102	80 - 120	98	82 - 117	ND, RDL=1	ug/L	NC	25		
1954394	Total Nickel (Ni)	2009/09/29	100	80 - 120	99	81 - 117	ND, RDL=1	ug/L	NC	25		
1954394	Total Selenium (Se)	2009/09/29	103	75 - 125	101	82 - 118	ND, RDL=2	ug/L	NC	25		
1954394	Total Silver (Ag)	2009/09/29	98	80 - 120	97	80 - 120	ND, RDL=0.1	ug/L	NC	25		
1954394	Total Thallium (Tl)	2009/09/29	100	80 - 120	98	80 - 129	ND, RDL=0.05	ug/L	NC	25		
1954394	Total Tungsten (W)	2009/09/29	105	75 - 125	102	81 - 123	ND, RDL=1	ug/L	NC	25		
1954394	Total Uranium (U)	2009/09/29	101	80 - 120	100	82 - 120	ND, RDL=0.1	ug/L	NC	25		
1954394	Total Vanadium (V)	2009/09/29	103	80 - 120	101	82 - 118	ND, RDL=1	ug/L	NC	25		
1954394	Total Zinc (Zn)	2009/09/29	100	80 - 120	101	80 - 120	ND, RDL=5	ug/L	NC	25		
1954394	Total Zirconium (Zr)	2009/09/29	101	75 - 125	99	84 - 118	ND, RDL=1	ug/L	NC	25		

N/A = Not Applicable
RDL = Reportable Detection Limit
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) - Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Validation Signature Page

Maxxam Job #: A9C4118

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

CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst

TIM MUNSHAW, Lab Manager

STEVE ROBERTS, Lab Supervisor, Ottawa

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

Maxxam Analytics

Maxxam Analytics International Corporation o/a Maxxam Analytics
32 Colonnade Unit 1000, Nepean, Ontario Canada K2E 7J6 Tel:(613) 274-0573 Toll-free:877-480-7272 Fax:613-274-0574 www.maxxamanalytics.com

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:	
Company Name:	#10988 Franz Environmental Inc	Company Name:	Same	Quotation #:	A93902
Contact Name:	Ryan Fletcher	Contact Name:		P.O. #:	2078
Address:	329 Churchill Ave N Suite 200	Address:		Project #:	1564-0901
	Ottawa ON K1Z 5B8		and Jdittburner@franz....	Project Name:	TC Iqaluit
Phone:	(613)721-0555 Fax: (613)721-0029	Phone:	Fax:	Site Location:	Iqaluit, NU
Email:	rfletcher@franzenvironmental.com	Email:		Sampled By:	RF

Laboratory Use Only:

MAXXAM JOB #:	BOTTLE ORDER #:
	162606
CHAIN OF CUSTODY #:	PROJECT MANAGER:
C#162606-07-01	MELISSA MORRISON

REGULATORY CRITERIA:

☐ MISA Reg. 153/04 — Sewer Use: ☐ Sanitary ☐ Storm ☐ Combined
☐ PWQO ☒ Table 1 ☒ Residential/Parkland
☐ Table 2 ☐ Industrial/Commercial
☐ Reg. 558 ☐ Table 3 ☐ Medium/Fine — Municipality ______
☐ Table 6 ☐ Coarse
Other (specify) ______ Report Criteria on C of A ? ☐

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10ºC) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

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

ANALYSIS REQUESTED (Please be specific):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Petroleum Hydrocarbons BTEX / F1 - F4	Polychlorinated Biphenyl in Water	Dissolved Organic Carbon (DOC)	PWQO Metals inc Al, Hg, Cr6, & TPhosphor	Volatile Organic Compounds in Water	PAH Compounds in Water by GC/MS (SIM)	OC Pesticides (Selected) & PCB	Hardness	Hold		# of Bottles	Comments
1		AEC1-SW09-1	Sept. 17/09		SW	N	N	X	X	X	X	X	X	X	X			19	to meet PWQO
2		AEC4-SW09-1			SW				X	X	X			X	X			9	
3		AEC4-SW09-2			SW					X	X				X			5	
4		AEC4-SW09-3			SW					X	X				X			5	
5		AEC4-SW09-4			SW					X	X				X			5	
6		AEC4-SW09-5			SW					X	X				X			5	
7		AEC4-SW09-6			SW					X	X				X			5	
8		AEC4-SW09-7			SW					X	X				X			5	
9		AEC4-SW09-8			SW					X	X				X			5	
10		AEC4-SW09-9			SW					X	X				X		X	8	

21-Sep-09 07:30
MELISSA MORRISON
A9C4118
JOE OTT-001

REC'D IN OTTAWA

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Ryan Fletcher	Sept. 18/09		J. Clement	09/09/21	7:30	

Laboratory Use Only

Time Sensitive	Temperature (ºC) on Receipt	Custody Seal Intact on Cooler?
☐	4/5/6 1/3/6	☐ Yes ☐ No

White: Maxxam Yellow: Client

* 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.

4/5/6 3/5/6 6/6/8 3/4/5
3/4/4 1/4/6 4/5/8 3/4/4

Maxxam Analytics

Maxxam Analytics International Corporation o/a Maxxam Analytics

32 Colonnade Unit 1000, Nepean, Ontario Canada K2E 7J6 Tel:(613) 274-0573 Toll-free:877-480-7272 Fax:613-274-0574 www.maxxamanalytics.com

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:	
Company Name:	#10988 Franz Environmental Inc	Company Name:	Same	Quotation #:	A93902
Contact Name:	Ryan Fletcher	Contact Name:		P.O. #:	2078
Address:	329 Churchill Ave N Suite 200	Address:		Project #:	1584-0901
	Ottawa ON K1Z 5B8		and Jdittburner@franz...	Project Name:	TC Iqaluit
Phone:	(613)721-0555 Fax: (613)721-0029	Phone:	Fax:	Site Location:	Iqaluit, NU
Email:	rfletcher@franzenvironmental.com	Email:		Sampled By:	RF

Laboratory Use Only:

MAXXAM JOB #:	BOTTLE ORDER #:
	162606
CHAIN OF CUSTODY #:	**PROJECT MANAGER:**
C#162606-08-01	MELISSA MORRISON

REGULATORY CRITERIA:

☐ MISA — Reg. 153/04 — Sewer Use: ☐ Sanitary ☐ Storm ☐ Combined

☐ PWQO — ☒ Table 1 ☐ Table 2 ☐ Table 3 ☐ Table 6 — ☒ Residential/Parkland ☐ Industrial/Commercial ☐ Medium/Fine ☐ Coarse

☐ Reg. 558 — Municipality ______

Other (specify) ______ Report Criteria on C of A ? ☐

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10ºC) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

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

ANALYSIS REQUESTED (Please be specific):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Petroleum Hydrocarbons BTEX / F1 - F4	Polychlorinated Biphenyl in Water	Dissolved Organic Carbon (DOC)	PWQO Metals inc Al, Hg, Cr6, & TPhosphor	Volatile Organic Compounds in Water	PAH Compounds in Water by GC/MS (SIM)	OC Pesticides (Selected) ~~& PCB~~	Hardness			# of Bottles	Comments
1		AEC4-SW09-10	Sept.17/09	-	SW	N	N			X	X				X			5	To meet FWAL
2		AEC4-SW09-11			SW			X	X	X	X	X	X	X	X			19	
3		AEC4-SW09-12			SW					X	X	X			X			8	
4		AEC4-SW09-13			SW					X	X				X			5	
5		AEC4-SW09-14			SW					X	X				X			8	
6		AEC4-SW09-15			SW			X	X	X	X	X	X	X	X			19	
7		AEC4-SW09-16			SW	N	N			X	X	X			X			8	
8		AEC4-SW09-DUP2			SW	"	"	X		X	X	X	X		X			15	
9		AEC2-SW09-8	"		SW	"	"	X				X	X		X			10	
10		AEC2-SW09-6	"		SW	"	"	X				X	X		X			10	

REC'D IN OTTAWA

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Ryan Fletcher	Sept. 18/09		J. Clement	09/09/21	7:30	

Laboratory Use Only

Time Sensitive	Temperature (ºC) on Receipt	Custody Seal Intact on Cooler?
☐	4/5/6 1/3/6	☐ Yes ☐ No

* 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.

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

4/5/6 3/5/6 6/6/8 3/4/5
3/4/4 1/4/6 4/5/8 3/4/4

Maxxam Analytics

Maxxam Analytics International Corporation o/a Maxxam Analytics
32 Colonnade Unit 1000, Nepean, Ontario Canada K2E 7J6 Tel:(613) 274-0573 Toll-free:877-480-7272 Fax:613-274-0574 www.maxxamanalytics.com

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:	
Company Name:	#10988 Franz Environmental Inc	Company Name:	Same	Quotation #:	A93902
Contact Name:	Ryan Fletcher	Contact Name:		P.O. #:	2078
Address:	329 Churchill Ave N Suite 200	Address:	and jdittburner@Franz...	Project #:	1584-0901
	Ottawa ON K1Z 5B8			Project Name:	TC Iqaluit
Phone:	(613)721-0555 Fax: (613)721-0029	Phone:	Fax:	Site Location:	Iqaluit, NU
Email:	rfletcher@franzenvironmental.com	Email:		Sampled By:	RF

Laboratory Use Only:

MAXXAM JOB #:	BOTTLE ORDER #:
	162606
CHAIN OF CUSTODY #:	PROJECT MANAGER:
C#162606-06-01	MELISSA MORRISON

REGULATORY CRITERIA:

- [ ] MISA Reg. 153/04
- [ ] PWQO
- [x] Table 1
- [ ] Table 2
- [ ] Table 3
- [ ] Table 6
- [x] Residential/Parkland
- [ ] Industrial/Commercial
- [ ] Medium/Fine
- [ ] Coarse
- [ ] Reg. 558

Sewer Use: [ ] Sanitary [ ] Storm [ ] Combined

Municipality ______

Other (specify) ______

Report Criteria on C of A ? [ ]

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10ºC) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Petroleum Hydrocarbons BTEX / F1 - F4	Polychlorinated Biphenyl in Water	Dissolved Organic Carbon (DOC)	PWQO Metals inc Al, Hg, Cr6, & TPhosphor	Volatile Organic Compounds in Water	PAH Compounds in Water by GC/MS (SIM)	OC Pesticides (Selected) & PCB				# of Bottles	Comments
1		SW09-DUP3	Sept. 17/09		SW	N	N			X	X							5	to meet FWAL
2					SW														
3					SW														
4					SW														
5					SW														
6					SW														
7					SW														
8					SW														
9					SW														
10					SW														

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]
(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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission) [ ]
Date Required: ______ Time Required: ______
Rush Confirmation Number: ______ (call lab for #)

REC'D IN OTTAWA

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Ryan Fletcher	Sept. 17/09		J. Clement	09/09/21	7:30	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
[ ]	4/5/6 1/3/6	[ ] Yes [ ] No

White: Maxxam Yellow: Client

* 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.

Maxxam Analytics International Corporation o/a Maxxam Analytics

4/5/6 3/5/6 6/6/8 3/4/5
3/4/4 1/4/6 4/5/8 3/4/4

Your P.O. #: 2078
Your Project #: 1584-0901
Site: TC IQALUIT, NU
Your C.O.C. #: 16261507, 162615-0

Attention: Ryan Fletcher
Franz Environmental Inc
329 Churchill Ave N
Suite 200
Ottawa, ON
K1Z 5B8

Report Date: 2009/10/01

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9C4313
Received: 2009/09/21, 07:30

Sample Matrix: Soil
Samples Received: 12

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Chromium (VI) in Soil	12	2009/09/28	2009/09/29	CAM SOP-00420	EPA 3060A
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	5	2009/09/22	2009/09/26	CAM SOP-00315	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (1)	5	2009/09/22	2009/09/26	CAM SOP-00316	CCME CWS
Acid Extr. Metals (aqua regia) by ICPMS	12	2009/09/29	2009/09/29	CAM SOP-00447	EPA 6020
MOISTURE (1)	5	N/A	2009/09/23	CAM SOP-00445	MOE HANDBOOK(1983)
MOISTURE	11	N/A	2009/09/25	CAM SOP-00445	McKeague 2nd ed 1978
MOISTURE	1	N/A	2009/09/28	CAM SOP-00445	McKeague 2nd ed 1978
OC Pesticides (Selected) & PCB (2)	4	2009/09/28	2009/09/28	CAM SOP-00307	SW846 8081, 8082
OC Pesticides (Selected) & PCB (2)	1	2009/09/28	2009/09/30	CAM SOP-00307	SW846 8081, 8082
PAH Compounds in Soil by GC/MS (SIM)	1	2009/09/24	2009/09/28	CAM SOP - 00318	EPA 8270
PAH Compounds in Soil by GC/MS (SIM)	3	2009/09/24	2009/09/29	CAM SOP - 00318	EPA 8270
Total Organic Carbon in Soil	12	N/A	2009/09/28	CAM SOP-00468	LECO Combustion
Volatile Organic Compounds in Soil (1)	5	2009/09/22	2009/09/23	CAM SOP-00226	EPA 8260 modified

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

(1) This test was performed by Maxxam Ottawa
(2) Chlordane (Total) = Alpha Chlordane + Gamma Chlordane

Encryption Key

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

MELISSA MORRISON, Project Manager
Email: Melissa.Morrison@maxxamanalytics.com
Phone# (613) 274-0573

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Job #: A9C4313
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

O'REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		DT7580	DT7581	DT7586	DT7609	DT7610		
Sampling Date		2009/09/17	2009/09/17	2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC1-SD09-1**	**AEC4-SD09-1**	**AEC4-SD09-11**	**AEC4-SD09-15**	**SD09-DUP 2**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	23	48	33	47	26	0.2	1944726
BTEX & F1 Hydrocarbons								
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	10	1946178
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	10	1946178
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	10	1946168
F3 (C16-C34 Hydrocarbons)	ug/g	52	190	42	21	<10	10	1946168
F4 (C34-C50 Hydrocarbons)	ug/g	50	180	100	<10	<10	10	1946168
Reached Baseline at C50	ug/g	YES	YES	YES	YES	YES		1946168
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	118	121	122	120	122		1946178
4-Bromofluorobenzene	%	96	95	93	93	94		1946178
D10-Ethylbenzene	%	79	75	96	81	93		1946178
D4-1,2-Dichloroethane	%	128	130	116	122	125		1946178
o-Terphenyl	%	83	89	90	87	80		1946168

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C4313
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

O'REG 153 METALS - TABLE 1 (SOIL)

Maxxam ID		DT7580		DT7581			DT7582		
Sampling Date		2009/09/17		2009/09/17			2009/09/17		
	Units	**AEC1-SD09-1**	**RDL**	**AEC4-SD09-1**	**RDL**	**QC Batch**	**AEC4-SD09-2**	**RDL**	**QC Batch**
Inorganics									
Moisture	%						60	0.2	1951230
Metals									
Chromium (VI)	ug/g	<0.2	0.2	<0.4(1)	0.4	1953379	0.8(1)	0.5	1953379
Acid Extractable Aluminum (Al)	ug/g	4700	50	3500	50	1954619	4300	50	1954728
Acid Extractable Antimony (Sb)	ug/g	<0.2	0.2	<0.2	0.2	1954619	<0.2	0.2	1954728
Acid Extractable Arsenic (As)	ug/g	<1	1	<1	1	1954619	2	1	1954728
Acid Extractable Barium (Ba)	ug/g	26	0.5	16	0.5	1954619	25	0.5	1954728
Acid Extractable Beryllium (Be)	ug/g	<0.2	0.2	<0.2	0.2	1954619	<0.2	0.2	1954728
Acid Extractable Cadmium (Cd)	ug/g	<0.1	0.1	0.2	0.1	1954619	0.2	0.1	1954728
Acid Extractable Calcium (Ca)	ug/g	2200	50	2500	50	1954619	2400	50	1954728
Acid Extractable Chromium (Cr)	ug/g	23	1	20	1	1954619	15	1	1954728
Acid Extractable Cobalt (Co)	ug/g	5.2	0.1	3.1	0.1	1954619	3.4	0.1	1954728
Acid Extractable Copper (Cu)	ug/g	6.1	0.5	7.2	0.5	1954619	7.6	0.5	1954728
Acid Extractable Iron (Fe)	ug/g	25000	50	22000	50	1954619	16000	50	1954728
Acid Extractable Lead (Pb)	ug/g	5	1	9	1	1954619	9	1	1954728
Acid Extractable Magnesium (Mg)	ug/g	2600	50	2500	50	1954619	3400	50	1954728
Acid Extractable Manganese (Mn)	ug/g	150	1	59	1	1954619	60	1	1954728
Acid Extractable Molybdenum (Mo)	ug/g	0.8	0.5	1.9	0.5	1954619	4.2	0.5	1954728
Acid Extractable Nickel (Ni)	ug/g	7.1	0.5	5.3	0.5	1954619	6.4	0.5	1954728
Acid Extractable Phosphorus (P)	ug/g	770	50	880	50	1954619	820	50	1954728
Acid Extractable Potassium (K)	ug/g	700	200	910	200	1954619	1200	200	1954728
Acid Extractable Selenium (Se)	ug/g	<0.5	0.5	<0.5	0.5	1954619	<0.5	0.5	1954728
Acid Extractable Silver (Ag)	ug/g	<0.2	0.2	<0.2	0.2	1954619	<0.2	0.2	1954728
Acid Extractable Sodium (Na)	ug/g	130	100	1400	100	1954619	1400	100	1954728
Acid Extractable Strontium (Sr)	ug/g	6	1	11	1	1954619	14	1	1954728
Acid Extractable Thallium (Tl)	ug/g	0.07	0.05	<0.05	0.05	1954619	0.09	0.05	1954728
Acid Extractable Vanadium (V)	ug/g	52	5	51	5	1954619	32	5	1954728
Acid Extractable Zinc (Zn)	ug/g	29	5	51	5	1954619	64	5	1954728
Acid Extractable Mercury (Hg)	ug/g	<0.05	0.05	<0.05	0.05	1954619	<0.05	0.05	1954728

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) -
Sample contained a high amount of moisture. Reporting limits were adjusted for dry weight of sample.

Maxxam Analytics

Maxxam Job #: A9C4313
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

O'REG 153 METALS - TABLE 1 (SOIL)

Maxxam ID		DT7583		DT7584	DT7585	DT7586		
Sampling Date		2009/09/17		2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC4-SD09-3**	**QC Batch**	**AEC4-SD09-4**	**AEC4-SD09-5**	**AEC4-SD09-11**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	42	1951230	46	27		0.2	1951230
Metals								
Chromium (VI)	ug/g	0.7	1953387	<0.2	<0.2	<0.2	0.2	1953379
Acid Extractable Aluminum (Al)	ug/g	3600	1954728	4100	3700	3900	50	1954728
Acid Extractable Antimony (Sb)	ug/g	<0.2	1954728	<0.2	<0.2	<0.2	0.2	1954728
Acid Extractable Arsenic (As)	ug/g	1	1954728	1	<1	1	1	1954728
Acid Extractable Barium (Ba)	ug/g	17	1954728	20	20	23	0.5	1954728
Acid Extractable Beryllium (Be)	ug/g	<0.2	1954728	<0.2	<0.2	0.2	0.2	1954728
Acid Extractable Cadmium (Cd)	ug/g	0.2	1954728	0.1	<0.1	<0.1	0.1	1954728
Acid Extractable Calcium (Ca)	ug/g	2300	1954728	2400	1800	2200	50	1954728
Acid Extractable Chromium (Cr)	ug/g	17	1954728	18	13	17	1	1954728
Acid Extractable Cobalt (Co)	ug/g	3.3	1954728	3.0	3.0	3.3	0.1	1954728
Acid Extractable Copper (Cu)	ug/g	7.6	1954728	8.0	5.6	6.3	0.5	1954728
Acid Extractable Iron (Fe)	ug/g	22000	1954728	19000	15000	28000	50	1954728
Acid Extractable Lead (Pb)	ug/g	11	1954728	6	2	3	1	1954728
Acid Extractable Magnesium (Mg)	ug/g	2800	1954728	3200	3000	3000	50	1954728
Acid Extractable Manganese (Mn)	ug/g	68	1954728	55	54	72	1	1954728
Acid Extractable Molybdenum (Mo)	ug/g	2.5	1954728	8.3	0.8	1.3	0.5	1954728
Acid Extractable Nickel (Ni)	ug/g	5.9	1954728	6.0	5.8	5.7	0.5	1954728
Acid Extractable Phosphorus (P)	ug/g	770	1954728	920	600	800	50	1954728
Acid Extractable Potassium (K)	ug/g	980	1954728	1400	1100	1000	200	1954728
Acid Extractable Selenium (Se)	ug/g	<0.5	1954728	<0.5	<0.5	<0.5	0.5	1954728
Acid Extractable Silver (Ag)	ug/g	<0.2	1954728	<0.2	<0.2	<0.2	0.2	1954728
Acid Extractable Sodium (Na)	ug/g	2400	1954728	5100	3000	1200	100	1954728
Acid Extractable Strontium (Sr)	ug/g	12	1954728	12	10	12	1	1954728
Acid Extractable Thallium (Tl)	ug/g	<0.05	1954728	0.05	<0.05	<0.05	0.05	1954728
Acid Extractable Vanadium (V)	ug/g	43	1954728	44	29	37	5	1954728
Acid Extractable Zinc (Zn)	ug/g	60	1954728	48	31	37	5	1954728
Acid Extractable Mercury (Hg)	ug/g	<0.05	1954728	<0.05	<0.05	<0.05	0.05	1954728

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: A9C4313
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

O'REG 153 METALS - TABLE 1 (SOIL)

Maxxam ID		DT7587	DT7588	DT7589	DT7609	DT7610		
Sampling Date		2009/09/17	2009/09/17	2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC4-SD09-12**	**AEC4-SD09-13**	**AEC4-SD09-14**	**AEC4-SD09-15**	**SD09-DUP 2**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	15	25	20			0.2	1951230
Metals								
Chromium (VI)	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	1953379
Acid Extractable Aluminum (Al)	ug/g	2700	4000	3900	5500	3700	50	1954728
Acid Extractable Antimony (Sb)	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	1954728
Acid Extractable Arsenic (As)	ug/g	<1	<1	1	2	2	1	1954728
Acid Extractable Barium (Ba)	ug/g	11	20	20	34	22	0.5	1954728
Acid Extractable Beryllium (Be)	ug/g	<0.2	<0.2	<0.2	0.2	0.3	0.2	1954728
Acid Extractable Cadmium (Cd)	ug/g	<0.1	<0.1	<0.1	0.1	<0.1	0.1	1954728
Acid Extractable Calcium (Ca)	ug/g	1500	2500	2200	2800	2000	50	1954728
Acid Extractable Chromium (Cr)	ug/g	30	20	18	20	14	1	1954728
Acid Extractable Cobalt (Co)	ug/g	4.8	3.4	3.2	4.6	3.5	0.1	1954728
Acid Extractable Copper (Cu)	ug/g	6.3	5.8	6.2	9.5	5.3	0.5	1954728
Acid Extractable Iron (Fe)	ug/g	40000	23000	24000	19000	28000	50	1954728
Acid Extractable Lead (Pb)	ug/g	2	3	3	7	3	1	1954728
Acid Extractable Magnesium (Mg)	ug/g	2100	3100	2800	4000	2700	50	1954728
Acid Extractable Manganese (Mn)	ug/g	230	67	58	75	74	1	1954728
Acid Extractable Molybdenum (Mo)	ug/g	1.9	1.4	1.0	2.5	1.3	0.5	1954728
Acid Extractable Nickel (Ni)	ug/g	6.5	6.3	5.9	7.9	5.7	0.5	1954728
Acid Extractable Phosphorus (P)	ug/g	530	850	820	880	680	50	1954728
Acid Extractable Potassium (K)	ug/g	590	990	990	1600	1000	200	1954728
Acid Extractable Selenium (Se)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	1954728
Acid Extractable Silver (Ag)	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	1954728
Acid Extractable Sodium (Na)	ug/g	1800	560	870	1100	1000	100	1954728
Acid Extractable Strontium (Sr)	ug/g	7	8	10	13	12	1	1954728
Acid Extractable Thallium (Tl)	ug/g	<0.05	<0.05	<0.05	0.06	<0.05	0.05	1954728
Acid Extractable Vanadium (V)	ug/g	91	52	43	40	33	5	1954728
Acid Extractable Zinc (Zn)	ug/g	32	40	33	50	35	5	1954728
Acid Extractable Mercury (Hg)	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1954728

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C4313
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DT7580		DT7581	DT7582	DT7583	DT7584	DT7585		
Sampling Date		2009/09/17		2009/09/17	2009/09/17	2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC1-SD09-1**	**QC Batch**	**AEC4-SD09-1**	**AEC4-SD09-2**	**AEC4-SD09-3**	**AEC4-SD09-4**	**AEC4-SD09-5**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	23	1951838	48					0.2	1953996
Total Organic Carbon	mg/kg	17000	1952361	12000	20000	12000	15000	4200	500	1952361

Maxxam ID		DT7586	DT7587	DT7588	DT7589	DT7609	DT7610		
Sampling Date		2009/09/17	2009/09/17	2009/09/17	2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC4-SD09-11**	**AEC4-SD09-12**	**AEC4-SD09-13**	**AEC4-SD09-14**	**AEC4-SD09-15**	**SD09-DUP 2**	**RDL**	**QC Batch**
Inorganics									
Moisture	%	33				47	26	0.2	1951838
Total Organic Carbon	mg/kg	4900	2300	4900	3200	6600	5300	500	1952361

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C4313
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		DT7580	DT7586	DT7609	DT7610		
Sampling Date		2009/09/17	2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC1-SD09-1**	**AEC4-SD09-11**	**AEC4-SD09-15**	**SD09-DUP 2**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	<0.02	<0.02	<0.02	<0.02	0.02	1949291
Acenaphthylene	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1949291
Anthracene	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1949291
Benzo(a)anthracene	ug/g	<0.02	<0.02	<0.02	<0.02	0.02	1949291
Benzo(a)pyrene	ug/g	<0.01	<0.01	0.01	<0.01	0.01	1949291
Benzo(g,h,i)perylene	ug/g	<0.04	<0.04	<0.04	<0.04	0.04	1949291
Benzo(k)fluoranthene	ug/g	<0.02	<0.02	<0.02	<0.02	0.02	1949291
Chrysene	ug/g	<0.02	<0.02	<0.02	<0.02	0.02	1949291
Dibenz(a,h)anthracene	ug/g	<0.04	<0.04	<0.04	<0.04	0.04	1949291
Fluoranthene	ug/g	0.02	<0.01	0.03	<0.01	0.01	1949291
Fluorene	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1949291
Indeno(1,2,3-cd)pyrene	ug/g	<0.04	<0.04	<0.04	<0.04	0.04	1949291
2-Methylnaphthalene	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1949291
Naphthalene	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	1949291
Phenanthrene	ug/g	0.01	<0.01	0.02	<0.01	0.01	1949291
Pyrene	ug/g	0.01	<0.01	0.02	<0.01	0.01	1949291
Surrogate Recovery (%)							
D10-Anthracene	%	81	85	74	83		1949291
D14-Terphenyl (FS)	%	88	87	84	94		1949291
D7-Quinoline	%	75	84	70	72		1949291
D8-Acenaphthylene	%	73	78	49	70		1949291

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C4313
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DT7580	DT7581	DT7586	DT7609	DT7610		
Sampling Date		2009/09/17	2009/09/17	2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC1-SD09-1**	**AEC4-SD09-1**	**AEC4-SD09-11**	**AEC4-SD09-15**	**SD09-DUP 2**	**RDL**	**QC Batch**
Volatile Organics								
Acetone (2-Propanone)	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	1946681
Benzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Bromodichloromethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Bromoform	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Bromomethane	ug/g	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	1946681
Carbon Tetrachloride	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Chlorobenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Chloroform	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Dibromochloromethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,2-Dichlorobenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,3-Dichlorobenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,4-Dichlorobenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,1-Dichloroethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,2-Dichloroethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,1-Dichloroethylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
cis-1,2-Dichloroethylene	ug/g	<0.002	<0.002	0.008	<0.002	0.004	0.002	1946681
trans-1,2-Dichloroethylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,2-Dichloropropane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
cis-1,3-Dichloropropene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
trans-1,3-Dichloropropene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Ethylbenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Ethylene Dibromide	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Methylene Chloride(Dichloromethane)	ug/g	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	1946681
Methyl Isobutyl Ketone	ug/g	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	1946681
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	1946681
Methyl t-butyl ether (MTBE)	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Styrene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,1,1,2-Tetrachloroethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,1,2,2-Tetrachloroethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Tetrachloroethylene	ug/g	<0.002	<0.002	0.24	<0.002	0.38	0.002	1946681
Toluene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,1,1-Trichloroethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,1,2-Trichloroethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C4313
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DT7580	DT7581	DT7586	DT7609	DT7610		
Sampling Date		2009/09/17	2009/09/17	2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC1-SD09-1**	**AEC4-SD09-1**	**AEC4-SD09-11**	**AEC4-SD09-15**	**SD09-DUP 2**	**RDL**	**QC Batch**
Trichloroethylene	ug/g	<0.002	<0.002	0.10	<0.002	0.072	0.002	1946681
Vinyl Chloride	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
p+m-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
o-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Xylene (Total)	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	90	88	95	96	92		1946681
D4-1,2-Dichloroethane	%	96	94	94	94	95		1946681
D8-Toluene	%	107	108	103	105	105		1946681

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Franz Environmental Inc
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Sampler Initials: RF

ORGANOCHLORINATED PESTICIDES BY GC-ECD (SOIL)

Maxxam ID		DT7580		DT7581		DT7586	DT7609	DT7610		
Sampling Date		2009/09/17		2009/09/17		2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC1-SD09-1**	**QC Batch**	**AEC4-SD09-1**	**QC Batch**	**AEC4-SD09-11**	**AEC4-SD09-15**	**SD09-DUP 2**	**RDL**	**QC Batch**
Pesticides & Herbicides										
Aroclor 1262	ug/g	<0.02	1953008			<0.02	<0.02	<0.02	0.02	1953008
Aroclor 1268	ug/g	<0.02	1953008			<0.02	<0.02	<0.02	0.02	1953008
Hexachlorobutadiene	ug/g	<0.01	1953008	<0.01	1954099	<0.01	<0.01	<0.01	0.01	1953008
Aldrin	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
a-Chlordane	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
g-Chlordane	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
Chlordane (Total)	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
o,p-DDD	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
p,p-DDD	ug/g	0.009	1953008	0.004	1954099	<0.002	0.004	<0.002	0.002	1953008
o,p-DDD + p,p-DDD	ug/g	0.009	1953008	0.004	1954099	<0.002	0.004	<0.002	0.002	1953008
o,p-DDE	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
p,p-DDE	ug/g	0.004	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
o,p-DDE + p,p-DDE	ug/g	0.004	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
o,p-DDT	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
p,p-DDT	ug/g	0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
o,p-DDT + p,p-DDT	ug/g	0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
DDT+ Metabolites	ug/g	0.015	1953008	0.004	1954099	<0.002	0.004	<0.002	0.002	1953008
Dieldrin	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
Endosulfan I	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
Endosulfan II	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
Total Endosulfan	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
Endrin	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
Heptachlor	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
Heptachlor epoxide	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
Hexachlorobenzene	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
Lindane	ug/g	<0.002	1953008	<0.002	1954099	<0.002	<0.002	<0.002	0.002	1953008
Methoxychlor	ug/g	<0.008	1953008	<0.008	1954099	<0.008	<0.008	<0.008	0.008	1953008
Total PCB	ug/g	<0.03	1953008	0.03	1954099	<0.03	0.04	<0.03	0.03	1953008
Aroclor 1016	ug/g	<0.02	1953008			<0.02	<0.02	<0.02	0.02	1953008
Aroclor 1221	ug/g	<0.03	1953008			<0.03	<0.03	<0.03	0.03	1953008
Aroclor 1232	ug/g	<0.02	1953008			<0.02	<0.02	<0.02	0.02	1953008
Aroclor 1242	ug/g	<0.02	1953008			<0.02	<0.02	<0.02	0.02	1953008
Aroclor 1248	ug/g	<0.02	1953008			<0.02	<0.02	<0.02	0.02	1953008

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Franz Environmental Inc
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ORGANOCHLORINATED PESTICIDES BY GC-ECD (SOIL)

Maxxam ID		DT7580		DT7581		DT7586	DT7609	DT7610		
Sampling Date		2009/09/17		2009/09/17		2009/09/17	2009/09/17	2009/09/17		
	Units	**AEC1-SD09-1**	**QC Batch**	**AEC4-SD09-1**	**QC Batch**	**AEC4-SD09-11**	**AEC4-SD09-15**	**SD09-DUP 2**	**RDL**	**QC Batch**
Aroclor 1254	ug/g	<0.02	1953008			<0.02	<0.02	<0.02	0.02	1953008
Aroclor 1260	ug/g	<0.02	1953008			<0.02	0.04	<0.02	0.02	1953008
Surrogate Recovery (%)										
2,4,5,6-Tetrachloro-m-xylene	%	113	1953008	87	1954099	102	94	91		1953008
Decachlorobiphenyl	%	102	1953008	109	1954099	98	111	97		1953008

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Package 1	3.3°C
Package 2	3.7°C
Package 3	4.7°C
Package 4	3.7°C
Package 5	6.7°C
Package 6	5.7°C
Package 7	4.0°C
Package 8	3.7°C
Package 9	5.0°C
Package 10	6.7°C

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

GENERAL COMMENTS

PAH Analysis: Due to the sample matrix, samples required dilution. Detection limits were adjusted accordingly.

Maxxam Job #: A9C4313
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
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Sampler Initials: RF

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1944726	Moisture	2009/09/23							1.2	50		
1946168	o-Terphenyl	2009/09/26	80	30 - 130	81	30 - 130	80	%				
1946168	F2 (C10-C16 Hydrocarbons)	2009/09/26	116	60 - 130	111	60 - 130	<10	ug/g	28.0	50		
1946168	F3 (C16-C34 Hydrocarbons)	2009/09/26	116	60 - 130	111	60 - 130	<10	ug/g	34.6	50		
1946168	F4 (C34-C50 Hydrocarbons)	2009/09/26	116	60 - 130	111	60 - 130	<10	ug/g	36.6	50		
1946178	1,4-Difluorobenzene	2009/09/26	115	60 - 140	114	60 - 140	106	%				
1946178	4-Bromofluorobenzene	2009/09/26	95	60 - 140	95	60 - 140	95	%				
1946178	D10-Ethylbenzene	2009/09/26	94	30 - 130	88	30 - 130	89	%				
1946178	D4-1,2-Dichloroethane	2009/09/26	119	60 - 140	114	60 - 140	113	%				
1946178	F1 (C6-C10)	2009/09/27	86	60 - 140	82	60 - 140	<10	ug/g	0.8	50		
1946178	F1 (C6-C10) - BTEX	2009/09/27					<10	ug/g	0.6	50		
1946681	4-Bromofluorobenzene	2009/09/22	94	60 - 140	101	60 - 140	97	%				
1946681	D4-1,2-Dichloroethane	2009/09/22	93	60 - 140	98	60 - 140	98	%				
1946681	D8-Toluene	2009/09/22	107	60 - 140	101	60 - 140	102	%				
1946681	Acetone (2-Propanone)	2009/09/23	86	24 - 171	101	60 - 140	<0.1	ug/g	NC	50		
1946681	Benzene	2009/09/23	107	39 - 137	99	60 - 140	<0.002	ug/g	NC	50		
1946681	Bromodichloromethane	2009/09/23	91	45 - 131	103	60 - 140	<0.002	ug/g	NC	50		
1946681	Bromoform	2009/09/23	70	44 - 131	113	60 - 140	<0.002	ug/g	NC	50		
1946681	Bromomethane	2009/09/23	NC	20 - 146	128	60 - 140	<0.003	ug/g	NC	50		
1946681	Carbon Tetrachloride	2009/09/23	77	40 - 139	102	60 - 140	<0.002	ug/g	NC	50		
1946681	Chlorobenzene	2009/09/23	99	45 - 140	102	60 - 140	<0.002	ug/g	NC	50		
1946681	Chloroform	2009/09/23	117	48 - 128	105	60 - 140	<0.002	ug/g	NC	50		
1946681	Dibromochloromethane	2009/09/23	90	52 - 135	113	60 - 140	<0.002	ug/g	NC	50		
1946681	1,2-Dichlorobenzene	2009/09/23	74	39 - 145	91	60 - 140	<0.002	ug/g	NC	50		
1946681	1,3-Dichlorobenzene	2009/09/23	83	38 - 158	93	60 - 140	<0.002	ug/g	NC	50		
1946681	1,4-Dichlorobenzene	2009/09/23	83	35 - 159	90	60 - 140	<0.002	ug/g	NC	50		
1946681	1,1-Dichloroethane	2009/09/23	130	48 - 131	116	60 - 140	<0.002	ug/g	NC	50		
1946681	1,2-Dichloroethane	2009/09/23	97	43 - 123	103	60 - 140	<0.002	ug/g	NC	50		
1946681	1,1-Dichloroethylene	2009/09/23	120	50 - 134	130	60 - 140	<0.002	ug/g	NC	50		
1946681	cis-1,2-Dichloroethylene	2009/09/23	118	45 - 136	109	60 - 140	<0.002	ug/g	NC	50		
1946681	trans-1,2-Dichloroethylene	2009/09/23	120	45 - 138	110	60 - 140	<0.002	ug/g	NC	50		
1946681	1,2-Dichloropropane	2009/09/23	110	51 - 130	105	60 - 140	<0.002	ug/g	NC	50		
1946681	cis-1,3-Dichloropropene	2009/09/23	65	39 - 143	103	60 - 140	<0.002	ug/g	NC	50		
1946681	trans-1,3-Dichloropropene	2009/09/23	74	33 - 135	109	60 - 140	<0.002	ug/g	NC	50		
1946681	Ethylbenzene	2009/09/23	90	46 - 150	100	60 - 140	<0.002	ug/g	NC	50		
1946681	Ethylene Dibromide	2009/09/23	103	48 - 136	103	60 - 140	<0.002	ug/g	NC	50		
1946681	MethyleneChloride(Dichloromethane)	2009/09/23	107	47 - 124	98	60 - 140	<0.003	ug/g	NC	50		
1946681	Methyl Isobutyl Ketone	2009/09/23	80	48 - 133	107	60 - 140	<0.03	ug/g	NC	50		
1946681	Methyl Ethyl Ketone (2-Butanone)	2009/09/23	83	39 - 160	107	60 - 140	<0.03	ug/g	NC	50		

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QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1946681	Methyl t-butyl ether (MTBE)	2009/09/23	103	37 - 150	111	60 - 140	<0.002	ug/g	NC	50		
1946681	Styrene	2009/09/23	51	27 - 148	110	60 - 140	<0.002	ug/g	NC	50		
1946681	1,1,1,2-Tetrachloroethane	2009/09/23	85	51 - 140	105	60 - 140	<0.002	ug/g	NC	50		
1946681	1,1,2,2-Tetrachloroethane	2009/09/23	75	46 - 128	106	60 - 140	<0.002	ug/g	NC	50		
1946681	Tetrachloroethylene	2009/09/23	90	45 - 154	98	60 - 140	<0.002	ug/g	NC	50		
1946681	Toluene	2009/09/23	106	30 - 158	98	60 - 140	<0.002	ug/g	NC	50		
1946681	1,1,1-Trichloroethane	2009/09/23	104	44 - 136	104	60 - 140	<0.002	ug/g	NC	50		
1946681	1,1,2-Trichloroethane	2009/09/23	105	56 - 135	108	60 - 140	<0.002	ug/g	NC	50		
1946681	Trichloroethylene	2009/09/23	100	39 - 146	101	60 - 140	<0.002	ug/g	NC	50		
1946681	Vinyl Chloride	2009/09/23	81	34 - 136	95	60 - 140	<0.002	ug/g	NC	50		
1946681	p+m-Xylene	2009/09/23	92	29 - 161	103	60 - 140	<0.002	ug/g	NC	50		
1946681	o-Xylene	2009/09/23	88	45 - 150	102	60 - 140	<0.002	ug/g	NC	50		
1946681	Xylene (Total)	2009/09/23					<0.002	ug/g	NC	50		
1949291	D10-Anthracene	2009/09/28	77	30 - 130	95	30 - 130	88	%				
1949291	D14-Terphenyl (FS)	2009/09/28	78	30 - 130	96	30 - 130	93	%				
1949291	D7-Quinoline	2009/09/28	79	30 - 130	101	30 - 130	101	%				
1949291	D8-Acenaphthylene	2009/09/28	63	30 - 130	88	30 - 130	84	%				
1949291	Acenaphthene	2009/09/28	73	30 - 130	96	30 - 130	<0.01	ug/g	NC	50		
1949291	Acenaphthylene	2009/09/28	68	30 - 130	89	30 - 130	<0.005	ug/g	NC	50		
1949291	Anthracene	2009/09/28	87	30 - 130	103	30 - 130	<0.005	ug/g	NC	50		
1949291	Benzo(a)anthracene	2009/09/28	96	30 - 130	110	30 - 130	<0.01	ug/g	NC	50		
1949291	Benzo(a)pyrene	2009/09/28	89	30 - 130	103	30 - 130	<0.005	ug/g	NC	50		
1949291	Benzo(g,h,i)perylene	2009/09/28	98	30 - 130	114	30 - 130	<0.02	ug/g	NC	50		
1949291	Benzo(k)fluoranthene	2009/09/28	99	30 - 130	119	30 - 130	<0.01	ug/g	NC	50		
1949291	Chrysene	2009/09/28	101	30 - 130	117	30 - 130	<0.01	ug/g	NC	50		
1949291	Dibenz(a,h)anthracene	2009/09/28	100	30 - 130	115	30 - 130	<0.02	ug/g	NC	50		
1949291	Fluoranthene	2009/09/28	103	30 - 130	117	30 - 130	<0.005	ug/g	NC	50		
1949291	Fluorene	2009/09/28	84	30 - 130	105	30 - 130	<0.005	ug/g	NC	50		
1949291	Indeno(1,2,3-cd)pyrene	2009/09/28	84	30 - 130	97	30 - 130	<0.02	ug/g	NC	50		
1949291	2-Methylnaphthalene	2009/09/28	53	30 - 130	78	30 - 130	<0.005	ug/g	NC	50		
1949291	Naphthalene	2009/09/28	38	30 - 130	59	30 - 130	<0.005	ug/g	NC	50		
1949291	Phenanthrene	2009/09/28	88	30 - 130	105	30 - 130	<0.005	ug/g	NC	50		
1949291	Pyrene	2009/09/28	104	30 - 130	117	30 - 130	<0.005	ug/g	NC	50		
1951230	Moisture	2009/09/25							6.3	50		
1951838	Moisture	2009/09/25							1.6	50		
1952361	Total Organic Carbon	2009/09/28					<500	mg/kg	17.4	50	105	80 - 120
1953008	2,4,5,6-Tetrachloro-m-xylene	2009/09/28	98	40 - 130	85	40 - 130	103	%				
1953008	Decachlorobiphenyl	2009/09/28	101	40 - 130	74	40 - 130	91	%				
1953008	Hexachlorobutadiene	2009/09/28	65	N/A	106	N/A	<0.01	ug/g	NC	50		

Maxxam Job #: A9C4313
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1953008	Aldrin	2009/09/28	NC(1)	40 - 130	75	40 - 130	<0.002	ug/g	NC	50		
1953008	a-Chlordane	2009/09/28	110	40 - 130	76	40 - 130	<0.002	ug/g	NC	50		
1953008	g-Chlordane	2009/09/28	116	40 - 130	82	40 - 130	<0.002	ug/g	NC	50		
1953008	o,p-DDD	2009/09/28	82	40 - 130	86	40 - 130	<0.002	ug/g	NC	50		
1953008	p,p-DDD	2009/09/28	NC(1)	40 - 130	97	40 - 130	<0.002	ug/g	NC	50		
1953008	o,p-DDE	2009/09/28	57	40 - 130	72	40 - 130	<0.002	ug/g	NC	50		
1953008	p,p-DDE	2009/09/28	103	40 - 130	81	40 - 130	<0.002	ug/g	NC	50		
1953008	o,p-DDT	2009/09/28	105	40 - 130	87	40 - 130	<0.002	ug/g	NC	50		
1953008	p,p-DDT	2009/09/28	114	40 - 130	86	40 - 130	<0.002	ug/g	NC	50		
1953008	Dieldrin	2009/09/28	125	40 - 130	100	40 - 130	<0.002	ug/g	NC	50		
1953008	Endosulfan I	2009/09/28	119	40 - 130	102	40 - 130	<0.002	ug/g	NC	50		
1953008	Endosulfan II	2009/09/28	102	40 - 130	106	40 - 130	<0.002	ug/g	NC	50		
1953008	Endrin	2009/09/28	125	40 - 130	102	40 - 130	<0.002	ug/g	NC	50		
1953008	Heptachlor	2009/09/28	129	40 - 130	85	40 - 130	<0.002	ug/g	NC	50		
1953008	Heptachlor epoxide	2009/09/28	141(2, 3)	40 - 130	100	40 - 130	<0.002	ug/g	NC	50		
1953008	Hexachlorobenzene	2009/09/28	129	20 - 130	81	20 - 130	<0.002	ug/g	NC	50		
1953008	Lindane	2009/09/28	103	40 - 130	89	40 - 130	<0.002	ug/g	NC	50		
1953008	Methoxychlor	2009/09/28	81	40 - 130	99	40 - 130	<0.008	ug/g	NC	50		
1953008	Total PCB	2009/09/28					<0.03	ug/g	NC	50		
1953008	Aroclor 1242	2009/09/28					<0.015	ug/g	NC	50		
1953008	Aroclor 1262	2009/09/28					<0.015	ug/g	NC	50		
1953008	Aroclor 1268	2009/09/28					<0.015	ug/g	NC	50		
1953008	Chlordane (Total)	2009/09/28					<0.002	ug/g	NC	50		
1953008	o,p-DDD + p,p-DDD	2009/09/28					<0.002	ug/g	NC	50		
1953008	o,p-DDE + p,p-DDE	2009/09/28					<0.002	ug/g	NC	50		
1953008	o,p-DDT + p,p-DDT	2009/09/28					<0.002	ug/g	NC	50		
1953008	DDT+ Metabolites	2009/09/28					<0.002	ug/g	NC	50		
1953008	Total Endosulfan	2009/09/28					<0.002	ug/g	NC	50		
1953008	Aroclor 1016	2009/09/28					<0.015	ug/g	NC	50		
1953008	Aroclor 1221	2009/09/28					<0.03	ug/g	NC	50		
1953008	Aroclor 1232	2009/09/28					<0.015	ug/g	NC	50		
1953008	Aroclor 1248	2009/09/28					<0.015	ug/g	NC	50		
1953008	Aroclor 1254	2009/09/28					<0.015	ug/g	NC	50		
1953008	Aroclor 1260	2009/09/28					<0.015	ug/g	NC	50		
1953379	Chromium (VI)	2009/09/29	65(2, 4)	75 - 125	100	75 - 125	<0.2	ug/g	NC	35	96	85 - 115
1953387	Chromium (VI)	2009/09/29	27(2, 4)	75 - 125	100	75 - 125	<0.2	ug/g	NC	35	96	85 - 115
1953996	Moisture	2009/09/28							3.4	50		
1954099	2,4,5,6-Tetrachloro-m-xylene	2009/09/30	65	40 - 130	92	40 - 130	107	%				
1954099	Decachlorobiphenyl	2009/09/30	105	40 - 130	102	40 - 130	106	%				

Maxxam Job #: A9C4313
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1954099	Hexachlorobutadiene	2009/09/30	48	N/A	95	N/A	<0.01	ug/g				
1954099	Aldrin	2009/09/30	68	40 - 130	95	40 - 130	<0.002	ug/g	NC	50		
1954099	a-Chlordane	2009/09/30	85	40 - 130	96	40 - 130	<0.002	ug/g	NC	50		
1954099	g-Chlordane	2009/09/30	84	40 - 130	99	40 - 130	<0.002	ug/g	NC	50		
1954099	o,p-DDD	2009/09/30	85	40 - 130	102	40 - 130	<0.002	ug/g	NC	50		
1954099	p,p-DDD	2009/09/30	93	40 - 130	105	40 - 130	<0.002	ug/g	NC	50		
1954099	o,p-DDE	2009/09/30	84	40 - 130	94	40 - 130	<0.002	ug/g	NC	50		
1954099	p,p-DDE	2009/09/30	92	40 - 130	104	40 - 130	<0.002	ug/g	NC	50		
1954099	o,p-DDT	2009/09/30	102	40 - 130	112	40 - 130	<0.002	ug/g	NC	50		
1954099	p,p-DDT	2009/09/30	92	40 - 130	106	40 - 130	<0.002	ug/g	NC	50		
1954099	Dieldrin	2009/09/30	86	40 - 130	109	40 - 130	<0.002	ug/g	NC	50		
1954099	Endosulfan I	2009/09/30	79	40 - 130	106	40 - 130	<0.002	ug/g	NC	50		
1954099	Endosulfan II	2009/09/30	91	40 - 130	112	40 - 130	<0.002	ug/g	NC	50		
1954099	Endrin	2009/09/30	72	40 - 130	97	40 - 130	<0.002	ug/g	NC	50		
1954099	Heptachlor	2009/09/30	44	40 - 130	71	40 - 130	<0.002	ug/g	NC	50		
1954099	Heptachlor epoxide	2009/09/30	70	40 - 130	81	40 - 130	<0.002	ug/g	NC	50		
1954099	Hexachlorobenzene	2009/09/30	66	20 - 130	88	20 - 130	<0.002	ug/g	NC	50		
1954099	Lindane	2009/09/30	78	40 - 130	98	40 - 130	<0.002	ug/g	NC	50		
1954099	Methoxychlor	2009/09/30	113	40 - 130	123	40 - 130	<0.008	ug/g	NC	50		
1954099	Total PCB	2009/09/30					<0.03	ug/g	NC	50		
1954099	Chlordane (Total)	2009/09/30					<0.002	ug/g	NC	50		
1954099	o,p-DDD + p,p-DDD	2009/09/30					<0.002	ug/g	NC	50		
1954099	o,p-DDE + p,p-DDE	2009/09/30					<0.002	ug/g	NC	50		
1954099	o,p-DDT + p,p-DDT	2009/09/30					<0.002	ug/g	NC	50		
1954099	DDT+ Metabolites	2009/09/30					<0.002	ug/g	NC	50		
1954099	Total Endosulfan	2009/09/30					<0.002	ug/g	NC	50		
1954619	Acid Extractable Aluminum (Al)	2009/09/29	NC	75 - 125	131 (2)	75 - 125	<50	ug/g	3.4	35		
1954619	Acid Extractable Antimony (Sb)	2009/09/29	99	75 - 125	100	75 - 125	<0.2	ug/g	NC	35		
1954619	Acid Extractable Arsenic (As)	2009/09/29	99	75 - 125	100	75 - 125	<1	ug/g	NC	35		
1954619	Acid Extractable Barium (Ba)	2009/09/29	NC	75 - 125	97	75 - 125	<0.5	ug/g	8.8	35		
1954619	Acid Extractable Beryllium (Be)	2009/09/29	97	75 - 125	102	75 - 125	<0.2	ug/g	NC	35		
1954619	Acid Extractable Cadmium (Cd)	2009/09/29	101	75 - 125	103	75 - 125	<0.1	ug/g	NC	35		
1954619	Acid Extractable Calcium (Ca)	2009/09/29	NC	75 - 125	105	75 - 125	<50	ug/g	3.9	35		
1954619	Acid Extractable Chromium (Cr)	2009/09/29	98	75 - 125	102	75 - 125	<1	ug/g	7.0	35		
1954619	Acid Extractable Cobalt (Co)	2009/09/29	93	75 - 125	97	75 - 125	<0.1	ug/g	2.0	35		
1954619	Acid Extractable Copper (Cu)	2009/09/29	93	75 - 125	96	75 - 125	<0.5	ug/g	1.5	35		
1954619	Acid Extractable Iron (Fe)	2009/09/29	NC	75 - 125	120	75 - 125	<50	ug/g	3.5	35		
1954619	Acid Extractable Lead (Pb)	2009/09/29	98	75 - 125	101	75 - 125	<1	ug/g	NC	35		
1954619	Acid Extractable Magnesium (Mg)	2009/09/29	NC	75 - 125	105	75 - 125	<50	ug/g	5.3	35		

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Franz Environmental Inc
Client Project #: 1584-0901
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Sampler Initials: RF

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1954619	Acid Extractable Manganese (Mn)	2009/09/29	NC	75 - 125	98	75 - 125	<1	ug/g	5.7	35		
1954619	Acid Extractable Molybdenum (Mo)	2009/09/29	97	75 - 125	100	75 - 125	<0.5	ug/g	NC	35		
1954619	Acid Extractable Nickel (Ni)	2009/09/29	95	75 - 125	98	75 - 125	<0.5	ug/g	5.9	35		
1954619	Acid Extractable Phosphorus (P)	2009/09/29	NC	75 - 125	104	75 - 125	<50	ug/g	8.8	35		
1954619	Acid Extractable Potassium (K)	2009/09/29	NC	75 - 125	120	75 - 125	<200	ug/g	NC	35		
1954619	Acid Extractable Selenium (Se)	2009/09/29	95	75 - 125	97	75 - 125	<0.5	ug/g	NC	35		
1954619	Acid Extractable Silver (Ag)	2009/09/29	96	75 - 125	97	75 - 125	<0.2	ug/g	NC	35		
1954619	Acid Extractable Sodium (Na)	2009/09/29	99	75 - 125	104	75 - 125	<100	ug/g	NC	35		
1954619	Acid Extractable Strontium (Sr)	2009/09/29	NC	75 - 125	97	75 - 125	<1	ug/g	3.8	35		
1954619	Acid Extractable Thallium (Tl)	2009/09/29	95	75 - 125	97	75 - 125	<0.05	ug/g	NC	35		
1954619	Acid Extractable Vanadium (V)	2009/09/29	103	75 - 125	101	75 - 125	<5	ug/g	NC	35		
1954619	Acid Extractable Zinc (Zn)	2009/09/29	91	75 - 125	102	75 - 125	<5	ug/g	NC	35		
1954619	Acid Extractable Mercury (Hg)	2009/09/29	104	75 - 125	107	75 - 125	<0.05	ug/g	NC	35		
1954728	Acid Extractable Aluminum (Al)	2009/09/29	NC	75 - 125	132(2)	75 - 125	<50	ug/g				
1954728	Acid Extractable Antimony (Sb)	2009/09/29	103	75 - 125	103	75 - 125	<0.2	ug/g	NC	35		
1954728	Acid Extractable Arsenic (As)	2009/09/29	97	75 - 125	99	75 - 125	<1	ug/g	NC	35		
1954728	Acid Extractable Barium (Ba)	2009/09/29	NC	75 - 125	98	75 - 125	<0.5	ug/g	0.3	35		
1954728	Acid Extractable Beryllium (Be)	2009/09/29	100	75 - 125	97	75 - 125	<0.2	ug/g	NC	35		
1954728	Acid Extractable Cadmium (Cd)	2009/09/29	106	75 - 125	104	75 - 125	<0.1	ug/g	NC	35		
1954728	Acid Extractable Calcium (Ca)	2009/09/29	NC	75 - 125	102	75 - 125	<50	ug/g				
1954728	Acid Extractable Chromium (Cr)	2009/09/29	96	75 - 125	104	75 - 125	<1	ug/g	0.5	35		
1954728	Acid Extractable Cobalt (Co)	2009/09/29	93	75 - 125	100	75 - 125	<0.1	ug/g	2.7	35		
1954728	Acid Extractable Copper (Cu)	2009/09/29	90	75 - 125	99	75 - 125	<0.5	ug/g	4.1	35		
1954728	Acid Extractable Iron (Fe)	2009/09/29	NC	75 - 125	106	75 - 125	<50	ug/g				
1954728	Acid Extractable Lead (Pb)	2009/09/29	96	75 - 125	104	75 - 125	<1	ug/g	NC	35		
1954728	Acid Extractable Magnesium (Mg)	2009/09/29	NC	75 - 125	113	75 - 125	<50	ug/g				
1954728	Acid Extractable Manganese (Mn)	2009/09/29	NC	75 - 125	102	75 - 125	<1	ug/g				
1954728	Acid Extractable Molybdenum (Mo)	2009/09/29	105	75 - 125	104	75 - 125	<0.5	ug/g	NC	35		
1954728	Acid Extractable Nickel (Ni)	2009/09/29	93	75 - 125	103	75 - 125	<0.5	ug/g	1.7	35		
1954728	Acid Extractable Phosphorus (P)	2009/09/29	NC	75 - 125	99	75 - 125	<50	ug/g				
1954728	Acid Extractable Potassium (K)	2009/09/29	NC	75 - 125	123	75 - 125	<200	ug/g				
1954728	Acid Extractable Selenium (Se)	2009/09/29	94	75 - 125	100	75 - 125	<0.5	ug/g	NC	35		
1954728	Acid Extractable Silver (Ag)	2009/09/29	99	75 - 125	100	75 - 125	<0.2	ug/g	NC	35		
1954728	Acid Extractable Sodium (Na)	2009/09/29	102	75 - 125	111	75 - 125	<100	ug/g				
1954728	Acid Extractable Strontium (Sr)	2009/09/29	NC	75 - 125	98	75 - 125	<1	ug/g				
1954728	Acid Extractable Thallium (Tl)	2009/09/29	94	75 - 125	101	75 - 125	<0.05	ug/g	NC	35		
1954728	Acid Extractable Vanadium (V)	2009/09/29	97	75 - 125	98	75 - 125	<5	ug/g	NC	35		

Maxxam Job #: A9C4313
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1954728	Acid Extractable Zinc (Zn)	2009/09/29	95	75 - 125	104	75 - 125	<5	ug/g	NC	35		
1954728	Acid Extractable Mercury (Hg)	2009/09/29	100	75 - 125	108	75 - 125	<0.05	ug/g	NC	35		

N/A = Not Applicable

RPD = Relative Percent Difference

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

(1) - The recovery in the matrix spike was not calculated (NC) due to background interference.

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

(3) - The recovery in the matrix spike was above the upper control limit. This may represent a high bias in some results. For results that were not detected (ND), this potential bias has no impact.

(4) - The recovery was below the lower control limit. This may be due in part to the reducing environment of the sample

Validation Signature Page

Maxxam Job #: A9C4313

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

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

PAUL RUBINATO, Analyst, Maxxam Analytics

CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst

TROY CARRIERE, B.Sc., C.Chem, Scientific Specialist

Validation Signature Page

Maxxam Job #: A9C4313

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

FLOYD MAYEDE, Senior Analyst

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

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Maxxam Analytics

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CHAIN OF CUSTODY RECORD

Page 1 of 2

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:	
Company Name:	#10988 Franz Environmental Inc	Company Name:	Same	Quotation #:	A93902
Contact Name:	Ryan Fletcher	Contact Name:		P.O. #:	2078
Address:	329 Churchill Ave N Suite 200	Address:		Project #:	1554-0001
	Ottawa ON K1Z 5B8		and Jdittburner@franz...	Project Name:	TC Igalvit
Phone:	(613)721-0555 Fax: (613)721-0029	Phone:	Fax:	Site Location:	Igalvit, NU
Email:	rfletcher@franzenvironmental.com	Email:		Sampled By:	RF

Laboratory Use Only:

MAXXAM JOB #:	BOTTLE ORDER #:
	162615
CHAIN OF CUSTODY #:	PROJECT MANAGER:
C#162615-07-01	MELISSA MORRISON

REGULATORY CRITERIA:

- ☐ MISA — Reg. 153/04
- ☐ PWQO — ☒ Table 1, ☐ Table 2, ☐ Table 3, ☐ Table 6
- ☐ Reg. 558
- ☒ Residential/Parkland, ☐ Industrial/Commercial, ☐ Medium/Fine, ☐ Coarse
- Sewer Use: ☐ Sanitary ☐ Storm ☐ Combined
- Municipality ______
- Other (specify) ______
- Report Criteria on C of A ? ☐

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10ºC) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

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

ANALYSIS REQUESTED (Please be specific):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Petroleum Hydrocarbons BTEX / F1 - F4	ICPMS	Pesticides	PCBs	VOC's	PAH	TOC				Hold Remaining	# of Bottles	Comments
1		AEC1-SD09-1	Sept.17/09		SOIL			X	X	X	X	X	X	X				X	7	to meet
2		AEC4-SD09-1			SOIL			X	X	X	X	X		X				X	7	ISQG
3		AEC4-SD09-2			SOIL				X					X				X	7	
4		AEC4-SD09-3			SOIL				X					X				X	7	Metals in
5		AEC4-SD09-4			SOIL				X					X				X	7	bags
6		AEC4-SD09-5			SOIL				X					X				X	7	
7		AEC4-SD09-11			SOIL			X	X	X	X	X	X	X				X	7	
8		AEC4-SD09-12			SOIL				X					X				X	7	
9		AEC4-SD09-13			SOIL				X					X				X	7	
10		AEC4-SD09-14			SOIL				X					X				X	7	

21-Sep-09 07:30
MELISSA MORRISON
A9C4313
JOE OTT-014

REC'D IN OTTAWA

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Time Sensitive	Temperature (ºC) on Receipt	Custody Seal Intact on Cooler?
Ryan Fletcher	Sept. 18/09		Chris J. Clement	09/09/21	7:30		☐	4/5/6 1/3/6	☐ Yes ☐ No

Laboratory Use Only

* 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.

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

4/5/6 3/5/6 6/6/8 3/4/5
3/4/4 1/4/6 4/5/8 3/4/4

Maxxam Analytics

Maxxam Analytics International Corporation o/a Maxxam Analytics
32 Colonnade Unit 1000, Nepean, Ontario Canada K2E 7J6 Tel:(613) 274-0573 Toll-free:877-480-7272 Fax:613-274-0574 www.maxxamanalytics.com

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#10988 Franz Environmental Inc	Company Name:	Same	Quotation #:	A93902	MAXXAM JOB #:	BOTTLE ORDER #: 162615
Contact Name:	Ryan Fletcher	Contact Name:		P.O. #:	2078		
Address:	329 Churchill Ave N Suite 200	Address:		Project #:	1584-0901		
	Ottawa ON K1Z 5B8		and Jdittburner@franz...	Project Name:	TC Iqaluit	CHAIN OF CUSTODY #: C#162615-08-01	PROJECT MANAGER: MELISSA MORRISON
Phone:	(613)721-0555 Fax: (613)721-0029	Phone:	Fax:	Site Location:	Iqaluit, NU		
Email:	rfletcher@franzenvironmental.com	Email:		Sampled By:	RF		

REGULATORY CRITERIA:

☐ MISA Reg. 153/04 Sewer Use ☐ Sanitary ☐ Storm ☐ Combined

☐ PWQO ☑ Table 1 ☑ Residential/Parkland ☐ Table 2 ☐ Industrial/Commercial

☐ Reg. 558 ☐ Table 3 ☐ Medium/Fine Municipality ______ ☐ Table 6 ☐ Coarse

Other (specify) ______ Report Criteria on C of A ? ☐

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10ºC) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

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

ANALYSIS REQUESTED (Please be specific):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Petroleum Hydrocarbons BTEX / F1 - F4	ICPMS	Pesticides	PCBs	VOCs	PAH	TOC			Hold Remaining	# of Bottles	Comments
1		AEC4-SD09-15	Sept.17/09	-	SOIL			X	X	X	X	X	X	X			X	7	to meet ISQG
2					SOIL														
3					SOIL														
4					SOIL														Metals in bags
5					SOIL														
6		SD09-DUP2	Sept.17/09		SOIL			X	X	X	X	X	X	X			X	7	
7					SOIL														
8					SOIL														
9					SOIL														REC'D IN OTTAWA
10					SOIL														

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Ryan Fletcher	Sept.18/09		K. J. Clement	09/09/21	7:30		☐	4/5/6 1/3/6	☐ Yes ☐ No

*** 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.**

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

4/5/6 3/5/6 6/6/8 3/4/5
3/4/4 1/4/6 4/5/8 3/4/4

Your P.O. #: 2078
Your Project #: 1584-0901
Site: TC IQALUIT, NU
Your C.O.C. #: 16261509, 162615-0, 162615-1

Attention: Ryan Fletcher
Franz Environmental Inc
329 Churchill Ave N
Suite 200
Ottawa, ON
K1Z 5B8

Report Date: 2009/10/01

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9C4508
Received: 2009/09/21, 07:30

Sample Matrix: Soil
Samples Received: 19

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Chromium (VI) in Soil	14	2009/09/28	2009/09/29	CAM SOP-00420	EPA 3060A
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	5	2009/09/22	2009/09/26	CAM SOP-00315	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	1	2009/09/22	2009/09/27	CAM SOP-00315	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	5	2009/09/23	2009/09/25	CAM SOP-00315	CCME CWS
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	2	2009/09/23	2009/09/26	CAM SOP-00315	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (1)	13	2009/09/22	2009/09/26	CAM SOP-00316	CCME CWS
Acid Extr. Metals (aqua regia) by ICPMS	1	2009/09/27	2009/09/28	CAM SOP-00447	EPA 6020
Acid Extr. Metals (aqua regia) by ICPMS	8	2009/09/28	2009/09/28	CAM SOP-00447	EPA 6020
Acid Extr. Metals (aqua regia) by ICPMS	5	2009/09/28	2009/09/29	CAM SOP-00447	EPA 6020
MOISTURE (1)	8	N/A	2009/09/23	CAM SOP-00445	MOE HANDBOOK(1983)
MOISTURE (1)	5	N/A	2009/09/24	CAM SOP-00445	MOE HANDBOOK(1983)
MOISTURE	10	N/A	2009/09/25	CAM SOP-00445	McKeague 2nd ed 1978
MOISTURE	8	N/A	2009/09/28	CAM SOP-00445	McKeague 2nd ed 1978
OC Pesticides (Selected) & PCB (2)	2	2009/09/28	2009/09/28	CAM SOP-00307	SW846 8081, 8082
PAH Compounds in Soil by GC/MS (SIM)	6	2009/09/24	2009/09/29	CAM SOP - 00318	EPA 8270
Polychlorinated Biphenyl in Soil	5	2009/09/24	2009/09/25	CAM SOP-00309	SW846 8082
Polychlorinated Biphenyl in Soil	1	2009/09/25	2009/09/25	CAM SOP-00309	SW846 8082
Volatile Organic Compounds in Soil (1)	13	2009/09/22	2009/09/23	CAM SOP-00226	EPA 8260 modified

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

(1) This test was performed by Maxxam Ottawa
(2) Chlordane (Total) = Alpha Chlordane + Gamma Chlordane

Encryption Key

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

MELISSA MORRISON, Project Manager
Email: Melissa.Morrison@maxxamanalytics.com
Phone# (613) 274-0573

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section

5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 2

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: A9C4508
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

O'REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		DT8529	DT8533	DT8534	DT8535	DT8537	DT8624	DT8625	DT8626		
	Units	**AEC1-TP09-1-1**	**AEC1-TP09-3-2**	**TP09-DUP 1**	**AEC1-TP09-4-1**	**AEC1-TP09-5-2**	**AEC2-TP09-1**	**AEC2-TP09-2**	**AEC3-TP09-1**	**RDL**	**QC Batch**
Inorganics											
Moisture	%	11	6.5	9.5	6.3	14	9.8	13	8.6	0.2	1944726
BTEX & F1 Hydrocarbons											
F1 (C6-C10)	ug/g	<10	180	<10	<10	<10	<10	<10	<10	10	1946178
F1 (C6-C10) - BTEX	ug/g	<10	180	<10	<10	<10	<10	<10	<10	10	1946178
F2-F4 Hydrocarbons											
F2 (C10-C16 Hydrocarbons)	ug/g	<10	1100	90	<10	<10	<10	<10	<10	10	1946168
F3 (C16-C34 Hydrocarbons)	ug/g	<10	3900	730	<10	<10	77	240	<10	10	1946168
F4 (C34-C50 Hydrocarbons)	ug/g	<10	830	220	<10	<10	70	160	<10	10	1946168
Reached Baseline at C50	ug/g	YES	YES	YES	YES	YES	YES	YES	YES		1946168
Surrogate Recovery (%)											
1,4-Difluorobenzene	%	112	123	118	108	116	109	120	113		1946178
4-Bromofluorobenzene	%	94	103	95	95	93	95	93	95		1946178
D10-Ethylbenzene	%	82	90	90	86	86	88	87	86		1946178
D4-1,2-Dichloroethane	%	124	120	129	116	121	123	126	119		1946178
o-Terphenyl	%	79	84	88	80	89	85	88	84		1946168

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C4508
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

O'REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		DT8627	DT8629	DT8630	DT8636	DT8637		
	Units	**AEC3-TP09-3**	**AEC3-TP09-6**	**AEC3-TP09-7**	**AEC4-TP09-1**	**AEC4-TP09-2**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	10	16	20	6.9	34	0.2	1946780
BTEX & F1 Hydrocarbons								
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	10	1947719
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	10	1947719
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	10	1946805
F3 (C16-C34 Hydrocarbons)	ug/g	<10	<10	<10	<10	100	10	1946805
F4 (C34-C50 Hydrocarbons)	ug/g	<10	<10	<10	<10	51	10	1946805
Reached Baseline at C50	ug/g	YES	YES	YES	YES	YES		1946805
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	102	108	110	113	118		1947719
4-Bromofluorobenzene	%	94	96	96	94	95		1947719
D10-Ethylbenzene	%	92	89	82	81	80		1947719
D4-1,2-Dichloroethane	%	109	106	129	109	113		1947719
o-Terphenyl	%	90	85	91	88	90		1946805

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C4508
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

LOW LEVEL BTEX - TABLE 1, O'REG 153 (SOIL)

Maxxam ID		DT8535	DT8537	DT8624	DT8625	DT8626	DT8627		
	Units	**AEC1-TP09-4-1**	**AEC1-TP09-5-2**	**AEC2-TP09-1**	**AEC2-TP09-2**	**AEC3-TP09-1**	**AEC3-TP09-3**	**RDL**	**QC Batch**
Volatile Organics									
Benzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Ethylbenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Toluene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
p+m-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
o-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Xylene (Total)	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	88	96	93	87	93	95		1946681
D4-1,2-Dichloroethane	%	90	92	91	93	94	96		1946681
D8-Toluene	%	92	103	107	110	106	106		1946681

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Maxxam Job #: A9C4508
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Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
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O'REG 153 METALS - TABLE 1 (SOIL)

Maxxam ID		DT8529		DT8531		DT8532		DT8535	DT8536		
	Units	**AEC1-TP09-1-1**	**QC Batch**	**AEC1-TP09-2-1**	**QC Batch**	**AEC1-TP09-3-1**	**QC Batch**	**AEC1-TP09-4-1**	**AEC1-TP09-5-1**	**RDL**	**QC Batch**
Inorganics											
Moisture	%			15	1953996	5.5	1953996	6.3	7.8	0.2	1953996
Metals											
Chromium (VI)	ug/g	<0.2	1953387	<0.2	1953387	<0.2	1953387	<0.2	<0.2	0.2	1953379
Acid Extractable Aluminum (Al)	ug/g	2600	1952859	4900	1952862	3700	1953201	4800	4700	50	1952859
Acid Extractable Antimony (Sb)	ug/g	<0.2	1952859	<0.2	1952862	<0.2	1953201	<0.2	2.0	0.2	1952859
Acid Extractable Arsenic (As)	ug/g	1	1952859	<1	1952862	2	1953201	<1	1	1	1952859
Acid Extractable Barium (Ba)	ug/g	17	1952859	31	1952862	20	1953201	33	27	0.5	1952859
Acid Extractable Beryllium (Be)	ug/g	<0.2	1952859	<0.2	1952862	<0.2	1953201	<0.2	0.3	0.2	1952859
Acid Extractable Cadmium (Cd)	ug/g	<0.1	1952859	<0.1	1952862	<0.1	1953201	<0.1	0.2	0.1	1952859
Acid Extractable Calcium (Ca)	ug/g	7700	1952859	2200	1952862	2000	1953201	2400	2300	50	1952859
Acid Extractable Chromium (Cr)	ug/g	21	1952859	20	1952862	19	1953201	24	21	1	1952859
Acid Extractable Cobalt (Co)	ug/g	4.3	1952859	3.8	1952862	3.3	1953201	5.4	5.9	0.1	1952859
Acid Extractable Copper (Cu)	ug/g	11	1952859	6.7	1952862	5.9	1953201	9.0	14	0.5	1952859
Acid Extractable Iron (Fe)	ug/g	20000	1952859	24000	1952862	22000	1953201	28000	27000	50	1952859
Acid Extractable Lead (Pb)	ug/g	2	1952859	3	1952862	3	1953201	4	150	1	1952859
Acid Extractable Magnesium (Mg)	ug/g	1800	1952859	2600	1952862	2100	1953201	2300	2900	50	1952859
Acid Extractable Manganese (Mn)	ug/g	130	1952859	88	1952862	92	1953201	240	250	1	1952859
Acid Extractable Molybdenum (Mo)	ug/g	<0.5	1952859	<0.5	1952862	<0.5	1953201	0.7	0.6	0.5	1952859
Acid Extractable Nickel (Ni)	ug/g	6.1	1952859	6.4	1952862	5.5	1953201	7.7	8.0	0.5	1952859
Acid Extractable Phosphorus (P)	ug/g	630	1952859	780	1952862	630	1953201	650	590	50	1952859
Acid Extractable Potassium (K)	ug/g	460	1952859	810	1952862	530	1953201	670	600	200	1952859
Acid Extractable Selenium (Se)	ug/g	<0.5	1952859	<0.5	1952862	0.5	1953201	<0.5	<0.5	0.5	1952859
Acid Extractable Silver (Ag)	ug/g	<0.2	1952859	0.2	1952862	<0.2	1953201	<0.2	<0.2	0.2	1952859
Acid Extractable Sodium (Na)	ug/g	120	1952859	110	1952862	<100	1953201	<100	<100	100	1952859
Acid Extractable Strontium (Sr)	ug/g	14	1952859	4	1952862	5	1953201	5	7	1	1952859
Acid Extractable Thallium (Tl)	ug/g	<0.05	1952859	0.09	1952862	<0.05	1953201	<0.05	<0.05	0.05	1952859
Acid Extractable Vanadium (V)	ug/g	38	1952859	52	1952862	49	1953201	68	58	5	1952859
Acid Extractable Zinc (Zn)	ug/g	26	1952859	28	1952862	22	1953201	30	58	5	1952859
Acid Extractable Mercury (Hg)	ug/g	<0.05	1952859	<0.05	1952862	<0.05	1953201	<0.05	<0.05	0.05	1952859

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C4508
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

O'REG 153 METALS - TABLE 1 (SOIL)

Maxxam ID		DT8624		DT8625		DT8628		DT8629		
	Units	**AEC2-TP09-1**	**QC Batch**	**AEC2-TP09-2**	**QC Batch**	**AEC3-TP09-5**	**QC Batch**	**AEC3-TP09-6**	**RDL**	**QC Batch**
Inorganics										
Moisture	%					8.1	1953996		0.2	
Metals										
Chromium (VI)	ug/g	<0.2	1953387	0.4	1953387	<0.2	1953387	<0.2	0.2	1953387
Acid Extractable Aluminum (Al)	ug/g	5100	1952859	4700	1952862	4800	1952859	4800	50	1952862
Acid Extractable Antimony (Sb)	ug/g	0.9	1952859	1.1	1952862	<0.2	1952859	<0.2	0.2	1952862
Acid Extractable Arsenic (As)	ug/g	1	1952859	1	1952862	2	1952859	2	1	1952862
Acid Extractable Barium (Ba)	ug/g	35	1952859	36	1952862	26	1952859	28	0.5	1952862
Acid Extractable Beryllium (Be)	ug/g	0.3	1952859	<0.2	1952862	<0.2	1952859	<0.2	0.2	1952862
Acid Extractable Cadmium (Cd)	ug/g	0.4	1952859	0.7	1952862	<0.1	1952859	<0.1	0.1	1952862
Acid Extractable Calcium (Ca)	ug/g	2600	1952859	2200	1952862	1900	1952859	2300	50	1952862
Acid Extractable Chromium (Cr)	ug/g	20	1952859	20	1952862	25	1952859	19	1	1952862
Acid Extractable Cobalt (Co)	ug/g	5.1	1952859	4.4	1952862	3.7	1952859	2.6	0.1	1952862
Acid Extractable Copper (Cu)	ug/g	20	1952859	93	1952862	5.0	1952859	6.2	0.5	1952862
Acid Extractable Iron (Fe)	ug/g	23000	1952859	20000	1952862	29000	1952859	19000	50	1952862
Acid Extractable Lead (Pb)	ug/g	49	1952859	83	1952862	3	1952859	4	1	1952862
Acid Extractable Magnesium (Mg)	ug/g	2400	1952859	2300	1952862	3100	1952859	2700	50	1952862
Acid Extractable Manganese (Mn)	ug/g	210	1952859	180	1952862	95	1952859	55	1	1952862
Acid Extractable Molybdenum (Mo)	ug/g	1.1	1952859	1.0	1952862	1.4	1952859	1.8	0.5	1952862
Acid Extractable Nickel (Ni)	ug/g	7.6	1952859	6.7	1952862	5.9	1952859	5.0	0.5	1952862
Acid Extractable Phosphorus (P)	ug/g	680	1952859	650	1952862	770	1952859	830	50	1952862
Acid Extractable Potassium (K)	ug/g	720	1952859	590	1952862	920	1952859	930	200	1952862
Acid Extractable Selenium (Se)	ug/g	<0.5	1952859	<0.5	1952862	<0.5	1952859	<0.5	0.5	1952862
Acid Extractable Silver (Ag)	ug/g	<0.2	1952859	<0.2	1952862	<0.2	1952859	<0.2	0.2	1952862
Acid Extractable Sodium (Na)	ug/g	170	1952859	130	1952862	130	1952859	140	100	1952862
Acid Extractable Strontium (Sr)	ug/g	7	1952859	6	1952862	8	1952859	7	1	1952862
Acid Extractable Thallium (Tl)	ug/g	<0.05	1952859	0.05	1952862	<0.05	1952859	<0.05	0.05	1952862
Acid Extractable Vanadium (V)	ug/g	43	1952859	41	1952862	64	1952859	47	5	1952862
Acid Extractable Zinc (Zn)	ug/g	63	1952859	74	1952862	44	1952859	27	5	1952862
Acid Extractable Mercury (Hg)	ug/g	<0.05	1952859	<0.05	1952862	<0.05	1952859	<0.05	0.05	1952862

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C4508
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

O'REG 153 METALS - TABLE 1 (SOIL)

Maxxam ID		DT8630		DT8636		DT8637		DT8638		DT8639		
	Units	**AEC3-TP09-7**	**QC Batch**	**AEC4-TP09-1**	**QC Batch**	**AEC4-TP09-2**	**QC Batch**	**TP09-DUP-2**	**QC Batch**	**AEC3-TP09-4**	**RDL**	**QC Batch**
Inorganics												
Moisture	%					34	1953996	13	1953996	16	0.2	1953996
Metals												
Chromium (VI)	ug/g	<0.2	1953379	<0.2	1953379	<0.2	1953387	<0.2	1953387	<0.2	0.2	1953387
Acid Extractable Aluminum (Al)	ug/g	4700	1952862	4300	1952768	4300	1952859	3900	1952862	3700	50	1952859
Acid Extractable Antimony (Sb)	ug/g	<0.2	1952862	<0.2	1952768	<0.2	1952859	0.8	1952862	<0.2	0.2	1952859
Acid Extractable Arsenic (As)	ug/g	2	1952862	2	1952768	2	1952859	1	1952862	2	1	1952859
Acid Extractable Barium (Ba)	ug/g	28	1952862	29	1952768	22	1952859	28	1952862	22	0.5	1952859
Acid Extractable Beryllium (Be)	ug/g	<0.2	1952862	<0.2	1952768	<0.2	1952859	<0.2	1952862	<0.2	0.2	1952859
Acid Extractable Cadmium (Cd)	ug/g	<0.1	1952862	<0.1	1952768	<0.1	1952859	0.6	1952862	<0.1	0.1	1952859
Acid Extractable Calcium (Ca)	ug/g	2400	1952862	2200	1952768	2500	1952859	2100	1952862	2300	50	1952859
Acid Extractable Chromium (Cr)	ug/g	19	1952862	15	1952768	14	1952859	18	1952862	16	1	1952859
Acid Extractable Cobalt (Co)	ug/g	2.4	1952862	2.2	1952768	3.4	1952859	3.7	1952862	2.5	0.1	1952859
Acid Extractable Copper (Cu)	ug/g	6.0	1952862	5.8	1952768	6.0	1952859	18	1952862	4.0	0.5	1952859
Acid Extractable Iron (Fe)	ug/g	21000	1952862	16000	1952768	9900	1952859	19000	1952862	21000	50	1952859
Acid Extractable Lead (Pb)	ug/g	3	1952862	3	1952768	2	1952859	66	1952862	4	1	1952859
Acid Extractable Magnesium (Mg)	ug/g	2700	1952862	2400	1952768	2600	1952859	1900	1952862	2100	50	1952859
Acid Extractable Manganese (Mn)	ug/g	50	1952862	63	1952768	54	1952859	140	1952862	45	1	1952859
Acid Extractable Molybdenum (Mo)	ug/g	1.5	1952862	1.4	1952768	5.6	1952859	0.9	1952862	1.8	0.5	1952859
Acid Extractable Nickel (Ni)	ug/g	4.7	1952862	4.5	1952768	6.5	1952859	5.7	1952862	4.5	0.5	1952859
Acid Extractable Phosphorus (P)	ug/g	850	1952862	710	1952768	820	1952859	520	1952862	570	50	1952859
Acid Extractable Potassium (K)	ug/g	960	1952862	960	1952768	890	1952859	470	1952862	640	200	1952859
Acid Extractable Selenium (Se)	ug/g	<0.5	1952862	0.6	1952768	<0.5	1952859	<0.5	1952862	<0.5	0.5	1952859
Acid Extractable Silver (Ag)	ug/g	<0.2	1952862	<0.2	1952768	<0.2	1952859	<0.2	1952862	<0.2	0.2	1952859
Acid Extractable Sodium (Na)	ug/g	140	1952862	120	1952768	280	1952859	120	1952862	110	100	1952859
Acid Extractable Strontium (Sr)	ug/g	7	1952862	7	1952768	8	1952859	6	1952862	9	1	1952859
Acid Extractable Thallium (Tl)	ug/g	0.05	1952862	0.05	1952768	<0.05	1952859	<0.05	1952862	<0.05	0.05	1952859
Acid Extractable Vanadium (V)	ug/g	47	1952862	39	1952768	29	1952859	38	1952862	44	5	1952859
Acid Extractable Zinc (Zn)	ug/g	27	1952862	36	1952768	36	1952859	69	1952862	31	5	1952859
Acid Extractable Mercury (Hg)	ug/g	<0.05	1952862	<0.05	1952768	<0.05	1952859	<0.05	1952862	0.09	0.05	1952859

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C4508
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RESULTS OF ANALYSES OF SOIL

Maxxam ID		DT8529	DT8533	DT8534	DT8537	DT8624		
	Units	**AEC1-TP09-1-1**	**AEC1-TP09-3-2**	**TP09-DUP 1**	**AEC1-TP09-5-2**	**AEC2-TP09-1**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	11	6.5	9.5	14	9.8	0.2	1951838

Maxxam ID		DT8625	DT8626	DT8629	DT8630	DT8636		
	Units	**AEC2-TP09-2**	**AEC3-TP09-1**	**AEC3-TP09-6**	**AEC3-TP09-7**	**AEC4-TP09-1**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	13	8.6	16	20	6.9	0.2	1951838

RDL = Reportable Detection Limit
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SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		DT8529		DT8533		DT8534	DT8629	DT8630	DT8636		
	Units	**AEC1-TP09-1-1**	**RDL**	**AEC1-TP09-3-2**	**RDL**	**TP09-DUP 1**	**AEC3-TP09-6**	**AEC3-TP09-7**	**AEC4-TP09-1**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons											
Acenaphthene	ug/g	<0.01	0.01	<0.1	0.1	<0.01	<0.01	<0.01	<0.01	0.01	1949291
Acenaphthylene	ug/g	<0.005	0.005	<0.05	0.05	<0.005	<0.005	<0.005	<0.005	0.005	1949291
Anthracene	ug/g	<0.005	0.005	<0.05	0.05	<0.005	<0.005	<0.005	<0.005	0.005	1949291
Benzo(a)anthracene	ug/g	<0.01	0.01	<0.1	0.1	<0.01	<0.01	<0.01	<0.01	0.01	1949291
Benzo(a)pyrene	ug/g	<0.005	0.005	<0.05	0.05	<0.005	<0.005	<0.005	<0.005	0.005	1949291
Benzo(g,h,i)perylene	ug/g	<0.02	0.02	<0.2	0.2	<0.02	<0.02	<0.02	<0.02	0.02	1949291
Benzo(k)fluoranthene	ug/g	<0.01	0.01	<0.1	0.1	<0.01	<0.01	<0.01	<0.01	0.01	1949291
Chrysene	ug/g	<0.01	0.01	<0.1	0.1	<0.01	<0.01	<0.01	<0.01	0.01	1949291
Dibenz(a,h)anthracene	ug/g	<0.02	0.02	<0.2	0.2	<0.02	<0.02	<0.02	<0.02	0.02	1949291
Fluoranthene	ug/g	<0.005	0.005	<0.05	0.05	<0.005	<0.005	<0.005	<0.005	0.005	1949291
Fluorene	ug/g	<0.005	0.005	<0.05	0.05	<0.005	<0.005	<0.005	<0.005	0.005	1949291
Indeno(1,2,3-cd)pyrene	ug/g	<0.02	0.02	<0.2	0.2	<0.02	<0.02	<0.02	<0.02	0.02	1949291
2-Methylnaphthalene	ug/g	<0.005	0.005	<0.05	0.05	<0.005	<0.005	<0.005	<0.005	0.005	1949291
Naphthalene	ug/g	<0.005	0.005	<0.05	0.05	<0.005	<0.005	<0.005	<0.005	0.005	1949291
Phenanthrene	ug/g	<0.005	0.005	0.09	0.05	<0.005	<0.005	<0.005	<0.005	0.005	1949291
Pyrene	ug/g	<0.005	0.005	<0.05	0.05	0.005	<0.005	<0.005	<0.005	0.005	1949291
Surrogate Recovery (%)											
D10-Anthracene	%	85		96		80	82	79	77		1949291
D14-Terphenyl (FS)	%	98		110		93	88	89	87		1949291
D7-Quinoline	%	77		86		83	51	52	47		1949291
D8-Acenaphthylene	%	69		102		81	76	76	76		1949291

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DT8529	DT8533	DT8534	DT8629	DT8630	DT8636	DT8637		
	Units	**AEC1-TP09-1-1**	**AEC1-TP09-3-2**	**TP09-DUP 1**	**AEC3-TP09-6**	**AEC3-TP09-7**	**AEC4-TP09-1**	**AEC4-TP09-2**	**RDL**	**QC Batch**
Volatile Organics										
Acetone (2-Propanone)	ug/g	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	1946681
Benzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Bromodichloromethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Bromoform	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Bromomethane	ug/g	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	1946681
Carbon Tetrachloride	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Chlorobenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Chloroform	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Dibromochloromethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,2-Dichlorobenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,3-Dichlorobenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,4-Dichlorobenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,1-Dichloroethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,2-Dichloroethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,1-Dichloroethylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
cis-1,2-Dichloroethylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
trans-1,2-Dichloroethylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,2-Dichloropropane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
cis-1,3-Dichloropropene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
trans-1,3-Dichloropropene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Ethylbenzene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Ethylene Dibromide	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Methylene Chloride(Dichloromethane)	ug/g	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	1946681
Methyl Isobutyl Ketone	ug/g	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	1946681
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	1946681
Methyl t-butyl ether (MTBE)	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Styrene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,1,1,2-Tetrachloroethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,1,2,2-Tetrachloroethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Tetrachloroethylene	ug/g	<0.002	<0.002	<0.002	0.033	<0.002	<0.002	0.057	0.002	1946681
Toluene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,1,1-Trichloroethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
1,1,2-Trichloroethane	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Trichloroethylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.005	0.002	1946681

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C4508
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		DT8529	DT8533	DT8534	DT8629	DT8630	DT8636	DT8637		
	Units	**AEC1-TP09-1-1**	**AEC1-TP09-3-2**	**TP09-DUP 1**	**AEC3-TP09-6**	**AEC3-TP09-7**	**AEC4-TP09-1**	**AEC4-TP09-2**	**RDL**	**QC Batch**
Vinyl Chloride	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
p+m-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
o-Xylene	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Xylene (Total)	ug/g	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	1946681
Surrogate Recovery (%)										
4-Bromofluorobenzene	%	102	51 (1)	85	96	94	96	92		1946681
D4-1,2-Dichloroethane	%	91	96	88	93	91	92	95		1946681
D8-Toluene	%	100	65	103	105	106	104	109		1946681

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		DT8529		DT8535		
	Units	**AEC1-TP09-1-1**	**QC Batch**	**AEC1-TP09-4-1**	**RDL**	**QC Batch**
PCBs						
Aroclor 1262	ug/g	<0.01	1950012	<0.01	0.01	1951147
Aroclor 1016	ug/g	<0.01	1950012	<0.01	0.01	1951147
Aroclor 1221	ug/g	<0.01	1950012	<0.01	0.01	1951147
Aroclor 1232	ug/g	<0.01	1950012	<0.01	0.01	1951147
Aroclor 1242	ug/g	<0.01	1950012	<0.01	0.01	1951147
Aroclor 1248	ug/g	<0.01	1950012	<0.01	0.01	1951147
Aroclor 1254	ug/g	<0.01	1950012	<0.01	0.01	1951147
Aroclor 1260	ug/g	<0.01	1950012	<0.01	0.01	1951147
Aroclor 1268	ug/g	<0.01	1950012	<0.01	0.01	1951147
Total PCB	ug/g	<0.01	1950012	<0.01	0.01	1951147
Surrogate Recovery (%)						
2,4,5,6-Tetrachloro-m-xylene	%	112	1950012	59		1951147
Decachlorobiphenyl	%	134 (2)	1950012	74		1951147

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) - Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
(2) - Surrogate recovery was above the upper control limit. This may represent a high bias in some results.

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POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		DT8537		DT8624	DT8625		
	Units	**AEC1-TP09-5-2**	**RDL**	**AEC2-TP09-1**	**AEC2-TP09-2**	**RDL**	**QC Batch**
PCBs							
Aroclor 1262	ug/g	<0.01	0.01	<1	<1	1	1950012
Aroclor 1016	ug/g	<0.01	0.01	<1	<1	1	1950012
Aroclor 1221	ug/g	<0.01	0.01	<1	<1	1	1950012
Aroclor 1232	ug/g	<0.01	0.01	<1	<1	1	1950012
Aroclor 1242	ug/g	<0.01	0.01	<1	<1	1	1950012
Aroclor 1248	ug/g	<0.01	0.01	<1	<1	1	1950012
Aroclor 1254	ug/g	<0.01	0.01	<1	<1	1	1950012
Aroclor 1260	ug/g	<0.01	0.01	12	9	1	1950012
Aroclor 1268	ug/g	<0.01	0.01	<1	<1	1	1950012
Total PCB	ug/g	<0.01	0.01	12	9	1	1950012
Surrogate Recovery (%)							
2,4,5,6-Tetrachloro-m-xylene	%	79		76	76		1950012
Decachlorobiphenyl	%	62		59	72		1950012

Maxxam ID		DT8626		
	Units	**AEC3-TP09-1**	**RDL**	**QC Batch**
PCBs				
Aroclor 1262	ug/g	<0.01	0.01	1950012
Aroclor 1016	ug/g	<0.01	0.01	1950012
Aroclor 1221	ug/g	<0.01	0.01	1950012
Aroclor 1232	ug/g	<0.01	0.01	1950012
Aroclor 1242	ug/g	<0.01	0.01	1950012
Aroclor 1248	ug/g	<0.01	0.01	1950012
Aroclor 1254	ug/g	<0.01	0.01	1950012
Aroclor 1260	ug/g	<0.01	0.01	1950012
Aroclor 1268	ug/g	<0.01	0.01	1950012
Total PCB	ug/g	<0.01	0.01	1950012
Surrogate Recovery (%)				
2,4,5,6-Tetrachloro-m-xylene	%	74		1950012
Decachlorobiphenyl	%	63		1950012

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ORGANOCHLORINATED PESTICIDES BY GC-ECD (SOIL)

Maxxam ID		DT8533		DT8534		
	Units	**AEC1-TP09-3-2**	**RDL**	**TP09-DUP 1**	**RDL**	**QC Batch**
Pesticides & Herbicides						
Aroclor 1262	ug/g	<0.02	0.02	<0.02	0.02	1953008
Aroclor 1268	ug/g	<0.02	0.02	<0.02	0.02	1953008
Hexachlorobutadiene	ug/g	<0.01	0.01	<0.01	0.01	1953008
Aldrin	ug/g	<0.03	0.03	<0.002	0.002	1953008
a-Chlordane	ug/g	<0.002	0.002	<0.002	0.002	1953008
g-Chlordane	ug/g	<0.003	0.003	<0.002	0.002	1953008
Chlordane (Total)	ug/g	<0.003	0.003	<0.002	0.002	1953008
o,p-DDD	ug/g	<0.002	0.002	<0.002	0.002	1953008
p,p-DDD	ug/g	<0.002	0.002	<0.002	0.002	1953008
o,p-DDD + p,p-DDD	ug/g	<0.002	0.002	<0.002	0.002	1953008
o,p-DDE	ug/g	<0.003	0.003	<0.002	0.002	1953008
p,p-DDE	ug/g	<0.002	0.002	<0.002	0.002	1953008
o,p-DDE + p,p-DDE	ug/g	<0.003	0.003	<0.002	0.002	1953008
o,p-DDT	ug/g	<0.002	0.002	<0.002	0.002	1953008
p,p-DDT	ug/g	0.003	0.003	<0.002	0.002	1953008
o,p-DDT + p,p-DDT	ug/g	0.003	0.003	<0.002	0.002	1953008
DDT+ Metabolites	ug/g	0.003	0.003	<0.002	0.002	1953008
Dieldrin	ug/g	<0.004	0.004	<0.002	0.002	1953008
Endosulfan I	ug/g	<0.002	0.002	<0.002	0.002	1953008
Endosulfan II	ug/g	<0.006	0.006	<0.002	0.002	1953008
Total Endosulfan	ug/g	<0.006	0.006	<0.002	0.002	1953008
Endrin	ug/g	<0.002	0.002	<0.002	0.002	1953008
Heptachlor	ug/g	<0.03	0.03	<0.002	0.002	1953008
Heptachlor epoxide	ug/g	<0.01	0.01	<0.002	0.002	1953008
Hexachlorobenzene	ug/g	<0.003	0.003	<0.002	0.002	1953008
Lindane	ug/g	<0.002	0.002	<0.002	0.002	1953008
Methoxychlor	ug/g	<0.008	0.008	<0.008	0.008	1953008
Total PCB	ug/g	<0.03	0.03	<0.03	0.03	1953008
Aroclor 1016	ug/g	<0.02	0.02	<0.02	0.02	1953008
Aroclor 1221	ug/g	<0.03	0.03	<0.03	0.03	1953008
Aroclor 1232	ug/g	<0.02	0.02	<0.02	0.02	1953008
Aroclor 1242	ug/g	<0.02	0.02	<0.02	0.02	1953008
Aroclor 1248	ug/g	<0.02	0.02	<0.02	0.02	1953008
Aroclor 1254	ug/g	<0.02	0.02	<0.02	0.02	1953008
Aroclor 1260	ug/g	<0.02	0.02	<0.02	0.02	1953008

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ORGANOCHLORINATED PESTICIDES BY GC-ECD (SOIL)

Maxxam ID		DT8533		DT8534		
	Units	**AEC1-TP09-3-2**	**RDL**	**TP09-DUP 1**	**RDL**	**QC Batch**
Surrogate Recovery (%)						
2,4,5,6-Tetrachloro-m-xylene	%	107		94		1953008
Decachlorobiphenyl	%	112		103		1953008

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Package 1	5.0°C
Package 2	3.3°C
Package 3	5.0°C
Package 4	3.7°C
Package 5	4.7°C
Package 6	3.7°C
Package 7	6.7°C
Package 8	5.7°C
Package 9	4.0°C
Package 10	3.7°C

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

GENERAL COMMENTS

PCB Analysis: Due to high concentrations of the target analytes, some samples required dilution. Detection limits were adjusted accordingly.

Sample DT8533-01: The recovery of the surrogate compound 4-Bromofuorobenzene was lower than the lower control limit. This may be due to sample matrix interference effect.

OC Pesticide Analysis: Detection limits for some compounds were raised due to matrix interferences.

PAH Analysis: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Polychlorinated Biphenyl in Soil: Duplicate results exceeded RPD acceptance criteria. This may be due to sample heterogeneity.

The recovery in the matrix spike was not calculated (NC). Because of the high concentration of this analyte in the parent sample, the relative difference between the spiked and unspiked concentrations is not sufficiently significant to permit a reliable recovery calculation.

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QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1944726	Moisture	2009/09/23							1.2	50		
1946168	o-Terphenyl	2009/09/26	80	30 - 130	81	30 - 130	80	%				
1946168	F2 (C10-C16 Hydrocarbons)	2009/09/26	116	60 - 130	111	60 - 130	<10	ug/g	28.0	50		
1946168	F3 (C16-C34 Hydrocarbons)	2009/09/26	116	60 - 130	111	60 - 130	<10	ug/g	34.6	50		
1946168	F4 (C34-C50 Hydrocarbons)	2009/09/26	116	60 - 130	111	60 - 130	<10	ug/g	36.6	50		
1946178	1,4-Difluorobenzene	2009/09/26	115	60 - 140	114	60 - 140	106	%				
1946178	4-Bromofluorobenzene	2009/09/26	95	60 - 140	95	60 - 140	95	%				
1946178	D10-Ethylbenzene	2009/09/26	94	30 - 130	88	30 - 130	89	%				
1946178	D4-1,2-Dichloroethane	2009/09/26	119	60 - 140	114	60 - 140	113	%				
1946178	F1 (C6-C10)	2009/09/27	86	60 - 140	82	60 - 140	<10	ug/g	0.8	50		
1946178	F1 (C6-C10) - BTEX	2009/09/27					<10	ug/g	0.6	50		
1946681	4-Bromofluorobenzene	2009/09/22	94	60 - 140	101	60 - 140	97	%				
1946681	D4-1,2-Dichloroethane	2009/09/22	93	60 - 140	98	60 - 140	98	%				
1946681	D8-Toluene	2009/09/22	107	60 - 140	101	60 - 140	102	%				
1946681	Acetone (2-Propanone)	2009/09/23	86	24 - 171	101	60 - 140	<0.1	ug/g	NC	50		
1946681	Benzene	2009/09/23	107	39 - 137	99	60 - 140	<0.002	ug/g	NC	50		
1946681	Bromodichloromethane	2009/09/23	91	45 - 131	103	60 - 140	<0.002	ug/g	NC	50		
1946681	Bromoform	2009/09/23	70	44 - 131	113	60 - 140	<0.002	ug/g	NC	50		
1946681	Bromomethane	2009/09/23	NC	20 - 146	128	60 - 140	<0.003	ug/g	NC	50		
1946681	Carbon Tetrachloride	2009/09/23	77	40 - 139	102	60 - 140	<0.002	ug/g	NC	50		
1946681	Chlorobenzene	2009/09/23	99	45 - 140	102	60 - 140	<0.002	ug/g	NC	50		
1946681	Chloroform	2009/09/23	117	48 - 128	105	60 - 140	<0.002	ug/g	NC	50		
1946681	Dibromochloromethane	2009/09/23	90	52 - 135	113	60 - 140	<0.002	ug/g	NC	50		
1946681	1,2-Dichlorobenzene	2009/09/23	74	39 - 145	91	60 - 140	<0.002	ug/g	NC	50		
1946681	1,3-Dichlorobenzene	2009/09/23	83	38 - 158	93	60 - 140	<0.002	ug/g	NC	50		
1946681	1,4-Dichlorobenzene	2009/09/23	83	35 - 159	90	60 - 140	<0.002	ug/g	NC	50		
1946681	1,1-Dichloroethane	2009/09/23	130	48 - 131	116	60 - 140	<0.002	ug/g	NC	50		
1946681	1,2-Dichloroethane	2009/09/23	97	43 - 123	103	60 - 140	<0.002	ug/g	NC	50		
1946681	1,1-Dichloroethylene	2009/09/23	120	50 - 134	130	60 - 140	<0.002	ug/g	NC	50		
1946681	cis-1,2-Dichloroethylene	2009/09/23	118	45 - 136	109	60 - 140	<0.002	ug/g	NC	50		
1946681	trans-1,2-Dichloroethylene	2009/09/23	120	45 - 138	110	60 - 140	<0.002	ug/g	NC	50		
1946681	1,2-Dichloropropane	2009/09/23	110	51 - 130	105	60 - 140	<0.002	ug/g	NC	50		
1946681	cis-1,3-Dichloropropene	2009/09/23	65	39 - 143	103	60 - 140	<0.002	ug/g	NC	50		
1946681	trans-1,3-Dichloropropene	2009/09/23	74	33 - 135	109	60 - 140	<0.002	ug/g	NC	50		
1946681	Ethylbenzene	2009/09/23	90	46 - 150	100	60 - 140	<0.002	ug/g	NC	50		
1946681	Ethylene Dibromide	2009/09/23	103	48 - 136	103	60 - 140	<0.002	ug/g	NC	50		
1946681	MethyleneChloride(Dichloromethane)	2009/09/23	107	47 - 124	98	60 - 140	<0.003	ug/g	NC	50		
1946681	Methyl Isobutyl Ketone	2009/09/23	80	48 - 133	107	60 - 140	<0.03	ug/g	NC	50		
1946681	Methyl Ethyl Ketone (2-Butanone)	2009/09/23	83	39 - 160	107	60 - 140	<0.03	ug/g	NC	50		

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QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1946681	Methyl t-butyl ether (MTBE)	2009/09/23	103	37 - 150	111	60 - 140	<0.002	ug/g	NC	50		
1946681	Styrene	2009/09/23	51	27 - 148	110	60 - 140	<0.002	ug/g	NC	50		
1946681	1,1,1,2-Tetrachloroethane	2009/09/23	85	51 - 140	105	60 - 140	<0.002	ug/g	NC	50		
1946681	1,1,2,2-Tetrachloroethane	2009/09/23	75	46 - 128	106	60 - 140	<0.002	ug/g	NC	50		
1946681	Tetrachloroethylene	2009/09/23	90	45 - 154	98	60 - 140	<0.002	ug/g	NC	50		
1946681	Toluene	2009/09/23	106	30 - 158	98	60 - 140	<0.002	ug/g	NC	50		
1946681	1,1,1-Trichloroethane	2009/09/23	104	44 - 136	104	60 - 140	<0.002	ug/g	NC	50		
1946681	1,1,2-Trichloroethane	2009/09/23	105	56 - 135	108	60 - 140	<0.002	ug/g	NC	50		
1946681	Trichloroethylene	2009/09/23	100	39 - 146	101	60 - 140	<0.002	ug/g	NC	50		
1946681	Vinyl Chloride	2009/09/23	81	34 - 136	95	60 - 140	<0.002	ug/g	NC	50		
1946681	p+m-Xylene	2009/09/23	92	29 - 161	103	60 - 140	<0.002	ug/g	NC	50		
1946681	o-Xylene	2009/09/23	88	45 - 150	102	60 - 140	<0.002	ug/g	NC	50		
1946681	Xylene (Total)	2009/09/23					<0.002	ug/g	NC	50		
1946780	Moisture	2009/09/24							13.0	50		
1946805	o-Terphenyl	2009/09/26	92	30 - 130	89	30 - 130	97	%				
1946805	F2 (C10-C16 Hydrocarbons)	2009/09/26	119	60 - 130	108	60 - 130	<10	ug/g	NC	50		
1946805	F3 (C16-C34 Hydrocarbons)	2009/09/26	119	60 - 130	108	60 - 130	<10	ug/g	NC	50		
1946805	F4 (C34-C50 Hydrocarbons)	2009/09/26	119	60 - 130	108	60 - 130	<10	ug/g	NC	50		
1947719	1,4-Difluorobenzene	2009/09/25	117	60 - 140	106	60 - 140	122	%				
1947719	4-Bromofluorobenzene	2009/09/25	96	60 - 140	95	60 - 140	95	%				
1947719	D10-Ethylbenzene	2009/09/25	88	30 - 130	94	30 - 130	90	%				
1947719	D4-1,2-Dichloroethane	2009/09/25	129	60 - 140	113	60 - 140	128	%				
1947719	F1 (C6-C10)	2009/09/25	88	60 - 140	91	60 - 140	<10	ug/g	NC	50		
1947719	F1 (C6-C10) - BTEX	2009/09/25					<10	ug/g	NC	50		
1949291	D10-Anthracene	2009/09/28	77	30 - 130	95	30 - 130	88	%				
1949291	D14-Terphenyl (FS)	2009/09/28	78	30 - 130	96	30 - 130	93	%				
1949291	D7-Quinoline	2009/09/28	79	30 - 130	101	30 - 130	101	%				
1949291	D8-Acenaphthylene	2009/09/28	63	30 - 130	88	30 - 130	84	%				
1949291	Acenaphthene	2009/09/28	73	30 - 130	96	30 - 130	<0.01	ug/g	NC	50		
1949291	Acenaphthylene	2009/09/28	68	30 - 130	89	30 - 130	<0.005	ug/g	NC	50		
1949291	Anthracene	2009/09/28	87	30 - 130	103	30 - 130	<0.005	ug/g	NC	50		
1949291	Benzo(a)anthracene	2009/09/28	96	30 - 130	110	30 - 130	<0.01	ug/g	NC	50		
1949291	Benzo(a)pyrene	2009/09/28	89	30 - 130	103	30 - 130	<0.005	ug/g	NC	50		
1949291	Benzo(g,h,i)perylene	2009/09/28	98	30 - 130	114	30 - 130	<0.02	ug/g	NC	50		
1949291	Benzo(k)fluoranthene	2009/09/28	99	30 - 130	119	30 - 130	<0.01	ug/g	NC	50		
1949291	Chrysene	2009/09/28	101	30 - 130	117	30 - 130	<0.01	ug/g	NC	50		
1949291	Dibenz(a,h)anthracene	2009/09/28	100	30 - 130	115	30 - 130	<0.02	ug/g	NC	50		
1949291	Fluoranthene	2009/09/28	103	30 - 130	117	30 - 130	<0.005	ug/g	NC	50		
1949291	Fluorene	2009/09/28	84	30 - 130	105	30 - 130	<0.005	ug/g	NC	50		

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QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1949291	Indeno(1,2,3-cd)pyrene	2009/09/28	84	30 - 130	97	30 - 130	<0.02	ug/g	NC	50		
1949291	2-Methylnaphthalene	2009/09/28	53	30 - 130	78	30 - 130	<0.005	ug/g	NC	50		
1949291	Naphthalene	2009/09/28	38	30 - 130	59	30 - 130	<0.005	ug/g	NC	50		
1949291	Phenanthrene	2009/09/28	88	30 - 130	105	30 - 130	<0.005	ug/g	NC	50		
1949291	Pyrene	2009/09/28	104	30 - 130	117	30 - 130	<0.005	ug/g	NC	50		
1950012	2,4,5,6-Tetrachloro-m-xylene	2009/09/25	67	40 - 130	69	40 - 130	68	%				
1950012	Decachlorobiphenyl	2009/09/25	101	40 - 130	91	40 - 130	89	%				
1950012	Aroclor 1260	2009/09/25	NC	30 - 130	89	30 - 130	<0.01	ug/g	NC	50		
1950012	Total PCB	2009/09/25	NC	30 - 130	89	30 - 130	<0.01	ug/g	59.2(1)	50		
1950012	Aroclor 1262	2009/09/25					<0.01	ug/g	NC	50		
1950012	Aroclor 1016	2009/09/25					<0.01	ug/g	NC	50		
1950012	Aroclor 1221	2009/09/25					<0.01	ug/g	NC	50		
1950012	Aroclor 1232	2009/09/25					<0.01	ug/g	NC	50		
1950012	Aroclor 1242	2009/09/25					<0.01	ug/g	NC	50		
1950012	Aroclor 1248	2009/09/25					<0.01	ug/g	NC	50		
1950012	Aroclor 1254	2009/09/25					<0.01	ug/g	59.2(1)	50		
1950012	Aroclor 1268	2009/09/25					<0.01	ug/g	NC	50		
1951147	2,4,5,6-Tetrachloro-m-xylene	2009/09/25	70	40 - 130	91	40 - 130	71	%				
1951147	Decachlorobiphenyl	2009/09/25	83	40 - 130	102	40 - 130	78	%				
1951147	Aroclor 1260	2009/09/25	90	30 - 130	111	30 - 130	<0.01	ug/g				
1951147	Total PCB	2009/09/25	90	30 - 130	111	30 - 130	<0.01	ug/g	NC	50		
1951147	Aroclor 1262	2009/09/25					<0.01	ug/g				
1951147	Aroclor 1016	2009/09/25					<0.01	ug/g				
1951147	Aroclor 1221	2009/09/25					<0.01	ug/g				
1951147	Aroclor 1232	2009/09/25					<0.01	ug/g				
1951147	Aroclor 1242	2009/09/25					<0.01	ug/g				
1951147	Aroclor 1248	2009/09/25					<0.01	ug/g				
1951147	Aroclor 1254	2009/09/25					<0.01	ug/g				
1951147	Aroclor 1268	2009/09/25					<0.01	ug/g				
1951838	Moisture	2009/09/25							1.6	50		
1952768	Acid Extractable Aluminum (Al)	2009/09/28	NC	75 - 125	113	75 - 125	<50	ug/g				
1952768	Acid Extractable Antimony (Sb)	2009/09/28	87	75 - 125	100	75 - 125	<0.2	ug/g	NC	35		
1952768	Acid Extractable Arsenic (As)	2009/09/28	95	75 - 125	108	75 - 125	<1	ug/g	NC	35		
1952768	Acid Extractable Barium (Ba)	2009/09/28	NC	75 - 125	105	75 - 125	<0.5	ug/g	5.9	35		
1952768	Acid Extractable Beryllium (Be)	2009/09/28	108	75 - 125	112	75 - 125	<0.2	ug/g	NC	35		
1952768	Acid Extractable Cadmium (Cd)	2009/09/28	97	75 - 125	100	75 - 125	<0.1	ug/g	NC	35		
1952768	Acid Extractable Calcium (Ca)	2009/09/28	NC	75 - 125	114	75 - 125	<50	ug/g				
1952768	Acid Extractable Chromium (Cr)	2009/09/28	103	75 - 125	105	75 - 125	<1	ug/g	8.8	35		
1952768	Acid Extractable Cobalt (Co)	2009/09/28	94	75 - 125	105	75 - 125	<0.1	ug/g	0.1	35		

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QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1952768	Acid Extractable Copper (Cu)	2009/09/28	NC	75 - 125	102	75 - 125	<0.5	ug/g	3.6	35		
1952768	Acid Extractable Iron (Fe)	2009/09/28	NC	75 - 125	113	75 - 125	<50	ug/g				
1952768	Acid Extractable Lead (Pb)	2009/09/28	97	75 - 125	107	75 - 125	<1	ug/g	3.6	35		
1952768	Acid Extractable Magnesium (Mg)	2009/09/28	NC	75 - 125	106	75 - 125	<50	ug/g				
1952768	Acid Extractable Manganese (Mn)	2009/09/28	NC	75 - 125	104	75 - 125	<1	ug/g				
1952768	Acid Extractable Molybdenum (Mo)	2009/09/28	97	75 - 125	99	75 - 125	<0.5	ug/g	NC	35		
1952768	Acid Extractable Nickel (Ni)	2009/09/28	94	75 - 125	105	75 - 125	<0.5	ug/g	5.9	35		
1952768	Acid Extractable Phosphorus (P)	2009/09/28	NC	75 - 125	110	75 - 125	<50	ug/g				
1952768	Acid Extractable Potassium (K)	2009/09/28	NC	75 - 125	118	75 - 125	<200	ug/g				
1952768	Acid Extractable Selenium (Se)	2009/09/28	93	75 - 125	105	75 - 125	<0.5	ug/g	NC	35		
1952768	Acid Extractable Silver (Ag)	2009/09/28	96	75 - 125	100	75 - 125	<0.2	ug/g	NC	35		
1952768	Acid Extractable Sodium (Na)	2009/09/28	97	75 - 125	106	75 - 125	<100	ug/g				
1952768	Acid Extractable Strontium (Sr)	2009/09/28	NC	75 - 125	102	75 - 125	<1	ug/g				
1952768	Acid Extractable Thallium (Tl)	2009/09/28	89	75 - 125	103	75 - 125	<0.05	ug/g	NC	35		
1952768	Acid Extractable Vanadium (V)	2009/09/28	100	75 - 125	110	75 - 125	<5	ug/g	NC	35		
1952768	Acid Extractable Zinc (Zn)	2009/09/28	NC	75 - 125	104	75 - 125	<5	ug/g	4.2	35		
1952768	Acid Extractable Mercury (Hg)	2009/09/28	102	75 - 125	108	75 - 125	<0.05	ug/g	NC	35		
1952859	Acid Extractable Aluminum (Al)	2009/09/28	NC	75 - 125	107	75 - 125	<50	ug/g	NC	35		
1952859	Acid Extractable Antimony (Sb)	2009/09/28	102	75 - 125	102	75 - 125	<0.2	ug/g	NC	35		
1952859	Acid Extractable Arsenic (As)	2009/09/28	102	75 - 125	106	75 - 125	<1	ug/g	NC	35		
1952859	Acid Extractable Barium (Ba)	2009/09/28	99	75 - 125	106	75 - 125	<0.5	ug/g	2.4	35		
1952859	Acid Extractable Beryllium (Be)	2009/09/28	105	75 - 125	107	75 - 125	<0.2	ug/g	NC	35		
1952859	Acid Extractable Cadmium (Cd)	2009/09/28	104	75 - 125	106	75 - 125	<0.1	ug/g	NC	35		
1952859	Acid Extractable Calcium (Ca)	2009/09/28	NC	75 - 125	106	75 - 125	51, RDL=50	ug/g	2.4	35		
1952859	Acid Extractable Chromium (Cr)	2009/09/28	99	75 - 125	104	75 - 125	<1	ug/g	NC	35		
1952859	Acid Extractable Cobalt (Co)	2009/09/28	97	75 - 125	106	75 - 125	<0.1	ug/g	NC	35		
1952859	Acid Extractable Copper (Cu)	2009/09/28	94	75 - 125	101	75 - 125	<0.5	ug/g	28.2	35		
1952859	Acid Extractable Iron (Fe)	2009/09/28	NC	75 - 125	110	75 - 125	<50	ug/g	1	35		
1952859	Acid Extractable Lead (Pb)	2009/09/28	99	75 - 125	108	75 - 125	<1	ug/g	NC	35		
1952859	Acid Extractable Magnesium (Mg)	2009/09/28	NC	75 - 125	102	75 - 125	<50	ug/g	1.0	35		
1952859	Acid Extractable Manganese (Mn)	2009/09/28	NC	75 - 125	101	75 - 125	<1	ug/g	2.3	35		
1952859	Acid Extractable Molybdenum (Mo)	2009/09/28	105	75 - 125	106	75 - 125	<0.5	ug/g	NC	35		
1952859	Acid Extractable Nickel (Ni)	2009/09/28	97	75 - 125	104	75 - 125	<0.5	ug/g	NC	35		
1952859	Acid Extractable Phosphorus (P)	2009/09/28	NC	75 - 125	105	75 - 125	<50	ug/g	NC	35		
1952859	Acid Extractable Potassium (K)	2009/09/28	100	75 - 125	107	75 - 125	<200	ug/g	NC	35		
1952859	Acid Extractable Selenium (Se)	2009/09/28	97	75 - 125	104	75 - 125	<0.5	ug/g	NC	35		
1952859	Acid Extractable Silver (Ag)	2009/09/28	100	75 - 125	101	75 - 125	<0.2	ug/g	NC	35		
1952859	Acid Extractable Sodium (Na)	2009/09/28	100	75 - 125	103	75 - 125	<100	ug/g	NC	35		
1952859	Acid Extractable Strontium (Sr)	2009/09/28	NC	75 - 125	101	75 - 125	<1	ug/g	3.6	35		

Maxxam Job #: A9C4508
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1952859	Acid Extractable Thallium (Tl)	2009/09/28	97	75 - 125	105	75 - 125	<0.05	ug/g	NC	35		
1952859	Acid Extractable Vanadium (V)	2009/09/28	102	75 - 125	111	75 - 125	<5	ug/g	NC	35		
1952859	Acid Extractable Zinc (Zn)	2009/09/28	98	75 - 125	106	75 - 125	<5	ug/g	NC	35		
1952859	Acid Extractable Mercury (Hg)	2009/09/28	105	75 - 125	111	75 - 125	<0.05	ug/g	NC	35		
1952862	Acid Extractable Aluminum (Al)	2009/09/29	NC	75 - 125	104	75 - 125	<50	ug/g	2.8	35		
1952862	Acid Extractable Antimony (Sb)	2009/09/29	108	75 - 125	99	75 - 125	<0.2	ug/g	NC	35		
1952862	Acid Extractable Arsenic (As)	2009/09/29	104	75 - 125	101	75 - 125	<1	ug/g	NC	35		
1952862	Acid Extractable Barium (Ba)	2009/09/29	99	75 - 125	98	75 - 125	<0.5	ug/g	1.4	35		
1952862	Acid Extractable Beryllium (Be)	2009/09/29	111	75 - 125	110	75 - 125	<0.2	ug/g	NC	35		
1952862	Acid Extractable Cadmium (Cd)	2009/09/29	107	75 - 125	102	75 - 125	<0.1	ug/g	NC	35		
1952862	Acid Extractable Calcium (Ca)	2009/09/29	NC	75 - 125	92	75 - 125	<50	ug/g	0.7	35		
1952862	Acid Extractable Chromium (Cr)	2009/09/29	101	75 - 125	96	75 - 125	<1	ug/g	NC	35		
1952862	Acid Extractable Cobalt (Co)	2009/09/29	98	75 - 125	97	75 - 125	<0.1	ug/g	8.2	35		
1952862	Acid Extractable Copper (Cu)	2009/09/29	96	75 - 125	94	75 - 125	<0.5	ug/g	26.6	35		
1952862	Acid Extractable Iron (Fe)	2009/09/29	NC	75 - 125	104	75 - 125	<50	ug/g	3.4	35		
1952862	Acid Extractable Lead (Pb)	2009/09/29	NC	75 - 125	101	75 - 125	<1	ug/g	42.2(1, 2)	35		
1952862	Acid Extractable Magnesium (Mg)	2009/09/29	NC	75 - 125	99	75 - 125	<50	ug/g	1.4	35		
1952862	Acid Extractable Manganese (Mn)	2009/09/29	NC	75 - 125	97	75 - 125	<1	ug/g	1.9	35		
1952862	Acid Extractable Molybdenum (Mo)	2009/09/29	105	75 - 125	100	75 - 125	<0.5	ug/g	NC	35		
1952862	Acid Extractable Nickel (Ni)	2009/09/29	101	75 - 125	99	75 - 125	<0.5	ug/g	NC	35		
1952862	Acid Extractable Phosphorus (P)	2009/09/29	NC	75 - 125	109	75 - 125	<50	ug/g	NC	35		
1952862	Acid Extractable Potassium (K)	2009/09/29	106	75 - 125	98	75 - 125	<200	ug/g	NC	35		
1952862	Acid Extractable Selenium (Se)	2009/09/29	103	75 - 125	98	75 - 125	<0.5	ug/g	NC	35		
1952862	Acid Extractable Silver (Ag)	2009/09/29	104	75 - 125	95	75 - 125	<0.2	ug/g	NC	35		
1952862	Acid Extractable Sodium (Na)	2009/09/29	104	75 - 125	100	75 - 125	<100	ug/g	NC	35		
1952862	Acid Extractable Strontium (Sr)	2009/09/29	NC	75 - 125	97	75 - 125	<1	ug/g	1.7	35		
1952862	Acid Extractable Thallium (Tl)	2009/09/29	101	75 - 125	98	75 - 125	<0.05	ug/g	NC	35		
1952862	Acid Extractable Vanadium (V)	2009/09/29	105	75 - 125	102	75 - 125	<5	ug/g	NC	35		
1952862	Acid Extractable Zinc (Zn)	2009/09/29	NC	75 - 125	99	75 - 125	<5	ug/g	0.9	35		
1952862	Acid Extractable Mercury (Hg)	2009/09/29	110	75 - 125	96	75 - 125	<0.05	ug/g	NC	35		
1953008	2,4,5,6-Tetrachloro-m-xylene	2009/09/28	98	40 - 130	85	40 - 130	103	%				
1953008	Decachlorobiphenyl	2009/09/28	101	40 - 130	74	40 - 130	91	%				
1953008	Hexachlorobutadiene	2009/09/28	65	N/A	106	N/A	<0.01	ug/g	NC	50		
1953008	Aldrin	2009/09/28	NC(3)	40 - 130	75	40 - 130	<0.002	ug/g	NC	50		
1953008	a-Chlordane	2009/09/28	110	40 - 130	76	40 - 130	<0.002	ug/g	NC	50		
1953008	g-Chlordane	2009/09/28	116	40 - 130	82	40 - 130	<0.002	ug/g	NC	50		
1953008	o,p-DDD	2009/09/28	82	40 - 130	86	40 - 130	<0.002	ug/g	NC	50		
1953008	p,p-DDD	2009/09/28	NC(3)	40 - 130	97	40 - 130	<0.002	ug/g	NC	50		
1953008	o,p-DDE	2009/09/28	57	40 - 130	72	40 - 130	<0.002	ug/g	NC	50		

Maxxam Analytics

Maxxam Job #: A9C4508
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1953008	p,p-DDE	2009/09/28	103	40 - 130	81	40 - 130	<0.002	ug/g	NC	50		
1953008	o,p-DDT	2009/09/28	105	40 - 130	87	40 - 130	<0.002	ug/g	NC	50		
1953008	p,p-DDT	2009/09/28	114	40 - 130	86	40 - 130	<0.002	ug/g	NC	50		
1953008	Dieldrin	2009/09/28	125	40 - 130	100	40 - 130	<0.002	ug/g	NC	50		
1953008	Endosulfan I	2009/09/28	119	40 - 130	102	40 - 130	<0.002	ug/g	NC	50		
1953008	Endosulfan II	2009/09/28	102	40 - 130	106	40 - 130	<0.002	ug/g	NC	50		
1953008	Endrin	2009/09/28	125	40 - 130	102	40 - 130	<0.002	ug/g	NC	50		
1953008	Heptachlor	2009/09/28	129	40 - 130	85	40 - 130	<0.002	ug/g	NC	50		
1953008	Heptachlor epoxide	2009/09/28	141 (1, 4)	40 - 130	100	40 - 130	<0.002	ug/g	NC	50		
1953008	Hexachlorobenzene	2009/09/28	129	20 - 130	81	20 - 130	<0.002	ug/g	NC	50		
1953008	Lindane	2009/09/28	103	40 - 130	89	40 - 130	<0.002	ug/g	NC	50		
1953008	Methoxychlor	2009/09/28	81	40 - 130	99	40 - 130	<0.008	ug/g	NC	50		
1953008	Total PCB	2009/09/28					<0.03	ug/g	NC	50		
1953008	Aroclor 1242	2009/09/28					<0.015	ug/g	NC	50		
1953008	Aroclor 1262	2009/09/28					<0.015	ug/g	NC	50		
1953008	Aroclor 1268	2009/09/28					<0.015	ug/g	NC	50		
1953008	Chlordane (Total)	2009/09/28					<0.002	ug/g	NC	50		
1953008	o,p-DDD + p,p-DDD	2009/09/28					<0.002	ug/g	NC	50		
1953008	o,p-DDE + p,p-DDE	2009/09/28					<0.002	ug/g	NC	50		
1953008	o,p-DDT + p,p-DDT	2009/09/28					<0.002	ug/g	NC	50		
1953008	DDT+ Metabolites	2009/09/28					<0.002	ug/g	NC	50		
1953008	Total Endosulfan	2009/09/28					<0.002	ug/g	NC	50		
1953008	Aroclor 1016	2009/09/28					<0.015	ug/g	NC	50		
1953008	Aroclor 1221	2009/09/28					<0.03	ug/g	NC	50		
1953008	Aroclor 1232	2009/09/28					<0.015	ug/g	NC	50		
1953008	Aroclor 1248	2009/09/28					<0.015	ug/g	NC	50		
1953008	Aroclor 1254	2009/09/28					<0.015	ug/g	NC	50		
1953008	Aroclor 1260	2009/09/28					<0.015	ug/g	NC	50		
1953201	Acid Extractable Aluminum (Al)	2009/09/28	NC (5)	75 - 125			<50	ug/g			108	75 - 125
1953201	Acid Extractable Antimony (Sb)	2009/09/28	101	75 - 125			<0.2	ug/g	NC	35	95	75 - 125
1953201	Acid Extractable Arsenic (As)	2009/09/28	103	75 - 125			<1	ug/g	NC	35	101	75 - 125
1953201	Acid Extractable Barium (Ba)	2009/09/28	100	75 - 125			<0.5	ug/g	2.1	35	95	75 - 125
1953201	Acid Extractable Beryllium (Be)	2009/09/28	111	75 - 125			<0.2	ug/g	NC	35	107	75 - 125
1953201	Acid Extractable Cadmium (Cd)	2009/09/28	105	75 - 125			<0.1	ug/g	NC	35	97	75 - 125
1953201	Acid Extractable Calcium (Ca)	2009/09/28	NC (5)	75 - 125			<50	ug/g			103	75 - 125
1953201	Acid Extractable Chromium (Cr)	2009/09/28	100	75 - 125			<1	ug/g	4.6	35	98	75 - 125
1953201	Acid Extractable Cobalt (Co)	2009/09/28	101	75 - 125			<0.1	ug/g	8.1	35	99	75 - 125
1953201	Acid Extractable Copper (Cu)	2009/09/28	99	75 - 125			<0.5	ug/g	5.7	35	97	75 - 125
1953201	Acid Extractable Iron (Fe)	2009/09/28	NC (5)	75 - 125			<50	ug/g			116	75 - 125

Maxxam Job #: A9C4508
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078
Sampler Initials: RF

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1953201	Acid Extractable Lead (Pb)	2009/09/28	106	75 - 125			<1	ug/g	0.05	35	101	75 - 125
1953201	Acid Extractable Magnesium (Mg)	2009/09/28	NC(5)	75 - 125			<50	ug/g			100	75 - 125
1953201	Acid Extractable Manganese (Mn)	2009/09/28	NC(5)	75 - 125			<1	ug/g			98	75 - 125
1953201	Acid Extractable Molybdenum (Mo)	2009/09/28	106	75 - 125			<0.5	ug/g	NC	35	98	75 - 125
1953201	Acid Extractable Nickel (Ni)	2009/09/28	103	75 - 125			<0.5	ug/g	6.4	35	98	75 - 125
1953201	Acid Extractable Phosphorus (P)	2009/09/28	NC(5)	75 - 125			<50	ug/g			96	75 - 125
1953201	Acid Extractable Potassium (K)	2009/09/28	114	75 - 125			<200	ug/g			105	75 - 125
1953201	Acid Extractable Selenium (Se)	2009/09/28	100	75 - 125			<0.5	ug/g	NC	35	103	75 - 125
1953201	Acid Extractable Silver (Ag)	2009/09/28	102	75 - 125			<0.2	ug/g			93	75 - 125
1953201	Acid Extractable Sodium (Na)	2009/09/28	104	75 - 125			<100	ug/g			101	75 - 125
1953201	Acid Extractable Strontium (Sr)	2009/09/28	NC(5)	75 - 125			<1	ug/g			98	75 - 125
1953201	Acid Extractable Thallium (Tl)	2009/09/28	103	75 - 125			<0.05	ug/g			98	75 - 125
1953201	Acid Extractable Vanadium (V)	2009/09/28	105	75 - 125			<5	ug/g	NC	35	107	75 - 125
1953201	Acid Extractable Zinc (Zn)	2009/09/28	NC(5)	75 - 125			<5	ug/g	36.6(1, 2)	35	99	75 - 125
1953201	Acid Extractable Mercury (Hg)	2009/09/28	109	75 - 125			<0.05	ug/g			103	75 - 125
1953379	Chromium (VI)	2009/09/29	65(1, 6)	75 - 125	100	75 - 125	<0.2	ug/g	NC	35	96	85 - 115
1953387	Chromium (VI)	2009/09/29	27(1, 6)	75 - 125	100	75 - 125	<0.2	ug/g	NC	35	96	85 - 115
1953996	Moisture	2009/09/28							3.4	50		

N/A = Not Applicable
RDL = Reportable Detection Limit
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) - Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
(2) - Duplicate results exceeded RPD acceptance criteria. The variability in the results for flagged analytes may be more pronounced.
(3) - The recovery in the matrix spike was not calculated (NC) due to background interference.
(4) - The recovery in the matrix spike was above the upper control limit. This may represent a high bias in some results. For results that were not detected (ND), this potential bias has no impact.
(5) - The recovery in the matrix spike was not calculated (NC). Spiked concentration was less than 2x that native to the sample.
(6) - The recovery was below the lower control limit. This may be due in part to the reducing environment of the sample

Validation Signature Page

Maxxam Job #: A9C4508

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

PAUL RUBINATO, Analyst, Maxxam Analytics

BRAD NEWMAN, Scientific Specialist

CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst

STEVE ROBERTS, Lab Supervisor, Ottawa

Validation Signature Page

Maxxam Job #: A9C4508

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

CHARTERED Troy Carriere CHEMIST

TROY CARRIERE, B.Sc., C.Chem, Scientific Specialist

FLOYD MAYEDE, Senior Analyst

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

Maxxam Analytics

Maxxam Analytics International Corporation o/a Maxxam Analytics

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:	
Company Name:	#10988 Franz Environmental Inc	Company Name:	Same	Quotation #:	A93902
Contact Name:	Ryan Fletcher	Contact Name:		P.O. #:	2078
Address:	329 Churchill Ave N Suite 200	Address:		Project #:	1584-0901
	Ottawa ON K1Z 5B8			Project Name:	TC Iqaluit
Phone:	(613)721-0555 Fax: (613)721-0029	Phone:	and Jdittburner@franz... Fax:	Site Location:	Iqaluit, NU
Email:	rfletcher@franzenvironmental.com	Email:		Sampled By:	RF

Laboratory Use Only:	
MAXXAM JOB #:	BOTTLE ORDER #: 162615
CHAIN OF CUSTODY #: C#162615-09-01	PROJECT MANAGER: MELISSA MORRISON

REGULATORY CRITERIA:

- [ ] MISA
- [ ] PWQO
- [ ] Reg. 558
- Reg. 153/04: [x] Table 1 [ ] Table 2 [ ] Table 3 [ ] Table 6
- [x] Residential/Parkland [ ] Industrial/Commercial [ ] Medium/Fine [ ] Coarse
- Sewer Use: [ ] Sanitary [ ] Storm [ ] Combined
- Municipality ______
- Other (specify) ______
- Report Criteria on C of A ? [ ]

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10ºC) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: [x]
(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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission) [ ]
Date Required: ______ Time Required: ______
Rush Confirmation Number: ______ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Petroleum Hydrocarbons BTEX / F1 - F4	PCB	Pesticides	Metals ICP	VOC	PAH				Hold	# of Bottles	Comments
1		AECI-TP09-1-1	Sept.16/09	-	SOIL			X	X		X	X	X				X	6	Metals in
2		AECI-TP09-1-2			SOIL												X	3	bags
3		AECI-TP09-2-1			SOIL						X						X	5	
4		AECI-TP09-3-1			SOIL						X						X	6	
5		AECI-TP09-3-2			SOIL			X	X	X		X	X				X	5	
6		TP09-DUP1			SOIL			X	X	X		X	X				X	5	
7		AECI-TP09-4-1			SOIL			X	X		X						X	6	
8		AECI-TP09-5-1			SOIL						X						X	6	
9		AECI-TP09-5-2			SOIL			X	X								X	6	
10		AECI-TP09-5-3			SOIL												X	3	

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (ºC) on Receipt	Custody Seal Intact on Cooler?
Ryan Fletcher	Sept. 17/09		J. Clement	09/09/21	7:30		[ ]	4/5/6 1/3/6	[ ] Yes [ ] No

* 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.

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

4/5/6 3/5/6 6/6/8 3/4/5
3/4/4 1/4/6 4/5/8 3/4/4

Maxxam Analytics

Maxxam Analytics International Corporation o/a Maxxam Analytics
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CHAIN OF CUSTODY RECORD

Page 2 of 3

INVOICE INFORMATION:

Company Name: #10988 Franz Environmental Inc
Contact Name: Ryan Fletcher
Address: 329 Churchill Ave N Suite 200
Ottawa ON K1Z 5B8
Phone: (613)721-0555 Fax: (613)721-0029
Email: rfletcher@franzenvironmental.com

REPORT INFORMATION (if differs from invoice):

Company Name: Same
Contact Name:
Address: and Jdittburner@franz
Phone: Fax:
Email:

PROJECT INFORMATION:

Quotation #: A93902
P.O. #: 2078
Project #: 1584-0901
Project Name: TC Iqaluit
Site Location: Iqaluit, NU
Sampled By: RF

Laboratory Use Only:

MAXXAM JOB #:
BOTTLE ORDER #: 162615
CHAIN OF CUSTODY #: C#162615-10-01
PROJECT MANAGER: MELISSA MORRISON

REGULATORY CRITERIA:

☐ MISA Reg. 153/04
☐ PWQO ☒ Table 1 ☒ Residential/Parkland
☐ Table 2 ☐ Industrial/Commercial
☐ Reg. 558 ☐ Table 3 ☐ Medium/Fine
☐ Table 6 ☐ Coarse
Other (specify)

Sewer Use ☐ Sanitary ☐ Storm ☐ Combined
Municipality
Report Criteria on C of A? ☐

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10ºC) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Petroleum Hydrocarbons BTEX / F1 - F4	PCBs	Pesticides	Metals ICP	VOC	PAH				Hold	# of Bottles	Comments
1		AEC1-TP09-6-1	Sept. 16/09		SOIL												X	6	Metals in bags
2		AEC1-TP09-6-2			SOIL												X	5	
3		AEC1-TP09-7-1			SOIL												X	6	
4		AEC2-TP09-1			SOIL			X	X	NO	X						X	5	
5		AEC2-TP09-2			SOIL			X	X		X						X	5	
6		AEC3-TP09-1			SOIL			X	X								X	5	
7		AEC3-TP09-3			SOIL			X									X	3	
8		AEC3-TP09-5			SOIL						X						X	1	
9		AEC3-TP09-6			SOIL			X			X	X	X				X	6	
10		AEC3-TP09-7			SOIL			X			X	X	X				X	6	

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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission) ☐
Date Required: Time 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
Ryan Fletcher	Sept. 17/09		J. Clement	09/09/21	7:30	

Laboratory Use Only

Time Sensitive ☐
Temperature (ºC) on Receipt: 4/5/6 1/3/6
Custody Seal Intact on Cooler? ☐ Yes ☐ No

* 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.

Maxxam Analytics International Corporation o/a Maxxam Analytics

White: Maxxam Yellow: Client

4/5/6 3/5/6 6/6/8 3/4/5
3/4/4 1/4/6 4/5/8 3/4/4

Maxxam Analytics

Maxxam Analytics International Corporation o/a Maxxam Analytics
32 Colonnade Unit 1000, Nepean, Ontario Canada K2E 7J6 Tel:(613) 274-0573 Toll-free:877-480-7272 Fax:613-274-0574 www.maxxamanalytics.com

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:

Company Name: #10988 Franz Environmental Inc
Contact Name: Ryan Fletcher
Address: 329 Churchill Ave N Suite 200
Ottawa ON K1Z 5B8
Phone: (613)721-0555 Fax: (613)721-0029
Email: rfletcher@franzenvironmental.com

REPORT INFORMATION (if differs from invoice):

Company Name: Same
Contact Name:
Address:
Phone: and Jdittburner@franz...
Fax:
Email:

PROJECT INFORMATION:

Quotation #: A93902
P.O. #: 2078
Project #: 1584-0901
Project Name: TC Iqaluit
Site Location: Iqaluit, NU
Sampled By: RF

Laboratory Use Only:

MAXXAM JOB #:
BOTTLE ORDER #: 162615
CHAIN OF CUSTODY #: C#162615-11-01
PROJECT MANAGER: MELISSA MORRISON

REGULATORY CRITERIA:

☐ MISA
Reg. 153/04
☐ PWQO ☒ Table 1 ☐ Table 2 ☐ Table 3 ☐ Table 6
☒ Residential/Parkland ☐ Industrial/Commercial ☐ Medium/Fine ☐ Coarse
☐ Reg. 558
Sewer Use ☐ Sanitary ☐ Storm ☐ Combined
Municipality
Report Criteria on C of A ? ☐
Other (specify)

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10ºC) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

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

ANALYSIS REQUESTED (Please be specific):

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Petroleum Hydrocarbons BTEX / F1 - F4	PCBs	Pesticides	Metals ICP	VOC	PAH				Hold	# of Bottles	Comments
1		AEC4-TP09-1	Sept.16/09		SOIL			X			X	X	X				X	5	Metals in
2		AEC4-TP09-2	↓		SOIL			X			X	X					X	5	bags
3		TP09-DUP-2	"		SOIL						X						X	1	
4		AEC3-TP09-4	"		SOIL						X						X	1	
5					SOIL														
6					SOIL														
7					SOIL														
8					SOIL														
9					SOIL														
10					SOIL														

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Time Sensitive	Temperature (ºC) on Receipt	Custody Seal Intact on Cooler?
Ryan Fletcher	Sept.16/09		J. Clement	09/09/21	7:30		☐	4/5/6 1/3/6	☐ Yes ☐ No

Laboratory Use Only

White: Maxxam Yellow: Client

4/5/6 3/5/6 6/6/8 3/4/5
3/4/4 1/4/6 4/5/8 3/4/4

* 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.

Results of Characterization Analysis by GC/ECD

Client: Maxxam Analytics
Analysis Date: October 1, 2009
Internal Standard: dibutyl chlorendate
Maxxam Job Number: A9C4887
Maxxam WS Number: 1954807

	Parameter	Sample/quality control sample (ug/g)								
		BLANK (QC)	AEC2-AQ-VEG09-01	AEC2-AQ-VEG09-02	AEC4-AQ-VEG09-1	AEC1-AQ-VEG09-1	AEC3-VEG09-2	AEC2-VEG09-1	VEG-09-DUP1	Estimated Detection Limit
Parameter	hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	a-bhc	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	b-bhc	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	g-bhc	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	d-bhc	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	heptachlor	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	aldrin	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	octachlorostyrene	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	oxychlordane	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	heptachlor epoxide	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	g-chlordane	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	op-dde	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	a-endosulfan	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	a-chlordane	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	pp-dde	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	dieldrin	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	op-ddd	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	endrin	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	b-endosulfan	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	pp-ddd	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	op-ddt	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	pp-ddt	ND	ND	ND	ND	0.02	ND	ND	0.02	0.02
	endrin ketone	ND	ND	ND	ND	ND	ND	ND	ND	0.02
	methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	0.08
	mirex	ND	ND	ND	ND	ND	ND	ND	ND	0.01
	toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	0.1
	Total PCBs	ND	ND	ND	ND	ND	ND	ND	ND	0.3
Surrogate Recovery (%)	decachlorobiphenyl	105	103	107	96	108	108	106	92	NA
	2456 tetrachloro-m-xyl	65	57	69	61	60	65	73	58	NA

Sample(s) analyzed using methodologies that have not been subjected to Maxxam's standard validation process for the submitted matrix and is not an accredited method. Analysis performed with client consent, however results should be viewed with discretion.

Legend:
approximate conc= based on Maxxam Analytics Testcode OC-SEL-S
Units=ug/g
ND=Not detected N/A= not applicable

Approved by: | Date: 2009/10/01

Validated by: C. Ancker Date: 2009/10/01

Your P.O. #: 2078
Your Project #: 1584-0901
Site: TC IQALUIT, NU
Your C.O.C. #: 16261504, 162615-0

Attention: Ryan Fletcher
Franz Environmental Inc
329 Churchill Ave N
Suite 200
Ottawa, ON
K1Z 5B8

Report Date: 2009/10/01

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9C4887
Received: 2009/09/21, 07:30

Sample Matrix: Vegetation
Samples Received: 12

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Mercury in Vegetation by CVAA	12	2009/09/29	2009/09/30	CAM SOP-00453	Health Canada Method
Metals in Vegetation by ICPMS	12	N/A	2009/09/28	CAM SOP-00447	EPA SW846, 6020
Polychlorinated Biphenyl in Solids (1)	2	2009/09/24	2009/09/25	CAM SOP-00307	EPA 8082
MOISTURE	9	N/A	2009/09/30	CAM SOP-00445	McKeague 2nd ed 1978

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

(1) Sample(s) analyzed using methodologies that have not been subjected to Maxxam's standard validation process for the submitted matrix and is not an Accredited method. Analysis performed with client consent, however results should be viewed with discretion

Encryption Key

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

MELISSA MORRISON, Project Manager
Email: Melissa.Morrison@maxxamanalytics.com
Phone# (613) 274-0573

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Job #: A9C4887
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078

RESULTS OF ANALYSES OF VEGETATION

Maxxam ID		DU0695	DU0696	DU0697	DU0698		
Sampling Date		2009/09/16	2009/09/16	2009/09/16	2009/09/16		
	Units	**AEC2-AQ-VEG09-1**	**AEC2-AQ-VEG09-2**	**AEC3-AQ-VEG09-1**	**AEC4-AQ-VEG09-1**	**RDL**	**QC Batch**
Inorganics							
Moisture	%	75	90	92	92	0.2	1957031

Maxxam ID		DU0701	DU0702	DU0704	DU0705	DU0706		
Sampling Date		2009/09/16	2009/09/16	2009/09/16	2009/09/16	2009/09/16		
	Units	**AEC1-AQ-VEG09-1**	**AEC1-VEG09-1**	**AEC3-VEG09-2**	**AEC2-VEG09-1**	**VEG-09-DUP1**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	76	86	87	88	76	0.2	1957031

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C4887
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078

ELEMENTS BY ICP/MS (VEGETATION)

Maxxam ID		DU0695		DU0696	DU0697		DU0698		
Sampling Date		2009/09/16		2009/09/16	2009/09/16		2009/09/16		
	Units	**AEC2-AQ-VEG09-1**	**RDL**	**AEC2-AQ-VEG09-2**	**AEC3-AQ-VEG09-1**	**RDL**	**AEC4-AQ-VEG09-1**	**RDL**	**QC Batch**
Metals									
Aluminum (Al)	mg/kg	7.0	0.3	17.9	99.1	0.3	175	0.3	1953237
Antimony (Sb)	mg/kg	<0.05	0.05	<0.05	<0.05	0.05	<0.05	0.05	1953237
Arsenic (As)	mg/kg	<0.1	0.1	<0.1	0.4	0.1	0.4	0.1	1953237
Barium (Ba)	mg/kg	2.6	0.3	2.6	1.1	0.3	1.4	0.3	1953237
Beryllium (Be)	mg/kg	<0.05	0.05	<0.05	<0.05	0.05	<0.05	0.05	1953237
Bismuth (Bi)	mg/kg	<0.05	0.05	<0.05	<0.05	0.05	<0.05	0.05	1953237
Boron (B)	mg/kg	2.1	0.5	2.1	26.6	0.5	12.8	0.5	1953237
Cadmium (Cd)	mg/kg	0.04	0.01	0.06	0.01	0.01	0.03	0.01	1953237
Calcium (Ca)	mg/kg	616	50	889	824	50	876	50	1953237
Chromium (Cr)	mg/kg	<0.3	0.3	<0.3	<0.3	0.3	0.5	0.3	1953237
Cobalt (Co)	mg/kg	0.130	0.005	0.848	0.294	0.005	0.248	0.005	1953237
Copper (Cu)	mg/kg	0.8	0.5	0.7	0.8	0.5	0.5	0.5	1953237
Iron (Fe)	mg/kg	212	3	894	930	3	1890	20	1953237
Lead (Pb)	mg/kg	0.07	0.03	0.17	1.67	0.03	0.79	0.03	1953237
Magnesium (Mg)	mg/kg	244	100	308	1140	100	895	100	1953237
Manganese (Mn)	mg/kg	68.4	0.3	309	711	2	57.6	0.3	1953237
Molybdenum (Mo)	mg/kg	0.10	0.05	0.16	0.36	0.05	0.09	0.05	1953237
Nickel (Ni)	mg/kg	0.11	0.05	0.15	0.29	0.05	0.34	0.05	1953237
Phosphorus (P)	mg/kg	410	50	132	55	50	72	50	1953237
Potassium (K)	mg/kg	2550	100	3020	440	100	263	100	1953237
Selenium (Se)	mg/kg	<0.2	0.2	<0.2	<0.2	0.2	<0.2	0.2	1953237
Silver (Ag)	mg/kg	<0.05	0.05	<0.05	<0.05	0.05	<0.05	0.05	1953237
Sodium (Na)	mg/kg	293	50	1570	3390	50	310	50	1953237
Strontium (Sr)	mg/kg	1.9	0.5	4.3	11.9	0.5	8.9	0.5	1953237
Thallium (Tl)	mg/kg	<0.003	0.003	<0.003	<0.003	0.003	<0.003	0.003	1953237
Tin (Sn)	mg/kg	<0.3	0.3	<0.3	<0.3	0.3	<0.3	0.3	1953237
Titanium (Ti)	mg/kg	<0.5	0.5	0.8	8.4	0.5	14	3	1953237
Uranium (U)	mg/kg	<0.005	0.005	0.009	0.192	0.005	0.038	0.005	1953237
Vanadium (V)	mg/kg	<0.05	0.05	0.30	1.27	0.05	1.68	0.05	1953237
Zinc (Zn)	mg/kg	17	2	11	5	2	6	2	1953237

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: A9C4887
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078

ELEMENTS BY ICP/MS (VEGETATION)

Maxxam ID		DU0699		DU0700		DU0701		
Sampling Date		2009/09/16		2009/09/16		2009/09/16		
	Units	**AEC4-AQ-VEG09-2**	**RDL**	**AEC4-AQ-VEG09-3**	**RDL**	**AEC1-AQ-VEG09-1**	**RDL**	**QC Batch**
Metals								
Aluminum (Al)	mg/kg	486	0.3	158	0.3	12.6	0.3	1953237
Antimony (Sb)	mg/kg	<0.05	0.05	<0.05	0.05	<0.05	0.05	1953237
Arsenic (As)	mg/kg	1.1	0.1	0.2	0.1	<0.1	0.1	1953237
Barium (Ba)	mg/kg	3.7	0.3	1.2	0.3	4.1	0.3	1953237
Beryllium (Be)	mg/kg	<0.05	0.05	<0.05	0.05	<0.05	0.05	1953237
Bismuth (Bi)	mg/kg	<0.05	0.05	<0.05	0.05	<0.05	0.05	1953237
Boron (B)	mg/kg	5.2	0.5	19.0	0.5	2.2	0.5	1953237
Cadmium (Cd)	mg/kg	0.01	0.01	0.02	0.01	<0.01	0.01	1953237
Calcium (Ca)	mg/kg	464	50	617	50	1080	50	1953237
Chromium (Cr)	mg/kg	1.0	0.3	0.4	0.3	<0.3	0.3	1953237
Cobalt (Co)	mg/kg	0.470	0.005	0.439	0.005	0.779	0.005	1953237
Copper (Cu)	mg/kg	1.0	0.5	0.7	0.5	0.6	0.5	1953237
Iron (Fe)	mg/kg	2410	20	808	3	416	3	1953237
Lead (Pb)	mg/kg	0.48	0.03	0.95	0.03	0.11	0.03	1953237
Magnesium (Mg)	mg/kg	588	100	895	100	297	100	1953237
Manganese (Mn)	mg/kg	39.2	0.3	119	0.3	231	0.3	1953237
Molybdenum (Mo)	mg/kg	0.27	0.05	0.15	0.05	1.52	0.05	1953237
Nickel (Ni)	mg/kg	0.87	0.05	0.27	0.05	0.20	0.05	1953237
Phosphorus (P)	mg/kg	213	50	55	50	496	50	1953237
Potassium (K)	mg/kg	1390	100	286	100	2660	100	1953237
Selenium (Se)	mg/kg	<0.2	0.2	<0.2	0.2	<0.2	0.2	1953237
Silver (Ag)	mg/kg	<0.05	0.05	<0.05	0.05	<0.05	0.05	1953237
Sodium (Na)	mg/kg	241	50	1180	50	120	50	1953237
Strontium (Sr)	mg/kg	5.7	0.5	7.9	0.5	4.1	0.5	1953237
Thallium (Tl)	mg/kg	0.005	0.003	<0.003	0.003	<0.003	0.003	1953237
Tin (Sn)	mg/kg	<0.3	0.3	<0.3	0.3	<0.3	0.3	1953237
Titanium (Ti)	mg/kg	45	3	13	3	0.8	0.5	1953237
Uranium (U)	mg/kg	0.071	0.005	0.025	0.005	<0.005	0.005	1953237
Vanadium (V)	mg/kg	2.76	0.05	1.12	0.05	<0.05	0.05	1953237
Zinc (Zn)	mg/kg	6	2	4	2	16	2	1953237

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C4887
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078

ELEMENTS BY ICP/MS (VEGETATION)

Maxxam ID		DU0702	DU0703	DU0704	DU0705	DU0706		
Sampling Date		2009/09/16	2009/09/16	2009/09/16	2009/09/16	2009/09/16		
	Units	**AEC1-VEG09-1**	**AEC3-VEG09-1**	**AEC3-VEG09-2**	**AEC2-VEG09-1**	**VEG-09-DUP1**	**RDL**	**QC Batch**
Metals								
Aluminum (Al)	mg/kg	3.5	1.2	1.7	2.6	10.6	0.3	1953237
Antimony (Sb)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1953237
Arsenic (As)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	1953237
Barium (Ba)	mg/kg	0.9	0.6	0.8	0.6	3.5	0.3	1953237
Beryllium (Be)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1953237
Bismuth (Bi)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1953237
Boron (B)	mg/kg	1.1	1.1	1.0	0.8	2.0	0.5	1953237
Cadmium (Cd)	mg/kg	0.01	<0.01	<0.01	<0.01	<0.01	0.01	1953237
Calcium (Ca)	mg/kg	114	79	83	110	1040	50	1953237
Chromium (Cr)	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	0.3	1953237
Cobalt (Co)	mg/kg	0.011	0.007	0.005	0.006	0.456	0.005	1953237
Copper (Cu)	mg/kg	0.8	0.8	1.0	0.9	0.6	0.5	1953237
Iron (Fe)	mg/kg	9	<3	6	8	235	3	1953237
Lead (Pb)	mg/kg	7.53	2.64	5.20	3.69	0.09	0.03	1953237
Magnesium (Mg)	mg/kg	<100	<100	<100	<100	240	100	1953237
Manganese (Mn)	mg/kg	5.2	2.6	8.0	1.8	187	0.3	1953237
Molybdenum (Mo)	mg/kg	<0.05	<0.05	<0.05	<0.05	1.40	0.05	1953237
Nickel (Ni)	mg/kg	0.08	<0.05	<0.05	<0.05	0.12	0.05	1953237
Phosphorus (P)	mg/kg	141	131	149	114	319	50	1953237
Potassium (K)	mg/kg	1190	1250	1140	1020	2100	100	1953237
Selenium (Se)	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	1953237
Silver (Ag)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1953237
Sodium (Na)	mg/kg	<50	<50	<50	<50	226	50	1953237
Strontium (Sr)	mg/kg	<0.5	<0.5	<0.5	<0.5	3.6	0.5	1953237
Thallium (Tl)	mg/kg	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	1953237
Tin (Sn)	mg/kg	<0.3	<0.3	<0.3	<0.3	<0.3	0.3	1953237
Titanium (Ti)	mg/kg	1.1	<0.5	<0.5	<0.5	0.7	0.5	1953237
Uranium (U)	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	1953237
Vanadium (V)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1953237
Zinc (Zn)	mg/kg	3	2	<2	<2	17	2	1953237

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9C4887
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078

ELEMENTS BY ATOMIC SPECTROSCOPY (VEGETATION)

Maxxam ID		DU0695	DU0696	DU0697	DU0698	DU0699	DU0700		
Sampling Date		2009/09/16	2009/09/16	2009/09/16	2009/09/16	2009/09/16	2009/09/16		
	Units	**AEC2-AQ-VEG09-1**	**AEC2-AQ-VEG09-2**	**AEC3-AQ-VEG09-1**	**AEC4-AQ-VEG09-1**	**AEC4-AQ-VEG09-2**	**AEC4-AQ-VEG09-3**	**RDL**	**QC Batch**
Metals									
Mercury (Hg)	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1954588

Maxxam ID		DU0701	DU0702	DU0703	DU0704	DU0705	DU0706		
Sampling Date		2009/09/16	2009/09/16	2009/09/16	2009/09/16	2009/09/16	2009/09/16		
	Units	**AEC1-AQ-VEG09-1**	**AEC1-VEG09-1**	**AEC3-VEG09-1**	**AEC3-VEG09-2**	**AEC2-VEG09-1**	**VEG-09-DUP1**	**RDL**	**QC Batch**
Metals									
Mercury (Hg)	ug/g	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1954588

POLYCHLORINATED BIPHENYLS BY GC-ECD (VEGETATION)

Maxxam ID		DU0697	DU0702		
Sampling Date		2009/09/16	2009/09/16		
	Units	**AEC3-AQ-VEG09-1**	**AEC1-VEG09-1**	**RDL**	**QC Batch**
PCBs					
Aroclor 1262	ug/g	<0.1	<0.1	0.1	1949950
Aroclor 1016	ug/g	<0.1	<0.1	0.1	1949950
Aroclor 1221	ug/g	<0.1	<0.1	0.1	1949950
Aroclor 1232	ug/g	<0.1	<0.1	0.1	1949950
Aroclor 1242	ug/g	<0.1	<0.1	0.1	1949950
Aroclor 1248	ug/g	<0.1	<0.1	0.1	1949950
Aroclor 1254	ug/g	<0.1	<0.1	0.1	1949950
Aroclor 1260	ug/g	<0.1	<0.1	0.1	1949950
Aroclor 1268	ug/g	<0.1	<0.1	0.1	1949950
Total PCB	ug/g	<0.1	<0.1	0.1	1949950
Surrogate Recovery (%)					
2,4,5,6-Tetrachloro-m-xylene	%	51	69		1949950
Decachlorobiphenyl	%	72	79		1949950

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: A9C4887
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078

Package 1	5.0°C
Package 2	3.3°C
Package 3	5.0°C
Package 4	4.7°C
Package 5	6.7°C
Package 6	4.0°C
Package 7	3.7°C
Package 8	3.7°C
Package 9	5.7°C
Package 10	3.7°C

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

GENERAL COMMENTS

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: A9C4887
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1949950	2,4,5,6-Tetrachloro-m-xylene	2009/09/24			77	40 - 130	75	%				
1949950	Decachlorobiphenyl	2009/09/24			93	40 - 130	84	%				
1949950	Aroclor 1260	2009/09/24			94	30 - 130	<0.01	ug/g	6.7	50		
1949950	Total PCB	2009/09/24			94	30 - 130	<0.01	ug/g	6.7	50		
1949950	Aroclor 1262	2009/09/24					<0.01	ug/g				
1949950	Aroclor 1016	2009/09/24					<0.01	ug/g				
1949950	Aroclor 1221	2009/09/24					<0.01	ug/g				
1949950	Aroclor 1232	2009/09/24					<0.01	ug/g				
1949950	Aroclor 1242	2009/09/24					<0.01	ug/g				
1949950	Aroclor 1248	2009/09/24					<0.01	ug/g				
1949950	Aroclor 1254	2009/09/24					<0.01	ug/g				
1949950	Aroclor 1268	2009/09/24					<0.01	ug/g				
1953237	Aluminum (Al)	2009/09/28	NC	75 - 125			<0.3	mg/kg	3.0	20	29	24 - 38
1953237	Antimony (Sb)	2009/09/28	99	75 - 125			<0.05	mg/kg	NC	20		
1953237	Arsenic (As)	2009/09/28	98	75 - 125			<0.1	mg/kg	NC	20	102	70 - 130
1953237	Barium (Ba)	2009/09/28	108	75 - 125			<0.3	mg/kg	NC	20		
1953237	Beryllium (Be)	2009/09/28	99	75 - 125			<0.05	mg/kg	NC	20		
1953237	Bismuth (Bi)	2009/09/28	99	75 - 125			<0.05	mg/kg	NC	20		
1953237	Boron (B)	2009/09/28	94	75 - 125			<0.5	mg/kg	3.0	20	85	70 - 130
1953237	Cadmium (Cd)	2009/09/28	96	75 - 125			<0.01	mg/kg	NC	20	92	70 - 130
1953237	Calcium (Ca)	2009/09/28	113	75 - 125			<50	mg/kg	10.4	20	94	70 - 130
1953237	Chromium (Cr)	2009/09/28	99	75 - 125			<0.3	mg/kg	NC	20		
1953237	Cobalt (Co)	2009/09/28	101	75 - 125			<0.005	mg/kg	12.5	20	57 (1)	70 - 130
1953237	Copper (Cu)	2009/09/28	98	75 - 125			<0.5	mg/kg	NC	20	88	70 - 130
1953237	Iron (Fe)	2009/09/28	NC	75 - 125			<3	mg/kg	10.1	20		
1953237	Lead (Pb)	2009/09/28	97	75 - 125			<0.03	mg/kg	5.4	20	96	70 - 130
1953237	Magnesium (Mg)	2009/09/28	101	75 - 125			<100	mg/kg	9.4	20	100	70 - 130
1953237	Manganese (Mn)	2009/09/28	NC	75 - 125			<0.3	mg/kg	26.0 (1)	20	92	70 - 130
1953237	Molybdenum (Mo)	2009/09/28	99	75 - 125			<0.05	mg/kg	NC	20		
1953237	Nickel (Ni)	2009/09/28	100	75 - 125			<0.05	mg/kg	3.4	20	48	42 - 78
1953237	Potassium (K)	2009/09/28	113	75 - 125			<100	mg/kg	NC	20	98	70 - 130
1953237	Selenium (Se)	2009/09/28	93	75 - 125			<0.2	mg/kg	NC	20		
1953237	Silver (Ag)	2009/09/28	95	75 - 125			<0.05	mg/kg	NC	20		
1953237	Sodium (Na)	2009/09/28	112	75 - 125			<50	mg/kg	8.1	20	85	70 - 130
1953237	Strontium (Sr)	2009/09/28	102	75 - 125			<0.5	mg/kg	12.1	20	98	70 - 130
1953237	Thallium (Tl)	2009/09/28	98	75 - 125			<0.003	mg/kg	NC	20	96	70 - 130
1953237	Tin (Sn)	2009/09/28	104	75 - 125			<0.3	mg/kg	NC	20		
1953237	Titanium (Ti)	2009/09/28	101	75 - 125			<0.5	mg/kg	19.2	20		
1953237	Vanadium (V)	2009/09/28	100	75 - 125			<0.05	mg/kg	3.9	20	39	28 - 52

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Maxxam Job #: A9C4887
Report Date: 2009/10/01

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC IQALUIT, NU
Your P.O. #: 2078

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1953237	Zinc (Zn)	2009/09/28	89	75 - 125			<2	mg/kg	NC	20	88	70 - 130
1953237	Uranium (U)	2009/09/28					<0.005	mg/kg	4.6	20	29	23 - 40
1953237	Phosphorus (P)	2009/09/28					<50	mg/kg	NC	20		
1954588	Mercury (Hg)	2009/09/30	93	75 - 125			<0.01	ug/g	NC	35	93	70 - 130
1957031	Moisture	2009/09/30							11.5	50		

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

Maxxam Job #: A9C4887

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

CHARLES ANCKER, B.Sc., M.Sc., C.Chem, Senior Analyst

CRISTINA CARRIERE, Scientific Services

EWA PRANJIC, M.Sc., C.Chem, Scientific Specialist

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

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Maxxam Analytics

Maxxam Analytics International Corporation o/a Maxxam Analytics
32 Colonnade Unit 1000, Nepean, Ontario Canada K2E 7J6 Tel:(613) 274-0573 Toll-free:877-480-7272 Fax:613-274-0574 www.maxxamanalytics.com

CHAIN OF CUS

21-Sep-09 07:30
MELISSA MORRISON
A9C4887
J_L ENV-947

Page 1 of 2

...e Only:

INVOICE INFORMATION:

Company Name:	#10988 Franz Environmental Inc
Contact Name:	Ryan Fletcher
Address:	329 Churchill Ave N Suite 200 Ottawa ON K1Z 5B8
Phone:	(613)721-0555 Fax (613)721-0029
Email:	rfletcher@franzenvironmental.com

REPORT INFORMATION (if differs from invoice):

Company Name:	
Contact Name:	Same
Address:	and Jdittburner@Franz...
Phone:	Fax:
Email:	

PROJECT INFORMATION:

Quotation #:	A93902
P.O. #:	2078
Project #:	1584-0901
Project Name:	TC Iqaluit
Site Location:	Iqaluit, NU
Sampled By:	RF

BOTTLE ORDER #: 162615

C#162615-04-01

PROJECT MANAGER: MELISSA MORRISON

REGULATORY CRITERIA:

☐ MISA Reg. 153/04 Sewer Use ☐ Sanitary ☐ Storm ☐ Combined

☐ PWQO ☐ Table 1 ☐ Table 2 ☐ Table 3 ☐ Table 6 ☐ Residential/Parkland ☐ Industrial/Commercial ☐ Medium/Fine ☐ Coarse

☐ Reg. 558 Municipality ______

Other (specify) MOE Report Criteria on C of A? ☐

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

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

ANALYSIS REQUESTED (Please be specific):

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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

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

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Petroleum Hydrocarbons BTEX / F1 - F4	Metals	PCBs	Pesticides						# of Bottles	Comments
1		AEC2-AQ-VEG09-1	Sept.16/09		Veg ~~SOIL~~				X	X	X						1	
2		AEC2-AQ-VEG09-2			SOIL				X	X	X						1	SEP 22 '09 0:43
3		AEC3-AQ-VEG09-1			SOIL				X	X							1	
4		AEC4-AQ-VEG09-1			SOIL				X	X	X						1	
5		AEC4-AQ-VEG09-2			SOIL				X								1	
6		AEC4-AQ-VEG09-3			SOIL				X								1	
7		AEC1-AQ-VEG09-1			SOIL				X	X	X						1	
8		AEC1-VEG09-1			SOIL				X	X							1	REC'D IN OTTAWA
9		AEC3-VEG09-1			SOIL				X								1	
10		AEC3-VEG09-2			SOIL				X	X	X						1	7/10/10

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Ryan Fletcher	Sept.17/09		J.Clement	09/09/21	7:30	
			KB AIRAM SMH	09/09/22	08:43	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
☐	4/5/6 1/3/6	☐ Yes ☐ No

White: Maxxam Yellow: Client

4/5/6 3/5/6 6/6/8 3/4/5
3/4/4 1/4/6 4/5/8 3/4/4

* 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.

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Maxxam Analytics

Maxxam Analytics International Corporation o/a Maxxam Analytics
32 Colonnade Unit 1000, Nepean, Ontario Canada K2E 7J6 Tel:(613) 274-0573 Toll-free:877-480-7272 Fax 613-274-0574 www.maxxamanalytics.com

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:

Company Name: #10988 Franz Environmental Inc
Contact Name: Ryan Fletcher
Address: 329 Churchill Ave N Suite 200
Ottawa ON K1Z 5B8
Phone: (613)721-0555 Fax: (613)721-0029
Email: rfletcher@franzenvironmental.com

REPORT INFORMATION (if differs from invoice):

Company Name: Same
Contact Name:
Address: and Jdittburner@Franz...
Phone: Fax:
Email:

PROJECT INFORMATION:

Quotation #: A93902
P.O. #: 2078
Project #: 1584-0901
Project Name: TC Iqaluit
Site Location: Iqaluit, NU
Sampled By: RF

Laboratory Use Only:

MAXXAM JOB #:
BOTTLE ORDER #: 162615
CHAIN OF CUSTODY #: C#162615-05-01
PROJECT MANAGER: MELISSA MORRISON

REGULATORY CRITERIA:

☐ MISA Reg. 153/04
☐ PWQO ☐ Table 1 ☐ Table 2 ☐ Table 3 ☐ Table 6
☐ Reg. 558
☐ Residential/Parkland ☐ Industrial/Commercial ☐ Medium/Fine ☐ Coarse
Sewer Use ☐ Sanitary ☐ Storm ☐ Combined
Municipality
Other (specify) MoE
Report Criteria on C of A? ☐

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

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

ANALYSIS REQUESTED (Please be specific):

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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

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

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	Petroleum Hydrocarbons BTEX / F1 - F4	Metals	PCBS	Pesticides						# of Bottles	Comments
1		AEC2-VEG09-1	Sept.16/09		veg				X	X	X						1	SEP 22 '09 8:43
2		VEG09-DUP1	〃		SOIL				X	X	X						1	
3					SOIL													
4					SOIL													
5					SOIL													
6					SOIL													
7					SOIL													
8					SOIL													
9					SOIL													
10					SOIL													

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Ryan. Fletcher	Sept.17/09		J. Clement	09/09/21	7:30	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
☐	4/5/6 1/3/6	☐ Yes ☐ No

4/5/6 3/5/6 6/6/8 3/4/5
3/4/4 1/4/6 4/5/8 3/4/4

White: Maxxam Yellow: Client

* 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.

Your P.O. #: 2078
Your Project #: 1584-0901
Site: TC-IQALUIT, IQALUIT, NU
Your C.O.C. #: 16261512, 162615-1

Attention: Ryan Fletcher
Franz Environmental Inc
329 Churchill Ave N
Suite 200
Ottawa, ON
K1Z 5B8

Report Date: 2009/09/25

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9C5013
Received: 2009/09/21, 07:30

Sample Matrix: Paint
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Lead In Paint	2	2009/09/25	2009/09/25	CAM SOP-00408	EPA 6010

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

Encryption Key

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

MELISSA MORRISON, Project Manager
Email: Melissa.Morrison@maxxamanalytics.com
Phone# (613) 274-0573

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Job #: A9C5013
Report Date: 2009/09/25

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC-IQALUIT, IQALUIT, NU
Your P.O. #: 2078

ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

Maxxam ID		DU1246	DU1247		
Sampling Date		2009/09/16	2009/09/16		
	Units	**AEC2-PB09-1(ORANGE)**	**AEC2-PB09-2(GREEN)**	**RDL**	**QC Batch**
Metals					
Lead (Pb)	%	7.5	5.7	0.01	1950998

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: A9C5013
Report Date: 2009/09/25

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC-IQALUIT, IQALUIT, NU
Your P.O. #: 2078

Package 1	5.0°C
Package 2	3.3°C
Package 3	5.0°C
Package 4	4.7°C
Package 5	6.7°C
Package 6	4.0°C
Package 7	3.7°C
Package 8	3.7°C
Package 9	5.7°C
Package 10	3.7°C

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

GENERAL COMMENTS

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, MIssissauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: A9C5013
Report Date: 2009/09/25

Franz Environmental Inc
Client Project #: 1584-0901
Project name: TC-IQALUIT, IQALUIT, NU
Your P.O. #: 2078

QUALITY ASSURANCE REPORT

			Matrix Spike		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1950998	Lead (Pb)	2009/09/25	NC(1)	75 - 125	ND, RDL=0.01	%	24.1	35	103	75 - 125

N/A = Not Applicable
RDL = Reportable Detection Limit
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
(1) - The recovery in the matrix spike was not calculated (NC). Spiked concentration was less than 2x that native to the sample.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Validation Signature Page

Maxxam Job #: A9C5013

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

Cristina Carriere

CRISTINA CARRIERE, Scientific Services

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

Maxxam Analytics International Corporation o/a Maxxam Analytics
32 Colonnade Unit 1000, Nepean, Ontario Canada K2E 7J6 Tel:(613) 274-0573 Toll-free:877-480-7272 Fax:613-274-0574 www.maxxamanalytics.com

CHAIN OF CU[STODY]

21-Sep-09 07:30
MELISSA MORRISON
A9C5013
J_L ENV-947

Page 1 of 1

Lab Use Only:
BOTTLE ORDER #: 162615
C#162615-12-01
PROJECT MANAGER: MELISSA MORRISON

INVOICE INFORMATION:
Company Name: #10988 Franz Environmental Inc
Contact Name: Ryan Fletcher
Address: 329 Churchill Ave N Suite 200, Ottawa ON K1Z 5B8
Phone: (613)721-0555 Fax: (613)721-0029
Email: rfletcher@franzenvironmental.com

REPORT INFORMATION (if differs from invoice):
Company Name: Same
Contact Name: and Jdittburner @ Franz...
Address:
Phone: Fax:
Email:

PROJECT INFORMATION:
Quotation #: A93902
P.O. #: 2078
Project #: 1584-0901
Project Name: TC Iqaluit
Site Location: Iqaluit, NV
Sampled By: RF

REGULATORY CRITERIA
MISA · Reg. 153/04 · Sewer Use: Sanitary / Storm / Combined
PWQO · Table 1 / Table 2 / Table 3 / Table 6 · Residential/Parkland / Industrial/Commercial / Medium/Fine / Coarse
Reg. 558 · Municipality
Other (specify) · Report Criteria on C of A?

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10ºC) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific): Regulated Drinking Water? (Y/N) · Metals Field Filtered? (Y/N) · Petroleum Hydrocarbons BTEX / F1 - F4 · Lead in paint ↳ Total · Hold

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water?	Metals Field Filtered?	PHC BTEX / F1-F4	Lead in paint ↳ Total	Hold	# of Bottles	Comments
1		AEC2-PB09-1 (orange)	Sept.16/09		Materials (SOIL)				X	X	1	
2		AEC2-PB09-2 (green)	↓		↓				X	X	1	
3					SOIL							
4					SOIL							
5					SOIL							
6					SOIL							
7					SOIL							
8					SOIL							
9					SOIL							
10					SOIL							

TURNAROUND TIME (TAT) REQUIRED:
PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Regular (Standard) TAT: [X]
(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 such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission)
Date Required: Time Required:
Rush Confirmation Number: (call lab for #)

'09 SEP 22 9:02

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Ryan Fletcher	Sept.16/09		Kle J.Clement	09/09/21	7:30	
			ASAD	2009/09/22	09:02	

Laboratory Use Only: Time Sensitive · Temperature (ºC) on Receipt: 4/5/6 1/3/6 · Custody Seal Intact on Cooler? Yes / No

* 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.

9/8/9 °C
5/6/7 °C

4/5/6 3/5/6 6/6/8 3/4/5
3/4/4 1/4/6 4/5/8 3/4/4

White: Maxxam Yellow: Client