APPENDIX E

St. Lewis Field Office
Newfoundland and Labrador, DFRP # 58590
Phase III Environmental Site Assessment
Final Report - March 2010

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

St. Lewis Field Office
Newfoundland and Labrador, DFRP # 58590

Phase III Environmental Site Assessment

Final Report

March 2010

Presented by

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EXECUTIVE SUMMARY

Public Works and Government Services Canada (PWGSC), on behalf of Fisheries and Oceans Canada (DFO), retained the services of Dessau in October 2009 to perform a Phase III Environmental Site Assessment (ESA) at the St. Lewis Field Office (DFRP # 58590) in St. Lewis, Newfoundland and Labrador (NL).

The investigated site is located at 10 Shoal Point Road, in the municipality of St. Lewis, in the Southeast Region of Labrador. The site custodian is Department of Fisheries and Oceans Canada (DFO). The subject site is occupied by the DFO Field Office, a garage and several storage areas.

A Phase I-II ESA performed by SNC-Lavalin in 1999 and in 2000 showed that Total Petroleum Hydrocarbons (TPH) impacted soils are present on the site near the former location of an original single-walled AST with a capacity of 9,092 litre, which was present on the site from 1982 up to 1995. On September 2, 2008, Dessau performed a Phase II-III ESA to delineate the boundaries of the identified TPH contamination.

A site investigation was performed by Mr. Guillaume Paradis and Mr. Jason Benoit, representatives of Dessau Inc., on November 6 and 7, 2009. The property location and approximate boundaries were confirmed and geographic coordinates of the site were gathered. The investigated site and potential areas of concern were observed. An intrusive sampling program was performed in order to confirm the presence or absence of contamination at potential areas of concern identified from the 1999 and 2000 Phase I-II ESA conducted by SNC-Lavalin and the 2008 Phase II-III performed by Dessau.

Analysis of the various information gathered from the record review revealed the presence of the following environmental concerns:

- Presence of Petroleum Hydrocarbon/Total Petroleum Hydrocarbons (PHC/TPH) contaminated soils in the vicinity of the two (2) former single-walled and self-dyked 9,092 litre ASTs located south of the Field Office;
- Potential for impacted soils (Petroleum Hydrocarbons/Total Petroleum Hydrocarbons, Polycyclic Aromatic Hydrocarbon (PAH), benzene, toluene, ethylbenzene, and xylenes (BTEX), Metals and Polychlorinated Biphenyls (PCB) in the vicinity of the helicopter-landing pad and aviation fuel storage platform;
- Potential for impacted soils with hydrocarbon and metals in the vicinity of the 4 m x 4 m storage shed located southeast of a fenced area;
- Potential for impacted soils (Petroleum Hydrocarbons, PAH, BTEX, Metals and PCB) due to various activities in the area of storage for fishing vessels;

- Potential for drinking water impacted with Petroleum Hydrocarbons, PAH and BTEX due to the impacted soils in the vicinity of the artesian water well; and
- Potential asbestos content in the mineral board sheeting inside the furnace room in the Field Office.

Based on the findings of the Phase I-II ESA realized by SNC-Lavalin in 1999 and 2000 and the Phase II-III performed by Dessau in 2008, a Phase III program was established and performed on the site on November 6 and 7, 2009. This program was carried out to confirm the presence or absence of contamination at the investigated site, and where applicable, to delineate the horizontal and vertical extent of impacted soils. This program consisted in the collection of thirty-two (32) soil samples, at the following locations:

- In the area of the two (2) former single-walled and self-dyked 9,092 litre ASTs located south of the Field office;
- In the vicinity of the former helicopter landing pad and aviation fuel storage platform;
- In the area of the former 4 m x 4 m storage shed located south-east of the building; and
- At the storage area for fishing vessels, located east of the building.

Also, one (1) water sample was collected from the faucet in the kitchen inside the building and one (1) lined wall sample was collected for the determination of its asbestos content.

Analytical results of selected samples revealed the following:

Soils

- Petroleum Hydrocarbon (PHC) concentrations exceeding the CCME Canada Wide Standards (CWS) for Petroleum Hydrocarbons (PHCs) for F2 and F3 Fractions were measured in two (2) soil samples identified as LEWI-58590-09-TP-05-01 and LEWI-58590-09-TP-09-01 in the area of former single-walled and self-dyked 9,092 litre ASTs;
- TPH concentrations exceeding the 2003 Atlantic PIRI TIER I RBSL for Residential land use with coarse-grained soils and potable water were measured in the soil sample identified LEWI-58590-09-TP-10-01;
- BTEX concentrations are below the laboratory detection limits for soil samples analyzed in the area of former single-walled and self-dyked 9,092 litre ASTs;
- PHC/TPH, BTEX, PAHs, metals and PCB are below the applicable guidelines or below the laboratory detection limits for soil samples collected in the area of the former helicopter landing pad and aviation fuel storage platform, in the area of the former 4 m x 4 m storage shed, and in the storage area for fishing vessels; and
- Background sample LEWI-58590-09-TH-03-01 collected approximately 20 m south of the property limit did not contain any metal concentration exceeding the CCME CSQG.

Water

- Analytical results of the water sample LEWI-58590-09-WA-01, collected from the faucet in the kitchen of the Field Office, revealed BTEX and PAH concentrations below to the Health Canada Guideline for Canadian Drinking Water Quality and Total Petroleum Hydrocarbons (TPH) concentrations below to the Atlantic PIRI TIER I RBSL for a residential property with a potable water supply. In fact, analytical results for the water sample LEWI-58590-09-WA-01 are non-detect.

Materials Likely to Contains Asbestos (MLCA)

- Analytical results indicated the absence of asbestos in the collected samples. Material was found to be composed of glass fibers (1-5%) and cellulose (5-10%).

Analytical results of thirteen (13) soil samples previously collected by SNC-Lavalin (September 30, 1999 and October 28, 2000) and the analytical results of six (6) soil samples collected by Dessau on September 2, 2008 were compared to the fourteen (14) soil samples collected by Dessau on November 6, 2009 in order to evaluate the extent of PHC/TPH contamination in soil at the former location of single-walled and self-dyked 9,092 litre ASTs. The approximate surface area of PHC/TPH contaminated soils was estimated at 137 m^2, yielding a volume of ± 80 m^3 when considering an average contaminated soil thickness of 0.5 m.

Based on the results of the Phase III ESA at the St. Lewis Field Office, the following actions are recommended for the investigated site:

- Complete a Site Specific Human Health Risk Assessment (SSHHRA) and a Screening Level Ecological Risk Assessment (SLERA) based on a realistic scenario; these assessments could be completed using the available data for PHC/TPH impacted soils; and

- Excavation, transportation and off-site disposal at an approved facility to eliminate PHC/TPH impacted soils on the subject site; in this option, soil should be excavated using a back-hoe up to the depth reached by the contamination (approximately 0.5 m below ground surface), loaded aboard dump trucks, transported and disposed off at an appropriate treatment facility (in Happy Valley-Goose Bay), and the excavated area should be restored using clean fill material. If it appears that the contamination has seeped under the newly installed AST, an evaluation of the different remedial strategies will need to be undertaken.

The NCSCS evaluation of the investigated site resulted in a score of 52.1 for the site (Class 2), indicating the site as having medium priority for action.

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1 INTRODUCTION

1.1 Mandate, Issues and Objectives

The services of Dessau Inc. were retained by Public Works and Government Services Canada (PWGSC), on behalf of Fisheries and Oceans Canada (DFO), to carry out a Phase III Environmental Site Assessment (ESA) at the St. Lewis Field Office (DFRP # 58590) in St. Lewis, in Newfoundland and Labrador.

The subject site is located at 10 Shoal Point Road in the Community of St. Lewis, Labrador, approximately 200 miles southeast of Goose Bay. The subject site is located approximately 300 m northwest and upgrade of the shoreline of St. Lewis Harbour. A general location map is provided in Figure 1, while Figure 2 illustrates the location of the St. Lewis Field Office and the property limits. Both of these Figures are included in Appendix 1.

The objectives of the present study are to complete a Phase III ESA in accordance with the requirements of the Canadian Standards Association (CSA) Phase II ESA Information Product Z769-00 (R2008), as well as the Terms of References for Phase III Environmental Site Assessments of the 2009-2010 DFO FCSAP Program, and Dessau's Revised Work Plan and Cost Estimate (dated of August 5th of 2009). The specific objectives of the present study were initially to:

- Perform a Phase III ESA to delineate the area and volume of contaminated soils in the vicinity of the former 9,092 litre Aboveground Storage Tanks (ASTs) (located south of the Field Office) identified by SNC-Lavalin in their final report dated of June 2001 and by Dessau in the Phase II-III final report dated of March 2009;
- Conduct a Phase III ESA to verify the possible presence of (Petroleum Hydrocarbons/Total Petroleum Hydrocarbons, (PHC/TPH) Polycyclic Aromatic Hydrocarbons (PAH), benzene, toluene, ethylbenzene, and xylenes (BTEX), Metals and Polychlorinated Biphenyls (PCB) contamination in soil in the vicinity of the helicopter-landing pad and aviation fuel storage platform;
- Conduct a Phase III ESA to verify the possible presence of hydrocarbon and metals contamination in soil in the vicinity of the 4 m x 4 m storage shed located southeast of a fenced area;
- Conduct a Phase III ESA to verify the possible presence of PHC, BTEX, PAHs, PCB and metals contamination due to various activities in the storage area for fishing vessels;
- Collect and analyze a water sample from the artesian well located immediately adjacent to the DFO office building to determine its water quality (BTEX, TPH and PAH);
- Collect and analyze a water sample from the potable water supply for the facility to determine its water quality (BTEX, TPH and PAH);

- Collect and analyze a piece of interior walls inside the furnace room for potential presence of asbestos;
- Collect one (1) soil background sample to determine the metal concentrations in soil;
- Submit of all collected samples to a certified laboratory and analysis of selected soil, water and lined wall samples;
- Compare analytical results with applicable guidelines;
- Complete the National Classification System for Contaminated Sites (NCSCS) classification for each contaminated site identified on the property;
- Prepare an indicative estimate of liability associated with known contaminated sites; and
- Provide and input necessary data requirements into DFO's contaminated sites module.

The present Phase III ESA involves the collection of soil and water samples in areas of concern identified through the previous Phase I-II ESA performed by SNC-Lavalin and the Phase II-III performed by Dessau. Let us recall that SNC-Lavalin previously performed field work on the subject site on October 28, 1999 and on September 30, 2000, while Dessau performed its field work on September 2, 2008. Intrusive methods, such as excavating test pits were adopted by SNC-Lavalin and by Dessau to collect a total of thirteen (13) and six (6) soil samples respectively. The full scope of the Phase I-II ESA by SNC-Lavalin is presented in their final report dated June 12, 2001 while the full scope of the Phase II-III ESA by Dessau is presented in the final report dated March 31, 2009. Although complete reports were not included within the present report, all relevant site drawings, photographs and analytical results were included within Appendix 7 to be used as background information.

1.2 Scope and Approach

The Phase III ESA was conducted in accordance with the CSA Standard Z769-00 entitled *Phase II Environmental Site Assessment*. The Phase III ESA also complies with the Terms of Reference for Phase III Environmental Site Assessments of the 2009-2010 DFO FCSAP Program, and to Dessau's revised proposal (August 5, 2009). Activities related to the Phase III ESA aimed to confirm the presence or absence of contamination in potential areas of concern identified in the course of the Phase I-II ESA performed by SNC-Lavalin and the Phase II-III conducted by Dessau (refer to SNC-Lavalin final report dated June 12, 2001 and Dessau final report dated March 31, 2009), and to conduct a Phase III ESA to delineate the area and volume of contaminated soil in the vicinity of a former single-walled 9,092 litre AST.

1.3 Study Limitations

The limitations related to this study are presented in Section 12 (Closure).

2 IDENTIFICATION OF THE SUBJECT SITE

Geographic coordinates:	55°41' 29.45" W, 52° 21' 57.22" N (NAD 83)
Parcel ID #:	Parcels A, B and 02-01
Land Area:	± 0. 5315 ha
Current owner/Custodian:	Department of Fisheries and Oceans (DFO)
Occupant(s):	DFO Field Office
Current use:	Office building, garage and storage shed

The subject site is located at 10 Shoal Point Road in the community of St. Lewis, Labrador. The site is composed of three (3) landlots (Parcel A, B and 02-01), all of which are owned by the Government of Canada. Parcel A (± 0.2076 ha) and Parcel B (± 0.1269 ha) were acquired by the Government of Canada from the Province of Newfoundland and Labrador on January 29, 1981. An office building and a small storage shed were constructed on Parcel A of the subject site in 1982, while an aviation fuel storage platform and a helicopter landing pad were constructed on Parcel 02-01 (± 0.197 ha) in 1982. A large piece of land (18 m x 18 m) was also fenced east of the DFO Office building for storage purposes. According to SNC-Lavalin's report, the site was a gravel pit prior to 1982. The boundaries of Parcel 02-01 were defined during a survey carried out on the subject site on July 3, 2002.

The small (4 m x 4 m) storage shed east of the fenced area, the helicopter-landing pad and the aviation fuel storage platform have been dismantled some time between 2004 and 2007. A garage was recently constructed (2007) on Parcel 02-01 west of DFO's office at the location of the former helicopter landing pad and adjacent aviation fuel storage platform. A larger storage shed (6 m x 8 m) was further constructed in 2004 west of the garage on Parcel 02-01 to replace the former smaller (4 m x 4 m) storage shed.

The location of the subject site is shown within its regional context in Figure 1, which is included in Appendix 1, while Figure 2 and Figure 3, also included in Appendix 1, illustrate the location of the subject building and other infrastructure present on the subject site.

3 PREVIOUS INVESTIGATIONS

Two (2) reports were provided by PWGSC and reviewed by Dessau. A brief summary of these reports is presented hereafter.

3.1 Phase I Environmental Site Assessment, St. Lewis Field Office, St. Lewis Labrador, June 2001

A Phase I-II ESA, including two (2) soil sampling programs, was performed by SNC-Lavalin on the subject site (Refer to Final Report # 721650-P001 dated June 12, 2001). This report states that a first soil sampling program was initiated by SNC-Lavalin on October 28, 1999 to determine the presence/absence of hydrocarbon contamination in the soil adjacent to the original single-walled 9,092 litre AST, while a second soil sampling program was initiated on September 30, 2000 to further delineate the extent of the hydrocarbon contamination detected in the 1999 soil program.

The 1999 soil sampling program involved the excavation by hand of three (3) test pits in the area of the original single-walled 9,092 litre AST to determine the presence/absence of hydrocarbon contamination due to possible leaks and/or overfilling having occurred over 13 years of use (from 1982 until 1995) of the original single-walled 9,092 litre AST. Analytical results of the 1999 soil sampling program revealed a TPH content of two (2) samples (TPH-02-S and TPH-02-B) exceeding the Newfoundland Contaminated Site Cleanup Criteria (NCSCC) for residential sites (100 mg/kg). These samples were both collected in the same test pit (TP-02-1999) at two different depths (0 m and 0.3 m).

The 2000 soil sampling program conducted by SNC-Lavalin involved the excavation by backhoe of nine (9) test pits to further delineate the hydrocarbon contamination identified during the 1999 soil sampling program. Let us mention that out of the thirteen (13) soil samples having been collected, four (4) soil samples were unfortunately destroyed during transportation. All of the nine (9) remaining soil samples were submitted for chemical analyses. Soil samples from two (2) test pits (TP-03-2000 and TP-04-2000) dug in the vicinity of a 1999 test pit (TP-02-1999) in which TPH contamination had been identified, did not reveal levels of contamination exceeding the NCSCS criteria for TPH. However, the concentration of TPH exceeded the NCSCC residential criteria in one soil sample (SL-7-01) collected in another test pit (TP-7-2000).

The Phase I ESA “revealed conditions that could have resulted in the environmental contamination at the St. Lewis DFO Office”. Furthermore, the two (2) soil sampling programs undertaken in 1999 and 2000 in the scope of a Phase II ESA by SNC-Lavalin identified the presence of petroleum contaminated soils in the vicinity of the former single-walled 9,092 litre AST.

SNC-Lavalin concluded its study by recommending that the following actions be undertaken at the St. Lewis DFO Office:

- SNC-Lavalin recommended, in their final report dated of 2001, the collection of soil samples from beneath the original 9,092 litre single-walled AST found to the south (in the back) of DFO's office building. SNC-Lavalin argued that this would allow determining the presence/absence of hydrocarbon contamination due to spills and/or leaks associated with the former (original) 9,092 litre single-walled AST which had been operated from 1982 to 1995;
- Conduct additional test pitting and soil sample collection in the area beyond (east of) test pit No. 7 (TP-7-2000) to determine the area and volume of soil contamination;
- Due to the discrepancy in analytical results of samples TP-02-1999 and TP-4-2000, additional sampling was recommended by SNC-Lavalin in the area of these samples;
- Conduct a Phase II ESA to determine the presence/absence of PAH contamination of soil in the vicinity of the helicopter-landing pad and associated aviation fuel storage platform due to the presence of creosote timber in these structures;
- Collect and analyze a water sample from the artesian well to determine the groundwater quality;
- Conduct a Phase II ESA of the potable water supply for the facility to determine the presence/absence of lead;
- A Phase II ESA was finally recommended to determine the presence/absence of hydrocarbon contamination in the soil in the vicinity of the storage shed (4 m x 4 m) found southeast of DFO's office building; and
- Potential asbestos content in the mineral board sheeting inside the furnace room in the Field Office.

3.2 Phase II-III ESA, St. Lewis Field Office, Newfoundland and Labrador, March 31, 2009

The objective of this study conducted by Dessau was to delineate the extent and volume of contaminated soils found in the vicinity of the original single-walled AST of a capacity of 9,092 litre, which was dismantled in 1995.

The presence of two (2) new self-dyked ASTs on concrete slabs was noted on the subject site during the site visit on September 2, 2008. According to field notes of Dessau, one (1) of the two (2) new ASTs was installed in 2007 along the western wall of the garage and has a capacity of 2,273 litre, while the second of these new ASTs was installed in 2004 south of the Field Office building (in the vicinity of the TPH impacted soils) and has a capacity of 6,819 litre. A third concrete slab has been

installed in the back of (south of) the Field Office building between 2004 and 2007, in order to accommodate, if required, a third AST.

Analytical results of six (6) collected soil samples revealed TPH concentrations exceeding the applicable guideline[1] of 70 mg/kg in two (2) soil samples identified as 58590-TE-08-04-MA-1 and DUPLICATE 6. Analytical results of the two (2) water samples (58590-WATER and DUP 7) revealed a lead concentration below the Health Canada Guideline for Canadian Drinking Water Quality of 10 µg/L.

Analytical results of thirteen (13) soil samples previously collected by SNC-Lavalin (September 30, 1999 and October 28, 2000) were compared to the analytical results of six (6) soil samples collected by Dessau on September 2, 2008 in order to evaluate the extent of TPH contamination in soil at the former location of a 9,092 litre AST. The approximate surface area of TPH contaminated soils was estimated at 80 m^2, yielding a volume of 40 m^3 when considering an average contaminated soil depth of 0.5 m. The estimated surface area and volume of contaminated soils have a medium level of certainty, considering that the precise location of the contaminant plume is uncertain due to incongruities between SNC-Lavalin drawings and Fisheries and Oceans Canada drawings. This incongruity translates to an uncertainty with regards to the location of twelve (12) test pits (TP-01-1999, TP-02-1999, TP-03-1999, TP-1-2000, TP-2-2000, TP-3-2000, TP-4-2000, TP-5-2000, TP-6-2000, TP-7-2000, TP-8-2000 and TP-9-2000). The uncertainty in the location of these twelve (12) test pits is estimated at ± 3 m in the north-south axis.

It should be noted that on Figure 2 and Figure 3, enclosed in Appendix 1, Dessau has illustrated the former self-dyked 9,092 litre AST at a distance of 6 m south of DFO's office building (based on survey plan S-4755), while the single-walled 9,092 litre AST has been illustrated at a distance of 9 m south of DFO's office building, in accordance with SNC-Lavalin's statement appearing on page 10 of their final report dated of June 12, 2001.

The following recommendations were made:

- Perform a supplemental Phase III ESA to clearly identify the extent of TPH contamination in soil around the former 9,092 litre self-dyked AST;
- Obtain a proper site drawing to determine the exact location of the twelve (12) test pits (TP-01-1999, TP-02-1999, TP-03-1999, TP-1-2000, TP-2-2000, TP-3-2000, TP-4-2000, TP-5-2000, TP-6-2000, TP-7-2000, TP-8-2000 and TP-9-2000) performed by SNC-Lavalin in October 28, 1999 and September 30, 2000 around the former 9,092 litre self-dyked AST;

- Once the limits of TPH contamination in soils are determined, excavation of TPH impacted soils is recommended at the former location of the 9,092 litre AST south of DFO's office building. If excavation of TPH impacted soils reveals that the contamination has seeped under the newly installed AST, evaluate the volume of remaining soil contamination and the different remedial strategies;
- Conduct a Phase II ESA to determine PAH contamination of soil at the location of the former helicopter-landing pad (test pits should be performed along the western and northern walls of the garage which coincides with the former location of the helicopter landing pad western and northern limits);
- Conduct a Phase II ESA in the area of the former storage shed (4 m x 4 m) southeast of the fenced storage area for fishing vessels to verify the absence or presence of TPH, BTEX and PAH in soils; and
- It was initially recommended by SNC-Lavalin to collect a water sample from the head of a 25 m deep artesian well to determine the quality of groundwater, in particular groundwater concentrations of TPH, PAHs and BTEX. This recommendation was not achieved by Dessau in the present study and it is thus recommended to collect a groundwater sample from the artesian well head. This groundwater sample should be submitted for analyses of TPH, BTEX and PAHs. If this groundwater sample reveals TPH, BTEX or PAH concentrations above Canadian drinking water quality guidelines or above Atlantic PIRI TIER I RBSLs for a residential property with a potable water supply, it is recommended to install groundwater monitoring wells to delineate the groundwater contaminant plume.

[1] The applicable guideline is considered to be the Atlantic RBCA Tier I RBSL for residential properties with coarse-grained soils and a potable water supply. This guideline was divided by two (2) to provide an equivalency to the Canada-Wide Standard for Petroleum Hydrocarbons in Soil.

4 METHODOLOGY

4.1 Phase III ESA

Prior to commencing sounding activities, clearance for all underground utilities was obtained from Newfoundland Power, Newfoundland Hydro, Bell Aliant, Eastlink and Rogers. All the sampling activities were undertaken according with the CCME Guidance manual on sampling, analysis, and data management for contaminated sites (1993).

4.1.1 Sounding Location and Survey

Based on the findings of previous Phase I-II ESA (SNC-Lavalin, June 12, 2001) and Phase II-III (Dessau, September 31, 2008), a Phase III ESA was performed to address SNC-Lavalin's and Dessau's recommendations. Thirty-two (32) soil samples and six (6) field duplicates were collected within nineteen (19) test pits and three (3) test holes (including one soil background) at the subject site on November 6 and 7, 2009. These samples were tested for PHC/TPH, BTEX, PAHs, PCB and metals. One (1) mineral board sheeting of interior walls inside the furnace room was collected and analyzed for potential presence of asbestos. In addition, one (1) water sample and one (1) field duplicate were collected from the faucet in the kitchen inside the office building on the subject site on November 7, 2009 and only the water sample was submitted for chemical analysis of TPH, BTEX and PAHs. The location of these sampling points is illustrated on Figure 2 and Figure 3, both of which are included in Appendix 1, while the description and position of soil samples are presented in Table 4-1 below.

TABLE 4-1: SOIL SAMPLES GEOGRAPHIC COORDINATES

Sample ID	Location	Geographic Coordinates	
		X (Longitude)	Y (Latitude)
LEWI-58590-09TP-01-01	± 17.0 m to the west of the former 9,092 litre AST	589,047.62	5,802,522.10
LEWI-58590-09TP-01-02	± 17.0 m to the west of the former 9,092 litre AST	589,047.62	5,802,522.10
LEWI-58590-09TP-01-03	± 17.0 m to the west of the former 9,092 litre AST	589047.62	5,802,522.10
LEWI-58590-09TP-02-01	± 12.0 m to the west of the former 9,092 litre AST	589,053.69	5,802,523.47
LEWI-58590-09TP-03-01	± 12.0 m to the north-west of the former 9,092 litre AST	589,052.75	5,802,527.31
LEWI-58590-09TP-04-01	± 2.0 m to the north-west of the former 9,092 litre AST	589,067.45	5,802,526.09
LEWI-58590-09TP-05-01	At the center of the former 9,092 litre AST	589,068.00	5,802,523.95
LEWI-58590-09TP-05-02	At the center of the former 9,092 litre AST	589,068.00	5,802,523.95
LEWI-58590-09TP-06-01	± 5.0 m to the south-west of the former 9,092 litre AST	589,061.67	5,802,520.74
LEWI-58590-09TP-07-01	± 12.0 m to the east of the former 9,092 litre AST	589,080.35	5,802,526.60
LEWI-58590-09TP-08-01	± 16.0 m to the east of the former 9,092 litre AST	589,083.05	5,802,523.13

TABLE 4-1: SOIL SAMPLES GEOGRAPHIC COORDINATES (CONT'D)

Sample ID	Location	Geographic Coordinates	
		X (Longitude)	Y (Latitude)
LEWI-58590-09TP-09-01	± 13.0 m to the south-east of the former 9,092 litre AST	589,080.60	5,802,520.12
LEWI-58590-09TP-10-01	± 17.0 m to the south-east of the former 9,092 litre AST	589,084.10	5,802,520.71
LEWI-58590-09TP-11-01	± 9.0 m to the south-east of the former 9,092 litre AST	589,076.97	5,802,518.33
LEWI-58590-09TP-12-01	± 1.0 m to the west of the garage	589,036.59	5,802,539.11
LEWI-58590-09TP-12-02	± 1.0 m to the west of the garage	589,036.59	5,802,539.11
LEWI-58590-09TP-12-03	± 1.0 m to the west of the garage	589,036.59	5,802,539.11
LEWI-58590-09TP-13-01	± 1.5 m to the north of the garage	589,041.07	5,802,543.18
LEWI-58590-09TP-13-02	± 1.5 m to the north of the garage	589,041.07	5,802,543.18
LEWI-58590-09TP-14-01	± 7.0 m to the east of the field office (storage area)	589,079.94	5,802,535.20
LEWI-58590-09TP-15-01	± 7.0 m to the east of the field office (storage area)	589,088.79	5,802,532.75
LEWI-58590-09TP-15-02	± 7.0 m to the east of the field office (storage area)	589,088.79	5,802,532.75
LEWI-58590-09TP-15-03	± 7.0 m to the east of the field office (storage area)	589,088.79	5,802,532.75
LEWI-58590-09TP-16-01	± 22.5 m to the south-east of the field office	589,095.65	5,802,524.27
LEWI-58590-09TP-17-01	± 25.5 m to the south-east of the field office	589,098.34	5,802,522.57
LEWI-58590-09TP-17-02	± 25.5 m to the south-east of the field office	589,098.34	5,802,522.57
LEWI-58590-09TP-18-01	± 28.5 m to the south-east of the field office	589,101.16	5,802,522.84
LEWI-58590-09TP-18-02	± 28.5 m to the south-east of the field office	589,101.16	5,802,522.84
LEWI-58590-09TP-19-01	± 27.0 m to the south-east of the field office	589,100.24	5,802,517.30
LEWI-58590-09TH-01	Inside the garage	589,040.91	5,802,543.19
LEWI-58590-09TH-02	Inside the garage	589,039.82	5,802,522.24
LEWI-58590-09TH-03	± 20.0 m to the south of the property (background sample)	589,023.60	5,802,488.84

4.1.2 Test Pits and Test Holes Excavation

Eleven (11) test pits were performed in the area of the original single-walled and the self-dyked 9,092 litre AST. Three (3) of these test pits (LEWI-58590-09TP-01, LEWI-58590-09TP-02 and LEWI-58590-09TP-03) were performed west of the newly installed self-dyked 6819 litre AST. One (1) test pit (LEWI-58590-09TP-06) was performed south of the AST, one (1) test pit (LEWI-58590-09TP-04) was performed north of the former original single-walled 9,092 litre AST and one (1) test pit (LEWI-58590-09TP-05) was placed at the location of the former original single-walled 9,092 litre AST. The five (5) remaining test pits (LEWI-58590-09TP-07, LEWI-58590-09TP-08, LEWI-58590-09TP-09, LEWI-58590-09TP-10 and LEWI-58590-09TP-11) were all performed east of the locations of the former ASTs. The test pits performed by Dessau were sufficient to fully delineate vertically and horizontally the PHC/TPH contaminant plume.

Two (2) test pits (LEWI-58590-09TP-12 and LEWI-58590-09TP-13) and two (2) test holes (LEWI-58590-09TH-01 and LEWI-58590-09TH-02) were performed by Dessau at the location of the former helicopter landing pad and adjacent aviation fuel storage platform. Both test pits were performed outside of the existing garage along the western and northern walls of the garage, which coincides with the former northern and western walls of the creosoted timber helicopter landing pad. Both test holes were performed inside the existing garage which coincides with the center of the former creosoted timber helicopter landing pad and the center of the former aviation storage platform. It is considered that the majority of potentially PAH impacted soils associated with the former creosoted timber structures of the helicopter landing pad and aviation fuel storage platform have been excavated and handled during the construction of the garage.

Four (4) test pits (LEWI-58590-09TP-16, LEWI-58590-09TP-17, LEWI-58590-09TP-18 and LEWI-58590-09TP-19) were performed at the location of the former 4 m x 4 m storage shed east of the chain-linked fenced area. Let us recall that SNC-Lavalin had reported that various hazardous materials (including fuel, motor oil and gear oil) have been stored inside this former shed during its use (1982 up to presumably 2006). SNC-Lavalin further reported that the floor of this former storage shed had been stained by petroleum products and recommended to perform a Phase II ESA involving test pits at the location of the former storage shed.

Two (2) test pits (LEWI-58590-09TP-14 and LEWI-58590-09TP-15) were performed at the storage area for fishing vessels (inside the linked fence) to verify the possible presence of hydrocarbon and metals due to various activities in this area.

Let us finally mention that Dessau did not collect any groundwater sample from the head of the 25 m deep artesian well due to the impossibility to open the cover of the well and due to the risk of contamination of the groundwater with the sampling equipment and human activities in the vicinity of the artesian well. However, a water sample was collected from the potable water supply system inside the Field Office and analyses for TPH, BTEX and PAHs were conducted.

4.1.3 Soil Sampling Program

Thirty-two (32) soil samples and six (6) field duplicates were collected within nineteen (19) test pits and two (2) test holes to assess PHC, BTEX, PAHs, PCB and metals concentrations in soils. Soil samples from the test pits excavation were collected at depths ranging between 0.25 to 1.60 m. Soil samples were collected between 0.15 and 0.30 m and between 0.15 and 0.27 m within the two (2) test holes performed inside the garage. Soil samples were generally composed of medium to coarse sand, some cobbles and rock fragments. The groundwater table was not encountered during this soil sampling campaign.

All nineteen (19) test pits were dug using a backhoe. Samples were collected manually from the walls of the test pit excavation. Test pit logs are available in Appendix 3. The two (2) test holes were performed using a core drill to core the concrete slab (0.15 m thickness) inside the garage and then using a manual sampler to collect soil samples. A new pair of nitrile gloves was used to collect each soil sample. Each sample was given a unique sample I.D., logged onto a chain-of-custody form, and transported to the laboratory for analysis. The samples were kept in coolers filled with icepacks or ice to keep them at <4 °C until their arrival at the laboratory. Test pits and test holes locations are illustrated in Figure 2 and Figure 3 enclosed in Appendix 1.

4.1.4 Water Sampling Program

One (1) water sample (LEWI-58590-09-WA-01) and one (1) field duplicate sample (LEWI-58590-09-WA-Dup1) were collected from the faucet in the kitchen of the Field Office building to assess TPH, BTEX and PAHs concentration in drinking water. The water was allowed to flow at least 5 minutes before the water was sampled. Water samples were collected in glass containers with appropriate preservatives (prepared beforehand by Maxxam Analytics). Each sample was given a unique sample I.D., logged onto a chain-of-custody form, and transported to the laboratory for analysis. The samples were kept in coolers filled with icepacks or ice to keep them at <4 °C until their arrival at the laboratory. Note that water sample collected from the same location was submitted to lead analysis in September 2008. Analytical results were below the Health Canada Guideline for Canadian Drinking Water Quality (2008).

4.1.5 Materials Likely to Contains Asbestos (MLCA) Sampling Program

One (1) sample of materials likely containing asbestos was collected to assess the presence/absence of asbestos concentrations. The sample (LEWI-58590-09AS-01) was collected from the mineral board sheeting inside the furnace room in the Field Office.

4.1.6 Laboratory Analytical Program

All soil analyses were performed by Maxxam Analytics in their laboratory located in St. John's, NL or in their laboratory located in Bedford, Nova Scotia. Maxxam Analytics holds a valid certification from the Canadian Association for Environmental Analytical Laboratories. A summary of the laboratory analytical program for the St. Lewis Field Office is presented in Table 4-2 hereafter, while detailed certificates of analysis are included in Appendix 5.

TABLE 4-2: SUMMARY OF SOIL ANALYTICAL PROGRAM

Sample ID	Sample Location	Sample Description	Sampling Depth Below Ground Surface (m)	Laboratory Submission
LEWI-58590-09TP-01-01	±17.0 m to the west of the former 9,092 litre AST	Brown coarse sand, some cobbles	0.00 to 0.50	TPH/BTEX
LEWI-58590-09TP-01-03	±17.0 m to the west of the former 9,092 litre AST	Brown coarse sand, some cobbles	1.00 to 1.30	TPH/BTEX
LEWI-58590-09TP-02-01	±12.0 m to the west of the former 9,092 litre AST	Orange medium sand, some cobbles	0.00 to 0.40	TPH/BTEX
LEWI-58590-09TP-03-01	± 12.0 m to the north-west of the former 9,092 litre AST	Dark brown coarse sand, some cobbles	0.00 to 0.25	TPH/BTEX
LEWI-58590-09TP-04-01	± 2.0 m to the north-west of the former 9,092 litre AST	Dark brown coarse sand, some cobbles	0.00 to 0.60	TPH/BTEX
LEWI-58590-09TP-05-01	At the center of the former 9,092 litre AST	Brown medium sand, some cobbles	0.00 to 0.40	TPH/BTEX
LEWI-58590-09TP-05-02	At the center of the former 9,092 litre AST	Brown coarse sand, some cobbles	0.40 to 0.80	TPH/BTEX
LEWI-58590-09TP-06-01	± 5.0 m to the south-west of the former 9,092 litre AST	Light brown medium sand	0.00 to 0.25	TPH/BTEX
LEWI-58590-09TP-07-01	± 12.0 m to the east of the former 9,092 litre AST	Brown medium sand	0.00 to 0.20	TPH/BTEX
LEWI-58590-09TP-08-01	± 16.0 m to the east of the former 9,092 litre AST	Brown medium to coarse sand, some cobbles	0.00 to 0.50	TPH/BTEX
LEWI-58590-09TP-09-01	± 13.0 m to the south-east of the former 9,092 litre AST	Grey medium sand, some cobbles	0.00 to 0.45	TPH/BTEX
LEWI-58590-09TP-10-01	± 17.0 m to the south-east of the former 9,092 litre AST	Dark brown organic matter	0.00 to 0.55	TPH/BTEX
LEWI-58590-09TP-11-01	± 9.0 m to the south-east of the former 9,092 litre AST	Brown medium sand and organic matter	0.00 to 0.50	TPH/BTEX
LEWI-58590-09TP-12-01	± 1.0 m to the west of the garage	Brown medium sand, some cobbles	0.00 to 0.45	TPH/BTEX, PAH, metals
LEWI-58590-09TP-12-03	± 1.0 m to the west of the garage	Grey medium sand, some cobbles	1.00 to 1.60	TPH/BTEX, PAH, metals, PCB, Leachable metals
LEWI-58590-09TP-13-01	± 1.5 m to the north of the garage	Grey/brown medium sand, some cobbles	0.00 to 0.50	TPH/BTEX, PAH, metals
LEWI-58590-09TP-13-02	± 1.5 m to the north of the garage	Dark brown medium to coarse sand, some cobbles	0.50 to 0.80	TPH/BTEX, PAH, metals

TABLE 4-2: SUMMARY OF SOIL ANALYTICAL PROGRAM

Sample ID	Sample Location	Sample Description	Sampling Depth Below Ground Surface (m)	Laboratory Submission
LEWI-58590-09TP-14-01	± 7.0 m to the east of the field office	Dark brown medium to coarse sand, some cobbles	0.00 to 0.40	TPH/BTEX, PAH, metals
LEWI-58590-09TP-15-01	± 7.0 m to the east of the field office	Brown/grey gravel and cobbles	0.00 to 0.30	TPH/BTEX, PAH, metals, PCB
LEWI-58590-09TP-15-02	± 7.0 m to the east of the field office	Brown/grey cobbles	0.30 to 1.20	TPH/BTEX, PAH, metals
LEWI-58590-09TP-16-01	± 22.5 m to the south-east of the field office	Dark brown medium to coarse sand, some cobbles	0.00 to 0.40	TPH/BTEX, PAH
LEWI-58590-09TP-17-01	± 25.5 m to the south-east of the field office	Dark brown medium to coarse sand	0.00 to 0.40	TPH/BTEX, PAH
LEWI-58590-09TP-17-02	± 25.5 m to the south-east of the field office	Dark brown medium to coarse sand	0.40 to 0.90	TPH/BTEX, PAH
LEWI-58590-09TP-18-01	± 28.5 m to the south-east of the field office	Brown medium sand, some cobbles	0.00 to 0.35	TPH/BTEX, PAH
LEWI-58590-09TP-18-02	± 28.5 m to the south-east of the field office	Dark brown medium sand, some cobbles	0.35 to 0.70	TPH/BTEX, PAH
LEWI-58590-09TP-19-01	± 27.0 m to the south-east of the field office	Dark brown medium sand, some cobbles	0.00 to 0.50	TPH/BTEX, PAH
LEWI-58590-09TH-01	Inside the garage	Brown medium sand	0.15 to 0.30	TPH/BTEX, PAH, metals
LEWI-58590-09TH-02	Inside the garage	Brown medium sand	0.15 to 0.27	TPH/BTEX, PAH, metals
LEWI-58590-09TH-03	± 40.0 m to the south of the field office	Brown medium sand	0.00 to 0.15	Metals

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

A quality assurance/quality control program was implemented by Dessau and the laboratory. In the course of the project, the following quality assurance and quality control program was maintained:

- Project initiation meeting aimed at discussing the particularities of the project and its scope, as well as providing employees on the field with communication links and a health and safety plan adapted to the particularities of the project.
- Written field work program describing the activities specific to each subject site. The field work program was periodically revised by the project manager, who ensured regular communications

with employees on the field. Updates on the field work program were also communicated to the PWGSC project manager.

- Quality control and quality assurance measures during sampling activities The following quality control measures were applied to minimize the cross contamination of samples: cleaning of sampling equipment and tools between sampling events, use of a new pair of nitrile gloves on each sampling event; and the use of sterilized laboratory-supplied sampling jars. In addition, samples were stored and transported inside a cooler filled with ice at an approximate temperature of 4 °C to 6 °C to prevent the chemical alteration of samples during transportation. The measures also involved the identification of all samples using a sample ID number on jars or bags, and the logging of this sample ID number onto a chain-of-custody form. Upon arrival of samples at the laboratory, a confirmation was sent to the project manager of Dessau, who rapidly verified the information on the chain-of-custody form. Field duplicate samples should generally be collected at a frequency of 10% in each sampling program. In this particular case, one (1) duplicate water sample and six (6) duplicates soil samples were collected. Last, samples which were not submitted to a chemical analysis were stored at the laboratory in the event that further analyses were required.

The analytical laboratory of Maxxam Analytics also maintained its own quality assurance and quality control program to ensure the production of valid and representative chemical analytical results. The quality control program of Maxxam Analytics consists of internal laboratory verifications which are applied to daily laboratory operations ranging from the reception of samples at the laboratory to the validation of their analytical results. The laboratory quality control program includes the analysis of up to four types of quality controls: blanks, duplicates, spikes/surrogates and certified controls. Results of the laboratory QA/QC program are discussed in Section 4.4.4.

4.3 Selection of Applicable Environmental Quality Guidelines

According to SNC-Lavalin's study, the Government Services Center of Newfoundland and Labrador classifies the land use of the subject site as residential.

Soil

Soil sample analytical results for BTEX, PCB and metals were compared to the CCME-CEQGs for residential sites. As for PAHs, analytical results were compared to the 2008 CCME Soil Quality Guidelines for Carcinogenic and Other PAHs (SQGE – Soil Quality Guidelines for Environmental Health – residential land use). As per the 2008 CCME Fact Sheet on PAHs, 1999 CCME Soil Quality Guidelines and 1991 Interim soil quality criteria are superseded.

Soil sample analytical results for Total Petroleum Hydrocarbons (TPH) and BTEX were compared to the 2003 Atlantic PIRI Tier I RBCA RBSLs for residential sites with coarse-grained soil and potable

groundwater. Results for PHCs were also compared to the Health Canada 2006 Guidance on the use of Atlantic RBCA on Federal Sites for Residential/Parkland use. For PHCs, Health Canada recommends the use of the Canada-wide Standard (CWS) for federal contaminated sites. Since the CWS analytical method is not available at analytical laboratories in Atlantic Canada, a study was conducted and concluded that ARBCA and CWS analytical methods are comparable in terms of carbon fraction extraction for PHCs in soils. Consequently, results from Atlantic RBCA fractionation laboratory analysis of PHC can be converted to CWS fractions F1, F2, and F3. It should however be noted that Atlantic RBCA fractionation analysis does not estimate PHC CWS fraction F4. To ensure TPH equivalency with CWS for PHCs, ARBCA guideline values (i.e. gasoline, No. 2 Fuel/Diesel or No. 6 Fuel Oil) must be divided by 2.

Water

The analytical results of the BTEX and Benzo(a)pyrene content in the water sample LEWI-58590-09-WA-01 was compared to Health Canada Guidelines for Drinking Water Quality and to the 2003 Atlantic PIRI TIER I RBSL for a residential property with a potable water supply for TPH content.

Materials Likely to Contains Asbestos

Materials Likely Containing Asbestos (MLCA) sample analytical results were compared to the Newfoundland and Labrador Asbestos Abatement Regulation 111/98. According to this regulation, building materials containing more than 1% asbestos are considered to be asbestos materials. Removal and disposal of asbestos materials is required to be performed in compliance with this provincial regulation (registration of contractor, removal procedures, transport and disposal, etc.).

Leachable Metals in Soil

In the course of the project, one (1) soil sample was submitted for leachate analysis even though metal concentrations were not exceeding the CCME-CEQGs. The sample LEWI-58590-09TP-12-03 was mistakenly submitted to laboratory analysis. Leachable metals concentrations were compared to the Newfoundland and Labrador Department of Environment and Conservation, November 2003, Guidance document: Leachable Toxic Waste, Testing and Disposal (GD-PPD-26,1) and to the Environment Canada List of Contaminants or Substances Controlled under Leachate Test or Regulated Limits. As per Newfoundland's guidance document *Leachable Toxic Waste, Testing and Disposal* (Ref.: GD-PPD-26.1), materials with concentrations below the CCME Industrial Soil Quality Guidelines and/or with leachate test results respecting the applicable guidelines can be disposed of at an authorized landfill site. Should concentrations exceed the CCME Industrial Soil Quality guidelines or the leachate provincial guidelines, materials need to be disposed at a hazardous material disposal facility.

5 FIELD AND ANALYTICAL RESULTS

A summary of analytical results is presented in Tables I to VIII which are included in Appendix 2, while detailed analytical results are presented in the laboratory analytical certificates in Appendix 5.

5.1 Soil Samples

The general statigraphy consists as a layer of sand, some cobbles and rock fragments at depths ranging from 0.25 to 1.60 m below ground surface. Below this layer, the bedrock is present. No visual evidence of contamination nor odours were observed during the sampling operations.

5.1.1 Former single-walled and self-dyked 9,092 litre ASTs area

Table I enclosed in Appendix 2 presents the results of the thirteen (13) soil samples (LEWI-58590-09-TP-01-01, LEWI-58590-09-TP-01-03 LEWI-58590-09-TP-02-01, LEWI-58590-09-TP-03-01, LEWI-58590-09-TP-04-01, LEWI-58590-09-TP-05-01, LEWI-58590-09-TP-05-02, LEWI-58590-09-TP-06-01, LEWI-58590-09-TP-07-01, LEWI-58590-09-TP-8-01, LEWI-58590-09-TP-09-01, LEWI-58590-09-TP-10-01, LEWI-58590-09-TP-11-01), submitted to establish their PHC/TPH and BTEX concentrations in the area of the ASTs. BTEX concentrations are below the laboratory detection limit in the thirteen (13) samples, and are therefore also below CCME-CSQGs and Atlantic RBCA RBSLs.

An exceedance to the applicable guideline was noted in sample LEWI-58590-09-TP-05-01. This sample presents a F3 Fraction concentration of 307 mg/kg which is above the CCME-CEQG (Update 2008) Residential/Parkland sites of 300 mg/kg. A F2 Fraction concentration of 617 mg/kg (above the applicable guideline of 150 mg/kg) and a concentration of 783 mg/kg (above the applicable guideline of 300 mg/kg) for F3 Fraction were detected in the sample LEWI-58590-09-TP-09-01. Exceedances to the applicable guidelines were noted in samples LEWI-58590-09-TP-09-01 and LEWI-58590-09-TP-10-01 (1,400 and 170 mg/kg respectively) which revealed TPH concentrations above the Atlantic PIRI TIER I RBSL criteria of 70 mg/kg (Health Canada corrected).

It should be noted that the laboratory identified a resemblance to fuel oil fraction and to lube oil fraction in these samples and in other soil samples below the applicable guidelines.

5.1.2 Former helicopter landing pad and fuel storage platform, former storage shed area and storage area for fishing vessels

For the test pits performed in the former helicopter landing pad and fuel storage platform, former storage shed area and storage area for fishing vessels, analytical results presented in Table I included in Appendix 2 indicate PHC/TPH and BTEX concentrations below the laboratory detection limit or below the CCME-CSQGs and Atlantic RBCA RBSLs for the fifteen (15) soil samples (LEWI-58590-09-TP-12-01, LEWI-58590-09-TP-12-03, LEWI-58590-09-TP-13-01, LEWI-58590-09-TP-13-02, LEWI-58590-09-TP-14-01, LEWI-58590-09-TP-15-01, LEWI-58590-09-TP-15-02, LEWI-58590-09-TP-16-01, LEWI-58590-09-TP-17-01, LEWI-58590-09-TP-17-02, LEWI-58590-09-

TP-18-01, LEWI-58590-09-TP-18-02, LEWI-58590-09-TP-19-01, LEWI-58590-09-TH-01-01 and LEWI-58590-09-TH-02-01) submitted to establish their TPH and BTEX concentrations.

Table II enclosed in Appendix 2 presents the results of the ten (10) soil samples (LEWI-58590-09TP-12-01, LEWI-58590-09-TP12-03, LEWI-58590-09TP-13-01, LEWI-58590-09TP-13-02, LEWI-58590-09TP-14-01, LEWI-58590-09TP-15-01, LEWI-58590-09TP-15-02, LEWI-5858-09TH-01-01, LEWI-5858-09TH-02-01 and LEWI-5858-09TH-03-01). Metals concentrations are below the CCME-CSQG for Residential/Parkland in all samples. Table IV included in Appendix 2 presents the analytical results for metals in leachate from soil sample LEWI-58590-09-12-03. Note that this sample was mistakenly submitted to laboratory analysis. Metals concentrations are below the laboratory detection limits as well as below both Provincial and federal Guidelines and therefore soils representative of this sample can be disposed at a Provincial authorized landfill if necessary.

Table III enclosed in Appendix 2 presents the results for PAHs in sixteen (16) soil samples (LEWI-58590-09TP-12-01, LEWI-58590-09TP-12-03, LEWI-58590-09TP-13-01, LEWI-58590-09TP-13-02, LEWI-58590-09TP-14-01, LEWI-58590-09TP-15-01, LEWI-58590-09TP-15-02, LEWI-58590-09TP-16-01, LEWI-58590-09TP-17-01, LEWI-58590-09TP-17-02, LEWI-58590-09TP-18-01, LEWI-58590-09TP-18-02, LEWI-58590-09TP-19-01, LEWI-58590-09TH-01-01 and LEWI-58590-09TH-02-01). Several PAH concentrations are below the laboratory detection limits for all previously mentioned submitted samples. Remaining PAH concentrations are below the 2008 CCME Soil Quality Guidelines for Carcinogenic and Other PAHs – Environmental Health Guidelines (residential sites).

Analytical results presented in Table V indicate PCB concentrations below the laboratory detection limit or below the applicable CCME–CSQG of 1.3 mg/kg for all submitted soil samples.

5.2 Water Sample

Tables VI and VII included in Appendix 2 present the results for the water sample LEWI-58590-WA-01 sampled from the faucet in the kitchen which was submitted to the analysis of BTEX, TPH and PAHs to assess potential impact of the drinking water coming up from the PHC impacted soils identified south of the field office building at the location of the artesian water well. The concentration of BTEX and Benzo(a)pyrene, the only applicable parameter of the PAHs, were below the laboratory detection limits and are therefore also below the Health Canada Guideline for Canadian Drinking Water Quality (2008). BTEX and TPH concentrations were also below the laboratory detection limits.

5.3 MLCA Sample

Results of the asbestos content in mineral board sheeting sample identified LEWI-58590-09AS-01 ASBESTOS are presented in Table VIII (Appendix 2). Analytical results indicated the absence of asbestos in the collected sample. Material was found to be composed of glass fibers (1-5%) and cellulose (5-10%).

6 DISCUSSION

6.1 Contaminant Distribution in Soil

The distribution of BTEX, PHC/TPH, PAHs, metals and PCB contaminant at the location of former single-walled and the self-dyked 9,092 litre ASTs, at the location of the former helicopter landing pad and fuel storage platform, at the location of the former storage shed and the storage area of fishing vessels were evaluated on the basis of analytical results collected from four soil sampling campaigns performed on October 1999 and September 2000 by SNC-Lavalin and on September 2008 and November 2009 by Dessau.

6.1.1 *BTEX*

Former single-walled and self-dyked 9,092 litre ASTs area

Concentrations of benzene, toluene, ethylbenzene and xylenes (BTEX) were consistently detected below laboratory detection limits in all thirteen (13) soil samples submitted to analysis out of a total of seventeen (17) soil samples collected by SNC-Lavalin in October 1999 and September 2000 in the area of ASTs of a capacity of 9,092 litre used for the storage of heating oil and found south of the Field Office building. BTEX concentrations were also consistently detected below laboratory detection limits in all soil samples collected by Dessau in September 2008 (six (6) soil samples) and in November 2009 (thirteen (13) soil samples) at the location of the former 9,092 litre ASTs used for the storage of heating oil. BTEX concentrations are below the laboratory detection limits and are therefore also below CCME-CSQGs and Atlantic RBCA RBSLs. Therefore, there is no impact associated with BTEX in soils on the property for the investigated area.

6.1.2 *PHC/TPH*

Former single-walled and self-dyked 9,092 litre ASTs area

SNC-Lavalin 1999 and 2000 Phase I-II

Out of a total of thirteen(13) soil samples having been collected on the subject site over the course of two successive sampling campaigns (October 28, 1999 and September 30, 2000) by SNC-Lavalin and having been submitted to the analysis of TPH, three (3) soil samples, identified as TPH-02-S, TPH-02-B, SL-7-01, revealed TPH concentrations of 4,820 mg/kg, 839 mg/kg, 6,600 mg/kg, respectively, thus exceeding the modified Atlantic RBCA Tier I RBSL of 70 mg/kg. After conversion and according to the 2009 PHC-CWS application guidance, the PHC concentrations for soil sample TPH-02-S are 332 mg/kg for the F2 Fraction and 494 mg/kg for the F3 Fraction. For the soil sample TPH-02-B, the PHC concentrations are 1,970 mg/kg for the F2 Fraction and 2,696 mg/kg for the F3 Fraction and the concentrations for the soil sample SL-7-01 is 2,336 mg/kg for the F2 Fraction and

4,264 mg/kg for the F3 Fraction. For all three (3) soil samples the PHC concentrations exceed the CCME Canada Wide Standards (CWS) for Petroleum Hydrocarbons (PHCs) for both F2 and F3 Fractions criteria, respectively 150 mg/kg and 300 mg/kg.

Dessau 2008 Phase II-III

Out of a total of six (6) soil samples having been collected on the subject site over the course of the sampling campaign by Dessau on September 2, 2008, two (2) soil samples, identified as 58590-TE-08-04-MA-1 and DUPLICATE 6 (field duplicate of 59590-TE-08-05-MA-1), revealed TPH concentrations of 1,400 mg/kg and 78 mg/kg, respectively, thus exceeding the modified Atlantic RBCA Tier I RBSL of 70 mg/kg.

With the PHC-CWS application guidance, only the sample identified 58590-TE-08-04-MA-1 has PHC concentrations above the applicable criteria, 708 mg/kg for the F2 Fraction and 632 mg/kg for the F3 Fraction.

Dessau 2009 Phase III

Out of a total of thirteen (13) soil samples submitted to PHC/TPH analyses on the area of the ASTs over the course of the sampling campaign by Dessau on November 6, 2009, two (2) soil samples, identified as LEWI-58590-09-TP05-1 and LEWI-58590-09-TP09-1 are above the CCME Canada Wide Standards (CWS) for Petroleum Hydrocarbons (PHCs) for the F2 and/or F3 Fractions.

One (1) soil sample (LEWI-58590-09-TP010-1) showed TPH concentrations of 170 mg/kg above the 2003 Atlantic PIRI Tier I RBCA RBSLs for residential sites with coarse-grained soil and potable groundwater which is 70 mg/kg.

The application of the Canada-Wide-standards (CWS) was performed first, with the comparison of the analytical results against the Tier I Summary Levels. The analytical result of the soil sample LEWI-58590-09-TP05-1 (307 mg/kg for the F3 Fraction) aimed at confirming that PHC impacted soils are present at the location of former single-walled and self-dyked 9,092 litre ASTs. On the eastern side, the soil sample LEWI-58590-09-TP09-1 showed PHC concentrations (for both F2 and F3 Fractions) and TPH concentrations of 1,400 mg/kg above the applicable criteria. This indicates that the plume has extended on the eastern side when compared to the delineation of the contamination as shown on Dessau's previous study of March 31, 2009 (see Figure 3 included in Appendix 7).

Analytical results showing exceedances to the guidelines for soil samples (TPH-02-S, TPH-02-B, SL-7-01, 58590-TE-08-04-MA-1, DUPLICATE 6, LEWI-58590-09-TP05-1 and LEWI-58590-09-TP09-1) collected in the course of the four (4) soil sampling campaigns were compared to the CWS Management Limits (ML) criteria (F2 and F3 Fractions of 1,000 mg/kg and 2,500 mg/kg respectively).

Analytical results for samples TPH-02-B and SL-7-01 showed exceedances to the ML. Based on the analytical results of the two (2) Dessau's sampling campaigns, PHC concentrations are generally lower than PHC concentrations identified in samples TPH-02-B and SL-7-01 (collected previously by SNC-Lavalin). Exceedances to the ML criteria could be associated with the location of the samples which were probably collected punctually on or close to the stained area. The difference between SNC-Lavalin's and Dessau's analytical results can be explained by the weathering of soils within the last ten years.

The extent of PHC/TPH impacted soil was completely determined vertically (to the bedrock) and horizontally to the north, east, south and west in the area of the former single-walled and self-dyked 9,092 litre ASTs located south of the St. Lewis Field Office. The surface area of PHC/TPH impacted soils is approximated at 137 m^2. The extent of PHC/TPH impacted soils is shown on Figure 3 included in Appendix 1. This corresponds to a volume of PHC/TPH impacted soils of ± 80 m^3 (or more if fractured rock is present) calculated with an average thickness of 0.5 m.

Former helicopter landing pad and fuel storage platform, former storage shed area and storage area for fishing vessels

Fifteen (15) soil samples submitted to PHC/TPH analyses showed concentrations below the laboratory detection limits or below the CCME Canada Wide Standards (CWS) for Petroleum Hydrocarbons (PHC) and below the Atlantic PIRI TIER I RBSL Residential land use for Total Petroleum Hydrocarbons (TPH). These samples were collected at the area of the former helicopter landing pad and the fuel storage platform, at the area of the former storage shed and at the storage area for fishing vessels both areas located east of the Field Office. Therefore, there is no impact associated with PHC/TPH in soils in these areas on the investigated site.

6.1.3 *PAHs*

Out of a total thirty-two (32) soil samples having been collected on the subject site over the course of the sampling campaign by Dessau performed on November 6, 2009, fifteen (15) soil samples located at the former helicopter landing pad area, at the storage area of fishing vessels and the former storage shed were submitted to the analysis of PAHs. All soil samples revealed PAH concentrations below the laboratory detection limit except for four (4) soil samples identified LEWI-58590-09-TP12-01, LEWI-58590-09-TP13-01 LEWI-58590-09-TP13-02 and LEWI-58590-09-TH01-01 which showed PAHs concentrations below the 1999 CCME Recommended Soil Quality Guidelines Residential – Environmental Health – Soil contact.

These samples were collected from test pits located north and west of the existing garage which corresponds to the north and west walls of the former helicopter landing pad. The test hole LEWI-58590-09TH-01 was located at the center of the former helicopter landing.

It is considered likely that the majority of potentially PAH impacted soils associated to the former creosoted timber structures of the helicopter landing pad and aviation fuel storage platform have been excavated and handled during the construction of the garage. Therefore, the potential active source of contamination was removed.

6.1.4 Metals (background)

Background sample LEWI-58590-09TH-03 collected at approximately 20 m south of the property limit (Figure 3) did not contain any metal concentration exceeding the CCME CSQG.

6.2 Quality Assurance / Quality Control (QA/QC) Discussion

In the course of this study, six (6) soil duplicates samples were submitted to analysis. A concentration of PHCs F2 Fraction of 401 mg/kg (above the applicable guideline of 150 mg/kg) and a concentration of 534 mg/kg (above the applicable guideline of 300 mg/kg) were detected in the sample LEWI-58590-09-TP-DUP3 corresponding to the field sample LEWI-58590-09TP-09-01.

Also, three (3) soil duplicate samples (LEWI-58590-09-TP-DUP2, LEWI-58590-09-TP-DUP4 and LEWI-58590-09-TP-DUP5) were submitted to establish the PHC/TPH and BTEX concentrations. These samples corresponding to the field samples LEWI-58590-09TP-05-02, LEWI-58590-09TP-13-02 and LEWI-58590-09TP-17-02 respectively.

One (1) duplicate soil sample LEWI-58590-09TP-DUP4, corresponding to the field sample LEWI-58590-09TP-13-02 was submitted to establish metals concentrations. Duplicate sample LEWI-58590-09TP-DUP5, corresponding to the field sample LEWI-58590-09TP-17-02 was submitted to establish the PAHs concentrations.

The mean relative deviations for all duplicate samples collected at this site was found to be of 21.05% for soil samples (see Table IX enclosed in Appendix 2). There is no clear guideline as to what is an acceptable relative deviation for duplicate samples. For soil, this is due to the fact that deviation between results for the original and duplicate samples is influenced by contaminant characteristics and matrix heterogeneity which may vary significantly. Grain size distribution, clay fraction and organic matter content are among the factors influencing the distribution of contaminants in a given sample. For water, the relative deviation for duplicate samples is expected to be less than for soil because of the homogeneity of the water matrices. Nevertheless the results obtained in the course of the present study are considered to be acceptable duplicate correlations.

The review of the data provided by Maxxam Analytics relative to the quality control of the analytical procedures, enables us to believe that their work meets the required quality standards. The internal control data presented by Maxxam Analytics showed that in a general way the protocols used are controlled properly and that consequently, the provided results can be trusted. The review of the

laboratory duplicates show that, in general, the laboratory adequately handled and prepared the samples. This last element confers additional credibility to the results presented in this report. Finally, the detection limits obtained by Maxxam Analytics for all the parameters analyzed in soil and groundwater samples were lower than the applicable criteria used to interpret the analytical data in the course of this mandate.

Quality control results, performed by Maxxam Analytics, are presented in the analytical certificates. The results respect the standards, which indicates that analysis protocols were followed and a judgment can be based on the results gathered during this study. Since at lease 90% of the results are within the reference interval, they are considered to be acceptable.

7 IDENTIFICATION OF CONTAMINATED SITES

According to the Treasury Board Secretariat (TBS), a contaminated site is described as a "site at which substances occur at concentrations above background levels and pose, or are likely to pose, an immediate or long term hazard to human health or the environment or exceed levels specified in policies and/or regulations".

A property can have several contaminated sites. Each contaminated site on a property is defined in relation to an actual source of contamination and the distance between the contaminated site and other contaminated areas at the site. The following general guidelines apply in determining whether an area of known contamination will be defined as a contaminated site:

- One actual or potential source is impacting one (or more) different areas regardless of the distance between impacted areas = One site;
- Two or more actual or potential sources are impacting the same approximate area and sources and impacted areas are < 30 m apart = One site;
- Two or more actual or potential sources are impacting the same approximate area and sources are > 30 m apart = One site;
- Two or more actual or potential sources are impacting two different areas and sources and impacted areas are < 30 m apart = One site;
- Two or more actual or potential sources are impacting two different areas and sources and impacted areas are > 30 m apart = Two (or more) sites; and
- Two or more contaminated sites when there is contaminated soil and contaminated sediment.

Based on the above definition, one (1) contaminated site consisting of PHC/TPH impacted soils, located south of the Field office, was identified at the St. Lewis Field Office (DFRP # 58590).

7.1 Site Classification (NCSCS 2008)

The National Classification System for Contaminated Sites (NCSCS 2008) is a screening tool to aid in the evaluation of contaminated sites based on their current or potential impact on human health and the environment. It provides scientific and technical support in the identification and prioritization of contaminated sites. The system screens sites with regards to the need for further action. Sites are classified in one of the five following categories:

Class 1: High Priority for Action (NCSCS Score greater than 70)

The available information indicates that action (i.e. further site characterization, risk management, remediation, etc.) is required to address existing concerns. Typically, Class 1 sites show a propensity to be a high concern for several factors and measured or observed impacts have been documented.

Class 2: Medium Priority for Action (NCSCS Score between 50 and 69.9)

The available information indicates that there is high potential for off-site impacts, although the threat to human health and the environment is generally not imminent. Typically, for Class 2, there is probably no indication of off-site contamination. However, the potential for this was rated high and therefore, some action is likely required.

Class 3: Low Priority for Action (NCSCS Score between 37 and 49.9)

The available information indicates that the site is currently not a high concern. However, additional investigation may be carried out to confirm the site classification.

Class N: Not a Priority for Action (NCSCS Score below 37)

The available information indicates there is probably no significant environmental impact or human health threats. There is likely no need for action unless new information becomes available indicating greater concerns, in which case, the site should be re-examined.

Class INS: Insufficient Information (>15% of responses are “Do Not Know”)

There is insufficient information to classify the site. In this event, additional information is needed to address data gaps.

The NCSCS evaluation of the St. Lewis Field Office resulted in a score of 52.1 for the site (Class 2), indicating the subject site has a medium priority for action. The NCSCS Evaluation form is presented in Appendix 6. This score is consistent with the scores obtained by SNC-Lavalin (2000) and Dessau (2008) following a NCSCS evaluation.

8 IDENTIFICATION AND EVALUATION OF REMEDIAL AND/OR RISK MANAGEMENT ALTERNATIVES

While remedial solutions (such as excavation and disposal) aim to eliminate or reduce the level of contaminant found in soil or groundwater below the applicable guideline, risk management measures aim to confine contaminated soils or groundwater and to restrict their use to prevent exposure to human and ecological receptors. In general, risk management measures should be applied only when remedial solutions are not feasible.

Based on the results of the Phase III ESA performed by Dessau, at least two (2) remedial management alternatives may be considered regarding the PHC/TPH contaminated site: (1) no action and (2) Remediation.

In spite of the fact that PHC/TPH impacted soils does not pose unacceptable risk to the human and ecological receptors, no action will result in a liability to DFO related to the presence of this contamination on the subject property.

As for the remediation alternative, one (1) option can be contemplated:

1. Excavation, transportation and off-site disposal at an approved facility to eliminate PHC/TPH impacted soils on the subject site; in this option, soils should be excavated using a back-hoe up to the depth reached by the contamination (approximately 0.5 m below ground surface), loaded aboard dump trucks, transported and disposed off at an appropriate treatment facility (in Happy Valley-Goose Bay), and the excavated area should be restored using clean fill material. If it appears that the contamination has seeped under the newly installed AST, an evaluation of the different remedial strategies will need to be undertaken.

This option have advantages and disadvantages (technical and economical) but their implementation will result in no liability to DFO related to the presence of PHC/TPH impacted soils.

A liability letter is provided under separate cover.

9 CONCLUSION

In order to address the potential environmental concerns identified in the past studies conducted at the St. Lewis Field Office property, a Phase III ESA was carried out. Results of the analytical program revealed the following:

Soils

- The general soil stratigraphy indicates that medium to coarse sand and some cobbles and rock fragments are observed on the site. Underlying the sand and cobbles layers the bedrock was observed;
- Petroleum Hydrocarbon (PHC) concentrations exceeding the CCME Canada Wide Standards (CWS) for Petroleum Hydrocarbons (PHCs) for F2 and F3 Fractions were measured in two (2) soil samples identified as LEWI-58590-09-TP-05-01 and LEWI-58590-09-TP-09-01 in the area of former single-walled and self-dyked 9,092 litre ASTs;
- TPH concentrations exceeding the 2003 Atlantic PIRI TIER I RBSL for Residential land use with coarse-grained soils and potable water were measured in the soil sample identified LEWI-58590-09-TP-10-01;
- BTEX concentrations are below the laboratory detection limits for soil samples analyzed in the area of former single-walled and self-dyked 9,092 litre ASTs;
- PHC/TPH, BTEX, PAHs, metals and PCB are below the applicable guidelines or below the laboratory detection limits for soil samples collected in the area of the former helicopter landing pad and aviation fuel storage platform, in the area of the former 4 m x 4 m storage shed, and in the storage area for fishing vessels;
- Background sample LEWI-58590-09-TH-03-01 collected approximately 20 m south of the property limit did not contain any metal concentration exceeding the CCME CSQG;
- No evidences of contamination were observed during the sampling operations;
- Fuel oil and lube oil fractions resemblance was determined by the laboratory in the submitted soil sample collected in the area of former single-walled and self-dyked 9,092 litre ASTs;
- The surface area of PHC/TPH impacted soils is approximated at 137 m^2 for a volume estimated at ± 80 m^3, considering an average soil thickness of 0.5 m;
- No remedial action is recommended at the former helicopter landing pad, in the area of the former storage shed and at the storage area for fishing vessels; and
- Remedial action is recommended at the St. Lewis Field Office in the area of former single-walled and self-dyked 9,092 litre ASTs.

Water

- Analytical results of the water sample LEWI-58590-09-WA-01, collected from the faucet in the kitchen of the Field Office, revealed BTEX and PAH concentrations below to the Health Canada Guideline for Canadian Drinking Water Quality and Total Petroleum Hydrocarbons (TPH) concentrations below to the Atlantic PIRI TIER I RBSL for a residential property with a potable water supply. BTEX, PAH and TPH concentrations were non detected; and
- No remedial action is recommended for the drinking water at the St. Lewis field office.

MLCA

- Analytical results indicated the absence of asbestos in the collected samples. Material was found to be composed of glass fibers (1-5%) and cellulose (5-10%).

10 RECOMMENDATIONS

Based on the results of the Phase III ESA completed at the St. Lewis Field Office, the following actions are recommended:

- Complete a Site Specific Human Health Risk Assessment (SSHHRA) and a Screening Level Ecological Risk Assessment (SLERA) based on a realistic scenario; these assessments could be completed using the available data for PHC/TPH impacted soils; and
- Excavation, transportation and off-site disposal at an approved facility to eliminate PHC/TPH impacted soils on the subject site; in this option, soil should be excavated using a back-hoe up to the depth reached by the contamination (approximately 0.5 m below ground surface), loaded aboard dump trucks, transported and disposed off at an appropriate treatment facility (in Happy Valley-Goose Bay), and the excavated area should be restored using clean fill material. If it appears that the contamination has seeped under the newly installed AST, an evaluation of the different remedial strategies will need to be undertaken.

11 REFERENCES

- Canadian Council of Ministers of the Environment, 2008, National Classification System for Contaminated Sites, Guidance Document;
- Canadian Standard Association, Phase II Environmental Site Assessment Standard Z769-00, 2000 (R2008);
- Dessau Inc, March 31, 2009, St.Lewis Field Office, Newfoundland and Labrador, DFRP # 58590 Phase II-III ESA Final Report Submitted to Public Works and Government Services Canada, O/Ref.:045-P013946-0100;
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- Energy, Mines and Resources Canada, Government of Canada, Centre for Topographic Information, 1964,Topographical map 13-3D5, Fox Harbour, scale of 1/50 000;
- Energy, Mines and Resources Canada, Government of Canada, Centre for Topographic Information, Permafrost, http://atlas.nrcan.gc.ca/site/english/maps/environment/land/permafrost;
- GeoScience Resource Atlas of the Department of Natural Resources of the Government of Newfoundland and Labrador http://gis.geosurv.gov.nl.ca;
- PWGSC, 2009-2010 FCSAP Program, NL Region, Terms of Reference Cover Document, May 30, 2008;
- PWGSC, 2009-2010 FCSAP Program, NL Region, Terms of Reference Module, Phase I/II Environmental Site Assessments. Statement of Work for the completion of a combined Phase I/II environmental site assessment;
- PWGSC, 2009-2010 FCSAP Program, NL Region, Terms of Reference Appendix, DFO Guidance on Identification of Contaminated Sites;
- PWGSC, 2009-2010 FCSAP Program, NL Region, Terms of Reference Appendix, DFO Direction on Document Deliverables;

- PWGSC, 2009-2010 FCSAP Program, NL Region, Terms of References Appendix, Report Summary Template and instruction sheet for DFO Contaminated Sites Module of the EnviroSys Database;
- SNC-Lavalin, June 12, 2001, "Phase I Environmental Site Assessment, St.Lewis Field Office, St.Lewis Labrador" Final Report Submitted to: Public Works and Government Services Canada, File No. 721650-P001, Report No. RP1-01-EN-XX-010; and
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SOIL

- Atlantic RBCA (Risk Based Corrective Action) Version 2.0 for Petroleum Impacted Sites in Atlantic Canada, User Guidance, Updated March 2007, Appendix 3: "Atlantic Canada Tier-1 Risk Based Screening Level (RSBL) Table". www.atlanticrbca.com/eng/technical_doc.html;
- Canadian Council of Ministers of the Environment, 2007, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health: Summary Tables. Updated September 2007. In Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment. http://ceqg-rcqe.ccme.ca/?lang=en;
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- Health Canada, July 10, 2006, Guidance Document on Use of Tier I and Tier II Atlantic-Based Corrective Action (RBCA) Look-Up Tables for Human Health Risk Assessment at Federal Contaminated Sites.

12 CLOSURE

Dessau realized this Environmental Site Assessment (ESA) in a diligent and reasonable manner in accordance with the applicable CSA Z769-00 standard. Findings presented in this report are a still frame of the site at the time of the environmental assessment. Conclusions presented in this report are based upon available information and documents, visual inspection of the property and information provided by contacted sources.

Dessau assumes no responsibility for errors due to statements from contacted sources of unavailability of information. Results of this report should not be considered a legal interpretation. Opinions given on legal or regulatory conformity are strictly of technical nature.

This report has been prepared by Dessau for the sole use of Public Works and Government Services Canada and the Department of Fisheries and Oceans. Any interpretation or use of this report by a third party is its own responsibility. Dessau assumes no responsibility for liabilities to a third party and resulting from decisions based on this report.

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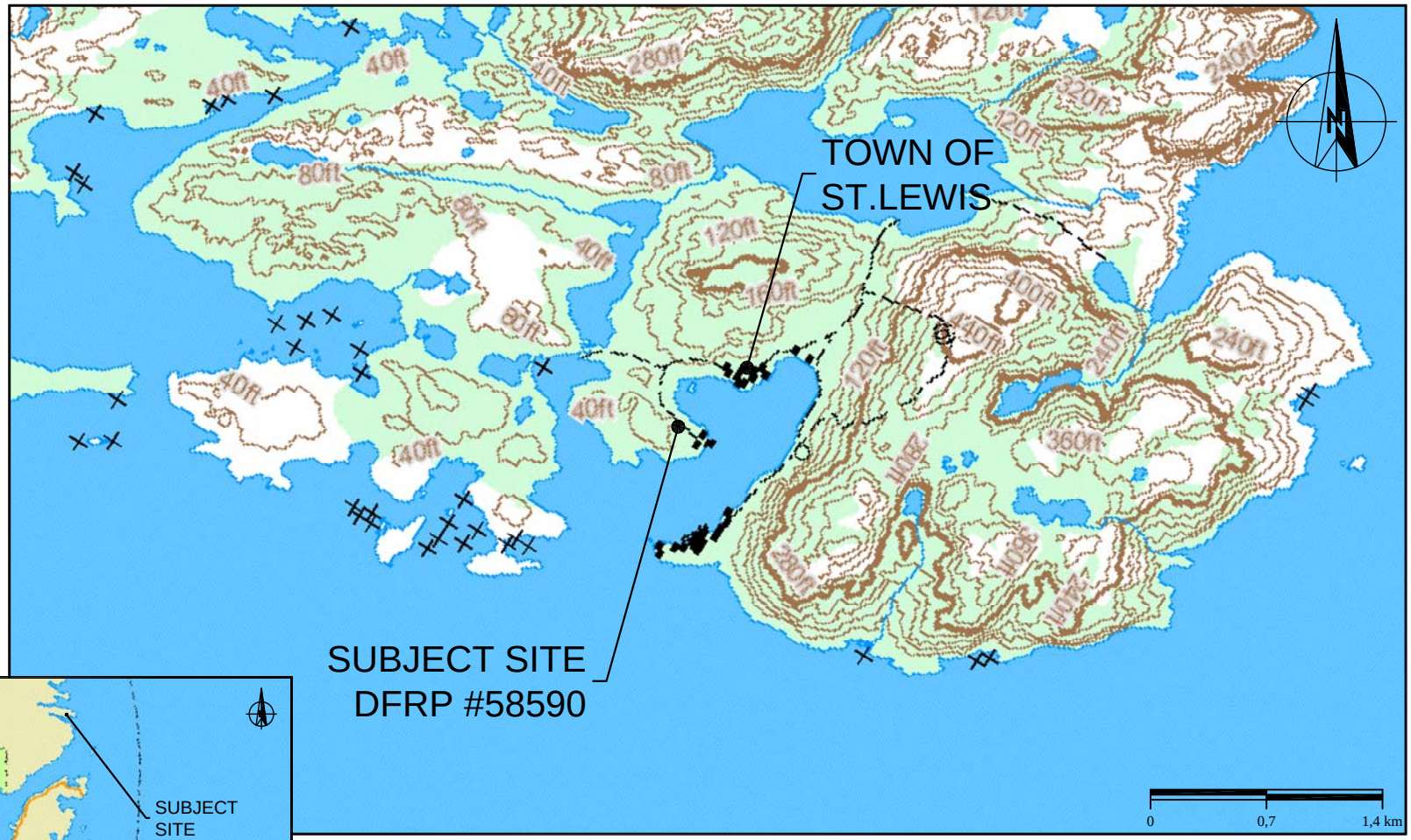
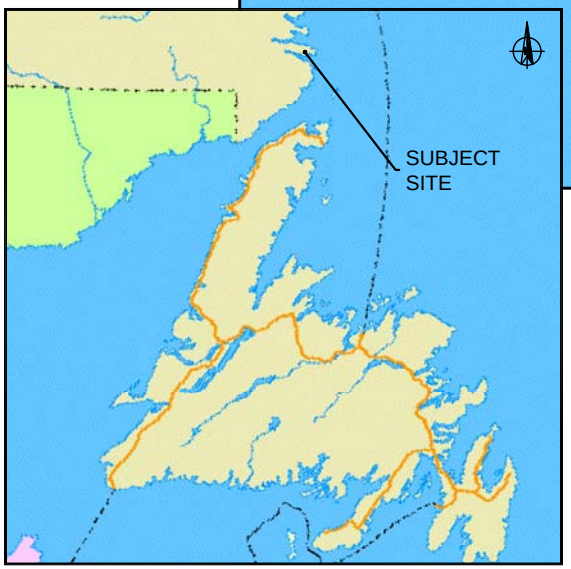
Appendix 1 Figures

File: G:\049\P029201_DFO-FCSAP_Add_sites_09-10_Group_1-2\z5_CAD\Actif.101\049-P029201-0101HG0101-00.dwg





SOURCE :
– toporama.cits.rncan.gc.ca

Project

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

PHASE III ENVIRONMENTAL SITE ASSESSMENT
ST.LEWIS FIELD OFFICE (DFRP #58590)
ST.LEWIS, NEWFOUNDLAND AND LABRADOR, CANADA

Title

FIGURE 1
SITE LOCATION

DESSAU

Dessau inc.
1080 Beaver Hall Hill, Suite 300
Montréal (Québec) H2Z 1S8
Telephone: 514.281.1010
Fax: 514.798.8790

Prepared	G. Caumartin	Discipline	Environment	Project manager	G. Caumartin
Drawn	C. Simard M.	Scale	as shown	Extract from:	Rev.:
Checked	L. Gauthier	Date	2010-02-26		

M. dept.	Project	Work pckg.	Sub-w.p.	Disc.	Drawing no.	Rev.
045	P029201	0101	000	HG	0101	00

DESSAU (2009-11-07)	LEWI-58590-09TH-02 01 0.15–0.27	
METALS	--	●
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	<	●
F3 C_{16}–C_{34}	<	●
TPH	<	●
PAH	<	●

DESSAU (2009-11-07)	LEWI-58590-09TH-01 01 0.15–0.30	
METALS	--	●
BTEX	<	●
F1 C_6–C_{10}	<	●
F3 C_{10}–C_{16}	<	●
F3 C_{16}–C_{34}	<	●
TPH	<	●
PAH	--	●

LEWI-58590-09WA-01	DESSAU (2008-09-02)		DESSAU (2009-11-07)	
METAL (Pb)	<0.5	●	–	–
BTEX	–	–	<	●
TPH	–	–	<	●
BENZO (A)	–	–	<	●

COORDINATES (UTM)		
SAMPLE ID	X	Y
LEWI–58590–09TH–01	589041.89	5802539.10
LEWI–58590–09TH–02	589042.63	5802532.56
LEWI–58590–09TH–03	589023.60	5802488.84
LEWI–58590–09TP–01	589047.62	5802522.10
LEWI–58590–09TP–02	589053.69	5802523.47
LEWI–58590–09TP–03	589052.75	5802527.31
LEWI–58590–09TP–04	589067.45	5802526.09
LEWI–58590–09TP–05	589068.00	5802523.95
LEWI–58590–09TP–06	589061.67	5802520.74
LEWI–58590–09TP–07	589080.35	5802526.60
LEWI–58590–09TP–08	589083.05	5802523.13
LEWI–58590–09TP–09	589080.60	5802520.12
LEWI–58590–09TP–10	589084.10	5802520.71
LEWI–58590–09TP–11	589076.97	5802518.33
LEWI–58590–09TP–12	589036.59	5802539.11
LEWI–58590–09TP–13	589041.07	5802543.18
LEWI–58590–09TP–14	589079.94	5802535.20
LEWI–58590–09TP–15	589088.79	5802532.75
LEWI–58590–09TP–16	589095.65	5802524.27
LEWI–58590–09TP–17	589098.34	5802522.57
LEWI–58590–09TP–18	589101.16	5802522.84
LEWI–58590–09TP–19	589100.24	5802517.30

Legend
- SOIL SAMPLING LOCATION (DESSAU 2009)
- TEST PIT LOCATION (DESSAU 2009)
- WATER SAMPLING LOCATION (DESSAU 2008–2009)
- MATERIAL LIKELY TO CONTAINS ASBESTOS (MLCA) SAMPLING LOCATION (DESSAU 2009)
- BUILDING
- FORMER STRUCTURE AND ABOVEGROUND STORAGE TANK (AST)
- CHAIN LINKED FENCE
- STORAGE TANK
- SEPTIC SEWAGE
- LIMIT OF THE SUBJECT SITE
- PRESUMED GROUNDWATER FLOW DIRECTION
- APPROXIMATE DELINEATION OF PHC/TPH IMPACTED SOIL (± 137 m²)

SOURCES :
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- FISHERIES AND OCEANS REAL PROPERTY, SITE PLAN, 0300501F00201, 2001–09–20.
- SNC–LAVALIN INC., BAE.NEWPLAN GROUP LIMITED, JUNE 15, 2001. ENVIRONMENTAL SITE ASSESSMENT, ST.LEWIS, LABRADOR, PROJECT NO 21650, FIGURE 6, "1999 TEST PIT LOCATIONS". DRAWING NO. SK–MA–1EN–MA–1266.
- SNC–LAVALIN INC., BAE.NEWPLAN GROUP LIMITED, JUNE 15, 2001. ENVIRONMENTAL SITE ASSESSMENT, ST.LEWIS, LABRADOR, PROJECT NO 71650, FIGURE 7, "2000 TEST PIT LOCATIONS". DRAWING NO. SK–MA–1EN–MA–1267.

ANALYTICAL RESULTS FOR WATER

REALIZED BY: COMPANY AND DATE
WATER SAMPLE

ANALYZED PARAMETERS
METAL: Pb
BTEX: Benzene, Toluene, Ethylbenzene, Total xylenes
TPH : Petroleum Hydrocarbons modified TPH
Benzo (A) Pyrene

	LEWI–58590–09WA–01	DESSAU (2009–11–07)	
METAL (Pb)	--		●
BTEX	<		●
TPH	<		●
BENZO (A)	<		●

CONCENTRATION (in µg/L (ppb))
< : Below the analyzed detection limit
– : Not analyzed
-- : See tables of results for complete list

APPLICABLE CRITERIA:
– Atlantic PIRI TIER I – residential property with a potable water supply (2003)
– Health Canada Guideline for canadian drinking water quality (2008)
● = Concentration within applicable criteria
■ = Concentration exceeds applicable criteria

ANALYTICAL RESULTS FOR SOIL

TEST HOLE
ANALYZED SAMPLE
DEPTH INTERVAL, m
REALIZED BY : COMPANY AND DATE

ANALYZED PARAMETERS
METALS : Al, Ag, Sb, As, Ba, Be, B, Cd, Cr, Co, Cu, Fe, Pb, Li, Mn, Hg, Mo, Ni, Se, Sr, Tl, Sn, U, V, Zn.
BTEX : Benzene, Toluene, Ethylbenzene, Total xylenes
F1 : C_6–C_{10}
F2 : C_{10}–C_{16}
F3 : C_{16}–C_{34}
TPH : Petroleum Hydrocarbons modified TPH
PAH : Polycyclic Aromatic Hydrocarbons
PCB : Polychlorinated Biphenyl

	DESSAU (2009–11–07)	LEWI–58590–09TH–01 01 0.15–0.30	
METALS	--		●
BTEX	<		●
F1 C_6–C_{10}	<		●
F2 C_{10}–C_{16}	<		●
F3 C_{16}–C_{34}	<		●
TPH	<		●
PAH	--		●
PCB	<		●

CONCENTRATION (in mg/kg (ppm))
< : Below the analyzed detection limit
– : Not analyzed
-- : See tables of results for complete list

APPLICABLE CRITERIA:
– Atlantic PIRI TIER I – residential property with a potable water supply and coarse grained soils
– Note that the above–mentioned Atlantic PIRI TIER I criteria was divided by two to provide an equivalency to CCME's Canada–Wide Standard (CWS) for Petroleum Hydrocarbons (F) in Soil (2008)
● = Concentration within applicable criteria (Atlantic RBCA TIER I divided by 2)
■ = Concentration exceeds applicable criteria (Atlantic RBCA TIER I divided by 2)
– CCME–CEQG B : Benzene 0.03 mg/Kg
T : Toluene 0.37 mg/Kg
E : Ethylbenzene 0.082 mg/Kg
X : Total Xylenes 11 mg/Kg
F1 : C_6–C_{10} 30 mg/Kg
F2 : C_{10}–C_{16} 150 mg/Kg
F3 : C_{16}–C_{34} 300 mg/Kg

SHOAL POINT ROAD (GRAVEL)
FORMER HELICOPTER LANDING PAD
FORMER AVIATION FUEL STORAGE PLATFORM
NEW SEPTIC TANK
EXISTING SEPTIC TANK AND DISPOSAL SEPTIC LINES
CHAIN LINKED FENCE
FORMER STORAGE SHED
MAIN ROAD THROUGH FOX HARBOUR
CROWN LAND
PARCEL 02-01 (±0.1970 ha)
STORAGE SHED
GARAGE
OFFICE
STORAGE AREA FOR FISHING VESSELS
LOT A (±0.2076 ha)
LOT B (±0.1269 ha)
TRAIL TO FIRE HALL
FIRE HALL
2273 L AST ON CONCRETE SLAB
CONCRETE SLAB
ARTESIAN WELL
6819 L AST ON CONCRETE SLAB
FORMER APPROXIMATE LOCATION OF THE SECOND 9092 L SELF–DYKED AST (1995–2004)
FORMER APPROXIMATE LOCATION OF THE ORIGINAL 9092 L SINGLE–WALLED AST (1982–1995)
(BACKGROUND) LEWI-58590-09TH-03
LEWI-58590-09TP-13
LEWI-58590-09TP-12
LEWI-58590-09TH-01
LEWI-58590-09TH-02
LEWI-58590-09TH-03
LEWI-58590-09TP-01
LEWI-58590-09TP-02
LEWI-58590-09TP-03
LEWI-58590-WA-01
LEWI-58590-09AS-01
LEWI-58590-09TP-04
LEWI-58590-09TP-14
LEWI-58590-09TP-15
LEWI-58590-09TP-16
LEWI-58590-09TP-07
LEWI-58590-09TP-05
LEWI-58590-09TP-08
LEWI-58590-09TP-09
LEWI-58590-09TP-10
LEWI-58590-09TP-18
LEWI-58590-09TP-17
LEWI-58590-09TP-19
LEWI-58590-09TP-06
LEWI-58590-09TP-11

DESSAU (2009–11–07)	LEWI–58590–09TH–03 01 0–0.15	
METALS	<	●

DETAILED VIEW OF CONTAMINATED SOILS AND ANALYTICAL RESULTS (SEE FIGURE 3)

NOTES :
1–Sample LEWI–58590–WA–01 was collected from tap water in the faucet from the kitchen inside the office building. Tap water is supplied using an artesian well on site. Sampling location was not recording using a GPS.
2–Samples LEWI–58590–09TH–01 and LEWI–58590–09TH–02 were collected inside the garage. Sampling locations were not recording using a GPS.

SCALE 1:500
0 25 50 pi
0 4 8 16 m

REV.	Y-M-D DATE	DESCRIPTION	Prepared By	Checked By

ISSUES / REVISIONS

ALL DIMENSIONS MUST BE TAKEN AND CHECKED BEFORE BEGINNING THE WORKS

Seal

Customer
PUBLIC WORKS AND GOUVERNMENT SERVICES CANADA

Customer's references

Project
PHASE III
ENVIRONMENTAL SITE ASSESSMENT
ST.LEWIS FIELD OFFICE, DFRP #58590
ST.LEWIS, NEWFOUNDLAND AND LABRADOR, CANADA

Title
FIGURE 2
SAMPLING LOCATION PLAN AND SOIL AND WATER ANALYTICAL RESULTS

DESSAU
Dessau inc.
1080, Beaver Hall Hill, Suite 300
Montreal (Quebec) H2Z 1S8
Telephone: 514.281.1010
Fax: 514.798.8790

Prepared	G. Caumartin	Discipline	Environment
Drawn	C. Simard M.	Scale	as shown
Checked	L. Gauthier	Date	2010-02-26

Project manager: G. Caumartin
Sequence no.: of

M. dept.	Project	Work pckg.	Sub-w.p.	Disc.	Drawing no.	Rev.
049	P029201	0101	000	HG	0102	00

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SHEET A2

Legend
- TEST PIT LOCATION (DESSAU 2009)
- TEST PIT LOCATION (DESSAU, 2008)
- PRESUMED TEST PIT LOCATION (SNC–LAVALIN, 2000)
- PRESUMED TEST PIT LOCATION (SNC–LAVALIN, 1999)
- BUILDING
- FORMER STRUCTURE AND ABOVEGROUND STORAGE TANK (AST)
- CHAIN LINKED FENCE
- STORAGE TANK
- PRESUMED GROUNDWATER FLOW DIRECTION
- APPROXIMATE DELINEATION OF PHC/TPH IMPACTED SOIL (± 137 m²)

SOURCES :
- PWGSC, SEPT. 11, 2002, S–4755. PLAN OF SURVEY SHOWING LOTS A AND B AND PARCEL 02–01.
- FOX HARBOUR/ST.LEWIS, SITE PLAN, OCT. 2, 2001, NO. 03D0501F001C1.
- FISHERIES AND OCEANS REAL PROPERTY, SITE PLAN, 0300501F00201, 2001–09–20.
- SNC–LAVALIN INC., BAE.NEWPLAN GROUP LIMITED, JUNE 15, 2001. ENVIRONMENTAL SITE ASSESSMENT, ST.LEWIS, LABRADOR, PROJECT NO 21650, FIGURE 6, "1999 TEST PIT LOCATIONS". DRAWING NO. SK–MA–1EN–MA–1266.
- SNC–LAVALIN INC., BAE.NEWPLAN GROUP LIMITED, JUNE 15, 2001. ENVIRONMENTAL SITE ASSESSMENT, ST.LEWIS, LABRADOR, PROJECT NO 71650, FIGURE 7, "2000 TEST PIT LOCATIONS". DRAWING NO. SK–MA–1EN–MA–1267.

REV.	Y-M-D DATE	DESCRIPTION	Prepared By	Checked By

ISSUES / REVISIONS

ALL DIMENSIONS MUST BE TAKEN AND CHECKED BEFORE BEGINNING THE WORKS

Seal

Customer

PUBLIC WORKS AND GOUVERNMENT SERVICES CANADA

Customer's references

Project

PHASE III
ENVIRONMENTAL SITE ASSESSMENT
ST.LEWIS FIELD OFFICE, DFRP #58590
ST.LEWIS, NEWFOUNDLAND AND LABRADOR, CANADA

Title

FIGURE 3
SAMPLING LOCATION PLAN AND SOIL ANALYTICAL RESULTS

DESSAU
Dessau inc.
1080, Beaver Hall Hill, Suite 300
Montreal (Quebec) H2Z 1S8
Telephone: 514.281.1010
Fax: 514.798.8790

Prepared	G. Caumartin	Discipline	Environment
Drawn	C. Simard M.	Scale	as shown
Checked	L. Gauthier	Date	2010-02-26

Project manager: G. Caumartin
Sequence no.: of

M. dept.	Project	Work pckg.	Sub-w.p.	Disc.	Drawing no.	Rev.
049	P029201	0101	000	HG	0103	00

SCALE 1:200
0 3 6 m

ANALYTICAL RESULTS FOR SOIL

TEST HOLE
ANALYZED SAMPLE
DEPTH INTERVAL, m
REALIZED BY : COMPANY AND DATE

ANALYZED PARAMETERS
METALS : Al, Ag, Sb, As, Ba, Be, B, Cd, Cr, Co, Cu, Fe, Pb, Li, Mn, Hg, Mo, Ni, Se, Sr, Tl, Sn, U, V, Zn.
BTEX : Benzene, Toluene, Ethylbenzene, Total xylenes
F1 : C_6–C_{10}
F2 : C_{10}–C_{16}
F3 : C_{16}–C_{34}
TPH : Petroleum Hydrocarbons modified TPH
PAH : Polycyclic Aromatic Hydrocarbons
PCB : Polychlorinated Biphenyl

DESSAU (2009–11–07)	LEWI–58590–09TH–01
	01 0.15–0.30
METALS	––
BTEX	<
F1 C_6–C_{10}	<
F2 C_{10}–C_{16}	<
F3 C_{16}–C_{34}	<
TPH	<
PAH	––
PCB	<

CONCENTRATION (in mg/kg (ppm))
< : Below the analyzed detection limit
– : Not analyzed
–– : See tables of results for complete list

APPLICABLE CRITERIA:
– Atlantic PIRI TIER I – residential property with a potable water supply and coarse grained soils
– Note that the above–mentioned Atlantic PIRI TIER I criteria was divided by two to provide an equivalency to CCME's Canada–Wide Standard (CWS) for Petroleum Hydrocarbons (F) in Soil (2008)
● = Concentration within applicable criteria (Atlantic RBCA TIER I divided by 2)
■ = Concentration exceeds applicable criteria (Atlantic RBCA TIER I divided by 2)
– CCME–CEQG
B : Benzene 0.03 mg/Kg
T : Toluene 0.37 mg/Kg
E : Ethylbenzene 0.082 mg/Kg
X : Total Xylenes 11 mg/Kg
F1 : C_6–C_{10} 30 mg/Kg
F2 : C_{10}–C_{16} 150 mg/Kg
F3 : C_{16}–C_{34} 300 mg/Kg

DESSAU (2009–11–06)	LEWI–58590–09TP–13			
	01 0–0.4		02 0.4–0.8	
METALS	––	●	––	●
BTEX	<	●	<	●
F1 C_6–C_{10}	<	●	<	●
F2 C_{10}–C_{16}	<	●	<	●
F3 C_{16}–C_{34}	<	●	<	●
TPH	<	●	<	●
PAH	––	●	––	●

DESSAU (2009–11–06)	LEWI–58590–09TP–12			
	01 0–0.45		03 1.0–1.5	
METALS	––	●	––	●
BTEX	<	●	<	●
F1 C_6–C_{10}	<	●	<	●
F2 C_{10}–C_{16}	<	●	<	●
F3 C_{16}–C_{34}	<	●	<	●
TPH	<	●	<	●
PAH	––	●	<	●

DESSAU (2009–11–06)	LEWI–58590–09TP–03	
	01 0–0.25	
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	<	●
F3 C_{16}–C_{34}	<	●
TPH	<	●

DESSAU (2009–11–06)	LEWI–58590–09TP–02	
	01 0–0.4	
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	<	●
F3 C_{16}–C_{34}	<	●
TPH	<	●

DESSAU (2009–11–06)	LEWI–58590–09TP–01			
	01 0–0.5		03 1.0–1.3	
BTEX	<	●	<	●
F1 C_6–C_{10}	<	●	<	●
F2 C_{10}–C_{16}	<	●	<	●
F3 C_{16}–C_{34}	<	●	<	●
TPH	<	●	<	●

SNC (2000–09–30)	TP–04–2000	
	SL–4–01 0.5	
TPH	<	●

SNC (2000–09–30)	TP–05–2000	
	SL–5–01 0.5	
TPH (D)	13	●

DESSAU (2008–09–02)	58590 TE–08–5			
	MA–1 0.0–0.6		DUPLICATE–6 0.0–0.6	
BTEX	––	●	<	●
F1 C_6–C_{10}	<	●	<	●
F2 C_{10}–C_{16}	11	●	13	●
F3 C_{16}–C_{34}	51	●	66	●
TPH	62	–	79	■

DESSAU (2009–11–06)	LEWI–58590–09TP–04	
	01 0–0.6	
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	16	●
F3 C_{16}–C_{34}	20	●
TPH	36	●

SNC (1999–10–28)	TP–01–1999	
	TPH–01 0.0	
TPH (D)	51.2	●

DESSAU (2008–09–02)	58590 TE–08–1	
	MA–1 0.3–1.0	
TPH	<20	●

SNC (2000–09–30)	TP–06–2000	
	SL–6–01 0.5	
TPH	<	●

DESSAU (2008–09–02)	58590 TE–08–3	
	MA–1 0.0–0.5	
TPH	<20	●

DESSAU (2009–11–06)	LEWI–58590–09TP–07	
	01 0–0.2	
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	<	●
F3 C_{16}–C_{34}	<	●
TPH	<	●

DESSAU (2008–09–02)	58590 TE–08–2	
	MA–1 0.0–0.5	
TPH	20	●

SNC (2000–09–30)	TP–09–2000	
	SL–9–03 2.0	
TPH	<	●

DESSAU (2009–11–06)	LEWI–58590–09TP–14	
	01 0–0.4	
METALS	––	●
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	<	●
F3 C_{16}–C_{34}	<	●
TPH	<	●
PAH	<	●

DESSAU (2009–11–06)	LEWI–58590–09TP–15			
	01 0–0.3		02 0.3–1.2	
METALS	––	●	––	●
BTEX	<	●	<	●
F1 C_6–C_{10}	<	●	<	●
F2 C_{10}–C_{16}	<	●	11	●
F3 C_{16}–C_{34}	21	●	<	●
TPH	21	●	20	●
PAH	<	●	<	●
PCB	<	●	–	–

DESSAU (2009–11–06)	LEWI–58590–09TP–16	
	01 0–0.6	
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	<	●
F3 C_{16}–C_{34}	<	●
TPH	<	●
PAH	<	●

DESSAU (2009–11–06)	LEWI–58590–09TP–17			
	01 0–0.4		02 0.4–0.9	
BTEX	<	●	<	●
F1 C_6–C_{10}	<	●	<	●
F2 C_{10}–C_{16}	<	●	<	●
F3 C_{16}–C_{34}	<	●	<	●
TPH	<	●	<	●
PAH	<	●	<	●

DESSAU (2009–11–06)	LEWI–58590–09TP–18			
	01 0–0.35		02 0.35–0.7	
BTEX	<	●	<	●
F1 C_6–C_{10}	<	●	<	●
F2 C_{10}–C_{16}	<	●	<	●
F3 C_{16}–C_{34}	18	●	<	●
TPH	18	●	<	●
PAH	<	●	<	●

DESSAU (2009–11–06)	LEWI–58590–09TP–19	
	01 0–0.5	
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	<	●
F3 C_{16}–C_{34}	<	●
TPH	<	●
PAH	<	●

DESSAU (2009–11–06)	LEWI–58590–09TP–08	
	01 0–0.5	
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	<	●
F3 C_{16}–C_{34}	<	●
TPH	<	●

DESSAU (2009–11–06)	LEWI–58590–09TP–10	
	01 0–0.55	
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	23	●
F3 C_{16}–C_{34}	140	●
TPH	170	■

SNC (2000–09–30)	TP–03–2000	
	SL–3–01 0.5	
TPH	<	●

SNC (1999–10–28)	TP–03–1999	
	TPH–03 0.0	
TPH	<	●

SNC (2000–09–30)	TP–02–2000	
	SL–2–01 0.5	
TPH	<	●

SNC (1999–10–28)	TP–02–1999			
	TPH–02–B 0.0		TPH–02–S 0.3	
BTEX	<	●	<	●
F1 C_6–C_{10}	<	●	<	●
F2 C_{10}–C_{16}	1 970	■	332	■
F3 C_{16}–C_{34}	2 696	■	494	■
TPH	4 825	■	829	■

SNC (2000–09–30)	TP–01–2000	
	SL–1–01 0.3	
TPH	<	●

DESSAU (2008–09–02)	58590 TE–08–4	
	MA–1 0.0–0.5	
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	441	■
F3 C_{16}–C_{34}	899	■
TPH	1 360	■

SNC (2000–09–30)	TP–08–2000	
	SL–8–01 0.3	
TPH	16	●

DESSAU (2009–11–06)	LEWI–58590–09TP–06	
	01 0–0.25	
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	<	●
F3 C_{16}–C_{34}	<	●
TPH	<	●

DESSAU (2009–11–06)	LEWI–58590–09TP–05			
	01 0–0.4		02 0.4–0.8	
BTEX	<	●	<	●
F1 C_6–C_{10}	<	●	<	●
F2 C_{10}–C_{16}	123	●	11	●
F3 C_{16}–C_{34}	307	■	13	●
TPH	430	■	24	●

DESSAU (2009–11–06)	LEWI–58590–09TP–11	
	01 0–0.5	
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	<	●
F3 C_{16}–C_{34}	38	●
TPH	38	●

SNC (2000–09–30)	TP–07–2000	
	SL–7–01 0.5	
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	2 336	■
F3 C_{16}–C_{34}	4 264	■
TPH	6 640	■

DESSAU (2009–11–06)	LEWI–58590–09TP–09	
	01 0–0.45	
BTEX	<	●
F1 C_6–C_{10}	<	●
F2 C_{10}–C_{16}	617	■
F3 C_{16}–C_{34}	783	■
TPH	1,400	■

FORMER HELICOPTER LANDING PAD
LEWI–58590–09TP–13
LEWI–58590–09TP–12
LEWI–58590–09TH–01
FORMER AVIATION FUEL STORAGE PLATFORM
2273 L AST ON CONCRETE SLAB
LEWI–58590–09TH–02
OFFICE
CONCRETE SLAB
ARTESIAN WELL
GARAGE
LEWI–58590–09TP–03
LEWI–58590–09TP–02
LEWI–58590–09TP–01
6819 L AST ON CONCRETE SLAB
TP–01–1999
TP–06–2000
TP–05–2000
LEWI–58590–09TP–04
LEWI–58590–09TP–05
58590–TE–08–5
58590–TE–08–3
58590–TE–08–4
TP–04–2000
TP–02–1999
LEWI–58590–09TP–06
TP–03–2000
TP–03–1999
TP–02–2000
TP–012000
58590–TE–08–1
TP–09–2000
58590–TE–08–2
LEWI–58590–09TP–14
LEWI–58590–09TP–15
STORAGE AREA FOR FISHING VESSELS
LEWI–58590–09TP–07
LEWI–58590–09TP–08
LEWI–58590–09TP–09
LEWI–58590–09TP–10
LEWI–58590–09TP–11
TP–08–2000
LEWI–58590–09TP–16
LEWI–58590–09TP–17
LEWI–58590–09TP–18
LEWI–58590–09TP–19
FORMER APPROXIMATE LOCATION OF THE SECOND 9092 L SELF–DYKED AST (1995–2004)
FORMER APPROXIMATE LOCATION OF THE ORIGINAL 9092 L SINGLE–WALLED AST (1982–1995)

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Appendix 2 Tables

DESSAU

PWGSC

TABLE I
ANALYTICAL RESULTS - PHC/TPH and BTEX IN SOILS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data						Guidelines						
Lab ID			EI4982	EI4984	EI4985	EI4986	EI4987	EI4988	**1999 CCME-CEQG (Update 2008) Residential land use**	**2008 CCME CWS for PETROLEUM HYDROCARBONS (PHC) IN SOIL**		**2003 Atlantic PIRI TIER I RBSL Residential land use with coarse-grained soils and potable water**			
Sampling Date			06/11/2009	06/11/2009	06/11/2009	06/11/2009	06/11/2009	06/11/2009							
COC Number			19007	19007	19007	19007	19007	19007							
Sampling depth below ground surface (m)			0 to 0.5	1.0 to 1.3	0 to 0.4	0 to 0.25	0 to 0.6	0 to 0.4		**Management Limit**	**Eco Soil Contact**	**-**	**gasoline**	**diesel # 2**	**# 6 oil**
Sample ID	**Units**	**RDL**	**LEWI-58590-09TP-01-01**	**LEWI-58590-09TP-01-03**	**LEWI-58590-09TP-02-01**	**LEWI-58590-09TP-03-01**	**LEWI-58590-09TP-04-01**	**LEWI-58590-09TP-05-01**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Petroleum Hydrocarbons															
Benzene	mg/kg	0.03	N/D	N/D	N/D	N/D	N/D	N/D	**0.03**	**-**	**-**	**0.03**	**-**	**-**	**-**
Toluene	mg/kg	0.03	N/D	N/D	N/D	N/D	N/D	N/D	**0.37**	**-**	**-**	**0.37**	**-**	**-**	**-**
Ethylbenzene	mg/kg	0.03	N/D	N/D	N/D	N/D	N/D	N/D	**0.082**	**-**	**-**	**0.082**	**-**	**-**	**-**
Xylene (Total)	mg/kg	0.05	N/D	N/D	N/D	N/D	N/D	N/D	**11**	**-**	**-**	**11**	**-**	**-**	**-**
C_6 - C_{10} (less BTEX)	mg/kg	3	N/D	N/D	N/D	N/D	N/D	N/D	**-**	**-**	**-**	**-**	**-**	**-**	**-**
>C_{10}-C_{21} Hydrocarbons	mg/kg	15	N/D	N/D	N/D	N/D	36	280	**-**	**-**	**-**	**-**	**-**	**-**	**-**
>C_{21}-<C_{32} Hydrocarbons	mg/kg	15	N/D	N/D	N/D	N/D	N/D	150	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Modified TPH (Tier1)[2]	mg/kg	20	N/D	N/D	N/D	N/D	36	430	**-**	**-**	**-**	**-**	**19.5**	**70**	**345**
F1 (C6-C10)	mg/kg		N/D	N/D	N/D	N/D	N/D	N/D	**30**	**700**	**210**	**-**	**-**	**-**	**-**
F2 (C10-C16 Hydrocarbons)	mg/kg		N/D	N/D	N/D	N/D	16	123	**150**	**1000**	**150**	**-**	**-**	**-**	**-**
F3 (C16-C34 Hydrocarbons)	mg/kg		N/D	N/D	N/D	N/D	20	**307**	**300**	**2500**	**300**	**-**	**-**	**-**	**-**
F4 (C34-C50 Hydrocarbons)	mg/kg		--	--	--	--	--	--	**2800**	**10000**	**2800**	**-**	**-**	**-**	**-**
Petroleum Product Identification							Fuel oil fraction	Fuel oil fraction. Lube oil fraction	**-**	**-**	**-**	**-**	-	**-**	-

Notes:

CCME	**Canadian Council of Ministers of the Environment**	**PIRI**	**Partership in RBCA implementation**
CEQG	**Canadian Environmental Quality Guidelines**	**RBCA**	**Risk-based Corrective Action**
CWS	**Canada Wide Standard**	**RBSL**	**Risk-based screening level**
-	**No guideline established / no result available**		
N/D	**No petroleum product was detected**		
1	**Exposure pathway for the investigated site**		
2	**Health Canada recommends to divide the 2003 Atlantic PIRI TIER I RBSL's for modified TPH by two to provide an equivalency to the CCME Canada-Wide Standard (CWS) for Petroleum Hydrocarbons (PHC) in soils (2008)**		
--	**Not determined by the analytical method used by Maxxam**		

Bold and underlined results indicate that the concentration exceeds CCME-CEQG Tier I

Bold and shaded results indicate that the concentration exceeds CCME-CEQG Tier I (Exposure pathways)

Bold and dotted results indicate that the concentration exceeds ARBCA

DESSAU

PWGSC

TABLE I (Cont'd)
ANALYTICAL RESULTS - PHC/TPH and BTEX IN SOILS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data						Guidelines						
Lab ID			EI4989	EI4990	EI4991	EI4992	EI4993	EI4994	**1999 CCME-CEQG (Update 2008) Residential land use**	**2008 CCME CWS for PETROLEUM HYDROCARBONS (PHC) IN SOIL**		**2003 Atlantic PIRI TIER I RBSL Residential land use with coarse-grained soils and potable water**			
Sampling Date			06/11/2009	06/11/2009	06/11/2009	06/11/2009	06/11/2009	06/11/2009							
COC Number			19007	19007	19007	19007	19007	19007							
Sampling depth below ground surface (m)			0.4 to 0.8	0 to 0.25	0 to 0.2	0 to 0.5	0 to 0.45	0 to 0.55		**Management Limit**	**Eco Soil Contact**	**-**	**gasoline**	**diesel # 2**	**# 6 oil**
Sample ID	**Units**	**RDL**	**LEWI-58590-09TP-05-02**	**LEWI-58590-09TP-06-01**	**LEWI-58590-09TP-07-01**	**LEWI-58590-09TP-08-01**	**LEWI-58590-09TP-09-01**	**LEWI-58590-09TP-10-01**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Petroleum Hydrocarbons															
Benzene	mg/kg	0.03	N/D	N/D	N/D	N/D	N/D	N/D	**0.03**	**-**	**-**	**0.03**	**-**	**-**	**-**
Toluene	mg/kg	0.03	N/D	N/D	N/D	N/D	N/D	N/D	**0.37**	**-**	**-**	**0.37**	**-**	**-**	**-**
Ethylbenzene	mg/kg	0.03	N/D	N/D	N/D	N/D	N/D	N/D	**0.082**	**-**	**-**	**0.082**	**-**	**-**	**-**
Xylene (Total)	mg/kg	0.05	N/D	N/D	N/D	N/D	N/D	N/D	**11**	**-**	**-**	**11**	**-**	**-**	**-**
C_6 - C_{10} (less BTEX)	mg/kg	3	N/D	N/D	N/D	N/D	N/D	7	**-**	**-**	**-**	**-**	**-**	**-**	**-**
>C_{10}-C_{21} Hydrocarbons	mg/kg	15	24	N/D	N/D	N/D	1400	53	**-**	**-**	**-**	**-**	**-**	**-**	**-**
>C_{21}-<C_{32} Hydrocarbons	mg/kg	15	N/D	N/D	N/D	N/D	N/D	110	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Modified TPH (Tier1)[2]	mg/kg	20	24	N/D	N/D	N/D	1400	170	**-**	**-**	**-**	**-**	**19.5**	**70**	**345**
F1 (C6-C10)	mg/kg		N/D	N/D	N/D	N/D	N/D	7	**30**	**700**	**210**	**-**	**-**	**-**	**-**
F2 (C10-C16 Hydrocarbons)	mg/kg		11	N/D	N/D	N/D	**617**	23	**150**	**1000**	**150**	**-**	**-**	**-**	**-**
F3 (C16-C34 Hydrocarbons)	mg/kg		13	N/D	N/D	N/D	**783**	140	**300**	**2500**	**300**	**-**	**-**	**-**	**-**
F4 (C34-C50 Hydrocarbons)	mg/kg		--	--	--	--	--	--	**2800**	**10000**	**2800**	**-**	**-**	**-**	**-**
Petroleum Product Identification			Fuel oil fraction				Fuel oil fraction	One product in fuel / lube range	**-**	**-**	**-**	**-**	-	**-**	-

Notes:

CCME	**Canadian Council of Ministers of the Environment**
CEQG	**Canadian Environmental Quality Guidelines**
CWS	**Canada Wide Standard**
-	**No guideline established / no result available**
--	**No petroleum product was detected**
1	**Exposure pathway for the investigated site**
2	**Health Canada recommends to divide the 2003 Atlantic PIRI TIER I RBSL's for modified TPH by two to provide an equivalency to the CCME Canada-Wide Standard (CWS) for Petroleum Hydrocarbons (PHC) in soils (2008)**
N/D	**Not determined by the analytical method used by Maxxam**
	Bold and underlined results indicate that the concentration exceeds CCME-CEQG Tier I
	Bold and shaded results indicate that the concentration exceeds CCME-CEQG Tier I (Exposure pathways)
	Bold and dotted results indicate that the concentration exceeds ARBCA
PIRI	**Partership in RBCA implementation**
RBCA	**Risk-based Corrective Action**
RBSL	**Risk-based screening level**

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TABLE I (Cont'd)
ANALYTICAL RESULTS - PHC/TPH and BTEX IN SOILS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data						Guidelines						
Lab ID			EI4995	EI4996	EI4997	EI4998	EI4999	EI5000	**1999 CCME-CEQG (Update 2008) Residential land use**	**2008 CCME CWS for PETROLEUM HYDROCARBONS (PHC) IN SOIL**		**2003 Atlantic PIRI TIER I RBSL Residential land use with coarse grained soils and potable water**			
Sampling Date			06/11/2009	06/11/2009	06/11/2009	06/11/2009	06/11/2009	06/11/2009							
COC Number			19007	19007	19007	19007	19007	19007							
Sampling depth below ground surface (m)			0 to 0.5	0 to 0.45	1.0 to 1.6	0 to 0.4	0.4 to 0.8	0 to 0.4		**Management Limit**	**Eco Soil Contact**	**-**	**gasoline**	**diesel # 2**	**# 6 oil**
Sample ID	**Units**	**RDL**	**LEWI-58590-09TP-11-01**	**LEWI-58590-09TP-12-01**	**LEWI-58590-09TP-12-03**	**LEWI-58590-09TP-13-01**	**LEWI-58590-09TP-13-02**	**LEWI-58590-09TP-14-01**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Petroleum Hydrocarbons															
Benzene	mg/kg	0.03	N/D	N/D	N/D	N/D	N/D	N/D	**0.03**	**-**	**-**	**0.03**	**-**	**-**	**-**
Toluene	mg/kg	0.03	N/D	N/D	N/D	N/D	N/D	N/D	**0.37**	**-**	**-**	**0.37**	**-**	**-**	**-**
Ethylbenzene	mg/kg	0.03	N/D	N/D	N/D	N/D	N/D	N/D	**0.082**	**-**	**-**	**0.082**	**-**	**-**	**-**
Xylene (Total)	mg/kg	0.05	N/D	N/D	N/D	N/D	N/D	N/D	**11**	**-**	**-**	**11**	**-**	**-**	**-**
C_6 - C_{10} (less BTEX)	mg/kg	3	N/D	N/D	N/D	N/D	N/D	N/D	**-**	**-**	**-**	**-**	**-**	**-**	**-**
>C_{10}-C_{21} Hydrocarbons	mg/kg	15	N/D	N/D	N/D	N/D	N/D	N/D	**-**	**-**	**-**	**-**	**-**	**-**	**-**
>C_{21}-<C_{32} Hydrocarbons	mg/kg	15	38	N/D	N/D	N/D	N/D	N/D	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Modified TPH (Tier1)[2]	mg/kg	20	38	N/D	N/D	N/D	N/D	N/D	**-**	**-**	**-**	**-**	**19.5**	**70**	**345**
F1 (C6-C10)	mg/kg		N/D	N/D	N/D	N/D	N/D	N/D	**30**	**700**	**210**	**-**	**-**	**-**	**-**
F2 (C10-C16 Hydrocarbons)	mg/kg		N/D	N/D	N/D	N/D	N/D	N/D	**150**	**1000**	**150**	**-**	**-**	**-**	**-**
F3 (C16-C34 Hydrocarbons)	mg/kg		38	N/D	N/D	N/D	N/D	N/D	**300**	**2500**	**300**	**-**	**-**	**-**	**-**
F4 (C34-C50 Hydrocarbons)	mg/kg		--	--	--	--	--	--	**2800**	**10000**	**2800**	**-**	**-**	**-**	**-**
Petroleum Product Identification			Possible lube oil fraction						**-**	**-**	**-**	**-**	-	**-**	-

Notes:

CCME	**Canadian Council of Ministers of the Environment**
CEQG	**Canadian Environmental Quality Guidelines**
CWS	**Canada Wide Standard**
-	**No guideline established / no result available**
--	**No petroleum product was detected**
1	**Exposure pathway for the investigated site**
2	**Health Canada recommends to divide the 2003 Atlantic PIRI TIER I RBSL's for modified TPH by two to provide an equivalency to the CCME Canada-Wide Standard (CWS) for Petroleum Hydrocarbons (PHC) in soils (2008)**
N/D	**Not determined by the analytical method used by Maxxam**
	Bold and underlined results indicate that the concentration exceeds CCME-CEQG Tier I
	Bold and shaded results indicate that the concentration exceeds CCME-CEQG Tier I (Exposure pathways)
	Bold and dotted results indicate that the concentration exceeds ARBCA
PIRI	**Partership in RBCA implementation**
RBCA	**Risk-based Corrective Action**
RBSL	**Risk-based screening level**

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TABLE I (Cont'd)
ANALYTICAL RESULTS - PHC/TPH and BTEX IN SOILS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data						Guidelines						
Lab ID			EI5001	EI5002	EI5003	EI5004	EI5005	EI5006	**1999 CCME-CEQG (Update 2008) Residential land use**	**2008 CWS for PETROLEUM HYDROCARBONS (PHC) IN SOIL**		**2003 Atlantic PIRI TIER I RBSL Residential land use with coarse-grained soils and potable water**			
Sampling Date			06/11/2009	06/11/2009	06/11/2009	06/11/2009	06/11/2009	06/11/2009							
COC Number			19007	19007	19007	19007	19007	19007							
Sampling depth below ground surface (m)			0 to 0.3	0.3 to 1.2	0 to 0.6	0 to 0.4	0.4 to 0.9	0 to 0.35		**Management Limit**	**Eco Soil Contact**	**-**	**gasoline**	**diesel # 2**	**# 6 oil**
Sample ID	**Units**	**RDL**	**LEWI-58590-09TP-15-01**	**LEWI-58590-09TP-15-02**	**LEWI-58590-09TP-16-01**	**LEWI-58590-09TP-17-01**	**LEWI-58590-09TP-17-02**	**LEWI-58590-09TP-18-01**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Petroleum Hydrocarbons															
Benzene	mg/kg	0.03	N/D	N/D	N/D	N/D	N/D	N/D	**0.03**	**-**	**-**	**0.03**	**-**	**-**	**-**
Toluene	mg/kg	0.03	N/D	N/D	N/D	N/D	N/D	N/D	**0.37**	**-**	**-**	**0.37**	**-**	**-**	**-**
Ethylbenzene	mg/kg	0.03	N/D	N/D	N/D	N/D	N/D	N/D	**0.082**	**-**	**-**	**0.082**	**-**	**-**	**-**
Xylene (Total)	mg/kg	0.05	N/D	N/D	N/D	N/D	N/D	N/D	**11**	**-**	**-**	**11**	**-**	**-**	**-**
C_6 - C_{10} (less BTEX)	mg/kg	3	N/D	N/D	N/D	N/D	N/D	N/D	**-**	**-**	**-**	**-**	**-**	**-**	**-**
>C_{10}-C_{21} Hydrocarbons	mg/kg	15	N/D	N/D	N/D	N/D	N/D	N/D	**-**	**-**	**-**	**-**	**-**	**-**	**-**
>C_{21}-<C_{32} Hydrocarbons	mg/kg	15	21	20	N/D	N/D	N/D	18	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Modified TPH (Tier1)[2]	mg/kg	20	21	N/D	N/D	N/D	N/D	N/D	**-**	**-**	**-**	**-**	**19.5**	**70**	**345**
F1 (C6-C10)	mg/kg		N/D	N/D	N/D	N/D	N/D	N/D	**30**	**700**	**210**	**-**	**-**	**-**	**-**
F2 (C10-C16 Hydrocarbons)	mg/kg		N/D	N/D	N/D	N/D	N/D	N/D	**150**	**1000**	**150**	**-**	**-**	**-**	**-**
F3 (C16-C34 Hydrocarbons)	mg/kg		21	20	N/D	N/D	N/D	18	**300**	**2500**	**300**	**-**	**-**	**-**	**-**
F4 (C34-C50 Hydrocarbons)	mg/kg		--	--	--	--	--	--	**2800**	**10000**	**2800**	**-**	**-**	**-**	**-**
Petroleum Product Identification								No resemblance to petroleum products	**-**	**-**	**-**	**-**	-	**-**	-

Notes:

CCME	**Canadian Council of Ministers of the Environment**	**PIRI**	**Partership in RBCA implementation**
CEQG	**Canadian Environmental Quality Guidelines**	**RBCA**	**Risk-based Corrective Action**
CWS	**Canada Wide Standard**	**RBSL**	**Risk-based screening level**

- No guideline established / no result available
-- No petroleum product was detected
1 Exposure pathway for the investigated site
2 Health Canada recommends to divide the 2003 Atlantic PIRI TIER I RBSL's for modified TPH by two to provide an equivalency to the CCME Canada-Wide Standard (CWS) for Petroleum Hydrocarbons (PHC) in soils (2008)
N/D Not determined by the analytical method used by Maxxam
Bold and underlined results indicate that the concentration exceeds CCME-CEQG Tier I
Bold and shaded results indicate that the concentration exceeds CCME-CEQG Tier I (Exposure pathways)
Bold and dotted results indicate that the concentration exceeds ARBCA

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TABLE I (Cont'd)
ANALYTICAL RESULTS - PHC/TPH and BTEX IN SOILS
St. Lewis Field Office, St .Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data				Guidelines						
Lab ID			EI5007	EI5008	EI5013	EI5014	**1999 CCME-CEQG (Update 2008) Residential land use**	**2008 CWS for PETROLEUM HYDROCARBONS (PHC) IN SOIL**		**2003 Atlantic PIRI TIER I RBSL Residential land use with coarse-grained soils and potable water**			
Sampling Date			06/11/2009	06/11/2009	07/11/2009	07/11/2009							
COC Number			19007	19007	19007	19007							
Sampling depth below ground surface (m)			0.35 to 0.7	0 to 0.5	0.15 to 0.30	0.15 to 0.27		**Management Limit**	**Eco Soil Contact**	**-**	**gasoline**	**diesel # 2**	**# 6 oil**
Sample ID	**Units**	**RDL**	**LEWI-58590-09TP-18-02**	**LEWI-58590-09TP-19-01**	**LEWI-58590-09TH-01-01**	**LEWI-58590-09TH-02-01**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Petroleum Hydrocarbons													
Benzene	mg/kg	0.03	N/D	N/D	N/D	N/D	**0.03**	**-**	**-**	**0.03**	**-**	**-**	**-**
Toluene	mg/kg	0.03	N/D	N/D	N/D	N/D	**0.37**	**-**	**-**	**0.37**	**-**	**-**	**-**
Ethylbenzene	mg/kg	0.03	N/D	N/D	N/D	N/D	**0.082**	**-**	**-**	**0.082**	**-**	**-**	**-**
Xylene (Total)	mg/kg	0.05	N/D	N/D	N/D	N/D	**11**	**-**	**-**	**11**	**-**	**-**	**-**
C_6 - C_{10} (less BTEX)	mg/kg	3	N/D	N/D	N/D	N/D	**-**	**-**	**-**	**-**	**-**	**-**	**-**
>C_{10}-C_{21} Hydrocarbons	mg/kg	15	N/D	N/D	N/D	N/D	**-**	**-**	**-**	**-**	**-**	**-**	**-**
>C_{21}-<C_{32} Hydrocarbons	mg/kg	15	N/D	N/D	N/D	N/D	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Modified TPH (Tier1)[2]	mg/kg	20	N/D	N/D	N/D	N/D	**-**	**-**	**-**	**-**	**19.5**	**70**	**345**
F1 (C6-C10)	mg/kg		N/D	N/D	N/D	N/D	**30**	**700**	**210**	**-**	**-**	**-**	**-**
F2 (C10-C16 Hydrocarbons)	mg/kg		N/D	N/D	N/D	N/D	**150**	**1000**	**150**	**-**	**-**	**-**	**-**
F3 (C16-C34 Hydrocarbons)	mg/kg		N/D	N/D	N/D	N/D	**300**	**2500**	**300**	**-**	**-**	**-**	**-**
F4 (C34-C50 Hydrocarbons)	mg/kg		--	--	--	--	**2800**	**10000**	**2800**	**-**	**-**	**-**	**-**
Petroleum Product Identification					Fuel oil fraction	Fuel oil fraction	**-**	**-**	**-**	**-**	-	**-**	-

Notes:

CCME	**Canadian Council of Ministers of the Environment**
CEQG	**Canadian Environmental Quality Guidelines**
CWS	**Canada Wide Standard**
PIRI	**Partership in RBCA implementation**
RBCA	**Risk-based Corrective Action**
RBSL	**Risk-based screening level**
-	**No guideline established / no result available**
--	**Not determined by the analytical method used by Maxxam**
1	**Exposure pathway for the investigated site**
2	**Health Canada recommends to divide the 2003 Atlantic PIRI TIER I RBSL's for modified TPH by two to provide an equivalency to the CCME Canada-Wide Standard (CWS) for Petroleum Hydrocarbons (PHC) in soils (2008)**
N/D	**No petroleum product was detected**

Bold and underlined results indicate that the concentration exceeds CCME-CEQG Tier I

Bold and shaded results indicate that the concentration exceeds CCME-CEQG Tier I (Exposure pathways)

Bold and doted results indicate that the concentration exceeds ARBCA

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TABLE I (Cont'd)
ANALYTICAL RESULTS - PHC/TPH and BTEX IN SOILS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data				Guidelines						
Lab ID			EI5009	EI5010	EI5011	EI5012	**1999 CCME-CEQG (Update 2008) Residential land use**	**2008 CWS for PETROLEUM HYDROCARBONS (PHC) IN SOIL**		**2003 Atlantic PIRI TIER I RBSL Residential land use with coarse-grained soils and potable water**			
Sampling Date			06/11/2009	06/11/2009	06/11/2009	06/11/2009							
COC Number			19007	19007	19007	19007							
Sampling depth below ground surface (m)			0.4 to 0.8	0 to 0.45	0.4 to 0.8	0.4 to 0.9		**Management Limit**	**Eco Soil Contact**	**-**	**gasoline**	**diesel # 2**	**# 6 oil**
Sample ID	**Units**	**RDL**	**LEWI-58590-09TP-DUP2[2]**	**LEWI-58590-09TP-DUP3[3]**	**LEWI-58590-09TP-DUP4[4]**	**LEWI-58590-09TP-DUP5[5]**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Petroleum Hydrocarbons													
Benzene	mg/kg	0.03	N/D	N/D	N/D	N/D	**0.03**	**-**	**-**	**0.03**	**-**	**-**	**-**
Toluene	mg/kg	0.03	N/D	N/D	N/D	N/D	**0.37**	**-**	**-**	**0.37**	**-**	**-**	**-**
Ethylbenzene	mg/kg	0.03	N/D	N/D	N/D	N/D	**0.082**	**-**	**-**	**0.082**	**-**	**-**	**-**
Xylene (Total)	mg/kg	0.05	N/D	N/D	N/D	N/D	**11**	**-**	**-**	**11**	**-**	**-**	**-**
C_6 - C_{10} (less BTEX)	mg/kg	3	N/D	N/D	N/D	N/D	**-**	**-**	**-**	**-**	**-**	**-**	**-**
>C_{10}-C_{21} Hydrocarbons	mg/kg	15	37	910	N/D	N/D	**-**	**-**	**-**	**-**	**-**	**-**	**-**
>C_{21}-<C_{32} Hydrocarbons	mg/kg	15	N/D	25	N/D	N/D	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Modified TPH (Tier1)[6]	mg/kg	20	37	930	N/D	N/D	**-**	**-**	**-**	**-**	**19.5**	**70**	**345**
F1 (C6-C10)	mg/kg		N/D	N/D	N/D	N/D	**30**	**700**	**210**	**-**	**-**	**-**	**-**
F2 (C10-C16 Hydrocarbons)	mg/kg		16	**401**	N/D	N/D	**150**	**1000**	**150**	**-**	**-**	**-**	**-**
F3 (C16-C34 Hydrocarbons)	mg/kg		21	**534**	N/D	N/D	**300**	**2500**	**300**	**-**	**-**	**-**	**-**
F4 (C34-C50 Hydrocarbons)	mg/kg		--	--	--	--	**2800**	**10000**	**2800**	**-**	**-**	**-**	**-**
Petroleum Product Identification			Fuel oil fraction	Fuel oil fraction			**-**	**-**	**-**	**-**	-	**-**	-

Notes:

CCME	**Canadian Council of Ministers of the Environment**
CEQG	**Canadian Environmental Quality Guidelines**
CWS	**Canada Wide Standard**
PIRI	**Partership in RBCA implementation**
RBCA	**Risk-based Corrective Action**
RBSL	**Risk-based screening level**

- No guideline established / no result available
-- Not determined by the analytical method used by Maxxam
1 Exposure pathway for the investigated site
2 Field duplicate of LEWI-58590-09TP-05-02
3 Field duplicate of LEWI-58590-09TP-09-01
4 Field duplicate of LEWI-58590-09TP-13-02
5 Field duplicate of LEWI-58590-09TP-17-02
6 Health Canada recommends to divide the 2003 Atlantic PIRI TIER I RBSL's for modified TPH by two to provide an equivalency to the CCME Canada-Wide Standard (CWS) for Petroleum Hydrocarbons (PHC) in soils (2008)
N/D No petroleum product was detected
Bold and underlined results indicate that the concentration exceeds CCME-CEQG Tier I
Bold and shaded results indicate that the concentration exceeds CCME-CEQG Tier I (Exposure pathways)
Bold and doted results indicate that the concentration exceeds ARBCA

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TABLE II
ANALYTICAL RESULTS - METALS IN SOILS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data						
Lab ID			EI4996	EI4997	EI4998	EI4999	EI5000	EI5001	**1999 CCME CSQG Residential/Parkland (2007 Update)**
Sampling Date			06/11/2009	06/11/2009	06/11/2009	06/11/2009	06/11/2009	06/11/2009	
COC Number			19007	19007	19007	19007	19007	19007	
Sampling depth below ground surface (m)			0 to 0.45	1.0 to 1.5	0 to 0.4	0.4 to 0.8	0 to 0.4	0 to 0.3	
Sample ID	**Units**	**RDL**	**LEWI-58590-09TP-12-01**	**LEWI-58590-09-TP12-03**	**LEWI-58590-09TP-13-01**	**LEWI-58590-09TP-13-02**	**LEWI-58590-09TP-14-01**	**LEWI-58590-09TP-15-01**	**mg/kg**
Metals									
Available Aluminum (Al)	mg/kg	10	6900	9800	7500	9500	7600	8800	-
Available Antimony (Sb)	mg/kg	2	N/D	N/D	N/D	N/D	N/D	N/D	**40[1]**
Available Arsenic (As)	mg/kg	2	N/D	N/D	N/D	N/D	N/D	N/D	**12**
Available Barium (Ba)	mg/kg	5	63	74	60	15	34	92	**500**
Available Beryllium (Be)	mg/kg	2	N/D	N/D	N/D	N/D	N/D	N/D	**8[1]**
Available Boron (B)	mg/kg	5	N/D	N/D	N/D	N/D	N/D	N/D	-
Available Cadmium (Cd)	mg/kg	0.3	N/D	N/D	N/D	N/D	N/D	N/D	**10**
Available Chromium (Cr)	mg/kg	2	10	19	10	7	9	5	**64**
Available Cobalt (Co)	mg/kg	1	4	7	5	3	4	4	**300[1]**
Available Copper (Cu)	mg/kg	2	15	24	12	4	8	9	**63**
Available Iron (Fe)	mg/kg	50	12000	17000	13000	13000	14000	26000	-
Available Lead (Pb)	mg/kg	0.5	6.5	5.5	5.1	7.2	5.7	5.1	**140**
Available Lithium (Li)	mg/kg	2	9	16	9	7	8	9	-
Available Manganese (Mn)	mg/kg	2	220	330	210	190	190	570	-
Available Mercury (Hg)	mg/kg	0.1	N/D	N/D	N/D	N/D	N/D	N/D	**6.6**
Available Molybdenum (Mo)	mg/kg	2	N/D	N/D	N/D	N/D	N/D	N/D	**40[1]**
Available Nickel (Ni)	mg/kg	2	8	10	7	3	6	5	**50**
Available Selenium (Se)	mg/kg	2	N/D	N/D	N/D	N/D	N/D	N/D	**1**
Available Silver (Ag)	mg/kg	0.5	N/D	N/D	N/D	N/D	N/D	N/D	**40[1]**
Available Strontium (Sr)	mg/kg	5	11	5	13	6	ND	6	-
Available Thallium (Tl)	mg/kg	0.1	N/D	0.2	N/D	N/D	N/D	0.2	-
Available Tin (Sn)	mg/kg	2	N/D	N/D	N/D	N/D	N/D	N/D	**300[1]**
Available Uranium (U)	mg/kg	0.1	0.9	1.4	0.7	0.8	0.6	0.6	**23**
Available Vanadium (V)	mg/kg	2	22	30	24	20	24	14	**130**
Available Zinc (Zn)	mg/kg	5	36	54	36	26	33	72	**200**

Notes:
CCME **Canadian Council of Ministers of the Environment**
N/D **Not detected**
[1] **Interim remediation criterion for soil that has not yet been replaced by Canadian Soil Quality Guidelines (1991)**
- **No guideline established**
Bold and shaded results indicate that the concentration exceeds the 1999 CCME CEQG for Residential/Parkland sites

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TABLE II (Cont'd)
ANALYTICAL RESULTS - METALS IN SOILS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data				
Lab ID			EI5002	EI5013	EI5014	EI5015	**1999 CCME CSQG Residential/Parkland (2007 Update)**
Sampling Date			06/11/2009	07/11/2009	07/11/2009	07/11/2009	
COC Number			19007	19007	19007	19007	
Sampling depth below ground surface (m)			0.3 to 1.2	0.15 to 0.30	0.15 to 0.27	0 to 0.15	
Sample ID	**Units**	**RDL**	**LEWI-58590-09TP-15-02**	**LEWI-58590-09TH-01-01**	**LEWI-58590-09TH-02-01**	**LEWI-58590-09TH-03-01**	**mg/kg**
Metals							
Available Aluminum (Al)	mg/kg	10	11000	9200	9500	1100	**-**
Available Antimony (Sb)	mg/kg	2	N/D	N/D	N/D	N/D	**40[1]**
Available Arsenic (As)	mg/kg	2	N/D	N/D	N/D	N/D	**12**
Available Barium (Ba)	mg/kg	5	130	240	250	13	**500**
Available Beryllium (Be)	mg/kg	2	N/D	N/D	N/D	N/D	**8[1]**
Available Boron (B)	mg/kg	5	N/D	N/D	N/D	N/D	**-**
Available Cadmium (Cd)	mg/kg	0.3	N/D	N/D	N/D	N/D	**10**
Available Chromium (Cr)	mg/kg	2	5	20	22	N/D	**64**
Available Cobalt (Co)	mg/kg	1	5	9	10	N/D	**300[1]**
Available Copper (Cu)	mg/kg	2	9	30	33	N/D	**63**
Available Iron (Fe)	mg/kg	50	34000	19000	19000	2300	**-**
Available Lead (Pb)	mg/kg	0.5	13	15	15	8.8	**140**
Available Lithium (Li)	mg/kg	2	12	8	8	N/D	**-**
Available Manganese (Mn)	mg/kg	2	800	270	250	15	**-**
Available Mercury (Hg)	mg/kg	0.1	N/D	N/D	N/D	N/D	**6.6**
Available Molybdenum (Mo)	mg/kg	2	N/D	N/D	N/D	N/D	**40[1]**
Available Nickel (Ni)	mg/kg	2	5	13	16	N/D	**50**
Available Selenium (Se)	mg/kg	2	N/D	N/D	N/D	N/D	**1**
Available Silver (Ag)	mg/kg	0.5	N/D	0.6	N/D	N/D	**40[1]**
Available Strontium (Sr)	mg/kg	5	8	37	39	6	**-**
Available Thallium (Tl)	mg/kg	0.1	0.1	N/D	N/D	N/D	**-**
Available Tin (Sn)	mg/kg	2	N/D	N/D	N/D	2	**300[1]**
Available Uranium (U)	mg/kg	0.1	0.6	0.4	0.3	0.1	**23**
Available Vanadium (V)	mg/kg	2	15	36	39	5	**130**
Available Zinc (Zn)	mg/kg	5	90	52	50	9	**200**

Notes:
CCME Canadian Council of Ministers of the Environment
N/D Not detected
[1] Interim remediation criterion for soil that has not yet been replaced by Canadian Soil Quality Guidelines (1991)
- No guideline established
Bold and shaded results indicate that the concentration exceeds the 1999 CCME CEQG for Residential/Parkland sites

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TABLE II (Cont'd)
ANALYTICAL RESULTS - METALS IN SOILS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data	
Lab ID			EI5011	**1999 CCME CSQG Residential/Parkland (2007 Update)**
Sampling Date			06/11/2009	
COC Number			19007	
Sampling depth below ground surface (m)			0.5 to 0.8	
Sample ID	**Units**	**RDL**	**LEWI-58590-09TP-DUP4 [2]**	**mg/kg**
Metals				
Available Aluminum (Al)	mg/kg	10	9600	**-**
Available Antimony (Sb)	mg/kg	2	N/D	**40[1]**
Available Arsenic (As)	mg/kg	2	N/D	**12**
Available Barium (Ba)	mg/kg	5	14	**500**
Available Beryllium (Be)	mg/kg	2	N/D	**8[1]**
Available Boron (B)	mg/kg	5	N/D	**-**
Available Cadmium (Cd)	mg/kg	0.3	N/D	**10**
Available Chromium (Cr)	mg/kg	2	9	**64**
Available Cobalt (Co)	mg/kg	1	4	**300[1]**
Available Copper (Cu)	mg/kg	2	3	**63**
Available Iron (Fe)	mg/kg	50	15000	**-**
Available Lead (Pb)	mg/kg	0.5	9.7	**140**
Available Lithium (Li)	mg/kg	2	8	**-**
Available Manganese (Mn)	mg/kg	2	190	**-**
Available Mercury (Hg)	mg/kg	0.1	N/D	**6.6**
Available Molybdenum (Mo)	mg/kg	2	N/D	**40[1]**
Available Nickel (Ni)	mg/kg	2	4	**50**
Available Selenium (Se)	mg/kg	2	N/D	**1**
Available Silver (Ag)	mg/kg	0.5	N/D	**40[1]**
Available Strontium (Sr)	mg/kg	5	7	**-**
Available Thallium (Tl)	mg/kg	0.1	N/D	**-**
Available Tin (Sn)	mg/kg	2	N/D	**300[1]**
Available Uranium (U)	mg/kg	0.1	1.0	**23**
Available Vanadium (V)	mg/kg	2	24	**130**
Available Zinc (Zn)	mg/kg	5	32	**200**

Notes:
CCME Canadian Council of Ministers of the Environment
N/D Not detected
[1] Interim remediation criterion for soil that has not yet been replaced by Canadian Soil Quality Guidelines (1991)
[2] Field duplicate of LEWI-58590-09TP-13-02
- No guideline established
Bold and shaded results indicate that the concentration exceeds the 1999 CCME CEQG for Residential/Parkland sites

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TABLE III
ANALYTICAL RESULTS - PAHs IN SOILS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data						CCME - CSQG Carcinogenic and Other PAHs / Residential Update 2008		
Lab ID			EI4996	EI4997	EI4998	EI4999	EI5000	EI5001			
Sampling Date			06/11/2009	06/11/2009	06/11/2009	06/11/2009	06/11/2009	06/11/2009			
COC Number			19007	19007	19007	19007	19007	19007			
Sampling depth below ground surface (m)			0 to 0.45	1.0 to 1.5	0 to 0.4	0.4 to 0.8	0 to 0.4	0 to 0.3	**SQG_{HH} Human Health ***	**Environmental Health Soil contact**	**Protection of potable water**
Sample ID	**Units**	**RDL**	**LEWI-58590-09TP-12-01**	**LEWI-58590-09TP-12-03**	**LEWI-58590-09TP-13-01**	**LEWI-58590-09TP-13-02**	**LEWI-58590-09TP-14-01**	**LEWI-58590-09TP-15-01**			
Polyaromatic Hydrocarbons											
1-Methylnaphthalene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	-
2-Methylnaphthalene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	-
Acenaphthene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	-
Acenaphthylene	mg/kg	0.01	0.02	N/D	N/D	N/D	N/D	N/D	-	-	-
Anthracene	mg/kg	0.01	0.03	N/D	N/D	N/D	N/D	N/D	-	-	-
Benzo(a)anthracene	mg/kg	0.01	0.03	N/D	N/D	N/D	N/D	N/D	-	**1**	**0.33**
Benzo(a)pyrene	mg/kg	0.01	0.02	N/D	N/D	N/D	N/D	N/D	-	**0.7**	**0.37**
Benzo(b)fluoranthene	mg/kg	0.01	0.10	N/D	0.02	0.02	N/D	N/D	-	**1**	**0.16**
Benzo(g,h,i)perylene	mg/kg	0.01	0.02	N/D	N/D	N/D	N/D	N/D	-	-	**6.8**
Benzo(k)fluoranthene	mg/kg	0.01	0.03	N/D	N/D	N/D	N/D	N/D	-	**1**	**0.034**
Chrysene	mg/kg	0.01	0.14	N/D	0.02	0.02	N/D	N/D	-	-	**2.1**
Dibenz(a,h)anthracene	mg/kg	0.01	0.02	N/D	N/D	N/D	N/D	N/D	-	**1**	**0.23**
Fluoranthene	mg/kg	0.01	0.20	N/D	0.02	0.03	N/D	N/D	-	-	-
Fluorene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.01	0.03	N/D	N/D	N/D	N/D	N/D	-	**1**	**2.7**
Naphthalene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	**0.6**	-
Perylene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	-
Phenanthrene	mg/kg	0.01	0.04	N/D	N/D	N/D	N/D	N/D	-	**5**	-
Pyrene	mg/kg	0.01	0.12	N/D	0.02	0.02	N/D	N/D	-	**10**	
Benzo[a]pyrene Total Potency Equivalents	mg/kg	-	0.06	0.01	0.01	0.01	0.01	0.01	**5.3**	-	-

Notes:

CCME Canadian Council of Ministers of the Environment
CSQG Canadian Soil Quality Guidelines
- No guideline established
SQGHH Soil Quality Guidelines for human health, based on an incremental lifetime cancer risk (ILCR) of 1 in 100,000 (10-5)
N/D Not detected
***** the calculated B[a]P TPE is multiplied by an uncertainity factor of 3 to account for carcinogenic potential of PAHs present for which a PEF does not currently exist, but which are likely to contribute to mixture carcinogenic potential in case of soil contamination by coal tar or creosote mixture.

Bold and underlined results indicate that the concentration exceeds CCME-SQG_{HH}
Bold and shaded results indicate that the concentration exceeds CCME-SQG_{E}
Bold and dotted results indicate that the concentration exceeds CCME-SQG_{PW}

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TABLE III (Cont'd)
ANALYTICAL RESULTS - PAHs IN SOILS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data						CCME - CSQG Carcinogenic and Other PAHs / Residential Update 2008		
Lab ID			EI5002	EI5003	EI5004	EI5005	EI5006	EI5007			
Sampling Date			06/11/2009	06/11/2009	06/11/2009	06/11/2009	06/11/2009	06/11/2009			
COC Number			19007	19007	19007	19007	19007	19007			
Sampling depth below ground surface (m)			0.3 to 1.2	0 to 0.6	0 to 0.4	0.4 to 0.9	0 to 0.35	0.35 to 0.7	**SQG_{HH} Human Health ***	**Environmental Health Soil contact**	**Protection of potable water**
Sample ID	**Units**	**RDL**	**LEWI-58590-09TP-15-02**	**LEWI-58590-09TP-16-01**	**LEWI-58590-09TP-17-01**	**LEWI-58590-09TP-17-02**	**LEWI-58590-09TP-18-01**	**LEWI-58590-09TP-18-02**			
Polyaromatic Hydrocarbons											
1-Methylnaphthalene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	-
2-Methylnaphthalene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	-
Acenaphthene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	-
Acenaphthylene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	-
Anthracene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	-
Benzo(a)anthracene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	**1**	**0.33**
Benzo(a)pyrene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	**0.7**	**0.37**
Benzo(b)fluoranthene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	**1**	**0.16**
Benzo(g,h,i)perylene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	**6.8**
Benzo(k)fluoranthene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	**1**	**0.034**
Chrysene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	**2.1**
Dibenz(a,h)anthracene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	**1**	**0.23**
Fluoranthene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	-
Fluorene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	**1**	**2.7**
Naphthalene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	**0.6**	-
Perylene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	-	-
Phenanthrene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	**5**	-
Pyrene	mg/kg	0.01	N/D	N/D	N/D	N/D	N/D	N/D	-	**10**	
Benzo[a]pyrene Total Potency Equivalents	mg/kg	-	0.01	0.01	0.01	0.01	0.01	0.01	**5.3**	-	-

Notes:

CCME Canadian Council of Ministers of the Environment
CSQG Canadian Soil Quality Guidelines
- No guideline established
SQGHH Soil Quality Guidelines for human health, based on an incremental lifetime cancer risk (ILCR) of 1 in 100,000 (10-5)
N/D Not detected
***** the calculated B[a]P TPE is multiplied by an uncertainity factor of 3 to account for carcinogenic potential of PAHs present for which a PEF does not currently exist, but which are likely to contribute to mixture carcinogenic potential in case of soil contamination by coal tar or creosote mixture.

Bold and underlined results indicate that the concentration exceeds CCME-SQG_{HH}
Bold and shaded results indicate that the concentration exceeds CCME-SQG_{E}
Bold and dotted results indicate that the concentration exceeds CCME-SQG_{PW}

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TABLE III (Cont'd)
ANALYTICAL RESULTS - PAHs IN SOILS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data		CCME - CSQG Carcinogenic and Other PAHs / Residential Update 2008		
Lab ID			EI5013	EI5014			
Sampling Date			07/11/2009	07/11/2009			
COC Number			19007	19007			
Sampling depth below ground surface (m)			0.15 to 0.30	0.15 to 0.27	**SQG_{HH} Human Health ***	**Environmental Health Soil contact**	**Protection of potable water**
Sample ID	**Units**	**RDL**	**LEWI-58590-09TH-01-01**	**LEWI-58590-09TH-02-01**			
Polyaromatic Hydrocarbons							
1-Methylnaphthalene	mg/kg	0.01	N/D	N/D	-	-	-
2-Methylnaphthalene	mg/kg	0.01	N/D	N/D	-	-	-
Acenaphthene	mg/kg	0.01	N/D	N/D	-	-	-
Acenaphthylene	mg/kg	0.01	N/D	N/D	-	-	-
Anthracene	mg/kg	0.01	N/D	N/D	-	-	-
Benzo(a)anthracene	mg/kg	0.01	N/D	N/D	-	**1**	**0.33**
Benzo(a)pyrene	mg/kg	0.01	N/D	N/D	-	**0.7**	**0.37**
Benzo(b)fluoranthene	mg/kg	0.01	N/D	N/D	-	**1**	**0.16**
Benzo(g,h,i)perylene	mg/kg	0.01	N/D	N/D	-	-	**6.8**
Benzo(k)fluoranthene	mg/kg	0.01	N/D	N/D	-	**1**	**0.034**
Chrysene	mg/kg	0.01	0.01	N/D	-	-	**2.1**
Dibenz(a,h)anthracene	mg/kg	0.01	N/D	N/D	-	**1**	**0.23**
Fluoranthene	mg/kg	0.01	0.02	N/D	-	-	-
Fluorene	mg/kg	0.01	N/D	N/D	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.01	N/D	N/D	-	**1**	**2.7**
Naphthalene	mg/kg	0.01	N/D	N/D	-	**0.6**	-
Perylene	mg/kg	0.01	N/D	N/D	-	-	-
Phenanthrene	mg/kg	0.01	N/D	N/D	-	**5**	-
Pyrene	mg/kg	0.01	0.02	N/D	-	**10**	
Benzo[a]pyrene Total Potency Equivalents	mg/kg	-	0.01	0.01	**5.3**	-	-

Notes:

CCME	**Canadian Council of Ministers of the Environment**
CSQG	**Canadian Soil Quality Guidelines**
-	**No guideline established**
SQGHH	**Soil Quality Guidelines for human health, based on an incremental lifetime cancer risk (ILCR) of 1 in 100,000 (10-5)**
N/D	**Not detected**
*	**the calculated B[a]P TPE is multiplied by an uncertainity factor of 3 to account for carcinogenic potential of PAHs present for which a PEF does not currently exist, but which are likely to contribute to mixture carcinogenic potential in case of soil contamination by coal tar or creosote mixture.**

Bold and underlined results indicate that the concentration exceeds CCME-SQG_{HH}

Bold and shaded results indicate that the concentration exceeds CCME-SQG_{E}

Bold and dotted results indicate that the concentration exceeds CCME-SQG_{PW}

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TABLE III (Cont'd)
ANALYTICAL RESULTS - PAHs IN SOILS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data	CCME - CSQG Carcinogenic and Other PAHs / Residential Update 2008		
Lab ID			EI5012			
Sampling Date			06/11/2009			
COC Number			19007			
Sampling depth below ground surface (m)			0.4 to 0.9	**SQG_{HH} Human Health ***	**Environmental Health Soil contact**	**Protection of potable water**
Sample ID	**Units**	**RDL**	**LEWI-58590-09TP-DUP5[1]**			
Polyaromatic Hydrocarbons						
1-Methylnaphthalene	mg/kg	0.01	N/D	-	-	-
2-Methylnaphthalene	mg/kg	0.01	N/D	-	-	-
Acenaphthene	mg/kg	0.01	N/D	-	-	-
Acenaphthylene	mg/kg	0.01	N/D	-	-	-
Anthracene	mg/kg	0.01	N/D	-	-	-
Benzo(a)anthracene	mg/kg	0.01	N/D	-	**1**	**0.33**
Benzo(a)pyrene	mg/kg	0.01	N/D	-	**0.7**	**0.37**
Benzo(b)fluoranthene	mg/kg	0.01	N/D	-	**1**	**0.16**
Benzo(g,h,i)perylene	mg/kg	0.01	N/D	-	-	**6.8**
Benzo(k)fluoranthene	mg/kg	0.01	N/D	-	**1**	**0.034**
Chrysene	mg/kg	0.01	N/D	-	-	**2.1**
Dibenz(a,h)anthracene	mg/kg	0.01	N/D	-	**1**	**0.23**
Fluoranthene	mg/kg	0.01	N/D	-	-	-
Fluorene	mg/kg	0.01	N/D	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.01	N/D	-	**1**	**2.7**
Naphthalene	mg/kg	0.01	N/D	-	**0.6**	-
Perylene	mg/kg	0.01	N/D	-	-	-
Phenanthrene	mg/kg	0.01	N/D	-	**5**	-
Pyrene	mg/kg	0.01	N/D	-	**10**	
Benzo[a]pyrene Total Potency Equivalents	mg/kg	-	0.01	**5.3**	-	-

Notes:

CCME	**Canadian Council of Ministers of the Environment**
CSQG	**Canadian Soil Quality Guidelines**
-	**No guideline established**
SQGHH	**Soil Quality Guidelines for human health, based on an incremental lifetime cancer risk (ILCR) of 1 in 100,000 (10-5)**
N/D	**Not detected**
*	**the calculated B[a]P TPE is multiplied by an uncertainity factor of 3 to account for carcinogenic potential of PAHs present for which a PEF does not currently exist, but which are likely to contribute to mixture carcinogenic potential in case of soil contamination by coal tar or creosote mixture.**
1	**Field duplicate of LEWI-58590-09TP-17-02**

Bold and underlined results indicate that the concentration exceeds CCME-SQG_{HH}

Bold and shaded results indicate that the concentration exceeds CCME-SQG_{E}

Bold and dotted results indicate that the concentration exceeds CCME-SQG_{PW}

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TABLE IV
ANALYTICAL RESULTS - LEACHABLE METALS IN SOILS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data	Guidelines	
Lab ID			EI4997	**Provincial Guideline [1]**	**Environment Canada [2]**
Sampling Date			06/11/2009		
COC Number			19007		
Sampling depth below ground surface (m)			1.0 to 1.5		
Sample ID	**Units**	**RDL**	**LEWI-58590-09-12-03**		
Metals					
Leachable Aluminum (Al)	µg/l	100	1800	-	-
Leachable Antimony (Sb)	µg/l	20	N/D	-	-
Leachable Arsenic (As)	µg/l	20	N/D	**2500**	-
Leachable Barium (Ba)	µg/l	50	510	**100 000**	-
Leachable Beryllium (Be)	µg/l	20	N/D	-	-
Leachable Boron (B)	µg/l	500	N/D	**500 000**	-
Leachable Cadmium (Cd)	µg/l	3	N/D	**500**	-
Leachable Chromium (Cr)	µg/l	20	N/D	**5000**	-
Leachable Cobalt (Co)	µg/l	10	N/D	-	-
Leachable Copper (Cu)	µg/l	20	N/D	-	-
Leachable Iron (Fe)	µg/l	500	520	-	-
Leachable Lead (Pb)	µg/l	5	N/D	**5000**	**5000**
Leachable Lithium (Li)	µg/l	20	N/D	-	-
Leachable Manganese (Mn)	µg/l	20	180	-	-
Leachable Molybdenum (Mo)	µg/l	20	N/D	-	-
Leachable Nickel (Ni)	µg/l	20	N/D	-	-
Leachable Selenium (Se)	µg/l	20	N/D	**1000**	-
Leachable Silver (Ag)	µg/l	5	N/D	-	-
Leachable Strontium (Sr)	µg/l	50	N/D	-	-
Leachable Thallium (Tl)	µg/l	1	N/D	-	-
Leachable Tin (Sn)	µg/l	20	N/D	-	-
Leachable Uranium (U)	µg/l	1	2	**10 000**	-
Leachable Vanadium (V)	µg/l	20	N/D	-	-
Leachable Zinc (Zn)	µg/l	50	58	-	-

Notes:

1 Newfoundland and Labrador Department of Environment and Conservation. November 2003. Guidance document: Leachable Toxic Waste, Testing and Disposal (GD-PPD-26,1)

2 Environment Canada List of Contaminants or Substances Controlled under Leachate Test or Regulated Limits (5 mg/L)

- No guideline established

Bold and underlined results indicate that the concentration exceeds provincial guidelines

Bold and shaded results indicate that the concentration exceeds federal guidelines

N/D Not detected

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TABLE V
ANALYTICAL RESULTS - PCB IN SOILS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data		
Lab ID			EI4997	EI5001	**1999 CCME Soil Quality Guidelines Residential (2007 Update)**
Sampling Date			06/11/2009	06/11/2009	
COC Number			19007	19007	
Sampling depth below ground surface (m)			1.0 to 1.5	0 to 0.3	
Sample ID	**Units**	**RDL**	**LEWI-58590-09TP-12-03**	**LEWI-58590-09TP-15-01**	**mg/kg**
PCBs					
Total PCB	ug/g	0.05	N/D	N/D	**1.3**

Notes: **CCME** **Canadian Council of Ministers of the Environment**
Bold and shaded results indicate that the concentration exceeds CCME-SQG
N/D **Not detected**

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TABLE VI
ANALYTICAL RESULTS - TPH/BTEX IN WATER
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data	Guidelines				
Lab ID			EI5016	**Health Canada Guideline for Canadian Drinking Water Quality (2008)**	**2003 Atlantic PIRI TIER I RBSL (for a residential property with a potable water supply)**			
Sampling Date			07/11/2009					
COC Number			19007					
Groundwater Level			N/A		**-**	**gasoline**	**diesel # 2**	**# 6 oil**
Sample ID	**Units**	**RDL**	**LEWI-58590-09WA-01**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Petroleum Hydrocarbons								
Benzene	mg/L	0.001	N/D	**0.005**	**0.005**	**-**	**-**	**-**
Toluene	mg/L	0.001	N/D	**0.024**	**0.024**	**-**	**-**	**-**
Ethylbenzene	mg/L	0.001	N/D	**0.0024**	**0.0024**	**-**	**-**	**-**
Xylene (Total)	mg/L	0.002	N/D	**0.3**	**0.3**	**-**	**-**	**-**
C_6 - C_{10} (less BTEX)	mg/L	0.01	N/D	**-**	**-**	**-**	**-**	**-**
>C_{10}-C_{21} Hydrocarbons	mg/L	0.05	N/D	**-**	**-**	**-**	**-**	**-**
>C_{21}-<C_{32} Hydrocarbons	mg/L	0.1	N/D	**-**	**-**	**-**	**-**	**-**
Modified TPH (Tier1)	mg/L	0.1	N/D	**-**	**-**	**4.4**	**3.2**	**7.8**

Notes:

CCME	**Canadian Council of Ministers of the Environment**	**PIRI**	**Partnership in RBCA implementation**
CWQG	**Canadian Water Quality Guidelines for the protection of Aquatic Life**	**RBCA**	**Risk-based Corrective Action**
-	**No guideline established**	**RBSL**	**Risk-based screening level**
N/A	**Not applicable**		
N/D	**No petroleum product was detected**		

Bold and underlined results indicate that the concentration exceeds the Health Canada Guideline for Canadian Drinking Water Quality (2008)

Bold and shaded results indicate that the concentration exceeds the 2003 Atlantic PIRI TIER I RBSL's

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TABLE VII
ANALYTICAL RESULTS - PAHs IN WATER
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data	Health Canada Guideline for Canadian Drinking Water Quality (2008)
Lab ID			EI5016	
Sampling Date			07/11/2009	
COC Number			19007	
Groundwater Level			N/A	
Sample ID	**Units**	**RDL**	**LEWI-58590-09WA-01**	**µg/L**
Polyaromatic Hydrocarbons				
1-Methylnaphthalene	µg/L	0.05	N/D	-
2-Methylnaphthalene	µg/L	0.05	N/D	-
Acenaphthene	µg/L	0.01	N/D	-
Acenaphthylene	µg/L	0.01	N/D	-
Anthracene	µg/L	0.01	N/D	-
Benzo(a)anthracene	µg/L	0.01	N/D	-
Benzo(a)pyrene	µg/L	0.01	N/D	**0.01**
Benzo(b)fluoranthene	µg/L	0.01	N/D	-
Benzo(g,h,i)perylene	µg/L	0.01	N/D	-
Benzo(k)fluoranthene	µg/L	0.01	N/D	-
Chrysene	µg/L	0.01	N/D	-
Dibenz(a,h)anthracene	µg/L	0.01	N/D	-
Fluoranthene	µg/L	0.01	N/D	-
Fluorene	µg/L	0.01	N/D	-
Indeno(1,2,3-cd)pyrene	µg/L	0.01	N/D	-
Naphthalene	µg/L	0.2	N/D	-
Perylene	µg/L	0.01	N/D	-
Phenanthrene	µg/L	0.01	N/D	-
Pyrene	µg/L	0.01	N/D	-

Notes:

CCME	**Canadian Council of Ministers of the Environment**
N/D	**Not detected**
N/A	**Not applicable**
-	**No guideline established**

Bold and shaded results indicate that the concentration exceeds the Health Canada Guideline for Canadian Drinking Water Quality (2008)

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TABLE VIII
ANALYTICAL RESULTS - ASBESTOS
St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P029201-0101

			Data	Guidelines
Lab ID			EI5017	**Asbestos Abatement Regulation (Newfoundland and Labrador Regulation 111/98)**
Sampling Date			09/11/2009	
COC Number			19007	
Sample ID	**Units**	**RDL**	**LEWI-58590-09AS-01 ASBESTOS**	
Asbestos				
Asbestos	%	1	N/D	**1**
Chrysotile Asbestos	%	1	N/D	**1**
Amosite Asbestos	%	1	N/D	**1**
Crocidolite Asbestos	%	1	N/D	**1**
Tremolite Asbestos	%	1	N/D	**1**
Cellulose	%	1	(5-10)	**-**
Mineral Wool	%	1	N/D	**-**
Glass Fibres	%	1	(1-5)	**-**
Hair	%	1	N/D	**-**
Miscellaneous Fibres	%	1	N/D	**-**

Notes:

- **No guideline established**
N/D **Not detected**
Bold and underlined results indicate that the concentration exceeds the provincial regulation

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TABLE IX
Mean Relative Delineation for Duplicated Soil Samples
St. Lewis Field Office, St. Lewis, Newfoundland & Labrador (DFRP #58590)

O/Ref.: P029201-0101

Lab ID		EI4999	EI5011	**Mean relative deviation (%)**
Sampling Date		06/11/2009	06/11/2009	
COC Number		19007	19007	
Sampling depth below ground surface (m)		0.5 to 0.8	0.5 to 0.8	
Sample ID	**Units**	**LEWI-58590-09TP-13-02**	**LEWI-58590-09TP-DUP4**	
Metals				
Available Aluminum (Al)	mg/kg	9500	9600	1.05
Available Antimony (Sb)	mg/kg	N/D	N/D	n.a.
Available Arsenic (As)	mg/kg	N/D	N/D	n.a.
Available Barium (Ba)	mg/kg	15	14	6.90
Available Beryllium (Be)	mg/kg	N/D	N/D	n.a.
Available Boron (B)	mg/kg	N/D	N/D	n.a.
Available Cadmium (Cd)	mg/kg	N/D	N/D	n.a.
Available Chromium (Cr)	mg/kg	7	9	25.00
Available Cobalt (Co)	mg/kg	3	4	28.57
Available Copper (Cu)	mg/kg	4	3	28.57
Available Iron (Fe)	mg/kg	13000	15000	14.29
Available Lead (Pb)	mg/kg	7.2	9.7	29.59
Available Lithium (Li)	mg/kg	7	8	13.33
Available Manganese (Mn)	mg/kg	190	190	0.00
Available Mercury (Hg)	mg/kg	N/D	N/D	n.a.
Available Molybdenum (Mo)	mg/kg	N/D	N/D	n.a.
Available Nickel (Ni)	mg/kg	3	4	28.57
Available Selenium (Se)	mg/kg	N/D	N/D	n.a.
Available Silver (Ag)	mg/kg	N/D	N/D	n.a.
Available Strontium (Sr)	mg/kg	6	7	15.38
Available Thallium (Tl)	mg/kg	N/D	N/D	n.a.
Available Tin (Sn)	mg/kg	N/D	N/D	n.a.
Available Uranium (U)	mg/kg	0.8	1.0	22.22
Available Vanadium (V)	mg/kg	20	24	18.18
Available Zinc (Zn)	mg/kg	26	32	20.69
Mean Relative Delineation (%)				**16.82 A**

Lab ID		EI4989	EI5009	**Mean relative deviation (%)**
Sampling Date		06/11/2009	06/11/2009	
COC Number		19007	19007	
Sampling depth bgs (m)		0.4 to 0.8	0.4 to 0.8	
Sample ID	**Units**	**LEWI-58590-09TP-05-02**	**LEWI-58590-09TP-DUP2**	
Petroleum Hydrocarbons				
Benzene	mg/kg	N/D	N/D	n.a.
Toluene	mg/kg	N/D	N/D	n.a.
Ethylbenzene	mg/kg	N/D	N/D	n.a.
Xylene (Total)	mg/kg	N/D	N/D	n.a.
C_6 - C_{10} (less BTEX)	mg/kg	N/D	N/D	n.a.
>C_{10}-C_{21} Hydrocarbons	mg/kg	24	37	42.62
>C_{21}-<C_{32} Hydrocarbons	mg/kg	N/D	N/D	n.a.
Modified TPH (Tier1)	mg/kg	24	37	42.62
F1 (C6-C10)	mg/kg	N/D	N/D	n.a.
F2 (C10-C16 Hydrocarbons)	mg/kg	11	16	37.04
F3 (C16-C34 Hydrocarbons)	mg/kg	13	21	47.06
F4 (C34-C50 Hydrocarbons)	mg/kg	--	--	n.a.
Mean Relative Delineation (%)				**28.22 B**

Lab ID		EI4993	EI5010	**Mean relative deviation (%)**
Sampling Date		06/11/2009	06/11/2009	
COC Number		19007	19007	
Sampling depth bgs (m)		0 to 0.45	0 to 0.45	
Sample ID	**Units**	**LEWI-58590-09TP-09-01**	**LEWI-58590-09TP-DUP3**	
Benzene	mg/kg	N/D	N/D	n.a.
Toluene	mg/kg	N/D	N/D	n.a.
Ethylbenzene	mg/kg	N/D	N/D	n.a.
Xylene (Total)	mg/kg	N/D	N/D	n.a.
C_6 - C_{10} (less BTEX)	mg/kg	N/D	N/D	n.a.
>C_{10}-C_{21} Hydrocarbons	mg/kg	1400	910	42.42
>C_{21}-<C_{32} Hydrocarbons	mg/kg	N/D	25	n.a.
Modified TPH (Tier1)	mg/kg	**1400**	**930**	40.34
F1 (C6-C10)	mg/kg	N/D	N/D	n.a.
F2 (C10-C16 Hydrocarbons)	mg/kg	**617**	**401**	42.44
F3 (C16-C34 Hydrocarbons)	mg/kg	**783**	**534**	37.81
F4 (C34-C50 Hydrocarbons)	mg/kg	--	--	n.a.
Mean Relative Delineation (%)				**18.11 C**

Lab ID		EI4999	EI5011	**Mean relative deviation (%)**
Sampling Date		06/11/2009	06/11/2009	
COC Number		19007	19007	
Sampling depth bgs (m)		0.4 to 0.8	0.4 to 0.8	
Sample ID	**Units**	**LEWI-58590-09TP-13-02**	**LEWI-58590-09TP-DUP4**	
Benzene	mg/kg	N/D	N/D	n.a.
Toluene	mg/kg	N/D	N/D	n.a.
Ethylbenzene	mg/kg	N/D	N/D	n.a.
Xylene (Total)	mg/kg	N/D	N/D	n.a.
C_6 - C_{10} (less BTEX)	mg/kg	N/D	N/D	n.a.
>C_{10}-C_{21} Hydrocarbons	mg/kg	N/D	N/D	n.a.
>C_{21}-<C_{32} Hydrocarbons	mg/kg	N/D	N/D	n.a.
Modified TPH (Tier1)	mg/kg	N/D	N/D	n.a.
F1 (C6-C10)	mg/kg	N/D	N/D	n.a.
F2 (C10-C16 Hydrocarbons)	mg/kg	N/D	N/D	n.a.
F3 (C16-C34 Hydrocarbons)	mg/kg	N/D	N/D	n.a.
F4 (C34-C50 Hydrocarbons)	mg/kg	--	--	n.a.
Mean Relative Delineation (%)				**0.00 D**

Lab ID		EI5005	EI5012	**Mean relative deviation (%)**
Sampling Date		06/11/2009	06/11/2009	
COC Number		19007	19007	
Sampling depth bgs (m)		0.4 to 0.9	0.4 to 0.9	
Sample ID	**Units**	**LEWI-58590-09TP-17-02**	**LEWI-58590-09TP-DUP5**	
Benzene	mg/kg	N/D	N/D	n.a.
Toluene	mg/kg	N/D	N/D	n.a.
Ethylbenzene	mg/kg	N/D	N/D	n.a.
Xylene (Total)	mg/kg	N/D	N/D	n.a.
C_6 - C_{10} (less BTEX)	mg/kg	N/D	N/D	n.a.
>C_{10}-C_{21} Hydrocarbons	mg/kg	N/D	N/D	n.a.
>C_{21}-<C_{32} Hydrocarbons	mg/kg	N/D	N/D	n.a.
Modified TPH (Tier1)	mg/kg	N/D	N/D	n.a.
F1 (C6-C10)	mg/kg	N/D	N/D	n.a.
F2 (C10-C16 Hydrocarbons)	mg/kg	N/D	N/D	n.a.
F3 (C16-C34 Hydrocarbons)	mg/kg	N/D	N/D	n.a.
F4 (C34-C50 Hydrocarbons)	mg/kg	--	--	n.a.
Mean Relative Delineation (%)				**0.00 E**

Mean A, B and C 21.05

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TABLE X

Calculation of PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ)

St. Lewis Field Office, St. Lewis, Newfoundland and Labrador (DFRP # 58590)

O/Ref.: P029201-0101

Calculation of TPE for Sample LEWI-58590-09TP-12-01

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.03	0.003
Benzo[a]pyrene	0.02	0.020
Benzo[b+j]fluoranthene	0.10	0.010
Benzo[k]fluoranthene	0.03	0.003
Benzo[g,h,i]perylene	0.02	0.000
Chrysene	0.14	0.001
Dibenz[a,h]anthracene	0.02	0.020
Indeno[1,2,3-c,d]pyrene	0.03	0.003

Total B[a]P PEQ (mg/kg) = 0.06

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

Calculation of TPE for Sample LEWI-58590-09TP-12-03

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.005	0.001
Benzo[a]pyrene	0.005	0.005
Benzo[b+j]fluoranthene	0.005	0.001
Benzo[k]fluoranthene	0.005	0.001
Benzo[g,h,i]perylene	0.005	0.000
Chrysene	0.005	0.000
Dibenz[a,h]anthracene	0.005	0.005
Indeno[1,2,3-c,d]pyrene	0.005	0.001

Total B[a]P PEQ (mg/kg) = 0.01

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

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TABLE X (Cont'd)
Calculation of PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ)
St. Lewis Field Office, St. Lewis, Newfoundland and Labrador (DFRP # 58590)

O/Ref.: P029201-0101

Calculation of TPE for Sample LEWI-58590-09TP-13-01

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.005	0.001
Benzo[a]pyrene	0.005	0.005
Benzo[b+j]fluoranthene	0.02	0.002
Benzo[k]fluoranthene	0.005	0.001
Benzo[g,h,i]perylene	0.005	0.000
Chrysene	0.02	0.000
Dibenz[a,h]anthracene	0.005	0.005
Indeno[1,2,3-c,d]pyrene	0.005	0.001

Total B[a]P PEQ (mg/kg) = 0.01

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

Calculation of TPE for Sample LEWI-58590-09TP-13-02

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.005	0.001
Benzo[a]pyrene	0.005	0.005
Benzo[b+j]fluoranthene	0.02	0.002
Benzo[k]fluoranthene	0.005	0.001
Benzo[g,h,i]perylene	0.005	0.000
Chrysene	0.02	0.000
Dibenz[a,h]anthracene	0.005	0.005
Indeno[1,2,3-c,d]pyrene	0.005	0.001

Total B[a]P PEQ (mg/kg) = 0.01

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

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TABLE X (Cont'd)
Calculation of PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ)
St. Lewis Field Office, St. Lewis, Newfoundland and Labrador (DFRP # 58590)

O/Ref.: P029201-0101

Calculation of TPE for Sample LEWI-58590-09TP-14-01

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.005	0.001
Benzo[a]pyrene	0.005	0.005
Benzo[b+j]fluoranthene	0.005	0.001
Benzo[k]fluoranthene	0.005	0.001
Benzo[g,h,i]perylene	0.005	0.000
Chrysene	0.005	0.000
Dibenz[a,h]anthracene	0.005	0.005
Indeno[1,2,3-c,d]pyrene	0.005	0.001

Total B[a]P PEQ (mg/kg) = 0.01

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

Calculation of TPE for Sample LEWI-58590-09TP-15-01

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.005	0.001
Benzo[a]pyrene	0.005	0.005
Benzo[b+j]fluoranthene	0.005	0.001
Benzo[k]fluoranthene	0.005	0.001
Benzo[g,h,i]perylene	0.005	0.000
Chrysene	0.005	0.000
Dibenz[a,h]anthracene	0.005	0.005
Indeno[1,2,3-c,d]pyrene	0.005	0.001

Total B[a]P PEQ (mg/kg) = 0.01

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

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TABLE X (Cont'd)
Calculation of PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ)
St. Lewis Field Office, St. Lewis, Newfoundland and Labrador (DFRP # 58590)

O/Ref.: P029201-0101

Calculation of TPE for Sample LEWI-58590-09TP-15-02

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.005	0.001
Benzo[a]pyrene	0.005	0.005
Benzo[b+j]fluoranthene	0.005	0.001
Benzo[k]fluoranthene	0.005	0.001
Benzo[g,h,i]perylene	0.005	0.000
Chrysene	0.005	0.000
Dibenz[a,h]anthracene	0.005	0.005
Indeno[1,2,3-c,d]pyrene	0.005	0.001

Total B[a]P PEQ (mg/kg) = 0.01

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

Calculation of TPE for Sample LEWI-58590-09TP-16-01

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.005	0.001
Benzo[a]pyrene	0.005	0.005
Benzo[b+j]fluoranthene	0.005	0.001
Benzo[k]fluoranthene	0.005	0.001
Benzo[g,h,i]perylene	0.005	0.000
Chrysene	0.005	0.000
Dibenz[a,h]anthracene	0.005	0.005
Indeno[1,2,3-c,d]pyrene	0.005	0.001

Total B[a]P PEQ (mg/kg) = 0.01

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

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TABLE X (Cont'd)
Calculation of PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ)
St. Lewis Field Office, St. Lewis, Newfoundland and Labrador (DFRP # 58590)

O/Ref.: P029201-0101

Calculation of TPE for Sample LEWI-58590-09TP-17-01

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.005	0.001
Benzo[a]pyrene	0.005	0.005
Benzo[b+j]fluoranthene	0.005	0.001
Benzo[k]fluoranthene	0.005	0.001
Benzo[g,h,i]perylene	0.005	0.000
Chrysene	0.005	0.000
Dibenz[a,h]anthracene	0.005	0.005
Indeno[1,2,3-c,d]pyrene	0.005	0.001

Total B[a]P PEQ (mg/kg) = 0.01

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

Calculation of TPE for Sample LEWI-58590-09TP-17-02

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.005	0.001
Benzo[a]pyrene	0.005	0.005
Benzo[b+j]fluoranthene	0.005	0.001
Benzo[k]fluoranthene	0.005	0.001
Benzo[g,h,i]perylene	0.005	0.000
Chrysene	0.005	0.000
Dibenz[a,h]anthracene	0.005	0.005
Indeno[1,2,3-c,d]pyrene	0.005	0.001

Total B[a]P PEQ (mg/kg) = 0.01

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

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TABLE X (Cont'd)
Calculation of PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ)
St. Lewis Field Office, St. Lewis, Newfoundland and Labrador (DFRP # 58590)

O/Ref.: P029201-0101

Calculation of TPE for Sample LEWI-58590-09TP-18-01

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.005	0.001
Benzo[a]pyrene	0.005	0.005
Benzo[b+j]fluoranthene	0.005	0.001
Benzo[k]fluoranthene	0.005	0.001
Benzo[g,h,i]perylene	0.005	0.000
Chrysene	0.005	0.000
Dibenz[a,h]anthracene	0.005	0.005
Indeno[1,2,3-c,d]pyrene	0.005	0.001

Total B[a]P PEQ (mg/kg) = 0.01

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

Calculation of TPE for Sample LEWI-58590-09TP-18-02

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.005	0.001
Benzo[a]pyrene	0.005	0.005
Benzo[b+j]fluoranthene	0.005	0.001
Benzo[k]fluoranthene	0.005	0.001
Benzo[g,h,i]perylene	0.005	0.000
Chrysene	0.005	0.000
Dibenz[a,h]anthracene	0.005	0.005
Indeno[1,2,3-c,d]pyrene	0.005	0.001

Total B[a]P PEQ (mg/kg) = 0.01

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

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TABLE X (Cont'd)
Calculation of PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ)
St. Lewis Field Office, St. Lewis, Newfoundland and Labrador (DFRP # 58590)

O/Ref.: P029201-0101

Calculation of TPE for Sample LEWI-58590-09TH-01-01

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.005	0.001
Benzo[a]pyrene	0.005	0.005
Benzo[b+j]fluoranthene	0.005	0.001
Benzo[k]fluoranthene	0.005	0.001
Benzo[g,h,i]perylene	0.005	0.000
Chrysene	0.01	0.000
Dibenz[a,h]anthracene	0.005	0.005
Indeno[1,2,3-c,d]pyrene	0.005	0.001

Total B[a]P PEQ (mg/kg) = 0.01

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

Calculation of TPE for Sample LEWI-58590-09TH-02-01

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.005	0.001
Benzo[a]pyrene	0.005	0.005
Benzo[b+j]fluoranthene	0.005	0.001
Benzo[k]fluoranthene	0.005	0.001
Benzo[g,h,i]perylene	0.005	0.000
Chrysene	0.005	0.000
Dibenz[a,h]anthracene	0.005	0.005
Indeno[1,2,3-c,d]pyrene	0.005	0.001

Total B[a]P PEQ (mg/kg) = 0.01

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

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TABLE X (Cont'd)
Calculation of PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ)
St. Lewis Field Office, St. Lewis, Newfoundland and Labrador (DFRP # 58590)

O/Ref.: P029201-0101

Calculation of TPE for Sample LEWI-58590-09TP-DUP5

PAH Benzo[a]pyrene Potency Equivalence (B[a]P PEQ) Calculator

	Input - Soil Concentrations (mg/kg)	PAH PEQ Value
Benz[a]anthracene	0.005	0.001
Benzo[a]pyrene	0.005	0.005
Benzo[b+j]fluoranthene	0.005	0.001
Benzo[k]fluoranthene	0.005	0.001
Benzo[g,h,i]perylene	0.005	0.000
Chrysene	0.005	0.000
Dibenz[a,h]anthracene	0.005	0.005
Indeno[1,2,3-c,d]pyrene	0.005	0.001

Total B[a]P PEQ (mg/kg) = 0.01

Benzo[a]pyrene Potency Equivalence Factors (PEFs)	
Benz[a]anthracene	0.1
Benzo[a]pyrene	1
Benzo[b+j]fluoranthene	0.1
Benzo[k]fluoranthene	0.1
Benzo[g,h,i]perylene	0.01
Chrysene	0.01
Dibenz[a,h]anthracene	1
Indeno[1,2,3-c,d]pyrene	0.1

Appendix 3 Test Pit Logs

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SOUNDING LOG

NO. **LEWI-58590-09TH-01**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **07/11/2009**

Sounding Type: **From** **To**

Manual

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:
X:
Y:
Bench Mark:
Groundwater Level ▽
Elevation Date
Free Phase Level ▼
Elevation Date

Depth (m)	Elevation (m)	Groundwater	Free Phase	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0				Concrete slab									0
				Fill : brown medium sand and gravel 0.15m			0.15m				TPH/BTEX, PAH, metals		
				0.30m			0.30m						
1													
2													5

LOG DESSAU-ANG G:\049\P029201_DFO-FCSAP_ADD_SITES_09-10_GROUP_1-2\Z5_CAD\ACTIF.101\LOGS.GPJ DES_SOP.GDT 10/2/24

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

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SOUNDING LOG

NO. **LEWI-58590-09TH-02**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **07/11/2009**

Sounding Type: **From** **To**

Manual

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:
X:
Y:
Bench Mark:
Groundwater Level Elevation Date
Free Phase Level Elevation Date

Depth (m)	Elevation (m)	Groundwater	Free Phase	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0				Concrete slab									0
				Fill : brown medium sand and gravel 0.15m			0.15m				TPH/BTEX, PAH, metals		
				0.27m			0.27m						
1													
2													5

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FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

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SOUNDING LOG

NO. **LEWI-58590-09TH-03**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **07/11/2009**

Sounding Type: **From** **To**

Manual

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,023.600
Y: 5,802,488.840

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Elevation (m)	Groundwater	Free Phase	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0				Fill : brown organic matter and medium sand				X			Metals		0
				0.15m			0.15m						
1													
2													5

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FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

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SOUNDING LOG

NO. **LEWI-58590-09TP-01**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,047.620
Y: 5,802,522.100

Bench Mark:

Groundwater Level ▽

Elevation Date

Free Phase Level ▼

Elevation Date

Depth (m)	Elevation (m)	Groundwater	Free Phase	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0				Ligth brown coarse sand, some cobbles and rock fragments			01-01				TPH/BTEX		0
0.50m							01-02						
1							01-03				TPH/BTEX		
1.00m													
1.30m				End of the test pit on bedrock at 1.3 m.									5
2													

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FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

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SOUNDING LOG

NO. **LEWI-58590-09TP-02**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,053.690
Y: 5,802,523.470

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0	Grey medium sand, some cobbles									0
	Orange medium sand, some cobbles and rock fragments			02-01 DUP-1				TPH/BTEX		
0.15m										
0.40m	End of the test pit on bedrock at 0.4 m.									
1										5
2										

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

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SOUNDING LOG

NO. **LEWI-58590-09TP-03**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,052.750
Y: 5,802,527.310

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0	Fill :light brown coarse sand and gravel			03-01				TPH/BTEX		0
	0.05m									
	Dark brown coarse sand, some cobbles and rock fragments									
	0.25m			0.25m						
	End of the test pit on bedrock at 0.25 m.									
1										
2										5

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FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

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SOUNDING LOG

NO. **LEWI-58590-09TP-04**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,067.450
Y: 5,802,526.090

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0	Brown organic soil with coarse sand, some cobbles									0
	Dark brown coarse sand, some cobbles and rock fragments			04-01				TPH/BTEX		
0.25m										
0.60m	End of the test pit on bedrock at 0.6 m.									
1										5
2										

LOG DESSAU-ANG G:\049\P029201_DFO-FCSAP_ADD_SITES_09-10_GROUP_1-2\Z5_CAD\ACTIF.101\LOGS.GPJ DES_SOP.GDT 10/2/24

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

DESSAU

SOUNDING LOG

NO. **LEWI-58590-09TP-05**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,068.000
Y: 5,802,523.950

Bench Mark:

Groundwater Level ▽

Elevation Date

Free Phase Level ▼

Elevation Date

Depth (m)	Elevation (m)	Groundwater	Free Phase	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0				Brown coarse sand, some cobbles									0
				Light brown medium sand, some cobbles (0.15m)			05-01				TPH/BTEX		
				Dark Brown medium-coarse grain, some cobbles (0.25m)									
				Brown coarse sand, some cobbles and rock fragments (0.40m)			05-02 DUP-2				TPH/BTEX		
				(0.60m)									
				End of the test pit on bedrock at 0.8 m. (0.80m)									
1													5
2													

LOG DESSAU-ANG G:\049\P029201_DFO-FCSAP_ADD_SITES_09-10_GROUP_1-2\Z5_CAD\ACTIF.101\LOGS.GPJ DES_SOP.GDT 10/2/24

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

DESSAU

SOUNDING LOG

NO. **LEWI-58590-09TP-06**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,061.670
Y: 5,802,520.740

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Elevation (m)	Groundwater	Free Phase	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0				Black organic matter 0.05m Light brown medium sand. 0.15m Dark brown medium sand. 0.25m End of the test pit on bedrock at 0.25 m.			06-01 0.25m				TPH/BTEX		0
1													
2													5

LOG DESSAU-ANG G:\049\P029201_DFO-FCSAP_ADD_SITES_09-10_GROUP_1-2\Z5_CAD\ACTIF.101\LOGS.GPJ DES_SOP.GDT 10/2/24

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

DESSAU

SOUNDING LOG

NO. **LEWI-58590-09TP-07**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,080.350
Y: 5,802,526.600

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Elevation (m)	Groundwater	Free Phase	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0				Fill ; grey gravel.			07-01				TPH/BTEX		0
				Brown medium sand. 0.10m									
				0.20m			0.20m						
				End of the test pit on bedrock at 0.2 m.									
1													
2													5

LOG DESSAU-ANG G:\049\P029201_DFO-FCSAP_ADD_SITES_09-10_GROUP_1-2\Z5_CAD\ACTIF.101\LOGS.GPJ DES_SOP.GDT 10/2/24

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

DESSAU

SOUNDING LOG

NO. **LEWI-58590-09TP-08**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,083.050
Y: 5,802,523.130

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Elevation (m)	Groundwater	Free Phase	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0				Brown medium to coarse sand, some cobbles			08-01				TPH/BTEX		0
				Gray medium to coarse sand, some cobbles (0.35m)									
				Dark brown medium to coarse sand, some cobbles and rock fragments (0.45m)									
				End of the test pit on bedrock at 0.5 m. (0.50m)			0.50m						
1													5
2													

LOG DESSAU-ANG G:\049\P029201_DFO-FCSAP_ADD_SITES_09-10_GROUP_1-2\Z5_CAD\ACTIF.101\LOGS.GPJ DES_SOP.GDT 10/2/24

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

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SOUNDING LOG

NO. **LEWI-58590-09TP-09**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,080.600
Y: 5,802,520.120

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Elevation (m)	Groundwater	Free Phase	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0				Brown organic matter									0
				Grey medium sand 0.10m			09-01 DUP-3				TPH/BTEX		
				Grey medium to coarse sand, some cobbles and rock fragments 0.25m / 0.35m									
				Dark brown medium to coarse sand, some cobbles and rock fragments 0.45m									
				End of the test pit on bedrock at 0.45 m.									
1													5
2													

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

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SOUNDING LOG

NO. **LEWI-58590-09TP-10**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,083.670
Y: 5,802,521.290

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Elevation (m)	Groundwater	Free Phase	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0				Dark brown organic matter			10-01				TPH/BTEX		0
				Grey medium sand, some cobbles and rock fragments 0.40m									
				0.55m End of the test pit on bedrock at 0.55 m.			0.55m						
1													5
2													

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

DESSAU

SOUNDING LOG

NO. **LEWI-58590-09TP-11**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,076.970
Y: 5,802,518.330

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0	Fill: brown medium sand and organic matter. Presence of wood debris.									0
	Black organic matter 0.20m			11-01				TPH/BTEX		
	Grey medium sand, some cobbles and rock fragments 0.30m									
	0.50m			0.50m						
	End of the test pit on bedrock at 0.5 m.									
1										5
2										

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

DESSAU

SOUNDING LOG

NO. **LEWI-58590-09TP-12**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,036.590
Y: 5,802,539.110

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0	Brown medium sand, some cobbles									0
	Brown organic layer with medium sand, some cobbles — 0.15m			12-01				TPH/BTEX,Metals PAH		
	Dark brown medium-coarse sand, some cobbles and rock fragments — 0.45m			0.50m 12-02						
1	Grey medium sand, some cobbles and rock fragments — 0.85m			1.00m 12-03				TPH/BTEX,Metals PAH,PCB,Leachable Metals		5
	1.60m End of the test pit on bedrock at 1.6 m.			1.60m						
2										

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

DESSAU

SOUNDING LOG

NO. **LEWI-58590-09TP-13**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,041.070
Y: 5,802,543.180

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0	fill: grey gravel.									0
	Brown medium sand, some cobbles — 0.15m			13-01				TPH/BTEX,Metals PAH		
	Gray medium sand, some cobbles — 0.25m									
	Brown medium sand, some cobbles and rock fragments — 0.30m									
0.40m										
	Dark brown medium to coarse sand, some cobbles and rock fragments — 0.50m			13-02 DUP-4				TPH/BTEX,Metals PAH		
0.80m										
	End of the test pit on bedrock at 0.8 m.									
1										
2										5

LOG DESSAU-ANG G:\049\P029201_DFO-FCSAP_ADD_SITES_09-10_GROUP_1-2\Z5_CAD\ACTIF.101\LOGS.GPJ DES_SOP.GDT 10/2/24

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

DESSAU

SOUNDING LOG

NO. **LEWI-58590-09TP-14**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,079.940
Y: 5,802,535.200

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Elevation (m)	Groundwater	Free Phase	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0				Brown medium sand, some cobbles									0
				Dark brown medium to coarse sand, some cobbles and rock fragments			14-01				TPH/BTEX,Metals PAH		
				0.15m									
				0.40m			0.40m						
				End of the test pit on bedrock at 0.4 m.									
1													
2													5

LOG DESSAU-ANG G:\049\P029201_DFO-FCSAP_ADD_SITES_09-10_GROUP_1-2\Z5_CAD\ACTIF.101\LOGS.GPJ DES_SOP.GDT 10/2/24

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

DESSAU

SOUNDING LOG

NO. **LEWI-58590-09TP-15**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,088.790
Y: 5,802,532.750

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0	Fill: grey gravel.									0
	Brown/grey cobbles			15-01				TPH/BTEX,Metals PAH,PCB		
0.30m										
0.60m				15-02				TPH/BTEX,Metals PAH		
1										
1.20m	Orange medium sand, some cobbles and rock fragments			15-03						5
1.70m	End of the test pit on bedrock at 1.7 m.									
2										

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

DESSAU

SOUNDING LOG

NO. **LEWI-58590-09TP-16**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,095.650
Y: 5,802,524.270

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0	Light brown medium sand, some cobbles (Roots from 0 to 0.4 m)									0
	Dark brown medium to coarse sand, some cobbles and rock fragments			16-01				TPH/BTEX, PAH		
	0.15m									
	0.60m			0.60m						
	End of the test pit on bedrock at 0.6 m.									
1										
2										5

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

DESSAU

SOUNDING LOG

NO. **LEWI-58590-09TP-17**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,098.340
Y: 5,802,522.570

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0	Dark brown medium to coarse sand, some cobbles			17-01				TPH/BTEX, PAH		0
0.40m	Dark-brown medium to coarse sand, some cobbles and rock fragments			17-02 DUP-5				TPH/BTEX, PAH		
0.90m	End of the test pit on bedrock at 0.9 m.									
1										
2										5

LOG DESSAU-ANG G:\049\P029201_DFO-FCSAP_ADD_SITES_09-10_GROUP_1-2\Z5_CAD\ACTIF.101\LOGS.GPJ DES_SOP.GDT 10/2/24

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

DESSAU

SOUNDING LOG

NO. **LEWI-58590-09TP-18**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,101.160
Y: 5,802,522.840

Bench Mark:

Groundwater Level ▽

Elevation Date

Free Phase Level ▼

Elevation Date

Depth (m)	Soil Profile	Well Construction: Diagram / Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0	Brown medium sand, some cobbles		18-01				TPH/BTEX, PAH		0
	Dark brown medium to coarse sand, some cobbles and rock fragments								
	0.20m								
			18-02				TPH/BTEX, PAH		
	0.35m								
	0.70m								
	End of the test pit on bedrock at 0.7 m.								
1									5
2									

FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

DESSAU

SOUNDING LOG

NO. **LEWI-58590-09TP-19**

PROJECT: **Phase III - Environmental Site Assessment (ESA)** FILE NO: **P029201-101**

LOCATION: **St. Lewis Field Office in St. Lewis Newfoundland and Labrador** CLIENT: **PWGSC** DATE: **06/11/2009**

Sounding Type: **From** **To**

Backhoe

Sample Type

SS: Split Spoon:
ST: Shelby Tube:
TS: Piston Tube:
CR: Core sample, Caliper:
PW: Core sample Fondatec
GS: Grab Sample
AU: Manual Auger
WS: Wash Sample
TU: PVC Tubing (Geoprobe)

State of Sample

Disturbed Intact Lost Core

Tests and Measurement in Field

N: Standard Penetration Test
RQD: Rock Quality Designation
R: Refusal
GA: Grain Size Analysis
Kt: Triaxial Permeability Test
VOC: Volatils organic compounds

Analytics Parameters and Tests in Laboratory

MET: Metals
PAH: Polycyclic aromatic hydrocarbon
MAH: Monocyclics aromatic hydrocarbon
THH: Total halogeneted hydrocarbon
BTEX: Benzene, toluene, ethylbenzene, xylenes (totals)
PH: Petroleum hydrocarbon C10-C50
LEA: Leachate test

Coordinates:

X: 589,100.240
Y: 5,802,517.300

Bench Mark:

Groundwater Level

Elevation Date

Free Phase Level

Elevation Date

Depth (m)	Elevation (m)	Groundwater	Free Phase	Soil Profile	Well Construction: Diagram	Well Construction: Description	Sample Type and Number	State	Recovery (%)	N / RQD	Others	VOC (ppm)	Depth (ft)
0				Brown organic layer with medium sand, some cobbles									0
				Dark brown medium to coarse sand, some cobbles and rock fragments			19-01				TPH/BTEX, PAH		
				0.25m									
				0.50m			0.50m						
				End of the test pit on bedrock at 0.5 m.									
1													5
2													

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FIELD TECHNICIAN: **Guillaume Paradis** APPROUVED BY: **Guy Caumartin**

Appendix 4 Photographic Document

Photo 1: General western view of the St. Lewis Field Office.

Photo 2: General northern view of the garage and the new storage shed located west of the Field Office.

Photo 3: Southern view of the new self-dyked 9,092 L AST and of the artesian well located south of the building.

Photo 4: Northern view of the storage area for fishing vessels located east of the Field Office.

Photo 5: General view towards southwest of the property.

Photo 6: General view towards southeast of the property (St. Lewis Fire Hall).

Photo 7: Northern view of the petroleum bulk plant located southeast of the studied site.

Photo 8: Test hole LEWI-58590-09-TH02 performed in the garage of the St. Lewis Field Office.

Photo 9: Soil sampling LEWI-58590-09-TH01-01 performed in the garage of the St. Lewis Field Office.

Photo 10: Concrete patch on LEWI-58590-09-TH01 performed after soil sampling.

Photo 11: General south-eastern view of the locations of test pits LEWI-58590-09-TP01, TP02 and TP03.

Photo 12: Eastern view of excavation of test pit LEWI-58590-09-TP05.

Photo 13: Eastern view of excavation of test pit LEWI-58590-09-TP012.

Photo 14: Northern view of excavation of test pit LEWI-58590-09-TP15.

Photo 15: General eastern view of the locations of test pits LEWI-58590-09-TP16 and TP17.

Photo 16: Mineral board sheeting sampled for asbestos content, inside the furnace room.

Appendix 5 Laboratory Certificates

Your Project #: P029201-101
Site: ST-LEWIS, PHASE III
Your C.O.C. #: 19007

Attention: Guy Caumartin
Dessau Soprin
1080 Cote du Beaver Hall
bureau 300
Montreal, PQ
CANADA H2Z 1S8

Report Date: 2009/11/23

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A9F3461
Received: 2009/11/13, 9:47

Sample Matrix: Leachate
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Metals Leachate Total MS - N-per	1	N/A	2009/11/17	ATL SOP 00024 R4	Based on EPA6020A

Sample Matrix: Soil
Samples Received: 34

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Asbestos ∅	1	N/A	2009/11/19	ATL SOP-00174	Based on NIOSH9002
TEH in Soil (PIRI)	14	2009/11/17	2009/11/17	ATL SOP 00111 R3	Based on Atl. PIRI
TEH in Soil (PIRI)	18	2009/11/17	2009/11/18	ATL SOP 00111 R3	Based on Atl. PIRI
Metals Solid Avail. Unified MS - Nper	6	N/A	2009/11/17	ATL SOP 00024 R5	Based on EPA6020A
Metals Solid Avail. Unified MS - Nper	5	N/A	2009/11/18	ATL SOP 00024 R5	Based on EPA6020A
Moisture	32	N/A	2009/11/16	ATL SOP 00001 R3	MOE Handbook 1983
PAH Compounds by GCMS (SIM) ∅	1	2009/11/16	2009/11/16	ATL SOP 00102 R4	Based on EPA8270C
PAH Compounds by GCMS (SIM) ∅	15	2009/11/16	2009/11/20	ATL SOP 00102 R4	Based on EPA8270C
PCBs in soil by GC/ECD	1	2009/11/16	2009/11/17	ATL SOP 00106 R3	Based on EPA8082
PCBs in soil by GC/ECD	1	2009/11/16	2009/11/18	ATL SOP 00106 R3	Based on EPA8082
VPH in Soil (PIRI)	20	2009/11/14	2009/11/16	ATL SOP 00117 R4/00119 R6	Based on Atl. PIRI
VPH in Soil (PIRI)	12	2009/11/14	2009/11/17	ATL SOP 00117 R4/00119 R6	Based on Atl. PIRI
TCLP Inorganic extraction - pH	1	N/A	2009/11/17	ATL SOP-00035 R4	Based on EPA1311
TCLP Inorganic extraction - Weight	1	N/A	2009/11/17	ATL SOP-00035 R4	Based on EPA1311
ModTPH (T1) Calc. for Soil	32	2009/11/13	2009/11/18		Based on Atl. PIRI

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
TEH in Water (PIRI)	1	2009/11/17	2009/11/19	ATL SOP 00113 R3	Based on Atl. PIRI
PAH in Water by GC/MS (SIM)	1	2009/11/16	2009/11/20	ATL SOP 00103 R3	Based on EPA 8270C
VPH in Water (PIRI)	1	2009/11/16	2009/11/17	ATL SOP 00118 R4	Based on Atl. PIRI
ModTPH (T1) Calc. for Water	1	N/A	2009/11/19		Based on Atl. PIRI

../2

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Your Project #: P029201-101
Site: ST-LEWIS, PHASE III
Your C.O.C. #: 19007

Attention: Guy Caumartin
Dessau Soprin
1080 Cote du Beaver Hall
bureau 300
Montreal, PQ
CANADA H2Z 1S8

Report Date: 2009/11/23

CERTIFICATE OF ANALYSIS

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

(1) This test was performed by Maxxam Sydney
(2) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

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

MARI KENNY,
Email: mari.kenny.reports@maxxamanalytics.com
Phone# (902) 420-0203

==========

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 Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ELEMENTS BY ICP/MS (LEACHATE)

Maxxam ID		EI4997		
Sampling Date		2009/11/06		
COC Number		19007		
	Units	**LEWI-58590-09-12-03**	**RDL**	**QC Batch**
Metals				
Leachable Aluminum (Al)	ug/L	1800	100	2011907
Leachable Antimony (Sb)	ug/L	ND	20	2011907
Leachable Arsenic (As)	ug/L	ND	20	2011907
Leachable Barium (Ba)	ug/L	510	50	2011907
Leachable Beryllium (Be)	ug/L	ND	20	2011907
Leachable Boron (B)	ug/L	ND	500	2011907
Leachable Cadmium (Cd)	ug/L	ND	3	2011907
Leachable Chromium (Cr)	ug/L	ND	20	2011907
Leachable Cobalt (Co)	ug/L	ND	10	2011907
Leachable Copper (Cu)	ug/L	ND	20	2011907
Leachable Iron (Fe)	ug/L	520	500	2011907
Leachable Lead (Pb)	ug/L	ND	5	2011907
Leachable Lithium (Li)	ug/L	ND	20	2011907
Leachable Manganese (Mn)	ug/L	180	20	2011907
Leachable Molybdenum (Mo)	ug/L	ND	20	2011907
Leachable Nickel (Ni)	ug/L	ND	20	2011907
Leachable Selenium (Se)	ug/L	ND	20	2011907
Leachable Silver (Ag)	ug/L	ND	5	2011907
Leachable Strontium (Sr)	ug/L	ND	50	2011907
Leachable Thallium (Tl)	ug/L	ND	1	2011907
Leachable Tin (Sn)	ug/L	ND	20	2011907
Leachable Uranium (U)	ug/L	2	1	2011907
Leachable Vanadium (V)	ug/L	ND	20	2011907
Leachable Zinc (Zn)	ug/L	58	50	2011907

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

RESULTS OF ANALYSES OF SOIL

Maxxam ID		EI4982	EI4984		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-01-01**	**LEWI-58590-09TP-01-03**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	11	10	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		EI4985	EI4986		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-02-01**	**LEWI-58590-09TP-03-01**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	13	11	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		EI4987	EI4988		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-04-01**	**LEWI-58590-09TP-05-01**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	11	13	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

RESULTS OF ANALYSES OF SOIL

Maxxam ID		EI4989	EI4990		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-05-02**	**LEWI-58590-09TP-06-01**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	9	10	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		EI4991	EI4992		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-07-01**	**LEWI-58590-09TP-08-01**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	14	8	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		EI4993	EI4994		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-09-01**	**LEWI-58590-09TP-10-01**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	15	37	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

RESULTS OF ANALYSES OF SOIL

Maxxam ID		EI4995	EI4996		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-11-01**	**LEWI-58590-09TP-12-01**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	17	9	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		EI4997	EI4998		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09-12-03**	**LEWI-58590-09TP-13-01**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	10	8	1	2009424
Sample Weight (as received)	g	50		N/A	2010720
Initial pH	N/A	9.1			2010722
Final pH	N/A	4.9			2010722

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		EI4999	EI5000		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-13-02**	**LEWI-58590-09TP-14-01**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	8	11	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

RESULTS OF ANALYSES OF SOIL

Maxxam ID		EI5001	EI5002		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-15-01**	**LEWI-58590-09TP-15-02**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	9	8	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		EI5003	EI5004		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-16-01**	**LEWI-58590-09TP-17-01**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	11	11	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		EI5005	EI5006		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-17-02**	**LEWI-58590-09TP-18-01**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	7	10	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

RESULTS OF ANALYSES OF SOIL

Maxxam ID		EI5007	EI5008		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-18-02**	**LEWI-58590-09TP-19-01**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	8	11	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		EI5009	EI5010		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-DUP2**	**LEWI-58590-09TP-DUP3**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	11	14	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		EI5011	EI5012		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-DUP4**	**LEWI-58590-09TP-DUP5**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	8	8	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

RESULTS OF ANALYSES OF SOIL

Maxxam ID		EI5013	EI5014		
Sampling Date		2009/11/07	2009/11/07		
COC Number		19007	19007		
	Units	**LEWI-5858-09TH-01-01**	**LEWI-5858-09TH-02-01**	**RDL**	**QC Batch**
Inorganics					
Moisture	%	7	11	1	2009424

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		EI5017		
Sampling Date		2009/11/09		
COC Number		19007		
	Units	**LEWI-58590-09AS-01 ASBESTOS**	**RDL**	**QC Batch**
Inorganics				
Asbestos	%	ND	1	2014007
Chrysotile Asbestos	%	ND	1	2014007
Amosite Asbestos	%	ND	1	2014007
Crocidolite Asbestos	%	ND	1	2014007
Tremolite Asbestos	%	ND	1	2014007
Cellulose	%	(5-10)	1	2014007
Mineral Wool	%	ND	1	2014007
Glass Fibres	%	(1-5)	1	2014007
Hair	%	ND	1	2014007
Miscellaneous Fibres	%	ND	1	2014007

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		EI4996	EI4997		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-12-01**	**LEWI-58590-09-12-03**	**RDL**	**QC Batch**
Metals					
Available Aluminum (Al)	mg/kg	6900	9800	10	2011038
Available Antimony (Sb)	mg/kg	ND	ND	2	2011038
Available Arsenic (As)	mg/kg	ND	ND	2	2011038
Available Barium (Ba)	mg/kg	63	74	5	2011038
Available Beryllium (Be)	mg/kg	ND	ND	2	2011038
Available Boron (B)	mg/kg	ND	ND	5	2011038
Available Cadmium (Cd)	mg/kg	ND	ND	0.3	2011038
Available Chromium (Cr)	mg/kg	10	19	2	2011038
Available Cobalt (Co)	mg/kg	4	7	1	2011038
Available Copper (Cu)	mg/kg	15	24	2	2011038
Available Iron (Fe)	mg/kg	12000	17000	50	2011038
Available Lead (Pb)	mg/kg	6.5	5.5	0.5	2011038
Available Lithium (Li)	mg/kg	9	16	2	2011038
Available Manganese (Mn)	mg/kg	220	330	2	2011038
Available Mercury (Hg)	mg/kg	ND	ND	0.1	2011038
Available Molybdenum (Mo)	mg/kg	ND	ND	2	2011038
Available Nickel (Ni)	mg/kg	8	10	2	2011038
Available Selenium (Se)	mg/kg	ND	ND	2	2011038
Available Silver (Ag)	mg/kg	ND	ND	0.5	2011038
Available Strontium (Sr)	mg/kg	11	5	5	2011038
Available Thallium (Tl)	mg/kg	ND	0.2	0.1	2011038
Available Tin (Sn)	mg/kg	ND	ND	2	2011038
Available Uranium (U)	mg/kg	0.9	1.4	0.1	2011038
Available Vanadium (V)	mg/kg	22	30	2	2011038
Available Zinc (Zn)	mg/kg	36	54	5	2011038

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		EI4998	EI4999		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-13-01**	**LEWI-58590-09TP-13-02**	**RDL**	**QC Batch**
Metals					
Available Aluminum (Al)	mg/kg	7500	9500	10	2011038
Available Antimony (Sb)	mg/kg	ND	ND	2	2011038
Available Arsenic (As)	mg/kg	ND	ND	2	2011038
Available Barium (Ba)	mg/kg	60	15	5	2011038
Available Beryllium (Be)	mg/kg	ND	ND	2	2011038
Available Boron (B)	mg/kg	ND	ND	5	2011038
Available Cadmium (Cd)	mg/kg	ND	ND	0.3	2011038
Available Chromium (Cr)	mg/kg	10	7	2	2011038
Available Cobalt (Co)	mg/kg	5	3	1	2011038
Available Copper (Cu)	mg/kg	12	4	2	2011038
Available Iron (Fe)	mg/kg	13000	13000	50	2011038
Available Lead (Pb)	mg/kg	5.1	7.2	0.5	2011038
Available Lithium (Li)	mg/kg	9	7	2	2011038
Available Manganese (Mn)	mg/kg	210	190	2	2011038
Available Mercury (Hg)	mg/kg	ND	ND	0.1	2011038
Available Molybdenum (Mo)	mg/kg	ND	ND	2	2011038
Available Nickel (Ni)	mg/kg	7	3	2	2011038
Available Selenium (Se)	mg/kg	ND	ND	2	2011038
Available Silver (Ag)	mg/kg	ND	ND	0.5	2011038
Available Strontium (Sr)	mg/kg	13	6	5	2011038
Available Thallium (Tl)	mg/kg	ND	ND	0.1	2011038
Available Tin (Sn)	mg/kg	ND	ND	2	2011038
Available Uranium (U)	mg/kg	0.7	0.8	0.1	2011038
Available Vanadium (V)	mg/kg	24	20	2	2011038
Available Zinc (Zn)	mg/kg	36	26	5	2011038

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		EI5000	EI5001		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-14-01**	**LEWI-58590-09TP-15-01**	**RDL**	**QC Batch**
Metals					
Available Aluminum (Al)	mg/kg	7600	8800	10	2011038
Available Antimony (Sb)	mg/kg	ND	ND	2	2011038
Available Arsenic (As)	mg/kg	ND	ND	2	2011038
Available Barium (Ba)	mg/kg	34	92	5	2011038
Available Beryllium (Be)	mg/kg	ND	ND	2	2011038
Available Boron (B)	mg/kg	ND	ND	5	2011038
Available Cadmium (Cd)	mg/kg	ND	ND	0.3	2011038
Available Chromium (Cr)	mg/kg	9	5	2	2011038
Available Cobalt (Co)	mg/kg	4	4	1	2011038
Available Copper (Cu)	mg/kg	8	9	2	2011038
Available Iron (Fe)	mg/kg	14000	26000	50	2011038
Available Lead (Pb)	mg/kg	5.7	5.1	0.5	2011038
Available Lithium (Li)	mg/kg	8	9	2	2011038
Available Manganese (Mn)	mg/kg	190	570	2	2011038
Available Mercury (Hg)	mg/kg	ND	ND	0.1	2011038
Available Molybdenum (Mo)	mg/kg	ND	ND	2	2011038
Available Nickel (Ni)	mg/kg	6	5	2	2011038
Available Selenium (Se)	mg/kg	ND	ND	2	2011038
Available Silver (Ag)	mg/kg	ND	ND	0.5	2011038
Available Strontium (Sr)	mg/kg	ND	6	5	2011038
Available Thallium (Tl)	mg/kg	ND	0.2	0.1	2011038
Available Tin (Sn)	mg/kg	ND	ND	2	2011038
Available Uranium (U)	mg/kg	0.6	0.6	0.1	2011038
Available Vanadium (V)	mg/kg	24	14	2	2011038
Available Zinc (Zn)	mg/kg	33	72	5	2011038

ND = Not detected
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QC Batch = Quality Control Batch

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Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		EI5002	EI5011		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-15-02**	**LEWI-58590-09TP-DUP4**	**RDL**	**QC Batch**
Metals					
Available Aluminum (Al)	mg/kg	11000	9600	10	2012572
Available Antimony (Sb)	mg/kg	ND	ND	2	2012572
Available Arsenic (As)	mg/kg	ND	ND	2	2012572
Available Barium (Ba)	mg/kg	130	14	5	2012572
Available Beryllium (Be)	mg/kg	ND	ND	2	2012572
Available Boron (B)	mg/kg	ND	ND	5	2012572
Available Cadmium (Cd)	mg/kg	ND	ND	0.3	2012572
Available Chromium (Cr)	mg/kg	5	9	2	2012572
Available Cobalt (Co)	mg/kg	5	4	1	2012572
Available Copper (Cu)	mg/kg	9	3	2	2012572
Available Iron (Fe)	mg/kg	34000	15000	50	2012572
Available Lead (Pb)	mg/kg	13	9.7	0.5	2012572
Available Lithium (Li)	mg/kg	12	8	2	2012572
Available Manganese (Mn)	mg/kg	800	190	2	2012572
Available Mercury (Hg)	mg/kg	ND	ND	0.1	2012572
Available Molybdenum (Mo)	mg/kg	ND	ND	2	2012572
Available Nickel (Ni)	mg/kg	5	4	2	2012572
Available Selenium (Se)	mg/kg	ND	ND	2	2012572
Available Silver (Ag)	mg/kg	ND	ND	0.5	2012572
Available Strontium (Sr)	mg/kg	8	7	5	2012572
Available Thallium (Tl)	mg/kg	0.1	ND	0.1	2012572
Available Tin (Sn)	mg/kg	ND	ND	2	2012572
Available Uranium (U)	mg/kg	0.6	1.0	0.1	2012572
Available Vanadium (V)	mg/kg	15	24	2	2012572
Available Zinc (Zn)	mg/kg	90	32	5	2012572

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QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		EI5013	EI5014		
Sampling Date		2009/11/07	2009/11/07		
COC Number		19007	19007		
	Units	**LEWI-5858-09TH-01-01**	**LEWI-5858-09TH-02-01**	**RDL**	**QC Batch**
Metals					
Available Aluminum (Al)	mg/kg	9200	9500	10	2012572
Available Antimony (Sb)	mg/kg	ND	ND	2	2012572
Available Arsenic (As)	mg/kg	ND	ND	2	2012572
Available Barium (Ba)	mg/kg	240	250	5	2012572
Available Beryllium (Be)	mg/kg	ND	ND	2	2012572
Available Boron (B)	mg/kg	ND	ND	5	2012572
Available Cadmium (Cd)	mg/kg	ND	ND	0.3	2012572
Available Chromium (Cr)	mg/kg	20	22	2	2012572
Available Cobalt (Co)	mg/kg	9	10	1	2012572
Available Copper (Cu)	mg/kg	30	33	2	2012572
Available Iron (Fe)	mg/kg	19000	19000	50	2012572
Available Lead (Pb)	mg/kg	15	15	0.5	2012572
Available Lithium (Li)	mg/kg	8	8	2	2012572
Available Manganese (Mn)	mg/kg	270	250	2	2012572
Available Mercury (Hg)	mg/kg	ND	ND	0.1	2012572
Available Molybdenum (Mo)	mg/kg	ND	ND	2	2012572
Available Nickel (Ni)	mg/kg	13	16	2	2012572
Available Selenium (Se)	mg/kg	ND	ND	2	2012572
Available Silver (Ag)	mg/kg	0.6	ND	0.5	2012572
Available Strontium (Sr)	mg/kg	37	39	5	2012572
Available Thallium (Tl)	mg/kg	ND	ND	0.1	2012572
Available Tin (Sn)	mg/kg	ND	ND	2	2012572
Available Uranium (U)	mg/kg	0.4	0.3	0.1	2012572
Available Vanadium (V)	mg/kg	36	39	2	2012572
Available Zinc (Zn)	mg/kg	52	50	5	2012572

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		EI5015		
Sampling Date		2009/11/07		
COC Number		19007		
	Units	**LEWI-5858-09TH-03-01**	**RDL**	**QC Batch**
Metals				
Available Aluminum (Al)	mg/kg	1100	10	2012572
Available Antimony (Sb)	mg/kg	ND	2	2012572
Available Arsenic (As)	mg/kg	ND	2	2012572
Available Barium (Ba)	mg/kg	13	5	2012572
Available Beryllium (Be)	mg/kg	ND	2	2012572
Available Boron (B)	mg/kg	ND	5	2012572
Available Cadmium (Cd)	mg/kg	ND	0.3	2012572
Available Chromium (Cr)	mg/kg	ND	2	2012572
Available Cobalt (Co)	mg/kg	ND	1	2012572
Available Copper (Cu)	mg/kg	ND	2	2012572
Available Iron (Fe)	mg/kg	2300	50	2012572
Available Lead (Pb)	mg/kg	8.8	0.5	2012572
Available Lithium (Li)	mg/kg	ND	2	2012572
Available Manganese (Mn)	mg/kg	15	2	2012572
Available Mercury (Hg)	mg/kg	ND	0.1	2012572
Available Molybdenum (Mo)	mg/kg	ND	2	2012572
Available Nickel (Ni)	mg/kg	ND	2	2012572
Available Selenium (Se)	mg/kg	ND	2	2012572
Available Silver (Ag)	mg/kg	ND	0.5	2012572
Available Strontium (Sr)	mg/kg	6	5	2012572
Available Thallium (Tl)	mg/kg	ND	0.1	2012572
Available Tin (Sn)	mg/kg	2	2	2012572
Available Uranium (U)	mg/kg	0.1	0.1	2012572
Available Vanadium (V)	mg/kg	5	2	2012572
Available Zinc (Zn)	mg/kg	9	5	2012572

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		EI4996	EI4997		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-12-01**	**LEWI-58590-09-12-03**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons					
1-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
2-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
Acenaphthene	mg/kg	ND	ND	0.01	2009629
Acenaphthylene	mg/kg	0.02	ND	0.01	2009629
Anthracene	mg/kg	0.03	ND	0.01	2009629
Benzo(a)anthracene	mg/kg	0.03	ND	0.01	2009629
Benzo(a)pyrene	mg/kg	0.02	ND	0.01	2009629
Benzo(b)fluoranthene	mg/kg	0.10	ND	0.01	2009629
Benzo(g,h,i)perylene	mg/kg	0.02	ND	0.01	2009629
Benzo(k)fluoranthene	mg/kg	0.03	ND	0.01	2009629
Chrysene	mg/kg	0.14	ND	0.01	2009629
Dibenz(a,h)anthracene	mg/kg	0.02	ND	0.01	2009629
Fluoranthene	mg/kg	0.20	ND	0.01	2009629
Fluorene	mg/kg	ND	ND	0.01	2009629
Indeno(1,2,3-cd)pyrene	mg/kg	0.03	ND	0.01	2009629
Naphthalene	mg/kg	ND	ND	0.01	2009629
Perylene	mg/kg	ND	ND	0.01	2009629
Phenanthrene	mg/kg	0.04	ND	0.01	2009629
Pyrene	mg/kg	0.12	ND	0.01	2009629
Surrogate Recovery (%)					
D10-Anthracene	%	89	119		2009629
D14-Terphenyl (FS)	%	89	77		2009629
D8-Acenaphthylene	%	81	73		2009629

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QC Batch = Quality Control Batch

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Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		EI4998	EI4999		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-13-01**	**LEWI-58590-09TP-13-02**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons					
1-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
2-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
Acenaphthene	mg/kg	ND	ND	0.01	2009629
Acenaphthylene	mg/kg	ND	ND	0.01	2009629
Anthracene	mg/kg	ND	ND	0.01	2009629
Benzo(a)anthracene	mg/kg	ND	ND	0.01	2009629
Benzo(a)pyrene	mg/kg	ND	ND	0.01	2009629
Benzo(b)fluoranthene	mg/kg	0.02	0.02	0.01	2009629
Benzo(g,h,i)perylene	mg/kg	ND	ND	0.01	2009629
Benzo(k)fluoranthene	mg/kg	ND	ND	0.01	2009629
Chrysene	mg/kg	0.02	0.02	0.01	2009629
Dibenz(a,h)anthracene	mg/kg	ND	ND	0.01	2009629
Fluoranthene	mg/kg	0.02	0.03	0.01	2009629
Fluorene	mg/kg	ND	ND	0.01	2009629
Indeno(1,2,3-cd)pyrene	mg/kg	ND	ND	0.01	2009629
Naphthalene	mg/kg	ND	ND	0.01	2009629
Perylene	mg/kg	ND	ND	0.01	2009629
Phenanthrene	mg/kg	ND	ND	0.01	2009629
Pyrene	mg/kg	0.02	0.02	0.01	2009629
Surrogate Recovery (%)					
D10-Anthracene	%	118	99		2009629
D14-Terphenyl (FS)	%	73	75		2009629
D8-Acenaphthylene	%	70	76		2009629

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QC Batch = Quality Control Batch

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Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		EI5000	EI5001		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-14-01**	**LEWI-58590-09TP-15-01**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons					
1-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
2-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
Acenaphthene	mg/kg	ND	ND	0.01	2009629
Acenaphthylene	mg/kg	ND	ND	0.01	2009629
Anthracene	mg/kg	ND	ND	0.01	2009629
Benzo(a)anthracene	mg/kg	ND	ND	0.01	2009629
Benzo(a)pyrene	mg/kg	ND	ND	0.01	2009629
Benzo(b)fluoranthene	mg/kg	ND	ND	0.01	2009629
Benzo(g,h,i)perylene	mg/kg	ND	ND	0.01	2009629
Benzo(k)fluoranthene	mg/kg	ND	ND	0.01	2009629
Chrysene	mg/kg	ND	ND	0.01	2009629
Dibenz(a,h)anthracene	mg/kg	ND	ND	0.01	2009629
Fluoranthene	mg/kg	ND	ND	0.01	2009629
Fluorene	mg/kg	ND	ND	0.01	2009629
Indeno(1,2,3-cd)pyrene	mg/kg	ND	ND	0.01	2009629
Naphthalene	mg/kg	ND	ND	0.01	2009629
Perylene	mg/kg	ND	ND	0.01	2009629
Phenanthrene	mg/kg	ND	ND	0.01	2009629
Pyrene	mg/kg	ND	ND	0.01	2009629
Surrogate Recovery (%)					
D10-Anthracene	%	101	109		2009629
D14-Terphenyl (FS)	%	78	81		2009629
D8-Acenaphthylene	%	74	71		2009629

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QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		EI5002	EI5003		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-15-02**	**LEWI-58590-09TP-16-01**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons					
1-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
2-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
Acenaphthene	mg/kg	ND	ND	0.01	2009629
Acenaphthylene	mg/kg	ND	ND	0.01	2009629
Anthracene	mg/kg	ND	ND	0.01	2009629
Benzo(a)anthracene	mg/kg	ND	ND	0.01	2009629
Benzo(a)pyrene	mg/kg	ND	ND	0.01	2009629
Benzo(b)fluoranthene	mg/kg	ND	ND	0.01	2009629
Benzo(g,h,i)perylene	mg/kg	ND	ND	0.01	2009629
Benzo(k)fluoranthene	mg/kg	ND	ND	0.01	2009629
Chrysene	mg/kg	ND	ND	0.01	2009629
Dibenz(a,h)anthracene	mg/kg	ND	ND	0.01	2009629
Fluoranthene	mg/kg	ND	ND	0.01	2009629
Fluorene	mg/kg	ND	ND	0.01	2009629
Indeno(1,2,3-cd)pyrene	mg/kg	ND	ND	0.01	2009629
Naphthalene	mg/kg	ND	ND	0.01	2009629
Perylene	mg/kg	ND	ND	0.01	2009629
Phenanthrene	mg/kg	ND	ND	0.01	2009629
Pyrene	mg/kg	ND	ND	0.01	2009629
Surrogate Recovery (%)					
D10-Anthracene	%	114	106		2009629
D14-Terphenyl (FS)	%	82	83		2009629
D8-Acenaphthylene	%	74	71		2009629

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Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		EI5004	EI5005		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-17-01**	**LEWI-58590-09TP-17-02**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons					
1-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
2-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
Acenaphthene	mg/kg	ND	ND	0.01	2009629
Acenaphthylene	mg/kg	ND	ND	0.01	2009629
Anthracene	mg/kg	ND	ND	0.01	2009629
Benzo(a)anthracene	mg/kg	ND	ND	0.01	2009629
Benzo(a)pyrene	mg/kg	ND	ND	0.01	2009629
Benzo(b)fluoranthene	mg/kg	ND	ND	0.01	2009629
Benzo(g,h,i)perylene	mg/kg	ND	ND	0.01	2009629
Benzo(k)fluoranthene	mg/kg	ND	ND	0.01	2009629
Chrysene	mg/kg	ND	ND	0.01	2009629
Dibenz(a,h)anthracene	mg/kg	ND	ND	0.01	2009629
Fluoranthene	mg/kg	ND	ND	0.01	2009629
Fluorene	mg/kg	ND	ND	0.01	2009629
Indeno(1,2,3-cd)pyrene	mg/kg	ND	ND	0.01	2009629
Naphthalene	mg/kg	ND	ND	0.01	2009629
Perylene	mg/kg	ND	ND	0.01	2009629
Phenanthrene	mg/kg	ND	ND	0.01	2009629
Pyrene	mg/kg	ND	ND	0.01	2009629
Surrogate Recovery (%)					
D10-Anthracene	%	103	111		2009629
D14-Terphenyl (FS)	%	81	77		2009629
D8-Acenaphthylene	%	74	72		2009629

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		EI5006	EI5007		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-18-01**	**LEWI-58590-09TP-18-02**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons					
1-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
2-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
Acenaphthene	mg/kg	ND	ND	0.01	2009629
Acenaphthylene	mg/kg	ND	ND	0.01	2009629
Anthracene	mg/kg	ND	ND	0.01	2009629
Benzo(a)anthracene	mg/kg	ND	ND	0.01	2009629
Benzo(a)pyrene	mg/kg	ND	ND	0.01	2009629
Benzo(b)fluoranthene	mg/kg	ND	ND	0.01	2009629
Benzo(g,h,i)perylene	mg/kg	ND	ND	0.01	2009629
Benzo(k)fluoranthene	mg/kg	ND	ND	0.01	2009629
Chrysene	mg/kg	ND	ND	0.01	2009629
Dibenz(a,h)anthracene	mg/kg	ND	ND	0.01	2009629
Fluoranthene	mg/kg	ND	ND	0.01	2009629
Fluorene	mg/kg	ND	ND	0.01	2009629
Indeno(1,2,3-cd)pyrene	mg/kg	ND	ND	0.01	2009629
Naphthalene	mg/kg	ND	ND	0.01	2009629
Perylene	mg/kg	ND	ND	0.01	2009629
Phenanthrene	mg/kg	ND	ND	0.01	2009629
Pyrene	mg/kg	ND	ND	0.01	2009629
Surrogate Recovery (%)					
D10-Anthracene	%	100	120		2009629
D14-Terphenyl (FS)	%	80	84		2009629
D8-Acenaphthylene	%	70	72		2009629

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		EI5008	EI5012		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-19-01**	**LEWI-58590-09TP-DUP5**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons					
1-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
2-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
Acenaphthene	mg/kg	ND	ND	0.01	2009629
Acenaphthylene	mg/kg	ND	ND	0.01	2009629
Anthracene	mg/kg	ND	ND	0.01	2009629
Benzo(a)anthracene	mg/kg	ND	ND	0.01	2009629
Benzo(a)pyrene	mg/kg	ND	ND	0.01	2009629
Benzo(b)fluoranthene	mg/kg	ND	ND	0.01	2009629
Benzo(g,h,i)perylene	mg/kg	ND	ND	0.01	2009629
Benzo(k)fluoranthene	mg/kg	ND	ND	0.01	2009629
Chrysene	mg/kg	ND	ND	0.01	2009629
Dibenz(a,h)anthracene	mg/kg	ND	ND	0.01	2009629
Fluoranthene	mg/kg	ND	ND	0.01	2009629
Fluorene	mg/kg	ND	ND	0.01	2009629
Indeno(1,2,3-cd)pyrene	mg/kg	ND	ND	0.01	2009629
Naphthalene	mg/kg	ND	ND	0.01	2009629
Perylene	mg/kg	ND	ND	0.01	2009629
Phenanthrene	mg/kg	ND	ND	0.01	2009629
Pyrene	mg/kg	ND	ND	0.01	2009629
Surrogate Recovery (%)					
D10-Anthracene	%	99	100		2009629
D14-Terphenyl (FS)	%	79	80		2009629
D8-Acenaphthylene	%	76	72		2009629

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		EI5013	EI5014		
Sampling Date		2009/11/07	2009/11/07		
COC Number		19007	19007		
	Units	**LEWI-5858-09TH-01-01**	**LEWI-5858-09TH-02-01**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons					
1-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
2-Methylnaphthalene	mg/kg	ND	ND	0.01	2009629
Acenaphthene	mg/kg	ND	ND	0.01	2009629
Acenaphthylene	mg/kg	ND	ND	0.01	2009629
Anthracene	mg/kg	ND	ND	0.01	2009629
Benzo(a)anthracene	mg/kg	ND	ND	0.01	2009629
Benzo(a)pyrene	mg/kg	ND	ND	0.01	2009629
Benzo(b)fluoranthene	mg/kg	ND	ND	0.01	2009629
Benzo(g,h,i)perylene	mg/kg	ND	ND	0.01	2009629
Benzo(k)fluoranthene	mg/kg	ND	ND	0.01	2009629
Chrysene	mg/kg	0.01	ND	0.01	2009629
Dibenz(a,h)anthracene	mg/kg	ND	ND	0.01	2009629
Fluoranthene	mg/kg	0.02	ND	0.01	2009629
Fluorene	mg/kg	ND	ND	0.01	2009629
Indeno(1,2,3-cd)pyrene	mg/kg	ND	ND	0.01	2009629
Naphthalene	mg/kg	ND	ND	0.01	2009629
Perylene	mg/kg	ND	ND	0.01	2009629
Phenanthrene	mg/kg	ND	ND	0.01	2009629
Pyrene	mg/kg	0.02	ND	0.01	2009629
Surrogate Recovery (%)					
D10-Anthracene	%	113	114		2009629
D14-Terphenyl (FS)	%	82	92		2009629
D8-Acenaphthylene	%	71	77		2009629

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI4982	EI4984		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-01-01**	**LEWI-58590-09TP-01-03**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009666
Toluene	mg/kg	ND	ND	0.03	2009666
Ethylbenzene	mg/kg	ND	ND	0.03	2009666
Xylene (Total)	mg/kg	ND	ND	0.05	2009666
C6 - C10 (less BTEX)	mg/kg	ND	ND	3	2009666
>C10-C21 Hydrocarbons	mg/kg	ND	ND	15	2010798
>C21-<C32 Hydrocarbons	mg/kg	ND	ND	15	2010798
Modified TPH (Tier1)	mg/kg	ND	ND	20	2008071
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	98	98		2010798
n-Dotriacontane - Extractable	%	97	97		2010798
Isobutylbenzene - Volatile	%	93	86		2009666

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI4985	EI4986		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-02-01**	**LEWI-58590-09TP-03-01**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009666
Toluene	mg/kg	ND	ND	0.03	2009666
Ethylbenzene	mg/kg	ND	ND	0.03	2009666
Xylene (Total)	mg/kg	ND	ND	0.05	2009666
C6 - C10 (less BTEX)	mg/kg	ND	ND	3	2009666
>C10-C21 Hydrocarbons	mg/kg	ND	ND	15	2010798
>C21-<C32 Hydrocarbons	mg/kg	ND	ND	15	2010798
Modified TPH (Tier1)	mg/kg	ND	ND	20	2008071
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	97	93		2010798
n-Dotriacontane - Extractable	%	94	97		2010798
Isobutylbenzene - Volatile	%	98	105		2009666

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI4987	EI4988		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-04-01**	**LEWI-58590-09TP-05-01**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009666
Toluene	mg/kg	ND	ND	0.03	2009666
Ethylbenzene	mg/kg	ND	ND	0.03	2009666
Xylene (Total)	mg/kg	ND	ND	0.05	2009666
C6 - C10 (less BTEX)	mg/kg	ND	ND	3	2009666
>C10-C21 Hydrocarbons	mg/kg	36	280	15	2010798
>C21-<C32 Hydrocarbons	mg/kg	ND	150	15	2010798
Modified TPH (Tier1)	mg/kg	36	430	20	2008071
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	98	101		2010798
n-Dotriacontane - Extractable	%	97 (1)	97 (2)		2010798
Isobutylbenzene - Volatile	%	92	98		2009666

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Fuel oil fraction.
(2) Fuel oil fraction. Lube oil fraction.

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Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI4989	EI4990		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-05-02**	**LEWI-58590-09TP-06-01**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009666
Toluene	mg/kg	ND	ND	0.03	2009666
Ethylbenzene	mg/kg	ND	ND	0.03	2009666
Xylene (Total)	mg/kg	ND	ND	0.05	2009666
C6 - C10 (less BTEX)	mg/kg	ND	ND	3	2009666
>C10-C21 Hydrocarbons	mg/kg	24	ND	15	2010798
>C21-<C32 Hydrocarbons	mg/kg	ND	ND	15	2010798
Modified TPH (Tier1)	mg/kg	24	ND	20	2008071
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	98	106		2010798
n-Dotriacontane - Extractable	%	95 (1)	102		2010798
Isobutylbenzene - Volatile	%	92	89		2009666

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Fuel oil fraction.

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Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI4991	EI4992		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-07-01**	**LEWI-58590-09TP-08-01**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009666
Toluene	mg/kg	ND	ND	0.03	2009666
Ethylbenzene	mg/kg	ND	ND	0.03	2009666
Xylene (Total)	mg/kg	ND	ND	0.05	2009666
C6 - C10 (less BTEX)	mg/kg	ND	ND	3	2009666
>C10-C21 Hydrocarbons	mg/kg	ND	ND	15	2010798
>C21-<C32 Hydrocarbons	mg/kg	ND	ND	15	2010798
Modified TPH (Tier1)	mg/kg	ND	ND	20	2008071
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	96	96		2010798
n-Dotriacontane - Extractable	%	97	97		2010798
Isobutylbenzene - Volatile	%	108	86		2009666

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI4993	EI4994		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-09-01**	**LEWI-58590-09TP-10-01**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009666
Toluene	mg/kg	ND	ND	0.03	2009666
Ethylbenzene	mg/kg	ND	ND	0.03	2009666
Xylene (Total)	mg/kg	ND	ND	0.05	2009666
C6 - C10 (less BTEX)	mg/kg	ND	7	3	2009666
>C10-C21 Hydrocarbons	mg/kg	1400	53	15	2010798
>C21-<C32 Hydrocarbons	mg/kg	ND	110	15	2010798
Modified TPH (Tier1)	mg/kg	1400	170	20	2008071
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	98	100		2010798
n-Dotriacontane - Extractable	%	100 (1)	87 (2)		2010798
Isobutylbenzene - Volatile	%	108	88		2009666

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Fuel oil fraction.
(2) One product in fuel / lube range.

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Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI4995		EI4996		
Sampling Date		2009/11/06		2009/11/06		
COC Number		19007		19007		
	Units	**LEWI-58590-09TP-11-01**	**QC Batch**	**LEWI-58590-09TP-12-01**	**RDL**	**QC Batch**
Petroleum Hydrocarbons						
Benzene	mg/kg	ND	2009666	ND	0.03	2009666
Toluene	mg/kg	ND	2009666	ND	0.03	2009666
Ethylbenzene	mg/kg	ND	2009666	ND	0.03	2009666
Xylene (Total)	mg/kg	ND	2009666	ND	0.05	2009666
C6 - C10 (less BTEX)	mg/kg	ND	2009666	ND	3	2009666
>C10-C21 Hydrocarbons	mg/kg	ND	2010798	ND	15	2010827
>C21-<C32 Hydrocarbons	mg/kg	38	2010798	ND	15	2010827
Modified TPH (Tier1)	mg/kg	38	2008071	ND	20	2008071
Surrogate Recovery (%)						
Isobutylbenzene - Extractable	%	99	2010798	88		2010827
n-Dotriacontane - Extractable	%	95 (1)	2010798	101		2010827
Isobutylbenzene - Volatile	%	89	2009666	102		2009666

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Possible lube oil fraction.

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Client Project #: P029201-101
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ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI4997	EI4998		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09-12-03**	**LEWI-58590-09TP-13-01**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009666
Toluene	mg/kg	ND	ND	0.03	2009666
Ethylbenzene	mg/kg	ND	ND	0.03	2009666
Xylene (Total)	mg/kg	ND	ND	0.05	2009666
C6 - C10 (less BTEX)	mg/kg	ND	ND	3	2009666
>C10-C21 Hydrocarbons	mg/kg	ND	ND	15	2010827
>C21-<C32 Hydrocarbons	mg/kg	ND	ND	15	2010827
Modified TPH (Tier1)	mg/kg	ND	ND	20	2008071
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	91	90		2010827
n-Dotriacontane - Extractable	%	100	102		2010827
Isobutylbenzene - Volatile	%	95	90		2009666

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI4999	EI5000		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-13-02**	**LEWI-58590-09TP-14-01**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009666
Toluene	mg/kg	ND	ND	0.03	2009666
Ethylbenzene	mg/kg	ND	ND	0.03	2009666
Xylene (Total)	mg/kg	ND	ND	0.05	2009666
C6 - C10 (less BTEX)	mg/kg	ND	ND	3	2009666
>C10-C21 Hydrocarbons	mg/kg	ND	ND	15	2010827
>C21-<C32 Hydrocarbons	mg/kg	ND	ND	15	2010827
Modified TPH (Tier1)	mg/kg	ND	ND	20	2008584
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	90	89		2010827
n-Dotriacontane - Extractable	%	104	100		2010827
Isobutylbenzene - Volatile	%	84	88		2009666

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Dessau Soprin
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Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI5001	EI5002		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-15-01**	**LEWI-58590-09TP-15-02**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009666
Toluene	mg/kg	ND	ND	0.03	2009666
Ethylbenzene	mg/kg	ND	ND	0.03	2009666
Xylene (Total)	mg/kg	ND	ND	0.05	2009666
C6 - C10 (less BTEX)	mg/kg	ND	ND	3	2009666
>C10-C21 Hydrocarbons	mg/kg	ND	ND	15	2010827
>C21-<C32 Hydrocarbons	mg/kg	21	20	15	2010827
Modified TPH (Tier1)	mg/kg	21	ND	20	2008584
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	99	89		2010827
n-Dotriacontane - Extractable	%	112 (1)	105 (1)		2010827
Isobutylbenzene - Volatile	%	101	89		2009666

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Lube oil fraction.

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI5003	EI5004		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-16-01**	**LEWI-58590-09TP-17-01**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009928
Toluene	mg/kg	ND	ND	0.03	2009928
Ethylbenzene	mg/kg	ND	ND	0.03	2009928
Xylene (Total)	mg/kg	ND	ND	0.05	2009928
C6 - C10 (less BTEX)	mg/kg	ND	ND	3	2009928
>C10-C21 Hydrocarbons	mg/kg	ND	ND	15	2010827
>C21-<C32 Hydrocarbons	mg/kg	ND	ND	15	2010827
Modified TPH (Tier1)	mg/kg	ND	ND	20	2008584
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	92	98		2010827
n-Dotriacontane - Extractable	%	101	98		2010827
Isobutylbenzene - Volatile	%	102	105		2009928

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI5005	EI5006		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-17-02**	**LEWI-58590-09TP-18-01**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009928
Toluene	mg/kg	ND	ND	0.03	2009928
Ethylbenzene	mg/kg	ND	ND	0.03	2009928
Xylene (Total)	mg/kg	ND	ND	0.05	2009928
C6 - C10 (less BTEX)	mg/kg	ND	ND	3	2009928
>C10-C21 Hydrocarbons	mg/kg	ND	ND	15	2010827
>C21-<C32 Hydrocarbons	mg/kg	ND	18	15	2010827
Modified TPH (Tier1)	mg/kg	ND	ND	20	2008584
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	94	96		2010827
n-Dotriacontane - Extractable	%	95	101 (1)		2010827
Isobutylbenzene - Volatile	%	100	101		2009928

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) No resemblance to petroleum products.

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Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI5007	EI5008		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-18-02**	**LEWI-58590-09TP-19-01**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009928
Toluene	mg/kg	ND	ND	0.03	2009928
Ethylbenzene	mg/kg	ND	ND	0.03	2009928
Xylene (Total)	mg/kg	ND	ND	0.05	2009928
C6 - C10 (less BTEX)	mg/kg	ND	ND	3	2009928
>C10-C21 Hydrocarbons	mg/kg	ND	ND	15	2010827
>C21-<C32 Hydrocarbons	mg/kg	ND	ND	15	2010827
Modified TPH (Tier1)	mg/kg	ND	ND	20	2008584
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	93	96		2010827
n-Dotriacontane - Extractable	%	102	103		2010827
Isobutylbenzene - Volatile	%	95	100		2009928

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI5009	EI5010		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-DUP2**	**LEWI-58590-09TP-DUP3**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009928
Toluene	mg/kg	ND	ND	0.03	2009928
Ethylbenzene	mg/kg	ND	ND	0.03	2009928
Xylene (Total)	mg/kg	ND	ND	0.05	2009928
C6 - C10 (less BTEX)	mg/kg	ND	ND	3	2009928
>C10-C21 Hydrocarbons	mg/kg	37	910	15	2010827
>C21-<C32 Hydrocarbons	mg/kg	ND	25	15	2010827
Modified TPH (Tier1)	mg/kg	37	930	20	2008584
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	96	98		2010827
n-Dotriacontane - Extractable	%	98 (1)	98 (1)		2010827
Isobutylbenzene - Volatile	%	101	87		2009928

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Fuel oil fraction.

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI5011	EI5012		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09TP-DUP4**	**LEWI-58590-09TP-DUP5**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009928
Toluene	mg/kg	ND	ND	0.03	2009928
Ethylbenzene	mg/kg	ND	ND	0.03	2009928
Xylene (Total)	mg/kg	ND	ND	0.05	2009928
C6 - C10 (less BTEX)	mg/kg	ND	ND	3	2009928
>C10-C21 Hydrocarbons	mg/kg	ND	ND	15	2010827
>C21-<C32 Hydrocarbons	mg/kg	ND	ND	15	2010827
Modified TPH (Tier1)	mg/kg	ND	ND	20	2008584
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	95	96		2010827
n-Dotriacontane - Extractable	%	100	99		2010827
Isobutylbenzene - Volatile	%	94	96		2009928

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (SOIL)

Maxxam ID		EI5013	EI5014		
Sampling Date		2009/11/07	2009/11/07		
COC Number		19007	19007		
	Units	**LEWI-5858-09TH-01-01**	**LEWI-5858-09TH-02-01**	**RDL**	**QC Batch**
Petroleum Hydrocarbons					
Benzene	mg/kg	ND	ND	0.03	2009928
Toluene	mg/kg	ND	ND	0.03	2009928
Ethylbenzene	mg/kg	ND	ND	0.03	2009928
Xylene (Total)	mg/kg	ND	ND	0.05	2009928
C6 - C10 (less BTEX)	mg/kg	ND	ND	3	2009928
>C10-C21 Hydrocarbons	mg/kg	ND	ND	15	2010827
>C21-<C32 Hydrocarbons	mg/kg	ND	ND	15	2010827
Modified TPH (Tier1)	mg/kg	ND	ND	20	2008584
Surrogate Recovery (%)					
Isobutylbenzene - Extractable	%	96	98		2010827
n-Dotriacontane - Extractable	%	100	100		2010827
Isobutylbenzene - Volatile	%	86	97		2009928

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

POLYCHLORINATED BIPHENYLS BY GC-ECD (SOIL)

Maxxam ID		EI4997	EI5001		
Sampling Date		2009/11/06	2009/11/06		
COC Number		19007	19007		
	Units	**LEWI-58590-09-12-03**	**LEWI-58590-09TP-15-01**	**RDL**	**QC Batch**
PCBs					
Total PCB	ug/g	ND	ND	0.05	2009603
Surrogate Recovery (%)					
Decachlorobiphenyl	%	92	87		2009603

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		EI5016		
Sampling Date		2009/11/07		
COC Number		19007		
	Units	**LEWI-58590-09WA-01**	**RDL**	**QC Batch**
Polyaromatic Hydrocarbons				
1-Methylnaphthalene	ug/L	ND	0.05	2009965
2-Methylnaphthalene	ug/L	ND	0.05	2009965
Acenaphthene	ug/L	ND	0.01	2009965
Acenaphthylene	ug/L	ND	0.01	2009965
Anthracene	ug/L	ND	0.01	2009965
Benzo(a)anthracene	ug/L	ND	0.01	2009965
Benzo(a)pyrene	ug/L	ND	0.01	2009965
Benzo(b)fluoranthene	ug/L	ND	0.01	2009965
Benzo(g,h,i)perylene	ug/L	ND	0.01	2009965
Benzo(k)fluoranthene	ug/L	ND	0.01	2009965
Chrysene	ug/L	ND	0.01	2009965
Dibenz(a,h)anthracene	ug/L	ND	0.01	2009965
Fluoranthene	ug/L	ND	0.01	2009965
Fluorene	ug/L	ND	0.01	2009965
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.01	2009965
Naphthalene	ug/L	ND	0.2	2009965
Perylene	ug/L	ND	0.01	2009965
Phenanthrene	ug/L	ND	0.01	2009965
Pyrene	ug/L	ND	0.01	2009965
Surrogate Recovery (%)				
D10-Anthracene	%	103		2009965
D14-Terphenyl	%	110 (1)		2009965
D8-Acenaphthylene	%	100		2009965

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) PAH sample contained sediment.

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Maxxam Job #: A9F3461
Report Date: 2009/11/23

Dessau Soprin
Client Project #: P029201-101
Project name: ST-LEWIS, PHASE III

ATLANTIC RBCA HYDROCARBONS (WATER)

Maxxam ID		EI5016		
Sampling Date		2009/11/07		
COC Number		19007		
	Units	**LEWI-58590-09WA-01**	**RDL**	**QC Batch**
Petroleum Hydrocarbons				
Benzene	mg/L	ND	0.001	2010183
Toluene	mg/L	ND	0.001	2010183
Ethylbenzene	mg/L	ND	0.001	2010183
Xylene (Total)	mg/L	ND	0.002	2010183
C6 - C10 (less BTEX)	mg/L	ND	0.01	2010183
>C10-C21 Hydrocarbons	mg/L	ND	0.05	2010653
>C21-<C32 Hydrocarbons	mg/L	ND	0.1	2010653
Modified TPH (Tier1)	mg/L	ND	0.1	2008618
Surrogate Recovery (%)				
Isobutylbenzene - Extractable	%	77		2010653
n-Dotriacontane - Extractable	%	80		2010653
Isobutylbenzene - Volatile	%	84		2010183

ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2009/11/23

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Client Project #: P029201-101
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GENERAL COMMENTS

Results relate only to the items tested.

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Dessau Soprin
Attention: Guy Caumartin
Client Project #: P029201-101
P.O. #:
Project name: ST-LEWIS, PHASE III

Quality Assurance Report

Maxxam Job Number: DA9F3461

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2009603	CMI	Matrix Spike						
		[EI4997-01]	Decachlorobiphenyl	2009/11/17		90	%	30 - 130
			Total PCB	2009/11/17		100	%	70 - 130
		Spiked Blank	Decachlorobiphenyl	2009/11/17		89	%	30 - 130
			Total PCB	2009/11/17		104	%	70 - 130
		Method Blank	Decachlorobiphenyl	2009/11/17		87	%	30 - 130
			Total PCB	2009/11/17	ND, RDL=0.05		ug/g	
		RPD [EI4997-01]	Total PCB	2009/11/17	NC		%	50
2009629	SOD	Matrix Spike						
		[EI4996-01]	D10-Anthracene	2009/11/16		87	%	30 - 130
			D14-Terphenyl (FS)	2009/11/16		89	%	30 - 130
			D8-Acenaphthylene	2009/11/16		80	%	30 - 130
			1-Methylnaphthalene	2009/11/16		80	%	30 - 130
			2-Methylnaphthalene	2009/11/16		82	%	30 - 130
			Acenaphthene	2009/11/16		77	%	30 - 130
			Acenaphthylene	2009/11/16		82	%	30 - 130
			Anthracene	2009/11/16		83	%	30 - 130
			Benzo(a)anthracene	2009/11/16		70	%	30 - 130
			Benzo(a)pyrene	2009/11/16		76	%	30 - 130
			Benzo(b)fluoranthene	2009/11/16		74	%	30 - 130
			Benzo(g,h,i)perylene	2009/11/16		73	%	30 - 130
			Benzo(k)fluoranthene	2009/11/16		72	%	30 - 130
			Chrysene	2009/11/16		76	%	30 - 130
			Dibenz(a,h)anthracene	2009/11/16		70	%	30 - 130
			Fluoranthene	2009/11/16		81	%	30 - 130
			Fluorene	2009/11/16		78	%	30 - 130
			Indeno(1,2,3-cd)pyrene	2009/11/16		70	%	30 - 130
			Naphthalene	2009/11/16		79	%	30 - 130
			Perylene	2009/11/16		72	%	30 - 130
			Phenanthrene	2009/11/16		80	%	30 - 130
			Pyrene	2009/11/16		79	%	30 - 130
		Spiked Blank	D10-Anthracene	2009/11/16		92	%	30 - 130
			D14-Terphenyl (FS)	2009/11/16		92	%	30 - 130
			D8-Acenaphthylene	2009/11/16		84	%	30 - 130
			1-Methylnaphthalene	2009/11/16		85	%	30 - 130
			2-Methylnaphthalene	2009/11/16		86	%	30 - 130
			Acenaphthene	2009/11/16		80	%	30 - 130
			Acenaphthylene	2009/11/16		85	%	30 - 130
			Anthracene	2009/11/16		91	%	30 - 130
			Benzo(a)anthracene	2009/11/16		74	%	30 - 130
			Benzo(a)pyrene	2009/11/16		80	%	30 - 130
			Benzo(b)fluoranthene	2009/11/16		76	%	30 - 130
			Benzo(g,h,i)perylene	2009/11/16		76	%	30 - 130
			Benzo(k)fluoranthene	2009/11/16		65	%	30 - 130
			Chrysene	2009/11/16		78	%	30 - 130
			Dibenz(a,h)anthracene	2009/11/16		74	%	30 - 130
			Fluoranthene	2009/11/16		87	%	30 - 130
			Fluorene	2009/11/16		83	%	30 - 130
			Indeno(1,2,3-cd)pyrene	2009/11/16		75	%	30 - 130
			Naphthalene	2009/11/16		82	%	30 - 130
			Perylene	2009/11/16		75	%	30 - 130
			Phenanthrene	2009/11/16		82	%	30 - 130
			Pyrene	2009/11/16		84	%	30 - 130
		Method Blank	D10-Anthracene	2009/11/16		90	%	30 - 130
			D14-Terphenyl (FS)	2009/11/16		94	%	30 - 130

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Dessau Soprin
Attention: Guy Caumartin
Client Project #: P029201-101
P.O. #:
Project name: ST-LEWIS, PHASE III

Quality Assurance Report (Continued)

Maxxam Job Number: DA9F3461

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2009629	SOD	Method Blank	D8-Acenaphthylene	2009/11/16		85	%	30 - 130
			1-Methylnaphthalene	2009/11/16	ND, RDL=0.01		mg/kg	
			2-Methylnaphthalene	2009/11/16	ND, RDL=0.01		mg/kg	
			Acenaphthene	2009/11/16	ND, RDL=0.01		mg/kg	
			Acenaphthylene	2009/11/16	ND, RDL=0.01		mg/kg	
			Anthracene	2009/11/16	ND, RDL=0.01		mg/kg	
			Benzo(a)anthracene	2009/11/16	ND, RDL=0.01		mg/kg	
			Benzo(a)pyrene	2009/11/16	ND, RDL=0.01		mg/kg	
			Benzo(b)fluoranthene	2009/11/16	ND, RDL=0.01		mg/kg	
			Benzo(g,h,i)perylene	2009/11/16	ND, RDL=0.01		mg/kg	
			Benzo(k)fluoranthene	2009/11/16	ND, RDL=0.01		mg/kg	
			Chrysene	2009/11/16	ND, RDL=0.01		mg/kg	
			Dibenz(a,h)anthracene	2009/11/16	ND, RDL=0.01		mg/kg	
			Fluoranthene	2009/11/16	ND, RDL=0.01		mg/kg	
			Fluorene	2009/11/16	ND, RDL=0.01		mg/kg	
			Indeno(1,2,3-cd)pyrene	2009/11/16	ND, RDL=0.01		mg/kg	
			Naphthalene	2009/11/16	ND, RDL=0.01		mg/kg	
			Perylene	2009/11/16	ND, RDL=0.01		mg/kg	
			Phenanthrene	2009/11/16	ND, RDL=0.01		mg/kg	
			Pyrene	2009/11/16	ND, RDL=0.01		mg/kg	
		RPD [EI4996-01]	1-Methylnaphthalene	2009/11/16	NC		%	50
			2-Methylnaphthalene	2009/11/16	NC		%	50
			Acenaphthene	2009/11/16	NC		%	50
			Acenaphthylene	2009/11/16	NC		%	50
			Anthracene	2009/11/16	NC		%	50
			Benzo(a)anthracene	2009/11/16	NC		%	50
			Benzo(a)pyrene	2009/11/16	NC		%	50
			Benzo(b)fluoranthene	2009/11/16	17.9		%	50
			Benzo(g,h,i)perylene	2009/11/16	NC		%	50
			Benzo(k)fluoranthene	2009/11/16	NC		%	50
			Chrysene	2009/11/16	0.7		%	50
			Dibenz(a,h)anthracene	2009/11/16	NC		%	50
			Fluoranthene	2009/11/16	3.3		%	50
			Fluorene	2009/11/16	NC		%	50
			Indeno(1,2,3-cd)pyrene	2009/11/16	NC		%	50
			Naphthalene	2009/11/16	NC		%	50
			Perylene	2009/11/16	NC		%	50
			Phenanthrene	2009/11/16	NC		%	50
			Pyrene	2009/11/16	2.1		%	50
2009666	ASL	Matrix Spike [EI4984-01]	Isobutylbenzene - Volatile	2009/11/16		91	%	60 - 140
			Benzene	2009/11/16		100	%	60 - 140
			Toluene	2009/11/16		125	%	60 - 140
			Ethylbenzene	2009/11/16		124	%	60 - 140
			Xylene (Total)	2009/11/16		128	%	60 - 140
		Spiked Blank	Isobutylbenzene - Volatile	2009/11/16		91	%	60 - 140
			Benzene	2009/11/16		110	%	60 - 140
			Toluene	2009/11/16		116	%	60 - 140
			Ethylbenzene	2009/11/16		115	%	60 - 140
			Xylene (Total)	2009/11/16		117	%	60 - 140
		Method Blank	Isobutylbenzene - Volatile	2009/11/16		95	%	60 - 140
			Benzene	2009/11/16	ND, RDL=0.03		mg/kg	
			Toluene	2009/11/16	ND, RDL=0.03		mg/kg	
			Ethylbenzene	2009/11/16	ND, RDL=0.03		mg/kg	
			Xylene (Total)	2009/11/16	ND, RDL=0.05		mg/kg	

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Attention: Guy Caumartin
Client Project #: P029201-101
P.O. #:
Project name: ST-LEWIS, PHASE III

Quality Assurance Report (Continued)

Maxxam Job Number: DA9F3461

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2009666	ASL	Method Blank	C6 - C10 (less BTEX)	2009/11/16	ND, RDL=3		mg/kg	
		RPD [EI4984-01]	Benzene	2009/11/16	NC		%	50
			Toluene	2009/11/16	NC		%	50
			Ethylbenzene	2009/11/16	NC		%	50
			Xylene (Total)	2009/11/16	NC		%	50
			C6 - C10 (less BTEX)	2009/11/16	NC		%	50
2009928	ASL	Matrix Spike						
		[EI5004-01]	Isobutylbenzene - Volatile	2009/11/17		76	%	60 - 140
			Benzene	2009/11/17		78	%	60 - 140
			Toluene	2009/11/17		110	%	60 - 140
			Ethylbenzene	2009/11/17		101	%	60 - 140
			Xylene (Total)	2009/11/17		116	%	60 - 140
		Spiked Blank	Isobutylbenzene - Volatile	2009/11/16		97	%	60 - 140
			Benzene	2009/11/16		97	%	60 - 140
			Toluene	2009/11/16		94	%	60 - 140
			Ethylbenzene	2009/11/16		97	%	60 - 140
			Xylene (Total)	2009/11/16		100	%	60 - 140
		Method Blank	Isobutylbenzene - Volatile	2009/11/16		100	%	60 - 140
			Benzene	2009/11/16	ND, RDL=0.03		mg/kg	
			Toluene	2009/11/16	ND, RDL=0.03		mg/kg	
			Ethylbenzene	2009/11/16	ND, RDL=0.03		mg/kg	
			Xylene (Total)	2009/11/16	ND, RDL=0.05		mg/kg	
			C6 - C10 (less BTEX)	2009/11/16	ND, RDL=3		mg/kg	
		RPD [EI5004-01]	Benzene	2009/11/16	NC		%	50
			Toluene	2009/11/16	NC		%	50
			Ethylbenzene	2009/11/16	NC		%	50
			Xylene (Total)	2009/11/16	NC		%	50
			C6 - C10 (less BTEX)	2009/11/16	NC		%	50
2009965	RST	Matrix Spike	D10-Anthracene	2009/11/20		89	%	30 - 130
			D14-Terphenyl	2009/11/20		97 (1)	%	30 - 130
			D8-Acenaphthylene	2009/11/20		92	%	30 - 130
			1-Methylnaphthalene	2009/11/20		87	%	30 - 130
			2-Methylnaphthalene	2009/11/20		90	%	30 - 130
			Acenaphthene	2009/11/20		94	%	30 - 130
			Acenaphthylene	2009/11/20		85	%	30 - 130
			Anthracene	2009/11/20		104	%	30 - 130
			Benzo(a)anthracene	2009/11/20		100	%	30 - 130
			Benzo(a)pyrene	2009/11/20		85	%	30 - 130
			Benzo(b)fluoranthene	2009/11/20		98	%	30 - 130
			Benzo(g,h,i)perylene	2009/11/20		82	%	30 - 130
			Benzo(k)fluoranthene	2009/11/20		98	%	30 - 130
			Chrysene	2009/11/20		108	%	30 - 130
			Dibenz(a,h)anthracene	2009/11/20		55 (2)	%	30 - 130
			Fluoranthene	2009/11/20		116	%	30 - 130
			Fluorene	2009/11/20		89	%	30 - 130
			Indeno(1,2,3-cd)pyrene	2009/11/20		70 (2)	%	30 - 130
			Naphthalene	2009/11/20		89	%	30 - 130
			Perylene	2009/11/20		102	%	30 - 130
			Phenanthrene	2009/11/20		105	%	30 - 130
			Pyrene	2009/11/20		115	%	30 - 130
		Spiked Blank	D10-Anthracene	2009/11/20		107	%	30 - 130
			D14-Terphenyl	2009/11/20		101	%	30 - 130
			D8-Acenaphthylene	2009/11/20		99	%	30 - 130
			1-Methylnaphthalene	2009/11/20		93	%	30 - 130
			2-Methylnaphthalene	2009/11/20		96	%	30 - 130

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Quality Assurance Report (Continued)

Maxxam Job Number: DA9F3461

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2009965	RST	Spiked Blank	Acenaphthene	2009/11/20		100	%	30 - 130
			Acenaphthylene	2009/11/20		93	%	30 - 130
			Anthracene	2009/11/20		110	%	30 - 130
			Benzo(a)anthracene	2009/11/20		103	%	30 - 130
			Benzo(a)pyrene	2009/11/20		90	%	30 - 130
			Benzo(b)fluoranthene	2009/11/20		100	%	30 - 130
			Benzo(g,h,i)perylene	2009/11/20		94	%	30 - 130
			Benzo(k)fluoranthene	2009/11/20		100	%	30 - 130
			Chrysene	2009/11/20		115	%	30 - 130
			Dibenz(a,h)anthracene	2009/11/20		68	%	30 - 130
			Fluoranthene	2009/11/20		122	%	30 - 130
			Fluorene	2009/11/20		96	%	30 - 130
			Indeno(1,2,3-cd)pyrene	2009/11/20		77	%	30 - 130
			Naphthalene	2009/11/20		96	%	30 - 130
			Perylene	2009/11/20		108	%	30 - 130
			Phenanthrene	2009/11/20		107	%	30 - 130
			Pyrene	2009/11/20		122	%	30 - 130
		Method Blank	D10-Anthracene	2009/11/20		109	%	30 - 130
			D14-Terphenyl	2009/11/20		105	%	30 - 130
			D8-Acenaphthylene	2009/11/20		99	%	30 - 130
			1-Methylnaphthalene	2009/11/20	ND, RDL=0.05		ug/L	
			2-Methylnaphthalene	2009/11/20	ND, RDL=0.05		ug/L	
			Acenaphthene	2009/11/20	ND, RDL=0.01		ug/L	
			Acenaphthylene	2009/11/20	ND, RDL=0.01		ug/L	
			Anthracene	2009/11/20	ND, RDL=0.01		ug/L	
			Benzo(a)anthracene	2009/11/20	ND, RDL=0.01		ug/L	
			Benzo(a)pyrene	2009/11/20	ND, RDL=0.01		ug/L	
			Benzo(b)fluoranthene	2009/11/20	ND, RDL=0.01		ug/L	
			Benzo(g,h,i)perylene	2009/11/20	ND, RDL=0.01		ug/L	
			Benzo(k)fluoranthene	2009/11/20	ND, RDL=0.01		ug/L	
			Chrysene	2009/11/20	ND, RDL=0.01		ug/L	
			Dibenz(a,h)anthracene	2009/11/20	ND, RDL=0.01		ug/L	
			Fluoranthene	2009/11/20	ND, RDL=0.01		ug/L	
			Fluorene	2009/11/20	ND, RDL=0.01		ug/L	
			Indeno(1,2,3-cd)pyrene	2009/11/20	ND, RDL=0.01		ug/L	
			Naphthalene	2009/11/20	ND, RDL=0.2		ug/L	
			Perylene	2009/11/20	ND, RDL=0.01		ug/L	
			Phenanthrene	2009/11/20	ND, RDL=0.01		ug/L	
			Pyrene	2009/11/20	ND, RDL=0.01		ug/L	
		RPD	1-Methylnaphthalene	2009/11/20	NC		%	40
			2-Methylnaphthalene	2009/11/20	NC		%	40
			Acenaphthene	2009/11/20	NC (3)		%	40
			Acenaphthylene	2009/11/20	NC (3)		%	40
			Anthracene	2009/11/20	132 (3)		%	40
			Benzo(a)anthracene	2009/11/20	108 (3)		%	40
			Benzo(a)pyrene	2009/11/20	121 (3)		%	40
			Benzo(b)fluoranthene	2009/11/20	116 (3)		%	40
			Benzo(g,h,i)perylene	2009/11/20	114 (3)		%	40
			Benzo(k)fluoranthene	2009/11/20	117 (3)		%	40
			Chrysene	2009/11/20	107 (3)		%	40
			Dibenz(a,h)anthracene	2009/11/20	NC (3)		%	40
			Fluoranthene	2009/11/20	118 (3)		%	40
			Fluorene	2009/11/20	NC (3)		%	40
			Indeno(1,2,3-cd)pyrene	2009/11/20	102 (3)		%	40
			Naphthalene	2009/11/20	NC		%	40

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Quality Assurance Report (Continued)

Maxxam Job Number: DA9F3461

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2009965	RST	RPD	Perylene	2009/11/20	NC (3)		%	40
			Phenanthrene	2009/11/20	117 (3)		%	40
			Pyrene	2009/11/20	118 (3)		%	40
2010183	SHL	Matrix Spike [EI5016-01]	Isobutylbenzene - Volatile	2009/11/17		82	%	70 - 130
			Benzene	2009/11/17		91	%	70 - 130
			Toluene	2009/11/17		91	%	70 - 130
			Ethylbenzene	2009/11/17		91	%	70 - 130
			Xylene (Total)	2009/11/17		99	%	70 - 130
		Spiked Blank	Isobutylbenzene - Volatile	2009/11/17		86	%	70 - 130
			Benzene	2009/11/17		88	%	70 - 130
			Toluene	2009/11/17		92	%	70 - 130
			Ethylbenzene	2009/11/17		89	%	70 - 130
			Xylene (Total)	2009/11/17		97	%	70 - 130
		Method Blank	Isobutylbenzene - Volatile	2009/11/17		86	%	70 - 130
			Benzene	2009/11/17	ND, RDL=0.001		mg/L	
			Toluene	2009/11/17	ND, RDL=0.001		mg/L	
			Ethylbenzene	2009/11/17	ND, RDL=0.001		mg/L	
			Xylene (Total)	2009/11/17	ND, RDL=0.002		mg/L	
			C6 - C10 (less BTEX)	2009/11/17	ND, RDL=0.01		mg/L	
		RPD	Benzene	2009/11/17	NC		%	40
			Toluene	2009/11/17	NC		%	40
			Ethylbenzene	2009/11/17	NC		%	40
			Xylene (Total)	2009/11/17	NC		%	40
			C6 - C10 (less BTEX)	2009/11/17	NC		%	40
2010653	SHR	Matrix Spike	Isobutylbenzene - Extractable	2009/11/18		88	%	30 - 130
			n-Dotriacontane - Extractable	2009/11/18		93	%	30 - 130
			>C10-C21 Hydrocarbons	2009/11/18		80	%	30 - 130
			>C21-<C32 Hydrocarbons	2009/11/18		83	%	30 - 130
		Spiked Blank	Isobutylbenzene - Extractable	2009/11/18		107	%	30 - 130
			n-Dotriacontane - Extractable	2009/11/18		114	%	30 - 130
			>C10-C21 Hydrocarbons	2009/11/18		97	%	30 - 130
			>C21-<C32 Hydrocarbons	2009/11/18		103	%	30 - 130
		Method Blank	Isobutylbenzene - Extractable	2009/11/18		102	%	30 - 130
			n-Dotriacontane - Extractable	2009/11/18		109	%	30 - 130
			>C10-C21 Hydrocarbons	2009/11/18	ND, RDL=0.05		mg/L	
			>C21-<C32 Hydrocarbons	2009/11/18	ND, RDL=0.1		mg/L	
		RPD	>C10-C21 Hydrocarbons	2009/11/18	6.3		%	40
			>C21-<C32 Hydrocarbons	2009/11/18	NC		%	40
2010720	JWH	Method Blank	Sample Weight (as received)	2009/11/17	50, RDL=0		g	
		RPD [EI4997-01]	Sample Weight (as received)	2009/11/17	0		%	N/A
2010798	SHR	Matrix Spike [EI4985-01]	Isobutylbenzene - Extractable	2009/11/17		101	%	30 - 130
			n-Dotriacontane - Extractable	2009/11/17		104	%	30 - 130
			>C10-C21 Hydrocarbons	2009/11/17		85	%	30 - 130
			>C21-<C32 Hydrocarbons	2009/11/17		103	%	30 - 130
		Spiked Blank	Isobutylbenzene - Extractable	2009/11/17		95	%	30 - 130
			n-Dotriacontane - Extractable	2009/11/17		83	%	30 - 130
			>C10-C21 Hydrocarbons	2009/11/17		80	%	30 - 130
			>C21-<C32 Hydrocarbons	2009/11/17		94	%	30 - 130
		Method Blank	Isobutylbenzene - Extractable	2009/11/17		97	%	30 - 130
			n-Dotriacontane - Extractable	2009/11/17		89	%	30 - 130
			>C10-C21 Hydrocarbons	2009/11/17	ND, RDL=15		mg/kg	
			>C21-<C32 Hydrocarbons	2009/11/17	ND, RDL=15		mg/kg	
		RPD [EI4985-01]	>C10-C21 Hydrocarbons	2009/11/17	NC		%	50

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Quality Assurance Report (Continued)

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2010798	SHR	RPD [EI4985-01]	>C21-<C32 Hydrocarbons	2009/11/17	NC		%	50
2010827	SHR	Matrix Spike						
		[EI5003-01]	Isobutylbenzene - Extractable	2009/11/17		105	%	30 - 130
			n-Dotriacontane - Extractable	2009/11/17		118	%	30 - 130
			>C10-C21 Hydrocarbons	2009/11/17		94	%	30 - 130
			>C21-<C32 Hydrocarbons	2009/11/17		113	%	30 - 130
		Spiked Blank	Isobutylbenzene - Extractable	2009/11/17		95	%	30 - 130
			n-Dotriacontane - Extractable	2009/11/17		102	%	30 - 130
			>C10-C21 Hydrocarbons	2009/11/17		93	%	30 - 130
			>C21-<C32 Hydrocarbons	2009/11/17		115	%	30 - 130
		Method Blank	Isobutylbenzene - Extractable	2009/11/17		95	%	30 - 130
			n-Dotriacontane - Extractable	2009/11/17		103	%	30 - 130
			>C10-C21 Hydrocarbons	2009/11/17	ND, RDL=15		mg/kg	
			>C21-<C32 Hydrocarbons	2009/11/17	ND, RDL=15		mg/kg	
		RPD [EI5003-01]	>C10-C21 Hydrocarbons	2009/11/17	NC		%	50
			>C21-<C32 Hydrocarbons	2009/11/17	NC		%	50
2011038	LKE	Matrix Spike	Available Aluminum (Al)	2009/11/17		NC	%	75 - 125
			Available Antimony (Sb)	2009/11/17		82	%	75 - 125
			Available Arsenic (As)	2009/11/17		102	%	75 - 125
			Available Barium (Ba)	2009/11/17		NC	%	75 - 125
			Available Beryllium (Be)	2009/11/17		98	%	75 - 125
			Available Boron (B)	2009/11/17		92	%	75 - 125
			Available Cadmium (Cd)	2009/11/17		99	%	75 - 125
			Available Chromium (Cr)	2009/11/17		89	%	75 - 125
			Available Cobalt (Co)	2009/11/17		98	%	75 - 125
			Available Copper (Cu)	2009/11/17		91	%	75 - 125
			Available Iron (Fe)	2009/11/17		NC	%	75 - 125
			Available Lead (Pb)	2009/11/17		NC	%	75 - 125
			Available Lithium (Li)	2009/11/17		NC	%	75 - 125
			Available Manganese (Mn)	2009/11/17		NC	%	75 - 125
			Available Mercury (Hg)	2009/11/17		100	%	75 - 125
			Available Molybdenum (Mo)	2009/11/17		96	%	75 - 125
			Available Nickel (Ni)	2009/11/17		98	%	75 - 125
			Available Selenium (Se)	2009/11/17		96	%	75 - 125
			Available Silver (Ag)	2009/11/17		98	%	75 - 125
			Available Strontium (Sr)	2009/11/17		94	%	75 - 125
			Available Thallium (Tl)	2009/11/17		92	%	75 - 125
			Available Tin (Sn)	2009/11/17		97	%	75 - 125
			Available Uranium (U)	2009/11/17		100	%	75 - 125
			Available Vanadium (V)	2009/11/17		NC	%	75 - 125
			Available Zinc (Zn)	2009/11/17		94	%	75 - 125
		QC Standard	Available Aluminum (Al)	2009/11/17		84	%	75 - 125
			Available Arsenic (As)	2009/11/17		117	%	75 - 125
			Available Barium (Ba)	2009/11/17		102	%	75 - 125
			Available Chromium (Cr)	2009/11/17		82	%	75 - 125
			Available Cobalt (Co)	2009/11/17		94	%	75 - 125
			Available Copper (Cu)	2009/11/17		90	%	75 - 125
			Available Iron (Fe)	2009/11/17		92	%	75 - 125
			Available Lead (Pb)	2009/11/17		102	%	75 - 125
			Available Manganese (Mn)	2009/11/17		102	%	75 - 125
			Available Nickel (Ni)	2009/11/17		97	%	75 - 125
			Available Strontium (Sr)	2009/11/17		85	%	75 - 125
			Available Vanadium (V)	2009/11/17		100	%	75 - 125
			Available Zinc (Zn)	2009/11/17		100	%	75 - 125
		Spiked Blank	Available Aluminum (Al)	2009/11/17		100	%	75 - 125

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Quality Assurance Report (Continued)

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QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2011038 LKE	Spiked Blank	Available Antimony (Sb)	2009/11/17		88	%	75 - 125
		Available Arsenic (As)	2009/11/17		95	%	75 - 125
		Available Barium (Ba)	2009/11/17		92	%	75 - 125
		Available Beryllium (Be)	2009/11/17		100	%	75 - 125
		Available Boron (B)	2009/11/17		92	%	75 - 125
		Available Cadmium (Cd)	2009/11/17		92	%	75 - 125
		Available Chromium (Cr)	2009/11/17		93	%	75 - 125
		Available Cobalt (Co)	2009/11/17		95	%	75 - 125
		Available Copper (Cu)	2009/11/17		94	%	75 - 125
		Available Iron (Fe)	2009/11/17		99	%	75 - 125
		Available Lead (Pb)	2009/11/17		97	%	75 - 125
		Available Lithium (Li)	2009/11/17		85	%	75 - 125
		Available Manganese (Mn)	2009/11/17		105	%	75 - 125
		Available Mercury (Hg)	2009/11/17		102	%	75 - 125
		Available Molybdenum (Mo)	2009/11/17		88	%	75 - 125
		Available Nickel (Ni)	2009/11/17		92	%	75 - 125
		Available Selenium (Se)	2009/11/17		94	%	75 - 125
		Available Silver (Ag)	2009/11/17		96	%	75 - 125
		Available Strontium (Sr)	2009/11/17		98	%	75 - 125
		Available Thallium (Tl)	2009/11/17		93	%	75 - 125
		Available Tin (Sn)	2009/11/17		88	%	75 - 125
		Available Uranium (U)	2009/11/17		99	%	75 - 125
		Available Vanadium (V)	2009/11/17		94	%	75 - 125
		Available Zinc (Zn)	2009/11/17		92	%	75 - 125
	Method Blank	Available Aluminum (Al)	2009/11/17	ND, RDL=10		mg/kg	
		Available Antimony (Sb)	2009/11/17	ND, RDL=2		mg/kg	
		Available Arsenic (As)	2009/11/17	ND, RDL=2		mg/kg	
		Available Barium (Ba)	2009/11/17	ND, RDL=5		mg/kg	
		Available Beryllium (Be)	2009/11/17	ND, RDL=2		mg/kg	
		Available Boron (B)	2009/11/17	ND, RDL=5		mg/kg	
		Available Cadmium (Cd)	2009/11/17	ND, RDL=0.3		mg/kg	
		Available Chromium (Cr)	2009/11/17	ND, RDL=2		mg/kg	
		Available Cobalt (Co)	2009/11/17	ND, RDL=1		mg/kg	
		Available Copper (Cu)	2009/11/17	ND, RDL=2		mg/kg	
		Available Iron (Fe)	2009/11/17	ND, RDL=50		mg/kg	
		Available Lead (Pb)	2009/11/17	ND, RDL=0.5		mg/kg	
		Available Lithium (Li)	2009/11/17	ND, RDL=2		mg/kg	
		Available Manganese (Mn)	2009/11/17	ND, RDL=2		mg/kg	
		Available Mercury (Hg)	2009/11/17	ND, RDL=0.1		mg/kg	
		Available Molybdenum (Mo)	2009/11/17	ND, RDL=2		mg/kg	
		Available Nickel (Ni)	2009/11/17	ND, RDL=2		mg/kg	
		Available Selenium (Se)	2009/11/17	ND, RDL=2		mg/kg	
		Available Silver (Ag)	2009/11/17	ND, RDL=0.5		mg/kg	
		Available Strontium (Sr)	2009/11/17	ND, RDL=5		mg/kg	
		Available Thallium (Tl)	2009/11/17	ND, RDL=0.1		mg/kg	
		Available Tin (Sn)	2009/11/17	ND, RDL=2		mg/kg	
		Available Uranium (U)	2009/11/17	ND, RDL=0.1		mg/kg	
		Available Vanadium (V)	2009/11/17	ND, RDL=2		mg/kg	
		Available Zinc (Zn)	2009/11/17	ND, RDL=5		mg/kg	
	RPD	Available Aluminum (Al)	2009/11/17	15.5		%	35
		Available Antimony (Sb)	2009/11/17	NC		%	35
		Available Arsenic (As)	2009/11/17	NC		%	35
		Available Barium (Ba)	2009/11/17	17.5		%	35
		Available Beryllium (Be)	2009/11/17	NC		%	35
		Available Boron (B)	2009/11/17	NC		%	35

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Dessau Soprin
Attention: Guy Caumartin
Client Project #: P029201-101
P.O. #:
Project name: ST-LEWIS, PHASE III

Quality Assurance Report (Continued)

Maxxam Job Number: DA9F3461

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2011038	LKE	RPD	Available Cadmium (Cd)	2009/11/17	NC		%	35
			Available Chromium (Cr)	2009/11/17	NC		%	35
			Available Cobalt (Co)	2009/11/17	NC		%	35
			Available Copper (Cu)	2009/11/17	NC		%	35
			Available Iron (Fe)	2009/11/17	11.6		%	35
			Available Lead (Pb)	2009/11/17	7.1		%	35
			Available Lithium (Li)	2009/11/17	14.5		%	35
			Available Manganese (Mn)	2009/11/17	13.5		%	35
			Available Mercury (Hg)	2009/11/17	NC		%	35
			Available Molybdenum (Mo)	2009/11/17	NC		%	35
			Available Nickel (Ni)	2009/11/17	NC		%	35
			Available Selenium (Se)	2009/11/17	NC		%	35
			Available Silver (Ag)	2009/11/17	NC		%	35
			Available Strontium (Sr)	2009/11/17	NC		%	35
			Available Thallium (Tl)	2009/11/17	NC		%	35
			Available Tin (Sn)	2009/11/17	NC		%	35
			Available Uranium (U)	2009/11/17	12.7		%	35
			Available Vanadium (V)	2009/11/17	6.8		%	35
			Available Zinc (Zn)	2009/11/17	23.7		%	35
2011907	LKE	Method Blank	Leachable Aluminum (Al)	2009/11/17	ND, RDL=100		ug/L	
			Leachable Antimony (Sb)	2009/11/17	ND, RDL=20		ug/L	
			Leachable Arsenic (As)	2009/11/17	ND, RDL=20		ug/L	
			Leachable Barium (Ba)	2009/11/17	ND, RDL=50		ug/L	
			Leachable Beryllium (Be)	2009/11/17	ND, RDL=20		ug/L	
			Leachable Boron (B)	2009/11/17	ND, RDL=500		ug/L	
			Leachable Cadmium (Cd)	2009/11/17	ND, RDL=3		ug/L	
			Leachable Chromium (Cr)	2009/11/17	ND, RDL=20		ug/L	
			Leachable Cobalt (Co)	2009/11/17	ND, RDL=10		ug/L	
			Leachable Copper (Cu)	2009/11/17	ND, RDL=20		ug/L	
			Leachable Iron (Fe)	2009/11/17	ND, RDL=500		ug/L	
			Leachable Lead (Pb)	2009/11/17	ND, RDL=5		ug/L	
			Leachable Lithium (Li)	2009/11/17	ND, RDL=20		ug/L	
			Leachable Manganese (Mn)	2009/11/17	ND, RDL=20		ug/L	
			Leachable Molybdenum (Mo)	2009/11/17	ND, RDL=20		ug/L	
			Leachable Nickel (Ni)	2009/11/17	ND, RDL=20		ug/L	
			Leachable Selenium (Se)	2009/11/17	ND, RDL=20		ug/L	
			Leachable Silver (Ag)	2009/11/17	ND, RDL=5		ug/L	
			Leachable Strontium (Sr)	2009/11/17	ND, RDL=50		ug/L	
			Leachable Thallium (Tl)	2009/11/17	ND, RDL=1		ug/L	
			Leachable Tin (Sn)	2009/11/17	ND, RDL=20		ug/L	
			Leachable Uranium (U)	2009/11/17	ND, RDL=1		ug/L	
			Leachable Vanadium (V)	2009/11/17	ND, RDL=20		ug/L	
			Leachable Zinc (Zn)	2009/11/17	ND, RDL=50		ug/L	
		RPD [EI4997-00]	Leachable Aluminum (Al)	2009/11/17	6.2		%	25
			Leachable Antimony (Sb)	2009/11/17	NC		%	25
			Leachable Arsenic (As)	2009/11/17	NC		%	25
			Leachable Barium (Ba)	2009/11/17	6.1		%	25
			Leachable Beryllium (Be)	2009/11/17	NC		%	25
			Leachable Boron (B)	2009/11/17	NC		%	25
			Leachable Cadmium (Cd)	2009/11/17	NC		%	25
			Leachable Chromium (Cr)	2009/11/17	NC		%	25
			Leachable Cobalt (Co)	2009/11/17	NC		%	25
			Leachable Copper (Cu)	2009/11/17	NC		%	25
			Leachable Iron (Fe)	2009/11/17	NC		%	25
			Leachable Lead (Pb)	2009/11/17	NC		%	25

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Dessau Soprin
Attention: Guy Caumartin
Client Project #: P029201-101
P.O. #:
Project name: ST-LEWIS, PHASE III

Quality Assurance Report (Continued)

Maxxam Job Number: DA9F3461

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2011907 LKE	RPD [EI4997-00]	Leachable Lithium (Li)	2009/11/17	NC		%	25
		Leachable Manganese (Mn)	2009/11/17	40.9 (4)		%	25
		Leachable Molybdenum (Mo)	2009/11/17	NC		%	25
		Leachable Nickel (Ni)	2009/11/17	NC		%	25
		Leachable Selenium (Se)	2009/11/17	NC		%	25
		Leachable Silver (Ag)	2009/11/17	NC		%	25
		Leachable Strontium (Sr)	2009/11/17	NC		%	25
		Leachable Thallium (Tl)	2009/11/17	NC		%	25
		Leachable Tin (Sn)	2009/11/17	NC		%	25
		Leachable Uranium (U)	2009/11/17	NC		%	25
		Leachable Vanadium (V)	2009/11/17	NC		%	25
		Leachable Zinc (Zn)	2009/11/17	NC		%	25
2012572 LKE	QC Standard	Available Aluminum (Al)	2009/11/18		85	%	75 - 125
		Available Arsenic (As)	2009/11/18		125	%	75 - 125
		Available Barium (Ba)	2009/11/18		112	%	75 - 125
		Available Chromium (Cr)	2009/11/18		87	%	75 - 125
		Available Cobalt (Co)	2009/11/18		98	%	75 - 125
		Available Copper (Cu)	2009/11/18		92	%	75 - 125
		Available Iron (Fe)	2009/11/18		93	%	75 - 125
		Available Lead (Pb)	2009/11/18		100	%	75 - 125
		Available Manganese (Mn)	2009/11/18		105	%	75 - 125
		Available Nickel (Ni)	2009/11/18		99	%	75 - 125
		Available Strontium (Sr)	2009/11/18		90	%	75 - 125
		Available Vanadium (V)	2009/11/18		106	%	75 - 125
		Available Zinc (Zn)	2009/11/18		107	%	75 - 125
	Spiked Blank	Available Aluminum (Al)	2009/11/18		101	%	75 - 125
		Available Antimony (Sb)	2009/11/18		106	%	75 - 125
		Available Arsenic (As)	2009/11/18		101	%	75 - 125
		Available Barium (Ba)	2009/11/18		99	%	75 - 125
		Available Beryllium (Be)	2009/11/18		97	%	75 - 125
		Available Boron (B)	2009/11/18		99	%	75 - 125
		Available Cadmium (Cd)	2009/11/18		101	%	75 - 125
		Available Chromium (Cr)	2009/11/18		95	%	75 - 125
		Available Cobalt (Co)	2009/11/18		96	%	75 - 125
		Available Copper (Cu)	2009/11/18		95	%	75 - 125
		Available Iron (Fe)	2009/11/18		97	%	75 - 125
		Available Lead (Pb)	2009/11/18		100	%	75 - 125
		Available Lithium (Li)	2009/11/18		97	%	75 - 125
		Available Manganese (Mn)	2009/11/18		105	%	75 - 125
		Available Mercury (Hg)	2009/11/18		105	%	75 - 125
		Available Molybdenum (Mo)	2009/11/18		96	%	75 - 125
		Available Nickel (Ni)	2009/11/18		93	%	75 - 125
		Available Selenium (Se)	2009/11/18		85	%	75 - 125
		Available Silver (Ag)	2009/11/18		97	%	75 - 125
		Available Strontium (Sr)	2009/11/18		100	%	75 - 125
		Available Thallium (Tl)	2009/11/18		97	%	75 - 125
		Available Tin (Sn)	2009/11/18		98	%	75 - 125
		Available Uranium (U)	2009/11/18		96	%	75 - 125
		Available Vanadium (V)	2009/11/18		94	%	75 - 125
		Available Zinc (Zn)	2009/11/18		97	%	75 - 125
	Method Blank	Available Aluminum (Al)	2009/11/18	ND, RDL=10		mg/kg	
		Available Antimony (Sb)	2009/11/18	ND, RDL=2		mg/kg	
		Available Arsenic (As)	2009/11/18	ND, RDL=2		mg/kg	
		Available Barium (Ba)	2009/11/18	ND, RDL=5		mg/kg	
		Available Beryllium (Be)	2009/11/18	ND, RDL=2		mg/kg	

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Dessau Soprin
Attention: Guy Caumartin
Client Project #: P029201-101
P.O. #:
Project name: ST-LEWIS, PHASE III

Quality Assurance Report (Continued)

Maxxam Job Number: DA9F3461

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2012572	LKE	Method Blank	Available Boron (B)	2009/11/18	ND, RDL=5		mg/kg	
			Available Cadmium (Cd)	2009/11/18	ND, RDL=0.3		mg/kg	
			Available Chromium (Cr)	2009/11/18	ND, RDL=2		mg/kg	
			Available Cobalt (Co)	2009/11/18	ND, RDL=1		mg/kg	
			Available Copper (Cu)	2009/11/18	ND, RDL=2		mg/kg	
			Available Iron (Fe)	2009/11/18	ND, RDL=50		mg/kg	
			Available Lead (Pb)	2009/11/18	ND, RDL=0.5		mg/kg	
			Available Lithium (Li)	2009/11/18	ND, RDL=2		mg/kg	
			Available Manganese (Mn)	2009/11/18	ND, RDL=2		mg/kg	
			Available Mercury (Hg)	2009/11/18	ND, RDL=0.1		mg/kg	
			Available Molybdenum (Mo)	2009/11/18	ND, RDL=2		mg/kg	
			Available Nickel (Ni)	2009/11/18	ND, RDL=2		mg/kg	
			Available Selenium (Se)	2009/11/18	ND, RDL=2		mg/kg	
			Available Silver (Ag)	2009/11/18	ND, RDL=0.5		mg/kg	
			Available Strontium (Sr)	2009/11/18	ND, RDL=5		mg/kg	
			Available Thallium (Tl)	2009/11/18	ND, RDL=0.1		mg/kg	
			Available Tin (Sn)	2009/11/18	ND, RDL=2		mg/kg	
			Available Uranium (U)	2009/11/18	ND, RDL=0.1		mg/kg	
			Available Vanadium (V)	2009/11/18	ND, RDL=2		mg/kg	
			Available Zinc (Zn)	2009/11/18	ND, RDL=5		mg/kg	

N/A = Not Applicable
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
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) PAH sample contained sediment.
(2) Matrix Spike: < 10 % of compounds in multi-component analysis in violation.
(3) Duplicate: results are outside acceptance limit. Sample was past recommended hold time for repeat analysis.
(4) Poor RPD due to sample inhomogeneity.

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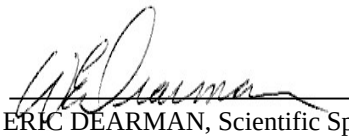
Validation Signature Page

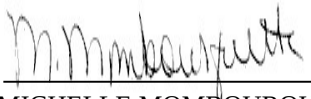
Maxxam Job #: A9F3461

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



ERIC DEARMAN, Scientific Specialist

ROSE MACDONALD,



MICHELLE MOMBOURQUETTE, Laboratory Manager

ALAN STEWART, Scientific Specialist (Organics)

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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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Appendix 6 NCSCS Score

CCME National Classification System for Contaminated Sites (2008)
Pre-Screening Checklist

Question	Response (yes / no)	Comment
1. Are **Radioactive material**, **Bacterial contamination** or **Biological hazards** likely to be present at the site?	No	If yes, do not proceed through the NCSCS. Contact applicable regulatory agency immediately.
2. Are there **no contamination exceedances** (known or suspected)? Determination of exceedances may be based on: 1) CCME environmental quality guidelines; 2) equivalent provincial guidelines/standards if no CCME guideline exists for a specific chemical in a relevant medium; or 3) toxicity benchmarks derived from the literature for chemicals not covered by CCME or provincial guidelines/standards.	No	If yes (i.e., there are no exceedances), do not proceed through the NCSCS.
3. Have **partial/incompleted or no environmental site investigations** been conducted for the Site?	No	If yes, do not proceed through the NCSCS.
4. Is there direct and signficant evidence of **impacts to humans** at the site, or off-site due to migration of contaminants from the site?	No	If yes, automatically rate the site as Class 1, a priority for remediation or risk management, regardless of the total score obtained should one be calculated (e.g., for comparison with other Class 1 sites).
5. Is there direct and significant evidence of **impacts to ecological receptors** at the site, or off-site due to migration of contaminants from the site?	No	Some low levels of impact to ecological receptors are considered acceptable, particularly on commercial and industrial land uses. However, if ecological effects are considered to be severe, the site may be categorized as Class 1, regardless of the numerical total NCSCS score. For the purpose of application of the NCSCS, effects that would be considered severe include observed effects on survival, growth or reproduction which could threaten the viability of a population of ecological receptors at the site. Other evidence that qualifies as severe adverse effects may be determined based on professional judgement and in consultation with the relevant jurisdiction.
6. Are there indicators of significant **adverse effects in the exposure zone** (i.e., the zone in which receptors may come into contact with contaminants)? Some examples are as follows: -Hydrocarbon sheen or NAPL in the exposure zone -Severely stressed biota or devoid of biota; -Presence of material at ground surface or sediment with suspected high concentration of contaminants such as ore tailings, sandblasting grit, slag, and coal tar.	No	If yes, automatically rate the site as Class 1, a priority for remediation or risk management, regardless of the total score obtained should one be calculated (e.g., for comparison with other Class 1 sites).
7. Do measured concentrations of volatiles or unexploded ordnances represent an **explosion hazard**?	No	If yes, automatically rate the site as Class 1, a priority for remediation or risk management, and do not continue until the safety risks have been addressed. Consult your jurisdiction's occupational health and safety guidance or legislation on exposive hazards and measurement of lower explosive limits.

If none of the above applies, proceed with the NCSCS scoring.

CCME National Classification System for Contaminated Sites (2008)
Summary of Site Conditions

Subject Site:	**St. Lewis Field Office DFRP #58590**	
Civic Address: *(or other description of location)*	10, Shoal Point Road, St.Lewis, NL	
Site Common Name : *(if applicable)*		
Site Owner or Custodian: *(Organization and Contact Person)*	Fisheries and Oceans **DFO Contact**: Carl Bradley, 709-939-2273	
Legal description *or* metes and bounds:		
Approximate Site area:	3344,73 m^2	
PID(s) : *(or Parcel Identification Numbers [PIN] if untitled Crown land)*		
Centre of site: *(provide latitude/longitude or UTM coordinates)*	Latitude: Longitude:	52 degrees 21 min 56.78 secs 55 degrees 41 min 30.146 secs
	UTM Coordinate:	Northing _____ Easting _____
Site Land Use:	Current:	Residential Land Use according to SNC-Lavalin's Phase I/II Study
	Proposed:	It is not known whether a change in land use has been proposed. A change of land use has possibly been proposed given that activities on-site are commercial (office space and storage of fuel and fishing vessels)
Site Plan	**To delineate the bounds of the Site a site plan MUST be attached. The plan must be drawn to scale indicating the boundaries in relation to well-defined reference points and/or legal descriptions. Delineation of the contamination should also be indicated on the site plan.**	
Provide a brief description of the Site:	The subject site houses an office building for Fisheries and Oceans (constructed in 1982), an extended garage(constructed in 2007), and a storage shed (constructed in 2004) Two fuel storage tanks are currently found adjacent to the office building. These storage tanks were installed in 2004 and in 2007, respectively. A fenced area is found east of the office building, which is used for the storage of private fishing vessels. A 9092 L was formerly found behind (south of) the office building but has been removed between 2001 and 2008. A helicopter landing pad and adjacent fuel aviation storage platform were formerly found west of the office building but have been removed between 2001 and 2008 in order to accomodate the extended garage and storage shed.	

CCME National Classification System for Contaminated Sites (2008)
Summary of Site Conditions

Affected media and Contaminants of Potential Concern (COPC):	Soils south of the office building , in the vicinity of a former 9092 L AST containing fuel oil for a furnace inside the office building, are contaminated by petroleum hydrocarbons. The quality of soils at the former location of the helicopter landing pad, west of the office building (at the current location of the garage) and at the location of the storage shed founds south-east of the office building are not impacted.

Please fill in the "letter" that best describes the level of information available for the site being assessed

Site Letter Grade **C**

If letter grade is F, do not continue, you must have a minimum of a Phase I Environmental Site Assessment or equivalent.

Scoring Completed By:	**Guy Caumartin, Project manager, Dessau inc.**
Date Scoring Completed:	**08-Dec-09**

CCME National Classification System (2008)

(I) Contaminant Characteristics

St. Lewis Field Office DFRP #58590

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method of Evaluation	Notes
1. Residency Media (replaces physical state)				
Which of the following residency media are known (or strongly suspected) to have one or more exceedances of the applicable CCME guidelines? **yes** = has an exceedance or strongly suspected to have an exceedance **no** = does not have an exceedance or strongly suspected not to have an exceedance		Six **soil** samples (TP-02-B, TP-02-S, SL-7-01, 58590-TE-08-04-MA-, LEWI-58590-09-TP05-01 and LEWI-58590-09-TP09-01) revealed a concentration of PH F1 and/or F2 and/or F3 exceeding the CCME-CWS guideline for PHC on coarse grained soils with potable water supplies on residential land. PHC concentrations in these five samples ranged from 307 mg/kg to 4264 mg/kg, while the guideline for TPH is 30 mg/kg for F1, 150 mg/kg for F2 and 300mg/kg for F3. contaminated soils lie in proximity of a **groundwater** well used as a potable water suppl. Petroleum hydrocarbon concentrations were analyzed in sample LEWI-58590-09-WA-01 (shows concentrations below the applicable guidelines) which was collected from tap water inside the office building.	The overall score is calculated by adding the individual scores from each residency media (having one or more exceedance of the most conservative media specific and land-use appropriate CCME guideline). Summary tables of the Canadian Environmental Quality Guidelines for soil, water (aquatic life, non-potable groundwater environments, and agricultural water uses) and sediment are available on the CCME website at http://www.ccme.ca/publications/cegg_rcge.html?category_id=124 For potable groundwater environments, guidelines for Canadian Drinking Water Quality (for comparison with groundwater monitoring data) are available on the Health Canada website at http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc_sup-appui/sum_guide-res_recom/index_e.html.	An increasing number of residency media containing chemical exceedances often equates to a greater potential risk due to an increase in the number of potential exposure pathways.
A. Soil	Yes			
Yes No Do Not Know				
B. Groundwater	No			
Yes No Do Not Know				
C. Surface water	No			
Yes No Do Not Know				
D. Sediment	No			
Yes No Do Not Know				
"Known" -score	2			
"Potential" - score	---			
2. Chemical Hazard				
What is the relative degree of chemical hazard of the contaminant in the list of hazard rankings proposed by the Federal Contaminated Sites Action Plan (FCSAP)?	Medium	The source of contamination is presumably from a spill from a first generation heating oil from a storage tank. Fuel heating oil has a **medium** contaminant hazard. This oil spill presumably occured during the use of the tank between 1982 and 2995	The relative degree of chemical hazard should be selected based on the most hazardous contaminant known or suspected to be present at the site. The degree of hazard has been defined by the Federal Contaminated Sites Action Plan (FCSAP) and a list of substances with their associated hazard (Low, Medium and High) has been provided as a separate sheet in this file. *See Attached Reference Material for Contaminant Hazard Rankings.*	Hazard as defined in the revised NCS pertains to the physical properties of a chemical which can cause harm. Properties can include toxic potency, propensity to biomagnify, persistence in the environment, etc. Although there is some overlap between hazard and contaminant exceedance factor below, it will not be possible to derive contaminant exceedance factors for many substances which have a designated chemical hazard designation, but don't have a CCME guideline. The purpose of this category is to avoid missing a measure of toxic potential.
High Medium Low Do Not Know				
"Known" -score	4			
"Potential" - score	---			
3. Contaminant Exceedence Factor				
What is the ratio between the measured contaminant concentration and the applicable CCME guidelines (or other "standards")?	Medium (10x to 100x)	The highest exceedance ratio was noted in sample SL-7-01 which revealed a PHC F3 concentration of 4264 mg/kg, which is 14 x higher than the guideline of 300 mg/kg.	Ranking of contaminant "exceedance" is determined by comparing contaminant concentrations with the *most conservative media-specific and land-use appropriate CCME* environmental quality guidelines. **Ranking should be based on contaminant with greatest exceedance of CCME guidelines.** Ranking of contaminant hazard as high, medium and low is as follows: High = One or more measured contaminant concentration is greater than 100 X appropriate CCME guidelines Medium = One or more measured contaminant concentration is 10 - 99.99 X appropriate CCME guidelines Low = One or more measured contaminant concentration is 1 - 9.99 X appropriate CCME guidelines Mobile NAPL = Contaminant is a non-aqueous phase liquid (i.e., due to its low solubility, it does not dissolve in water, but remains as a separate liquid) and is present at a sufficiently high saturation (i.e., greater than residual NAPL saturation) such that there is significant potential for mobility either downwards or laterally. Other standards may include local background concentration or published toxicity benchmarks. Results of toxicity testing with site samples can be used as an alternative. This approach is only relevant for contaminants that do not biomagnify in the food web, since toxicity tests would not indicate potential effects at higher trophic levels. High = lethality observed. Medium = no lethality, but sub lethal effects observed. Low = neither lethal nor sub lethal effects observed.	In the event that elevated levels of a material with no associated CCME guidelines are present, check provincial and USEPA environmental criteria. Hazard Quotients (sometimes referred to as a screening quotient in risk assessments) refer to the ratio of measured concentration to the concentration believed to be the threshold for toxicity. A similar calculation is used here to determine the contaminant exceedance factor (CEF). Concentrations greater than one times the applicable CCME guideline (i.e., CEF=>1) indicate that risks are possible. Mobile NAPL has the highest associated score (8) because of its highly concentrated nature and potential for increase in the size of the impacted zone.
Mobile NAPL High (>100x) Medium (10x to 100x) Low (1x to 10x) Do Not Know				
"Known" -score	4			
"Potential" - score	---			

CCME National Classification System (2008)

(I) Contaminant Characteristics

St. Lewis Field Office DFRP #58590

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method of Evaluation	Notes
4. Contaminant Quantity (known or strongly suspected)				
What is the known or strongly suspected quantity of all contaminants? >10 hectare (ha) or 5000 m^3 2 to 10 ha or 1000 to 5000 m^3 <2 ha or 1000 m^3 Do Not Know	<2 ha or 1000 m3	The contaminated soil extent is inferior to 1000m^3.	Measure or estimate the area or quantity of total contamination (i.e, all contaminants known or strongly suspected to be present on the site). The "Area of Contamination" is defined as the area or volume of contaminated media (soil, sediment, groundwater, surface water) exceeding appropriate environmental criteria.	A larger quantity of a potentially toxic substance can result in a larger frequency of exposure as well as a greater probability of migration, therefore, larger quantities of these substances earn a higher score.
"Known" -score	2			
"Potential" - score	---			
5. Modifying Factors				
Does the chemical fall in the class of persistent chemicals based on its behavior in the environment? Yes No Do Not Know	Yes	According to the Spreadsheet Model of the Canada-Wide Standard for PHC in Soils, Petroleum hydrocarbons C6-C10 have a half-life of **712** days, while petroleum hydrocarbons C10-C16 have a half-life of **1750** days. The half-lives of heavier fractions (C10-C21 and C21-C32) is not presented. Reference: http://www.ccme.ca/assets/xls/phc_cws_sprdsht_user_e_20021219.xls	Persistent chemicals, e.g., PCBs, chlorinated pesticides etc. either do not degrade or take longer to degrade, and therefore may be available to cause effects for a longer period of time. Canadian Environmental Protection Act (CEPA) classifies a chemical as persistent when it has at least one of the following characteristics: (a) in air, (i) its half-life is equal to or greater than 2 days, or (ii) it is subject to atmospheric transport from its source to a remote area; (b) in water, its half-life is equal to or greater than 182 days; (c) in sediments, its half-life is equal to or greater than 365 days; or (d) in soil, its half-life is equal to or greater than 182 days. This list does not include metals or metalloids, which in their elemental form do not degrade. However metals and metalloids form chemical species in the environment, many of which are not readily bioavailable.	*Examples of Persistent Substances are provided in attached Reference Materials*
Are there contaminants present that could cause damage to utilities and infrastructure, either now or in the future, given their location? Yes No Do Not Know	No	Petroleum hydrocarbons do not damage underground infrastructures.		Some contaminants may react or absorb into underground utilities and infrastructure. For example, organic solvents may degrade some plastics, and salts could cause corrosion of metal.
How many different contaminant classes have representative CCME guideline exceedances? one two to four five or more Do Not Know	two to four	Analyses performed by Dessau revealed at two contaminant classes, including light extractable petroleum hydrocarbons (F2 or C10-C16 which corresponds approximatively to the fractionation C10-C21) and heavy light extractable petroleum hydrocarbons (F3 or C16-C34 which corresponds approximatively to the fractionation C21-C32)	For the purposes of the revised NCS ranking system, the following chemicals represent distinct chemical "classes": inorganic substances (including metals), volatile petroleum hydrocarbons, light extractable petroleum hydrocarbons, heavy extractable petroleum hydrocarbons, PAHs, phenolic substances, chlorinated hydrocarbons, halogenated methanes, phthalate esters, pesticides.	*Refer to the Reference Material sheet for a list of example substances that fall under the various chemical classes.*
"Known" - Score	4			
"Potential" - Score	---			

Contaminant Characteristic Total

Raw Total Scores- "Known"	16
Raw Total Scores- "Potential"	0
Raw Combined Total Scores	16
Total Score (Raw Combined / 40 * 33)	**13.2**

CCME National Classification System (2008)

(II) Migration Potential (Evaluation of contaminant migration pathways)

St. Lewis Field Office DFRP #58590

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
1. Groundwater Movement				
A. Known COPC exceedances and an operable groundwater pathway within and/or beyond the property boundary.				
i) For **potable groundwater environments**, 1) groundwater concentrations exceed background concentrations and 1X the Guideline for Canadian Drinking Water Quality (GCDWQ) or 2) there is known contact of contaminants with groundwater, based on physical evidence of groundwater contamination. For **non-potable environments** (typically urban environments with municipal services), 1) groundwater concentrations exceed 1X the applicable non potable guidelines or modified generic guidelines (which exclude ingestion of drinking water pathway) or 2) there is known contact of contaminants with groundwater, based on physical evidence of groundwater impacts.	12	Given coarse-grained soils on the site, and the proximity of a groundwater well in the vicinity of soil contamination by PHC, there exists a potential pathway for groundwater contamination, which will be evaluated below.	Review chemical data and evaluate groundwater quality. The evaluation method concentrates on 1) a potable or non-potable groundwater environment; 2) the groundwater flow system and its potential to be an exposure pathway to known or potential receptors An aquifer is defined as a geologic unit that yields groundwater in usable quantities and drinking water quality. The aquifer can currently be used as a potable water supply or could have the potential for use in the future. Non-potable groundwater environments are defined as areas that are serviced with a reliable alternative water supply (most commonly provided in urban areas). The evaluation of a non-potable environment will be based on a site specific basis. Physical evidence includes significant sheens, liquid phase contamination, or contaminant saturated soils. Seeps and springs are considered part of the groundwater pathway. In Arctic environments, the potability and evaluation of the seasonal active layer (above the permafrost) as a groundwater exposure pathway will be considered on a site-specific basis.	The 1992 NCS rationale evaluated the off-site migration as a regulatory issue. The exposure assessment and classification of hazards should be evaluated regardless of the property boundaries. Someone experienced must provide a thorough description of the sources researched to determine the presence/absence of a groundwater supply source in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resources such as internet links. Note that for potable groundwater that also daylights into a nearby surface water body, the more stringent guidelines for both drinking water and protection of aquatic life should be considered. **Selected References** Potable Environments Guidelines for Canadian Drinking Water Quality: www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc_sup-appui/sum_guide-res_recom/index_e.html Non-Potable Environments Canadian Water Quality Guidelines for Protection of Aquatic Life. CCME. 1999 www.ccme.ca Compilation and Review of Canadian Remediation Guidelines, Standards and Regulations. Science Applications International Corporation (SAIC Canada), report to Environment Canada, January 4, 2002.
ii) Same as (i) except the information is not known but strongly suspected based on indirect observations.	9			
iii) Meets GCDWQ for **potable environments**; meets non-potable criteria or modified generic criteria (excludes ingestion of drinking water pathway) for **non-potable environments** **or** Absence of groundwater exposure pathway (i.e., there is no aquifer (see definition at right) at the site or there is an adequate isolating layer between the aquifer and the contamination, and within 5 km of the site there are no aquatic receiving environments and the groundwater does not daylight).	0			
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Known COPC Exceedances, then you can skip Part B (Potential for groundwater pathway) and go to Section 2 (Surface Water Pathway)				
B. Potential for groundwater pathway.				
a. Relative Mobility High Moderate Low Insignificant Do Not Know		According to the Canada-Wide Standard for PHC in Soils, Scientific Rationale, Supporting Technical Document, the log(Koc) of aliphatic petroleum hydrocarbons ranges from 5.4 to 9.0, for C10-C21. Reference:http://www.ccme.ca/assets/pdf/pn_1399_phc_sr_std_1.2_e.pdf	Organics Koc (L/kg) / Metals with higher mobility at acidic conditions / Metals with higher mobility at alkaline conditions Koc < 500 (i.e., log Koc < 2.7) — pH < 5 — pH > 8.5 Koc = 500 to 5000 (i.e., log Koc = 2.7 to 3.7) — pH = 5 to 6 — pH = 7.5 to 8.5 Koc = 5,000 to 100,000 (i.e., log Koc = 3.7 to 5) — pH > 6 — pH < 7.5 Koc > 100,000 (i.e., log Koc > 5)	Reference: US EPA Soil Screening Guidance (Part 5 - Table 39) If a score of zero is assigned for relative mobility, it is still recommended that the following sections on potential for groundwater pathway be evaluated and scored. Although the Koc of an individual contaminant may suggest that it will be relatively immobile, it is possible that, with complex mixtures, there could be enhanced mobility due to co-solvent effects. Therefore, the Koc cannot be relied on solely as a measure of mobility. An evaluation of other factors such as containment, thickness of confining layer, hydraulic conductivities and precipitation infiltration rate are still useful in predicting potential for groundwater migration, even if a contaminant is expected to have insignificant mobility based on its chemistry alone.
	Insignificant			
Score	0			
b. Presence of engineered sub-surface containment? No containment Partial containment Full containment Do Not Know		No engineered subsurface containment to our knowledge.	Review the existing engineered systems or natural attenuation processes for the site and determine if full or partial containment is achieved. Full containment is defined as an engineered system or natural attenuation processes, monitored as being effective, which provide for full capture and/or treatment of contaminants. All chemicals of concern must be contained for "Full Containment" scoring. Natural attenuation must have sufficient data, and reports cited with monitoring data to support steady state conditions and the attenuation processes. If there is no containment or insufficient natural attenuation process, this category is evaluated as high. If there is less than full containment or if uncertain, then evaluate as medium. In Arctic environments, permafrost will be evaluated, as appropriate, based on detailed evaluations, effectiveness and reliability to contain/control contaminant migration.	Someone experienced must provide a thorough description of the sources researched to determine the containment of the source at the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps, geotechnical reports or natural attenuation studies and other resources such as internet links. **Selected Resources:** United States Environmental Protection Agency (USEPA) 1998. Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater. EPA/600/R-98/128. Environment Canada – Ontario Region – Natural Attenuation Technical Assistance Bulletins (TABS) Number 19 –21.
	No containment			
Score	3			
c. Thickness of confining layer over aquifer of concern or groundwater exposure pathway 3 m or less including no confining layer or discontinuous confining layer 3 to 10 m > 10 m Do Not Know		Usually 3 m or less throughout NL.	The term "confining layer" refers to geologic material with little or no permeability or hydraulic conductivity (such as unfractured clay); water does not pass through this layer or the rate of movement is extremely slow. Measure the thickness and extent of materials that will impede the migration of contaminants to the groundwater exposure pathway. The evaluation of this category is based on: 1) The presence and thickness of saturated subsurface materials that impede the vertical migration of contaminants to lower aquifer units which can or are used as drinking water sources or 2) The presence and thickness of unsaturated subsurface materials that impede the vertical migration of contaminants from the source location to the saturated zone (e.g., water table aquifer, first hydrostratigraphic unit or other groundwater pathway).	
	3 m or less			
Score	1			
d. Hydraulic conductivity of confining layer >10^{-4} cm/s or no confining layer 10^{-4} to 10^{-6} cm/s <10^{-6} cm/s Do Not Know		Confining layer not known.	Determine the nature of geologic materials and estimate hydraulic conductivity from published material (or use "Range of Values of Hydraulic Conductivity and Permeability" figure in the Reference Material sheet). Unfractured clays should be scored low. Silts should be scored medium. Sand, gravel should be scored high. The evaluation of this category is based on: 1) The presence and hydraulic conductivity ("K") of saturated subsurface materials that impede the vertical migration of contaminants to lower aquifer units which can or are used as a drinking water source, groundwater exposure pathway or 2) The presence and permeability ("k") of unsaturated subsurface materials that impede the vertical migration of contaminants from the source location to the saturated water table aquifer, first hydrostratigraphic unit or other groundwater pathway.	
	Do Not Know			
Score	0.5			

(II) Migration Potential (Evaluation of contaminant migration pathways)

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Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
B. Potential for groundwater pathway.				
e. Precipitation infiltration rate (Annual precipitation factor x surface soil relative permeability factor) High Moderate Low Very Low None Do Not Know	High	According to Environment Canada Climate Normals for Natashquan, the nearest weather station to St.Lewis, the annual precipitation is 1130 mm. Reference: http://climate.weatheroffice.ec.gc.ca/	Precipitation Refer to Environment Canada precipitation records for relevant areas. Divide annual precipitation by 1000 and round to nearest tenth (e.g., 667 mm = 0.7 score). Permeability For surface soil relative permeability (i.e., infiltration) assume: gravel (1), sand (0.6), loam (0.3) and pavement or clay (0). Multiply the surface soil relative permeability factor with precipitation factor to obtain the score for precipitation infiltration rate.	
Score	1			
f. Hydraulic conductivity of aquifer >10^{-2} cm/s 10^{-2} to 10^{-4} cm/s <10^{-4} cm/s Do Not Know	<10-4 cm/s	Usually 10^{-4} cm/s throughout NL.	Determine the nature of geologic materials and estimate hydraulic conductivity of all aquifers of concern from published material (refer to "Range of Values of Hydraulic Conductivity and Permeability" in the Reference Material sheet).	
Score	0			
Potential groundwater pathway total	5.5	Note: If a "known" score is provided, the "potential" score is disallowed.		
Allowed Potential score	5.5			
Groundwater pathway total	**5.5**			
2. Surface Water Movement				
A. Demonstrated migration of COPC in surface water above background conditions				
Known concentrations of surface water: i) Concentrations exceed background concentrations and exceed CCME CWQG for protection of aquatic life, irrigation, livestock water, and/or recreation (whichever uses are applicable at the site) by >1 X; or There is known contact of contaminants with surface water based on site observations. or In the absence of CWQG, chemicals have been proven to be toxic based on site specific testing (e.g. toxicity testing; or other indicator testing of exposure).	12	The nearest surface water is Fox Harbour which is found at a distance of 50 meters north-east of the subject site.	Collect all available information on quality of surface water near to site. Evaluate available data against Canadian Water Quality Guidelines (select appropriate guidelines based on local water use, e.g., recreation, irrigation, aquatic life, livestock watering, etc.). The evaluation method concentrates on the surface water flow system and its potential to be an exposure pathway. Contamination is present on the surface (above ground) and has the potential to impact surface water bodies. Surface water is defined as a water body that supports one of the following uses: recreation, irrigation, livestock watering, aquatic life.	General Notes: Someone experienced must provide a thorough description of the sources researched to classify the surface water body in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resource such as internet links. Selected References: CCME. 1999. Canadian Water Quality Guidelines for the Protection of Aquatic Life www.ccme.ca CCME. 1999. Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses (Irrigation and Livestock Water) www.ccme.ca Health and Welfare Canada. 1992. Guidelines for Canadian Recreational Water Quality.
ii) Same as (i) except the information is not known but strongly suspected based on indirect observations.	8			
iii) Meets CWQG or absence of surface water exposure pathway (i.e., Distance to nearest surface water is > 5 km.)	0			
Score	Go to Potential ---			
NOTE: If a score is assigned here for Demonstrated Migration in Surface Water, then you can skip Part B (Potential for migration of COPCs in surface water) and go to Section 3 (Surface Soils)				
B. Potential for migration of COPCs in surface water				
a. Presence of containment No containment Partial containment Full containment Do Not Know	No containment		Review the existing engineered systems and relate these structures to site conditions and proximity to surface water and determine if full containment is achieved: score low if there is full containment such as capping, berms, dikes; score medium if there is partial containment such as natural barriers, trees, ditches, sedimentation ponds; score high if there are no intervening barriers between the site and nearby surface water. Full containment must include containment of all chemicals.	
Score	5			
b. Distance to Surface Water 0 to <100 m 100 - 300 m >300 m Do Not Know	0 to <100 m	Fox Harbour is found 50 meters north-east of the subject site.	Review available mapping and survey data to determine distance to nearest surface water bodies.	
Score	3			

(II) Migration Potential (Evaluation of contaminant migration pathways)

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Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
c. Topography Contaminants above ground level and slope is steep Contaminants at or below ground level and slope is steep Contaminants above ground level and slope is intermediate Contaminants at or below ground level and slope is intermediate Contaminants above ground level and slope is flat Contaminants at or below ground level and slope is flat Do Not Know	At/below and flat	Contaminants are found between a depth of 0,0 m and 0,5 m. Slope is flat.	Review engineering documents on the topography of the site and the slope of surrounding terrain. Steep slope = >50% Intermediate slope = between 5 and 50% Flat slope = < 5% Note: Type of fill placement (e.g., trench, above ground, etc.).	
Score	0			
d. Run-off potential High (rainfall run-off score > 0.6) Moderate (0.4 < rainfall run-off score <0.6) Low (0.2 < rainfall run-off score <0.4) Very Low (0 < rainfall run-off score < 0.2) None (rainfall run-off score = 0) Do Not Know	(0 < rainfall run-off s	0,15 (sand and gravel) x 0.7 (annual rainfall factor for Natashquan, nearest weater station with climate normals) = 0,105 Reference: http://climate.weatheroffice.ec.gc.ca/	Rainfall Refer to Environment Canada precipitation records for relevant areas. Divide rainfall by 1000 and round to nearest tenth (e.g., 667 mm = 0.7 score). The former definition of "annual rainfall" did not include the precipitation as snow. This minor adjustment has been made. The second modification was the inclusion of permeability of surface materials as an evaluation factor. Permeability For infiltration assume: gravel (0), sand (0.3), loam (0.6) and pavement or clay (1). Multiply the infiltration factor with precipitation factor to obtain rainfall run off score.	Selected Sources: Environment Canada web page link: www.msc.ec.gc.ca Snow to rainfall conversion apply ratio of 15 (snow):1(water)
Score	0.4			
e. Flood potential 1 in 2 years 1 in 10 years 1 in 50 years Do Not Know	1 in 50 years	Major flood are uncommon in NL	Review published data such as flood plain mapping or flood potential (e.g., spring or mountain run-off) and Conservation Authority records to evaluate flood potential of nearby water courses both up and down gradient. Rate zero if site not in flood plain.	
Score	0.2			
Potential surface water pathway total	8.6			
Allowed Potential score	8.6	Note: If a "known" score is provided, the "potential" score is disallowed.		
Surface water pathway total	**8.6**			
3. Surface Soils (potential for dust, dermal and ingestion exposure)				
A. Demonstrated concentrations of COPC in surface soils (top 1.5 m)				
COPCs measured in surface soils exceed the CCME soil quality guideline. Strongly suspected that soils exceed guidelines COPCs in surface soils does not exceed the CCME soil quality guideline or is not present (i.e., bedrock).	12 9 0	PHC in surface soil (0.0 to 0.5 m below ground surface) exceed the CCME-CWS guideline for PHC on coarse grained soils with potable water supplies on residential land.	Collect all available information on quality of surface soils (i.e., top 1.5 metres) at the site. Evaluate available data against Canadian Soil Quality Guidelines. Select appropriate guidelines based on current (or proposed future) land use (i.e, agricultural, residential/parkland, commercial, or industrial), and soil texture if applicable (i.e., coarse or fine).	Selected References: CCME. 1999. Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health www.ccme.ca
	12			
Score	12			
NOTE: If a score is assigned here for Demonstrated Concentrations in Surface Soils, then you can skip Part B (Potential for a surface soils migration pathway) and go to Section 4 (Vapour)				
B. Potential for a surface soils (top 1.5 m) migration pathway				
a. Are the soils in question covered? Exposed Vegetated Landscaped Paved Do Not Know	Exposed	The soils are not covered. The grass cover is sparse at location of petroleum hydrocarbon impacted soils.	Consult engineering or risk assessment reports for the site. Alternatively, review photographs or perform a site visit. Landscaped surface soils must include a minimum of 0.5 m of topsoil.	The possibility of contaminants in blowing snow have not been included in the revised NCS as it is difficult to assess what constitutes an unacceptable concentration and secondly, spills to snow or ice are most efficiently mitigated while freezing conditions remain.
Score	6			
b. For what proportion of the year does the site remain covered by snow? 0 to 10% of the year 10 to 30% of the year More than 30% of the year Do Not Know	>30% of year	The snow cover lasts from November to April inclusively in Natashquan, a nearby weather station (5 out of 12 months)	Consult climatic information for the site. The increments represent the full span from soils which are always wet or covered with snow (and therefore less likely to generate dust) to those soils which are predominantly dry and not covered by snow (and therefore are more likely to generate dust).	
Score	0			
Potential surface soil pathway total	6			
Allowed Potential score	---	**Note: If a "known" score is provided, the "potential" score is disallowed.**		
Soil pathway total	**12**			

CCME National Classification System (2008)

(II) Migration Potential (Evaluation of contaminant migration pathways)

St. Lewis Field Office DFRP #58590

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
4. Vapour				
A. Demonstrated COPCs in vapour.				
Vapour has been measured (indoor or outdoor) in concentrations exceeding risk based concentrations.	12		Consult previous investigations, including human health risk assessments, for reports of vapours detected.	
Strongly suspected (based on observations and/or modelling)	9			
Vapour has not been measured and volatile hydrocarbons have not been found in site soils or groundwater.	0			
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Demonstrated COPCs in Vapour, then you can skip Part B (Potential for COPCs in vapour) and go to Section 5 (Sediment)				
B. Potential for COPCs in vapour				
a. Relative Volatility based on Henry's Law Constant, H' (dimensionless) High (H' > 1.0E-1) Moderate (H' = 1.0E-1 to 1.0E-3) Low (H' < 1.0E-3) Not Volatile Do Not Know		According to the Spreadsheet Model for Canada-Wide Standards for PHCs in Soil, the Henry's Law Constant for aliphatic PHCs C10-C34 varies from 2.9 atm-m3/mol. from 13 500 atm-m^3/mol, which converts to a range of 1,2 x 10^{-2} to 1.8 x 10^{-6} (dimensionless) However, aromatic PHCs C10-C34 are more volatile with dimensionless Herny's Law Constants ranging from 7.2 to 1.53 x 10^3. References: http://www.ccme.ca/assets/xls/phc_cws_model_2.1_e.xls http://www.mpch-mainz.mpg.de/~sander/res/henry-conv.html	Reference: US EPA Soil Screening Guidance (Part 5 - Table 36) *Provided in Attached Reference Materials*	If the Henry's Law Constant for a substance indicates that it is not volatile, and a score of zero is assigned here for relative volatility, then the other three questions in this section on Potential for COPCs will be automatically assigned scores of zero and you can skip to section 5.
	Moderate			
Score	2.5			
b. What is the soil grain size? Fine Coarse Do Not Know		A gravel layer on top. Underneath this gravel layer we find brown sand with gravel according to Dessau's test pits up to 0.5 to 1.6 m below ground surface.	Review soil permeability data in engineering reports. The greater the permeability of soils, the greater the possible movement of vapours. Fine-grained soils are defined as those which contain greater than 50% by mass particles less than 75 µm mean diameter (D50 < 75 µm). Coarse-grained soils are defined as those which contain greater than 50% by mass particles greater than 75 µm mean diameter (D50 > 75 µm).	
	Coarse			
Score	4			
c. Is the depth to the source less than 10m? Yes No Do Not Know			Review groundwater depths below grade for the site.	
	Do Not Know			
Score	1			
d. Are there any preferential pathways? Yes No Do Not Know			Visit the site during dry summer conditions and/or review available photographs. Where bedrock is present, fractures would likely act as preferential pathyways.	Preferential pathways refer to areas where vapour migration is more likely to occur because there is lower resistance to flow than in the surrounding materials. For example, underground conduits such as sewer and utility lines, drains, or septic systems may serve as preferential pathways. Features of the building itself that may also be preferential pathways include earthen floors, expansion joints, wall cracks, or foundation perforations for subsurface features such as utility pipes, sumps, and drains.
	Do Not Know			
Score	1			
Potential vapour pathway total	8.5	Note: If a "known" score is provided, the "potential" score is disallowed.		
Allowed Potential score	8.5			
Vapour pathway total	**8.5**			
5. Sediment Movement				
A. Demonstrated migration of sediments containing COPCs				
There is evidence to suggest that sediments originally deposited to the site (exceeding the CCME sediment quality guidelines) have migrated.	12		Review sediment assessment reports. Evidence of migration of contaminants in sediments must be reported by someone experienced in this area.	Usually not considered a significant concern in lakes/marine environments, but could be very important in rivers where transport downstream could be significant.
Strongly suspected (based on observations and/or modelling)	9			
Sediments have been contained and there is no indication that sediments will migrate in future. **or** Absence of sediment exposure pathway (i.e., within 5 km of the site there are no aquatic receiving environments, and therefore no sediments).	0	Not applicable - Although an aquatic receiving environment is found within 50 meters, it is unlikely that contaminants in soils will reach the sediments in Fox Harbour.		
	0			
Score	0			
NOTE: If a score is assigned here for Demonstrated Migration of Sediments, then you can skip Part B (Potential for Sediment Migration) and go to Section 6 (Modifying Factors)				

CCME National Classification System (2008)

(II) Migration Potential (Evaluation of contaminant migration pathways)

St. Lewis Field Office DFRP #58590

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
B. Potential for sediment migration				
a. Are the sediments having COPC exceedances capped with sediments having no exceedances ("clean sediments")?	Do Not Know		Review existing sediment assessments. If sediment coring has been completed, it may indicate that historically contaminated sediments have been covered over by newer "clean" sediments. This assessment will require that cores collected demonstrate a low concentration near the top and higher concentration with sediment depth.	
Yes				
No				
Do Not Know	2			
b. For lakes and marine habitats, are the contaminated sediments in shallow water and therefore likely to be affected by tidal action, wave action or propeller wash?	Do Not Know		Review existing sediment assessments. If the sediments present at the site are in a river, select "no" for this question.	
Yes				
No				
Do Not Know	2			
c. For rivers, are the contaminated sediments in an area prone to sediment scouring?	Do Not Know		Review existing sediment assessments. It is important that the assessment is made under worst case flows (high yearly flows). Under high yearly flows, areas which are commonly depositional may	
Yes				
No				
Do Not Know	2			
Potential sediment pathway total	6	Skip Part B		
Allowed Potential score	---	Note: If a "known" score is provided, the "potential" score is disallowed.		
Sediment pathway total	**0**			
6. Modifying Factors				
Are there subsurface utility conduits in the area affected by contamination?	No		Consult existing engineering reports. Subsurface utilities can act as conduits for contaminant migration.	
Yes				
No				
Do Not Know				
Known	0			
Potential	0			

Migration Potential Total	
Raw "known" total	12
Raw "potential" total	22.6
Raw combined total	34.6
Total (max 33)	**17.8**

Note: If "Known" and "Potential" scores are provided, the checklist defaults to known. Therefore, the total "Potential" Score may not reflect the sum of the individual "Potential"

CCME National Classification System (2008)

(III) Exposure (Demonstrates the presence of an exposure pathway and receptors)

St. Lewis Field Office DFRP #58590

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
1. Human				
A. Known exposure				
Documented adverse impact or high quantified exposure which has or will result in an adverse effect, injury or harm or impairment of the safety to humans as a result of the contaminated site. (Class 1 Site*) Same as above, but "Strongly Suspected" based on observations or indirect evidence. No quantified or suspected exposures/impacts in humans. Score	22 10 0 Go to Potential ---	The potential exposure of humans to contaminants of potential concern (COPC) will be evaluated below	*Where adverse effects on humans are documented, the site should be automatically designated as a Class 1 site (i.e., action required). There is no need to proceed through the NCS in this case. However, a scoring guideline (22) is provided in case a numerical score for the site is still desired (e.g., for comparison with other Class 1 sites). This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients >1 for noncarcinogenic chemicals and incremental cancer risks that exceed acceptable levels defined by the jurisdiction for carcinogenic chemicals (for most jurisdictions this is typically either >10^{-5} or >10^{-6}). Known impacts can also be evaluated based on blood testing (e.g. blood lead >10 ug/dL) or other health based testing. This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients of less than 0.2 for non-carcinogenic chemicals and incremental lifetime cancer risks for carcinogenic chemicals that are within acceptable levels as defined by the jurisdiction (for most jurisdictions this is less than either 10^{-6} or 10^{-5}).	Known adverse impact includes domestic and traditional food sources. Adverse effects based on food chain transfer to humans and/or animals can be scored in this category. However, the weight of evidence must show a direct link of a contaminated food source/supply and subsequent ingestion/transfer to humans. Any associated adverse effects to the environment are scored separately later in this worksheet. Someone experienced must provide a thorough description of the sources researched to evaluate and determine the quantified exposure/impact (adverse effect) in the vicinity of the contaminated site. **Selected References:** Health Canada – Federal Contaminated Site Risk Assessment in Canada Parts 1 and 2 Guidance on Human Heath Screening Level Risk Assessments (www.hc-sc.gc.ca/ewh-semt/pubs/contamsite/index_e.html) United States Environmental Protection Agency, Integrated Risk Information System (IRIS) – http://toxnet.nml.nih.gov
NOTE: If a score is assigned here for Known Exposure, then you can skip Part B (Potential for Human Exposure) and go to Section 2 (Human Exposure Modifying Factors)				
B. Potential for human exposure				
a) Land use (provides an indication of potential human exposure scenarios) Agricultural Residential / Parkland Commercial Industrial Do Not Know Score	 Res / Parkland 2	According to the Phase I/II Study performed by SNC Lavalin, the land use is residential.	Review zoning and land use maps over the distances indicated. If the proposed future land use is more "sensitive" than the current land use, evaluate this factor assuming the proposed future use is in place. Agricultural land use is defined as uses of land where the activities are related to the productive capability of the land or facility (e.g., greenhouse) and are agricultural in nature, or activities related to the feeding and housing of animals as livestock. Residential/Parkland land uses are defined as uses of land on which dwelling on a permanent, temporary, or seasonal basis is the activity (residential), as well as uses on which the activities are recreational in nature and require the natural or human designed capability of the land to sustain that activity (parkland). Commercial/Industrial land uses are defined as land on which the activites are related to the buying, selling, or trading of merchandise or services (commercial), as well as land uses which are related to the production, manufacture, or storage of materials (industrial).	This is the main "receptor" factor used in site scoring. A higher score implies a greater exposure and/or exposure of more sensitive human receptors (e.g., children).
b. Indicate the level of accessibility to the contaminated portion of the site (e.g., the potential for coming in contact with contamination) Limited barriers to prevent site access; contamination not covered Moderate access or no intervening barriers, contaminants are covered. Remote locations in which contaminants not covered. Controlled access or remote location and contaminants are covered Do Not Know Score	 Access, not covered 2	No fence prevents the access to soils. Soils are exposed.	Review location and structures and contaminants at the site and determine if there are intervening barriers between the site and humans. A low rating should be assigned to a (covered) site surrounded by a fence or in a remote location, whereas a high score should be assigned to a site that has no cover, fence, natural barriers or buffer.	
B. Potential for human exposure				
c) Potential for intake of contaminated soil, water, sediment or foods for operable or potentially operable pathways, as identified in Worksheet II (Migration Potential). i) direct contact Is dermal contact with contaminated surface water, groundwater, sediments or soils anticipated? Yes No Do Not Know Score	 No 0		If soils or potable groundwater are present exceeding their respective CCME guidelines, dermal contact is assumed. Exposure to surface water, non-potable groundwater or sediments exceeding their respective CCME guidelines will depend on the site. Select "Yes" if dermal exposure to surface water, non-potable groundwater or sediments is expected. For instance, dermal contact with sediments would not be expected in an active port. Only soils in the top 1.5 m are defined by CCME (2003) as surface soils. If contaminated soils are only located deeper than 1.5 m, direct contact with soils is not anticipated to be an operable contaminant exposure pathway.	Exposure via the skin is generally believed to be a minor exposure route. However for some organic contaminants, skin exposure can play a very important component of overall exposure. Dermal exposure can occur while swimming in contaminated waters, bathing with contaminated surface water/groundwater and digging in contaminated dirt, etc.
ii) inhalation (i.e., inhalation of dust, vapour) Vapour - Are there inhabitable buildings on the site within 30 m of soils or groundwater with volatile contamination as determined in Worksheet II (Migration Potential)? Yes No Do Not Know Score	 Yes 3		If inhabitable buildings are on the site within 30 m of soils or groundwater exceeding their respective guidelines for volatile chemicals, there is a potential of risk to human health (Health Canada, 2004). Review site investigations for location of soil samples (having exceedances of volatile substances) relative to buildings. Refer to (II) Migration Potential worksheet, 4B.a), *Potential for COPCs in Vapour* for a definition of volatility.	Exposure via the lungs (inhalation) can be a very important exposure pathway. Inhalation can be via both particulates (dust) and gas (vapours). Vapours can be a problem where buildings have been built on former industrial sites or where volatile contaminants have migrated below buildings resulting in the potential for vapour intrusion. Assesses the potential for humans to be exposed to vapours originating from site soils. The closer the receptor is to a source of volatile chemicals in soil, the greater the potential of exposure. Also, coarser-grained soil will convey vapour much more efficiently in the soil than finer grained material such as clays and silts. General Notes; Someone experienced must provide a thorough description of the sources researched to determine the presence/absence of a vapour migration and/or dust generation in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resource such as internet links. Selected References; Canadian Council of Ministers of the Environment (CCME). 2006. Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines. PN 1332. www.ccme.ca Golder, 2004. Soil Vapour Intrusion Guidance for Health Canada Screening Level Risk Assessment (SLRA) Submitted to Health Canada, Burnaby, BC
Dust - If there is contaminated surface soil (e.g. top 1.5 m) , indicate whether the soil is fine or coarse textured. If it is known that surface soil is not contaminated, enter a score of zero. Fine Coarse Surface soil is not contaminated or absent (bedrock) Do Not Know Texture Score	 Coarse 1		Consult grain size data for the site. If soils (containing exceedances of the CCME soil quality guidelines) predominantly consist of fine material (having a median grain size of 75 microns; as defined by CCME (2006)) then these soils are more likely to generate dusts.	
inhalation total	4			

CCME National Classification System (2008)

(III) Exposure (Demonstrates the presence of an exposure pathway and receptors)

St. Lewis Field Office DFRP #58590

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
B. Potential for human exposure				
iii) Ingestion (i.e., ingestion of food items, water and soils [for children]), including traditional foods.			Review available site data to determine if drinking water (groundwater, surface water, private, commercial or municipal supply) is known or suspected to be contaminated above Guidelines for Canadian Drinking Water Quality. If drinking water supply is known to be contaminated, some immediate action (e.g., provision of alternate drinking water supply) should be initiated to reduce or eliminate exposure. The evaluation of significant potential for exceedances of the water supply in the future may be based on the capture zones of the drinking water wells; contaminant travel times; computer modelling of flow and contaminant transport.	**Selected References:** Guidelines for Canadian Drinking Water Quality: www.hc-sc.gc.ca/hecs-sesc/water/publications/drinking_water_quality_guidelines/toc.htm Drinking water can be an extremely important exposure pathway to humans. If site groundwater or surface water is not used for drinking, then this pathway is considered to be inoperable. Consider both wild foods such as salmon, venison, caribou, as well as agricultural sources of food items if the contaminated site is on or adjacent to agricultural land uses.
Drinking Water: Choose a score based on the proximity to a drinking water supply, to indicate the potential for contamination (present or future).				
0 to 100 m 100 to 300 m 300 m to 1 km 1 to 5 km No drinking water present Do Not Know				
	0 to 100 m			
Score	3	Artesian well found less than 1 meter away from impacted soils.		
Is an alternative water supply readily available?				
Yes No Do Not Know				
	Do Not Know			
Score	0.5			
Is human ingestion of contaminated soils possible?			If contaminated soils are located within the top 1.5 m, it is assumed that ingestion of soils is an operable exposure pathway. Exposure to soils deeper than 1.5 m is possible, but less likely, and the duration is shorter. Refer to human health risk assessment reports for the site in question.	
Yes No Do Not Know				
	No			
Score	0			
Are food items consumed by people, such as plants, domestic animals or wildlife harvested from the contaminated land and its surroundings?			Use human health risk assessment reports (or others) to determine if there is significant reliance on traditional food sources associated with the site. Is the food item in question going to spend a large proportion of its time at the site (e.g., large mammals may spend a very small amount of time at a small contaminated site)? Human health risk assessment reports for the site in question will also provide information on potential bioaccumulation of the COPC in question.	
Yes No Do Not Know				
	No			
Score	0			
Ingestion total	3.5			
Human Health Total "Potential" Score	11.5	Note if a "Known" Human Health score is provided, the "Potential" score is disallowed.		
Allowed "Potential" Score	11.5			
2. Human Exposure Modifying Factors				
a) Strong reliance of local people on natural resources for survival (i.e., food, water, shelter, etc.)	No			
Yes No Do Not Know				
Known	0			
Potential	---			
Raw Human "known" total	0			
Raw Human "potential" total	11.5			
Raw Human Exposure Total Score	11.5			
Human Health Total (max 22)	**11.5**			
3. Ecological				
A. Known exposure				
Documented adverse impact or high quantified exposure which has or will result in an adverse effect, injury or harm or impairment of the safety to terrestrial or aquatic organisms as a result of the contaminated site.	18		Some low levels of impact to ecological receptors are considered acceptable, particularly on commercial and industrial land uses. However, if ecological effects are deemed to be severe, the site may be categorized as class one (i.e., a priority for remediation or risk management), regardless of the numerical total NCS score. For the purpose of application of the NCS, effects that would be considered severe include observed effects on survival, growth or reproduction which could threaten the viability of a population of ecological receptors at the site. Other evidence that qualifies as severe adverse effects may be determined based on professional judgement and in consultation with the relevant jurisdiction. If ecological effects are determined to be severe and an automatic Class 1 is assigned, there is no need to proceed through the NCS. However, a scoring guideline (18) is provided in case a numerical score for the site is still desired (e.g., for comparison with other Class 1 sites).	CCME, 1999: Canadian Water Quality Guidelines for the Protection of Aquatic Life. www.ccme.ca CCME, 1999: Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses. www.ccme.ca Sensitive receptors- review: Canadian Council on Ecological Areas; www.ccea.org. Ecological effects should be evaluated at a population or community level, as opposed to at the level of individuals. For example, population-level effects could include reduced reproduction, growth or survival in a species. Community-level effects could include reduced species diversity or relative abundances. Further discussion of ecological assessment endpoints is provided in *A Framework for Ecological Risk Assessment: General Guidance* (CCME 1996). Notes: Someone experienced must provide a thorough description of the sources researched to classify the environmental receptors in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resource such as internet links.
Same as above, but "Strongly Suspected" based on observations or indirect evidence.	12		This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients >1. Alternatively, known impacts can also be evaluated based on a weight of evidence assessment involving a combination of site observations, tissue testing, toxicity testing and quantitative community assessments. Scoring of adverse effects on individual rare or endangered species will be completed on a case-by-case basis with full scientific justification.	
No quantified or suspected exposures/impacts in terrestrial or aquatic organisms	0		This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients of less than 1 and no other observable or measurable sign of impacts. Alternatively, it can be based on a combination of other lines of evidence showing no adverse effects, such as site observations, tissue testing, toxicity testing and quantitative community assessments.	
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Known Exposure, then you can skip Part B (Potential for Ecological Exposure) and go to Section 4 (Ecological Exposure Modifying Factors)				

CCME National Classification System (2008)

(III) Exposure (Demonstrates the presence of an exposure pathway and receptors)

St. Lewis Field Office DFRP #58590

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
B. Potential for ecological exposure (for the contaminated portion of the site)				
a) Terrestrial			Review zoning and land use maps. If the proposed future land use is more "sensitive" than the current land use, evaluate this factor assuming the proposed future use is in place (indicate in the worksheet that future land use is the consideration).	
i) Land use				
Agricultural (or Wild lands) Residential/Parkland Commercial Industrial Do Not Know	Residential/Parkland	According to the Phase I/II Study performed by SNC Lavalin, the land use is residential.	Agricultural land use is defined as uses of land where the activities are related to the productive capability of the land or facility (e.g., greenhouse) and are agricultural in nature, or activities related to the feeding and housing of animals as livestock. Wild lands are grouped with agricultural land due to the similarities in receptors that would be expected to occur there (e.g., herbivorous mammals and birds) and the similar need for a high level of protection to ensure ecological functioning. Residential/Parkland land uses are defined as uses of land on which dwelling on a permanent, temporary, or seasonal basis is the activity (residential), as well as uses on which the activities are recreational in nature and require the natural or human designed capability of the land to sustain that activity (parkland). Commercial/Industrial land uses are defined as land on which the activities are related to the buying, selling, or trading of merchandise or services (commercial), as well as land uses which are related to the production, manufacture, or storage of materials (industrial).	
Score	2			
ii) Uptake potential			If contaminated soils are located within the top 1.5 m, it is assumed that direct contact of soils with plants and soil invertebrates is an operable exposure pathway. Exposure to soils deeper than 1.5 m is possible, but less likely.	
Direct Contact - Are plants and/or soil invertebrates likely exposed to contaminated soils at the site?	Yes			
Yes No Do Not Know				
Score	1			
iii) Ingestion (i.e., wildlife or domestic animals ingesting contaminated food items, soils or water)				
Are terrestrial animals likely to be ingesting contaminated water at the site?		No surface water on-site.	Refer to an Ecological Risk Assessment for the site. If there is contaminated surface water at the site, assume that terrestrial organisms will ingest it.	
Yes No Do Not Know	No			
Score	0			
Are terrestrial animals likely to be ingesting contaminated soils at the site?		Terrestrial animals not likely present on-site.	Refer to an Ecological Risk Assessment report. Most animals will co-ingest some soil while eating plant matter or soil invertebrates.	
Yes No Do Not Know	No			
Score	0			
Can the contamination identified bioaccumulate?		According to the Model Spreadsheet for Canada-Wide Standards for PHCs in Soils, the organic-carbon partition coefficient ranges from $2.1x10^{5}$,L/g to 1 x 10^{13} mL/g Reference: http://www.ccme.ca/assets/xls/phc_cws_model_2.1_e.xls	Bioaccumulation of contaminants within food items is considered possible if: 1) The Log(Kow) of the contaminant is greater than 4 (as per the chemical characteristics work sheet) and concentrations in soils exceed the most conservative CCME soil quality guideline for the intended land use, or 2) The contaminant in collected tissue samples exceeds the Canadian Tissue Residue Guidelines.	
Yes No Do Not Know	Yes			
Score	1			
Distance to sensitive terrestrial ecological area		According to the Registry of the SARA (Species At Risk Act), one endangered terrestrial species identified as **Wolverine** is found within a radius of 1 km from the subject site	It is considered that within 300 m of a site, there is a concern for contamination. Therefore an environmental receptor located within this area of the site will be subject to further evaluations. It is also considered that any environmental receptor located greater than 5 km will not be a concern for evaluation. Review Conservation Authority mapping and literature including Canadian Council on Ecological Areas link: www.ccea.org.	Environmental receptors include: local, regional or provincial species of interest or significance; arctic environments (on a site specific basis); nature preserves, habitats for species at risk, sensitive forests, natural parks or forests.
0 to 300 m 300 m to 1 km 1 to 5 km > 5 km Do Not Know	300 m to 1 km			
Score	2			
Raw Terrestrial Total Potential	6	Note if a "Known" Ecological Effects score is provided, the "Potential" score is disallowed.		
Allowed Terrestrial Total Potential	6			
B. Potential for ecological exposure (for the contaminated portion of the site)				
b) Aquatic			"Sensitive aquatic environments" include those in or adjacent to shellfish or fish harvesting areas, marine parks, ecological reserves and fish migration paths. Also includes those areas deemed to have ecological significance such as for fish food resources, spawning areas or having rare or endangered species. "Typical aquatic environments" include those in areas other than those listed above.	
i) Classification of aquatic environment		According to the Registry of the SARA (Species At Risk Act), two endangered aquatic species (identified as North Atlantic Right Whale and Blue Whale) are identified within a radius of 1km from the subject site.		
Sensitive Typical Not Applicable (no aquatic environment present) Do Not Know	Sensitive			
Score	3			
ii) Uptake potential			Groundwater concentrations of contaminants at the point of contact with an aquatic receiving environment can be estimated in three ways: 1) by comparing collected nearshore groundwater concentrations to the CCME water quality guidelines (this will be a conservative comparison, as contaminant concentrations in groundwater often decrease between nearshore wells and the point of discharge). 2) by conducting groundwater modeling to estimate the concentration of groundwater immediately before discharge. 3) by installing water samplers, "peepers", in the sediments in the area of daylighting groundwater.	
Does groundwater daylighting to an aquatic environment exceed the CCME water quality guidelines for the protection of aquatic life at the point of contact?		Not applicable		
Yes No (or Not Applicable) Do Not Know	No			
Score	0			
Distance from the contaminated site to an important surface water resource		Fox Harbour is found within 50 meters north east of the subject site.	It is considered that within 300 m of a site, there is a concern for contamination. Therefore an environmental receptor or important water resource located within this area of the site will be subject to further evaluation. It is also considered that any environmental receptor located greater than 5 km away will not be a concern for evaluation. Review Conservation Authority mapping and literature including Canadian Council on Ecological Areas link: www.ccea.org.	Environmental receptors include: local, regional or provincial species of interest or significance, sensitive wetlands and fens and other aquatic environments.
0 to 300 m 300 m to 1 km 1 to 5 km > 5 km Do Not Know	0 to 300 m			
Score	3			
Are aquatic species (i.e., forage fish, invertebrates or plants) that are consumed by predatory fish or wildlife consumers, such as mammals and birds, likely to accumulate contaminants in their tissues?		According to the Model Spreadsheet for Canada-Wide Standards for PHCs in Soils, the organic-carbon partition coefficient ranges from $2.1x10^{5}$ to 1 x 10^{13} Reference: http://www.ccme.ca/assets/xls/phc_cws_model_2.1_e.xls	Bioaccumulation of food items is possible if: 1) The Log(Kow) of the contaminant is greater than 4 (as per the chemical characteristics work sheet) and concentrations in sediments exceed the CCME ISQGs. 2) The contaminant in collected tissue samples exceeds the CCME tissue quality guidelines.	
Yes No Do Not Know	Yes			
Score	1			
Raw Aquatic Total Potential	7	Note if a "Known" Ecological Effects score is provided, the "Potential" score is disallowed.		
Allowed Aquatic Total Potential	7			

CCME National Classification System (2008)

(III) Exposure (Demonstrates the presence of an exposure pathway and receptors)

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Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
4. Ecological Exposure Modifying Factors				
a) Known occurrence of a species at risk. Is there a potential for a species at risk to be present at the site? Yes No Do Not Know	 Yes	Yes according to the Registry of SARA, one terrestrial species (wolverine) is found within a radius of 1 km from the subject site.	Consult any ecological risk assessment reports. If information is not present, utilize on-line databases such as Eco Explorer. Regional, Provincial (Environment Ministries), or Federal staff (Fisheries and Oceans or Environment Canada) should be able to provide some guidance.	Species at risk include those that are extirpated, endangered, threatened, or of special concern. For a list of species at risk, consult Schedule 1 of the federal Species at Risk Act (http://www.sararegistry.gc.ca/species/schedules_e.cfm?id=1). Many provincial governments may also provide regionally applicable lists of species at risk. For example, in British Columbia, consult: BCMWLAP. 2005. Endangered Species and Ecosystems in British Columbia. Provincial red and blue lists. Ministry of Sustainable Resource Management and Water, Land and Air Protection. http://srmwww.gov.bc.ca/atrisk/red-blue.htm
Score	2 ---			
b) Potential impact of aesthetics (e.g., enrichment of a lake or tainting of food flavor). Is there evidence of aesthetic impact to receiving water bodies? Yes No Do Not Know	 No 0 ---	SNC Lavalin reported strong petroleum odours at a depth of 0 meters (at ground surface) in 1999 in the vicinity of the second generation oil tank.	Documentation may consist of environmental investigation reports, press articles, petitions or other records.	This Item will require some level of documentation by user, including contact names, addresses, phone numbers, e-mail addresses. Evidence of changes must be documented, please attach copy of report containing relevant information.
Is there evidence of olfactory impact (i.e., unpleasant smell)? Yes No Do Not Know	Yes 2 ---		Examples of olfactory change can include the smell of a COPC or an increase in the rate of decay in an aquatic habitat.	
Is there evidence of increase in plant growth in the lake or water body? Yes No Do Not Know	No 0 ---		A distinct increase of plant growth in an aquatic environment may suggest enrichment. Nutrients e.g., nitrogen or phosphorous releases to an aquatic body can act as a fertilizer.	
Is there evidence that fish or meat taken from or adjacent to the site smells or tastes different? Yes No Do Not Know	No 0 ---		Some contaminants can result in a distinctive change in the way food gathered from the site tastes or smells.	
Ecological Modifying Factors Total - Known	**4**			
Ecological Modifying Factors Total - Potential	**---**			
Raw Ecological Total - Known	4			
Raw Ecological Total - Potential	13			
Raw Ecological Total	17			
Ecological Total (Max 18)	**17.0**			
5. Other Potential Contaminant Receptors				
a) Exposure of permafrost (leading to erosion and structural concerns) Are there improvements (roads, buildings) at the site dependant upon the permafrost for structural integrity? Yes No Do Not Know	 No 0 ---	Permafrost occurs when the ground remains at or below a temperature of 0oC for a minimum period of two years. permafrost occurs at high latitude or altitude. According to the Atlas of Canada, isolated patches of permafrost can be found at the latitude (52° 21' 56.78") of the subject site. However, soil was not frozen on the subject site at the time of the visit on November 9, 2009. Thus these isolated patches of permafrost are expected to occur at higher altitude abive sea level for the latitude of 52° 21' 56.78" Reference: http://atlas.nrcan.gc.ca/site/english/maps/environment/land/permafrost	Consult engineering reports, site plans or air photos of the site. When permafrost melts, the stability of the soil decreases, leading to erosion. Human structures, such as roads and/or buildings are often dependent on the stability that the permafrost provides.	Plants and lichens provide a natural insulating layer which will help prevent thawing of the permafrost during the summer. Plants and lichens may also absorb less solar radiation. Solar radiation is turned into heat which can also cause underlying permafrost to melt.
Is there a physical pathway which can transport soils released by damaged permafrost to a nearby aquatic environment? Yes No Do Not Know	No 0 ---		Melting permafrost leads to a decreased stability of underlying soils. Wind or surface run-off erosion can carry soils into nearby aquatic habitats. The increased soil loadings into a river can cause an increase in total dissolved solids and a resulting decrease in aquatic habitat quality. In addition, the erosion can bring contaminants from soils to aquatic environments.	
Other Potential Receptors Total - Known	**0**			
Other Potential Receptors Total - Potential	**0**			

Exposure Total	
Raw Human Health + Ecological Total - Known	4
Raw Human Health + Ecological Total - Potential	24.5
Raw Total	28.5
Exposure Total (max 34)	**21.1**

Only includes "Allowed potential" - if a "Known" score was supplied under a given category then the "Potential" score was not included.

CCME National Classification System (2008)
Score Summary

Scores from individual worksheets are tallied in this worksheet.
Refer to this sheet after filling out the revised NCS completely.

I. Contaminant Characteristics	Known	Potential
1. Residency Media	2	---
2. Chemical Hazard	4	---
3. Contaminant Exceedance Factor	4	---
4. Contaminant Quantity	2	---
5. Modifying Factors	4	---
Raw Total Score	16	0
Raw Total Score (Known + Potential)	16	
Adjusted Total Score (Raw Total / 40 *33)	**13.2**	(max 33)

II. Migration Potential	Known	Potential
1. Groundwater Movement	---	5.5
2. Surface Water Movement	---	8.6
3. Soil	12	---
4. Vapour	---	8.5
5. Sediment Movement	0	---
6. Modifying Factors	0	0
Raw Total Score	12	22.6
Raw Total Score (Known + Potential)	34.6	
Adjusted Total Score (Raw Total / 64 * 33)	**17.8**	(max 33)

III. Exposure	Known	Potential
1. Human Receptors		
A. Known Impact	---	
B Potential		
a. Land Use		2
b. Accessibility		2
c. Exposure Route		
i. Direct Contact		0
ii. Inhalation		4
iii. Ingestion		3.5
2. Human Receptors Modifying Factors	0	---
Raw Total Human Score	0	11.5
Raw Total Human Score (Known + Potential)	11.5	
Adjusted Total Human Score	11.5	(maximum 22)
3. Ecological Receptors		
A. Known Impact	---	
B. Potential		
a. Terrestrial		6
b. Aquatic		7
4. Ecological Receptors Modifying Factors	4	---
Raw Total Ecological Score	4	13
Raw Total Ecological Score (Known + Potential)	17	
Adjusted Total Ecological Score	17.0	(maximum 18)
5. Other Receptors	0	0
Total Other Receptors Score (Known + Potential)	0	
Total Exposure Score (Human + Ecological + Other)	**28.5**	
Adjusted Total Exposure Score (Total Exposure / 46 * 34)	**21.1**	(max 34)

Site Score

St. Lewis Field Office DFRP #58590

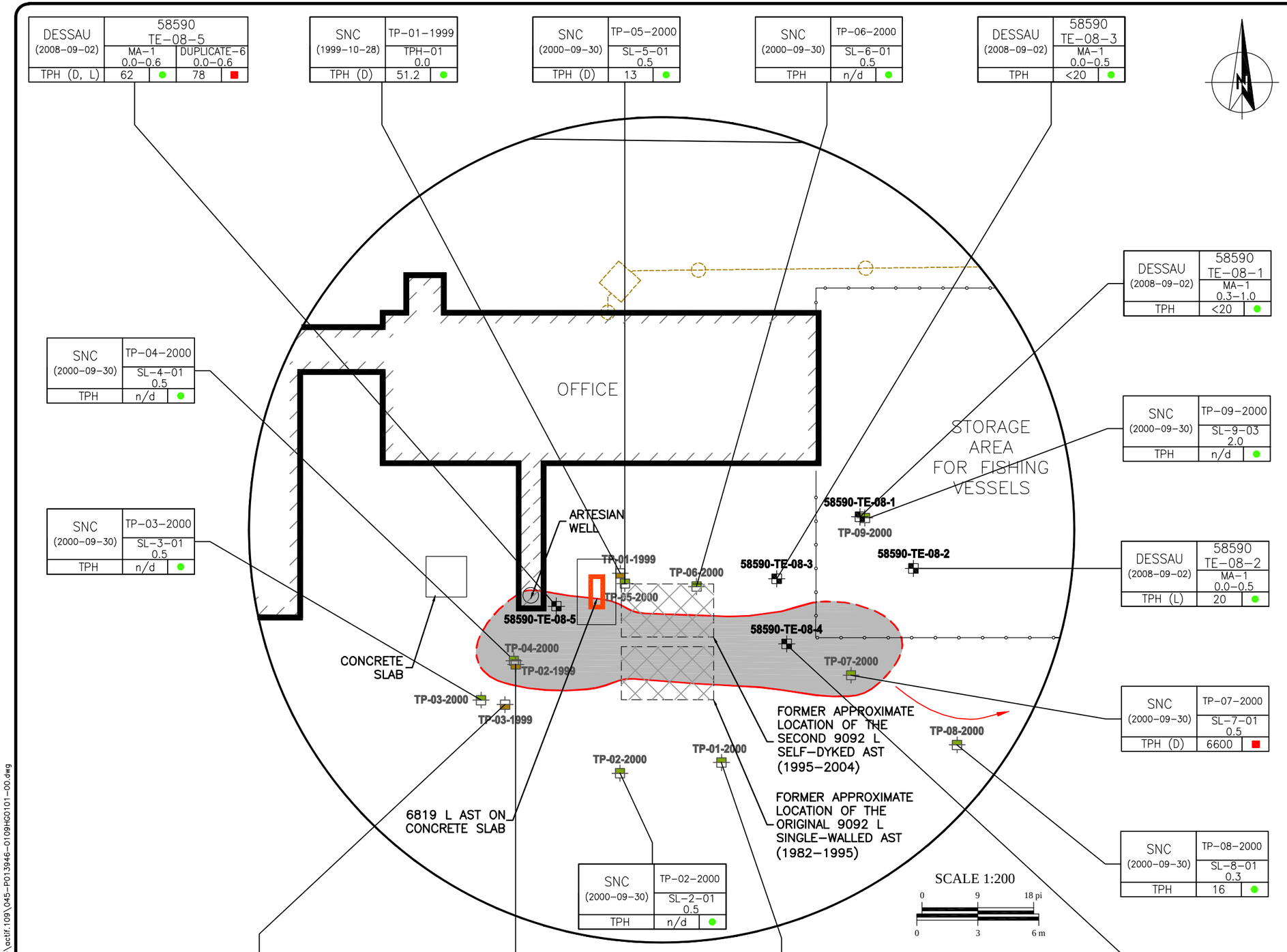
Site Letter Grade	**C**
Certainty Percentage	**69%**
% Responses that are "Do Not Know"	**3%**
Total NCSCS Score for site	**52.1**
Site Classification Category	**2**

Site Classification Categories*:

Class 1 - High Priority for Action (Total NCS Score >70)
Class 2 - Medium Priority for Action (Total NCS Score 50 - 69.9)
Class 3 - Low Priority for Action (Total NCS Score 37 - 49.9)
Class N - Not a Priority for Action (Total NCS Score <37)
Class INS - Insufficient Information (>15% of responses are "Do Not Know")

* NOTE: The term "action" in the above categories does not necessarily refer to remediation, but could also include risk assessment, risk management or further site characterization and data collection.

Appendix 7 Background Information



LEGEND:

- PRECISE LOCATION OF TEST PIT (DESSAU, 2008)
- PRESUMED LOCATION OF TEST PIT (SNC-LAVALIN, 2000)
- PRESUMED LOCATION OF TEST PIT (SNC-LAVALIN, 1999)
- BUILDING
- CHAIN LINKED FENCE
- STORAGE TANK
- SEPTIC SEWAGE SYSTEM
- FORMER STORAGE TANK
- PRESUMED GROUNDWATER FLOW DIRECTION
- APPROXIMATE DELINEATION OF CONTAMINATION (80 m²)

TEST PIT
ANALYZED SAMPLE AND DEPTH INTERVAL, m
REALIZED BY: COMPANY AND DATE

ANALYZED PARAMETERS
TPH (G): gasoline
TPH (D): diesel #1, #2 /furnace oil
TPH (L): #6 diesel oil/lube oil

DESSAU (2008-MA-1XX)	58590 TE-08-2
	MA-1 0.0-0.5
TPH (L)	20

CONCENTRATION (in mg/kg (ppm))
(Gasoline) 19.5
(Diesel Oil) 70.0
(Lube Oil) 345.0
n/d : BELOW THE ANALYZED DETECTION LIMIT
– : NOT ANALYZED

APPLICABLE CRITERIA:
– Atlantic PIRI TIER I – residential property with a potable water supply and coarse grained soils
– Note that the above-mentioned Atlantic PIRI TIER I criteria was divided by two to provide an equivalency to CCME's Canada-Wide Standard (CWS) for Petroleum Hydrocarbons (PHC) in Soil (2008)
● = Concentration within applicable criteria (Atlantic RBCA TIER I Divided by 2)
■ = Concentration exceeds applicable criteria (Atlantic RBCA TIER I Divided by 2)

Project
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
PHASE II AND III ENVIRONMENTAL SITE ASSESSMENT
ST.LEWIS FIELD OFFICE
ST.LEWIS, NEWFOUNDLAND AND LABRADOR, CANADA

Title
FIGURE 3
PHASE III - ESA

DESSAU
Dessau inc.
1080, Beaver Hall Hill
Montreal (Québec) H2Z 1S8
Telephone: 514.281.1010
Fax: 514.798.8790

Prepared	I. Gagnon	Discipline	Environment	Project manager	I. Gagnon
Drawn	C. Simard M.	Scale	as shown	Extract from:	Rev.:
Checked	A. Renfer	Date	2009-06-17		

M. dept.	Project	Work pckg.	Sub-w.p.	Disc.	Drawing no.	Rev.
045	P013946	0109	000	HG	0103	00

File: G:\045\P013946\z5_CAD\actif.109\045-P013946-0109HG0101-00.dwg

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TABLE I
ANALYTICAL RESULTS - TPH/BTEX IN SOILS
(St. Lewis Field Office, Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P013946-0109

		Data			Guidelines				
Lab ID		AJ6164	AJ6165	AJ6166	**1999 CCME-CEQG (Update 2007) Residential sites**	**2003 Atlantic PIRI TIER I RBSL Residential land use with coarse-grained soils and potable water**			
Sampling Date		02/09/2008	02/09/2008	02/09/2008					
COC Number		7211	7211	7211					
Sampling depth below ground surface (m)		0.3 to 1.0	0.0 to 0.5	0.0 to 0.5		-	gasoline	diesel # 2	# 6 oil
Sample ID	**Units**	**58590-TE-08-01-MA-1**	**58590-TE-08-02-MA-1**	**58590-TE-08-03-MA-1**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.03	<0.03	<0.03	**0.03**	**0.03**	-	-	-
Toluene	mg/kg	<0.03	<0.03	<0.03	**0.37**	**0.38**	-	-	-
Ethylbenzene	mg/kg	<0.03	<0.03	<0.03	**0.082**	**0.08**	-	-	-
Xylene (Total)	mg/kg	<0.05	<0.05	<0.05	**11**	**11**	-	-	-
C_6 - C_{10} (less BTEX)	mg/kg	<3	<3	<3	-	-	-	-	-
>C_{10}-C_{21} Hydrocarbons	mg/kg	<15	<15	<15	-	-	-	-	-
>C_{21}-<C_{32} Hydrocarbons	mg/kg	<15	20	<15	-	-	-	-	-
Modified TPH (Tier1)[&]	mg/kg	<20	<20	<20	-	-	19.5	70	345
Petroleum Product Identification		N/D	Traces of lube oil fraction	N/D					

Notes:

CCME	**Canadian Council of Ministers of the Environment**
CEQG	**Canadian Environmental Quality Guidelines**
	Bold faced guidelines reflect those most applicable to the land use
-	**No guideline established**
&	**As recommended by Health Canada, the 2003 Atlantic PIRI TIER I RBSL's for modified TPH was divided by two to provide an equivalency to the CCME Canada-Wide Standard (CWS) for Petroleum Hydrocarbons (PHC) in soils (2008)**
N/D	**No petroleum product was detected**
	Bold and underlined results indicate that the concentration exceeds the CCME-CEQG's
	Bold and shaded results indicate that the concentration exceeds Recommended 2003 Atlantic PIRI TIER I RBSL's

PIRI	**Partnership in RBCA implementation**
RBCA	**Risk-based Corrective Action**
RBSL	**Risk-based screening level**

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TABLE I (CONT'D)
ANALYTICAL RESULTS - TPH/BTEX IN SOILS
(St. Lewis Field Office, Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P013946-0109

		Data			Guidelines				
Lab ID		AJ6167	AJ6168	AJ6169	**1999 CCME-CEQG (Update 2007) Residential sites**	**2003 Atlantic PIRI TIER I RBSL Residential land use with coarse-grained soils and potable water**			
Sampling Date		02/09/2008	02/09/2008	02/09/2008					
COC Number		7211	7211	7211					
Sampling depth below ground surface (m)		0.0 to 0.5	0.0 to 0.6	0.0 to 0.6		-	gasoline	diesel # 2	# 6 oil
Sample ID	**Units**	**58590-TE-08-04-MA-1**	**58590-TE-08-05-MA-1**	**DUPLICATE 6❶**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Petroleum Hydrocarbons									
Benzene	mg/kg	<0.03	<0.03	<0.03	**0.03**	**0.03**	-	-	-
Toluene	mg/kg	<0.03	<0.03	<0.03	**0.37**	**0.38**	-	-	-
Ethylbenzene	mg/kg	<0.03	<0.03	<0.03	**0.082**	**0.08**	-	-	-
Xylene (Total)	mg/kg	<0.05	<0.05	<0.05	**11**	**11**	-	-	-
C_6 - C_{10} (less BTEX)	mg/kg	<3	<3	<3	-	-	-	-	-
>C_{10}-C_{21} Hydrocarbons	mg/kg	1000	24	29	-	-	-	-	-
>C_{21}-<C_{32} Hydrocarbons	mg/kg	340	38	50	-	-	-	-	-
Modified TPH (Tier1)&&	mg/kg	**1400**	62	**78**	-	-	19.5	70	345
Petroleum Product Identification		Fuel oil fraction	Weathered fuel oil fraction. Lube oil fraction	Weathered fuel oil fraction. Lube oil fraction					

Notes:

CCME	**Canadian Council of Ministers of the Environment**	**PIRI**	**Partnership in RBCA implementation**
CEQG	**Canadian Environmental Quality Guidelines**	**RBCA**	**Risk-based Corrective Action**
	Bold faced guidelines reflect those most applicable to the land use	**RBSL**	**Risk-based screening level**

❶ Duplicate of 58590-TE-08-05-MA-1

- No guideline established

&& As recommended by Health Canada, the 2003 Atlantic PIRI TIER I RBSL's for modified TPH was divided by two to provide an equivalency to the CCME Canada-Wide Standard (CWS) for Petroleum Hydrocarbons (PHC) in soils (2008)

N/D No petroleum product was detected

Bold and underlined results indicate that the concentration exceeds the CCME-CEQG's

Bold and shaded results indicate that the concentration exceeds Recommended 2003 Atlantic PIRI TIER I RBSL's

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TABLE II
ANALYTICAL RESULTS - PAH IN SOILS
(St. Lewis Field Office, Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P013946-0109

		Data	1999 CCME Recommended Soil Quality Guidelines Residential (Update 2007)
Lab ID		AW3495	
Sampling Date		02/09/2008	
COC Number		B 54314	
Sampling depth below ground surface (m)		0.0 to 0.5	
Sample ID	**Units**	**58590-TE-08-04-MA-1(P#AJ6167)**	**mg/kg**
Polyaromatic Hydrocarbons			
1-Methylnaphthalene	mg/kg	<0.05	-
2-Methylnaphthalene	mg/kg	<0.05	-
Acenaphthene	mg/kg	<0.05	-
Acenaphthylene	mg/kg	<0.05	-
Anthracene	mg/kg	<0.05	-
Benzo(a)anthracene	mg/kg	<0.05	**1**
Benzo(a)pyrene	mg/kg	<0.05	**0.7**
Benzo(b)fluoranthene	mg/kg	<0.05	**1**
Benzo(g,h,i)perylene	mg/kg	<0.05	-
Benzo(k)fluoranthene	mg/kg	<0.05	**1**
Chrysene	mg/kg	<0.05	-
Dibenz(a,h)anthracene	mg/kg	<0.05	**1**
Fluoranthene	mg/kg	<0.05	-
Fluorene	mg/kg	<0.05	-
Indeno(1,2,3-cd)pyrene	mg/kg	<0.05	**1**
Naphthalene	mg/kg	<0.05	**0.6**
Perylene	mg/kg	<0.05	-
Phenanthrene	mg/kg	<0.05	**5**
Pyrene	mg/kg	<0.05	**10**

Notes: **CCME** **Canadian Council of Ministers of the Environment**
- **No guideline established**
Bold and shaded results indicate that the concentration exceeds the 1999 CCME CEQG for Residential sites

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TABLE III
ANALYTICAL RESULTS - LEAD IN WATER
(St. Lewis Field Office, Newfoundland and Labrador, DFRP # 58590)

O/Ref.: P013946-0109

		Data		Guideline
Lab ID		AJ8716	AJ8717	**Health Canada Guideline for Canadian Drinking Water Quality (2008)**
Sampling Date		02/09/2008	02/09/2008	
COC Number		7211	7211	
Sample ID	**Units**	**58590-WATER**	**DUP 7❶**	
Metals				
Lead (Pb)	µg/L	<0.5	0.7	**10**

Notes:

1	**Newfoundland and Labrador Provincial Guideline for lead - based paints**
2	**Federal Hazardous Products Act (HPA), Surface Coating Materials Regulation (SOR/2005-109)**
3	**Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health**
CCME	**Canadian Council of Ministers of the Environment**
CEQG	**Canadian Environmental Quality Guidelines**
❶	**Duplicate of 58590-WATER**
-	**No guideline established**
	Bold and underlined results indicate that the concentration exceeds the Federal Guideline
	Bold and shaded results indicate that the concentration exceeds the Provincial Guideline

Photo 1: View towards the southeast of the St. Lewis field office. Notice the newly constructed building extension used as a garage and a newly constructed storage shed. Also notice the newly installed aboveground storage tank between the garage and the storage shed.

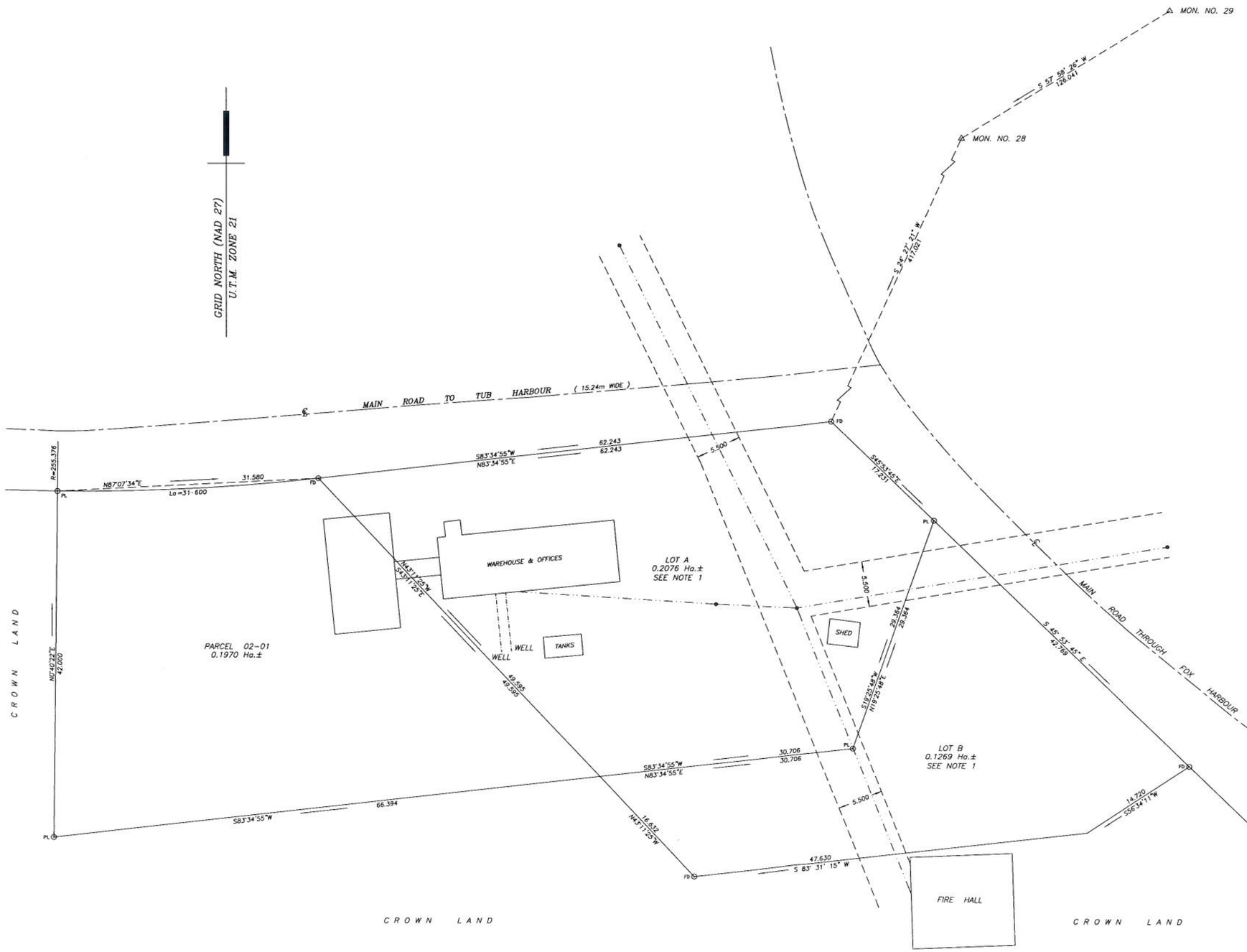
Photo 2: View towards the northeast of the back of DFO's office building. Notice the presence of one newly installed aboveground storage tank. The former 9092 L AST has been removed.

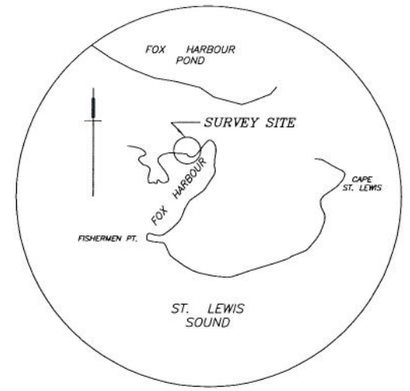
Photo 3: View towards the south of the new AST between the garage and the storage shed, both newly constructed buildings.

Photo 4: View towards the northwest of the new AST located next to the former 9092 L AST.

Photo 5: View of the location of the former 9092 L AST.

Photo 6: View towards the northeast of the concrete slab installed west of the artesian well.





KEY PLAN 1:50,000

LEGEND:

- ⊙ SURVEY MARKER
- ● UTILITY POLE
- △ NEWFOUNDLAND COORDINATE MONUMENT
- DERRICK
- ○ LAMP STANDARD
- OHWM ORDINARY HIGH WATER MARK
- R, A, T RADIUS, ARC, TANGENT
- FD/PL FOUND/PLACED
- PROPERTY BOUNDARIES

NOTES

1. THIS SURVEY CARRIED OUT ON JULY 3, 2002.
2. THIA SURVEY IS NOT ADJUSTED
3. ALL MEASURED DISTANCES ARE HORIZONTAL GROUND DISTANCES (NO SCALE FACTOR)
4. ALL TOPOGRAPHIC FEATURE HAVE BEEN SURVEYED BY RADIAL METHOD.
5. PARCEL 02-01 ORIGINATES WITH THIS PLAN.
6. ALL BEARINGS ARE GRID REFERENCED TO LONGITUDE 57° 00' WEST THE CENTRAL MERIDIAN OF UTM ZONE 21. NAD 27 VALUES.

MONUMENTS

MONUMENT #	NORTHING	EASTING
28	5 802 705.763	589 207.353
29	5 802 772.603	589 314.211

PLAN REFERENCES

NOTE 1
PROVINCIAL TRANSFER NO. 60001 DATED JANUARY 29, 1981
TRANSFERS LAND TO H.M. in right of CANADA
SEE PLAN (JOB NO. 80078) DATED JULY 1980 BY RICHARD YOUNG, NLS.

SURVEYOR'S CERTIFICATE

I, GERARD BUTLER, NEWFOUNDLAND LAND SURVEYOR, HEREBY CERTIFY THAT THE SURVEY REPRESENTED BY THIS PLAN WAS CONDUCTED UNDER MY SUPERVISION AND THAT THE SURVEY AND PLAN WERE MADE IN ACCORDANCE WITH THE NEWFOUNDLAND LAND SURVEYORS ACT AND THE REGULATIONS MADE THEREUNDER.

DATED SEPT. 11, 2002.

----------, N.L.S.

PLAN OF SURVEY SHOWING
LOTS A and B
LAND OWNED BY
H.M. in right of CANADA
AND
PARCEL 02-01
LAND REQUIRED BY
H.M. in right of CANADA
AT
ST. LEWIS (FOX HARBOUR)
ELECTORIAL DISTRICT OF
CARTWRIGHT-L'ANSE AU CLAIR
NEWFOUNDLAND & LABRADOR

SCALE 1 : 250
5 2.5 0 5 10 15 20 25
METRES

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
REAL ESTATE SECTOR

S-4755