

**DFO St. Lewis Building Upgrades - St. Lewis, NL
EA003-212489/A**

**ADDENDUM NO. 1
AMENDMENT # 1**

THE FOLLOWING AMENDMENT TO THE TENDER DOCUMENTS IS EFFECTIVE IMMEDIATELY.
THE AMENDMENT SHALL FORM A PART OF THE CONTRACT DOCUMENTS.

ADDENDUM NO. 1

SPECIFICATIONS

- .1 Reference Section 00 01 10 - Table of Contents:
 - .1 Delete Section and replace with new Section 00 01 10 - Table of Contents issued with and forming part of this Addendum.
 - .2 Add new Appendix F titled "St. Lewis Field Office Newfoundland and Labrador Small Craft Harbour (DFRP No. 58590) Environmental Risk Management Plan", issued with and forming part of this Addendum.

By submission of its tender, the Tenderer confirms that it has read and understands the requirements expressed in all addenda and has included all costs of these requirements in its Total Tender Amount.

All other terms & conditions remain unchanged.

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APPENDIX F

**St. Lewis Field Office
Newfoundland and Labrador
Small Craft Harbour (DFRP No. 58590)
Environmental Risk Management Plan**

Property Description

The Department of Fisheries and Oceans (DFO) field office is located at 10 Shoal Point Road in the community of St. Lewis, Labrador, herein referred to as the “Site” (Figure 1, Appendix A). The Site, which consists of three separate land parcels (Parcel A, B and 02-01), is owned by the Government of Canada.

Existing infrastructure consists of an office building with an attached garage, small storage shed, two above ground fuel oil storage tanks, fenced storage yard, septic tank and disposal field, and private water supply well (Figure 2, Appendix A). Former infrastructure at the Site also included a helicopter-landing pad and the aviation fuel storage platform, which were dismantled between 2004 and 2007. An aerial photograph of the Site is presented in Appendix B.



The Site is bordered to the north by a private residence across Shoal Point Road, to the southeast by St. Lewis Fire Hall, and by undeveloped land to the east (across Main Road) and west. A Canadian Coast Guard bulk fuel farm is located approximately 150 m southwest of the property.

Land use is currently classified as commercial/potable water/coarse grained soil.

Several environmental site assessment programs have identified petroleum hydrocarbon (specifically fuel oil) impacted surface soil at the Site. Although the 2011 Human Health Risk Assessment (HHRA) concluded there were no unacceptable human health or ecological risks, the HHRA did not specifically consider earthwork or soil disturbance activities within the impacted areas. Therefore, this Risk Management Plan (RMP) addresses potential future soil disturbances or earthwork within the impacted areas.

An environmental summary of site conditions is presented below, which is followed by the Site Specific Risk Management Plan.

Environmental Summary of Site Conditions

ESA Details	1999 (SNC-Lavalin)	3 Shallow test holes (STHs) 4 Soil samples	Soil samples: TPH-01 to TPH-03
	Phase I ESA 2001 (SNC-Lavalin)	Potential environmental liabilities were identified as: the above ground fuel oil storage tanks, storage of cans of gasoline in the storage shed, storage of 45 gallon barrels of aviation fuel; and creosote timbers used to construct the helicopter pad and aviation fuel storage platform. It was also recommended that a water sample be collected to assess the potable water quality for lead.	
		9 Test pits (TPs) 9 Soil samples	Soil Samples: SL-1-01 to SL-9-03
	Phase II/III ESA 2009 (Dessau)	5 TPs 6 Soil samples (includes 1 duplicate) 1 Water sample	Soil Samples: 58590-TE-08-01-MA-1 to 58590-TE-08-05-MA-1 and DUPLICATE 6. Water Samples: 58590-Water
	Phase III ESA 2010 (Dessau)	19 TPs 3 STHs 61 Soil samples 1 Asbestos sample 1 Water sample	Soil samples: LEWI-58590-09TP-01-01 to LEWI-58590-09TP-19-01, and LEWI-58590-09TH-01 to LEWI-58590-09TH-03. Asbestos sample: LEWI-58590-09AS-01 Water samples: LEWI-58590-09-WA-01
	Analysis conducted: Soil: Benzene, toluene, ethylbenzene, xylenes (collectively referred to as BTEX)/total petroleum hydrocarbon (TPH), metals, metal leachate, polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyl's (PCBs). Water: Lead, BTEX/TPH and PAHs Asbestos		
ESA Summary	<ul style="list-style-type: none">The volume of BTEX/TPH contamination in soil, in excess of the Canadian Council of Ministers of the environment (CCME) Canadian Soil Quality Guideline (CSQG) concentrations, was estimated to be 80 m³ (approximately 137 m² x 0.5 m).Metal, PAH and PCB concentrations in soil were below the CCME CSQG concentrations for a commercial site.Lead, PAH and PCB concentrations were not detected in the water sample.Asbestos was not present in the mineral board sheeting inside the furnace room.Options were presented to address the PHC impacted soil which included conducting a HHRA or excavating the impacted soil for off-site disposal were recommended.		
Risk Assessment Details	2011 (Stantec)	Human Health and Ecological Risk Assessment	
	<ul style="list-style-type: none">The human health risk assessment concluded the petroleum hydrocarbon concentrations in soil are not expected to cause adverse risks to commercial workers inside the building.Based on the results of the ERA, it was concluded that unacceptable risks are not expected.Although the outcome of the 2011 HHRA concluded there were no unacceptable human health or ecological risks, it was recommended that the water quality be sampled/assessed twice a year and that a Risk Management Plan (RMP) be prepared prior to excavation activities within the impacted area. It was also recommend that if site conditions or land use changes, that the risk assessment should be re-evaluated.		
References	<ol style="list-style-type: none">Phase I Environmental Site Assessment, SNC-Lavalin Inc., June 2001.Phase II/III Site Assessment, Dessau, March 31, 2009.Phase III Environmental Site Assessment, Dessau, March 2010.Human Health and Ecological Risk Assessment, Stantec Consulting Ltd., February 25, 2011.		

Site Specific Risk Management Plan

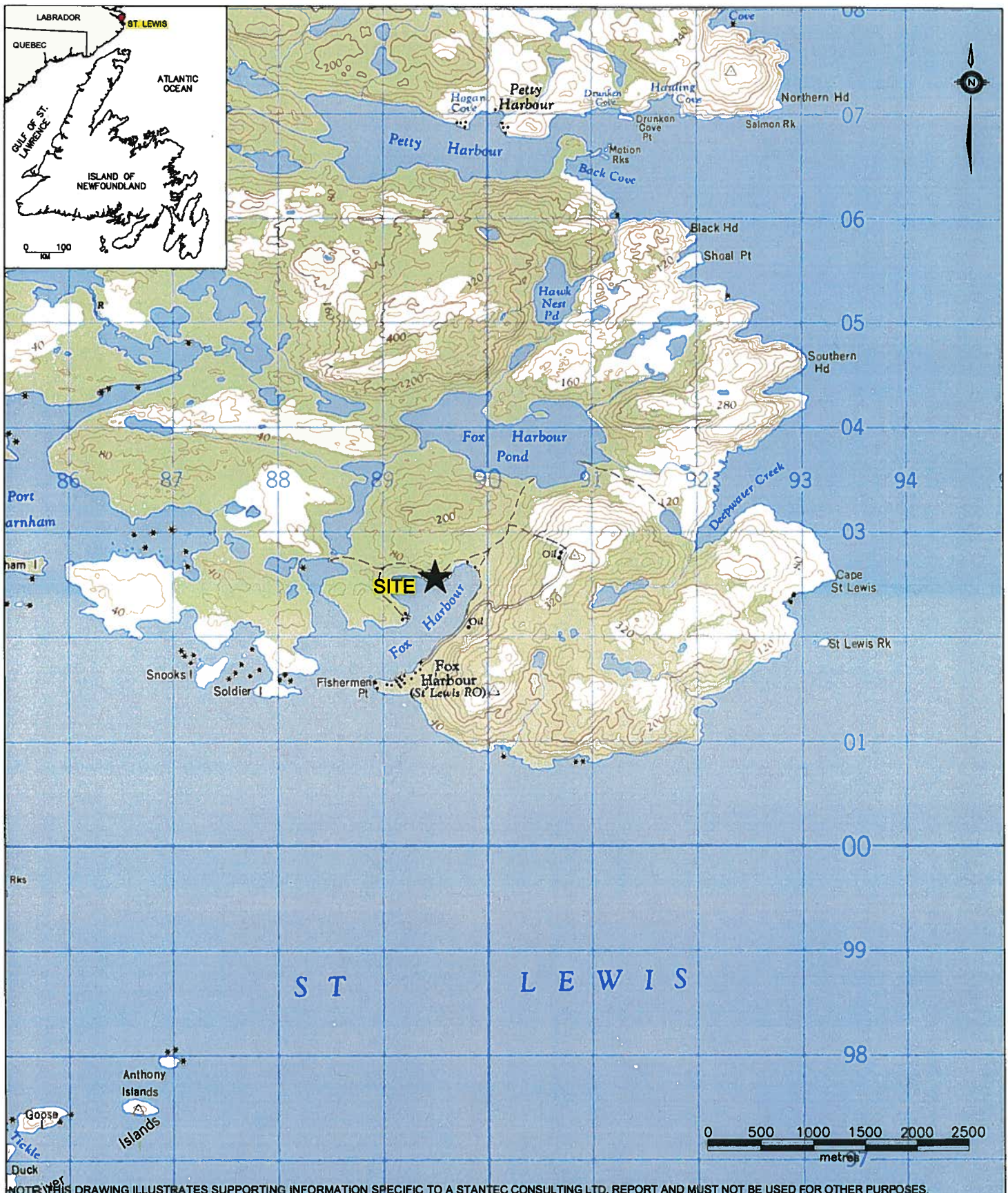
Date Created: March 31, 2014		
Risk Management Objective	<ul style="list-style-type: none">Advise and protect DFO workers or contractors conducting future earthwork or soil disturbance activities within the impacted areas.Protect the human health of site visitors.	
Chemicals of Potential Concern (COPC)	The COPCs are identified as follows: <ul style="list-style-type: none">Petroleum hydrocarbons (specifically fuel oil)	
Potential Risks	<ul style="list-style-type: none">Human health and ecological receptors associated with petroleum hydrocarbons in surface soil.Exposure pathways include dermal contact, ingestion and/or inhalation of soil/dust.Although no risks have been identified at this time, the presence of the on-site well and consumption of potable water does present a potential for consuming impacted groundwater.	
Issues of Concern	Location	Required Risk Management Actions
PHCs in Soil	Although Stantec (2011) concluded that there were no unacceptable risks, there are still areas of elevated PHC concentrations in surface soil (see Figure 4, Appendix A).	Earthwork activities within the impacted area should be conducted in accordance with a site specific health & safety plan (HASP) to address potential risks. See below for specific details (Mitigation Measures and Responsibilities).
Mitigation Measures and Responsibilities	<ul style="list-style-type: none">It is the worker's responsibility to understand which COPCs are present in the vicinity of their specific work tasks.DFO workers or contractors should review the current CCME fact sheets for potential risks associated with the COPCs.If earthwork or soil disturbance activities are to be conducted within the impacted areas, a project specific health and safety plan should be prepared and include measures to mitigate potential hazards (i.e., dermal contact, ingestion or inhalation of COPCs).Workers shall wear proper personal protective equipment (PPE) when earthwork or soil disturbance activities are being conducted within the impacted areas. In addition to standard PPE, such as a hard hat, steel toe boots, eye protection, etc., PPE may include, but is not limited to: dust mask/respirator, appropriate gloves and tyvek suits or coveralls. It is the worker's responsibility to understand PPE requirements for their specific work tasks. The suggested PPE is specific to current conditions as identified in the most recent assessment (Dessau, 2010) and may change over time. Unknown DFO worker or contractor activities that are outside the exposure scenario presented above must be mitigated in a site specific H&S Plan prepared by the employee or contractor.DFO workers or contractors shall consider and follow appropriate provincial and federal Occupational Health and Safety (OH&S) legislation.	
Historical analytical data for contaminants of concern are presented in Appendix C.		
Monitoring Requirements	The risk assessment concluded there were no unacceptable risks to human and ecological receptors at the Site. Therefore, there are no specific monitoring requirements associated with the PHC impacts in soil. However, water sampling was recommended twice a year to assess the water quality. In addition to the standard water quality analysis (i.e., general chemistry, metals and bacteria), petroleum hydrocarbons should also be included.	
Other Risk Management Considerations		
Land Use	<p>If the property is divested and re-developed in the future, a revised risk management plan should be established specifically for the re-development of the property.</p> <p>If the property is redeveloped for residential land use, then the Human Health Risk Assessment should be re-evaluated, and potential human health risks mitigated as part of the development.</p>	
Hazardous Building Materials	This RMP does not consider hazardous building materials or building conditions. Consult with the Office of Environmental Compliance for work associated with the existing buildings or infrastructure	

Small Craft Harbour (DFRP No. 58590)
Environmental Risk Management Plan


St. Lewis
Newfoundland

	(i.e., renovations, demolition or removal).
Species at Risk (SAR) ACCDC Search (Stantec, 2011)	<p>The Atlantic Canada Conservation Data Centre (ACCDC) search identified one record of a rare plant (Northern Ladyfern) within 5 kilometers of the Site.</p> <p>Based on Expert Opinion Maps, Barrow's goldeneye (<i>Bucephala islandica</i>), the Common nighthawk, the Harlequin duck (<i>Histrionicus histrionicus</i>) (breeding range only), the Ivory gull (<i>Pagophila eburnean</i>), Polar bear (<i>Ursus maritimus</i>) (spring and summer only), and the Short eared owl (<i>Asio flammeus</i>) are likely within 5 km of the site. The peregrine falcon is considered possible but unlikely within 5 km of the site.</p>

Appendix A Figures

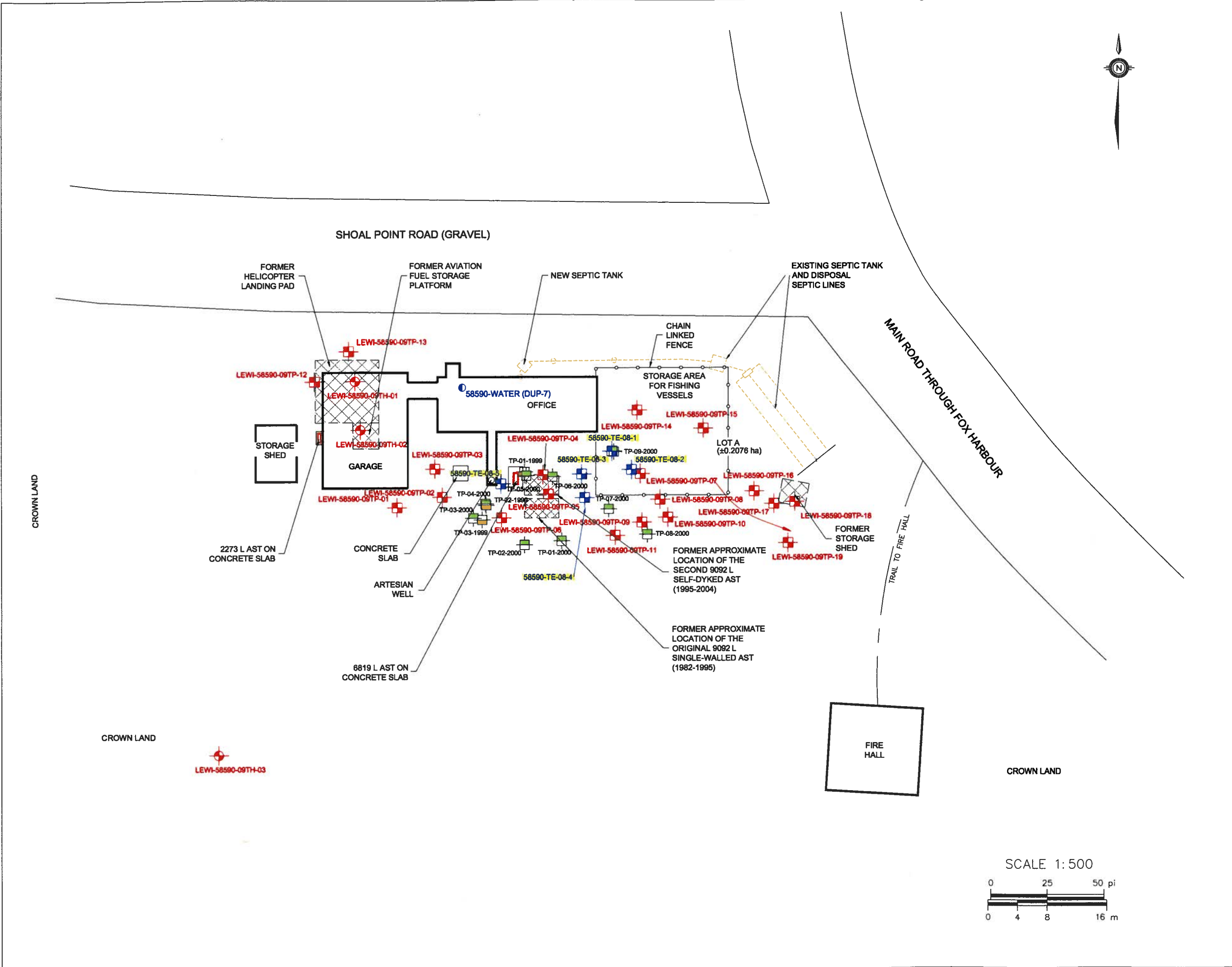


NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT:	 Public Works and Government Services Canada Travaux publics et Services gouvernementaux Canada	SCALE: 1:50 000 DATE: DEC. 16, 2010 DRAWN BY: R.L. CHECKED BY: AA EDITED BY: - REV. No: 0
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DRAWING TITLE:	SITE LOCATION PLAN	
		DRAWING No: 121411344-EE-01 CAD FILE: 121411344-EE-01.DWG



Stantec



LEGEND

- TEST PIT (DESSAU, 2009)
- 58590-TE-08 TEST PIT (DESSAU, 2008)
- TEST PIT (SNC-LAVALIN, 2000)
- TEST PIT (SNC-LAVALIN, 1999)
- WATER SAMPLING LOCATION
- BUILDING
- CHAIN LINKED FENCE
- STORAGE TANK
- SEPTIC SEWAGE
- FORMER STRUCTURE AND STORAGE TANK
- LIMIT OF THE SUBJECT SITE
- PRESUMED GROUNDWATER FLOW DIRECTION (DESSAU 2009)

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT:

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

PROJECT TITLE:

HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT, ST. LEWIS DFO FIELD OFFICE, ST. LEWIS, NL

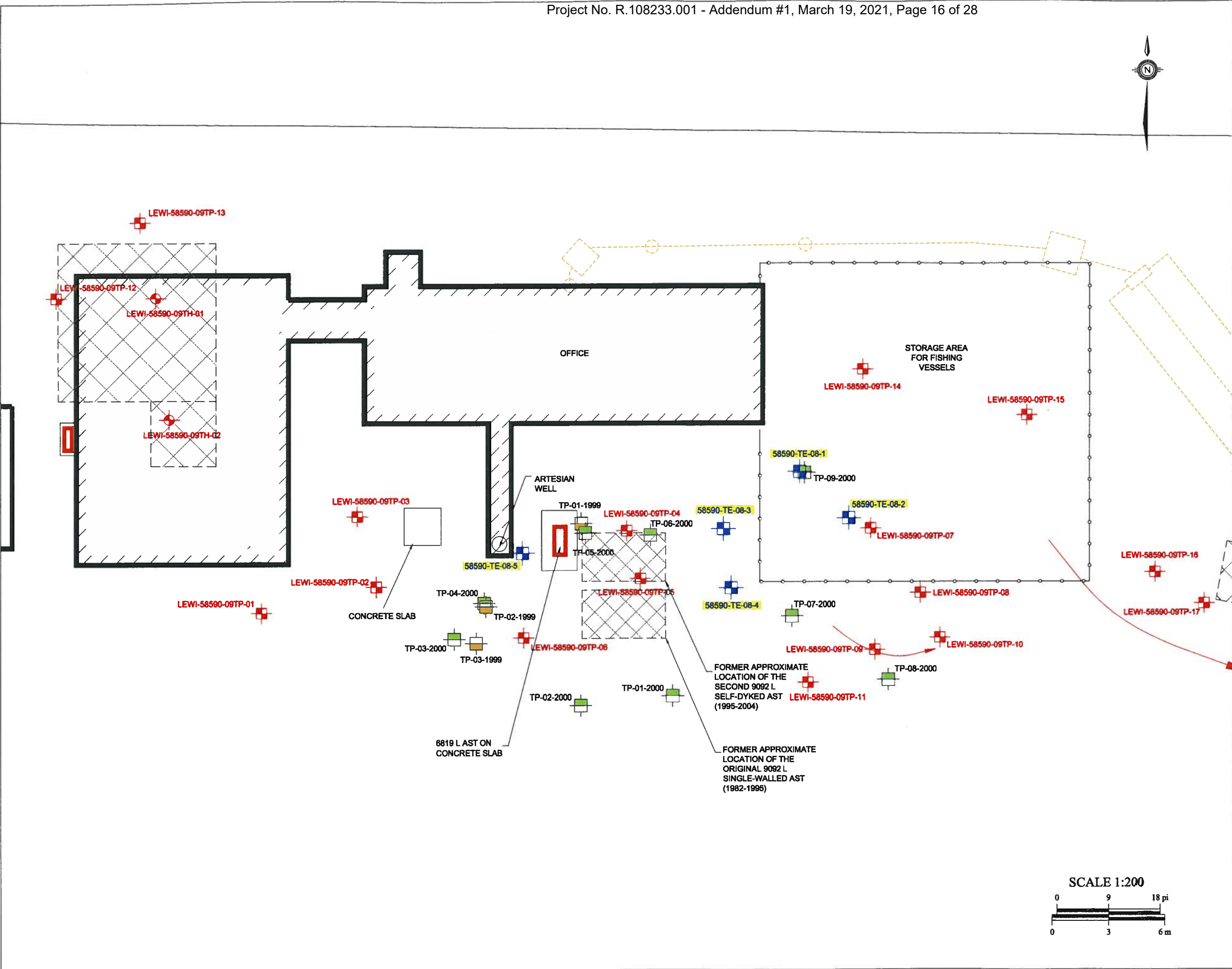
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Stantec Consulting Ltd.



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EDITED BY:	-	REV. No.	0
DRAWING No:	121411344-EE-02		
CAD FILE:	121411344-EE-02.DWG		



LEGEND

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- TEST PIT (SNC-LAVALIN, 2000)
- TEST PIT (SNC-LAVALIN, 1999)
- WATER SAMPLING LOCATION
- BUILDING
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- FORMER STRUCTURE AND STORAGE TANK
- LIMIT OF THE SUBJECT SITE
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NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT:

Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

PROJECT TITLE:

HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT, ST. LEWIS DFO FIELD OFFICE, ST. LEWIS, NL

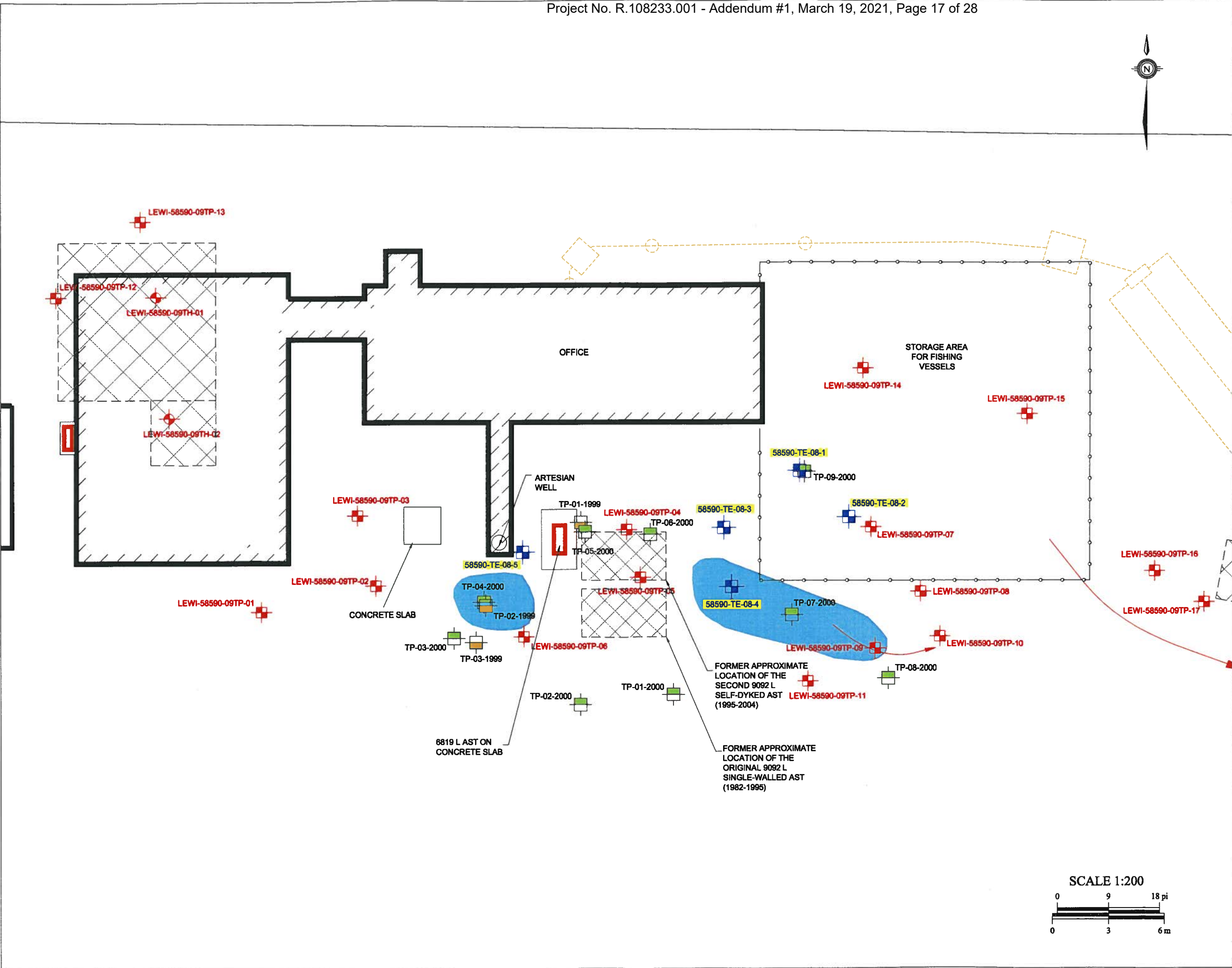
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Stantec Consulting Ltd.

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LEGEND

- TEST PIT (DESSAU, 2009)
- 58590-TE-08 TEST PIT (DESSAU, 2008)
- TEST PIT (SNC-LAVALIN, 2000)
- TEST PIT (SNC-LAVALIN, 1999)
- WATER SAMPLING LOCATION
- BUILDING
- CHAIN LINKED FENCE
- STORAGE TANK
- SEPTIC SEWAGE
- FORMER STRUCTURE AND STORAGE TANK
- PRESUMED GROUNDWATER FLOW DIRECTION (DESSAU 2009)
- ESTIMATED AREA OF PHC IMPACTS IN SOIL EXCEEDING CANADA WIDE STANDARDS

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT:

Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

PROJECT TITLE:

HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT, ST. LEWIS DFO FIELD OFFICE, ST. LEWIS, NL

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ESTIMATED AREA OF PETROLEUM HYDROCARBON IMPACTS IN SOIL

Stantec Consulting Ltd.

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Appendix B
Aerial Photograph



PROJECT

SSRMP
ST. LEWIS FIELD OFFICE, NL, (DFRP# 58590)

PROJECT NO.

14-8986

TITLE

MAIN AREA

AERIAL PHOTO NO.

1

DATE

MARCH 2014

Appendix C
Historical Analytical Data for Contaminants of Concern

Table B-1 Results of Laboratory Analysis of TPH/BTEX in Soil
Human Health and Ecological Risk Assessment
St. Lewis DFO Field Office, St. Lewis, NL
Project No. 121411344

Parameters			Benzene	Toluene	Ethylbenzene	Xylenes	C ₆ -C ₁₀ (Gas Range)	C ₁₀ -C ₂₁ (Fuel Range)	C ₂₁ -C ₃₂ (Lube Range)	Modified TPH - Tier I ³	Calculated CWS Petroleum Hydrocarbon Fractions (mg/kg or ppm) ²				Resemblance/Comment
											F1 (C ₆ -C ₁₀)	F2 (>C ₁₀ -C ₁₆)	F3 (>C ₁₆ -C ₃₄)	F4 (>C ₃₄ -C ₅₀) ⁴	
RDL			0.03	0.03	0.03	0.05	3	15	15	20	-	-	-	-	
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	
SNC (1999)	TP01-TPH-01	0	<0.03	<0.03	<0.03	<0.06	<1.7	18.2	33	51.2	nd	8	43	nd	
	TP02-TPH-02-S	0	<0.025	<0.025	<0.025	<0.025	159	4470	196	4820	159	3164	1502	nd	
	TP02-TPH-02-B	0.3	<0.025	<0.025	<0.025	<0.025	13	754	71.8	839	13	534	292	nd	
	TP03-TPH-03	0	<0.03	<0.03	<0.03	<0.06	<1.7	<5	<12	N/A	nd	nd	nd	nd	
SNC (2000)	TP1-SL-1-01	0.3	<0.03	<0.03	<0.03	<0.06	<1.7	<5	<12	nd	nd	nd	nd	nd	
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	TP3-SL-3-01	0.5	<0.03	<0.03	<0.03	<0.06	<1.7	<5	<12	nd	nd	nd	nd	nd	
	TP4-SL-4-01	0.5	<0.03	<0.03	<0.03	<0.06	<1.7	<5	<12	nd	nd	nd	nd	nd	
	TP5-SL-5-01	0.5	<0.03	<0.03	<0.03	<0.06	<1.7	<5	13	13	nd	nd	13	nd	
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	58590-TE-08-02-MA-1	0-0.5	<0.03	<0.03	<0.03	<0.05	<3	<15	20	<20	nd	nd	20	nd	Traces of Lube Oil Fraction
	58590-TE-08-03-MA-1	0-0.5	<0.03	<0.03	<0.03	<0.05	<3	<15	<15	<20	nd	nd	nd	nd	-
	58590-TE-08-04-MA-1	0-0.5	<0.03	<0.03	<0.03	<0.05	<3	1,000	340	1,400	nd	708	632	nd	Fuel Oil Fraction
	58590-TE-08-05-MA-1	0-0.6	<0.03	<0.03	<0.03	<0.05	<3	24	38	62	nd	17	45	nd	Weathered Fuel Oil Fraction Lube Oil Fraction.
	DUPLICATE 6	0-0.6	<0.03	<0.03	<0.03	<0.05	<3	29	50	78	nd	21	58	nd	Weathered Fuel Oil Fraction Lube Oil Fraction.
Dessau (2010)	LEWI-58590-09TP-01-01	0 to 0.5	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-01-03	1.0 to 1.3	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-02-01	0 to 0.4	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-03-01	0 to 0.25	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-04-01	0 to 0.6	N/D	N/D	N/D	N/D	N/D	36	N/D	36	N/D	25	11	--	Fuel oil fraction
	LEWI-58590-09TP-05-01	0 to 0.4	N/D	N/D	N/D	N/D	N/D	280	150	430	N/D	198	232	--	Fuel oil fraction. Lube oil fraction
	LEWI-58590-09TP-05-02	0.4 to 0.8	N/D	N/D	N/D	N/D	N/D	24	N/D	24	N/D	17	7	--	Fuel oil fraction
	LEWI-58590-09TP-06-01	0 to 0.25	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-07-01	0 to 0.2	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-08-01	0 to 0.5	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-09-01	0 to 0.45	N/D	N/D	N/D	N/D	N/D	1,400	N/D	1,400	N/D	991	409	--	Fuel oil fraction
	LEWI-58590-09TP-10-01	0 to 0.55	N/D	N/D	N/D	N/D	7	53	110	170	7	23	140	--	One product in fuel / lube range
	LEWI-58590-09TP-11-01	0 to 0.5	N/D	N/D	N/D	N/D	N/D	N/D	38	38	N/D	N/D	38	--	Possible lube oil fraction
	LEWI-58590-09TP-12-01	0 to 0.45	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-12-03	1.0 to 1.6	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-13-01	0 to 0.4	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-13-02	0.4 to 0.8	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-14-01	0 to 0.4	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-15-01	0 to 0.3	N/D	N/D	N/D	N/D	N/D	N/D	21	21	N/D	N/D	21	--	
	LEWI-58590-09TP-15-02	0.3 to 1.2	N/D	N/D	N/D	N/D	N/D	N/D	20	N/D	N/D	N/D	20	--	
	LEWI-58590-09TP-16-01	0 to 0.6	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-17-01	0 to 0.4	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-17-02	0.4 to 0.9	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-18-01	0 to 0.35	N/D	N/D	N/D	N/D	N/D	N/D	18	N/D	N/D	N/D	18	--	No resemblance to petroleum products
	LEWI-58590-09TP-18-02	0.35 to 0.7	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-19-01	0 to 0.5	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TH-01-01	0.15 to	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	Fuel oil fraction
	LEWI-58590-09TH-02-01	0.15 to	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	Fuel oil fraction
	LEWI-58590-09TP-DUP22	0.4 to 0.8	N/D	N/D	N/D	N/D	N/D	37	N/D	37	N/D	26	11	--	Fuel oil fraction
	LEWI-58590-09TP-DUP33	0 to 0.45	N/D	N/D	N/D	N/D	N/D	910	25	930	N/D	644	291	--	Fuel oil fraction
	LEWI-58590-09TP-DUP44	0.4 to 0.8	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
	LEWI-58590-09TP-DUP55	0.4 to 0.9	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	--	
Guidelines ⁵			0.03	0.37	0.082	11	-	-	-	-	240	260	1700	3300	-
Guidelines ⁶			-	-	-	-	-	-	-	-	700	1000	3500	10000	-
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-

Notes

1 RDL = laboratory's reportable detection limit; n/a = not applicable; "-" = no guideline available or parameter not analyzed

2 Calculated CWS Petroleum Hydrocarbon Fractions = In Atlantic Canada, the CWS analytical method is not available at local analytical laboratories. As such, the results from the Atlantic RBCA Tier I (fractionation) laboratory analysis of PHC has been converted to CWS fractions F1, F2 and F3 as required under Health Canada's "Guidance on Use of the Tier I and Tier II Atlantic RBCA Petroleum Hydrocarbon Concentrations for Human Health Risk Assessment at Federal Contaminated Sites".

3 Modified TPH = total petroleum hydrocarbons excluding total BTEX

4 Atlantic RBCA analytical method does not analyse for >C34-C50 hydrocarbons

5 CCME SQG = Canadian Council of Ministers of the Environment Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (1999; last updated 2007) - Commerical Site
CCME CWS PHC = Canadian Council of Ministers of the Environment Canada Wide Standards for Petroleum Hydrocarbons (PHC) in Soil (2001, updated January 2008) - Commercial Site

6 CCME CWS PHC Management Limit for a Commercial Site (2001, updated January 2008)
Bold = Value exceeds guideline⁵ Shaded = Value exceeds guideline⁶

Table B-2 Results of Laboratory Analysis of PAHs in Soil
Human Health and Ecological Risk Assessment
St. Lewis DFO Field Office, St. Lewis, NL
Project No. 121411344

Parameters	RDL	Units	Criteria ^{1,3}	Criteria ^{2,3}	Criteria ⁴	58590-TE-08-04-MA-1	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-58590-09TH-01-01	LEWI-58590-09TH-02-01	LEWI-58590-09TP-DUP51	
						0 - 0.5	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	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	0.15 to 0.30	0.15 to 0.27	0.4 - 0.9	
Non-carcinogenic PAHs						Dessau (2009)																
1-Methylnaphthalene	0.001	mg/kg	-	-	-	<0.05	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
2-Methylnaphthalene	0.001	mg/kg	-	-	-	<0.05	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Acenaphthene	0.002	mg/kg	-	-	-	<0.05	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Acenaphthylene	0.001	mg/kg	-	-	-	<0.05	0.02	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Anthracene	0.001	mg/kg	2.5	-	-	<0.05	0.03	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Fluoranthene	0.001	mg/kg	50	-	-	<0.05	0.2	N/D	0.02	0.03	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0.02	N/D	N/D	
Fluorene	0.001	mg/kg	-	-	-	<0.05	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Naphthalene	0.002	mg/kg	-	-	0.6	<0.05	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Perylene	0.001	mg/kg	-	-	-	<0.05	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Phenanthrene	0.001	mg/kg	-	-	5	<0.05	0.04	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Pyrene	0.003	mg/kg	-	-	10	<0.05	0.12	N/D	0.02	0.02	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0.02	N/D	N/D	
Carcinogenic PAHs																						
Benzo(a)anthracene	0.001	mg/kg	-	-	1	<0.05	0.03	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Benzo(a)pyrene	0.003	mg/kg	20	-	-	<0.05	0.02	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Benzo(b)fluoranthene	0.004	mg/kg	-	-	1	<0.05	0.1	N/D	0.02	0.02	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Benzo(k)fluoranthene	0.004	mg/kg	-	-	1	<0.05	0.03	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Benzo(g,h,i)perylene	0.002	mg/kg	-	-	-	<0.05	0.02	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Chrysene	0.001	mg/kg	-	-	-	<0.05	0.14	N/D	0.02	0.02	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0.01	N/D	N/D	
Dibenz(a,h,)anthracene	0.004	mg/kg	-	-	1	<0.05	0.02	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Indeno(1,2,3-c,d) pyrene	0.003	mg/kg	-	-	1	<0.05	0.03	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
Benzo (a)pyrene TPE ⁵			-	5.3	-	nd	0.06	nd	0.002	0.002	nd	nd	nd	nd	nd	nd	nd	nd	0.0001	0.00	0.00	

Notes:

1 = CCME Canadian Soil Quality Guidelines for the Protection of Environmental Health at a Residential Site (2010)

2 = CCME Canadian Soil Quality Guidelines for Protection of Human Health for a Residential Site (Direct Soil Contact) (2010)

3 = As per CCME recommendations, soil samples are compared against the SQG for the protection of human health and environmental health separately

4 = CCME Provisional SQG_E (1997)

5 = Carcinogenic PAHs Assessed as Benzo(a)pyrene Total Potency Equivalent (TPE)

RDL = Reportable Detection Limit for routine analysis

nd = Not detected above RDL noted

Table B-3 Results of Laboratory Analysis of PCBs in Soil
Human Health and Ecological Risk Assessment
St. Lewis DFO Field Office, St. Lewis, NL
Project No. 121411344

Year	Sample I.D.	Sample Depth (m)	Polychlorinated Biphenyls (PCBs)
RDL			0.005
Units			mg/kg
CCME Commercial¹			33
Dessau (2010)	LEWI-58590-09TP-12-03	1.0 to 1.5	nd
	LEWI-58590-09TP-15-01	0 to 0.3	nd

Notes:

1 = CCME Canadian Soil Quality Guidelines for a Commercial Site (2007)

RDL = Reportable Detection Limit

nd = Not detected above standard RDL

Table B-4 Results of Laboratory Analysis of Metals in Soil
Human Health and Ecological Risk Assessment
St. Lewis DFO Field Office, St. Lewis, NL
Project No. 121411344

Parameters	RDL	Units	Criteria ¹	Dessau (2010)										
				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-58590-09TH-01-01	LEWI-58590-09TH-02-01	LEWI-58590-09TH-03-01	LEWI-58590-09TP-DUP4 2
				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	0.3 to 1.2	0.15 to 0.30	0.15 to 0.27	0 to 0.15	0.5 to 0.8
Aluminum	10	mg/kg	-	6,900	9,800	7,500	9,500	7,600	8,800	11,000	9,200	9,500	1100	9600
Antimony	2	mg/kg	40*	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Arsenic	2	mg/kg	12	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Barium	5	mg/kg	2,000	63	74	60	15	34	92	130	240	250	13	14
Beryllium	2	mg/kg	8*	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Boron	5	mg/kg	-	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Cadmium	0.3	mg/kg	22	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Chromium	2	mg/kg	87	10	19	10	7	9	5	5	20	22	N/D	9
Cobalt	1	mg/kg	300*	4	7	5	3	4	4	5	9	10	N/D	4
Copper	2	mg/kg	91	15	24	12	4	8	9	9	30	33	N/D	3
Iron	50	mg/kg	-	12,000	17,000	13,000	13,000	14,000	26000	34000	19,000	19,000	2300	15000
Lead	0.5	mg/kg	260	6.5	5.5	5.1	7.2	5.7	5.1	13	15	15	8.8	9.7
Lithium	2	mg/kg	-	9	16	9	7	8	9	12	8	8	N/D	8
Manganese	2	mg/kg	-	220	330	210	190	190	570	800	270	250	15	190
Mercury	0.1	mg/kg	24	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Molybdenum	2	mg/kg	40*	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Nickel	2	mg/kg	50	8	10	7	3	6	5	5	13	16	N/D	4
Selenium	2	mg/kg	2.9	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Silver	0.5	mg/kg	40*	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0.6	N/D	N/D	N/D
Strontium	5	mg/kg	-	11	5	13	6	ND	6	8	37	39	6	7
Thallium	0.1	mg/kg	1	N/D	0	N/D	N/D	N/D	0	0	N/D	N/D	N/D	N/D
Tin	2	mg/kg	300*	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D	2	N/D
Uranium	0.1	mg/kg	33	1	1	1	1	1	1	1	0.4	0.3	0.1	1
Vanadium	2	mg/kg	130	22	30	24	20	24	14	15	36	39	5	24
Zinc	5	mg/kg	360	36	54	36	26	33	72	90	52	50	9	32

Notes:
1 = CCME Canadian Soil Quality Guidelines for a Commercial Site
RDL = Reportable Detection Limit for routine analysis
< # = Not detected above RDL noted
"-" = indicates value is not available or does not apply
Shaded = Value exceeds applicable guideline



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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


Lab ID			Data	Guidelines				
			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
<div>Notes:</div> <div><div>CCME</div><div>Canadian Council of Ministers of the Environment</div><div>PIRI</div><div>Partnership in RBCA implementation</div></div> <div><div>CWQG</div><div>Canadian Water Quality Guidelines for the protection of Aquatic Life</div><div>RBCA</div><div>Risk-based Corrective Action</div></div> <div><div>-</div><div>No guideline established</div><div>RBSL</div><div>Risk-based screening level</div></div> <div><div>N/A</div><div>Not applicable</div><div></div><div></div></div> <div><div>N/D</div><div>No petroleum product was detected</div><div></div><div></div></div> <div><div colspan="4">Bold and underlined results indicate that the concentration exceeds the Health Canada Guideline for Canadian Drinking Water Quality (2008)</div><div colspan="4">Bold and shaded results indicate that the concentration exceeds the 2003 Atlantic PIRI TIER I RBSL's</div></div>								

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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

Lab ID			Data	Health Canada Guideline for Canadian Drinking Water Quality (2008)		
Sampling Date			EI5016			
COC Number			07/11/2009			
Groundwater Level			19007			
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		-	
<div>Notes: CCME Canadian Council of Ministers of the Environment</div> <div>N/D Not detected</div> <div>N/A Not applicable</div> <div>- No guideline established</div> <div>Bold and shaded results indicate that the concentration exceeds the Health Canada Guideline for Canadian Drinking Water Quality (2008)</div>						

DESSAU	 PWGSC
<p align="center">TABLE VIII ANALYTICAL RESULTS - ASBESTOS St. Lewis Field Office, St. Lewis (Newfoundland and Labrador, DFRP # 58590)</p>	
O/Ref.: P029201-0101	

Lab ID			Data	Guidelines
Sampling Date			EI5017	Asbestos Abatement Regulation (Newfoundland and Labrador Regulation 111/98)
COC Number			09/11/2009	
Sample ID			19007	
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	-
<p>Notes:</p> <p>- No guideline established</p> <p>N/D Not detected</p> <p>Bold and underlined results indicate that the concentration exceeds the provincial regulation</p>				

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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		2008-09-02	2008-09-02	
COC Number		7211	7211	
Sample ID	Units	58590-WATER	DUP 7 [●]	
Metals				
Lead (Pb)	µg/L	<0.5	0.7	10
<div>Notes:</div> <div><div>1</div>Newfoundland and Labrador Provincial Guideline for lead - based paints</div> <div><div>2</div>Federal Hazardous Products Act (HPA), Surface Coating Materials Regulation (SOR/2005-109)</div> <div><div>3</div>Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health</div> <div><div>CCME</div>Canadian Council of Ministers of the Environment</div> <div><div>CEQG</div>Canadian Environmental Quality Guidelines</div> <div><div>●</div>Duplicate of 58590-WATER</div> <div><div>-</div>No guideline established</div> <div><u>Bold and underlined results indicate that the concentration exceeds the Federal Guideline</u></div> <div>Bold and shaded results indicate that the concentration exceeds the Provincial Guideline</div>				