Appendix 8a

Site Drawings

– Camp Road Dump Site

LEGEND

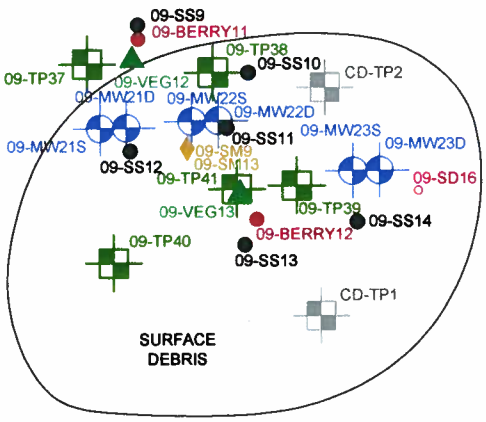
- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- SMALL MAMMALS (STANTEC 2009)
- SURFACE WATER SAMPLE (STANTEC 2009)
- VEGETATION SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- MONITOR WELL (STANTEC 2009)
- TEST PIT (AGRA 1999)
- BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)
- SEDIMENT SAMPLE (STANTEC 2009)
- FISH LOCATION (STANTEC 2009)

CAMP ROAD-FS

09-SW2
SSM-2-CR
09-BENTHIC2

LAKE MELVILLE

CAMP ROAD DUMP SITE



ASSUMED DIRECTION OF GROUNDWATER FLOW

0 10 20 30 40 50
metres

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

CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:1500 / DATE: JUNE 17, 2010
	DRAWN BY: N.M. / CHECKED BY: A.R.
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	EDITED BY: - / REV. No. 0
	DRAWING No: 121410105-EE-08A
DRAWING TITLE: SITE PLAN - CAMP ROAD DUMP SITE	CAD FILE: 1044857-EE-07.DWG

Stantec

17JUN10 1:00PM

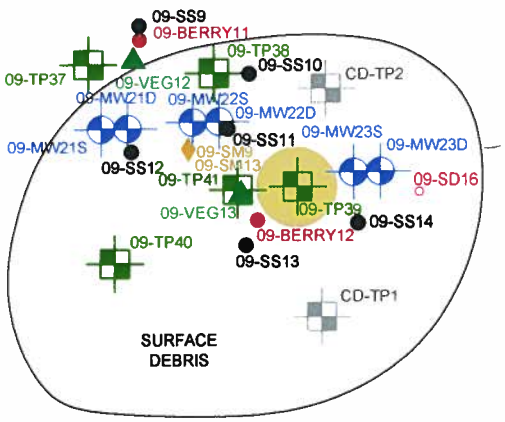
LEGEND

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- SMALL MAMMALS (STANTEC 2009)
- FISH LOCATION (STANTEC 2009)
- SURFACE WATER SAMPLE (STANTEC 2009)
- SEDIMENT SAMPLE (STANTEC 2009)
- VEGETATION SAMPLE LOCATION (STANTEC 2009)
- BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- TEST PIT (AGRA 1999)
- MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES

CAMP ROAD-FS
09-SWM2
SSM-2-CR
09-BENTHIC2

LAKE MELVILLE

CAMP ROAD DUMP SITE



ASSUMED DIRECTION OF GROUNDWATER FLOW

0 10 20 30 40 50
metres

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

CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:1500
	DATE: JUNE 18, 2010
	DRAWN BY: N.M.
	CHECKED BY: A.R.
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	EDITED BY: -
	REV. No. 0
DRAWING TITLE: APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - CAMP ROAD DUMP SITE	DRAWING No: 121410105-EE-08B
	CAD FILE: 1044857-EE-10.DWG

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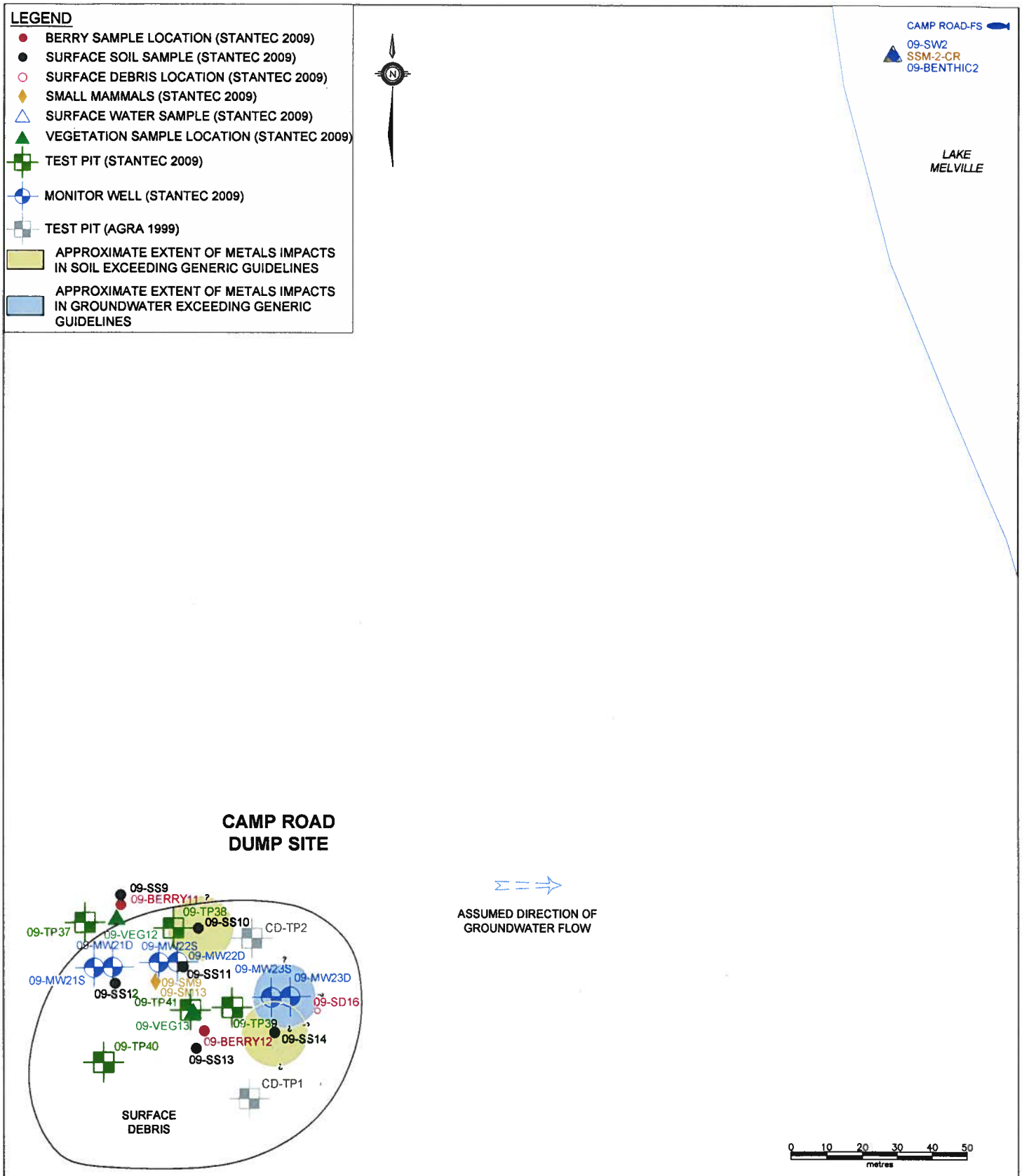
18JUN10 1:00PM



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

CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:1500
	DATE: JUNE 21, 2010
	DRAWN BY: N.M.
	CHECKED BY: A.R.
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL	EDITED BY: R.L.
	REV. No. 0
DRAWING TITLE: APPROXIMATE EXTENT OF METALS IMPACTS EXCEEDING GENERIC GUIDELINES - CAMP ROAD DUMP SITE	DRAWING No: 121410105-EE-8C
	CAD FILE: 1044857-EE-11.DWG

Stantec

19SEPT11 4:30PM

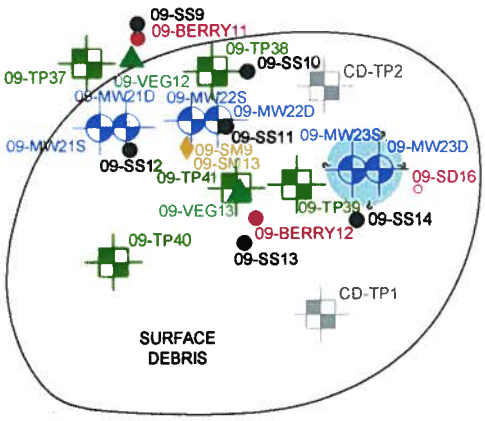
LEGEND

- BERRY SAMPLE (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- SMALL MAMMALS (STANTEC 2009)
- SURFACE WATER SAMPLE (STANTEC 2009)
- VEGETATION SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- MONITOR WELL (STANTEC 2009)
- TEST PIT (AGRA 1999)
- BENTHIC INVERTEBRATE SAMPLE (STANTEC 2009)
- SEDIMENT SAMPLE (STANTEC 2009)
- FISH LOCATION (STANTEC 2009)
- APPROXIMATE EXTENT OF PAHs IMPACTS IN GROUNDWATER EXCEEDING GENERIC GUIDELINES

CAMP ROAD-FS
09-SW2
SSM-2-CR
09-BENTHIC2

LAKE MELVILLE

CAMP ROAD DUMP SITE



ASSUMED DIRECTION OF GROUNDWATER FLOW

0 10 20 30 40 50
metres

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

CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION		SCALE: 1:800	DATE: JUNE 21, 2010
		DRAWN BY: N.M.	CHECKED BY: A.R.
PROJECT TITLE: PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL		EDITED BY: -	REV. No. 0
		DRAWING No: 121410105-EE-8D	
DRAWING TITLE: APPROXIMATE EXTENT OF PAHs IMPACTS EXCEEDING GENERIC GUIDELINES - CAMP ROAD DUMP SITE		CAD FILE: 1044857-EE-12.DWG	

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21JUN10 1:00PM

Appendix 8b

Sample Coordinates

– Camp Road Dump Site

Sample Coordinates - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Sample ID	Coordinates (NAD27)	
	Easting	Northing
TEST PITS		
09-TP37	694734	5931097
09-TP38	694759	5931096
09-TP39	694776	5931074
09-TP40	694740	5931058
09-TP41	694764	5931073
MONITOR WELLS		
09-MW21S	694737	5931084
09-MW21D	694737	5931084
09-MW22S	694755	5931086
09-MW22D	694755	5931086
09-MW23S	694787	5931077
09-MW23D	694787	5931077
SURFACE SOIL		
09-SS9	694744	5931105
09-SS10	694766	5931096
09-SS11	694762	5931085
09-SS12	694743	5931080
09-SS13	694766	5931062
09-SS14	694788	5931067
SURFACE WATER / SEDIMENT / BENTHIC		
09-SWM2, SSM-2-CR, 09-BENTHIC2	694927	5931345
VEGETATION		
09-VEG12	694743	5931098
09-VEG13	694765	5931072
BERRIES		
09-BERRY11	694744	5931102
09-BERRY12	694768	5931067
SMALL MAMMALS		
09-SM9	694754	5931081
09-SM13	694535	5931145
FISH		
CAMP ROAD-FS	694986	5931356

Appendix 8c

Test Pit Records and Monitor Well Records

– Camp Road Dump Site

TEST PIT RECORD

CLIENT: NL Department of Environment and Conservation
PROJECT: Phase III ESA, HHRA & ERA, Former US Military Facility
LOCATION: Northwest Point, NL
DATES (mm-dd-yy): DUG: 8-7-09 WATER LEVEL: N/A DATUM:

TEST PIT No.: 09-TP37
PROJECT No.: 121410105

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	SAMPLES NUMBER	HYDROCARBON ODOUR	SAMPLES OTHER TESTS	PID READINGS (ppm)	CHEMICAL ANALYSIS (ppm) TPH	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
0														
		Compact, brown to grey, SAND with gravel (SP)			BS	1	0		9.7	-	-	-	-	-
1														
2														
3														
4					BS	2	0		7.3	-	-	-	-	-
		End of Test Pit No groundwater seepage observed. Bedrock not encountered.												
5														

Stantec

TEST PIT RECORD

CLIENT: NL Department of Environment and Conservation
PROJECT: Phase III ESA, HHRA & ERA, Former US Military Facility
LOCATION: Northwest Point, NL
DATES (mm-dd-yy): DUG 8-7-09 WATER LEVEL N/A

TEST PIT No. 09-TP38
PROJECT No. 121410105
DATUM

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	SAMPLES NUMBER	HYDROCARBON ODOUR	SAMPLES OTHER TESTS	PID READINGS (ppm)	CHEMICAL ANALYSIS (ppm) TPH	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
0														
		Loose to compact, brown, SAND (SP); some debris (car chassis, cable, creosote utility pole, sheet metal, wood, glass, etc)			BS	1	0		46	-	-	-	-	-
1														
2		Compact, brown, SAND (SP)												
3														
4					BS	2	0		48	-	-	-	-	-
		End of Test Pit No groundwater seepage observed. Bedrock not encountered.												
5														

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TEST PIT RECORD

CLIENT **NL Department of Environment and Conservation**
PROJECT **Phase III ESA, HHRA & ERA, Former US Military Facility**
LOCATION **Northwest Point, NL**
DATES (mm-dd-yy): DUG **8-7-09** WATER LEVEL **1.4m** **8-7-09**

TEST PIT No. **09-TP39**
PROJECT No. **121410105**
DATUM

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES HYDROCARBON ODOUR	SAMPLES OTHER TESTS	PID READINGS (ppm)	CHEMICAL ANALYSIS (ppm) TPH	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
0		Loose, brown, SAND (SP); some debris (steel drums, cable, glass, wood, etc)			BS	1	0		4.2	-	-	-	-	-
1				▽	BS	2	0		5.0	760	nd	0.06	nd	nd
2		End of Test Pit Rapid groundwater seepage observed at 1.4 m depth. Bedrock not encountered.												
3														
4														
5														

Stantec

TEST PIT RECORD

CLIENT **NL Department of Environment and Conservation**
PROJECT **Phase III ESA, HHRA & ERA, Former US Military Facility**
LOCATION **Northwest Point, NL**
DATES (mm-dd-yy): DUG **8-7-09** WATER LEVEL **2m** **8-7-09**

TEST PIT No. **09-TP40**
PROJECT No. **121410105**
DATUM

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	SAMPLES NUMBER	HYDROCARBON ODOUR	SAMPLES OTHER TESTS	PID READINGS (ppm)	CHEMICAL ANALYSIS (ppm) TPH	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
0		Loose to compact, brown, SAND (SP); trace debris (cans, bottles, etc)			BS	1	0		4.5	-	-	-	-	-
1		Compact to dense, grey, SILT with sand (ML); trace clay		▽	BS	2	0		4.2	nd	nd	nd	nd	nd
2														
3		End of Test Pit Very slow groundwater seepage observed at 2.0 m depth. Bedrock not encountered.												
4														
5														

TEST PIT RECORD

CLIENT: NL Department of Environment and Conservation
PROJECT: Phase III ESA, HHRA & ERA, Former US Military Facility
LOCATION: Northwest Point, NL
DATES (mm-dd-yy): DUG 8-7-09 WATER LEVEL 1.4m 8-7-09

TEST PIT No. 09-TP41
PROJECT No. 121410105
DATUM

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES HYDROCARBON ODOUR	SAMPLES OTHER TESTS	PID READINGS (ppm)	CHEMICAL ANALYSIS (ppm) TPH	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
0		Loose, brown and grey, SAND and silt (SP-SM); trace debris			BS	1	0		3.5	-	-	-	-	-
1		Rootmat												
		Compact, grey, SILT with sand (ML); trace clay		▽	BS	2	0		3.4	nd	nd	nd	nd	nd
2		End of Test Pit Very slow groundwater seepage observed at 1.4 m depth. Bedrock not encountered.												
3														
4														
5														

MONITOR WELL RECORD

Stantec

BOREHOLE No. **09-MW21S**
PAGE **1** of **1**
PROJECT No. **121410105**
DRILLING METHOD **Auger**
SIZE **100mm HS**
DATUM

CLIENT **NL Department of Enviroment and Conservation**
PROJECT **Phase III ESA, HHRA & ERA, Former US Military Facility**
LOCATION **Northwest Point, NL**
DATES (mm-dd-yy): BORING **8-8-09** WATER LEVEL **1.22m** **8-8-09**

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY mm	SAMPLES N-VALUE OR RQD %	HYDROCARBON ODOUR	APPARENT MOISTURE CONTENT	PID (ppm)	TPH (ppm)	WELL CONSTRUCTION DETAILS (0.61 m STICK UP)
0		Grey, SILT (ML)			SS	1	405	3	0		-	-	CAST IRON WELL HEAD
		Brown, SAND (SP)											BENTONITE
		Grey, silty SAND (SM)			SS	2	455	2	0		-	-	
1		CLAY (CL)		▼									
		Grey, silty SAND (SM)			SS	3	560	3	0		-	-	50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK
2		Grey, SILT (ML)			SS	4	305	0	0		-	-	
		Brown, SAND (SP)											
		Light brown, SAND (SP); some cobbles			SS	5	255	22	0		-	-	
3													END CAP
		End of Borehole											
4													
5													
6													
7													
8													
9													
10													

MONITOR WELL RECORD

Stantec

BOREHOLE No. **09-MW21D**
PAGE **1** of **1**
PROJECT No. **121410105**
DRILLING METHOD **Auger**
SIZE **100mm HS**
DATUM

CLIENT **NL Department of Enviroment and Conservation**
PROJECT **Phase III ESA, HHRA & ERA, Former US Military Facility**
LOCATION **Northwest Point, NL**
DATES (mm-dd-yy): BORING **8-10-09** WATER LEVEL **5.79m** **8-10-09**

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY mm	SAMPLES N-VALUE OR RQD %	HYDROCARBON ODOUR	APPARENT MOISTURE CONTENT	PID (ppm)	TPH (ppm)	WELL CONSTRUCTION DETAILS (0.61 m STICK UP)
0		Grey, SILT (ML)			SS	1	405	3	0		15.4	-	CAST IRON WELL HEAD
		Brown, SAND (SP)											
		Grey, silty SAND (SM)			SS	2	455	2	0		9.9	-	
1		CLAY (CL)											
		Grey, silty SAND (SM)			SS	3	560	3	0		9.1	-	
2		Grey, SILT (ML)			SS	4	305	0	0		8.5	-	BENTONITE
		Brown, SAND (SP)											
		Light brown, SAND (SP); some cobbles			SS	5	255	22	0		13.1	nd	
3													
4													
5													50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK
6				▼									
7													END CAP
		End of Borehole											
8													
9													
10													

Stantec

MONITOR WELL RECORD

BOREHOLE No. **09-MW22S**
PAGE **1** of **1**
PROJECT No. **121410105**
DRILLING METHOD **Auger**
SIZE **100mm HS**
DATUM

CLIENT **NL Department of Enviroment and Conservation**
PROJECT **Phase III ESA, HHRA & ERA, Former US Military Facility**
LOCATION **Northwest Point, NL**
DATES (mm-dd-yy): BORING **8-8-09** WATER LEVEL **1.22m** **8-8-09**

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY mm	SAMPLES N-VALUE OR RQD %	HYDROCARBON ODOUR	APPARENT MOISTURE CONTENT	PID (ppm)	TPH (ppm)	WELL CONSTRUCTION DETAILS (0.61 m STICK UP)
0													CAST IRON WELL HEAD
0		Grey, SILT (ML)			SS	1	455	4	0		-	-	BENTONITE
		Brown, SAND (SP); some cobbles											
1		Brown, SAND (SP)		▽	SS	2	455	10	0		-	-	
		Light brown, SAND (SP); some cobbles			SS	3	510	16	0	M	-	-	50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK
2					SS	4	560	24	0		-	-	
					SS	5	560	36	0		-	-	
3													
4		End of Borehole											END CAP
5													
6													
7													
8													
9													
10													

MONITOR WELL RECORD

Stantec

BOREHOLE No. **09-MW22D**
PAGE **1** of **1**
PROJECT No. **121410105**
DRILLING METHOD **Auger**
SIZE **100mm HS**
DATUM

CLIENT **NL Department of Enviroment and Conservation**
PROJECT **Phase III ESA, HHRA & ERA, Former US Military Facility**
LOCATION **Northwest Point, NL**
DATES (mm-dd-yy): BORING **8-10-09** WATER LEVEL **5.79m** **8-10-09**

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY mm	SAMPLES N-VALUE OR RQD %	HYDROCARBON ODOUR	APPARENT MOISTURE CONTENT	PID (ppm)	TPH (ppm)	WELL CONSTRUCTION DETAILS (0.61 m STICK UP)
0		Grey, SILT (ML)			SS	1	455	4	0		6.6	-	CAST IRON WELL HEAD
		Brown, SAND (SP); some cobbles			SS	2	455	10	0		6.1	-	
1		Brown, SAND (SP)			SS	3	510	16	0		5.8	-	
		Light brown, SAND (SP); some cobbles			SS	4	560	24	0		5.4	-	BENTONITE
2					SS	5	560	36	0		5.2	nd	
3													
4													
5													50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK
6				▼									
7													END CAP
		End of Borehole											
8													
9													
10													

MONITOR WELL RECORD

BOREHOLE No. **09-MW23S**
PAGE **1** of **1**
PROJECT No. **121410105**
DRILLING METHOD **Auger**
SIZE **100mm HS**
DATUM

CLIENT **NL Department of Enviroment and Conservation**
PROJECT **Phase III ESA, HHRA & ERA, Former US Military Facility**
LOCATION **Northwest Point, NL**
DATES (mm-dd-yy): BORING **8-8-09** WATER LEVEL **4.88m** **8-8-09**

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY mm	SAMPLES N-VALUE OR RQD %	HYDROCARBON ODOUR	APPARENT MOISTURE CONTENT	PID (ppm)	TPH (ppm)	WELL CONSTRUCTION DETAILS (0.61 m STICK UP)
0		Dark brown, SAND (SP); some organics, trace debris			SS	1	205	5	0		-	-	CAST IRON WELL HEAD
1		Brown, SAND (SP); some organics			SS	2	-	-	0		-	-	BENTONITE
2		Brown, SAND (SP); some cobbles			SS	3	-	-	0		-	-	
3					SS	4	-	-	0		-	-	50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK
4					SS	5	-	-	0		-	-	
5				▼	SS	6	-	-	0		-	-	
					SS	7	-	-	0		-	-	END CAP
6		End of Borehole											
7													
8													
9													
10													

MONITOR WELL RECORD

Stantec

BOREHOLE No. **09-MW23D**
PAGE **1** of **1**
PROJECT No. **121410105**
DRILLING METHOD **Auger**
SIZE **100mm HS**
DATUM

CLIENT **NL Department of Enviroment and Conservation**
PROJECT **Phase III ESA, HHRA & ERA, Former US Military Facility**
LOCATION **Northwest Point, NL**
DATES (mm-dd-yy): BORING **8-10-09** WATER LEVEL **5.79m** **8-10-09**

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY mm	SAMPLES N-VALUE OR RQD %	HYDROCARBON ODOUR	APPARENT MOISTURE CONTENT	PID (ppm)	TPH (ppm)	WELL CONSTRUCTION DETAILS (0.61 m STICK UP)
0													CAST IRON WELL HEAD
0		Dark brown, SAND (SP); some organics, trace debris			SS	1	205	5	0		4.2	-	
1		Brown, SAND (SP); some organics			SS	2	-	-	0		4.5	-	
1		Brown, SAND (SP); some cobbles			SS	3	-	-	0		3.2	-	
2					SS	4	-	-	0		3.0	-	BENTONITE
2					SS	5	-	-	0		2.9	-	
3													
4					SS	6	-	-	0		2.8	-	
5					SS	7	-	-	0		2.4	nd	50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK
6				▼									
7													END CAP
7		End of Borehole											
8													
9													
10													

Appendix 8d

Laboratory Analytical Results Summary Tables

– Camp Road Dump Site

Table 8.1 Results of Laboratory Analysis of TPH/BTEX in Soil - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Sample Location	Sample Depth (m)	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH Purgeable ($<C_{10}$)	TPH Extractable (C_{10}-C_{32})	C_6-C_{10} (Gas Range)	C_{10}-C_{21} (Fuel Range)	C_{21}-C_{32} (Lube Range)	Modified TPH - Tier I[2]	Resemblance
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-
Tier I RBSLs[1]		0.16	14	58	17	-	-	-	-	-	140	-
1999 Sampling (AGRA)												
CD-TP1	1.5	<0.002	<0.002	<0.002	<0.004	<0.02	<0.2	-	-	-	0.2	-
CD-TP2	2.9	<0.002	<0.002	<0.002	<0.004	<0.02	<0.2	-	-	-	0.2	-
MDL	-	0.002	0.002	0.002	0.004	0.02	0.2	-	-	-	0.2	-
2009 Sampling (Stantec)												
09-TP39-BS2	1.2 - 1.6	<0.03	0.06	<0.03	<0.05	-	-	<3	280	480	760	OPF/L
09-TP40-BS2	1.7 - 2.2	<0.03	<0.03	<0.03	<0.05	-	-	<3	<15	<15	<20	-
09-TP41-BS2	1.2 - 1.6	<0.03	<0.03	<0.03	<0.05	-	-	<3	<15	<15	<20	-
09-MW21D-SS5	2.4 - 3.0	<0.03	<0.03	<0.03	<0.05	-	-	<3	<15	<15	<20	-
09-MW22D-SS5	2.4 - 3.0	<0.03	<0.03	<0.03	<0.05	-	-	<3	<15	<15	<20	-
09-MW23D-SS7	4.9 - 5.5	<0.03	<0.03	<0.03	<0.05	-	-	<3	<15	<15	<20	-
RDL	-	0.03	0.03	0.03	0.05	-	-	3	15	15	20	-

Notes:

1 = Partnership in RBCA (Risk-Based Corrective Action) Implementation (PIRI) Tier I Risk Based Screening Levels (RBSLs) for a residential site with non-potable groundwater and coarse grained soil, fuel oil impacts (September, 2003)

2 = Modified TPH - Tier I does not include BTEX

MDL = Method Detection Limit; RDL = Reportable Detection Limit for routine analysis

< # = Not detected above MDL/RDL noted

"-" = Indicates value is not available or does not apply

OPF/L = One product in the fuel/lube oil range

Shaded = Value exceeds generic guideline for a residential site, non-potable groundwater, coarse grained soil and fuel oil impacts

Table 8.2 Results of Laboratory Analysis of Metals in Soil - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Parameters	Units	Criteria[1]	1999 Sampling (AGRA)		2009 Sampling (Stantec)									
			CD-TP2	MDL	09-MW21D-SS5	RDL	09-SS9	09-SS10	09-SS11	09-SS12	09-SS13	RDL	09-SS14	RDL
Sample Depth (m)			2.9	-	2.4 - 3.0	-	0.0 - 0.15	0.0 - 0.15	0.0 - 0.15	0.0 - 0.15	0.0 - 0.15	-	0.0 - 0.15	-
Aluminum	mg/kg	-	3,970	5	1,500	10	3,200	2,800	2,400	1,800	2,200	10	3,400	100
Antimony	mg/kg	20	-	-	<2	2	<2	<2	<2	<2	<2	2	<20	20
Arsenic	mg/kg	12	-	-	<2	2	<2	<2	<2	<2	<2	2	<20	20
Barium	mg/kg	500	30	0.5	17	5	29	38	20	17	17	5	60	50
Beryllium	mg/kg	4	-	-	<2	2	<2	<2	<2	<2	<2	2	<20	20
Bismuth	mg/kg	-	<0.1	0.1	<2	2	<2	<2	<2	<2	<2	2	<20	20
Boron	mg/kg	-	-	-	<5	5	<5	<5	<5	<5	<5	5	<50	50
Cadmium	mg/kg	10	3.3	0.5	nd	0.3	<0.3	0.3	<0.3	<0.3	<0.3	0.3	<3	3
Chromium	mg/kg	64	10	1	5	2	7	7	5	4	3	2	5,600	20
Cobalt	mg/kg	50	5.9	5	2	1	2	2	2	2	2	1	<10	10
Copper	mg/kg	63	39	1	6	2	6	22	5	5	5	2	690	20
Iron	mg/kg	-	9,490	1	4,000	50	5,700	8,000	4,000	3,700	3,500	50	20,000	500
Lead	mg/kg	140	26	5	0.8	0.5	1.7	150	1.5	0.9	1.3	0.5	33,000	50
Lithium	mg/kg	-	-	-	<2	2	3	<2	<2	<2	<2	2	<20	20
Manganese	mg/kg	-	67	5	40	2	67	99	54	45	45	2	180	20
Mercury	mg/kg	6.6	-	-	<0.1	0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.1	1	1
Molybdenum	mg/kg	10	<5	5	<2	2	<2	<2	<2	<2	<2	2	58	20
Nickel	mg/kg	50	9.7	5	3	2	5	6	3	3	3	2	<20	20
Rubidium	mg/kg	-	-	-	3	2	6	5	3	3	3	2	<20	20
Selenium	mg/kg	1	-	-	<2	2	<1	<1	<1	<1	<1	1	<10	10
Silver	mg/kg	20	<5	5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<5	5
Strontium	mg/kg	-	-	-	<5	5	6	7	<5	<5	6	5	<50	50
Thallium	mg/kg	1	-	-	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<1	1
Tin	mg/kg	-	-	-	<2	2	<2	20	<2	<2	<2	2	49	20
Uranium	mg/kg	23	-	-	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	<1	1
Vanadium	mg/kg	130	15	5	8	2	14	11	8	7	7	2	<20	20
Zinc	mg/kg	200	120	1	7	5	14	72	11	10	10	5	390	50

Notes:
1 = CCME Canadian Soil Quality Guidelines for Protection of Environmental and Human Health at a Residential/Parkland site (2007)
MDL = Method Detection Limit; RDL = Reportable Detection Limit for routine analysis
< # = Not detected above MDL/RDL noted
"-" = No applicable guideline
Shaded = Value exceeds applicable criteria

Table 8.3 Results of Laboratory Analysis of PAHs in Soil - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Parameters	Units	Criteria[1,3]	Criteria[2,3]	1999 Sampling (AGRA)			2009 Sampling (Stantec)	
				CD-TP1	CD-TP2	MDL	09-SS10	RDL
			Sample Depth (m)	1.5	2.9	-	0.0 - 0.15	-
Non-carcinogenic PAHs								
1-Methylnaphthalene	mg/kg	-	-	-	-	-	0.006	0.005
2-Methylnaphthalene	mg/kg	-	-	-	-	-	0.011	0.005
Acenaphthene	mg/kg	-	-	<0.002	<0.002	0.002	0.052	0.005
Acenaphthylene	mg/kg	-	-	<0.001	<0.001	0.001	<0.005	0.005
Anthracene	mg/kg	2.5	-	<0.001	<0.001	0.001	0.091	0.005
Fluoranthene	mg/kg	50	-	<0.001	<0.001	0.001	0.50	0.005
Fluorene	mg/kg	-	-	<0.001	<0.001	0.001	0.034	0.005
Naphthalene	mg/kg	-	-	<0.002	<0.002	0.002	0.039	0.005
Perylene	mg/kg	-	-	-	-	-	0.042	0.005
Phenanthrene	mg/kg	-	-	<0.001	<0.001	0.001	0.37	0.005
Pyrene	mg/kg	-	-	<0.003	<0.003	0.003	0.39	0.005
Carcinogenic PAHs								
Benzo(a)anthracene	mg/kg	-	-	<0.001	<0.001	0.001	0.20	0.005
Benzo(a)pyrene	mg/kg	20	-	<0.003	<0.003	0.003	0.17	0.005
Benzo(b)fluoranthene	mg/kg	-	-	<0.004	<0.004	0.004	0.16	0.005
Benzo(g,h,i)perylene	mg/kg	-	-	<0.002	<0.002	0.002	0.12	0.005
Benzo(k)fluoranthene	mg/kg	-	-	<0.004	<0.004	0.004	0.16	0.005
Chrysene	mg/kg	-	-	<0.001	<0.001	0.001	0.25	0.005
Indeno(1,2,3-c,d) pyrene	mg/kg	-	-	<0.003	<0.003	0.003	0.12	0.005
Dibenz(a,h,)anthracene	mg/kg	-	-	<0.004	<0.004	0.004	0.030	0.005
Benzo(a)pyrene TPE[4]		-	5.3	0.004	0.004	-	0.268	-

Notes:
1 = CCME Canadian Soil Quality Guidelines for the Protection of Environmental Health at a Residential/Parkland Site (2008)
2 = CCME Canadian Soil Quality Guidelines for Protection of Human Health for a Residential Site (Direct Soil Contact) (2008)
3 = As per CCME recommendations, soil samples are compared against the SQG for the protection of human health and environmental health separately
4 = Carcinogenic PAHs Assessed as Benzo(a)pyrene Total Potency Equivalent (TPE)
MDL = Method Detection Limit; RDL = Reportable Detection Limit for routine analysis
< # = Not detected above MDL/RDL noted
"-" = No applicable guideline or does not apply

Table 8.4 Results of Laboratory Analysis of PCBs in Soil - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Sample Location	Sample Depth (m)	Polychlorinated Biphenyls (PCBs)
	Units	ug/g
	Criteria[1]	1.3
1999 Sampling (AGRA)		
CD-TP1	1.5	<0.005
CD-TP2	2.85	<0.005
MDL	-	0.005
2009 Sampling (Stantec)		
09-SS39	0.0 - 0.15	<0.05
09-SS11	0.0 - 0.15	<0.05
RDL	-	0.05

Notes:
1 = CCME Canadian Soil Quality Guidelines for a Residential/Parkland site (2007)
MDL = Method Detection Limit; RDL = Reportable Detection Limit for routine analysis
< # = Not detected above MDL/RDL noted

Table 8.5 Results of Laboratory Analysis of VOCs in Soil - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Parameters	RDL	Units	Criteria[1]	Criteria[2]	2009 Sampling (Stantec)		
					09-MW21D-SS5	09-MW22D-SS5	09-MW23D-SS7
				Sample Depth (m)	2.4 - 3.0	2.4 - 3.0	4.9 - 5.5
1,1,1-Trichloroethane	30	ug/kg	-	-	<30	<30	<30
1,1,2,2-Tetrachloroethane	30	ug/kg	-	-	<30	<30	<30
1,1,2-Trichloroethane	30	ug/kg	-	-	<30	<30	<30
1,1-Dichloroethane	30	ug/kg	-	-	<30	<30	<30
1,1-Dichloroethylene	30	ug/kg	-	-	<30	<30	<30
1,2-Dichlorobenzene	30	ug/kg	-	1,000	<30	<30	<30
1,2-Dichloroethane	30	ug/kg	-	-	<30	<30	<30
1,2-Dichloropropane	30	ug/kg	-	-	<30	<30	<30
1,3-Dichlorobenzene	30	ug/kg	-	1,000	<30	<30	<30
1,4-Dichlorobenzene	30	ug/kg	-	1,000	<30	<30	<30
Benzene	30	ug/kg	30/11	-	<30	<30	<30
Bromodichloromethane	30	ug/kg	-	-	<30	<30	<30
Bromoform	30	ug/kg	-	-	<30	<30	<30
Bromomethane	200	ug/kg	-	-	<30	<30	<30
Carbon Tetrachloride	30	ug/kg	-	-	<30	<30	<30
Chlorobenzene	30	ug/kg	-	2,000	<30	<30	<30
Chloroform	30	ug/kg	-	-	<30	<30	<30
Chloromethane	30	ug/kg	-	-	<30	<30	<30
cis-1,2-Dichloroethylene	30	ug/kg	-	-	<30	<30	<30
cis-1,3-Dichloropropene	30	ug/kg	-	-	<30	<30	<30
Dibromochloromethane	30	ug/kg	-	-	<30	<30	<30
Ethylbenzene	30	ug/kg	82	-	<30	<30	<30
Ethylene Dibromide	30	ug/kg	-	-	<30	<30	<30
Methylene Chloride(Dichloromethane)	30	ug/kg	-	-	<30	<30	<30
o-Xylene	30	ug/kg	-	-	<30	<30	<30
p+m-Xylene	30	ug/kg	-	-	<30	<30	<30
Styrene	30	ug/kg	-	-	<30	<30	<30
Tetrachloroethylene	30	ug/kg	200	-	<30	<30	<30
Toluene	30	ug/kg	370	-	<30	<30	<30
trans-1,2-Dichloroethylene	30	ug/kg	-	-	<30	<30	<30
trans-1,3-Dichloropropene	30	ug/kg	-	-	<30	<30	<30
Trichloroethylene	30	ug/kg	-	-	<30	<30	<30
Trichlorofluoromethane (FREON 11)	30	ug/kg	10	-	<30	<30	<30
Vinyl Chloride	30	ug/kg	-	-	<30	<30	<30

Notes:
1 = CCME Canadian Soil Quality Guidelines for a Residential/Parkland site, subsoil (2007)
2 = CCME Interim remediation criteria for soil that have not beem replaced by Canadian Soil Quality Guidelines (1991)
RDL = Reportable Detection Limit for routine analysis
< # = Not detected above RDL noted

Table 8.6 Results of Laboratory Analysis of TPH/BTEX in Groundwater - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Sample Location	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[2]	Resemblance
RDL	0.001	0.001	0.001	0.002	0.01	0.05	0.1	0.1	-
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	-
Tier I RBSLs[1]	1	20	20	20	-	-	-	12/20/20	-
2009 Sampling (Stantec)									
09-MW21D	<0.001	<0.001	<0.001	<0.002	<0.01	<0.05	0.1	0.1	NRL
09-MW22D	<0.001	<0.001	<0.001	<0.002	<0.01	0.07	<0.1	<0.1	WFO
09-MW23D	<0.001	<0.001	<0.001	<0.002	<0.01	0.15	0.2	0.3	WFO/LO

Notes:
1 = Partnership in RBCA (Risk-Based Corrective Action) Implementation (PIRI) Tier I Risk Based Screening Levels (RBSLs) for a residential site with non-potable groundwater and coarse grained soil, fuel oil impacts (September, 2003)
2 = Modified TPH - Tier I does not include BTEX
RDL = Reportable Detection Limit for routine analysis
< # = Not detected above RDL noted
"-" = Indicates value is not available or does not apply
WFO= Weathered Fuel Oil; LO= Lube Oil; NRL=No resemblance to petroleum products in lube oil range

Table 8.7 Results of Laboratory Analysis of Dissolved Metals in Groundwater - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Parameters	RDL	Units	Criteria[1]	2009 Sampling (Stantec)			
				09-MW21	09-MW21 Lab-Dup	09-MW22	09-MW23
Aluminum	5.0	ug/L	-	541	533	236	32.8
Antimony	2.0	ug/L	20,000	<2.0	<2.0	<2.0	<2.0
Arsenic	2.0	ug/L	1,900	<2.0	<2.0	<2.0	<2.0
Barium	5.0	ug/L	29,000	34.7	35.8	33.3	29.9
Beryllium	2.0	ug/L	67	<2.0	<2.0	<2.0	<2.0
Bismuth	2.0	ug/L	-	<2.0	<2.0	<2.0	<2.0
Boron	5.0	ug/L	45,000	<5.0	<5.0	40.2	61.9
Cadmium	0.017	ug/L	2.7	0.019	<0.017	<0.017	0.064
Chromium	1.0	ug/L	810	1.1	1.0	1.1	<1.0
Cobalt	0.40	ug/L	66	2.89	2.90	2.04	3.00
Copper	2.0	ug/L	87	7.9	7.6	7.4	7.2
Iron	50	ug/L	-	554	545	106	<50
Lead	0.50	ug/L	25	5.15	5.05	<0.50	<0.50
Manganese	2.0	ug/L	-	30.0	29.6	11.0	116
Mercury	0.02	ug/L	0.29	0.13	-	0.033	0.8
Molybdenum	2.0	ug/L	9,200	<2.0	<2.0	<2.0	6.0
Nickel	2.0	ug/L	490	2.4	2.4	<2.0	3.3
Selenium	1.0	ug/L	63	<1.0	<1.0	<1.0	<1.0
Silver	0.10	ug/L	1.5	<0.10	<0.10	<0.10	<0.10
Strontium	5.0	ug/L	-	47.7	47.8	65.1	149
Thallium	0.10	ug/L	510	<0.10	<0.10	<0.10	<0.10
Tin	2.0	ug/L	-	<2.0	<2.0	<2.0	<2.0
Titanium	2.0	ug/L	-	16.3	15.6	2.4	<2.0
Uranium	0.10	ug/L	420	0.13	0.13	0.11	0.12
Vanadium	2.0	ug/L	250	<2.0	<2.0	<2.0	<2.0
Zinc	5.0	ug/L	1,100	9.5	9.8	5.8	9.6

Notes:

1 = Ontario Ministry of the Environment (MOE) Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. July 27, 2009. Table 3: full depth generic site condition standards in a non-potable groundwater condition, coarse-grained soil

< # = Not detected above RDL noted

"-" = No applicable guideline

Lab-dup = Laboratory duplicate sample

Table 8.8 Results of Laboratory Analysis of PAHs in Groundwater - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Parameters	Units	Criteria[1]	2009 Sampling (Stantec)		
			09-MW23D	09-MW23D Lab-Dup	RDL
1-Methylnaphthalene	ug/L	18,000	0.10	0.14	0.05
2-Methylnaphthalene	ug/L	18,000	0.15	0.24	0.05
Acenaphthene	ug/L	600	0.76	1.1	0.01
Acenaphthylene	ug/L	1.8	0.11	0.10	0.01
Acridine	ug/L	-	<0.05	0.05	0.05
Anthracene	ug/L	2.4	1.7	2.3	0.01
Benzo[a]anthracene	ug/L	4.7	3.9	4.8	0.01
Benzo[a]pyrene	ug/L	0.81	3.0	3.8	0.01
Benzo[b]fluoranthene	ug/L	0.75	2.4	3.2	0.01
Benzo[ghi]perylene	ug/L	0.2	1.7	2.3	0.01
Benzo[k]fluoranthene	ug/L	0.4	2.4	3.1	0.01
Chrysene	ug/L	1	3.5	4.5	0.01
Dibenz[a,h]anthracene	ug/L	0.52	0.40	0.57	0.01
Fluoranthene	ug/L	130	8.3	10	0.01
Fluorene	ug/L	400	0.70	0.90	0.01
Indeno[1,2,3-cd]pyrene	ug/L	0.2	1.9	2.8	0.01
Naphthalene	ug/L	1,400	0.3	0.7	0.2
Perylene	ug/L	-	0.96	1.2	0.01
Phenanthrene	ug/L	580	5.6	7.1	0.01
Pyrene	ug/L	68	6.6	7.9	0.01
Quinoline	ug/L	-	<0.05	<0.05	0.05

Notes:
1 = Ontario Ministry of the Environment (MOE) Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. July 27, 2009. Table 3: full depth generic site condition standards in a non-potable groundwater condition, coarse-grained soil
RDL = Reportable Detection Limit
"-" = indicates value is not available or does not apply
< # = Not detected above RDL noted
Lab-dup = Laboratory duplicate sample
Shaded = Value exceeds applicable criteria

Table 8.9 Results of Laboratory Analysis of General Chemistry in Groundwater - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Parameter	Units	Criteria[1]	2009 Sampling (Stantec)					
			09-MW22D	RDL	09-MW21D	09-MW23D	09-MW23D Lab-Dup	RDL
Metals								
Dissolved Calcium	mg/L	-	7.5	0.1	5.1	17	-	0.1
Dissolved Magnesium	mg/L	-	1.2	0.1	1.2	5.4	-	0.1
Dissolved Phosphorus	mg/L	<0.004 to >0.1[3]	<0.1	0.1	<0.1	<0.1	-	0.1
Dissolved Potassium	mg/L	-	1.6	0.1	1.3	3.6	-	0.1
Dissolved Sodium	mg/L	-	11	0.1	2.4	5.3	-	0.1
Calculated Parameters								
Anion Sum	me/L	-	0.830	N/A	0.550	1.60	-	N/A
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L	-	36	1	24	65	-	1
Calculated TDS	mg/L	-	61	1	47	99	-	1
Carb.Alkalinity (calc. as $CaCO_3$)	mg/L	-	<1	1	<1	<1	-	1
Cation Sum	me/L	-	0.980	N/A	0.510	1.62	-	N/A
Hardness ($CaCO_3$)	mg/L	-	24	1	18	65	-	1
Ion Balance (% Difference)	%	-	8.29	N/A	3.77	0.620	-	N/A
Langelier Index (@ 20C)	N/A	-	-2.35	-	-2.68	-1.25	-	-
Langelier Index (@ 4C)	N/A	-	-2.60	-	-2.93	-1.50	-	-
Nitrate (N)	mg/L	2.9	1.4	0.05	0.23	1.4	-	0.05
Saturation pH (@20C)	N/A	-	8.88	-	9.21	8.29	-	-
Saturation pH (@4C)	N/A	-	9.13	-	9.46	8.54	-	-
Inorganics								
Total Alkalinity (Total as $CaCO_3$)	mg/L	-	36	5	25	65	-	5
Dissolved Chloride (Cl)	mg/L	-	<1	1	<1	1	-	1
Colour	TCU	-	25	5	10	13	-	5
Nitrate + Nitrite	mg/L	-	1.4	0.05	0.23	1.4	-	0.05
Nitrite (N)	mg/L	0.06	<0.01	0.01	<0.01	<0.01	-	0.01
Nitrogen (Ammonia Nitrogen)	mg/L	-	<0.05	0.05	<0.05	<0.05	-	0.05
Total Organic Compound	mg/L	-	10	5	<50(1)	<50(1)	-	50
Orthophosphate (P)	mg/L	-	<0.01	0.01	<0.01	<0.01	-	0.01
pH	pH	6.5 - 9	6.53	N/A	6.53	7.04	7.1	N/A
Reactive Silica (SO_2)	mg/L	-	12	0.5	18	13	-	0.5
Dissolved Sulphate (SO_4)	mg/L	-	<2	2	2	8	-	2
Turbidity	NTU	Narritive[2]	490	10	470	>1000	-	10
Conductivity	uS/cm	-	81	1	54	150	150	1

Notes:

1 = CCME Water Quality Guidelines for the protection of freshwater aquatic life (2007)

2 = Maximum increase of 8 NTUs from background levels when background levels are between 8 and 80 NTUs

3 = Phosphorous guideline is dependant on trophic status of the freswater environment

RDL = Reportable Detection Limit

< # = Not detected above RDL noted

"-" = indicates value is not available or does not apply

(1) Detection limit increased due to sample matrix

Lab-dup = Laboratory duplicate sample

Table 8.10 Results of Laboratory Analysis of TPH/BTEX in Surface Water - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Sample Location	Benzene	Toluene	Ethylbenzene	Xylenes	C_6-C_{10} (Gas Range)	C_{11}-C_{20} (Fuel Range)	C_{21}-C_{32} (Lube Range)	Modified TPH - Tier I[2]	Resemblance
RDL	0.001	0.001	0.001	0.002	0.01	0.05	0.1	0.1	-
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	-
Criteria[1]	0.37	0.002	0.09	-	-	-	-	-	-
2009 Sampling (Stantec)									
09-SWM2	<0.001	<0.001	<0.001	<0.002	<0.01	<0.05	<0.1	<0.1	-

Notes:
1 = CCME Water Quality Guidelines for the protection of freshwater aquatic life (2007)
2 = Modified TPH - Tier I does not include BTEX
"-" = Value is not available or does not apply
RDL = Reportable Detection Limit for routine analysis
< # = Not detected above RDL noted

Table 8.11 Results of Lab Analysis of Dissolved Metals in Surface Water - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Parameters	RDL	Units	Criteria[1]	2009 Sampling (Stantec)
				09-SWM2
Aluminum	500	ug/L	5-100[2]	<500
Antimony	200	ug/L	-	<200
Arsenic	200	ug/L	5	<200
Barium	500	ug/L	-	<500
Beryllium	200	ug/L	-	<200
Bismuth	200	ug/L	-	<200
Boron	500	ug/L	-	1120
Cadmium	1.7	ug/L	0.017[3]	<1.7
Chromium	100	ug/L	8.9	<100
Cobalt	40	ug/L	-	<40
Copper	200	ug/L	2 to 4[4]	<200
Iron	5000	ug/L	300	<5000
Lead	50	ug/L	1-7[5]	<50
Magnesium	-	ug/L	-	-
Manganese	200	ug/L	-	<200
Mercury	0.013	ug/L	0.026	<0.013
Molybdenum	200	ug/L	73	<200
Nickel	200	ug/L	25-150[6]	<200
Phosphorous	-	ug/L	<0.004 to >0.1[7]	-
Potassium	-	ug/L	-	-
Selenium	100	ug/L	1	<100
Silver	10	ug/L	0.1	<10
Strontium	500	ug/L	-	1960
Thallium	10	ug/L	0.8	<10
Tin	200	ug/L	-	<200
Titanium	200	ug/L	-	<200
Uranium	10	ug/L	-	<10
Vanadium	200	ug/L	-	<200
Zinc	500	ug/L	30	<500
General Chemistry				
pH	1	-	6.5 - 9	7.17
Hardness ($CaCO_3$)	-	mg/L	-	1,600

Notes:

1 = CCME Water Quality Guidelines for the protection of freshwater aquatic life (2007)

2 = Aluminum guideline = 5 µg/L at pH<6.5
= 100 µg/L at pH>=6.5

3 = Cadmium guideline = 10^{0.86[log(hardness)]-3.2} = 0.026 mg/L at a water hardness of 75 mg/L as CaCO3

4 = Copper guideline = 2 µg/L at water hardness of 0-120 mg/L as $CaCO_3$
= 3 µg/L at water hardness of 120-180 mg/L as $CaCO_3$
= 4 µg/L at water hardness >180 mg/L as $CaCO_3$

5 =Lead guideline = 1 µg/L at water hardness of 0-60 mg/L as $CaCO_3$
= 2 µg/L at water hardness of 60-120 mg/L as $CaCO_3$
= 4 µg/L at water hardness of 120-180 mg/L as $CaCO_3$
= 7 µg/L at water hardness >180 mg/L as $CaCO_3$

6 = Nickel guideline = 25 µg/L at water hardness of 0-60 mg/L as $CaCO_3$
= 65 µg/L at water hardness of 60-120 mg/L as $CaCO_3$
= 110 µg/L at water hardness of 120-180 mg/L as $CaCO_3$
= 150 µg/L at water hardness >180 mg/L as $CaCO_3$

"-" = Not analysed or no applicable guideline; < # = Not detected above RDL noted

Shaded = Value exceeds CCME freshwater aquatic life guideline

Table 8.12 Results of Laboratory Analysis of General Chemistry in Surface Water - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Parameter	RDL	Units	Criteria[1]	2009 Sampling (Stantec)	
				09-SWM2	09-SWM2 Lab-Dup
Metals					
Dissolved Calcium	0.1	mg/L	-	110	-
Dissolved Magnesium	0.1	mg/L	-	330	-
Dissolved Phosphorus	0.1	mg/L	<0.004 to >0.1[2]	<1	-
Dissolved Potassium	0.1	mg/L	-	110	-
Dissolved Sodium	0.1	mg/L	-	2,900	-
Dissolved Sulphur	-	mg/L	-	240	-
Calculated Parameters					
Anion Sum	N/A	me/L	-	189	-
Bicarb. Alkalinity (calc. as $CaCO_3$)	1	mg/L	-	50	-
Calculated TDS	1	mg/L	-	10,400	-
Carb.Alkalinity (calc. as $CaCO_3$)	1	mg/L	-	<1	-
Cation Sum	N/A	me/L	-	162	-
Hardness ($CaCO_3$)	1	mg/L	-	1,600	-
Ion Balance (% Difference)	N/A	%	-	7.70	-
Langelier Index (@ 20C)	-	N/A	-	-0.959	-
Langelier Index (@ 4C)	-	N/A	-	-1.20	-
Nitrate (N)	0.05	ug/L	3	<0.05	-
Saturation pH (@20C)	-	N/A	-	8.13	-
Saturation pH (@4C)	-	N/A	-	8.37	-
Inorganics					
Total Alkalinity (Total as $CaCO_3$)	5	mg/L	-	50	-
Dissolved Chloride (Cl)	1	mg/L	-	6,100	-
Colour	80	TCU	Narrative	24	-
Nitrate + Nitrite	0.05	mg/L	-	<0.05	-
Nitrite (N)	0.01	ug/L	0.06	<0.01	-
Nitrogen (Ammonia Nitrogen)	0.05	mg/L	-	<0.05	-
Total Organic Compound	5	mg/L	-	9	-
Orthophosphate (P)	0.01	mg/L	-	<0.01	-
pH	N/A	pH	6.5 - 9	7.17	7.27
Reactive Silica (SO_2)	0.5	mg/L	-	3.9	-
Dissolved Sulphate (SO_4)	2	mg/L	-	830	-
Turbidity	1	NTU	Narrative[3]	2.7	-
Conductivity	1	uS/cm	-	17,000	17,000

Notes:
1 = CCME Water Quality Guidelines for the protection of freshwater aquatic life (2007)
2 = Phosphorous guideline is dependant on trophic status of the freswater environment
3 = Maximum increase of 8 NTUs from background levels when background levels are between 8 and 80 NTUs
RDL = Reportable Detection Limit
Lab-dup = Laboratory duplicate sample
"-" = Not analysed or no applicable guideline
< # = Not detected above RDL noted

Table 8.13 Results of Laboratory Analysis of TPH/BTEX in Sediment - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Sample Location	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[2]	Resemblance
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	-
Tier I RBSLs[1]	-	-	-	-	-	-	-	1,500	-
2009 Sampling (Stantec)									
SSM-2-CR	<0.03	<0.03	<0.03	<0.05	<3	<15	<15	<20	-

Notes:

1 = Ontario Ministry of Environment Guideline for sediments to be used as lake fill material (1993). There are no federal or provincial guidelines for TPH or BTEX in marine sediment.

2 = Modified TPH - Tier I does not include BTEX

RDL = Reportable Detection Limit for routine analysis

< # = Not detected above RDL noted

"-" = Indicates value is not available or does not apply

Table 8.14 Results of Laboratory Analysis of Metals in Sediment - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Parameters	RDL	Units	Criteria[1]	Criteria[2]	2009 Sampling (Stantec)
					SSM-2 CR
Aluminum	10	mg/kg	-	-	2,100
Antimony	2	mg/kg	-	-	<2
Arsenic	2	mg/kg	5.9	17	<2
Barium	5	mg/kg	-	-	25
Beryllium	2	mg/kg	-	-	<2
Bismuth	2	mg/kg	-	-	<2
Boron	5	mg/kg	-	-	<5
Cadmium	0.3	mg/kg	0.6	3.5	<0.3
Chromium	2	mg/kg	37.3	90	6
Cobalt	1	mg/kg	-	-	2
Copper	2	mg/kg	35.7	197	15
Iron	50	mg/kg	-	-	4,400
Lead	0.5	mg/kg	35	91.3	0.7
Lithium	2	mg/kg	-	-	<2
Manganese	2	mg/kg	-	-	50
Mercury	0.1	mg/kg	-	-	<0.1
Molybdenum	2	mg/kg	-	-	<2
Nickel	2	mg/kg	-	-	5
Rubidium	2	mg/kg	-	-	5
Selenium	2	mg/kg	-	-	<2
Silver	0.5	mg/kg	-	-	<0.5
Strontium	5	mg/kg	-	-	6
Thallium	0.1	mg/kg	-	-	<0.1
Tin	2	mg/kg	-	-	<2
Uranium	0.1	mg/kg	-	-	0.2
Vanadium	2	mg/kg	-	-	12
Zinc	5	mg/kg	123	315	10

Notes:
1 = CCME Interim Sediment Quality Guidelines (ISQGs) for freshwater sediment (2002)
2 = CCME Probable Effects Levels (PELs) for freshwater sediment (2002)
RDL = Reportable Detection Limit for routine analysis
< # = Not detected above RDL noted
"-" = No applicable guideline

Table 8.15 Results of Laboratory Analysis of PCBs in Vegetation - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Sample Location	Polychlorinated Biphenyls (PCBs)
RDL	0.05
Units	ug/L
Criteria	na
2009 Sampling (Stantec)	
09-VEG-12	<0.3
09-VEG-13	<0.3
09-VEG-13 Lab-Dup	<0.3

Notes:
RDL = Reportable Detection Limit
na = No applicable guideline
Lab-dup = Laboratory duplicate sample
< # = Not detected above RDL noted

Table 8.16 Results of Laboratory Analysis of PCBs in Berries - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Sample Location	Polychlorinated Biphenyls (PCBs)
RDL	0.05
Units	ug/g
Criteria	na
2009 Sampling (Stantec)	
09-BERRY 11	<0.05
09-BERRY 12	<0.05

Notes:
RDL = Reportable Detection Limit
na = No applicable guideline
< # = Not detected above RDL noted

Table 8.17 Results of Laboratory Analysis of PCBs/Crude Fat in Small Mammal Tissue Samples - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Sample Location	Polychlorinated Biphenyls (PCBs)	Crude Fat
RDL	0.07	0.5
Units	ug/g	%
Criteria	na	na
2009 Sampling (Stantec)		
09-SM9	<0.05	15
09-SM13	<0.07	-

Notes:
RDL = Reportable Detection Limit
na = No applicable guideline
< # = Not detected above RDL noted
"-" = Not analyzed

Table 8.18 Results of Laboratory Analysis of Metals in Small Mammals - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Parameters	RDL	Units	Criteria	2009 Sampling (Stantec)
				09-SM9
Aluminum	-	mg/kg	na	-
Antimony	-	mg/kg	na	-
Arsenic	-	mg/kg	na	-
Barium	-	mg/kg	na	-
Beryllium	-	mg/kg	na	-
Boron	-	mg/kg	na	-
Cadmium	-	mg/kg	na	-
Chromium	-	mg/kg	na	-
Cobalt	-	mg/kg	na	-
Copper	-	mg/kg	na	-
Iron	-	mg/kg	na	-
Lead	-	mg/kg	na	-
Lithium	-	mg/kg	na	-
Manganese	-	mg/kg	na	-
Mercury	0.10	mg/kg	na	<0.1
Molybdenum	-	mg/kg	na	-
Nickel	-	mg/kg	na	-
Selenium	-	mg/kg	na	-
Silver	-	mg/kg	na	-
Strontium	-	mg/kg	na	-
Thallium	-	mg/kg	na	-
Tin	-	mg/kg	na	-
Uranium	-	mg/kg	na	-
Vanadium	-	mg/kg	na	-
Zinc	-	mg/kg	na	-

Notes:
RDL = Reportable Detection Limit
na = No applicable guideline
< # = Not detected above RDL noted
"-" = Not analyzed

Table 8.19 Results of Laboratory Analysis of PCBs/Crude Fat in Fish Samples - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Sample Location	Polychlorinated Biphenyls (PCBs)	Crude Fat
RDL	0.05	-
Units	ug/g	%
Criteria	na	na
2009 Sampling (Stantec)		
CAMP ROAD - FS01	<0.05	8.6
CAMP ROAD - FS03	<0.05	11
CAMP ROAD - FS06	<0.05	10
CAMP ROAD - FS09	<0.05	11

Notes:
RDL = Reportable Detection Limit
na = No applicable guideline
< # = Not detected above RDL noted
"-" = Not analyzed

Table 8.20 Results of Laboratory Analysis of Available Metals in Fish - Camp Road Dump Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Parameters	RDL	Units	2009 Sampling (Stantec)			
			CAMP ROAD - FS01	CAMP ROAD - FS03	CAMP ROAD - FS06	CAMP ROAD - FS09
Aluminum	2.5	mg/kg	14.9	17.4	35.2	18
Antimony	0.5	mg/kg	<0.50	<0.50	<0.50	<0.50
Arsenic	0.5	mg/kg	1.97	1.92	1.89	1.58
Barium	1.5	mg/kg	<1.5	<1.5	<1.5	1.6
Beryllium	0.5	mg/kg	<0.50	<0.50	<0.50	<0.50
Boron	1.5	mg/kg	<1.5	<1.5	<1.5	<1.5
Cadmium	0.05	mg/kg	<0.050	<0.050	<0.050	<0.050
Chromium	0.5	mg/kg	<0.50	<0.50	<0.50	<0.50
Cobalt	0.2	mg/kg	<0.20	<0.20	<0.20	<0.20
Copper	0.5	mg/kg	1.18	1.39	1.31	1.31
Iron	15	mg/kg	43	37	75	46
Lead	0.18	mg/kg	<0.18	<0.18	<0.18	<0.18
Lithium	0.5	mg/kg	<0.50	<0.50	<0.50	<0.50
Manganese	0.5	mg/kg	8.63	6.52	8.04	10.90
Molybdenum	0.5	mg/kg	<0.50	<0.50	<0.50	<0.50
Nickel	0.5	mg/kg	<0.50	<0.50	<0.50	<0.50
Selenium	0.5	mg/kg	0.52	<0.50	0.5	<0.50
Silver	0.12	mg/kg	<0.12	<0.12	<0.12	<0.12
Strontium	1.5	mg/kg	63.9	50.9	57.7	58.7
Thallium	0.02	mg/kg	<0.020	<0.020	<0.020	<0.020
Tin	0.5	mg/kg	<0.50	<0.50	<0.50	<0.50
Uranium	0.02	mg/kg	<0.020	<0.020	<0.020	<0.020
Vanadium	0.5	mg/kg	<0.50	<0.50	<0.50	<0.50
Zinc	1.5	mg/kg	47.3	46.8	43.8	49.4

Notes:
RDL = Reportable Detection Limit
< # = Not detected above RDL noted

Appendix 8e

Results of Hydraulic Response (Bail-Down) Test

– Camp Road Dump Site

Stantec Consulting Ltd.
607 Torbay Road
St. John's, NL, A1A 4Y6
Tel: (709) 576-1458

Slug Test Data Report
Project: Northwest Point
Number: 121410105
Client: NLDEC

Test Well:	**09-MW22**	**Slug Test:**	**09-MW22**
		Test Well:	09-MW22
Depth to Static WL:	6.65 [m]	Casing radius:	0.025 [m]
Location:		Boring radius:	0.05 [m]
Recorded by:	Stantec	Screen length:	3.05 [m]
Date:	8/27/2009	Aquifer Thickness:	1.67 [m]

	Time [s]	Depth to WL [m]	Drawdown [m]
1	10	6.74	0.09
2	20	6.67	0.02
3	30	6.66	0.01
4	40	6.66	0.01
5	50	6.66	0.01
6	60	6.66	0.01
7	90	6.65	0.00