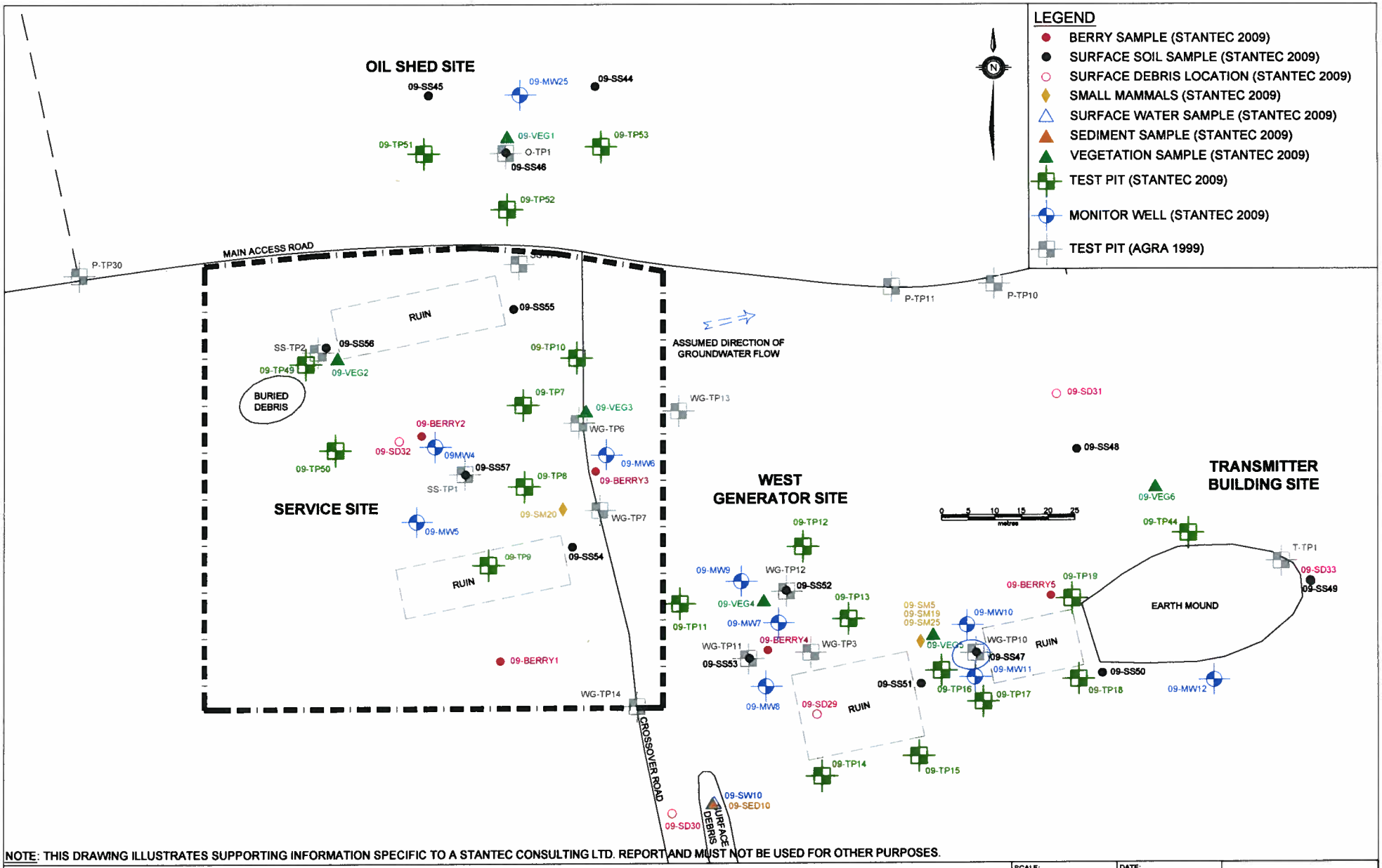
Appendix 10a

Site Drawings

– Service Site



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CLIENT:
NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION

PROJECT TITLE:
PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL

DRAWING TITLE:
SITE PLAN - SERVICE SITE

SCALE: 1:800	DATE: JUNE 17, 2010
DRAWN BY: N.M.	CHECKED BY: A.R.
EDITED BY: -	REV. No. 0
DRAWING No: 121410105-EE-10A	
CAD FILE: 1044857-EE-07.DWG	

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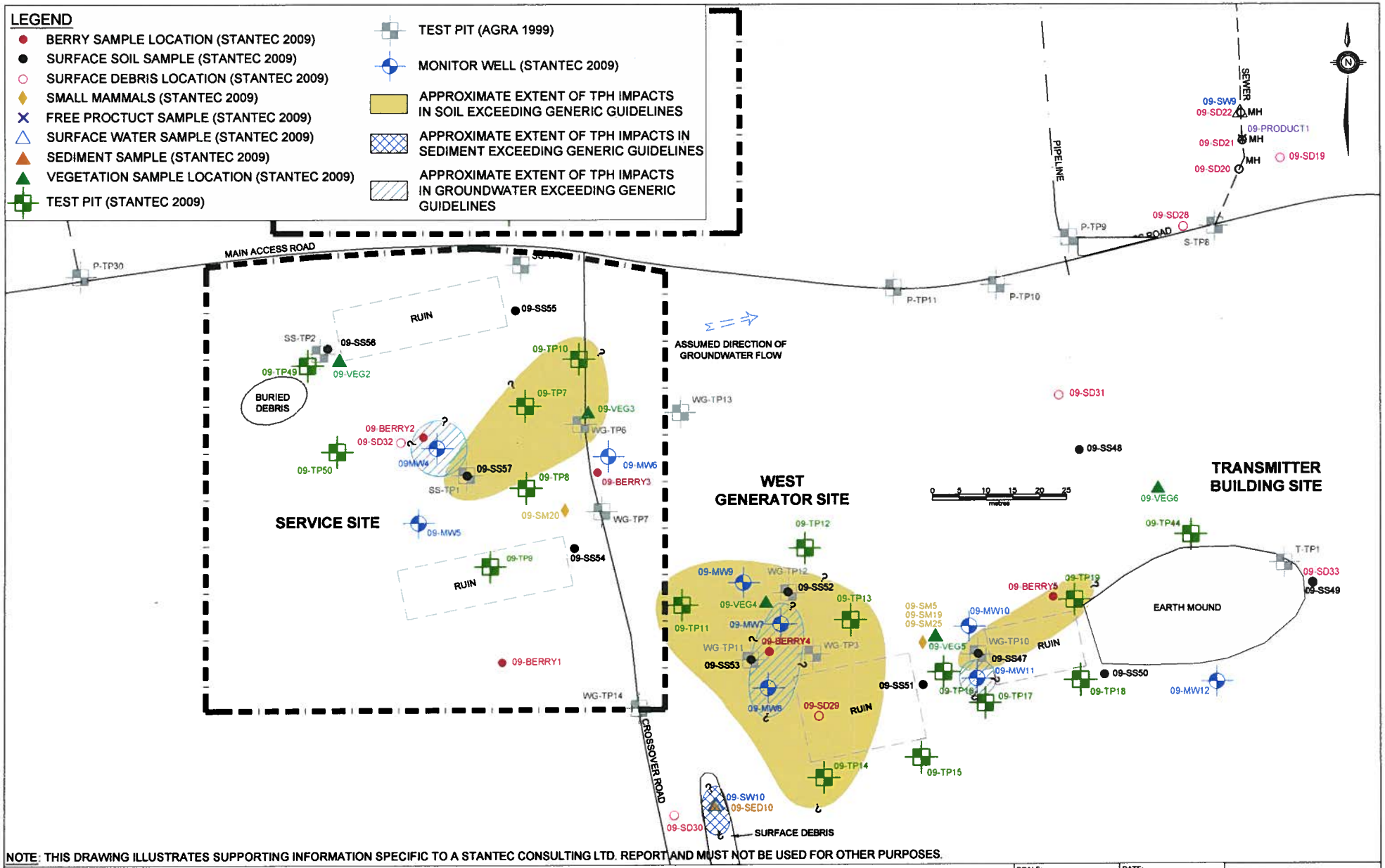

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CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION

PROJECT TITLE: PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL

DRAWING TITLE: APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - SERVICE SITE

SCALE: 1:800	DATE: JUNE 18, 2010
DRAWN BY: N.M.	CHECKED BY: A.R.
EDITED BY: -	REV. No. 0
DRAWING No: 121410105-EE-10B	
CAD FILE: 1044857-EE-10.DWG	

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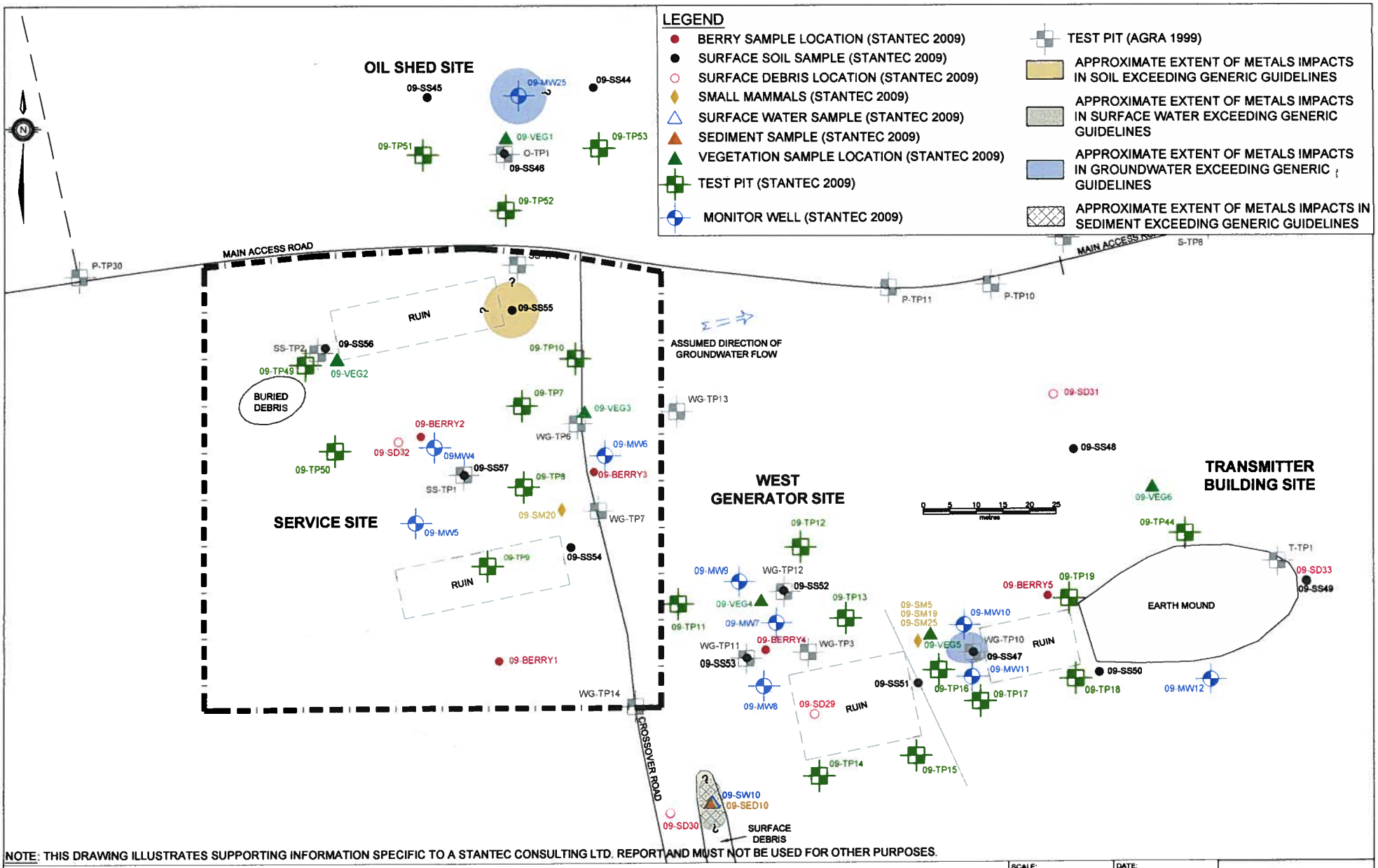
18JUN10 1:00PM



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CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION

PROJECT TITLE: PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL

DRAWING TITLE: APPROXIMATE EXTENT OF METALS IMPACTS EXCEEDING GENERIC GUIDELINES - SERVICE SITE

SCALE: 1:800	DATE: JUNE 21, 2010
DRAWN BY: N.M.	CHECKED BY: A.R.
EDITED BY: R.L.	REV. No. 0
DRAWING No: 121410105-EE-10C	
CAD FILE: 1044857-EE-11.DWG	

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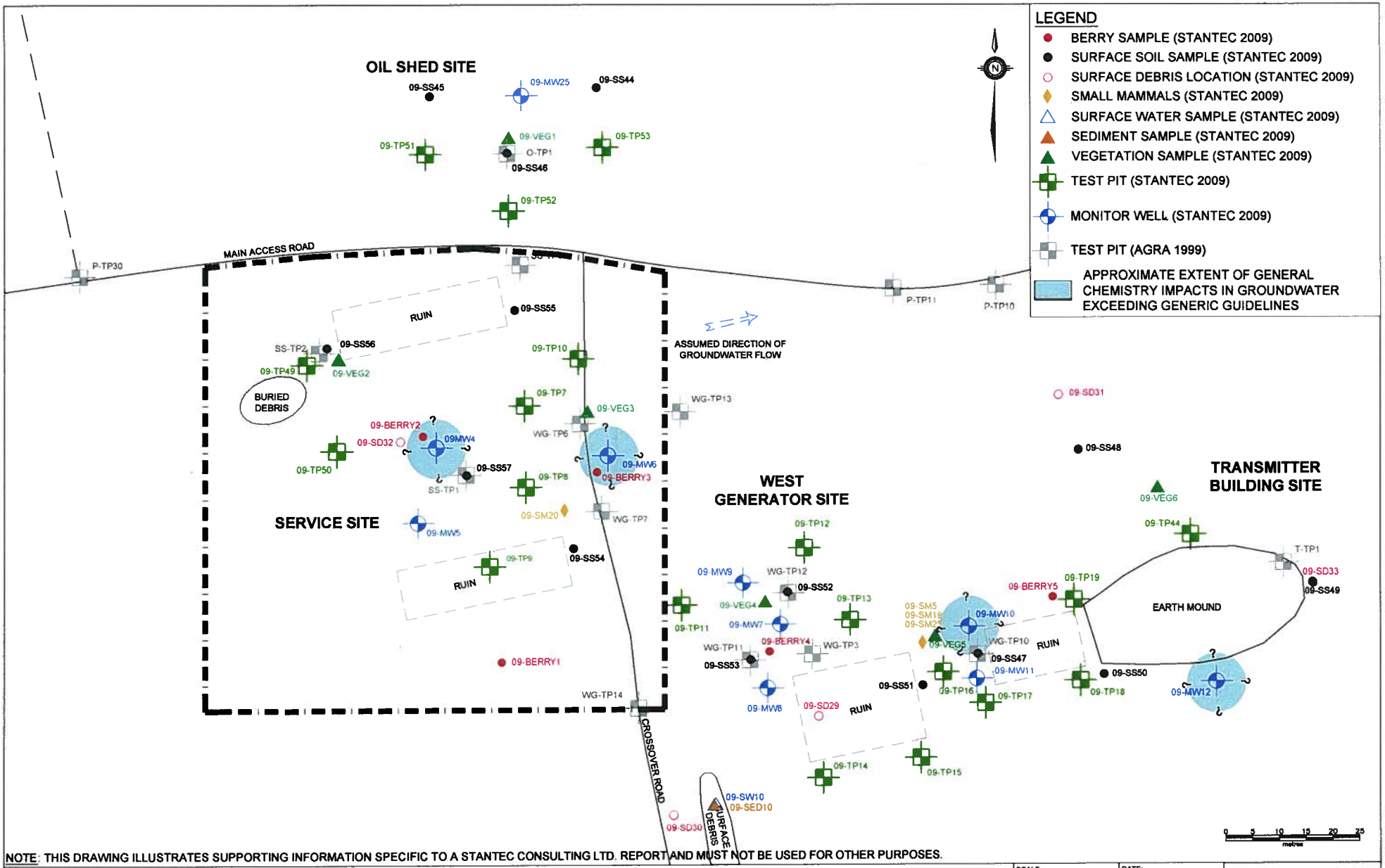
15SEPT11 12:00PM



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

PROJECT TITLE: PHASE III ENVIRONMENTAL SITE ASSESSMENT, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL

DRAWING TITLE: APPROXIMATE EXTENT OF GENERAL CHEMISTRY IMPACTS EXCEEDING GENERIC GUIDELINES - SERVICE SITE

SCALE: 1:800	DATE: JUNE 21, 2010
DRAWN BY: N.M.	CHECKED BY: A.R.
EDITED BY: -	REV. No. 0
DRAWING No: 121410105-EE-10D	
CAD FILE: 1044857-EE-13.DWG	

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21JUN10 12:00PM

Appendix 10b

Site Photos

– Service Site

Site Photographs – Service Site

Photo 1 View of site from main access road

Photo 2 View of northern concrete building pad at the site (looking west)

Site Photographs – Service Site

Photo 3 View of 09-TP49

Photo 4 View of MW4

Site Photographs – Service Site

Photo 5 View of southern concrete building pad at the site

Photo 6 View of vegetation at the site

Site Photographs – Service Site

Photo 7 View of vegetation and trees at the site

Photo 8 View of 09-MW6

Site Photographs – Service Site

Photo 9 Looking east at site from the southern concrete building pad

Appendix 10c

Sample Coordinates

– Service Site

Sample Coordinates - Service 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-TP7	694160	5931173
09-TP8	694162	5931163
09-TP9	694160	5931144
09-TP10	694176	5931183
09-TP49	694125	5931181
09-TP50	694131	5931165
MONITOR WELLS		
09-MW4	694150	5931166
09-MW5	694147	5931152
09-MW6	694182	5931165
SURFACE SOIL		
09-SS54	694176	5931140
09-SS55	694157	5931200
09-SS56	694126	5931189
09-SS57	694148	5931164
VEGETATION		
09-VEG2	694131	5931182
09-VEG3	694178	5931173
BERRIES		
09-BERRY1	694163	5931126
09-BERRY2	694147	5931168
09-BERRY3	694180	5931162
SMALL MAMMALS		
09-SM20	694174	5931155

Appendix 10d

Test Pit Records and Monitor Well Records

– Service Site

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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 **8-5-09** WATER LEVEL **1.8m** **8-5-09**

TEST PIT No. **09-TP7**
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 (pipe, culvert, etc)			BS	1	0		33.5	-	-	-	-	-
1		Dense, brown to grey, SAND with silt (SP-SM)		▽										
2					BS	2	1-2		37.7	8100	nd	nd	1.50	8.90
		End of Test Pit Very slow groundwater seepage observed at 1.8 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 **8-5-09** WATER LEVEL **1.7m** **8-5-09**

TEST PIT No. **09-TP8**
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		Compact to dense, brown to grey, SAND (SP); trace silt			BS	1	0		3.5	-	-	-	-	-
1				▽	BS	2	0		0.2	-	-	-	-	-
2														
		End of Test Pit Very slow groundwater seepage observed at 1.7 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 **8-5-09** WATER LEVEL **1.6m** **8-5-09**

TEST PIT No. **09-TP9**
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		Compact to dense, brown to grey, SAND (SP); trace silt			BS	1	0		3.3	-	-	-	-	-
1				▽	BS	2	0		8.1	nd	nd	nd	nd	nd
2		End of Test Pit Very slow groundwater seepage observed at 1.6 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 **8-5-09** WATER LEVEL **1.4m** **8-5-09**

TEST PIT No. **09-TP10**
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		Compact, brown, SAND (SP)			BS	1	0		27.2	-	-	-	-	-
1		Compact, grey, SAND with silt (SP-SM); trace clay		▽	BS	2	1		22.5	8700	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														

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 **1.1m** **8-7-09**

TEST PIT No. **09-TP49**
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, brown, SAND with gravel (SP); trace debris (metal, concrete, wood, etc)			BS	1	1		99	-	-	-	-	-
		Compact, grey, SAND with silt (SP-SM)		▽	BS	2	2		458	-	-	-	-	-
1														
2		End of Test Pit Very slow groundwater seepage observed at 1.1 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 **1.6m** **8-7-09**

TEST PIT No. **09-TP50**
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 with gravel (SP); trace debris			BS	1	0		24.3	-	-	-	-	-
1														
		Compact, grey, SAND with silt (SP-SM)		▽	BS	2	0		17.4	-	-	-	-	-
2														
		End of Test Pit Very slow groundwater seepage observed at 1.6 m depth. Bedrock not encountered.												
3														
4														
5														

MONITOR WELL RECORD

BOREHOLE No. **09-MW04**
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 **8-7-09** WATER LEVEL **2.13m** **8-7-09**

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 (0.91 m STICK UP)
0													CAST IRON WELL HEAD
0		Brown, SAND (SP)			SS	1	455	8	0		0.8	-	BENTONITE
1		Grey, silty SAND (SM)			SS	2	480	12	2		500	-	
2		Grey, SILT (ML)		▼	SS	3	560	20	2		420	-	50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK
2				▼	SS	4	355	22	2		80	nd	
3		Grey, CLAY (CL)			SS	5	560	32	2		100	-	
3													END CAP
4		End of Borehole											
5													
6													
7													
8													
9													
10													

MONITOR WELL RECORD

BOREHOLE No. **09-MW05**
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 **8-7-09** WATER LEVEL **1.52m** **8-7-09**

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 (0.91 m STICK UP)
0													CAST IRON WELL HEAD
0		Dark grey, SILT (ML); occasional organics			SS	1	-	9	0		31	-	BENTONITE
1		Dark grey, SILT (ML); occasional organics, trace sand			SS	2	-	12	0		0.0	-	
1		Brownish grey, CLAY (CL)		▼	SS	3	305	16	0		16	nd	50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK
2					SS	4	230	22	0		13.1	-	
2		Dark grey, SILT (ML)			SS	5	230	22	0		11.5	-	
3													END CAP
4		End of Borehole											
5													
6													
7													
8													
9													
10													

MONITOR WELL RECORD

BOREHOLE No. **09-MW06**
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 **8-7-09** WATER LEVEL **1.83m** **8-7-09**

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 (0.91 m STICK UP)
0													CAST IRON WELL HEAD
0		Brown, SAND (SP)			SS	1	305	8	0		6.8	-	BENTONITE
1					SS	2	50	12	0		12.2	-	
		Brown, SAND with gravel (SP)			SS	3	25	22	0		7.1	-	50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK
2		Brown, SAND (SP)		▼	SS	4	100	28	0		6.6	20	
					SS	5	305	28	0		3.6	-	
3													END CAP
		End of Borehole											
4													
5													
6													
7													
8													
9													
10													

Appendix 10e

Laboratory Analytical Results Summary Tables

– Service Site

Table 10.1 Results of Laboratory Analysis of TPH/BTEX in Soil - Service 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 (mbgs)	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)												
SS-TP1	1.8	<2	<2	2.5	5	1,300	9,640	-	-	-	10,940	D
SS-TP2	2.5	<0.002	<0.002	<0.002	<0.004	<0.02	<2	-	-	-	<0.22	-
SS-TP3	2.5	<0.002	<0.002	<0.002	<0.004	<0.02	<2	-	-	-	<0.22	-
WG-TP6	1.5	<0.4	<0.4	5.5	8.1	339	16,400	-	-	-	16,739	D
WG-TP7	2.5	<0.002	<0.002	<0.002	<0.004	<0.02	<2	-	-	-	<0.22	-
MDL	-	0.002	0.002	0.002	0.002	0.02	0.2	-	-	-	0.2	-
2009 Sampling (Stantec)												
09-TP7-BS2	1.8 - 2.3	<0.03	<0.03	1.5	8.9	-	-	1,200	6,900	51	8,100	WFO
RDL	**-**	0.03	0.03	0.03	0.05	-	-	30	15	15	30	-
09-TP9-BS2	1.9 - 1.8	<0.03	<0.03	<0.03	<0.05	-	-	<3	<15	<15	<20	-
09-TP10-BS2	1.3 - 1.8	<0.03	<0.03	<0.03	<0.05	-	-	180	8,400	79	8,700	WFO
09-MW4-SS4	1.8 - 2.4	<0.03	<0.03	<0.03	<0.05	-	-	<3	<15	<15	<20	-
09-MW5-SS3	1.2 - 1.8	<0.03	<0.03	<0.03	<0.05	-	-	<3	<15	<15	<20	-
09-MW6-SS4	1.8 - 2.4	<0.03	<0.03	<0.03	<0.05	-	-	<3	<15	20	20	PLO
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
RDL = Reportable Detection Limit for routine analysis
< # = Not detected above RDL noted
"-" = Indicates value is not available or does not apply
D = Diesel; WFO = Weathered fuel oil; PLO = Possible lube oil
Shaded = Value exceeds generic guideline for a residential site, non-potable groundwater, coarse grained soil and fuel oil impacts

Table 10.2 Results of Laboratory Analysis of Metals in Soil
- Service 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-TP7-BS1	09-TP8-BS1	09-TP9-BS1	09-TP10-BS1	09-TP49-BS2	09-TP49-BS2 Lab-Dup	09-MW4-SS1	RDL
		Sample Depth (m)	0.0 - 0.5	0.0 - 0.5	0.0 - 0.4	0.0 - 0.4	0.8 - 1.3	0.8 - 1.3	0.0 - 0.6	-
Aluminum	mg/kg	-	5,400	4,800	4,900	4,700	2,700	2,300	5,200	10
Antimony	mg/kg	20	<2	<2	<2	<2	<2	<2	<2	2
Arsenic	mg/kg	12	<2	<2	<2	<2	<2	<2	<2	2
Barium	mg/kg	500	56	49	34	43	30	24	52	5
Beryllium	mg/kg	4	<2	<2	<2	<2	<2	<2	<2	2
Bismuth	mg/kg	-	<2	<2	<2	<2	<2	<2	<2	2
Boron	mg/kg	-	<5	<5	<5	<5	<5	<5	<5	5
Cadmium	mg/kg	10	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.3
Chromium	mg/kg	64	14	11	9	9	8	8	12	2
Cobalt	mg/kg	50	4	3	3	4	3	3	4	1
Copper	mg/kg	63	11	8	9	9	7	6	12	2
Iron	mg/kg	-	8,900	7,700	6,600	7,000	4,800	5,200	8,300	50
Lead	mg/kg	140	3.6	3.6	5.1	2.9	1.7	1.2	6.5	0.5
Lithium	mg/kg	-	5	4	3	4	3	2	5	2
Manganese	mg/kg	-	120	110	89	90	60	57	100	2
Mercury	mg/kg	6.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Molybdenum	mg/kg	10	<2	<2	<2	<2	<2	<2	<2	2
Nickel	mg/kg	50	9	8	5	6	4	4	7	2
Rubidium	mg/kg	-	11	10	7	7	8	6	10	2
Selenium	mg/kg	1	<2	<2	<2	<2	<2	<2	<2	2
Silver	mg/kg	20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
Strontium	mg/kg	-	10	9	7	6	5	5	10	5
Thallium	mg/kg	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Tin	mg/kg	-	<2	<2	<2	<2	<2	<2	<2	2
Uranium	mg/kg	23	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.1
Vanadium	mg/kg	130	21	18	14	17	12	14	20	2
Zinc	mg/kg	200	33	26	86	18	43	36	38	5

Notes:

1 = CCME Canadian Soil Quality Guidelines for Protection of Environmental and Human Health at a Residential/Parkland site (2007)

RDL = Reportable Detection Limit for routine analysis

< # = Not detected above RDL noted

"-" = No applicable guideline

Table 10.2 Results of Laboratory Analysis of Metals in Soil
- Service 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-SS54	09-SS55	09-SS56	09-SS57	RDL
		Sample Depth (m)	0.0 - 0.15	0.0 - 0.15	0.0 - 0.15	0.0 - 0.15	-
Aluminum	mg/kg	-	3,700	4,000	4,200	3,300	10
Antimony	mg/kg	20	<2	<2	<2	<2	2
Arsenic	mg/kg	12	<2	<2	<2	<2	2
Barium	mg/kg	500	45	51	35	37	5
Beryllium	mg/kg	4	<2	<2	<2	<2	2
Bismuth	mg/kg	-	<2	<2	<2	<2	2
Boron	mg/kg	-	<5	<5	<5	<5	5
Cadmium	mg/kg	10	<0.3	1.8	<0.3	<0.3	0.3
Chromium	mg/kg	64	11	14	11	9	2
Cobalt	mg/kg	50	3	3	3	3	1
Copper	mg/kg	63	7	49	10	9	2
Iron	mg/kg	-	6,500	6,800	7,600	6,500	50
Lead	mg/kg	140	23	210	6.4	9.5	0.5
Lithium	mg/kg	-	4	4	4	4	2
Manganese	mg/kg	-	150	94	78	75	2
Mercury	mg/kg	6.6	<0.1	<0.1	<0.1	<0.1	0.1
Molybdenum	mg/kg	10	<2	<2	<2	<2	2
Nickel	mg/kg	50	6	7	6	6	2
Rubidium	mg/kg	-	8	6	8	8	2
Selenium	mg/kg	1	<1	<1	<1	<1	1
Silver	mg/kg	20	<0.5	<0.5	<0.5	<0.5	0.5
Strontium	mg/kg	-	24	8	7	8	5
Thallium	mg/kg	1	<0.1	<0.1	<0.1	<0.1	0.1
Tin	mg/kg	-	<2	5	<2	<2	2
Uranium	mg/kg	23	0.2	1.9	0.3	0.3	0.1
Vanadium	mg/kg	130	14	15	18	16	2
Zinc	mg/kg	200	90	88	31	33	5

Notes:

1 = CCME Canadian Soil Quality Guidelines for Protection of Environmental and Human Health at a Residential/Parkland site (2007)

RDL = Reportable Detection Limit for routine analysis

< # = Not detected above RDL noted

"-" = No applicable guideline

Table 10.3 Results of Laboratory Analysis of TPH/BTEX in Groundwater - Service 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-MW5	<0.001	<0.001	<0.001	0.005	0.006	4.6	0.3	4.9	WFO
09-MW6	<0.001	<0.001	<0.001	<0.002	<0.01	0.13	<0.1	0.1	WFO

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

Table 10.4 Results of Laboratory Analysis of Petroleum Hydrocarbon Fractionation in Groundwater - Service 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-MW4
Benzene	0.01	mg/L	1	<0.01
Toluene	0.01	mg/L	20	<0.01
Ethylbenzene	0.01	mg/L	20	0.07
Xylene (Total)	0.02	mg/L	20	0.58
Aliphatic >C6-C8	0.1	mg/L	-	0.2
Aliphatic >C8-C10	0.1	mg/L	-	0.3
>C8-C10 Aromatics (-EX)	0.1	mg/L	-	0.9
Aliphatic >C10-C12	1	mg/L	-	160
Aliphatic >C12-C16	6	mg/L	-	260
Aliphatic >C16-C21	6	mg/L	-	26
Aliphatic >C21-C32	0.1	mg/L	-	1.3
Aromatic >C10-C12	1	mg/L	-	25
Aromatic >C12-C16	6	mg/L	-	54
Aromatic >C16-C21	6	mg/L	-	11
Aromatic >C21-C32	0.1	mg/L	-	0.9
Modified TPH (Tier 2)	6	mg/L	12/20/20	540
Resemblance	-	-	-	FO

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, gasoline/fuel oil/lube oil impacts (September, 2003)
RDL = Reportable Detection Limit
"-" = indicates value is not available or does not apply
< # = Not detected above RDL noted
Shaded = Value exceeds applicable criteria

Table 10.5 Results of Laboratory Analysis of Dissolved Metals in Groundwater - Service 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-MW4	09-MW5	09-MW6
Aluminum	5.0	ug/L	-	75.4	31.7	6,200
Antimony	2.0	ug/L	20,000	<2.0	<2.0	<2.0
Arsenic	2.0	ug/L	1,900	<2.0	<2.0	<2.0
Barium	5.0	ug/L	29,000	31.3	10.1	140
Beryllium	2.0	ug/L	67	<2.0	<2.0	<2.0
Bismuth	2.0	ug/L	-	<2.0	<2.0	<2.0
Boron	5.0	ug/L	45,000	8	<5.0	9.4
Cadmium	0.017	ug/L	2.7	<0.017	<0.017	0.05
Chromium	1.0	ug/L	810	2.3	<1.0	7.7
Cobalt	0.40	ug/L	66	6.77	<0.40	4.96
Copper	2.0	ug/L	87	<2.0	2.8	23.5
Iron	50	ug/L	-	27,500	<50	4,440
Lead	0.50	ug/L	25	>0.50	<0.50	2.62
Manganese	2.0	ug/L	-	809	24.2	251
Mercury	0.02	ug/L	0.29	0.043	0.027	<0.02
Molybdenum	2.0	ug/L	9,200	<2.0	<2.0	<2.0
Nickel	2.0	ug/L	490	<2.0	2.2	4.6
Selenium	1.0	ug/L	63	<1.0	<1.0	<1.0
Silver	0.10	ug/L	1.5	<0.10	<0.10	<0.10
Strontium	5.0	ug/L	-	166	87.6	124
Thallium	0.10	ug/L	510	<0.10	<0.10	<0.10
Tin	2.0	ug/L	-	<2.0	<2.0	<2.0
Titanium	2.0	ug/L	-	3.3	<2.0	68.9
Uranium	0.10	ug/L	420	0.1	<0.10	0.80
Vanadium	2.0	ug/L	250	6	<2.0	9.3
Zinc	5.0	ug/L	1,100	11.6	21.0	37.8

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

Shaded = Value exceeds applicable criteria

Table 10.6 Results of Laboratory Analysis of General Chemistry in Groundwater - Service 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-MW4	09-MW5	RDL	09-MW6	RDL
Metals							
Dissolved Calcium	mg/L	-	26	11	0.1	19	0.1
Dissolved Magnesium	mg/L	-	3.0	2.9	0.1	5.5	0.1
Dissolved Phosphorus	mg/L	<0.004 to >0.1[3]	<0.1	<0.1	0.1	2.0	0.1
Dissolved Potassium	mg/L	-	3.3	3.1	0.1	3.0	0.1
Dissolved Sodium	mg/L	-	2.5	3.9	0.1	6.3	0.1
Calculated Parameters							
Anion Sum	me/L	-	1.35	0.940	N/A	0.900	N/A
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L	-	65	42	1	31	1
Calculated TDS	mg/L	-	126	67	1	84	1
Carb.Alkalinity (calc. as $CaCO_3$)	mg/L	-	<1	<1	1	<1	1
Cation Sum	me/L	-	2.73	1.03	N/A	1.92	N/A
Hardness ($CaCO_3$)	mg/L	-	78	39	1	70	1
Ion Balance (% Difference)	%	-	33.8	4.57	N/A	36.2	N/A
Langelier Index (@ 20C)	N/A	-	-1.71	-1.22	-	-1.78	-
Langelier Index (@ 4C)	N/A	-	-1.96	-1.47	-	-2.04	-
Nitrate (N)	mg/L	2.9	<0.05	<0.05	0.05	3.1	0.05
Saturation pH (@20C)	N/A	-	8.12	8.67	-	8.56	-
Saturation pH (@4C)	N/A	-	8.37	8.92	-	8.82	-
Inorganics							
Total Alkalinity (Total as CaCO3)	mg/L	-	65	42	5	31	5
Dissolved Chloride (Cl)	mg/L	-	2	3	1	2	1
Colour	TCU	-	240	10	30	9	5
Nitrate + Nitrite	mg/L	-	<0.05	<0.05	0.05	3.1	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	-	21	<5(1)	5	<50(1)	50
Orthophosphate (P)	mg/L	-	<0.01	<0.01	0.01	<0.01	0.01
pH	pH	6.5 - 9	6.41	7.45	N/A	6.78	N/A
Reactive Silica (SiO_2)	mg/L	-	22	18	0.5	11	0.5
Dissolved Sulphate (SO_4)	mg/L	-	<2	<2	2	<2	2
Turbidity	NTU	Narritive[2]	>1000	240	1	>1000	10
Conductivity	uS/cm	-	130	94	1	92	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
Shaded = Value exceeds applicable criteria

Table 10.7 Results of Laboratory Analysis of Glycol in Groundwater - Service 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-MW4
Ethylene glycol	10	mg/L	-	<10
Diethylene glycol	10	mg/L	-	<10
Triethylene glycol	10	mg/L	-	<10
Tetraethylene glycol	10	mg/L	-	<10
Propylene glycol	10	mg/L	-	<10

Notes:
1 = Ontario Ministry of the Environment (MOE) Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act.* March 28, 2007. Non-Potable Groundwater
RDL = Reportable Detection Limit
"-" = indicates value is not available or does not apply
< # = Not detected above RDL noted

Table 10.8 Results of Laboratory Analysis of PCBs in Vegetation - Service 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-02	<0.3
09-VEG-03	<0.3

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

Table 10.9 Results of Laboratory Analysis of PCBs in Berries - Service 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 1	<0.05
09-BERRY 2	<0.05
09-BERRY 3	<0.05

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

Table 10.10 Results of Laboratory Analysis of PCBs/Crude Fat in Small Mammal Tissue Samples - Service 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	0.5
Units	ug/g	%
Criteria	na	na
2009 Sampling (Stantec)		
09-SM20	<0.07	-

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

Appendix 10f

Results of Hydraulic Response (Bail-Down) Test

– Service Site

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

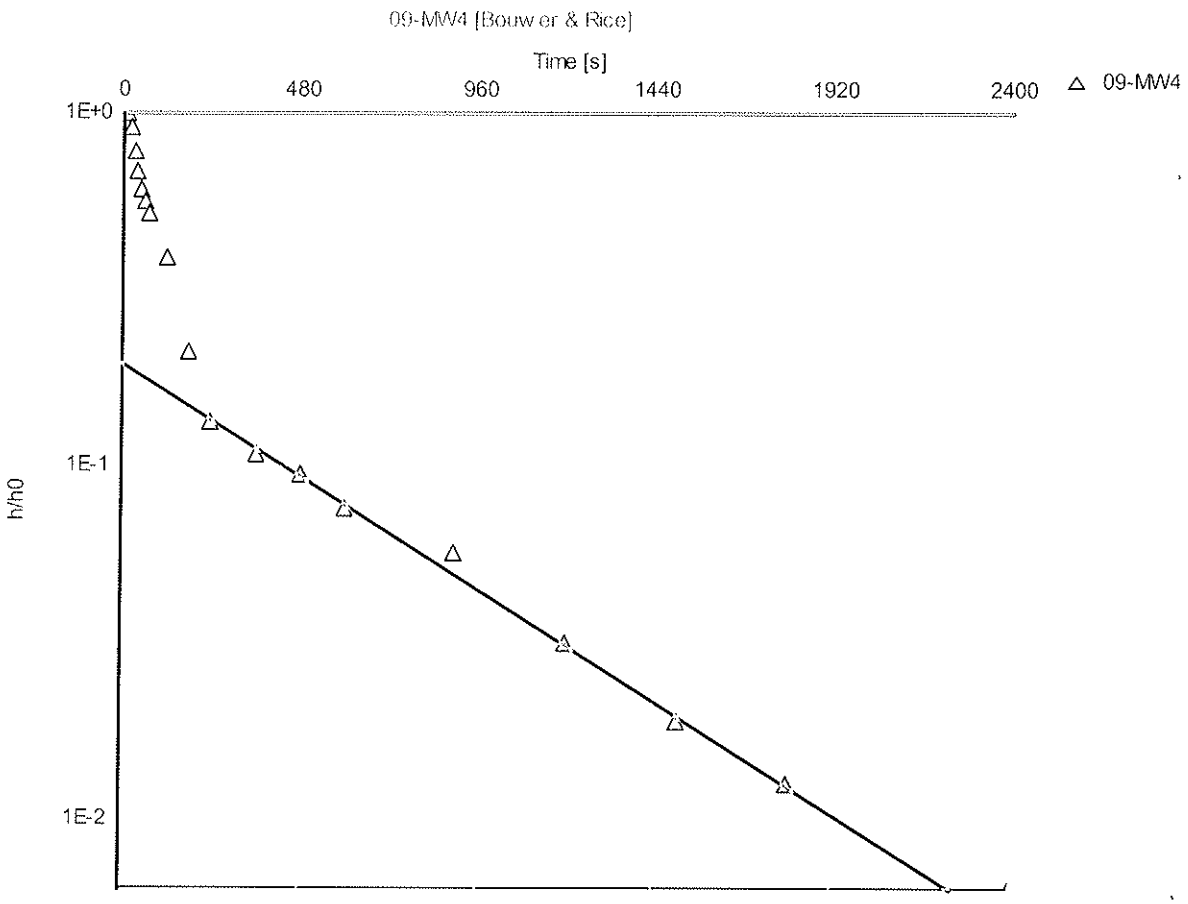
Slug Test Data Report
Project: Northwest Point
Number: 121410105
Client: NLDEC

Test Well:	**09-MW4**	**Slug Test:**	**09-MW4**
		Test Well:	09-MW4
Depth to Static WL:	2.52 [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:	1.87 [m]

	Time [s]	Depth to WL [m]	Drawdown [m]
1	10	4.09	1.57
2	20	3.96	1.44
3	30	3.75	1.23
4	40	3.59	1.07
5	50	3.48	0.96
6	60	3.40	0.88
7	70	3.34	0.82
8	120	3.13	0.61
9	180	2.85	0.33
10	240	2.73	0.21
11	360	2.69	0.17
12	480	2.67	0.15
13	600	2.64	0.12
14	900	2.61	0.09
15	1200	2.57	0.05
16	1500	2.55	0.03
17	1800	2.54	0.02
18	2400	2.53	0.01
19	3000	2.52	0.00

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

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



Slug Test: **09-MW4**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 4.44E-7 [m/s]

Test parameters:

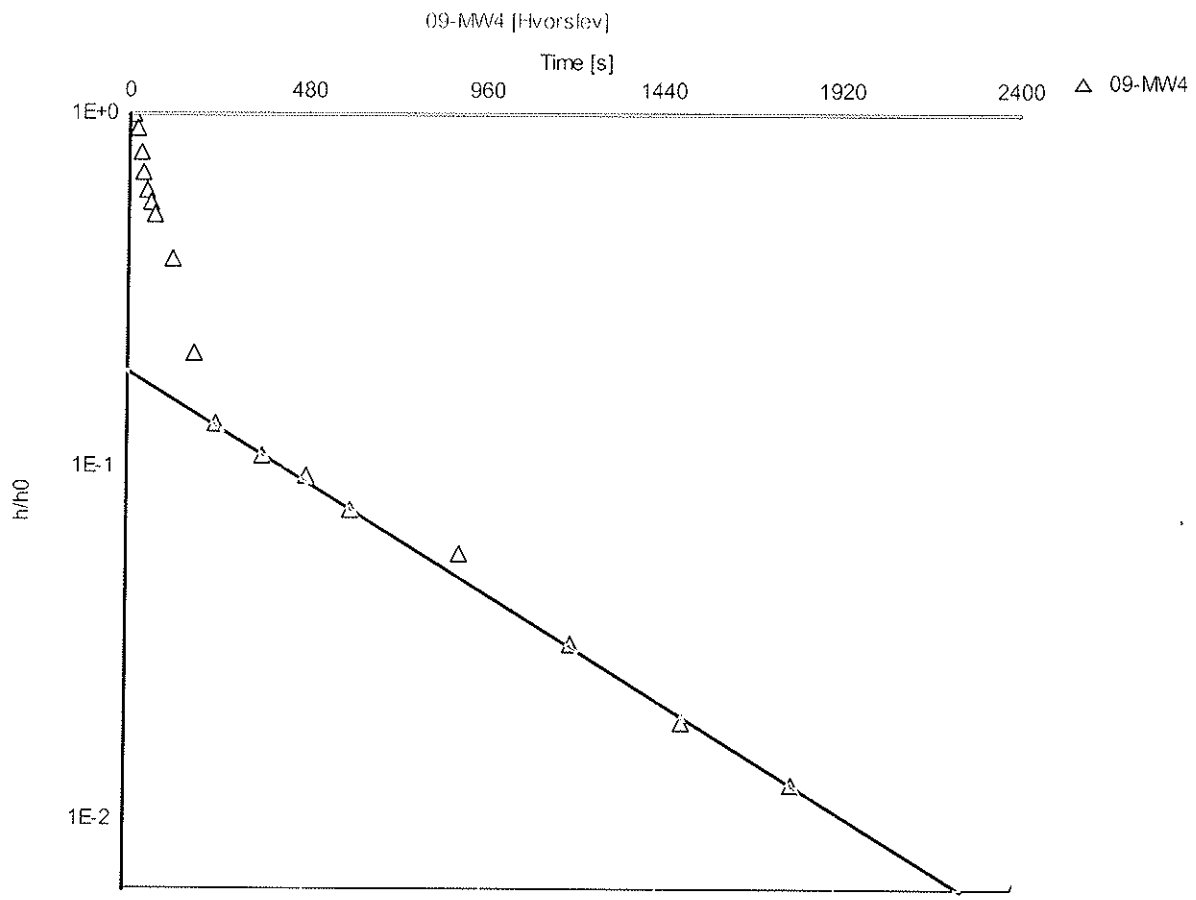
Test Well:	09-MW4	Aquifer Thickness:	1.87 [m]
Casing radius:	0.025 [m]	Gravel Pack Porosity (%)	25
Screen length:	3.05 [m]		
Boring radius:	0.05 [m]		
r(eff):	0.033 [m]		

Comments:

Evaluated by: AR
Evaluation Date: 6/9/2010

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

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



Slug Test: **09-MW4**

Analysis Method: **Hvorslev**

Analysis Results:

Conductivity: 6.36E-7 [m/s]

Test parameters:

Test Well:	09-MW4	Aquifer Thickness: 1.87 [m]
Casing radius:	0.025 [m]	
Screen length:	3.05 [m]	
Boring radius:	0.05 [m]	

Comments:

Evaluated by: AR

Evaluation Date: 6/9/2010