

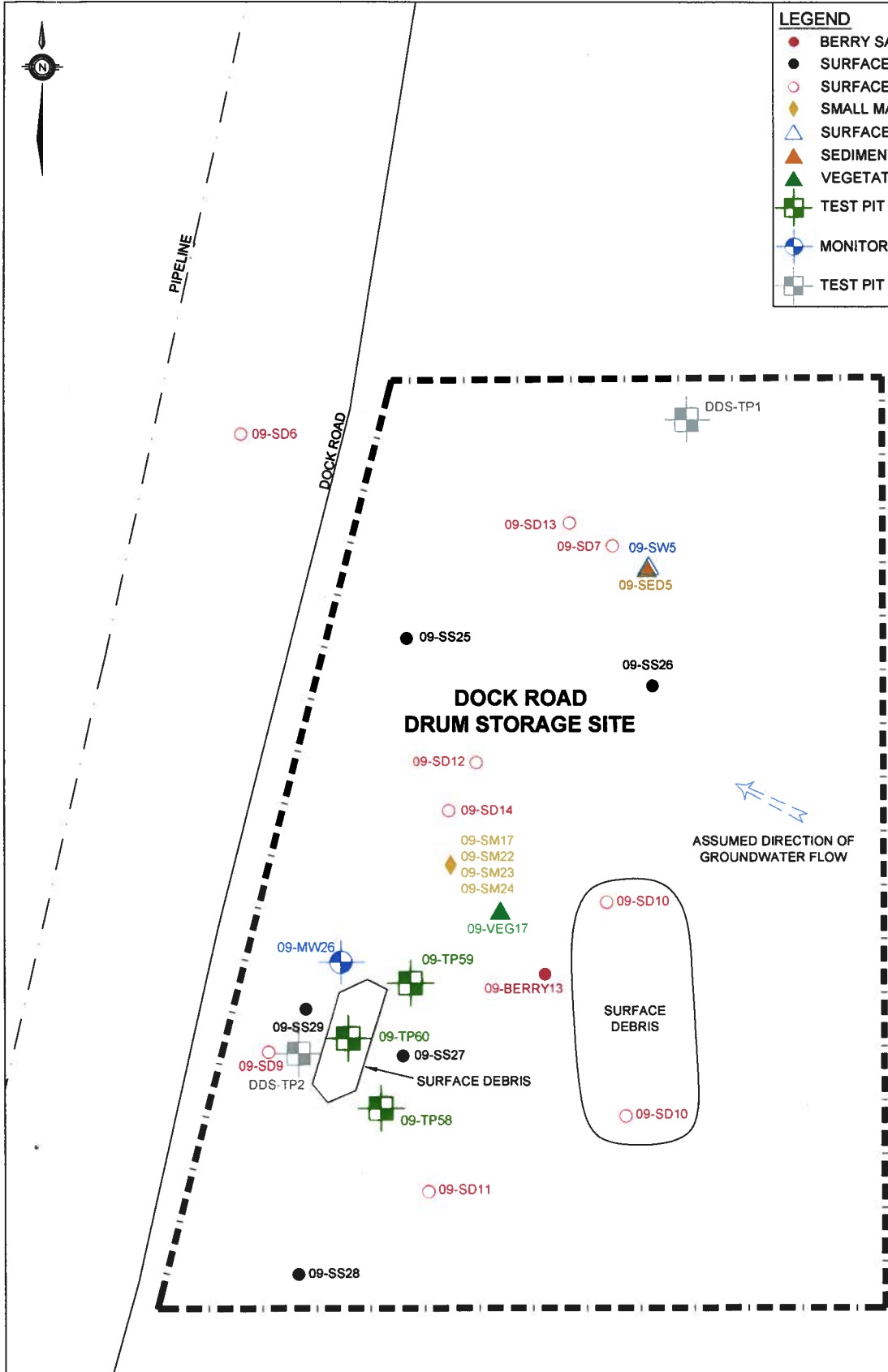
# **Appendix 15a**

Site Drawings


– Dock Road Drum Storage 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)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- MONITOR WELL (STANTEC 2009)
- TEST PIT (AGRA 1999)

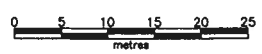
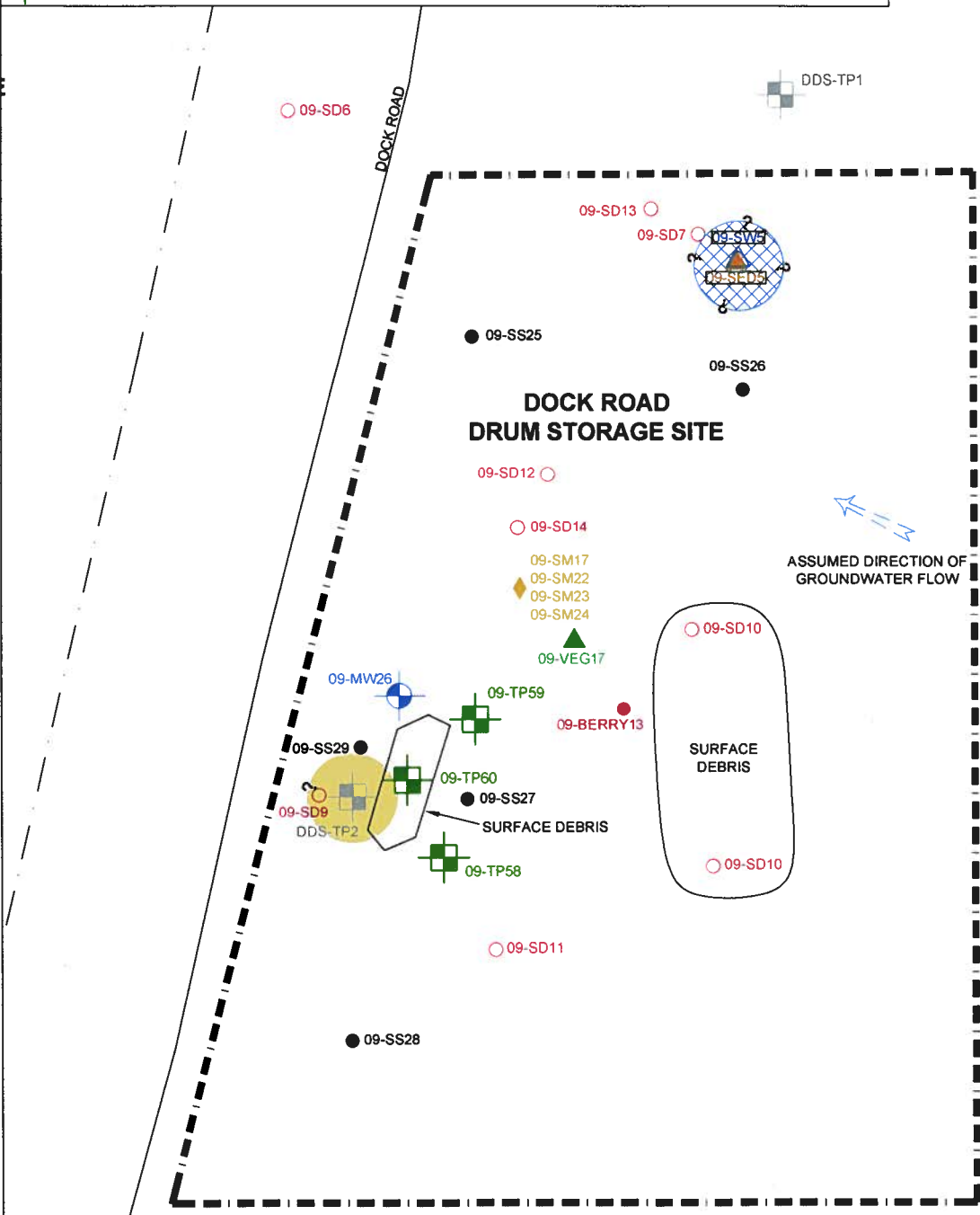


NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT: <b>NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</b>	SCALE: 1:800	DATE: JUNE 17, 2010	
	DRAWN BY: N.M.	CHECKED BY: A.R.	
PROJECT TITLE: <b>PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</b>	EDITED BY: -	REV. No. 0	
DRAWING TITLE: <b>SITE PLAN - DOCK ROAD DRUM STORAGE SITE</b>	DRAWING No: 121410105-EE-15A	CAD FILE: 1044857-EE-07.DWG	

**LEGEND**

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- ⊕ TEST PIT (STANTEC 2009)
- ⊕ TEST PIT (AGRA 1999)
- ⊕ MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF TPH IMPACTS IN SOIL EXCEEDING GENERIC GUIDELINES
- ▨ APPROXIMATE EXTENT OF TPH IMPACTS IN SEDIMENT EXCEEDING GENERIC GUIDELINES



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

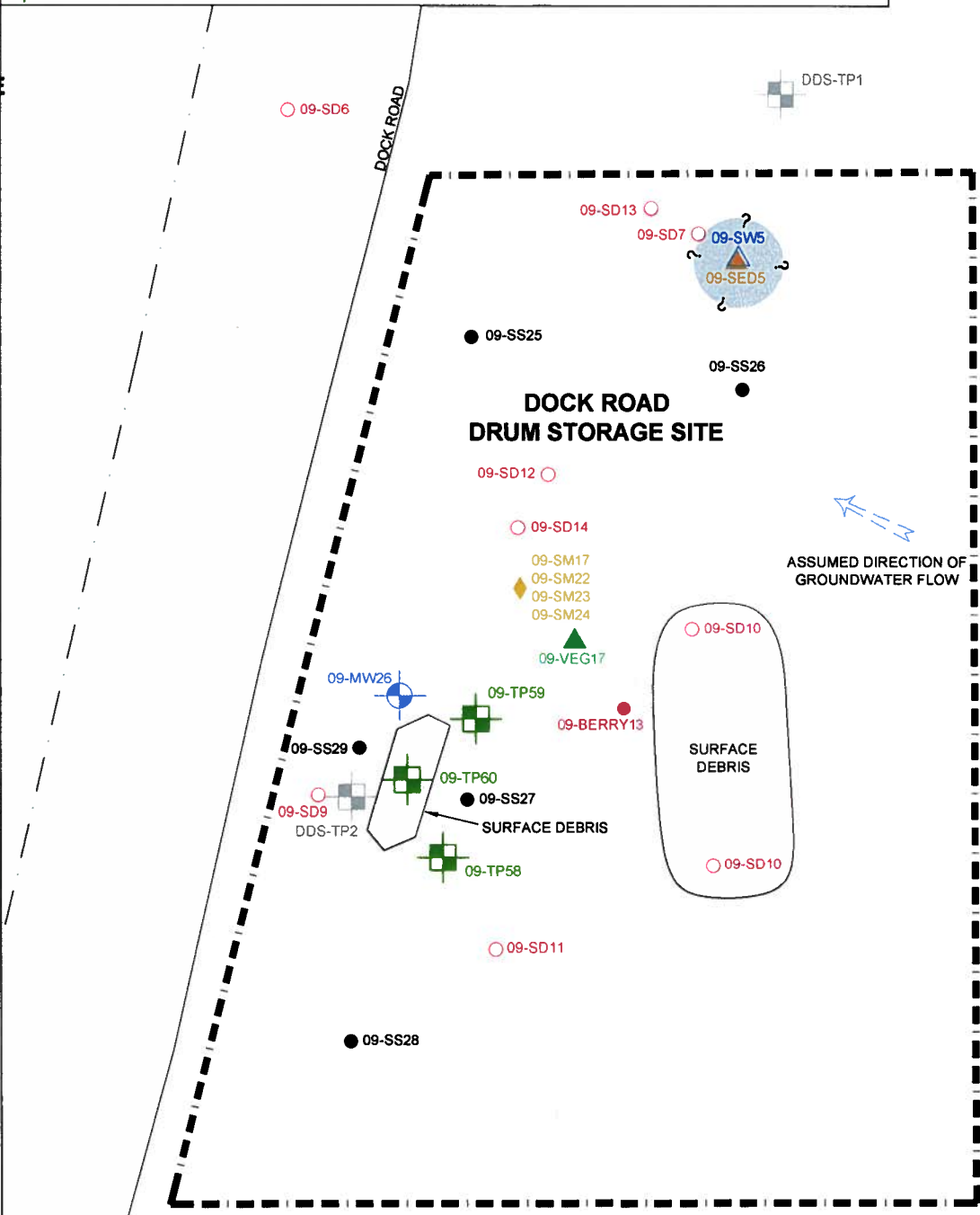
CLIENT: <b>NEWFOUNDLAND AND LABRADOR                  DEPARTMENT OF ENVIRONMENT AND CONSERVATION</b>	SCALE: 1:800 DATE: JUNE 18, 2010
PROJECT TITLE: <b>PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</b>	DRAWN BY: N.M. CHECKED BY: A.R.
DRAWING TITLE: <b>APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - DOCK ROAD DRUM STORAGE SITE</b>	EDITED BY: - REV. No: 0
	DRAWING No: 121410105-EE-15B CAD FILE: 1044857-EE-10.DWG



**Stantec**

**LEGEND**

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- ⊠ TEST PIT (STANTEC 2009)
- ⊠ TEST PIT (AGRA 1999)
- ⊕ MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF TOLUENE IMPACTS IN SURFACE WATER EXCEEDING GENERIC GUIDELINES



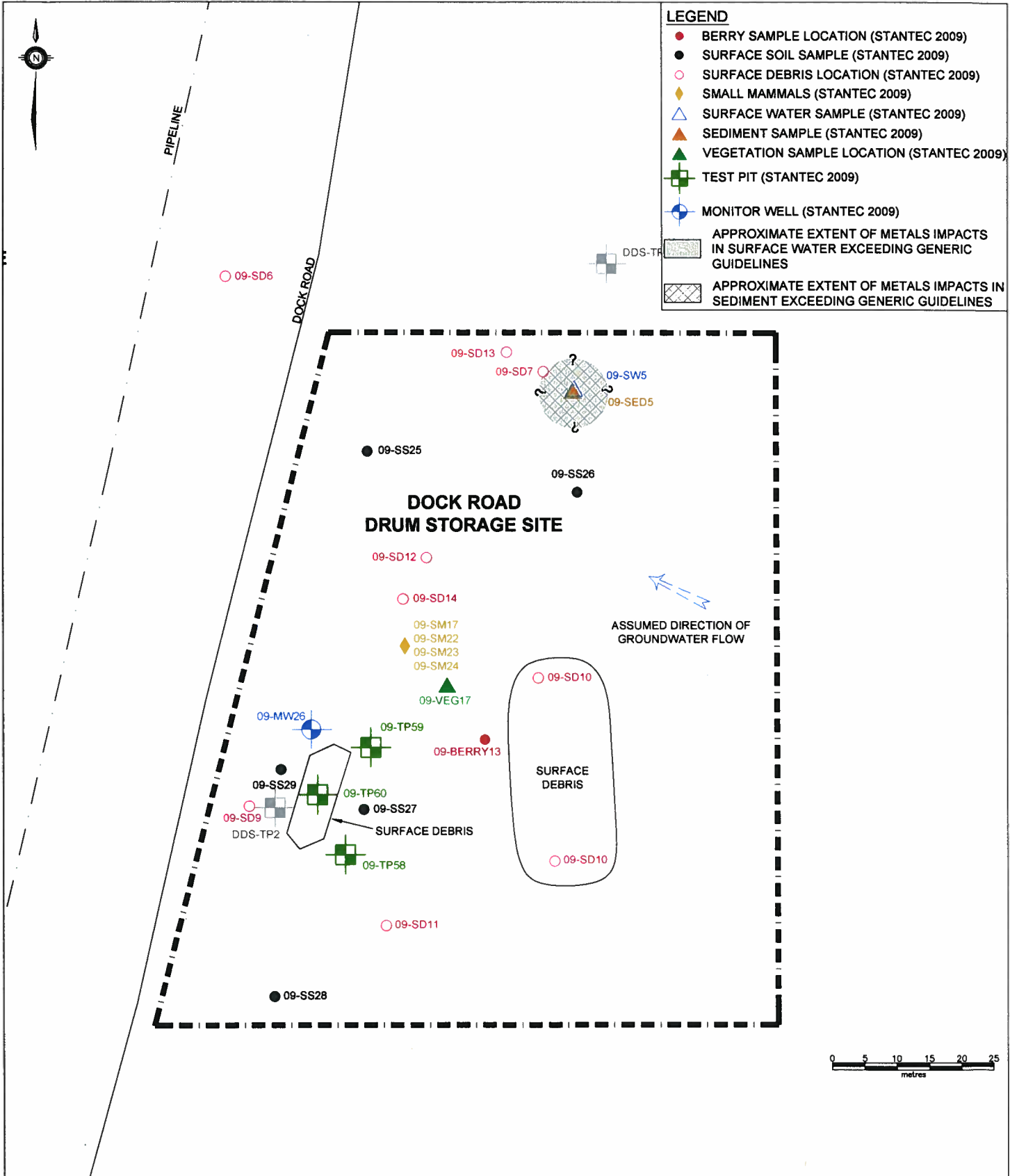
**NOTE:** THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT:	NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION
PROJECT TITLE:	PHASE III ESA, 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 TOLUENE IMPACTS EXCEEDING GENERIC GUIDELINES - DOCK ROAD DRUM STORAGE 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-15C		
CAD FILE:	1044857-EE-15.DWG		



**Stantec**



**LEGEND**

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- TEST PIT (STANTEC 2009)
- MONITOR WELL (STANTEC 2009)
- APPROXIMATE EXTENT OF METALS IMPACTS IN SURFACE WATER EXCEEDING GENERIC GUIDELINES
- APPROXIMATE EXTENT OF METALS IMPACTS IN SEDIMENT EXCEEDING GENERIC GUIDELINES

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

<p>CLIENT: <b>NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</b></p> <p>PROJECT TITLE: <b>PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</b></p> <p>DRAWING TITLE: <b>APPROXIMATE EXTENT OF METALS IMPACTS EXCEEDING GENERIC GUIDELINES - DOCK ROAD DRUM STORAGE SITE</b></p>	<p>SCALE: 1:800</p> <p>DRAWN BY: N.M.</p> <p>EDITED BY: -</p> <p>DRAWING No: 121410105-EE-15D</p> <p>CAD FILE: 1044857-EE-11.DWG</p>	<p>DATE: JUNE 21, 2010</p> <p>CHECKED BY: A.R.</p> <p>REV. No: 0</p>
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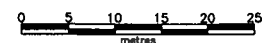
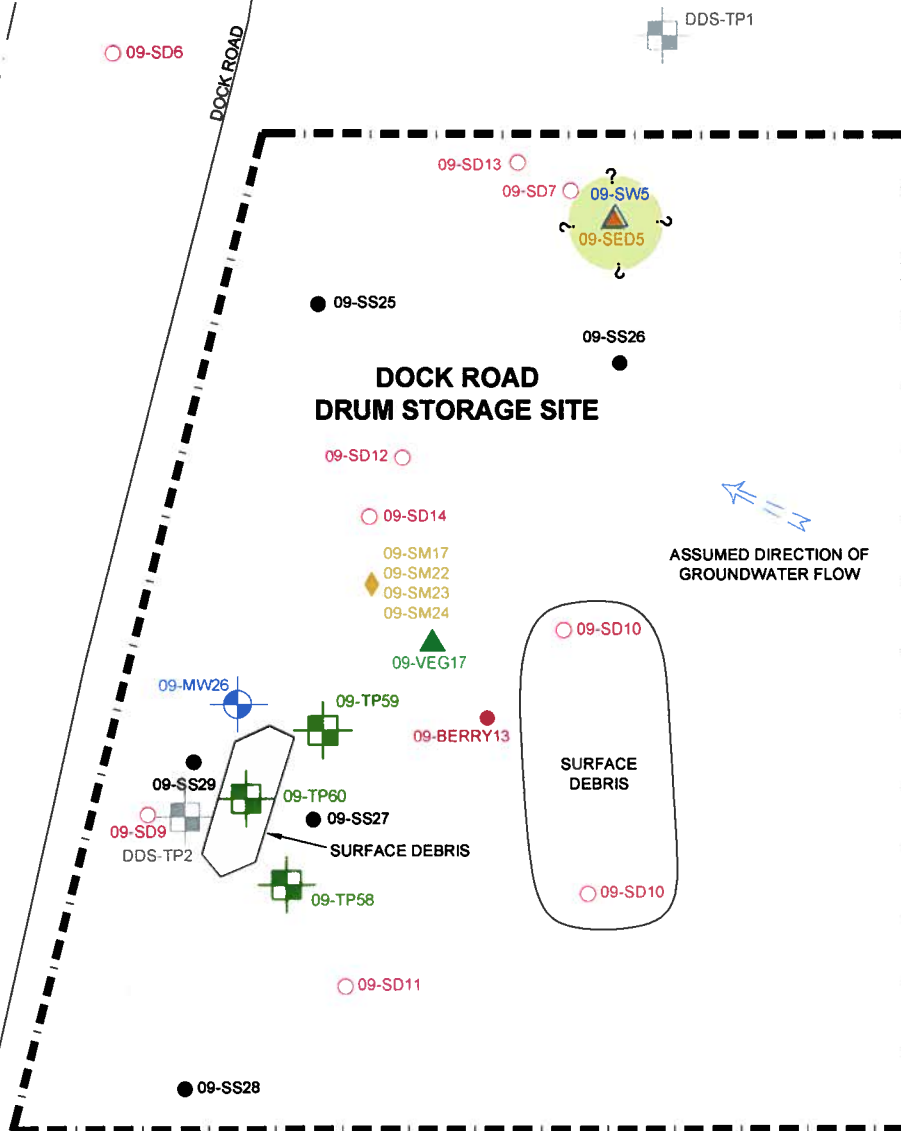
**Stantec**





PIPELINE

**LEGEND**

- BERRY SAMPLE LOCATION (STANTEC 2009)
- SURFACE SOIL SAMPLE (STANTEC 2009)
- SURFACE DEBRIS LOCATION (STANTEC 2009)
- ◆ SMALL MAMMALS (STANTEC 2009)
- △ SURFACE WATER SAMPLE (STANTEC 2009)
- ▲ SEDIMENT SAMPLE (STANTEC 2009)
- ▲ VEGETATION SAMPLE LOCATION (STANTEC 2009)
- ⊕ TEST PIT (STANTEC 2009)
- ⊕ MONITOR WELL (STANTEC 2009)
- ⊕ TEST PIT (AGRA 1999)
- APPROXIMATE EXTENT OF GENERAL CHEMISTRY IMPACTS IN SURFACE WATER EXCEEDING GENERIC GUIDELINES



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

CLIENT: <b>NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION</b>	SCALE: 1:800	DATE: JUNE 21, 2010	
	DRAWN BY: N.M.	CHECKED BY: A.R.	
PROJECT TITLE: <b>PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL</b>	EDITED BY: -	REV. No. 0	
	DRAWING No.: 121410105-EE-15E		
DRAWING TITLE: <b>APPROXIMATE EXTENT OF GENERAL CHEMISTRY IMPACTS EXCEEDING GENERIC GUIDELINES - DOCK ROAD DRUM STORAGE SITE</b>	CAD FILE: 1044857-EE-13.DWG		

# **Appendix 15b**

Site Photos

– Dock Road Drum Storage Site

## Site Photographs – Dock Road Drum Storage Site



Photo 1 View of surface debris at the site (steel cable, 09-SD10)



Photo 2 View of surface debris at the site (partially buried pipe, 09-SD9)



**Site Photographs – Dock Road Drum Storage Site**



Photo 3 View of surface debris at the site (metal debris, 09-SD10)



Photo 4 View of surface debris at the site (steel cable, 09-SD10)

Site Photographs – Dock Road Drum Storage Site



Photo 5 View of surface debris at the site (metal debris, 09-SD10)



Photo 6 Photo 5 View of surface debris at the site (metal debris, 09-SD10)

**Site Photographs – Dock Road Drum Storage Site**



Photo 7 View of surface debris at the site (metal debris, 09-SD10)



Photo 8 View of surface debris at the site (drum, 09-SD10)

**Site Photographs – Dock Road Drum Storage Site**



Photo 9 View of surface debris at the site (metal debris, 09-SD10)

# **Appendix 15c**

Sample Coordinates

– Dock Road Drum Storage Site

**Sample Coordinates - Dock Road Drum Storage 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
<b>TEST PITS</b>		
09-TP58	694770	5932075
09-TP59	694771	5932103
09-TP60	694758	5932082
<b>MONITOR WELLS</b>		
09-MW26	694764	5932109
<b>SURFACE SOIL</b>		
09-SS25	694774	5932158
09-SS26	694782	5932108
09-SS27	694787	5932097
09-SS28	694785	5932067
09-SS29	694742	5932092
<b>SURFACE WATER</b>		
09-SW5	694807	5932159
<b>SEDIMENT</b>		
09-SED5	694807	5932159
<b>VEGETATION</b>		
09-VEG17	694771	5932114
<b>BERRIES</b>		
09-BERRY13	694777	5932106
<b>SMALL MAMMALS</b>		
09-SM17	694764	5932120
09-SM22	694764	5932120
09-SM23	694764	5932120
09-SM24	694764	5932120
<b>RABBITS</b>		
09-SM32		

# **Appendix 15d**

Test Pit Records

– Dock Road Drum Storage 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 3.2m 8-7-09

TEST PIT No. 09-TP58  
 PROJECT No. 121410105  
 DATUM \_\_\_\_\_

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES				PID READINGS (ppm)	CHEMICAL ANALYSIS (ppm)				
					TYPE	NUMBER	HYDROCARBON ODOUR	OTHER TESTS		TPH	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
0		Compact, brown, SAND with gravel (SP); some cobbles			BS	1	0		0.0	-	-	-	-	-
1		Compact to dense, grey, SAND with silt (SP-SM)												
3				▽	BS	2	0		0.0	nd	nd	nd	nd	nd
4		End of Test Pit  Slow groundwater seepage observed at 3.2 m depth.  Bedrock not encountered.												
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 3.2m 8-7-09

TEST PIT No. 09-TP59  
 PROJECT No. 121410105  
 DATUM \_\_\_\_\_

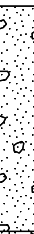

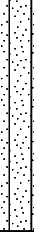
DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES				PID READINGS (ppm)	CHEMICAL ANALYSIS (ppm)				
					TYPE	NUMBER	HYDROCARBON ODOUR	OTHER TESTS		TPH	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
0		Compact, brown, SAND with gravel (SP); some cobbles			BS	1	0		0.2	-	-	-	-	-
1		Compact, grey, SAND with silt (SP-SM)												
2														
3					BS	2	0		0.3	nd	nd	nd	nd	nd
4		End of Test Pit  Very slow groundwater seepage observed at 3.2 m depth.  Bedrock not encountered.												
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 3.3m 8-7-09

TEST PIT No. 09-TP60  
 PROJECT No. 121410105  
 DATUM \_\_\_\_\_

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES				PID READINGS (ppm)	CHEMICAL ANALYSIS (ppm)				
					TYPE	NUMBER	HYDROCARBON ODOUR	OTHER TESTS		TPH	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
0		Compact, brown, SAND with gravel (SP); some cobbles			BS	1	0		0.0	-	-	-	-	-
1		Compact to dense, grey, SAND with silt (SP-SM)												
3				▽	BS	2	0		0.1	nd	nd	nd	nd	nd
4		End of Test Pit  Slow groundwater seepage observed at 3.3 m depth.  Bedrock not encountered.												
5														



# MONITOR WELL RECORD

BOREHOLE No. 09-MW26  
 PAGE 1 of 1  
 PROJECT No. 121410105  
 DRILLING METHOD Auger  
 SIZE 100mm HS  
 DATUM \_\_\_\_\_

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): BORING 8-9-09 WATER LEVEL 0.91m 8-9-09

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES				HYDROCARBON ODOUR	APPARENT MOISTURE CONTENT	PID (ppm)	TPH (ppm)	WELL CONSTRUCTION DETAILS
					TYPE	NUMBER	RECOVERY	N-VALUE OR RQD %					
0		Dark brown, SAND (SP); some cobbles					mm						0.61 m STICK UP CAST IRON WELL HEAD
1		Grey, SAND (SP)			SS	1&2	405	14	0	S	0.0	-	BENTONITE  50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK
2		Grey, SAND (SP); some cobbles			SS	3	50	36	0	S	0.0	nd	
3													
4		Grey, SAND (SP)			SS	4&5	560	15	0	M	0.0	-	
4		Silty CLAY (CL-ML)			SS	6	355	78/125	0		0.0	-	
5		End of Borehole											END CAP
6													
7													
8													
9													
10													

# **Appendix 15e**

Laboratory Analytical Results Summary Tables

– Dock Road Drum Storage Site

**Table 15.1 Results of Laboratory Analysis of TPH/BTEX in Soil - Dock Road Drum Storage Site**  
**Phase III ESA, HHERA and RAP**  
**Former U.S Military Facility, Northwest Point, NL**  
**Stantec Consulting Ltd. Project No. 121410105**

Sample Location	Depth (mbgs)	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH Purgeable (<C <sub>10</sub> )	TPH Extractable (C <sub>10</sub> -C <sub>32</sub> )	C <sub>6</sub> -C <sub>10</sub> (Gas Range)	C <sub>10</sub> -C <sub>21</sub> (Fuel Range)	C <sub>21</sub> -C <sub>32</sub> (Lube Range)	Modified TPH Tier I <sup>2</sup>	Resemblance
<b>Units</b>		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-
<b>Tier I RBSLs<sup>1</sup></b>		0.16	14	58	17	-	-	-	-	-	140	-
<b>1999 Sampling (AGRA)</b>												
DDS-TP2	1.5	<0.002	<0.002	<0.002	<0.004	0.33	209	-	-	-	209	TL
<b>MDL</b>	-	0.002	0.002	0.002	0.002	0.02	0.2	-	-	-	0.2	-
<b>2009 Sampling (Stantec)</b>												
09-TP58-BS2	3.0 - 3.4	<0.03	<0.03	<0.03	<0.05	-	-	<3	<15	<15	<20	-
09-TP59-BS2	3.0 - 3.4	<0.03	<0.03	<0.03	<0.05	-	-	<3	<15	<15	<20	-
09-TP60-BS2	3.0 - 3.5	<0.03	<0.03	<0.03	<0.05	-	-	<3	<15	<15	<20	-
09-MW26-SS2	1.8 - 1.2	<0.03	<0.03	<0.03	<0.05	-	-	<3	<15	<15	<20	-
<b>RDL</b>	-	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/lube 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

TL = Too low to characterize

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

**Table 15.2 Results of Laboratory Analysis of Metals in Soil - Dock Road Drum Storage Site  
Phase III ESA, HHERA and RAP  
Former U.S Military Facility, Northwest Point, NL  
Stantec Consulting Ltd. Project No. 121410105**

Parameters	Units	Criteria <sup>1</sup>	2009 Sampling (Stantec)						RDL
			09-SS25	09-SS25 Lab-Dup	09-SS26	09-SS27	09-SS28	09-SS29	
Aluminum	mg/kg	-	5,000	5,100	5,600	3,100	3,100	4,800	10
Antimony	mg/kg	20	<2	<2	<2	<2	<2	<2	2
Arsenic	mg/kg	12	<2	<2	<2	<2	<2	<2	2
Barium	mg/kg	500	44	45	45	41	38	70	5
Beryllium	mg/kg	4	<2	<2	<2	<2	<2	<2	2
Bismuth	mg/kg	-	<2	<2	<2	<2	<2	<2	2
Boron	mg/kg	-	<5	<5	<5	<5	<5	<5	5
Cadmium	mg/kg	10	<0.3	<0.3	<0.3	0.4	<0.3	<0.3	0.3
Chromium	mg/kg	64	13	13	9	8	7	23	2
Cobalt	mg/kg	50	4	4	2	1	2	3	1
Copper	mg/kg	63	14	14	8	28	4	14	2
Iron	mg/kg	-	8,300	8,600	6,500	5,300	5,800	7,600	50
Lead	mg/kg	140	1.5	1.5	7.2	93	22	30	0.5
Lithium	mg/kg	-	5	5	<2	<2	<2	4	2
Manganese	mg/kg	-	120	120	69	23	76	79	2
Mercury	mg/kg	6.6	<0.1	<0.1	0.1	0.2	0.1	<0.1	0.1
Molybdenum	mg/kg	10	<2	<2	<2	<2	6	<2	2
Nickel	mg/kg	50	7	8	5	3	4	6	2
Rubidium	mg/kg	-	9	10	3	<2	4	6	2
Selenium	mg/kg	1	<1	<1	<1	<1	<1	<1	1
Silver	mg/kg	20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
Strontium	mg/kg	-	9	10	17	14	18	7	5
Thallium	mg/kg	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
Uranium	mg/kg	23	0.3	0.3	0.2	0.1	0.1	0.2	0.1
Vanadium	mg/kg	130	19	19	12	12	13	17	2
Zinc	mg/kg	200	18	19	53	52	25	25	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 15.3 Results of Laboratory Analysis of PAHs in Soil - Dock Road Drum Storage Site  
Phase III ESA, HHERA and RAP  
Former U.S Military Facility, Northwest Point, NL  
Stantec Consulting Ltd. Project No. 121410105**

Parameters	Units	Criteria <sup>1,3</sup>	Criteria <sup>2,3</sup>	1999 Sampling (AGRA)		2009 Sampling (Stantec)	
				DDS-TP2	MDL	09-SS29	RDL
Sample Depth (m)				1.5	-	0.0 - 0.15	-
<b>Non-carcinogenic PAHs</b>							
1-Methylnaphthalene	mg/kg	-	-	-	-	<0.005	0.005
2-Methylnaphthalene	mg/kg	-	-	-	-	<0.005	0.005
Acenaphthene	mg/kg	-	-	<0.002	0.002	0.007	0.005
Acenaphthylene	mg/kg	-	-	<0.001	0.001	<0.005	0.005
Anthracene	mg/kg	2.5	-	<0.001	0.001	0.017	0.005
Fluoranthene	mg/kg	50	-	<0.001	0.001	0.15	0.005
Fluorene	mg/kg	-	-	<0.001	0.001	<0.005	0.005
Naphthalene	mg/kg	-	-	<0.002	0.002	<0.005	0.005
Perylene	mg/kg	-	-	<0.005	0.005	0.017	0.005
Phenanthrene	mg/kg	-	-	<0.001	0.001	0.056	0.005
Pyrene	mg/kg	-	-	<0.003	0.003	0.13	0.005
<b>Carcinogenic PAHs</b>							
Benzo(a)anthracene	mg/kg	-	-	<0.001	0.001	0.081	0.005
Benzo(a)pyrene	mg/kg	20	-	<0.003	0.003	0.075	0.005
Benzo(b)fluoranthene	mg/kg	-	-	<0.004	0.004	0.077	0.005
Benzo(g,h,i)perylene	mg/kg	-	-	<0.002	0.002	0.049	0.005
Benzo(k)fluoranthene	mg/kg	-	-	<0.004	0.004	0.077	0.005
Chrysene	mg/kg	-	-	<0.001	0.001	0.11	0.005
Indeno(1,2,3-c,d) pyrene	mg/kg	-	-	<0.003	0.003	0.056	0.005
Dibenz(a,h,)anthracene	mg/kg	-	-	<0.004	0.004	0.011	0.005
Benzo(a)pyrene TPE <sup>4</sup>		-	5.3	0.004	-	0.117	-

**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)

RDL = Reportable Detection Limit for routine analysis

< # = Not detected above RDL noted

"-" = No applicable guideline or does not apply

Table 15.4 Results of Laboratory Analysis of PCBs in Soil - Dock Road Drum Storage 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 <sup>1</sup>	1.3
<b>1999 Sampling (AGRA)</b>		
DDS-TP2	1.5	<0.005
<b>MDL</b>	-	0.005
<b>2009 Sampling (Stantec)</b>		
09-SS27	0.0 - 0.15	<0.05
09-SS29	0.0 - 0.15	<0.05
<b>RDL</b>	-	0.05

**Notes:**

1 = CCME Canadian Soil Quality Guidelines for a Residential/Parkland site (2007)

RDL = Reportable Detection Limit for routine analysis

< # = Not detected above RDL noted



**Table 15.5 Results of Laboratory Analysis of TPH/BTEX in Surface Water - Dock Road Drum Storage 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 <sub>6</sub> -C <sub>10</sub> (Gas Range)	C <sub>11</sub> -C <sub>20</sub> (Fuel Range)	C <sub>21</sub> -C <sub>32</sub> (Lube Range)	Modified TPH - Tier I <sup>3</sup>	Resemblance
<b>RDL</b>	0.001	0.001	0.001	0.002	0.01	0.05	0.1	0.1	-
<b>Units</b>	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	-
<b>Criteria<sup>1</sup></b>	0.37	0.002	0.09	-	-	-	-	-	-
<b>2009 Sampling (Stantec)</b>									
09-SW5	<0.001	0.005	0.003	<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

Shaded = Value exceeds applicable criteria

**Table 15.6 Results of Lab Analysis of Dissolved Metals in Surface Water - Dock Road Drum Storage Site  
Phase III ESA, HHERA and RAP  
Former U.S Military Facility, Northwest Point, NL  
Stantec Consulting Ltd. Project No. 121410105**

Parameters	Units	Criteria <sup>1</sup>	Surface Water (Freshwater)
			09-SW5
Aluminum	ug/L	5 <sup>2</sup>	612
Antimony	ug/L	-	<2.0
Arsenic	ug/L	5	<2.0
Barium	ug/L	-	27.2
Beryllium	ug/L	-	<2.0
Bismuth	ug/L	-	<2.0
Boron	ug/L	-	<5.0
Cadmium	ug/L	0.009 <sup>3</sup>	0.086
Chromium	ug/L	8.9	6.3
Cobalt	ug/L	-	5.27
Copper	ug/L	2 <sup>4</sup>	6.3
Iron	ug/L	300	1,020
Lead	ug/L	1 <sup>5</sup>	66.3
Manganese	ug/L	-	853
Mercury	ug/L	0.026	<0.013
Molybdenum	ug/L	73	<2.0
Nickel	ug/L	25 <sup>6</sup>	3.5
Selenium	ug/L	1	<1.0
Silver	ug/L	0.1	<0.10
Strontium	ug/L	-	38.6
Thallium	ug/L	0.8	<0.10
Tin	ug/L	-	<2.0
Titanium	ug/L	-	3.9
Uranium	ug/L	-	<0.10
Vanadium	ug/L	-	<2.0
Zinc	ug/L	30	32.7

**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 =  $10^{(0.86[\log(\text{hardness})]-3.2)}$  = 0.009 mg/L at a water hardness of 22 mg/L as CaCO<sub>3</sub>

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

5 = Lead guideline = 1 µg/L at water hardness of 0-60 mg/L as CaCO<sub>3</sub>  
= 2 µg/L at water hardness of 60-120 mg/L as CaCO<sub>3</sub>  
= 4 µg/L at water hardness of 120-180 mg/L as CaCO<sub>3</sub>  
= 7 µg/L at water hardness >180 mg/L as CaCO<sub>3</sub>

6 = Nickel guideline = 25 µg/L at water hardness of 0-60 mg/L as CaCO<sub>3</sub>  
= 65 µg/L at water hardness of 60-120 mg/L as CaCO<sub>3</sub>  
= 110 µg/L at water hardness of 120-180 mg/L as CaCO<sub>3</sub>  
= 150 µg/L at water hardness >180 mg/L as CaCO<sub>3</sub>

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

Shaded = Value exceeds CCME freshwater aquatic life guideline

**Table 15.7 Results of Laboratory Analysis of General Chemistry in Surface Water - Dock Road Drum Storage 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 <sup>1</sup>	2009 Sampling (Stantec)
				09-SW5
<b>Metals</b>				
Dissolved Calcium	0.1	mg/L	-	5.1
Dissolved Magnesium	0.1	mg/L	-	2.2
Dissolved Phosphorus	0.1	mg/L	<0.004 to >0.1 <sup>2</sup>	<0.1
Dissolved Potassium	0.1	mg/L	-	8.5
Dissolved Sodium	0.1	mg/L	-	3
<b>Calculated Parameters</b>				
Anion Sum	N/A	me/L	-	0.400
Bicarb. Alkalinity (calc. as CaCO <sub>3</sub> )	1	mg/L	-	10
Calculated TDS	1	mg/L	-	39
Carb. Alkalinity (calc. as CaCO <sub>3</sub> )	1	mg/L	-	<1
Cation Sum	N/A	me/L	-	0.800
Hardness (CaCO <sub>3</sub> )	1	mg/L	-	22
Ion Balance (% Difference)	N/A	%	-	33.3
Langelier Index (@ 20C)	-	N/A	-	-3.90
Langelier Index (@ 4C)	-	N/A	-	-4.15
Nitrate (N)	0.05	ug/L	3	<0.05
Saturation pH (@20C)	-	N/A	-	9.59
Saturation pH (@4C)	-	N/A	-	9.84
<b>Inorganics</b>				
Total Alkalinity (Total as CaCO <sub>3</sub> )	5	mg/L	-	10
Dissolved Chloride (Cl)	1	mg/L	-	7
Colour	80	TCU	Narrative	520
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	-	55
Orthophosphate (P)	0.01	mg/L	-	<0.01
pH	N/A	pH	6.5 - 9	5.69
Reactive Silica (SiO <sub>2</sub> )	0.5	mg/L	-	6.0
Dissolved Sulphate (SO <sub>4</sub> )	2	mg/L	-	<2
Turbidity	0.1	NTU	Narrative <sup>3</sup>	4.5
Conductivity	1	uS/cm	-	69

**Notes:**

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

2 = Phosphorous guideline is dependant on trophic status of the freshwater environment

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

RDL = Reportable Detection Limit

< # = Not detected above RDL noted

"-" = Value is not applicable or does not apply

Shaded = Value exceeds applicable guideline

**Table 15.8 Results of Laboratory Analysis of TPH/BTEX in Sediment - Dock Road Drum Storage 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	Ethyl Benzene	Xylenes	C <sub>6</sub> -C <sub>10</sub> (Gas Range)	C <sub>10</sub> -C <sub>21</sub> (Fuel Range)	C <sub>21</sub> -C <sub>32</sub> (Lube Range)	Modified TPH <sup>2</sup>	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	-
Criteria <sup>1</sup>	-	-	-	-	-	-	-	1,500	-
<b>2009 Sampling (Stantec)</b>									
09-SED5	<0.03	<0.03	<0.03	<0.05	<3	380	1,300	1,600	OPF/L

**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 freshwater 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

OPF/L= One product in fuel/lube range;

Shaded = Value exceeds applicable criteria

**Table 15.9 Results of Laboratory Analysis of Metals in Sediment - Dock Road Drum Storage 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 <sup>1</sup>	Criteria <sup>2</sup>	2009 Sampling (Stantec)
					09-SED5
Aluminum	10	mg/kg	-	-	4,000
Antimony	2	mg/kg	-	-	<2
Arsenic	2	mg/kg	5.9	17	<2
Barium	5	mg/kg	-	-	200
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	4
Cobalt	1	mg/kg	-	-	11
Copper	2	mg/kg	35.7	197	20
Iron	50	mg/kg	-	-	3,500
Lead	0.5	mg/kg	35	91.3	<b>300</b>
Lithium	2	mg/kg	-	-	<2
Manganese	2	mg/kg	-	-	260
Mercury	0.1	mg/kg	-	-	<0.1
Molybdenum	2	mg/kg	-	-	<2
Nickel	2	mg/kg	-	-	9
Rubidium	2	mg/kg	-	-	5
Selenium	1	mg/kg	-	-	<1
Silver	0.5	mg/kg	-	-	<0.5
Strontium	5	mg/kg	-	-	65
Thallium	0.1	mg/kg	-	-	<0.1
Tin	2	mg/kg	-	-	<2
Uranium	0.1	mg/kg	-	-	0.2
Vanadium	2	mg/kg	-	-	9
Zinc	5	mg/kg	123	315	15

**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

< = Not detected above RDL noted

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

Bold = Value exceeds CCME ISQG

Shaded = Value exceeds CCME PEL

**Table 15.10 Results of Laboratory Analysis of PCBs in Vegetation - Dock Road Drum Storage Site  
Phase III ESA, HHERA and RAP  
Former U.S Military Facility, Northwest Point, NL  
Stantec Consulting Ltd. Project No. 121410105**

<b>Sample Location</b>	<b>Polychlorinated Biphenyls (PCBs)</b>
<b>RDL</b>	0.05
<b>Units</b>	ug/L
<b>Criteria</b>	na
<b>2009 Sampling (Stantec)</b>	
09-VEG-17	<0.3

**Notes:**

RDL = Reportable Detection Limit

na = No applicable guideline

< # = Not detected above RDL noted

**Table 15.11 Results of Laboratory Analysis of PCBs in Berries - Dock Road Drum Storage 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
<b>2009 Sampling (Stantec)</b>	
09-BERRY 13	<0.05

**Notes:**

RDL = Reportable Detection Limit

na = No applicable guideline

< # = Not detected above RDL noted

**Table 15.12 Results of Laboratory Analysis of PCBs/Crude Fat in Small Mammal Tissue Samples - Dock Road Drum Storage 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 / 0.07	0.5
Units	ug/g	%
Criteria	na	na
<b>2009 Sampling (Stantec)</b>		
09-SM17	<0.05	2.8
09-SM22	<0.05	3.4
09-SM23	<0.07	-
09-SM24	<0.07	-

**Notes:**

RDL = Reportable Detection Limit

na = No applicable guideline

< # = Not detected above RDL noted

"-" = Not analyzed



# **Appendix 15f**

Results of Hydraulic Response (Bail-Down) Test

– Dock Road Drum Storage 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-MW26**Slug Test:** 09-MW26

Depth to Static WL: 1.3 [m]

Test Well: 09-MW26

Location:

Casing radius: 0.025 [m]

Recorded by: Stantec

Boring radius: 0.05 [m]

Date: 8/27/2009

Screen length: 3.66 [m]

Aquifer Thickness: 4.01 [m]

	Time [s]	Depth to WL [m]	Drawdown [m]
1	5	4.80	3.50
2	10	4.67	3.37
3	15	4.50	3.20
4	20	4.40	3.10
5	30	4.31	3.01
6	40	4.22	2.92
7	50	4.19	2.89
8	60	4.12	2.82
9	90	3.99	2.69
10	120	3.90	2.60
11	180	3.82	2.52
12	240	3.74	2.44
13	300	3.67	2.37
14	360	3.60	2.30
15	480	3.48	2.18
16	600	3.39	2.09
17	720	3.27	1.97
18	900	3.14	1.84
19	1200	3.01	1.71
20	1500	2.91	1.61
21	1800	2.82	1.52
22	2100	2.74	1.44
23	2400	2.68	1.38
24	3000	2.60	1.30
25	3600	2.55	1.25

**Stantec Consulting Ltd.**

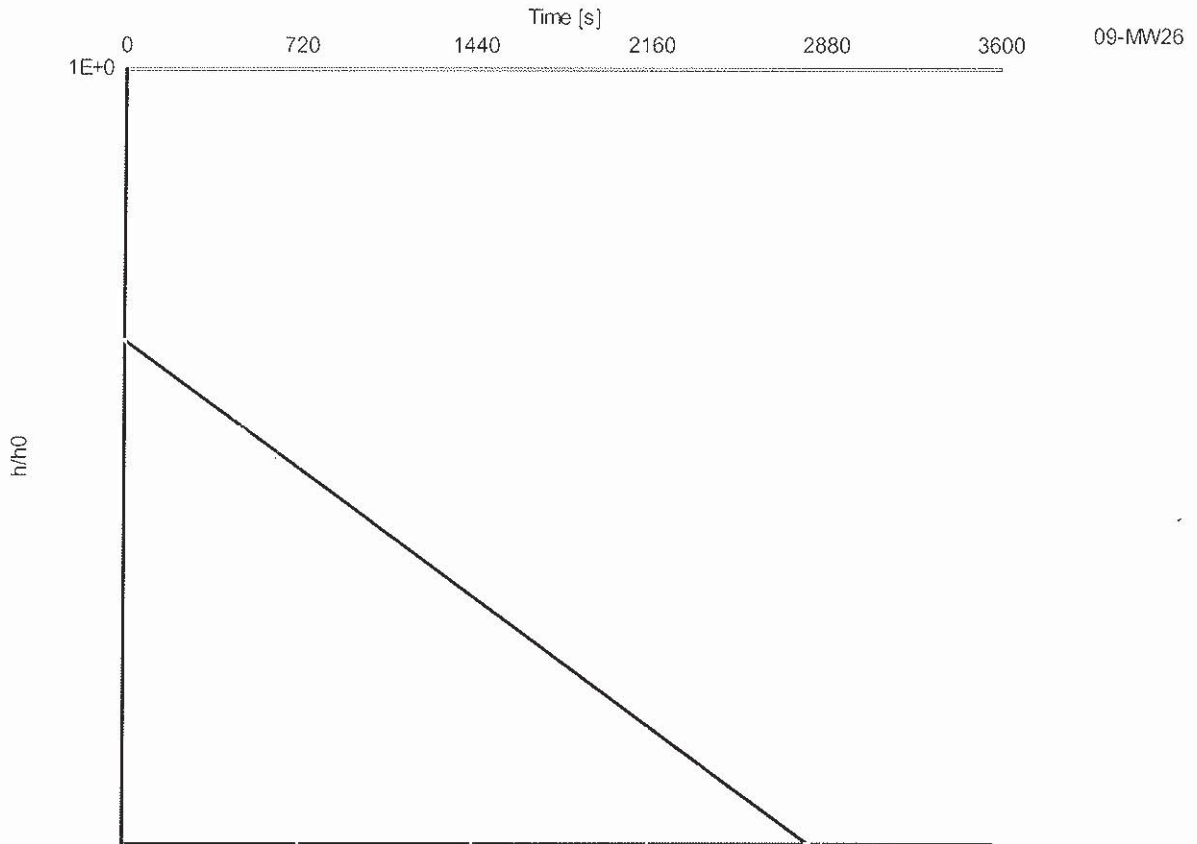
607 Torbay Road  
St. John's, NL, A1A 4Y6  
Tel: (709) 576-1458

**Slug Test Analysis Report**

Project: Northwest Point  
Number: 121410105  
Client: NLDEC



09-MW26 [Bouwer & Rice]



Slug Test: 09-MW26

Analysis Method: Bouwer & Rice

Analysis Results:

Conductivity: 6.83E-8 [m/s]

Test parameters:

Test Well:	09-MW26
Casing radius:	0.025 [m]
Screen length:	3.66 [m]
Boring radius:	0.05 [m]
r(eff):	0.033 [m]

Aquifer Thickness:	4.01 [m]
Gravel Pack Porosity (%)	25

Comments:

Evaluated by: AR

Evaluation Date: 6/9/2010

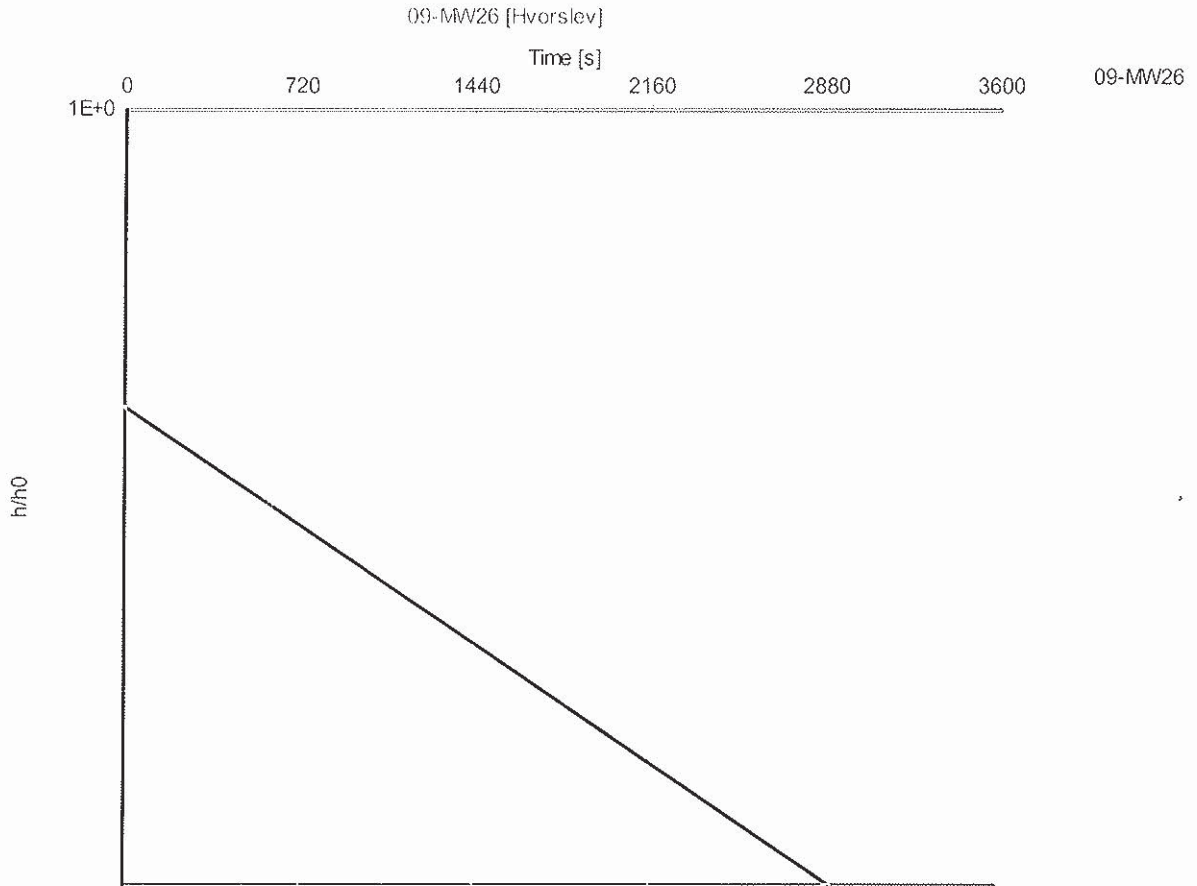
**Stantec Consulting Ltd.**

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

**Slug Test Analysis Report**

Project: Northwest Point  
Number: 121410105  
Client: NLDEC

Stantec



Slug Test: 09-MW26

Analysis Method: Hvorslev

Analysis Results:

Conductivity: 8.04E-8 [m/s]

Test parameters: Test Well: 09-MW26

Aquifer Thickness: 4.01 [m]

Casing radius: 0.025 [m]

Screen length: 3.66 [m]

Boring radius: 0.05 [m]

Comments:

Evaluated by: AR

Evaluation Date: 6/9/2010