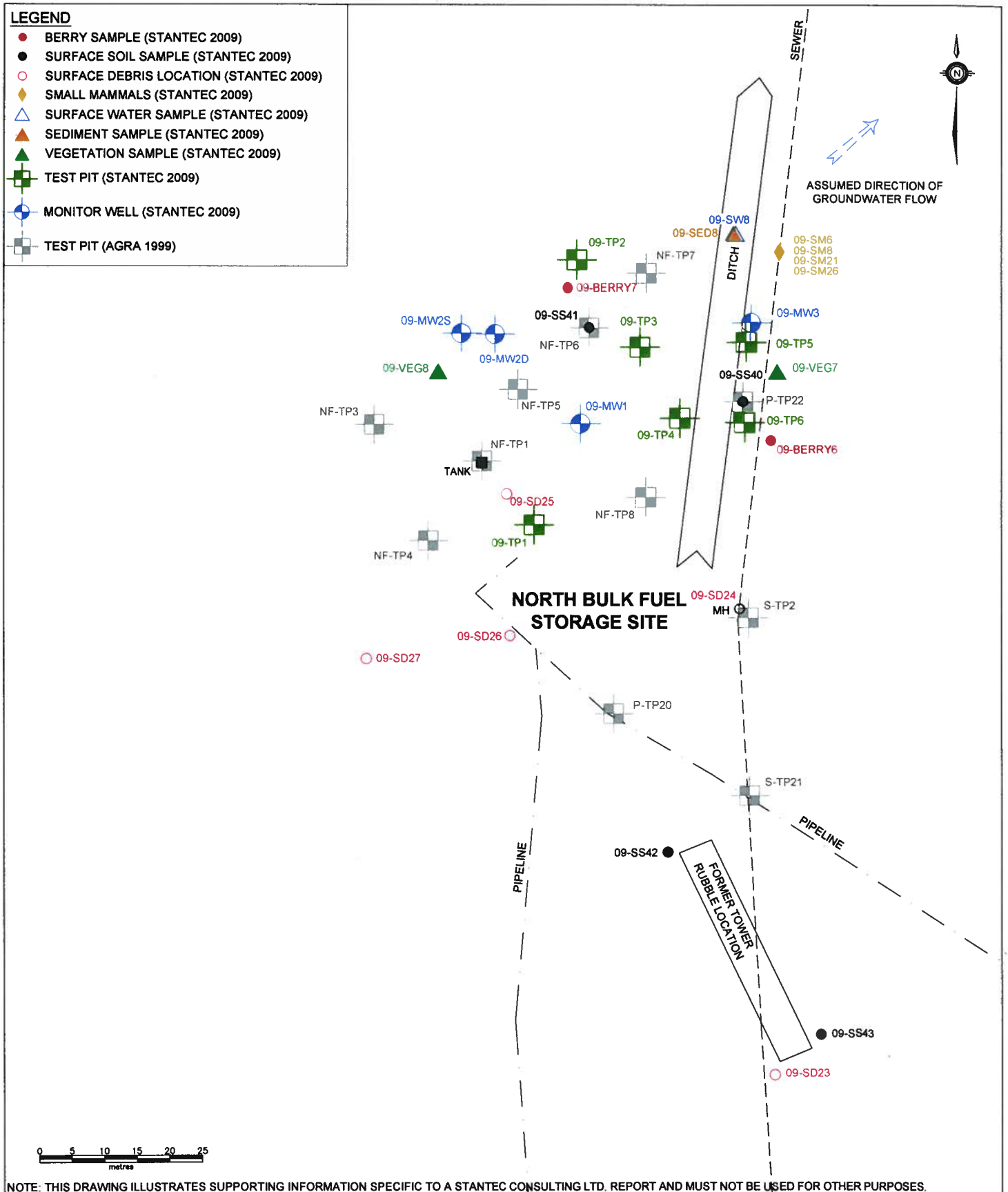
Appendix 2a

Site Drawings

– North Bulk Fuel Storage Site



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

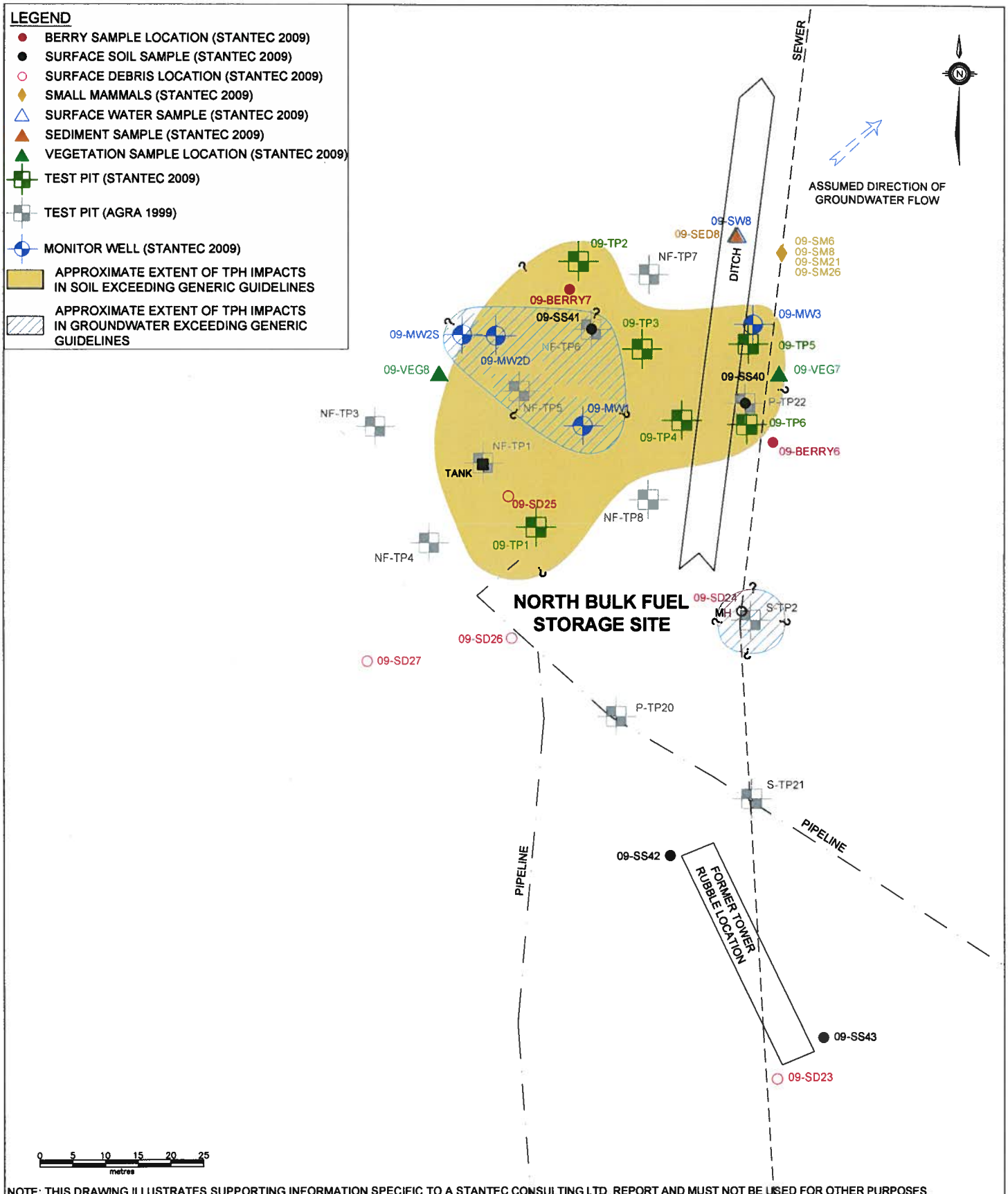
PROJECT TITLE:
PHASE III ESA, HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS, REMEDIAL ACTION PLAN FOR THE FORMER U.S. MILITARY FACILITY OF NORTHWEST POINT, NL

DRAWING TITLE:
SITE PLAN - NORTH BULK FUEL STORAGE 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-02A	
CAD FILE: 1044857-EE-07.DWG	

Stantec

17JUN10 1:00PM

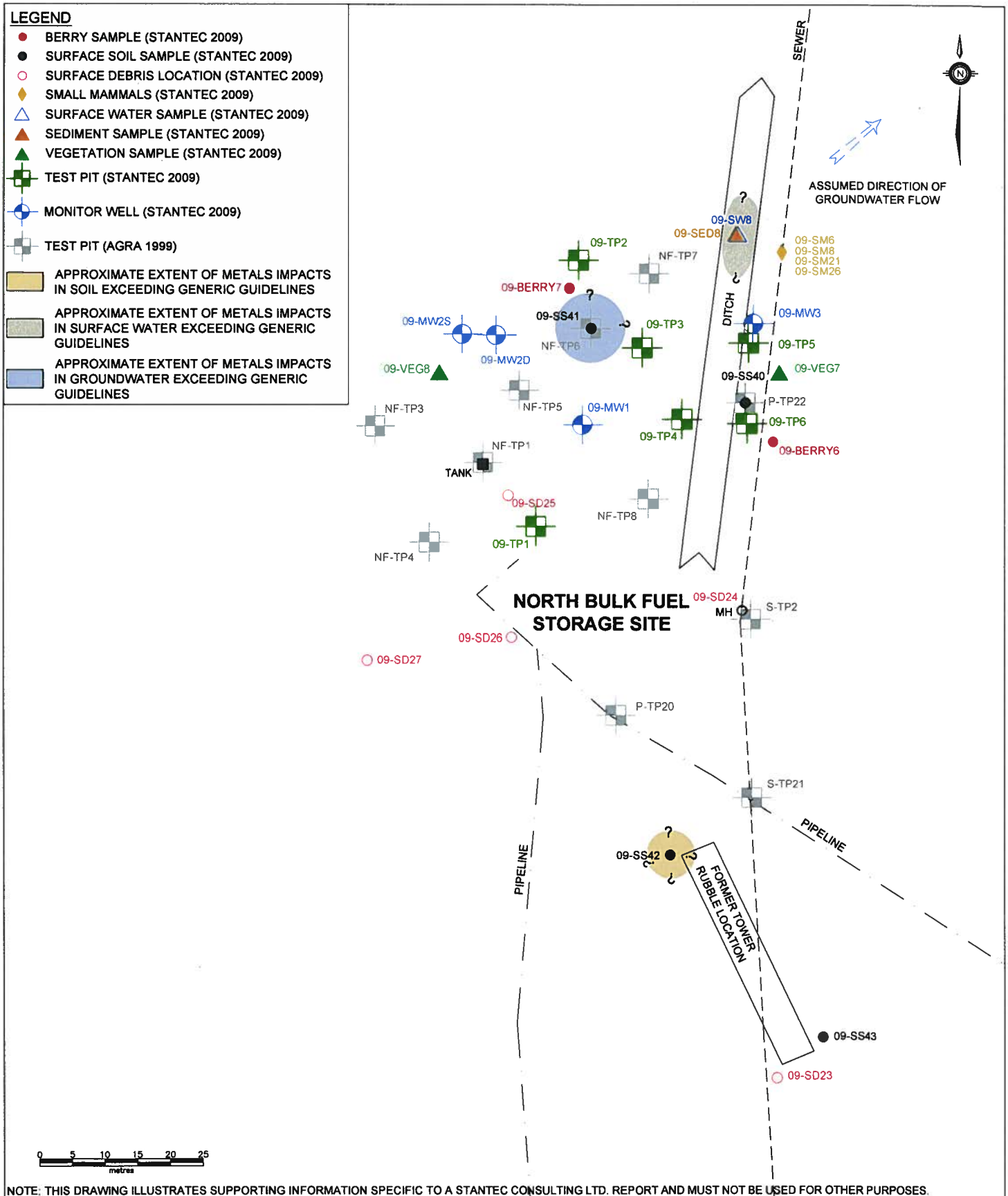


NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

CLIENT: NEWFOUNDLAND AND LABRADOR DEPARTMENT OF ENVIRONMENT AND CONSERVATION	SCALE: 1:800	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 TITLE: APPROXIMATE EXTENT OF TPH IMPACTS EXCEEDING GENERIC GUIDELINES - NORTH BULK FUEL STORAGE SITE	DRAWING No: 121410105-EE-02B		
	CAD FILE: 1044857-EE-10.DWG		

Stantec

17JUN10 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: 1:800
	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 TITLE: APPROXIMATE EXTENT OF METALS IMPACTS EXCEEDING GENERIC GUIDELINES - NORTH BULK FUEL STORAGE SITE	DRAWING No: 121410105-EE-2C
	CAD FILE: 1044857-EE-11.DWG

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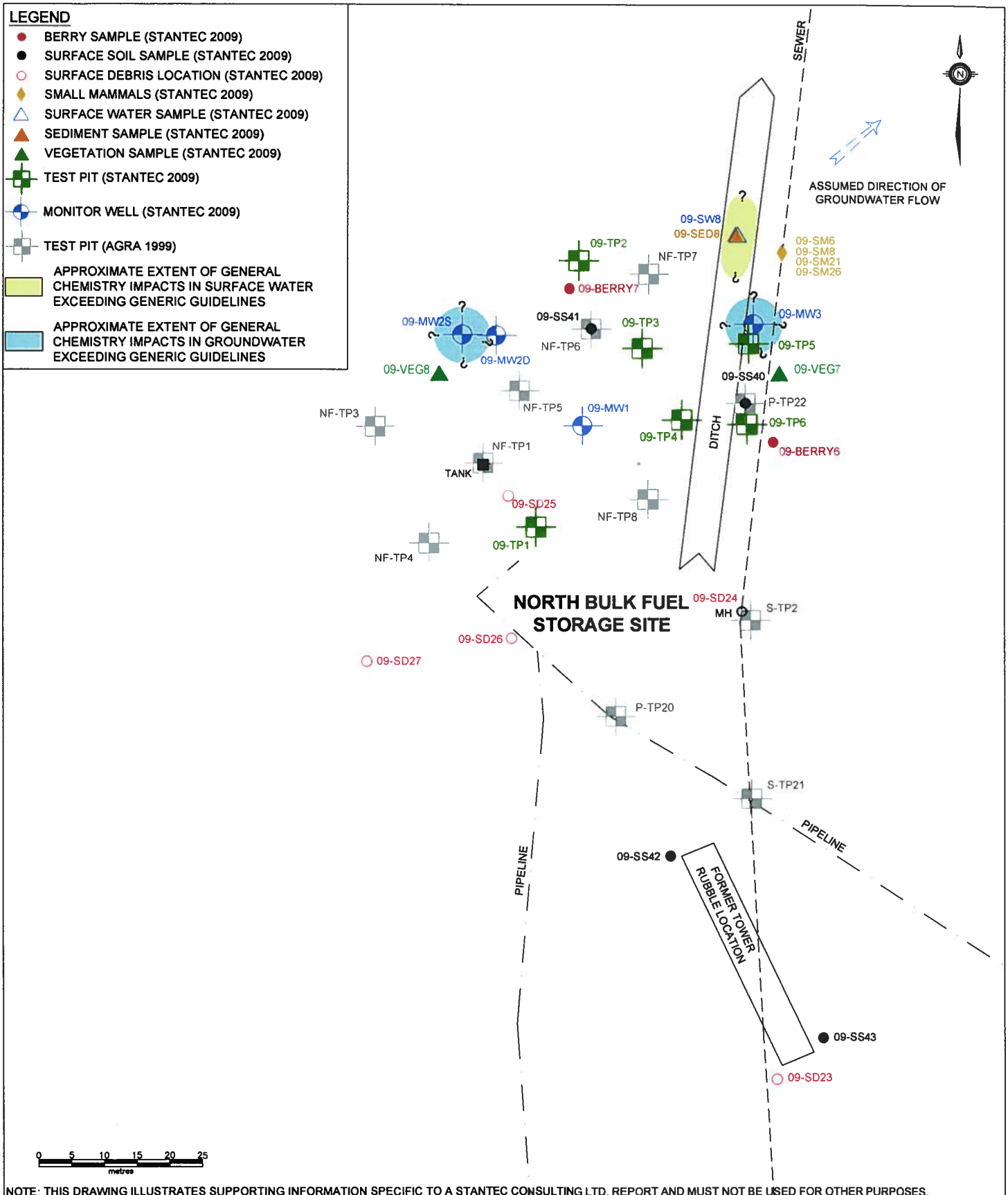
21JUN10 1:00PM



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

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 GENERAL CHEMISTRY IMPACTS EXCEEDING GENERIC GUIDELINES - NORTH BULK FUEL STORAGE 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-2D	
CAD FILE: 1044857-EE-13.DWG	

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21JUN10 12:00PM

Appendix 2b

Site Photos

– North Bulk Fuel Storage Site

Site Photographs – North Bulk Fuel Storage Site

Photo 1 View of manhole cover (09-SD24) at the site

Photo 2 View of surface debris (09-SD25) and cleared area at the site

Site Photographs – North Bulk Fuel Storage Site

Photo 3 View of surface debris (09-SD26) and a small area of standing water at the site

Photo 4 View of surface debris at the site (09-27) and trees at the site

Appendix 2c

Sample Coordinates

– North Bulk Fuel Storage Site

Sample Coordinates - North Bulk Fuel 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
TEST PITS		
09-TP1	694253	5931380
09-TP2	694264	5931415
09-TP3	694274	5931402
09-TP4	694281	5931400
09-TP5	694290	5931403
09-TP6	694286	5931391
MONITOR WELLS		
09-MW1	694268	5931393
09-MW2S	694245	5931396
09-MW2D	694245	5931396
09-MW3	694291	5931406
SURFACE SOIL		
09-SS40	694281	5931358
09-SS41	694261	5931409
09-SS42	694291	5931294
09-SS43	694298	5931278
SURFACE WATER		
09-SW8	694288	5931393
SEDIMENT		
09-SED8	694288	5931393
VEGETATION		
09-VEG7	694295	5931398
09-VEG8	694243	5931397
BERRIES		
09-BERRY6	694294	5931388
09-BERRY7	694263	5931410
SMALL MAMMALS		
09-SM6	694295	5931417
09-SM8	694295	5931417
09-SM21	694295	5931417
09-SM26	694295	5931417

Appendix 2d

Test Pit Records and Monitor Well Records

– North Bulk Fuel Storage Site

SYMBOLS AND TERMS USED ON BOREHOLE AND TEST PIT RECORDS

SOIL DESCRIPTION

Terminology describing common soil genesis:

Topsoil	-	mixture of soil and humus capable of supporting vegetative growth
Peat	-	mixture of visible and invisible fragments of decayed organic matter
Till	-	unstratified glacial deposit which may range from clay to boulders
Fill	-	material below the surface identified as placed by humans (excluding buried services)

Terminology describing soil structure:

Desiccated	-	having visible signs of weathering by oxidization of clay minerals, shrinkage cracks, etc.
Fissured	-	having cracks, and hence a blocky structure
Varved	-	composed of regular alternating layers of silt and clay
Stratified	-	composed of alternating successions of different soil types, e.g. silt and sand
Layer	-	> 75 mm in thickness
Seam	-	2 mm to 75 mm in thickness
Parting	-	< 2 mm in thickness

Terminology describing soil types:
The classification of soil types are made on the basis of grain size and plasticity in accordance with the Unified Soil Classification System (USCS) (ASTM D 2487 or D 2488). The classification excludes particles larger than 76 mm (3 inches). The USCS provides a group symbol (e.g. SM) and group name (e.g. silty sand) for identification.

Terminology describing cobbles, boulders, and non-matrix materials (organic matter or debris):
Terminology describing materials outside the USCS, (e.g. particles larger than 76 mm, visible organic matter, construction debris) is based upon the proportion of these materials present:

Trace, or occasional	Less than 10%
Some	10-20%
Frequent	> 20%

Terminology describing compactness of cohesionless soils:
The standard terminology to describe cohesionless soils includes compactness (formerly "relative density"), as determined by the Standard Penetration Test N-Value (also known as N-Index). A relationship between compactness condition and N-Value is shown in the following table.

Compactness Condition	SPT N-Value
Very Loose	<4
Loose	4-10
Compact	10-30
Dense	30-50
Very Dense	>50

Terminology describing consistency of cohesive soils:
The standard terminology to describe cohesive soils includes the consistency, which is based on undrained shear strength as measured by *in situ* vane tests, penetrometer tests, or unconfined compression tests.

Consistency	Undrained Shear Strength	
	kips/sq.ft.	kPa
Very Soft	<0.25	<12.5
Soft	0.25 - 0.5	12.5 - 25
Firm	0.5 - 1.0	25 - 50
Stiff	1.0 - 2.0	50 – 100
Very Stiff	2.0 - 4.0	100 - 200
Hard	>4.0	>200

ROCK DESCRIPTION

Terminology describing rock quality:

RQD	Rock Mass Quality
0-25	*Very Poor Quality - Very Severely Fractured, Crushed*
25-50	*Poor Quality- Severely Fractured, Shattered or Very Blocky*
50-75	*Fair Quality - Fractured, Blocky*
75-90	*Good Quality - Moderately Jointed, Sound*
90-100	*Excellent Quality - Intact, Very Sound*

Rock quality classification is based on a modified core recovery percentage (RQD) in which all pieces of sound core over 100 mm long are counted as recovery. The smaller pieces are considered to be due to close shearing, jointing, faulting, or weathering in the rock mass and are not counted. RQD was originally intended to be done on N-size core; however, it can be used on different core sizes if the bulk of the fractures caused by drilling stresses are easily distinguishable from *in situ* fractures. The terminology describing rock mass quality based on RQD is subjective and is underlain by the presumption that sound strong rock is of higher engineering value than fractured weak rock.

Terminology describing rock mass:

Spacing (mm)	Joint Classification	Bedding, Laminations, Bands
> 6000	*Extremely Wide*	-
2000-6000	*Very Wide*	*Very Thick*
600-2000	*Wide*	*Thick*
200-600	*Moderate*	*Medium*
60-200	*Close*	*Thin*
20-60	*Very Close*	*Very Thin*
<20	*Extremely Close*	*Laminated*
<6	-	*Thinly Laminated*

Terminology describing rock strength:

Strength Classification	Grade	Unconfined Compressive Strength (MPa)
Extremely Weak	R0	< 1
Very Weak	R1	1 – 5
Weak	R2	5 – 25
Medium Strong	R3	25 – 50
Strong	R4	50 – 100
Very Strong	R5	100 – 250
Extremely Strong	R6	> 250

Terminology describing rock weathering:

Term	Symbol	Description
Fresh	W1	No visible signs of rock weathering. Slight discolouration along major discontinuities
Slightly Weathered	W2	Discoloration indicates weathering of rock on discontinuity surfaces. All the rock material may be discoloured.
Moderately Weathered	W3	Less than half the rock is decomposed and/or disintegrated into soil.
Highly Weathered	W4	More than half the rock is decomposed and/or disintegrated into soil.
Completely Weathered	W5	All the rock material is decomposed and/or disintegrated into soil. The original mass structure is still largely intact.

Solid Core Recovery (SCR):
Solid core recovery is defined as the cumulative length of all solid (at full diameter) core in the core barrel divided by the length drilled and is recorded as a percentage on a per run basis.

Fracture Index (FI):
Fracture Index is defined as the number of naturally occurring fractures occurring per 0.3 m length of core. The Fracture Index is reported as a simple count of fractures. For > 25 fractures / 0.3 m length, the Fracture Index is reported as >25.

STRATA PLOT

Strata plots symbolize the soil or bedrock description. They are combinations of the following basic symbols. The dimensions within the strata symbols are not indicative of the particle size, layer thickness, etc.

Boulders Cobbles Gravel | Sand | Silt | Clay | Organics | Asphalt | Concrete | Fill | Igneous Bedrock | Meta-morphic Bedrock | Sedi-mentary Bedrock

SAMPLE TYPE

SS	Split spoon sample (obtained by performing the Standard Penetration Test)
ST	Shelby tube or thin wall tube
DP	Direct-Push sample (small diameter tube sampler hydraulically advanced)
PS	Piston sample
BS	Bulk sample
WS	Wash sample
HQ, NQ, BQ, etc.	Rock core samples obtained with the use of standard size diamond coring bits.

WATER LEVEL MEASUREMENT

measured in standpipe, piezometer, or well

inferred

RECOVERY

For soil samples, the recovery is recorded as the length of the soil sample recovered. For rock core, recovery (or total core recovery - TCR) is defined as the total cumulative length of all core recovered in the core barrel divided by the length drilled and is recorded as a percentage on a per run basis.

N-VALUE

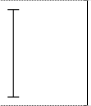
Numbers in this column are the field results of the Standard Penetration Test: the number of blows of a 140 pound (64 kg) hammer falling 30 inches (760 mm), required to drive a 2 inch (50.8 mm) O.D. split spoon sampler one foot (305 mm) into the soil. For split spoon samples where insufficient penetration was achieved and N-values cannot be presented, the number of blows are reported over sampler penetration in millimetres (e.g. 50/75). Some design methods make use of N value corrected for various factors such as overburden pressure, energy ratio, borehole diameter, etc. No corrections have been applied to the N-values presented on the log.

DYNAMIC CONE PENETRATION TEST (DCPT)

Dynamic cone penetration tests are performed using a standard 60 degree apex cone connected to A size drill rods with the same standard fall height and weight as the Standard Penetration Test. The DCPT value is the number of blows of the hammer required to drive the cone one foot (305 mm) into the soil. The DCPT is used as a probe to assess soil variability.

OTHER TESTS

S	Sieve analysis
H	Hydrometer analysis
k	Laboratory permeability
γ	Unit weight
G_s	Specific gravity of soil particles
CD	Consolidated drained triaxial
CU	Consolidated undrained triaxial with pore pressure measurements
UU	Unconsolidated undrained triaxial
DS	Direct Shear
C	Consolidation
Q_u	Unconfined compression
I_p	Point Load Index (I_p on Borehole Record equals $I_p(50)$ in which the index is corrected to a reference diameter of 50 mm)

	Single packer permeability test; test interval from depth shown to bottom of borehole
	Double packer permeability test; test interval as indicated
	Falling head permeability test using casing
	Falling head permeability test using well point or piezometer

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 **0.5m** **8-5-09**

TEST PIT No. **09-TP1**
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, brown, SAND (SP); some organics		▽	BS	1	1		70	-	-	-	-	-
					BS	2	0-1		54.8	-	-	-	-	-
1		Compact to dense, grey, SILT (ML); some clay			BS	3	0-1		206	11000	0.16	0.08	2.30	5.00
		End of Test Pit Moderate groundwater seepage observed at 0.5 m depth; sheen on groundwater. Bedrock not encountered.												
2														
3														
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 8-5-09 WATER LEVEL 0.9m 8-5-09

TEST PIT No. 09-TP2
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		Organics			BS	1	0		0.0	-	-	-	-	-
		Compact, brown, SAND (SP)												
1				▽	BS	2	1-2		83	2700	nd	nd	nd	nd
		End of Test Pit Rapid groundwater seepage observed at 0.9 m depth; sheen on groundwater. Bedrock not encountered.												
2														
3														
4														
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 **8-5-09** WATER LEVEL **1.3m** **8-5-09**

TEST PIT No. **09-TP3**
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		Organics			BS	1	1-2		49.7	-	-	-	-	-
1		Compact, brown, SAND (SP)		▽	BS	2	1-2		89.5	3000	nd	nd	nd	nd
2		Compact, grey, SILT (ML); some clay, trace sand												
		End of Test Pit Rapid groundwater seepage observed at 1.3 m depth; sheen on groundwater. Bedrock not encountered.												
3														
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 8-5-09 WATER LEVEL 1.5m 8-5-09

TEST PIT No. 09-TP4
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 grey silt and clay, occasional cobbles, trace roots			BS	1	0		10.5	-	-	-	-	-
1				▽										
		Compact, brown, SAND (SP)			BS	2	2		94	790	nd	nd	nd	nd
2		End of Test Pit Rapid groundwater seepage observed at 1.5 m depth; sheen on groundwater. Bedrock not encountered.												
3														
4														
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 **8-5-09** WATER LEVEL **1.4m** **8-5-09**

TEST PIT No. **09-TP5**
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, brown, SAND (SP); trace cobbles			BS	1	0		8.4	-	-	-	-	-
1				▽	BS	2	0		0.2	1600	nd	nd	nd	nd
2		Dense, grey, SILT (ML); trace clay and sand												
		End of Test Pit Moderate groundwater seepage observed at 1.4 m depth. Bedrock not encountered.												
3														
4														
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 **8-5-09** WATER LEVEL **1.4m** **8-5-09**

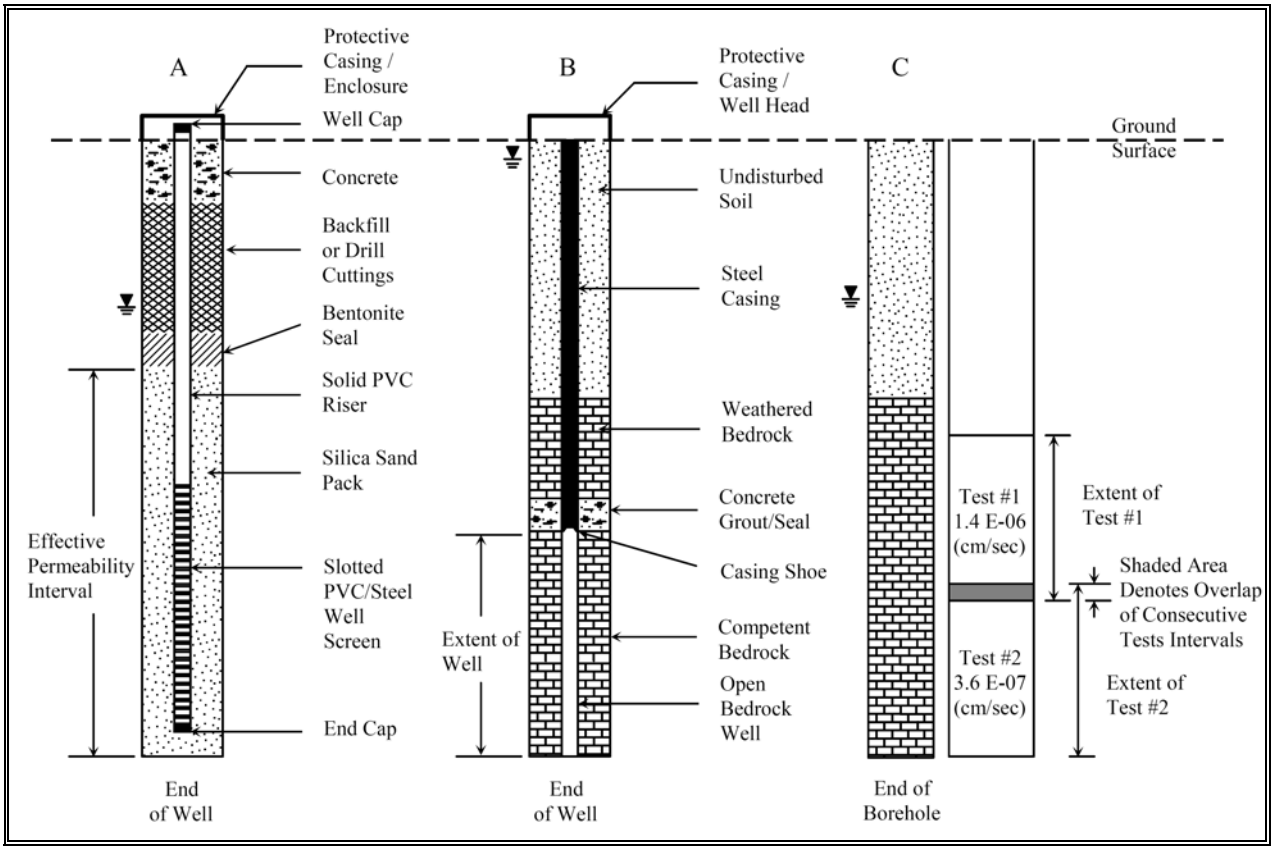
TEST PIT No. **09-TP6**
PROJECT No. **121410105**
DATUM

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, brown, SAND (SP); occasional cobbles and boulders			BS	1	0		0.5	-	-	-	-	-
1				▽	BS	2	0		0.0	-	-	-	-	-
		Dense, grey, SILT (ML); some clay, trace sand												
2		End of Test Pit Slow to moderate groundwater seepage observed at 1.4 m depth. Bedrock not encountered.												
3														
4														
5														

SYMBOLS AND TERMS USED ON MONITOR WELL, WATER WELL AND ENVIRONMENTAL RECORDS

Well Construction and Permeability Testing

Basic symbols used in typical monitor or water well and piezometer construction are shown below. The well construction symbols or materials shown below may be combined or altered to suit a particular application. The diagram shows: A) a typical piezometer or monitor well in overburden; B) a typical water well in bedrock; C) borehole permeability test results in bedrock.



Apparent Moisture Content

Terminology used to describe apparent moisture content at the time of borehole drilling or test pit excavation.

Symbol	Description
D	Dry – containing little or no moisture
M	Moist – containing some moisture without having 'free' moisture
S	Saturated – 'free' moisture can drain from material

Terminology Describing Contamination

Symbol	Description
PID	Photo Ionization Detector (readings in ppm)
TPH	Total Petroleum Hydrocarbon concentration (readings in ppm based on mass)
ppm	Parts Per Million (measurement of concentration, mg/kg or mg/L)
nd	Not Detected – below limit of quantification (LOQ)

Apparent Hydrocarbon Odour

Terminology used to describe apparent hydrocarbon odour at the time of borehole drilling or test pit excavation.

Value	Description
0	No apparent odour
1	Slight odour
2	Moderate odour
3	Strong odour

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MONITOR WELL RECORD

BOREHOLE No. **09-MW01**
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 **1.22m** **8-7-09**

DEPTH (m)	ELEVATION (m)	DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES N-VALUE OR RQD %	HYDROCARBON ODOUR	APPARENT MOISTURE CONTENT	PID (ppm)	TPH (ppm)	WELL CONSTRUCTION DETAILS (0.61 m STICK UP)
							mm						CAST IRON WELL HEAD
0		Brown, SAND (SP)			SS	1	-	2	1		0.0	-	BENTONITE
1				▼	SS	2	-	4	2		0.0	-	50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK
		Grey, CLAY (CL)			SS	3	-	5	3		0.0	-	
2					SS	4	-	11	2		0.0	-	
3		End of Borehole Samples SS3 and SS4 saturated with fuel.											END CAP
4													
5													
6													
7													
8													
9													
10													

Stantec

MONITOR WELL RECORD

BOREHOLE No. **09-MW02S**
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 **0.61m** **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 (0.61 m STICK UP)
0		Brown, SAND (SP)		▼	SS	1	305	4	1-2	-	8.8	-	CAST IRON WELL HEAD; BENTONITE
1		Brown, SAND with clay (SP-SC)			SS	2	305	7	1-2	-	18	-	50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK
2		Brown, silty SAND (SM); trace clay			SS	3	305	11	1	-	39	-	
3		End of Borehole											END CAP
4													
5													
6													
7													
8													
9													
10													

MONITOR WELL RECORD

BOREHOLE No. **09-MW02D**
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 **8-6-09** WATER LEVEL **0.61m** **8-6-09**

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		Compact to dense, brown to grey, SAND with silt (SP-SM)		▼	SS	1	255	4	2		47.6	-	
1					SS	2	150	9	2	S	146	4000	
2					SS	3	510	4	2		109	-	
		Dense, grey, SILT (ML); trace clay			SS	4	455	9	2		112	-	BENTONITE
3					SS	5	305	10	2		50.6	-	
4					SS	6	305	15	1-2		20.5	-	
5		Dense, grey, SAND with silt (SP-SM); trace gravel, trace clay			SS	7	455	20	0		19.2	-	
					SS	8	305	26	0		10.1	-	
6													50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK
7													END CAP
8		End of Borehole											
9													
10													

MONITOR WELL RECORD

BOREHOLE No. **09-MW03**
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	SAMPLES N-VALUE OR RQD %	HYDROCARBON ODOUR	APPARENT MOISTURE CONTENT	PID (ppm)	TPH (ppm)	WELL CONSTRUCTION DETAILS (0.61 m STICK UP)
							mm						CAST IRON WELL HEAD
0		Grey, SILT (ML)			SS	1	-	5	0		11	-	BENTONITE
1		Brown to black, SAND (SP)			SS	2	-	14	1		5.6	-	
					SS	3	-	18	0		4.3	-	50 mm DIAMETER No. 10 SLOT PVC SCREEN IN No. 2 SILICA SAND PACK
2		Layers of grey CLAY (CL) and brown SAND (SP)		▼	SS	4	-	3	0		4.0	-	
		Grey, CLAY (CL)			SS	5	-	6	0		2.8	-	
3													END CAP
		End of Borehole											
4													
5													
6													
7													
8													
9													
10													

Appendix 2e

Laboratory Analytical Results Summary Tables

– North Bulk Fuel Storage Site

Table 2.1 Results of Laboratory Analysis of TPH/BTEX in Soil - North Bulk Fuel 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)	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)												
NF-TP1	0.5	<2.0	<2.0	<2.0	<4.0	502	11,600	-	-	-	12,102	D
NF-TP3	0.5	<0.002	<0.002	<0.002	<0.004	<0.02	<0.20	-	-	-	<0.22	-
NF-TP4	0.5	<0.002	<0.002	<0.002	<0.004	<0.02	<0.20	-	-	-	<0.22	-
NF-TP5	0.5	<0.40	<0.40	<0.40	1.25	75.7	8,490	-	-	-	8,566	D
NF-TP7	0.5	<0.002	<0.002	<0.002	<0.004	<0.02	69	-	-	-	69	NRD/G
NF-TP8	0.5	<0.002	<0.002	<0.002	<0.004	<0.02	<0.20	-	-	-	<0.22	-
P-TP20	0.5	<0.002	<0.002	<0.002	<0.004	<0.02	<0.20	-	-	-	<0.22	-
P-TP22	0.5	<0.40	<0.40	0.80	1.50	69.0	15,900	-	-	-	15,969	D
S-TP2	2.5	<0.002	<0.002	<0.002	<0.004	<0.02	<0.20	-	-	-	<0.22	-
MDL	-	0.002	0.002	0.002	0.002	0.02		-	-	-	0.20	-
2009 Sampling (Stantec)												
09-TP1-BS3	1.0 - 1.2	0.16	0.08	2.3	5.0	-	-	1,000	10,000	120	11,000	FO
RDL	-	0.03	0.03	0.03	0.05	-	-	30	15	15	30	-
09-TP2-BS2	0.7 - 1.2	<0.03	<0.03	<0.03	<0.05	-	-	21	2,700	57	2,700	WFO
09-TP3-BS2	1.1 - 1.5	<0.03	<0.03	<0.03	<0.05	-	-	25	2,900	62	3,000	WFO
09-TP4-BS2	1.4 - 1.8	<0.03	<0.03	<0.03	<0.05	-	-	10	750	29	790	WFO
09-TP5-BS2	1.2 - 1.6	<0.03	<0.03	<0.03	<0.05	-	-	<3	1,600	23	1,600	WFO
09-MW2D-SS2	0.6 - 1.2	<0.03	<0.03	<0.03	<0.05	-	-	130	3,800	48	4,000	-
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
D = Diesel; NRD/G = No resemblance to diesel or gasoline; FO = Fuel oil; WFO = Weathered fuel oil
Shaded = Value exceeds generic guideline for a residential site, non-potable groundwater, coarse grained soil and fuel oil impacts

Table 2.2 Results of Laboratory Analysis of Petroleum Hydrocarbon Fractionation in Soil - North Bulk Fuel Storage 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-TP1-BS3	RDL
Benzene	mg/kg	0.16	0.15	0.03
Toluene	mg/kg	14	0.08	0.03
Ethylbenzene	mg/kg	58	2.5	0.03
Xylene (Total)	mg/kg	17	5	0.05
Aliphatic >C6-C8	mg/kg	-	130 (1)	3
Aliphatic >C8-C10	mg/kg	-	970 (1)	6
Aliphatic >C10-C12	mg/kg	-	1,600	8
Aliphatic >C12-C16	mg/kg	-	4,700	15
Aliphatic >C16-C21	mg/kg	-	1,500	15
Aliphatic >C21-C32	mg/kg	-	73	15
Aromatics (-EX) >C8-C10	mg/kg	-	32	1
Aromatic >C10-C12	mg/kg	-	460	4
Aromatic >C12-C16	mg/kg	-	1,600	15
Aromatic >C16-C21	mg/kg	-	680	15
Aromatic >C21-C32	mg/kg	-	60	15
Modified TPH (Tier 2)	mg/kg	140	12,000	20
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, fuel oil impacts (September, 2003)
(1) = Elevated VPH RDL(s) due to detected levels in the method blank.
RDL = Reportable Detection Limit
"-" = indicates value is not available or does not apply
< # = Not detected above RDL noted
FO = Fuel oil
Shaded = Value exceeds applicable criteria

Table 2.3 Results of Laboratory Analysis of Metals in Soil - North Bulk Fuel 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[1]	1999 Sampling (AGRA)				2009 Sampling (Stantec)				
			NF-TP6	P-TP20	P-TP22	MDL	09-SS41	09-SS42	09-SS42 Lab-Dup	09-SS43	RDL
Sample Depth (m)			0.5	0.5	0.5	-	0.0 - 0.15	0.0 - 0.15	0.0 - 0.15	0.0 - 0.15	-
Aluminum	mg/kg	-	3,530	4,240	3,050	5	2,200	3,700	3,700	4,700	10
Antimony	mg/kg	20	<0.1	-	<0.1	0.1	<2	<2	<2	<2	2
Arsenic	mg/kg	12	0.2	-	0.3	0.1	<2	<2	<2	<2	2
Barium	mg/kg	500	23	27	17	0.5	14	37	35	49	5
Beryllium	mg/kg	4	<0.2	<0.2	<0.2	<0.2	<2	<2	<2	<2	2
Bismuth	mg/kg	-	<0.2	<0.2	<0.2	0.2	<2	<2	<2	<2	2
Boron	mg/kg	-	-	-	-	-	<5	<5	<5	<5	5
Cadmium	mg/kg	10	<0.5	<0.5	<0.5	0.5	<0.3	<0.3	<0.3	<0.3	0.3
Calcium	mg/kg	-	1,620	1,370	1,420	5	-	-	-	-	-
Chromium	mg/kg	64	8	9	5	1	5	13	9(1)	13	2
Cobalt	mg/kg	50	2	2	1	1	1	2	2	3	1
Copper	mg/kg	63	3	4	4	1	3	5	5	8	2
Iron	mg/kg	-	4,950	5,560	5,060	5	3,300	5,700	5,900	7,600	50
Lead	mg/kg	140	<5	<5	6	5	5.9	170	31(2)	17	0.5
Lithium	mg/kg	-	-	-	-	-	<2	3	3	4	2
Magnesium	mg/kg	-	1,770	1,450	1,170	5	-	-	-	-	-
Manganese	mg/kg	-	67	68	52	1	34	71	67	110	2
Mercury	mg/kg	6.6	0.03	-	0.03	0.01	<0.1	<0.1	<0.1	<0.1	0.1
Molybdenum	mg/kg	10	<4	<4	<4	4	<2	<2	<2	<2	2
Nickel	mg/kg	50	5	<5	<5	5	3	5	5	7	2
Phosphorous	mg/kg	-	313	228	161	5	-	-	-	-	-
Potassium	mg/kg	-	828	601	682	5	-	-	-	-	-
Rubidium	mg/kg	-	-	-	-	-	3	7	7	10	2
Selenium	mg/kg	1	<0.1	-	<0.1	0.1	<1	<1	<1	<1	1
Silver	mg/kg	20	<5	<5	<5	5	<0.5	<0.5	<0.5	<0.5	0.5
Strontium	mg/kg	-	494	275	971	5	<5	7	7	10	5
Thallium	mg/kg	1	-	-	-	-	<0.1	<0.1	<0.1	<0.1	0.1
Tin	mg/kg	-	-	-	-	-	<2	<2	<2	<2	2
Uranium	mg/kg	23	-	-	-	-	0.2	0.2	0.2	0.3	0.1
Vanadium	mg/kg	130	15	16	11	5	8	13	14	19	2
Zinc	mg/kg	200	10	9	10	2	8	98	90	38	5

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
(1) Elevated reporting limit due to sample matrix; (2) Poor RPD due to sample inhomogeneity
Lab-Dup = Laboratory duplicate sample
< # = Not detected above MDL/RDL noted
"-" = No applicable guideline
Shaded = Value exceeds applicable criteria

Table 2.4 Results of Laboratory Analysis of PAHs in Soil - North Bulk Fuel 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[1,3]	Criteria[2,3]	1999 Sampling (AGRA)					2009 Samling (Stantec)		
				NF-TP5	NF-TP6	P-TP20	P-TP22	MDL	09-SS40	09-SS42	RDL
			Sample Depth (m)	0.5	0.5	0.5	0.5	-	0.0 - 0.15	0.0 - 0.15	-
Non-carcinogenic PAHs											
1-Methylnaphthalene	mg/kg	-	-	-	-	-	-	-	<0.005	<0.005	0.005
2-Methylnaphthalene	mg/kg	-	-	-	-	-	-	-	<0.005	<0.005	0.005
Acenaphthene	mg/kg	-	-	<0.02	<0.02	<0.002	<0.02	0.002	<0.005	<0.005	0.005
Acenaphthylene	mg/kg	-	-	<0.01	<0.01	<0.001	<0.01	0.001	<0.005	<0.005	0.005
Anthracene	mg/kg	2.5	-	<0.01	<0.02	<0.001	<0.01	0.001	<0.005	<0.005	0.005
Fluoranthene	mg/kg	50	-	<0.01	<0.01	<0.001	0.42	0.001	0.007	<0.005	0.03
Fluorene	mg/kg	-	-	<0.01	<0.01	<0.001	<0.01	0.001	<0.005	<0.005	0.005
Naphthalene	mg/kg	-	-	<0.02	<0.02	<0.002	<0.02	0.002	<0.005	<0.005	0.005
Perylene	mg/kg	-	-	-	-	-	-	-	<0.005	<0.005	0.005
Phenanthrene	mg/kg	-	-	<0.01	<0.01	<0.001	<0.01	0.001	0.007	<0.005	0.03
Pyrene	mg/kg	-	-	<0.03	<0.03	<0.003	0.32	0.003	0.007	<0.005	0.03
Carcinogenic PAHs											
Benzo(a)anthracene	mg/kg	-		<0.01	<0.01	<0.001	0.08	0.001	<0.005	<0.005	0.005
Benzo(a)pyrene	mg/kg	20	-	<0.03	<0.03	<0.003	0.04	0.003	<0.005	<0.005	0.005
Benzo(b)fluoranthene	mg/kg	-	-	<0.04	<0.04	<0.004	0.12	0.004	<0.005	<0.005	0.005
Benzo(g,h,i)perylene	mg/kg	-	-	<0.02	<0.02	<0.002	<0.02	0.002	0.009	<0.005	0.005
Benzo(k)fluoranthene	mg/kg	-	-	<0.04	<0.04	<0.004	0.09	0.004	<0.005	<0.005	0.005
Chrysene	mg/kg	-	-	<0.01	<0.01	<0.001	0.20	0.001	0.007	<0.005	0.005
Indeno(1,2,3-c,d) pyrene	mg/kg	-	-	<0.03	<0.03	<0.003	<0.03	0.003	0.009	<0.005	0.005
Dibenz(a,h,)anthracene	mg/kg	-	-	<0.04	<0.04	<0.004	<0.04	0.004	<0.005	<0.005	0.005
Benzo(a)pyrene TPE[4]		-	5.3	0.041	0.041	0.004	0.093	-	0.007	0.006	-

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

Shaded = Value exceeds applicable criteria

Table 2.5 Results of Laboratory Analysis of TPH/BTEX in Groundwater - North Bulk Fuel 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	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/L	mg/L	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	-
1999 Sampling (AGRA)											
NF-TP6	<0.0002	<0.0002	<0.00022	<0.00045	0.509	45,000	-	-	-	4,500.51	D
S-TP2	<0.0002	<0.0002	<0.00022	<0.00045	<0.005	177	-	-	-	177.005	D
MDL	0.0002	0.0002	<0.00022	0.00023	0.0005	0.05	-	-	-	0.05	-
2009 Sampling (Stantec)											
09-MW1	<0.001	<0.001	<0.001	<0.002	-	-	0.53	20	1.1	21	WFO
09-MW2S	<0.001	<0.001	0.004	0.019	-	-	2.2	19	1.0	22	WFO
09-MW2D	0.034	0.009	0.019	0.065	-	-	0.53	9.1	0.5	10	WFO
09-MW3	<0.001	<0.001	<0.001	<0.002	-	-	0.03	0.2	0.3	0.5	WFO/LO
RDL	0.001	0.001	0.001	0.002	-	-	0.01	0.05	0.1	0.1	-

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
D = Diesel; WFO= Weathered Fuel Oil; LO= Lube Oil
Shaded = Value exceeds applicable criteria

Table 2.6 Results of Laboratory Analysis of Dissolved Metals in Groundwater - North Bulk Fuel 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[1]	1999 Sampling (AGRA)		2009 Sampling (Stantec)				
			NF-TP6	MDL	09-MW1	09-MW2S	09-MW2D	09-MW3	RDL
Aluminum	ug/L	-	<5	5	229	48.0	284	324	5
Antimony	ug/L	20,000	<1	1	<2.0	<2.0	<2.0	<2.0	2
Arsenic	ug/L	1,900	<1	1	<2.0	<2.0	<2.0	<2.0	2
Barium	ug/L	29,000	190	5	52.6	164	51.1	36.0	5
Beryllium	ug/L	67	<1	1	<2.0	<2.0	<2.0	<2.0	2
Bismuth	ug/L	-	<1	1	<2.0	<2.0	<2.0	<2.0	2
Boron	ug/L	45,000	-	-	<5.0	34.6	<5.0	14.1	5
Cadmium	ug/L	2.7	<0.015	0.015	<0.017	0.064	0.031	0.038	0.017
Calcium	ug/L	-	8,200	50	-	-	-	-	-
Chromium	ug/L	810	1	1	1.8	<1.0	2.5	2.1	1
Cobalt	ug/L	66	<5	5	1.81	<0.40	2.53	1.83	0.40
Copper	ug/L	87	8	1	<2.0	<2.0	<2.0	2.4	2
Iron	ug/L	-	284	5	3,780	1,170	12,500	5,980	50
Lead	ug/L	25	1	1	0.77	<0.50	0.53	<0.50	0.50
Magnesium	ug/L	-	2,260	50	-	-	-	-	-
Manganese	ug/L	-	29	5	639	665	466	265	2
Mercury	ug/L	0.29	1	0.1	0.043	0.030	<0.02	0.045	0.02
Molybdenum	ug/L	9,200	<5	5	<2.0	17.8	<2.0	<2.0	2
Nickel	ug/L	490	<5	5	2.5	<2.0	3.3	3.3	2
Phosphorous	ug/L	-	<5	5	-	-	-	-	-
Potassium	ug/L	-	1,150	50	-	-	-	-	-
Selenium	ug/L	63	<1	1	<1.0	<1.0	<1.0	<1.0	1
Silver	ug/L	1.5	<0.1	0.1	<0.10	<0.10	<0.10	<0.10	0.10
Sodium	ug/L	-	5,180	50	-	-	-	-	-
Strontium	ug/L	-	-	-	63.1	465	96.6	68.1	5
Thallium	ug/L	510	-	-	<0.10	<0.10	<0.10	<0.10	0.10
Tin	ug/L	-	-	-	<2.0	<2.0	<2.0	<2.0	2
Titanium	ug/L	-	-	-	5.2	3.4	4.0	4.9	2
Uranium	ug/L	420	-	-	0.13	0.89	0.17	<0.10	0.10
Vanadium	ug/L	250	<50	50	5	2.5	4.2	3.9	2
Zinc	ug/L	1,100	124	1	13.4	9.5	11.8	10.6	5

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

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

< # = Not detected above MDL/RDL noted

"-" = No applicable guideline

Table 2.7 Results of Laboratory Analysis of General Chemistry in Groundwater - North Bulk Fuel 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[1]	2009 Sampling (Stantec)			
				09-MW1	09-MW2S	09-MW2D	09-MW3
Metals							
Dissolved Calcium	0.1	mg/L	-	18	45	13	6.5
Dissolved Magnesium	0.1	mg/L	-	2.3	26	3.3	2.1
Dissolved Phosphorus	0.1	mg/L	<0.004 to >0.1[3]	<0.1	<0.1	<0.1	<0.1
Dissolved Potassium	0.1	mg/L	-	2.2	19	2.5	1.9
Dissolved Sodium	0.1	mg/L	-	3.7	23	5.8	3.3
Calculated Parameters							
Anion Sum	N/A	me/L	-	0.810	0.560	5.40	0.54
Bicarb. Alkalinity (calc. as $CaCO_3$)	1	mg/L	-	37	25	243	20
Calculated TDS	1	mg/L	-	66	144	220	50
Carb.Alkalinity (calc. as $CaCO_3$)	1	mg/L	-	<1	<1	2	<1
Cation Sum	N/A	me/L	-	1.47	5.86	1.71	0.910
Hardness ($CaCO_3$)	1	mg/L	-	54	220	47	25
Ion Balance (% Difference)	N/A	%	-	29.0	82.6	51.9	25.5
Langelier Index (@ 20C)	-	N/A	-	-1.80	-2.06	0.148	-3.12
Langelier Index (@ 4C)	-	N/A	-	-2.05	-2.31	-0.102	-3.37
Nitrate (N)	0.05	mg/L	2.9	<0.05	<0.05	<0.05	<0.05
Saturation pH (@20C)	-	N/A	-	8.51	8.30	7.88	9.19
Saturation pH (@4C)	-	N/A	-	8.76	8.55	8.13	9.44
Inorganics							
Total Alkalinity (Total as $CaCO_3$)	5 / 30(1)	mg/L	-	37	25	250 (1)	20
Dissolved Chloride (Cl)	1	mg/L	-	2	2	7	2
Colour	5	TCU	-	49	37	44	6
Nitrate + Nitrite	0.05	mg/L	-	<0.05	<0.05	<0.05	<0.05
Nitrite (N)	0.01	mg/L	0.06	<0.01	<0.01	<0.01	<0.01
Nitrogen (Ammonia Nitrogen)	0.05	mg/L	-	0.62	<0.05	0.09	0.14
Total Organic Compound	5	mg/L	-	16	19	12	30
Orthophosphate (P)	0.01	mg/L	-	<0.01	<0.01	<0.01	<0.01
pH	N/A	pH	6.5 - 9	6.71	6.24	8.03	6.07
Reactive Silica (SiO_2)	0.5	mg/L	-	10	13	14	11
Dissolved Sulphate (SO_4)	2	mg/L	-	<2	<2	14	4
Turbidity	1 / 10(1)	NTU	Narritive[2]	670	830	89	>1000 (1)
Conductivity	1	uS/cm	-	83	65	460	62

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
(1) Elevated RDL
RDL = Reportable Detection Limit
< # = Not detected above RDL noted
"-" = indicates value is not available or does not apply
Shaded = Value exceeds applicable criteria

Table 2.8 Results of Laboratory Analysis of TPH/BTEX in Surface Water - North Bulk Fuel 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_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-SW8	<0.001	<0.001	<0.001	<0.002	<0.01	0.06	<0.1	0.06	NRF

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
NRF = No resemblance to petroleum products in the fuel oil range

Table 2.9 Results of Lab Analysis of Dissolved Metals in Surface Water - North Bulk Fuel 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[1]	2009 Sampling (Stantec)
				09-SW8
Aluminum	5.0	ug/L	5[2]	117
Antimony	2.0	ug/L	-	<2.0
Arsenic	2.0	ug/L	5	<2.0
Barium	5.0	ug/L	-	16.7
Beryllium	2.0	ug/L	-	<2.0
Bismuth	2.0	ug/L	-	<2.0
Boron	5.0	ug/L	-	<5.0
Cadmium	0.017	ug/L	0.009[3]	<0.017
Chromium	1.0	ug/L	8.9	1.3
Cobalt	0.40	ug/L	-	<0.40
Copper	2.0	ug/L	2[4]	<2.0
Iron	50	ug/L	300	484
Lead	0.50	ug/L	1[5]	<0.50
Manganese	2.0	ug/L	-	7.2
Mercury	0.013	ug/L	0.026	0.075
Molybdenum	2.0	ug/L	73	<2.0
Nickel	2.0	ug/L	25[6]	<2.0
Selenium	1.0	ug/L	1	<1.0
Silver	0.10	ug/L	0.1	<0.10
Strontium	5.0	ug/L	-	49.5
Thallium	0.10	ug/L	0.8	<0.10
Tin	2.0	ug/L	-	<2.0
Titanium	2.0	ug/L	-	<2.0
Uranium	0.10	ug/L	-	<0.10
Vanadium	2.0	ug/L	-	<2.0
Zinc	5.0	ug/L	30	<5.0

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} = 0.009 mg/L at a water hardness of 22 mg/L as $CaCO_3$

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 2.10 Results of Laboratory Analysis of General Chemistry in Surface Water - North Bulk Fuel 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[1]	2009 Sampling (Stantec)
				09-SW8
Metals				
Dissolved Calcium	0.1	mg/L	-	6.8
Dissolved Magnesium	0.1	mg/L	-	1.3
Dissolved Phosphorus	0.1	mg/L	<0.004 to >0.1[2]	<0.1
Dissolved Potassium	0.1	mg/L	-	2.1
Dissolved Sodium	0.1	mg/L	-	2.6
Calculated Parameters				
Anion Sum	N/A	me/L	-	0.460
Bicarb. Alkalinity (calc. as $CaCO_3$)	1	mg/L	-	19
Calculated TDS	1	mg/L	-	38
Carb.Alkalinity (calc. as $CaCO_3$)	1	mg/L	-	<1
Cation Sum	N/A	me/L	-	0.630
Hardness ($CaCO_3$)	1	mg/L	-	22
Ion Balance (% Difference)	N/A	%	-	15.6
Langelier Index (@ 20C)	-	N/A	-	-2.76
Langelier Index (@ 4C)	-	N/A	-	-3.02
Nitrate (N)	0.05	ug/L	3	<0.05
Saturation pH (@20C)	-	N/A	-	9.18
Saturation pH (@4C)	-	N/A	-	9.44
Inorganics				
Total Alkalinity (Total as $CaCO_3$)	5	mg/L	-	19
Dissolved Chloride (Cl)	1	mg/L	-	3
Colour	5	TCU	Narrative	44
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	50	mg/L	-	250 (3)
Orthophosphate (P)	0.01	mg/L	-	<0.01
pH	N/A	pH	6.5 - 9	6.42
Reactive Silica (SiO_2)	0.5	mg/L	-	11
Dissolved Sulphate (SO_4)	2	mg/L	-	<2
Turbidity	10	NTU	Narrative[3]	>1000
Conductivity	1	uS/cm	-	55

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
< # = Not detected above RDL noted
"-" = Value is not applicable or does not apply
(3) Elevated detection limit due to matrix interference
Shaded = Value exceeds CCME freshwater aquatic life guideline

Table 2.11 Results of Laboratory Analysis of TPH/BTEX in Sediment - North Bulk Fuel 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_6-C_{10} (Gas Range)	C_{10}-C_{21} (Fuel Range)	C_{21}-C_{32} (Lube Range)	Modified TPH[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	-
Criteria[1]	-	-	-	-	-	-	-	1,500	-
2009 Sampling (Stantec)									
09-SED8	<0.03	<0.03	<0.03	<0.05	<3	170	100	280	WFO/NRL

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
WFO = Weathered fuel oil; LO = Lube oil; NFP=No resemblance to petroleum products in the lube oil range

Table 2.12 Results of Laboratory Analysis of Metals in Freshwater Sediment - North Bulk Fuel 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[1]	Criteria[2]	2009 Sampling (Stantec)
					09-SED8
Aluminum	10	mg/kg	-	-	4,600
Antimony	2	mg/kg	-	-	<2
Arsenic	2	mg/kg	5.9	17	<2
Barium	5	mg/kg	-	-	40
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	12
Cobalt	1	mg/kg	-	-	4
Copper	2	mg/kg	35.7	197	5
Iron	50	mg/kg	-	-	8,500
Lead	0.5	mg/kg	35	91.3	5.8
Lithium	2	mg/kg	-	-	3
Manganese	2	mg/kg	-	-	140
Mercury	0.1	mg/kg	-	-	<0.1
Molybdenum	2	mg/kg	-	-	<2
Nickel	2	mg/kg	-	-	6
Rubidium	2	mg/kg	-	-	7
Selenium	1	mg/kg	-	-	<1
Silver	0.5	mg/kg	-	-	<0.5
Strontium	5	mg/kg	-	-	15
Thallium	0.1	mg/kg	-	-	<0.1
Tin	2	mg/kg	-	-	<2
Uranium	0.1	mg/kg	-	-	0.3
Vanadium	2	mg/kg	-	-	17
Zinc	5	mg/kg	123	315	18

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

Table 2.13 Results of Laboratory Analysis of PCBs in Vegetation - North Bulk Fuel 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/L
Criteria	na
2009 Sampling (Stantec)	
09-VEG7	<0.3
09-VEG8	<0.3

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

Table 2.14 Results of Laboratory Analysis of PCBs in Berries - North Bulk Fuel 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
2009 Sampling (Stantec)	
09-BERRY6	<0.05
09-BERRY7	<0.05
09-BERRY7 Lab-Dup	<0.05

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

Table 2.15 Results of Laboratory Analysis of PCBs/Crude Fat in Small Mammal Tissue Samples - North Bulk Fuel Storage Site
Phase III ESA, HHERA and RAP
Former U.S Military Facility, Northwest Point, NL
Stantec Consulting Ltd. Project No. 121410105

Location	Polychlorinated Biphenyls (PCBs)	Crude Fat
RDL	0.05 / 0.07	0.5
Units	ug/g	%
Criteria	na	na
2009 Sampling (Stantec)		
09-SM6	<0.05	-
09-SM8	<0.05	2.7
09-SM21	<0.07	-
09-SM26	<0.05	2.8

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

Table 2.16 Results of Laboratory Analysis of Metals in Small Mammals - North Bulk Fuel 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	2009 Sampling (Stantec)	
				09-SM6	09-SM8
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	<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
< # = Not detected above RDL noted
na = No applicable guideline
"-" = Not analyzed

Appendix 2f

Results of Hydraulic Response (Bail-Down) Test

– North Bulk Fuel Storage Site

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

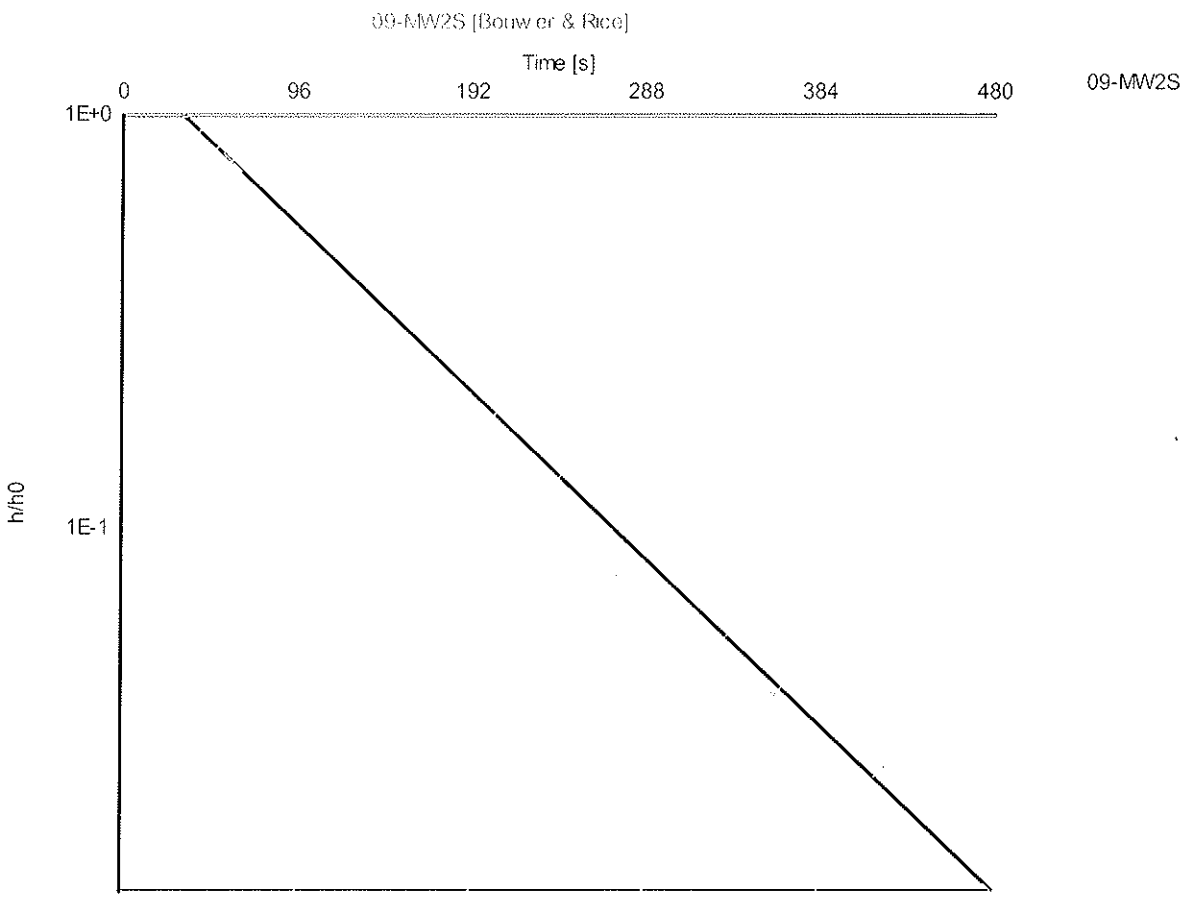
Slug Test Data Report
Project: Northwest Point
Number: 121410105
Client: NLDEC

Test Well:	**09-MW2S**	**Slug Test:**	**09-MW2S**
		Test Well:	09-MW2S
Depth to Static WL:	0.98 [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:	2.91 [m]

	Time [s]	Depth to WL [m]	Drawdown [m]
1	10	1.74	0.76
2	20	1.70	0.72
3	30	1.68	0.70
4	40	1.66	0.68
5	50	1.60	0.62
6	60	1.57	0.59
7	90	1.49	0.51
8	120	1.37	0.39
9	150	1.31	0.33
10	180	1.25	0.27
11	210	1.13	0.15
12	240	1.08	0.10
13	270	1.04	0.06
14	300	1.03	0.05
15	330	1.02	0.04
16	360	1.01	0.03
17	420	1.00	0.02
18	480	0.99	0.01
19	600	0.98	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-MW2S**

Analysis Method: **Bouwer & Rice**

Analysis Results:

Conductivity: 3.12E-6 [m/s]

Test parameters:

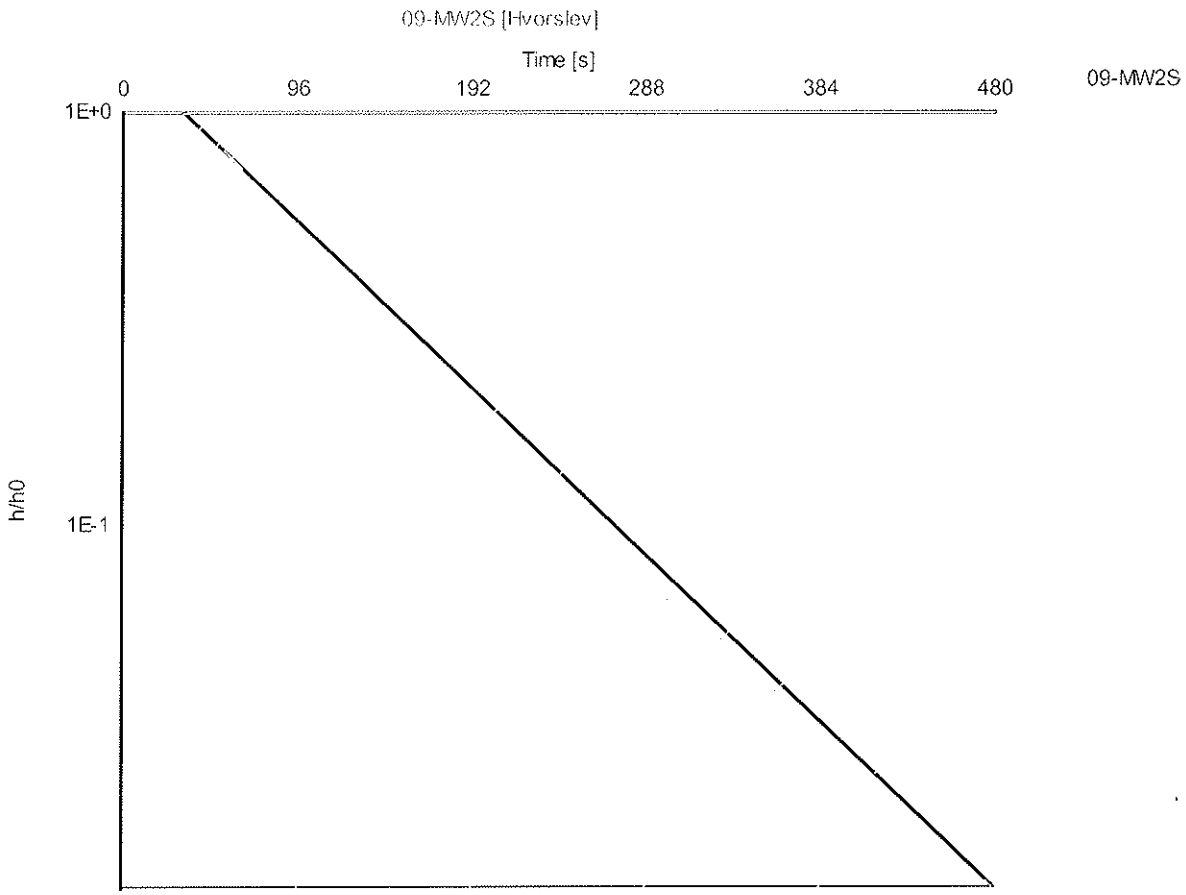
Test Well:	09-MW2S	Aquifer Thickness:	2.91 [m]
Casing radius:	0.025 [m]	Gravel Pack Porosity (%)	25
Screen length:	3.05 [m]		
Boring radius:	0.05 [m]		
r(eff):	0.033 [m]		

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-MW2S**

Analysis Method: **Hvorslev**

Analysis Results:

Conductivity: 4.10E-6 [m/s]

Test parameters:

Test Well:	09-MW2S	Aquifer Thickness:	2.91 [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