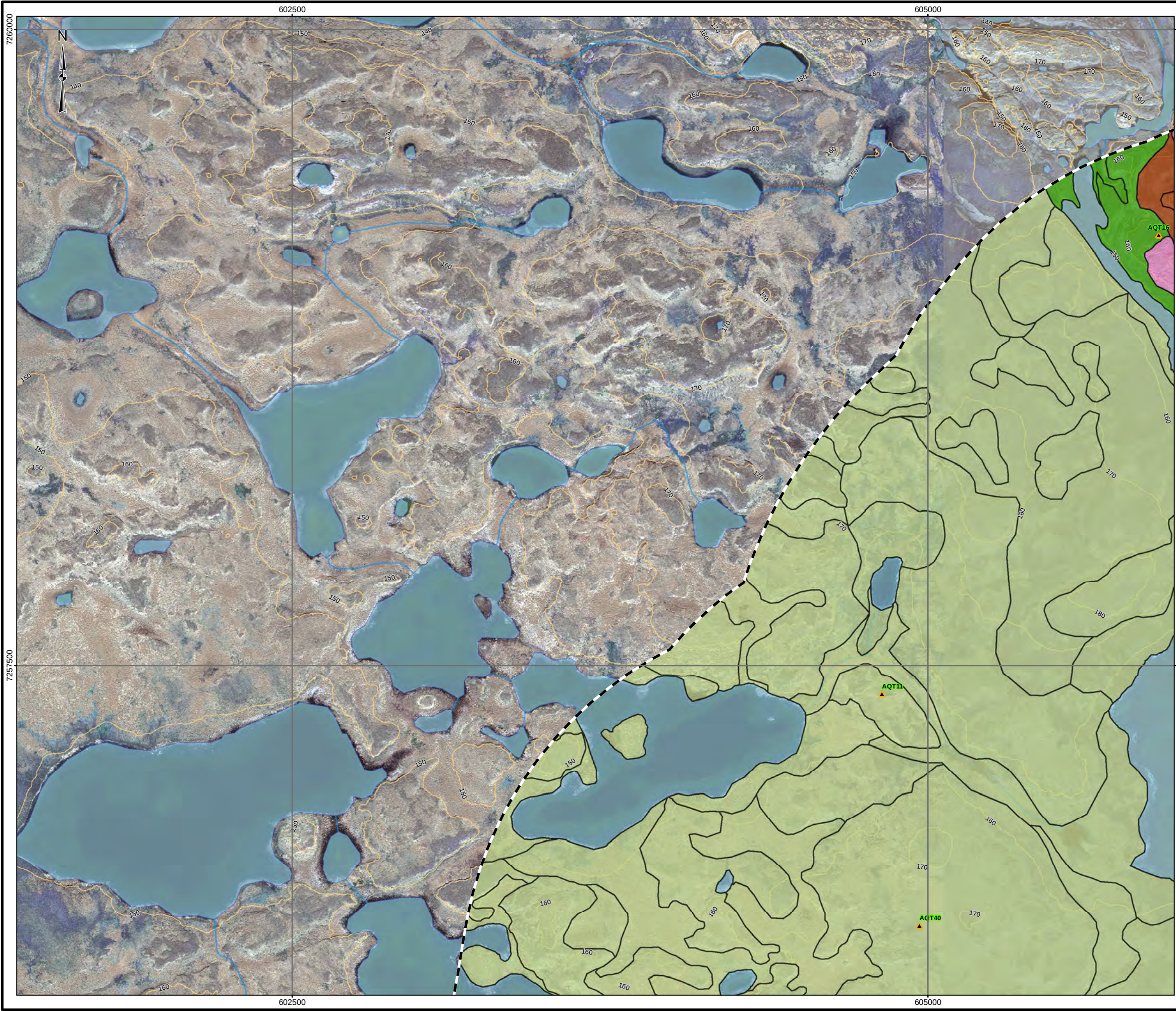


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LEGEND
 STUDY AREA
FIELD SITE LOCATION
 SURVEYED SOIL SITE
 SAMPLE SOIL SITE
DOMINANT SOIL SUBGROUP
 SOIL UNIT (APPROXIMATE)
 ORTHIC DYSTRIC BRUNISOL (O.DYB)
 ORTHIC DYSTRIC TURBIC CRYOSOL (OD.TC)
 REGOSOLIC TURBIC CRYOSOL (R.TC)
 WATER (N)
 BEDROCK (R)
BASEMAP FEATURES
 CONTOUR (10m INTERVAL)
 WATERCOURSE
 WATERBODY

10 KM

REFERENCE
PHOTOSAT IMAGERY/CONTOURS AND BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED (AGNICO EAGLE). HYDROGRAPHY DATA FROM CANVEC. IMAGERY COPYRIGHT © 20150226 ESRII AND ITS LICENSORS. SOURCE: GEOEYE IKONOS. USED UNDER LICENSE, ALL RIGHTS RESERVED.
DATUM: NAD 83 CSRS PROJECTION: UTM ZONE 14

300 0 300
METRES

SCALE 1:15,000

PROJECT

AGNICO EAGLE MINES LIMITED:
MEADOWBANK DIVISION
WHALE TAIL PIT PROJECT

TITLE

**DISTRIBUTION AND EXTENT
OF DOMINANT SOIL SUBGROUPS
WITHIN THE STUDY AREA**

PROJECT	1524321	FILE No.
DESIGN	AS	27 Oct. 2015
GIS	MM	02 May. 2016
CHECK	AS	02 May. 2016
REVIEW	DO	02 May. 2016

SCALE AS SHOWN

REV. 0

FIGURE D - 22



APPENDIX E

Soil Chemistry Data



Table E-1: Summary of Soil Data Collected, 2015

Site Name	GPS Location		Surface Expression	Slope Position	Percent Slope	Slope Length (m)	Peat/LFH Depth (cm)	Soil Texture ^(a)	Drainage	Parent Material	Subgroup Code ^(b)	Surface Stoniness (% of ground surface covered)	Sampled
	Easting	Northing											
AQT01	611994	7250284	Undulating	Mid	>5-10	>70	0	Sandy Loam	Imperfect	Till	O.G	Exceedingly (15 to 50)	No
AQT04	611707	7254055	Undulating	Mid	>10-15	<70	0	Sandy Loam	Well	Glaciofluvial	OD.TC	Excessively (>50)	No
AQT05	609835	7252808	Undulating	Mid	>0.5-2	N/A	0	Sandy Loam	Imperfect	Till	OD.TC	Excessively (>50)	No
AQT06	608855	7251461	Undulating	Mid	>5-10	>70	0	Sandy loam	Imperfect	Till	GL.TC	Exceedingly (15 to 50)	No
AQT07	605713	7250038	Undulating	Mid	>0.5-2	>70	0	Sandy loam	Moderately Well	Till	OD.TC	Excessively (>50)	No
AQT08	603753	7256978	Ridged	Upper	>2-5	<70	0	Sandy loam	Moderately Well	Till	R.SC	Excessively (>50)	No
AQT09	602454	7252347	Level	Depression	0-0.5	N/A	15	Silty Clay	Poor	Till	GL.TC	Moderately (0.1 to 3)	No
AQT10	602324	7254237	Undulating	Upper	>5-10	>70	0	Sandy loam	Moderately Well	Till	R.TC	Excessively (>50)	No
AQT11	604821	7257387	Undulating	Mid	>2-5	<70	0	Sandy loam	Moderately Well	Till	R.TC	Excessively (>50)	No
AQT14	606047	7259266	Undulating	Lower	>2-5	<70	0	Sandy loam	Moderately Well	Till	R.TC	Excessively (>50)	No
AQT16	605909	7259191	Undulating	Level	>0.5-2	N/A	0	Sandy Loam	Well	Glaciofluvial	O.DYB	Excessively (>50)	No
AQT21	609676	7257439	Undulating	Mid	>2-5	N/A	0	Sand	Well	Glaciofluvial	OD.TC	Excessively (>50)	No
AQT25	607325	7257779	Undulating	Lower	>5-10	<70	25	Sand	Imperfect	Till	R.TC	Exceedingly (15 to 50)	No
AQT27	607469	7257525	Undulating	Toe	>5-10	>70	45	Fibric/Silty Clay	Very Poor	Organic/Lacustrine	TFI.OC	Non (<0.01)	No
AQT28	607522	7257157	Hummocky	Upper	>10-15	<70	0	Sandy loam	Moderately Well	Till	R.TC	Excessively (>50)	No
AQT29	607197	7256878	Hummocky	Level	>0.5-2	N/A	0	Sand	Imperfect	Till	R.G	Exceedingly (15 to 50)	No
AQT30	607307	7256607	Undulating	Level	>0.5-2	N/A	5	Sandy Clay Loam	Poor	Glaciofluvial	R.SC	Non (<0.01)	No
AQT32	607296	7256270	Undulating	to	>2-5	>70	0	Sandy loam	Imperfect	Till	R.G	Very (3 to 15)	No
AQT36	606886	7255950	Undulating	Mid	>2-5	>70	0	Sand	Well	Glaciofluvial	OD.SC	Moderately (0.1 to 3)	No
AQT38	606724	7256045	Undulating	Level	>0.5-2	N/A	0	Sand	Imperfect	Till	GL.TC	Moderately (0.1 to 3)	No
AQT39	605583	7255466	Undulating	to	>2-5	>70	0	Sandy loam	Moderately Well	Till	R.TC	Exceedingly (15 to 50)	No
AQT40	604968	7256477	Undulating	Mid	>0.5-2	>70	0	Sandy loam	Moderately Well	Till	R.TC	Excessively (>50)	No
AQT45	603209	7254433	Undulating	Mid	>2-5	>70	0	Sandy loam	Moderately Well	Till	OD.TC	Excessively (>50)	No
AQT46	603252	7253814	Undulating	Toe	>0.5-2	>70	0	Sandy loam	Moderately Well	Till	R.TC	Exceedingly (15 to 50)	No
AQT50	603519	7252808	Undulating	Upper	>2-5	<70	0	Sandy loam	Moderately Well	Till	OD.TC	Excessively (>50)	No



Table E-1: Summary of Soil Data Collected, 2015

Site Name	GPS Location		Surface Expression	Slope Position	Percent Slope	Slope Length (m)	Peat/LFH Depth (cm)	Soil Texture ^(a)	Drainage	Parent Material	Subgroup Code ^(b)	Surface Stoniness (% of ground surface covered)	Sampled
	Easting	Northing											
AQT52	606174	7251994	Undulating	Depression	>0.5-2	>70	20	Sandy Clay	Poor	Fluvial	R.SC	Moderately (0.1 to 3)	No
AQT55	607180	7254547	Ridged	Upper	>0.5-2	<70	0	Sand	Rapid	Glaciofluvial	O.DYB	Excessively (>50)	Yes
AQT60	607375	7251756	Undulating	Mid	>5-10	>70	0	Sandy loam	Moderately Well	Till	R.TC	Exceedingly (15 to 50)	No
AQT62	607634	7252467	Ridged	Crest	>15-30	<70	0	Loamy Sand	Rapid	Glaciofluvial	O.DYB	Excessively (>50)	No
AQT64	607727	7255273	Undulating	Depression	>2-5	>70	0	Sandy Loam	Poor	Fluvial	R.G	Moderately (0.1 to 3)	Yes
AQT65	607727	7255238	Undulating	Mid	>2-5	>70	0	Sandy loam	Moderately Well	Till	OD.TC	Very (3 to 15)	Yes
AQT68	608772	7252134	Undulating	Mid	>2-5	>70	0	Sandy loam	Moderately Well	Till	OD.TC	Exceedingly (15 to 50)	No
AQT70	608438	7254068	Undulating	Mid	>2-5	>70	0	Sandy loam	Moderately Well	Till	OD.TC	Exceedingly (15 to 50)	No
AQT77	610379	7256235	Ridged	Crest	>0.5-2	>70	0	Sandy loam	Moderately Well	Till	R.TC	Excessively (>50)	No
AQT78	610289	7256130	Ridged	Depression	>2-5	N/A	0	Loamy Sand	Well	Glaciofluvial	O.DYB	Very (3 to 15)	No
AQT81	609695	7256281	Undulating	Mid	>2-5	>70	0	Sandy loam	Moderately Well	Till	OD.TC	Exceedingly (15 to 50)	No
AQT82	609601	7256481	Undulating	Depression	>2-5	>70	0	Sandy loam	Imperfect	Till	R.G	Moderately (0.1 to 3)	No
AQT85	608027	7255307	Undulating	Mid	>0.5-2	>70	0	Sandy loam	Well	Till	OD.TC	Very (3 to 15)	No
AQT87	611483	7254647	Ridged	Upper	>15-30	<70	0	Sand	Rapid	Glaciofluvial	OD.TC	Excessively (>50)	No
AQT89	611537	7252101	Undulating	Mid	>2-5	>70	0	Sandy Loam	Moderately Well	Till	OD.TC	Excessively (>50)	No
AQT92	614868	7249923	Undulating	Lower	>5-10	>70	0	Sand	Well	Till	OD.TC	Excessively (>50)	No
AQT93	614548	7249873	Ridged	Crest	>15-30	<70	0	Sand	Rapid	Till/Glaciofluvial	O.R	Excessively (>50)	No
AQT96	620834	7246197	Ridged	Mid	>15-30	<70	0	Sand	Rapid	Glaciofluvial	OD.TC	Exceedingly (15 to 50)	No
AQT97	620784	7246019	Level	Level	>0.5-2	N/A	50	Fibric/Sand	Poor	Organic/Glaciofluvial	TFI.OC	Non (<0.01)	No
AQT101	618110	7238053	Undulating	Lower	>5-10	>70	22	Sandy loam	Moderately Well	Till	R.TC	Exceedingly (15 to 50)	No
AQT106	625980	7235847	Undulating	Mid	>2-5	>70	0	Sandy loam	Moderately Well	Till	R.TC	Excessively (>50)	No
AQT107	626231	7235853	Ridged	Lower	>2-5	>70	0	Loamy Sand	Well	Glaciofluvial	OD.TC	Slightly (0.01 to 0.1)	No
AQT110	636374	7224127	Undulating	Lower	>2-5	<70	0	Sandy loam	Moderately Well	Till	OD.TC	Excessively (>50)	No
AQT113	636044	7224444	Undulating	Lower	>2-5	<70	0	Sandy loam	Moderately Well	Till	OD.TC	Excessively (>50)	No
AQT115	611513	7252152	Undulating	Mid	>2-5	>70	0	Sandy loam	Moderately Well	Till	OD.TC	Excessively (>50)	No



Table E-1: Summary of Soil Data Collected, 2015

Site Name	GPS Location		Surface Expression	Slope Position	Percent Slope	Slope Length (m)	Peat/LFH Depth (cm)	Soil Texture ^(a)	Drainage	Parent Material	Subgroup Code ^(b)	Surface Stoniness (% of ground surface covered)	Sampled
	Easting	Northing											
AQT116	614805	7248355	Undulating	Level	>0.5-2	N/A	0	Sandy loam	Moderately Well	Till	OD.TC	Exceedingly (15 to 50)	No
AQT119	620867	7243399	Undulating	Mid	>5-10	>70	0	Sandy loam	Moderately Well	Till	OD.TC	Excessively (>50)	No
AQT125	618583	7239649	Undulating	Mid	>5-10	>70	0	Sandy loam	Moderately Well	Till	OD.TC	Excessively (>50)	No
AQT126	639572	7220853	Undulating	Mid	>5-10	<70	0	Sandy loam	Moderately Well	Till	R.TC	Excessively (>50)	No
AQT130	635605	7226573	Undulating	Mid	>2-5	>70	0	Sandy loam	Well	Till	OD.TC	Exceedingly (15 to 50)	No
AQT131	635581	7226625	Undulating	Depression	>2-5	>70	6	Loam - Sandy loam	Imperfect	Till	GL.TC	Moderately (0.1 to 3)	Yes
AQT135	633276	7230950	Undulating	Mid	>2-5	>70	0	Sandy Loam	Moderately Well	Till	OD.TC	Exceedingly (15 to 50)	Yes
AQT136	633322	7230982	Undulating	Depression	>2-5	>70	18	Sandy Loam	Imperfect	Till	GL.TC	Very (3 to 15)	No
AQT137	633113	7232937	Ridged	Upper	>2-5	<70	0	Sand	Well	Glaciofluvial	O.DYB	Excessively (>50)	No
AQT141	619836	7241118	Undulating	Mid	>15-30	>70	0	Sandy Loam	Moderately Well	Till	OD.TC	Excessively (>50)	No
AQT142	632660	7233617	Undulating	Crest	>10-15	<70	0	Sand	Rapid	Glaciofluvial	O.DYB	Excessively (>50)	No
AQT144	632253	7233530	Undulating	Mid	>10-15	>70	0	Sandy loam	Moderately Well	Till	R.TC	Excessively (>50)	No
AQT145	632078	7233509	Undulating	Lower	>5-10	>70	0	Sandy loam	Moderately Well	Till	R.TC	Exceedingly (15 to 50)	No
AQT149	631579	7233931	Undulating	Mid	>2-5	>70	0	Sandy loam	Moderately Well	Till	R.TC	Exceedingly (15 to 50)	No
AQT151	626799	7236300	Undulating	Mid	>2-5	>70	0	Sandy loam	Moderately Well	Till	OD.TC	Excessively (>50)	No
AQT154	619734	7241223	Undulating	Toe	>5-10	>70	20	Sandy Clay Loam	Poor	Till	GL.SC	Very (3 to 15)	No

Note: GPS locations in NAD 83 Zone 14W.

a) Texture from upper surface horizon.

b) See Table A-2a for Soil Subgroup code descriptions.

GPS = global positioning system; NAD = North American Datum; LFH = leaf folic humic; m = metre; cm = centimetre; > = greater than; < = less than; N/A = not applicable.



Table E-2a: Soil Subgroup Code Descriptions

Order	Subgroup Code	Full Subgroup Name
Cryosolic	OD.TC	Orthic Dystric Turbic Cryosol
	R.TC	Regosolic Turbic Cryosol
	GL.TC	Gleysolic Turbic Cryosol
	OD.SC	Orthic Dystric Static Cryosol
	R.SC	Regosolic Static Cryosol
	GL.SC	Gleyed Static Cryosol
	TFI.OC	Terric Fibric Organic Cryosol
Brunisolic	O.DYB	Orthic Dystric Brunisol
Gleysolic	O.G	Orthic Gleysol
	R.G	Rego Gleysol



Table E-2b: Soil Horizon Symbol Definitions

Symbol	Definition
Major Mineral Horizon Symbol^(a)	
A	This mineral horizon forms at or near the surface in the zone of leaching or eluviation of materials in solution or suspension, or of maximum in situ accumulation of organic matter or both.
B	This mineral horizon is characterized by enrichment in organic matter, sesquioxides, or clay; or, by the development of soil structure; or, by a change of colour denoting hydrolysis, reduction, or oxidation.
C	This mineral horizon is comparatively unaffected by the pedogenic processes operating in A and B horizons.
Lowercase Mineral Horizon Suffix	
g	A horizon characterized by gray colours, or prominent mottling, or both, indicating permanent or periodic intense reduction.
m	A horizon slightly altered by hydrolysis, oxidation, or solution, or all three to give a change in colour or structure, or both.
y	A horizon affected by cryoturbation as shown by disrupted and broken horizons, incorporation of materials from other horizons, and mechanical sorting in at least half of the cross section of the pedon.
z	A frozen layer.
Major Organic Horizon Symbol^(b)	
O	Organic horizon developed mainly from mosses, rushes, and woody materials, and divided into the following subhorizons.
Organic Subhorizon Code^(c)	
Of	This O horizon consists largely of fibric materials that are readily identifiable as to botanical origin. A fibric horizon has 40% or more of rubbed fiber by volume and a pyrophosphate index of 5 or more. Fibric material usually is classified on the von Post scale of decomposition as class 1 to class 4.
Om	This O horizon consists of mesic material, which is at a stage of decomposition intermediate between fibric and humic materials. The material is partly altered both physically and biochemically. It has a rubbed fiber content ranging from 10% to less than 40%, and has a pyrophosphate index of >3 and <5. Mesic material usually is classified on the von Post scale of decomposition as class 5 or 6.

Source: SCWG (1998).

^{a)} Mineral horizons contain 17% or less organic carbon (about 30% organic matter) by weight.

^{b)} Organic horizons occur in organic soils and commonly at the surface of mineral soils. They may occur at any depth beneath the surface in buried soils or overlying geologic deposits. They contain more than 17% organic carbon (about 30% or more organic matter) by weight. Two groups of these horizons are recognized, the O horizons (peat materials) and the L, F, and H horizons (folic materials).

^{c)} Ofm denotes a combination of fibric and mesic organic material

% = percent; < = less than; > = greater than.



Table E-3: Results of Soil Chemistry of Sampled Soils within the Whale Tail Pit Study Area

Parameter	Unit	Detection Limit	AQT55 (O.DYB)		AQT64 (R.G)		AQT65 (OD.TC)			AQT131 (GL.TC)		AQT135 (OD.TC)		
			Bm	C	Ofm	Cg	LF	Bmy	Cz	Ofm	Cgy	LF	Bmy	C
			0 - 20 cm	20 - 50 cm	35 - 0 cm	0 - 80 cm	20 - 0 cm	0 - 24 cm	24 - 56 cm	6 - 0 cm	0 - 110 cm	7 - 0 cm	0 - 24 cm	24 - 100 cm
pH	pH units	0.10	5.4	5.66	5.17	5.2	5.14	5.32	6.24	6.87	6.49	5.8	6.43	6.96
Chloride (Cl)	mg/kg	1.5 - 70	<1.6	<1.7	<27	<1.9	23	<2.2	1.9	134	<2.0	44	<1.7	2.9
Sulphur (as SO ₄)	mg/kg	1.6 - 70	1.7	<1.7	69	4.2	71	3.2	3.3	190	5.4	94	2.8	7
Calcium(Ca)	mg/kg	0.63 - 28	0.97	<0.67	17	1.71	29.4	2.37	2.46	535	2.94	115	2.06	4.24
Potassium (K)	mg/kg	0.31 - 14	0.88	<0.33	22.2	1.85	28.4	0.9	1.07	301	0.9	64.6	0.83	1.49
Magnesium (Mg)	mg/kg	0.63 - 28	<0.63	<0.67	<11	0.79	18.1	1.53	1.88	130	1.48	46.5	1.14	2.68
Sodium (Na)	mg/kg	1.2 - 56	<1.3	<1.3	<22	2.7	19	1.8	1.8	<56	1.7	<18	<1.4	2.9
Salinity (electrical conductivity)	dS/m	0.10	<0.1	<0.1	<0.1	0.11	0.11	<0.1	<0.1	0.38	<0.1	0.26	<0.1	0.17
Sodium adsorption ratio (SAR) ^(a)	SAR	0.1 - 4.0	<0.6	Incalculable	<0.6	0.7	0.33	0.35	0.36	<0.2	0.32	<0.2	<0.3	0.49
Percent saturation	%	1.0	31.4	33.3	543	37.8	425	43.1	34.5	1400	40.2	444	34.1	29.9
Available nitrate (NO ₃)	mg/kg	1.0 - 22	<1.0	<1.0	<10	<1.0	<6.0	<1.0	<1.0	<22	<1.0	<8	<1.0	<1.0
Available nitrite (NO ₂)	mg/kg	0.4 - 4.4	<0.4	<0.4	<2.0	<0.4	<1.2	<0.4	<0.4	<4.4	<0.4	<1.6	<0.4	<0.4
Texture	-	N/A	Sand	Sand	N/A	Sandy Loam	N/A	Sandy Loam	Loam	N/A	Loam/ Sandy Loam	N/A	Sandy Loam	Loam

Note: See Table D-2a for Soil Subgroup Code Descriptions and Table D-2b for Soil Horizon Symbol Definitions.

^(a) Sodium adsorption ratio is incalculable where sodium (Na) concentrations are below detection limits.

pH = potential of hydrogen, provides measure of the acidity or alkalinity of a solution on a scale of 0 to 14; cm = centimetre; mg/kg = milligrams per kilogram; dS/m = decisiemens per metre; % = percent; < = below detection limit of; N/A = not applicable; - = no unit.

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