

Algar Lake (ALG) Soils Dominant Characteristics

Extent (area / percentage)	255 ha / 0.23%					
Soil Classification	Peaty Orthic Gleysol, and Rego Gleysols					
Parent Material	Glaciolacustrine					
Texture (O/A/B/C horizon)	(--)/C					
Terrain / Percent Slope	Nearly level / 0.05% to 2.0%					
Surface Stoniness	S0 (non-stony)					
Drainage Class	Very poor					
Land Use	Boreal forest					
Wind Erosion Risk	Low					
Water Erosion Risk	Low					
Land Capability Rating for Forestry – Capability Class (Limitations)	Class 4 – Conditionally productive (available water holding capacity, soil moisture and nutrient limitations)					
Reclamation Suitability – Surface Soil / Subsurface Soil (Limitations)*	N/A / Poor (texture)					
Sensitivity to Acidification	Medium					
Example Profile (Site #WKH 48)						
Horizon	Depth (cm)	Colour	Texture	Structure	Consistence	
Of	20-0	-	-	-	-	
BCg	0-120	2.5y 4/3 - (olive brown)	Clay	Massive	Sticky	
Soil Chemistry (Site #WKH 48)						
Horizon	Depth (cm)	pH (sat. paste)	EC (dS/m)	SAR	% Saturation	Ratings **
Of/Peat	20-0	4.3	0.47	0.1	-	-
BCg	0-120	6.2	0.14	0.2	-	Good
Soil Unit Concerns	<p>These soils:</p> <ul style="list-style-type: none"> • Have developed in poorly drained low-lying landscape positions and are often saturated throughout the year; • Have between 15 cm and 40 cm of peat overlying mineral soil material; • Have unstable exposed faces due to high moisture levels; and • Are susceptible to rutting and compaction due to high moisture levels. 					

Notes:

* Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture, 1987)

** Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

Dover (DOV) Soils Dominant Characteristics

Extent (area / percentage)	1,161 ha / 1.05%					
Soil Classification	Orthic and Gleyed Gray Luvisols					
Parent Material	Glaciolacustrine					
Texture (Organic/A/B/C horizon)	(--)/ SiL / SiL / C – HC					
Terrain / Percent Slope	Nearly level to gently undulating / 2% to 5%					
Surface Stoniness	S0 (non-stony)					
Drainage Class	Moderately well to imperfect					
Land Use	Boreal forest					
Wind Erosion Risk	Low					
Water Erosion Risk	Low					
Land Capability Rating for Forestry – Capability Class (Limitations)	Class 2 – (no limitations available)					
Reclamation Suitability – Surface Soil / Subsurface Soil (Limitations)*	Good / Fair (texture)					
Sensitivity to Acidification	Low					
Example Profile (Site # KH 12)						
Horizon	Depth (cm)	Colour	Texture	Structure	Consistence	
LFH	10-0	-	-	-	-	
Ahe	0-4	2.5Y 5/2 - (grayish brown)	Silt Loam	Platy	-	
Ae	4-28	2.5Y 5/4 - (light olive brown)	Silt Loam	Platy	-	
Bt	28-53	2.5Y 6/3 - (light yellowish brown)	Clay	-	-	
BC	53-120	2.5Y 3/1 - (very dark gray)	Heavy Clay	Massive	-	
Soil Chemistry (Site # KH 12)						
Horizon	Depth (cm)	pH (sat. paste)	EC (dS/m)	SAR	% Saturation	Ratings **
LFH	10-0	-	-	-	-	-
Ahe	0-4	5.3	0.10	0.1	-	Good
Ae	4-28	5.4	0.09	0.2	-	Good
Bt	28-53	5.0	0.08	0.7	-	Good
BC	53-120	4.6	0.10	1.9	-	Good
Soil Unit Concerns	<ul style="list-style-type: none"> Upper and lower subsoils will be very sensitive to rutting and compaction when wet. 					

Notes:

* Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture, 1987)

** Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

Firebag (FIR) Soils Dominant Characteristics

Extent (area / percentage)	12 ha / 0.01%					
Soil Classification	Orthic and Eluviated Dystric/Eutric Brunisols					
Parent Material	Glaciofluvial					
Texture (Organic/A/B/C horizon)	(--)/LS-S/LS-S/LS-SCL					
Terrain / Percent Slope	Nearly level to undulating / 2% to 9%					
Surface Stoniness	S0 (non-stony) to S4 (exceedingly stony)					
Drainage Class	Well to rapid					
Land Use	Boreal forest					
Wind Erosion Risk	High					
Water Erosion Risk	Low to medium					
Land Capability Rating for Forestry – Capability Class (Limitations)	Class 4 – Conditionally productive (available water holding capacity, soil moisture and nutrient limitations)					
Reclamation Suitability – Surface Soil / Subsurface Soil (Limitations)*	Poor (consistence, texture) / Poor (consistence, texture)					
Sensitivity to Acidification	Low					
Example Profile (Site #JB 92)						
Horizon	Depth (cm)	Colour	Texture	Structure	Consistence	
Ae	0-18	7.5 YR 6/2 - (pale green)	LS-S	Single Grain	Loose	
Bm	18-42	7.5YR 4/6 - (brown)	LS-S	Single Grain	Loose	
BC	42-90	10YR 5/4 - (Yellowish brown)	LS-SCL	Massive	Loose	
Soil Chemistry (Site #JB 92)						
Horizon	Depth (cm)	pH (sat. paste)	EC (dS/m)	SAR	% Saturation	Ratings **
Ae	0-18	-	-	-	-	-
Bm	18-42	-	-	-	-	-
BC	42-90	-	-	-	-	-
Soil Unit Concerns	<p>These soils:</p> <ul style="list-style-type: none"> • Have developed on moderately coarse to coarse textured glaciofluvial soil material; • Have unstable exposed due to the low cohesiveness of the sandy soil material; • May have acidic pH in the top 25 cm depth; • Can be prone to droughtiness; and • Have been designated Firebag-ST where soils are exceedingly stony (S4). • This site was taken from the site inspection list to describe the soils series Firebag, and was not lab tested. 					

Notes:

* Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture, 1987)

** Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

Fort (FRT) Soils Dominant Characteristics

Extent (area / percentage)	75 ha / 0.07%					
Soil Classification	Brunisolic, Orthic and Gleyed Gray Luvisols					
Parent Material	Glaciofluvial					
Texture (Organic/A/B/C horizon)	(--)/ SL / SL / SCL / SCL					
Terrain / Percent Slope	Nearly level to undulating / 2% to 5%					
Surface Stoniness	S0 (non-stony) to S3 (moderately stony)					
Drainage Class	Imperfect to moderately well					
Land Use	Boreal forest					
Wind Erosion Risk	Medium					
Water Erosion Risk	Low to medium					
Land Capability Rating for Forestry – Capability Class (Limitations)	Class 4 – Conditionally productive (soil moisture and nutrient limitations)					
Reclamation Suitability – Surface Soil / Subsurface Soil (Limitations)*	Fair (pH) / Poor (consistence, texture)					
Sensitivity to Acidification	Low					
Example Profile (Site #LP 93)						
Horizon	Depth (cm)	Colour	Texture	Structure	Consistence	
Of	12-0	-	-	-	-	
Ae	0-6	10 YR 5/3 - (brown)	Sandy Loam	Weak	Friable	
Bm	6-33	10 YR 5/8 - (yellowish brown)	Sandy Loam	Weak	loose	
Bt	33-52	10 YR 5/6 - (yellowish brown)	Sandy Clay Loam	Strong	Firm	
BC	52-120	10 YR 3/4 - (dark yellowish brown)	Sandy Clay Loam	Massive	Firm	
Soil Chemistry (Site #LP 93)						
Horizon	Depth (cm)	pH (sat. paste)	EC (dS/m)	SAR	% Saturation	Ratings **
Of	12-0	4.6	0.85	<0.1	486	-
Ae	0-6	3.3	0.17	0.2	40	Good
Bm	6-33	4.9	0.10	0.2	39	Good
Bt	33-52	4.6	0.07	0.5	43	Good
BC	52-120	-	-	-	-	-
Soil Unit Concerns	These soils: <ul style="list-style-type: none"> • Have developed on sandy loam to sandy clay loam textured glaciofluvial materials; • Have unstable exposed faces due to the sandy nature of the soil materials; and • Can be prone to drought. 					

Notes:

* Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture, 1987)

** Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

Hartley (HLY) Soils Dominant Characteristics

Extent (area / percentage)	6,674 ha / 6.02%					
Soil Classification	Terric Fibrisols and Mesisols					
Parent Material	Fen peat Organic					
Texture (Organic/A/B/C horizon)	Of / L / SL					
Terrain / Percent Slope	Level to nearly level / 0.05% to 2%					
Surface Stoniness	S0 (non-stony)					
Drainage Class	Poor to very poor					
Land Use	Boreal forest					
Wind Erosion Risk	Low					
Water Erosion Risk	Low					
Land Capability Rating for Forestry – Capability Class (Limitations)	Class 5 – Non-productive (surface peat, soil moisture and nutrient limitations)					
Reclamation Suitability – Surface Soil / Subsurface Soil (Limitations)*	Unclassified (Organic)					
Sensitivity to Acidification	Low					
Example Profile (Site #SN 6)						
Horizon	Depth (cm)	Colour	Texture	Structure	Consistence	
Oh	0-65	-	-	-	-	
Ahg	65-95	10 YR 2/1 - (black)	Loam	-	-	
Bg	95-120	Gley 2 5/1 – (greenish grey)	Sandy Loam	-	-	
Soil Chemistry (Site #SN 6)						
Horizon	Depth (cm)	pH (sat. paste)	EC (dS/m)	SAR	% Saturation	Ratings **
Oh	0-65	5.3	0.27	0.2	199	-
Ahg	65-95	5.6	0.38	0.2	76	Good
Bg	95-120	5.6	0.26	0.2	50	Good
Soil Unit Concerns	<p>These soils:</p> <ul style="list-style-type: none"> • Have developed on organic material found in fens; in some areas mineral soil material is encountered within 160 cm of the ground surface; • Are saturated throughout the year; • Have unstable faces When exposed; and • Have a high wind erosion risk if organic soil material is dry. 					

Notes:

* Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture, 1987)

** Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

Kinosis (KNS) Soils Dominant Characteristics

Extent (area / percentage)	26,477 ha / 23.87%					
Soil Classification	Brunisolic, Orthic and Gleyed Gray Luvisols					
Parent Material	Till					
Texture (Organic/A/B/C horizon)	(--)/ L / SiL / CL / SL					
Terrain / Percent Slope	Level to undulating / 0.5% to 9%					
Surface Stoniness	S0 (non-stony)					
Drainage Class	Imperfect to moderately well					
Land Use	Boreal forest					
Wind Erosion Risk	Low					
Water Erosion Risk	Low to high (>9%)					
Land Capability Rating for Forestry – Capability Class (Limitations)	Class 3 – Low capability (soil moisture and nutrients limitations)					
Reclamation Suitability – Surface Soil / Subsurface Soil (Limitations)*	Fair (pH) / Fair (texture)					
Sensitivity to Acidification	Low					
Example Profile (Site #SL 57)						
Horizon	Depth (cm)	Colour	Texture	Structure	Consistence	
Of	8-0	-	-	-	-	
Ah	0-2	10 YR 2/1 - (black)	Loam	Granular	-	
Ae	2-10	10 YR 5/2 - (grayish brown)	Silt Loam	Moderate	-	
Bm	10-25	10 YR 5/1 - (gray)	Silt Loam	Moderate	-	
Bt	25-55	10 YR 5/4 - (yellowish brown)	Clay Loam	Moderate	-	
IIC	55-100	10 YR 4/6 - (dark yellowish brown)	Sand Loam	Massive	-	
Soil Chemistry (Site #SL 57)						
Horizon	Depth (cm)	pH (sat. paste)	EC (dS/m)	SAR	% Saturation	Ratings **
Of	8-0	-	-	-	-	-
Ah	0-2	-	-	-	-	Good
Ae	2-10	-	-	-	-	Good
Bm	10-25	5.0	0.07	0.2	-	Good
Bt	25-55	5.0	0.05	0.4	-	Good
IIC	55-100	5.0	0.07	0.5	-	Good
Soil Unit Concerns	Soils are medium to moderately fine textured soils, and can be subject to rutting and compaction if handled when wet.					

Notes:

* Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture, 1987)

** Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

Livock (LVK) Soils Dominant Characteristics

Extent (area / percentage)	635 ha / 0.57%					
Soil Classification	Orthic and Gleyed Gray Luvisols					
Parent Material	Glaciofluvial					
Texture (Organic/A/B/C horizon)	(--)/ SL / SCL / SCL					
Terrain / Percent Slope	Nearly level to undulating / 0.5% to 5%					
Surface Stoniness	S0 (non stony) to S3 (very stony)					
Drainage Class	Imperfect to well					
Land Use	Boreal forest					
Wind Erosion Risk	Low					
Water Erosion Risk	Low					
Land Capability Rating for Forestry – Capability Class (Limitations)	Class 3 – Low capability (organic carbon and moisture limitations)					
Reclamation Suitability – Surface Soil / Subsurface Soil (Limitations)*	Poor (texture) / Fair (texture)					
Sensitivity to Acidification	Low					
Example Profile (Site #WKH 06)						
Horizon	Depth (cm)	Colour	Texture	Structure	Consistence	
Of	5-0	-	-	-	-	
Ae	0-5	2.5 Y 5/2 - (grayish brown)	Sandy Loam	Weak	Friable	
Bt	5-46	2.5 Y 5/4 - (light olive brown)	Sandy Clay Loam	Weak	Firm	
Ck	46-120	2.5Y 4/3 - (olive brown)	Sandy Clay Loam	Weak	Friable	
Soil Chemistry (Site #WKH 06)						
Horizon	Depth (cm)	pH (sat. paste)	EC (dS/m)	SAR	% Saturation	Ratings **
Of	5-0	5.8	0.09	0.1	-	-
Ae	0-5	5.3	0.11	0.1	-	Good
Bt	5-46	5.2	0.06	0.2	-	Good
Ck	46-120	7.3	0.26	0.1	-	Good
Soil Unit Concerns	These soils have developed on moderately coarse glaciofluvial materials overlying moderately fine till; may be unstable if the coarser surface soil material is exposed.					

Notes:

* Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture, 1987)

** Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

Mariana (MRN) Soils Dominant Characteristics

Extent (area / percentage)	16,679 ha / 15.03%					
Soil Classification	Terric Mesisols, Fibrisols and Mesisols					
Parent Material	Organic/Glaciofluvial					
Texture (Organic/A/B/C horizon)	(--)/ SiL / CL / SCL					
Terrain / Percent Slope	Nearly level to undulating / 0% to 2 %					
Surface Stoniness	S0 (non-stony)					
Drainage Class	Poor					
Land Use	Boreal forest					
Wind Erosion Risk	Low					
Water Erosion Risk	Low					
Land Capability Rating for Forestry – Capability Class (Limitations)	Class 5 – Non-productive (surface peat, soil moisture and nutrient limitations)					
Reclamation Suitability – Surface Soil / Subsurface Soil (Limitations)*	Unclassified (Organic)					
Sensitivity to Acidification	Low					
Example Profile (Site #JB 85)						
Horizon	Depth (cm)	Colour	Texture	Structure	Consistence	
Om	0-50	-	-	-	-	
Ahbg	50-60	10YR 3/2 - (very dark brown)	SiL-L	Granular	Friable	
Btg	60-75	10YR 4/3 - (brown)	CL	Subangular blocky	Firm	
BCg	75-120	2.5YR 4/3 - (olive brown)	SCL	Massive	Firm	
Soil Chemistry *** (Site #JB 85)						
Horizon	Depth (cm)	pH (sat. paste)	EC (dS/m)	SAR	% Saturation	Ratings **
Om	-	-	-	-	-	-
BCg	-	-	-	-	-	-
Soil Unit Concerns	<p>These soils:</p> <ul style="list-style-type: none"> • Have developed on poorly drained organic soils; • Have unstable soil faces if exposed. • This site information was extracted from the soil site inspection list to describe the soils series Mariana, and was not lab tested. • Mineral material is encountered within 160 cm of the surface. 					

Notes:

* Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture, 1987)

** Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

*** Soil Series was not sampled

McLelland (MLD) Soils Dominant Characteristics

Extent (area / percentage)	28,306 ha / 25.52%					
Soil Classification	Typic or Mesic Fibrisols, Typic Mesisol					
Parent Material	Fen peat Organic					
Texture (Organic/A/B/C horizon)	(--)/(--)					
Terrain / Percent Slope	Level to nearly level / 0.05% to 2%					
Surface Stoniness	S0 (non-stony)					
Drainage Class	Poor to very poor					
Land Use	Boreal forest					
Wind Erosion Risk	Low					
Water Erosion Risk	Low					
Land Capability Rating for Forestry – Capability Class (Limitations)	Class 5 – Non-productive (surface peat, soil moisture and nutrient limitations)					
Reclamation Suitability – Surface Soil / Subsurface Soil (Limitations)*	Unclassified (Organic)					
Sensitivity to Acidification	Low					
Example Profile (Site #JB 18)						
Horizon	Depth (cm)	Colour	Texture	Structure	Consistence	
Of	0-130	-	-	-	-	
Om	130-220	-	-	-	-	
Soil Chemistry (Site #JB 18)						
Horizon	Depth (cm)	pH (sat. paste)	EC (dS/m)	SAR	% Saturation	Ratings **
Of	0-20	3.6	0.29	0.3	1,630	-
Of	20-50	4.7	0.17	0.1	815	-
Of	50-130	5.1	0.22	0.1	806	-
Om	130-220	5.6	0.19	<0.1	499	-
Soil Unit Concerns	<p>These soils:</p> <ul style="list-style-type: none"> • Have developed on organic material found in fens; in some areas mineral soil material is encountered within 220 cm of the ground surface; • Are saturated throughout the year; • Have unstable faces when exposed; and • Have a high wind erosion risk if organic soil material is dry. 					

Notes:

* Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture, 1987)

** Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

Mikkwa aa* (MKWaa) Soils Dominant Characteristics**

Extent (area / percentage)	79 ha / 0.07%					
Soil Classification	Humic, Mesic and Fibric Organic Cryosols					
Parent Material	Organic (frozen)					
Texture (O/A/B/C horizon)	(--)					
Terrain / Percent Slope	Level to nearly level/ 0.05% to 2%					
Surface Stoniness	S0 (non-stony)					
Drainage Class	Poor to very poor					
Land Use	Boreal forest					
Wind Erosion Risk	Low					
Water Erosion Risk	Low					
Land Capability Rating for Forestry – Capability Class (Limitations)	Class 5 – Non-productive (Surface peat, soil moisture and nutrient limitations)					
Reclamation Suitability – Surface Soil / Subsurface Soil (Limitations)*	Unclassified (Organic)					
Sensitivity to Acidification	Low					
Example Profile (Site #WKH 15)						
Horizon	Depth (cm)	Colour	Texture	Structure	Consistence	
Of	0-20	-	-	-	-	
Omz	20-75	-	-	-	Frozen	
BCg	75-120	2.5Y 4/2 - (dark grayish brown)	SCL	Massive	Firm	
Soil Chemistry (Site #WKH 15)						
Horizon	Depth (cm)	pH (sat. paste)	EC (dS/m)	SAR	% Saturation	Ratings **
Of/Omz	0-40	4.4	0.43	0.1	-	-
Soil Unit Concerns	These soils: <ul style="list-style-type: none"> • Occur in organic soil environments and contain a permanently frozen layer beneath the surface; within 1 m of ground surface; • Have unstable faces when exposed; and • Are saturated throughout the year. 					

Notes:

* Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture, 1987)

** Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

Mildred (MIL) Soils Dominant Characteristics

Extent (area / percentage)		3,783 ha / 3.41%				
Soil Classification		Orthic and Eluviated Dystric / Eutric Brunisols				
Parent Material		Glaciofluvial				
Texture (Organic/A/B/C horizon)		(-) / S / S / S				
Terrain / Percent Slope		Nearly level to Undulating / 2% to 9%				
Surface Stoniness		S0 (non-stony)				
Drainage Class		Well to very rapid				
Land Use		Boreal forest				
Wind Erosion Risk		Medium				
Water Erosion Risk		Low to High (>9%)				
Land Capability Rating for Forestry – Capability Class (Limitations)		Class 4 – Conditionally productive (water holding capacity, soil moisture, structure, and organic carbon limitations)				
Reclamation Suitability – Surface Soil / Subsurface Soil (Limitations)*		Poor (texture) / Poor (texture)				
Sensitivity to Acidification		Medium				
Example Profile (Site #WKH 16)						
Horizon	Depth (cm)	Colour	Texture	Structure	Consistence	
Of	10-0	-	-	-	-	
Ae	0-6	10 YR 5/3 - (brown)	Sand	Single grain	Loose	
Bm	6-14	10 YR 4/2 - (dark grayish brown)	Sand	Single grain	Loose	
BC	14-120	2.5 Y 5/4 - (yellowish brown)	Sand	Single grain	Loose	
Soil Chemistry (Site #WKH 16)						
Horizon	Depth (cm)	pH (sat. paste)	EC (dS/m)	SAR	% Saturation	Ratings **
Of	10-0	4.3	0.35	0.1	-	-
Ae	0-6	6.3	0.27	0.2	-	Good
Bm	6-14	6.8	0.22	0.2	-	Good
BC	14-120	6.4	0.11	0.2	-	Good
Soil Unit Concerns	These soils: <ul style="list-style-type: none"> • Have developed on coarse to very coarse glaciofluvial materials; • Have unstable soil faces if exposed; and • May have acidic soil pH within 25 cm of soil surface. 					

Notes:

* Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture, 1987)

** Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

Muskeg (MUS) Soils Dominant Characteristics

Extent (area / percentage)		4,515 ha / 4.07%				
Soil Classification		Typic Mesisols, Typic Fibrisols				
Parent Material		Bog peat and bog peat / till				
Texture (Organic/A/B/C horizon)		(--)/(--)				
Terrain / Percent Slope		Level to nearly level / 0.05% to 2%				
Surface Stoniness		S0 (non-stony)				
Drainage Class		Poor to very poor				
Land Use		Boreal forest				
Wind Erosion Risk		Low				
Water Erosion Risk		Low				
Land Capability Rating for Forestry – Capability Class (Limitations)		Class 5 – Non-productive (surface peat, soil moisture and nutrient limitations)				
Reclamation Suitability – Surface Soil / Subsurface Soil (Limitations)*		Unclassified (Organic)				
Sensitivity to Acidification		Low				
Example Profile (Site #JB 45)						
Horizon	Depth (cm)	Colour	Texture	Structure	Consistence	
Of	0-20	-	-	-	-	
Of	20-40	-	-	-	-	
Om	40-220	-	-	-	-	
Soil Chemistry (Site #JB 45)						
Horizon	Depth (cm)	pH (sat. paste)	EC (dS/m)	SAR	% Saturation	Ratings **
Of	0-20	3.5	0.20	0.2	1680	-
Of	20-40	3.5	0.17	0.1	980	Good
Om	40-220	4.1	0.25	<0.1	574	Good
Soil Unit Concerns	<p>These soils:</p> <ul style="list-style-type: none"> • Are organic soils developed in sphagnum peat bogs and are saturated throughout the year; • Can have mineral soil material contact within 160 cm of the ground surface; • Have unstable soil faces if exposed; and • Have a high wind erosion risk if soil materials are dry. 					

Notes:

* Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture, 1987)

** Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

Steepbank (STP) Soils Dominant Characteristics

Extent (area / percentage)		6,645 ha / 5.99%				
Soil Classification		Peaty Orthic and Rego Gleysols and Orthic Luvisol Gleysols				
Parent Material		Till				
Texture (Organic/A/B/C horizon)		SL / SL / SCL				
Terrain / Percent Slope		Undulating / 0.05% to 5%				
Surface Stoniness		Non to very stony				
Drainage Class		Poor				
Land Use		Boreal forest				
Wind Erosion Risk		Low				
Water Erosion Risk		Low				
Land Capability Rating for Forestry – Capability Class (Limitations)		Class 5 – Non-productive (surface peat, soil moisture and nutrient limitations)				
Reclamation Suitability – Surface Soil / Subsurface Soil (Limitations)*		N/A / Poor (Carbonate equivalence)				
Sensitivity to Acidification		Low				
Example Profile (Site #SA 5)						
Horizon	Depth (cm)	Colour	Texture	Structure	Consistence	
Ah	0-10	10YR 2/1 - (black)	Sandy Loam	Platy	-	
Bg	10-40	10 YR 5/4 - (yellowish brown)	Sandy Loam	Subangular Blocky	Slightly Sticky	
BCg	40-110	10 YR 4/4 - (dark yellowish brown)	Sandy Clay Loam	Massive	Very Sticky	
Soil Chemistry (Site #SA 5)						
Horizon	Depth (cm)	pH (sat. paste)	EC (dS/m)	SAR	% Saturation	Ratings **
Ah	0-10	6.2	0.29	0.1	269	Good
Bg	10-40	6.6	0.20	0.2	40	Good
BCg	40-110	6.6	0.20	0.2	40	Good
Soil Unit Concerns	<p>These soils:</p> <ul style="list-style-type: none"> • Have developed in poorly drained low-lying landscape positions and are saturated throughout the year; • Can have between 10 cm and 30 cm of peat overlying mineral soil material; • Have unstable faces when exposed due to high moisture levels; and • Are susceptible to rutting and compaction due to high moisture levels. 					

Notes:

* Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture, 1987)

** Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

Surmont (SRT) Soils Dominant Characteristics

Extent (area / percentage)		4,562 ha / 4.11%				
Soil Classification		Orthic and Gleyed Gray Luvisols				
Parent Material		Till and Colluviated Till				
Texture (Organic/A/B/C horizon)		(--)/ SiL / CL / CL				
Terrain / Percent Slope		Undulating / 5% to >45%				
Surface Stoniness		Non to very stony				
Drainage Class		Moderately well to well				
Land Use		Boreal forest				
Wind Erosion Risk		Low				
Water Erosion Risk		Low to High (>9%)				
Land Capability Rating for Forestry – Capability Class (Limitations)		Class 2 – (no limitations available)				
Reclamation Suitability – Surface Soil / Subsurface Soil (Limitations)*		Not rated (surface peat) / Poor (Carbonate equivalence)				
Sensitivity to Acidification		Low				
Example Profile (Site #LP 33)						
Horizon	Depth (cm)	Colour	Texture	Structure	Consistence	
LFH	8-0	-	-	-	-	
Ae	0-25	10YR 7/1 - (light gray)	Silt Loam	Platy	Friable	
Bt	25-45	10YR 3/4 - (dark yellowish brown)	Clay Loam	Subangular Blocky	Firm	
BC	45-100	10YR 4/6 - (dark yellowish brown)	Silty Clay Loam	Massive	Firm	
Ck	110+	10YR 4/6 - (dark yellowish brown)	Silty Clay Loam	Massive	Firm	
Soil Chemistry *** (Site #LP 33)						
Horizon	Depth (cm)	pH (sat. paste)	EC (dS/m)	SAR	% Saturation	Ratings **
LFH	18-0	-	-	-	-	-
Ae	0-11	-	-	-	-	-
Bt	11-80	-	-	-	-	-
BC	80-100	-	-	-	-	-
Soil Unit Concerns	<p>These soils:</p> <ul style="list-style-type: none"> • Have developed in moderately well drained steep sloped landscape positions with underlying clay; • Have between 4 cm and 20 cm of LFH overlying mineral soil material; • Have unstable faces when exposed due to slope steepness. • This site information was extracted from the Nexen site inspection list to describe the soils series Surmont. 					

Notes:

* Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture, 1987)

** Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

*** Soil Series was not sampled

Miscellaneous Landscape Units

Rough Broken (RB) map units - These map units have extremely steep slopes and are associated with river channels. These map units cover about 76 ha or 0.07 percent of the LSA.

Stream Channel (SC) map units - These map units are associated with slow moving stream channels that are composed predominantly of deep and shallow organic soils with slow moving water in the centre of the map unit. These map units cover about 6,242 ha or 5.63 percent of the study area.

**TABLE 9B-1a. SOIL QUALITY RESULTS
DETAILED SALINITY**
North American Oil Sands Corporation

Sample Name	Soil Series / Horizon	Sample Depth	Sample Date	Matrix Sample Number	Lab pH	Lab EC dS/m	SAR mg/L	TGR mg/L	Na meq/L	Ca meq/L	Mg meq/L	K meq/L	Soil Quality Guidelines***			Saturation Percentage
													Soil Horizon	Salinity Rating	Sodicity Rating	
WKH01	MLD Of	0-40	21-Sep-06	4455060921301	6.10	0.32	0.6	<0.1	0.53	1.02	0.49	1.22	Topsoil	---	---	---
JB18	MLD Of	0-20	19-Oct-05	4455051019012	3.60	0.29	0.3	<0.1	0.10	0.15	0.12	1.32	Topsoil	---	---	1630
JB18	MLD Of	20-50	19-Oct-05	4455051019013	4.70	0.17	0.1	<0.1	0.14	1.35	0.56	0.12	Topsoil	---	---	815
JB18	MLD Of	50-130	19-Oct-05	4550051019014	5.10	0.22	0.1	<0.1	0.15	1.81	0.71	0.18	Subsoil	---	---	806
JB18	MLD Om	130-220	19-Oct-05	4455051019015	5.60	0.19	<0.1	<0.1	0.11	2.07	0.94	<0.03	Subsoil	---	---	499
LP68	MLD Of	0-20	23-Oct-05	4455051023221	4.00	0.32	0.1	<0.1	0.11	0.70	0.59	1.44	Topsoil	---	---	1280
LP68	MLD Of	20-220	23-Oct-05	4455051023222	4.50	0.29	0.2	<0.1	0.19	1.83	0.96	0.32	Subsoil	---	---	413
SL22	LVKAe	0-10	22-Sep-06	4455060922001	4.6	0.12	0.2	<0.1	0.12	0.67	0.31	0.18	Topsoil	Good	Good	---
SL22	LVK Bt	10-50	22-Sep-06	4455060922002	4.9	0.05	0.5	<0.1	0.14	0.07	0.07	0.05	Subsoil	Good	Good	---
SL22	LVK BC	50-100	22-Sep-06	4455060922003	5.0	0.04	0.7	<0.1	0.19	0.07	0.07	0.03	Subsoil	Good	Good	---
LP32	LVK LHF	8-0	19-Oct-05	4455051019211	4.20	0.67	0.1	<0.1	0.18	2.08	1.06	3.63	Topsoil	---	---	624
LP32	LVK Ae	0-12	19-Oct-05	4455051019212	4.00	0.19	0.2	<0.1	0.16	1.02	0.49	0.22	Topsoil	Good	Good	42
LP32	LVK Bt	12-28	19-Oct-05	4455051019213	4.70	0.08	0.4	<0.1	0.21	0.37	0.19	0.06	Subsoil	Good	Good	44
LP32	LVK BC	28-96	19-Oct-05	4455051019214	5.30	0.1	0.4	<0.1	0.24	0.46	0.26	0.05	Subsoil	Good	Good	39
LP32	LVK Ck	96-120	19-Oct-05	4455051019215	7.30	0.44	0.2	<0.1	0.30	3.08	1.42	0.04	Subsoil	Good	Good	40
SA75	LVK LFH	10-0	22-Oct-05	4455051022450	3.60	0.75	0.2	<0.1	0.25	2.43	1.25	3.42	Topsoil	---	---	471
SA75	LVK Ahe	0-3	22-Oct-05	4455051022451	4.00	0.22	0.4	<0.1	0.29	0.44	0.46	0.22	Topsoil	Good	Good	52
SA75	LVK Bt	3-40	22-Oct-05	4455051022452	5.00	0.08	0.4	<0.1	0.21	0.27	0.18	0.10	Subsoil	Good	Good	32
SA75	LVK BC	40-80	22-Oct-05	4455051022453	4.80	0.07	0.6	<0.1	0.24	0.18	0.11	0.09	Subsoil	Good	Good	31
SA75	LVK C	80-110	22-Oct-05	4455051022454	5.10	0.08	0.7	<0.1	0.31	0.28	0.11	0.07	Subsoil	Good	Good	42
WKH06	LVK Of	5-0	21-Sep-06	4455060921302	5.80	0.09	0.1	<0.1	0.05	0.67	0.25	0.19	Topsoil	---	---	---
WKH06	LVK Ae	0-5	21-Sep-06	4455060921303	5.30	0.11	0.1	<0.1	0.09	0.55	0.25	0.15	Topsoil	Good	Good	---
WKH06	LVKBt	5-46	21-Sep-06	4455060921304	5.20	0.06	0.2	<0.1	0.10	0.22	0.10	0.07	Subsoil	Good	Good	---
WKH06	LVKCK	46-120	21-Sep-06	4455060921305	7.30	0.26	0.1	<0.1	0.13	1.91	0.61	<0.03	Subsoil	Good	Good	---
WKH15	MKWaa	0-40	22-Sep-06	4455060922300	4.4	0.43	0.1	<0.1	0.12	1.92	0.64	2.45	Topsoil	---	---	---
WKH16	MIL Of	10-0	22-Sep-06	4455060922301	4.3	0.35	0.1	<0.1	0.11	1.16	0.56	2.00	Topsoil	---	---	---
WKH16	MIL Ae	0-6	22-Sep-06	4455060922302	6.3	0.27	0.2	<0.1	0.22	1.78	1.01	0.04	Topsoil	Good	Good	---
WKH16	MIL Bm	6-14	22-Sep-06	4455060922303	6.8	0.22	0.2	<0.1	0.21	1.61	0.80	0.03	Subsoil	Good	Good	---
WKH16	MIL BC	14-120	22-Sep-06	4455060922304	6.4	0.11	0.2	<0.1	0.20	0.85	0.39	0.04	Subsoil	Good	Good	---
LP12	MIL Of	8-0	19-Oct-05	4455051019206	4.20	0.52	<0.1	<0.1	0.09	2.22	0.96	1.82	Topsoil	---	---	380
LP12	MIL Ae	0-22	19-Oct-05	4455051019207	4.80	0.06	0.2	<0.1	0.09	0.21	0.09	0.07	Topsoil	Good	Good	32
LP12	MIL Bm	22-42	19-Oct-05	4455051019208	5.60	0.06	0.2	<0.1	0.10	0.32	0.12	0.07	Subsoil	Good	Good	35
LP12	MIL BC	42-82	19-Oct-05	4455051019209	5.80	0.05	0.3	<0.1	0.12	0.19	0.09	0.08	Subsoil	Good	Good	30
LP12	MIL C	82-120	19-Oct-05	4455051019210	5.20	0.08	0.5	<0.1	0.22	0.23	0.13	0.10	Subsoil	Good	Good	34
WKH48	ALG Of	20-0	23-Sep-06	4455060923300	4.3	0.47	0.1	<0.1	0.08	0.61	0.48	3.57	Topsoil	---	---	---
WKH48	ALG BCg	0-120	23-Sep-06	4455060923001	6.2	0.14	0.2	<0.1	0.16	0.68	0.54	0.05	Subsoil	Good	Good	---

**TABLE 9B-1a. SOIL QUALITY RESULTS
DETAILED SALINITY
North American Oil Sands Corporation**

Sample Name	Soil Series / Horizon	Sample Depth	Sample Date	Matrix Sample Number	Lab pH	Lab EC dS/m	SAR mg/L	TGR mg/L	Na meq/L	Ca meq/L	Mg meq/L	K meq/L	Soil Quality Guidelines***			Saturation Percentage
													Soil Horizon	Salinity Rating	Sodicity Rating	
SL57	KNSxc Bm	10-25	23-Sep-06	4455060923004	5.0	0.07	0.2	<0.1	0.12	0.32	0.16	0.06	Subsoil	Good	Good	---
SL57	KNSxc Bt	25-55	23-Sep-06	4455060923005	5.0	0.05	0.4	<0.1	0.12	0.12	0.09	0.05	Subsoil	Good	Good	---
SL57	KNSxc IIC	55-100	23-Sep-06	4455060923006	5.0	0.07	0.5	<0.1	0.20	0.20	0.11	0.08	Subsoil	Good	Good	---
JB8	KNS Of	13-0	18-Oct-05	4455051018001	5.40	1.05	<0.1	<0.1	0.12	10.50	2.65	3.77	Topsoil	---	---	385
JB8	KNS Ae	0-14	18-Oct-05	4455051018002	5.10	0.2	0.2	<0.1	0.16	1.46	0.54	0.16	Topsoil	Good	Good	45
JB8	KNS Bt	14-50	18-Oct-05	4455051018003	5.40	0.16	0.2	<0.1	0.17	1.21	0.44	0.13	Subsoil	Good	Good	46
JB8	KNS BC	50-80	18-Oct-05	4455051018004	6.90	0.38	0.2	<0.1	0.26	3.20	1.37	0.07	Subsoil	Good	Good	43
JB8	KNS CK	80-120	18-Oct-05	4455051018005	7.60	0.42	0.2	<0.1	0.31	3.47	1.34	0.06	Subsoil	Good	Good	46
SA53	KNS LFH	8-0	20-Oct-05	4455051020430	4.10	0.87	0.2	<0.1	0.31	2.39	1.38	5.18	Topsoil	---	---	609
SA53	KNS Ae	0-20	20-Oct-05	4455051020431	4.90	0.08	0.4	<0.1	0.22	0.36	0.19	0.09	Topsoil	Good	Good	38
SA53	KNS Bt1	20-50	20-Oct-05	4455051020432	4.70	0.08	0.5	<0.1	0.19	0.20	0.14	0.07	Subsoil	Good	Good	44
SA53	KNS Bt2	50-80	20-Oct-05	4455051020433	4.90	0.07	0.7	<0.1	0.25	0.16	0.10	0.05	Subsoil	Good	Good	39
SA53	KNS BC	80-110+	20-Oct-05	4455051020434	5.00	0.09	0.6	<0.1	0.29	0.25	0.14	0.07	Subsoil	Good	Good	30
JB45	MUS Of	0-20	21-Oct-05	4455051021025	3.5	0.20	0.2	<0.1	0.08	0.14	0.08	0.48	Topsoil	---	---	1680
JB45	MUS Of	20-40	21-Oct-05	4455051021026	3.5	0.17	0.1	<0.1	0.09	0.55	0.18	0.08	Subsoil	---	---	980
JB45	MUS Om	40-220	21-Oct-05	4455051021027	4.1	0.25	<0.1	<0.1	0.09	1.72	0.64	<0.03	Subsoil	---	---	574
LP38	HRR LFH	5-0	20-Oct-05	4455051020216	6.0	1.75	<0.1	<0.1	0.12	9.87	6.29	8.99	Topsoil	---	---	356
LP38	HRR Ae	0-5	20-Oct-05	4455051020217	7.2	0.35	0.1	<0.1	0.20	2.78	1.78	0.05	Topsoil	Good	Good	39
LP38	HRR Bt	5-55	20-Oct-05	4455051020218	5.4	0.19	0.3	<0.1	0.29	1.08	0.80	0.09	Subsoil	Good	Good	42
LP38	HRR BCg	55-73	20-Oct-05	4455051020219	7.2	0.37	0.2	<0.1	0.34	2.81	1.50	0.05	Subsoil	Good	Good	47
LP38	HRR CKg	73-110	20-Oct-05	4455051020220	7.6	0.32	0.2	<0.1	0.28	2.39	1.16	0.07	Subsoil	Good	Good	42
LP93	FORT Of	12-0	24-Oct-05	4455051024236	4.6	0.85	<0.1	<0.1	0.14	4.90	1.80	4.09	Topsoil	---	---	486
LP93	FORT Ae	0-6	24-Oct-05	4455051024237	3.7	0.17	0.2	<0.1	0.13	0.32	0.23	0.18	Topsoil	Good	Good	40
LP93	FORT Bm	6-33	24-Oct-05	4455051024238	4.9	0.10	0.2	<0.1	0.12	0.36	0.20	0.20	Subsoil	Good	Good	39
LP93	FORT Bt	33-52	24-Oct-05	4455051024239	4.6	0.07	0.5	<0.1	0.18	0.18	0.09	0.12	Subsoil	Good	Good	43
SN6	HLY Oh	0-65	23-Oct-05	4455051023460	5.3	0.27	0.2	<0.1	0.21	1.96	0.71	0.07	Topsoil	---	---	199
SN6	HLY Ahg	65-95	23-Oct-05	4455051023461	5.6	0.38	0.2	<0.1	0.29	2.71	1.17	0.06	Subsoil	Good	Good	76
SN6	HLY Bg	95-120	23-Oct-05	4455051023462	5.6	0.26	0.2	<0.1	0.26	1.55	0.74	0.14	Subsoil	Good	Good	50
Burned Sites																
SA5	STP Ah	0-10	18-Oct-05	4455051018400	6.2	0.29	0.1	<0.1	0.16	2.50	1.33	0.12	Topsoil	Good	Good	269
SA5	STP Bg	10-40	18-Oct-05	4455051018401	6.6	0.20	0.2	<0.1	0.20	1.51	0.78	0.12	Subsoil	Good	Good	40
SA5	STP BCg	40-110+	18-Oct-05	4455051018402	6.6	0.20	0.3	<0.1	0.32	1.06	0.64	0.16	Subsoil	Good	Good	40
SA26	MUS Of	0-20	19-Oct-05	4455051019409	3.50	0.19	0.2	<0.1	0.08	0.15	0.10	0.31	Topsoil	---	---	1440
SA26	MUS Of	20-200	19-Oct-05	4455051019410	3.50	0.18	0.2	<0.1	0.12	0.56	0.29	0.11	Subsoil	---	---	616
SA26	MUS Bg	200-220	19-Oct-05	4455051019411	4.20	0.3	0.3	<0.1	0.31	1.26	0.91	0.29	Subsoil	Good	Good	49

**TABLE 9B-1a. SOIL QUALITY RESULTS
DETAILED SALINITY**

North American Oil Sands Corporation

Sample Name	Soil Series / Horizon	Sample Depth	Sample Date	Matrix Sample Number	Lab pH	Lab EC dS/m	SAR mg/L	TGR mg/L	Na meq/L	Ca meq/L	Mg meq/L	K meq/L	Soil Quality Guidelines***			Saturation Percentage %
													Soil Horizon	Salinity Rating	Sodicity Rating	
Burned Sites																
SA28	KNSzb LFH	5-0	19-Oct-05	4455051019412	3.90	0.3	0.1	<0.1	0.11	1.20	0.83	0.80	Topsoil	---	---	432
SA28	KNSzb Ae	0-18	19-Oct-05	4455051019413	4.00	0.13	0.4	<0.1	0.18	0.28	0.22	0.31	Topsoil	Good	Good	27
SA28	KNSzb Bm	18-50	19-Oct-05	4455051019414	5.10	0.07	0.3	<0.1	0.13	0.21	0.10	0.12	Subsoil	Good	Good	26
SA28	KNSzb Bt	50-90	19-Oct-05	4455051019415	4.90	0.09	0.8	<0.1	0.34	0.22	0.14	0.17	Subsoil	Good	Good	32
SA28	KNSzb BC	90-140	19-Oct-05	4455051019416	5.00	0.16	0.8	<0.1	0.49	0.46	0.27	0.19	Subsoil	Good	Good	41
CCME Industrial Guidelines*					6-8.5**	4	12	NS	NS	NS	NS	NS	NS	NS	NS	NS
Alberta Tier I criteria**					6-8.5	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:

--- - not analyzed

NA - not applicable

NS - not specified

* - Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (CCME, 2006)

** - Alberta Tier I Criteria for Contaminated Soil Assessment and Remediation (AENV, 1994)

Italics - indicates that values exceed specified guideline

*** - Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

Good topsoil - EC <2 dS/m; SAR <4

Fair topsoil - EC 2 dS/m to 4 dS/m; SAR 4 to 8

Poor topsoil - EC 4 dS/m to 8 dS/m; SAR 8 to 12

Unsuitable topsoil - EC >8 dS/m; SAR >12

Good subsoil - EC <3 dS/m; SAR <4

Fair subsoil - EC 3 dS/m to 5 dS/m; SAR 4 to 8

Poor subsoil - EC 5 dS/m to 10 dS/m; SAR 8 to 12

Unsuitable subsoil - EC >10 dS/m; SAR >12

TABLE 9B-1a. SOIL QUALITY RESULTS
DETAILED SALINITY - mg/kg
North American Oil Sands Corporation

Sample Point	Soil Series	Depth cm	Sample Date	MSI Sample Number	Lab pH	Lab EC dS/m	SAR	TGR tons/ac	Soluble Ions				Soil Quality Guidelines***			Saturation Percentage %
									Na mg/kg	Ca mg/kg	Mg mg/kg	K mg/kg	Soil Horizon	Salinity Rating	Sodicity Rating	
WKH01	MLD Of	0-40	21-Sep-06	4455060921301	6.10	0.32	0.6	<0.1	67	111	32.6	258	Topsoil	---	---	---
JB18	MLD Of	0-20	19-Oct-05	4455051019012	3.60	0.29	0.3	<0.1	39	49.0	22.8	842	Topsoil	---	---	1630
JB18	MLD Of	20-50	19-Oct-05	4455051019013	4.70	0.17	0.1	<0.1	25	220.0	55.5	38	Topsoil	---	---	815
JB18	MLD Of	50-130	19-Oct-05	4550051019014	5.10	0.22	0.1	<0.1	27	292.0	69.0	56	Subsoil	---	---	806
JB18	MLD Om	130-220	19-Oct-05	4455051019015	5.60	0.19	<0.1	<0.1	13	206.0	56.5	<5	Subsoil	---	---	499
LP68	MLD Of	0-20	23-Oct-05	4455051023221	4.00	0.32	0.1	<0.1	32	178.0	91.8	717	Topsoil	---	---	1280
LP68	MLD Of	20-220	23-Oct-05	4455051023222	4.50	0.29	0.2	<0.1	18	151.0	47.7	52	Subsoil	---	---	413
SL22	LVKAe	0-10	22-Sep-06	4455060922001	4.60	0.12	0.2	<0.1	2	7.7	2.1	4	Topsoil	Good	Good	---
SL22	LVK Bt	10-50	22-Sep-06	4455060922002	4.90	0.05	0.5	<0.1	1	0.5	0.3	<1	Subsoil	Good	Good	---
SL22	LVK BC	50-100	22-Sep-06	4455060922003	5.00	0.04	0.7	<0.1	1	0.4	0.2	<1	Subsoil	Good	Good	---
LP32	LVK LFH	8-0	19-Oct-05	4455051019211	4.20	0.67	0.1	<0.1	26	260.0	80.0	884	Topsoil	---	---	624
LP32	LVK Ae	0-12	19-Oct-05	4455051019212	4.00	0.19	0.2	<0.1	2	8.6	2.5	4	Topsoil	Good	Good	42
LP32	LVK Bt	12-28	19-Oct-05	4455051019213	4.70	0.08	0.4	<0.1	2	3.3	1.0	1	Subsoil	Good	Good	44
LP32	LVK BC	28-96	19-Oct-05	4455051019214	5.30	0.1	0.4	<0.1	2	3.6	1.2	<1	Subsoil	Good	Good	39
LP32	LVK Ck	96-120	19-Oct-05	4455051019215	7.30	0.44	0.2	<0.1	3	24.6	6.9	<1	Subsoil	Good	Good	40
SA75	LVK LFH	10-0	22-Oct-05	4455051022450	3.60	0.75	0.2	<0.1	27	229.0	71.2	629	Topsoil	---	---	471
SA75	LVK Ahe	0-3	22-Oct-05	4455051022451	4.00	0.22	0.4	<0.1	4	4.6	2.9	4	Topsoil	Good	Good	52
SA75	LVK Bt	3-40	22-Oct-05	4455051022452	5.00	0.08	0.4	<0.1	2	1.7	0.7	1	Subsoil	Good	Good	32
SA75	LVK BC	40-80	22-Oct-05	4455051022453	4.80	0.07	0.6	<0.1	2	1.1	0.4	1	Subsoil	Good	Good	31
SA75	LVK C	80-110	22-Oct-05	4455051022454	5.10	0.08	0.7	<0.1	3	2.4	0.6	1	Subsoil	Good	Good	42
WKH06	LVK Of	5-0	21-Sep-06	4455060921302	5.80	0.09	0.1	<0.1	9	94.0	21.0	51	Topsoil	---	---	---
WKH06	LVK Ae	0-5	21-Sep-06	4455060921303	5.30	0.11	0.1	<0.1	1	6.9	1.9	4	Topsoil	Good	Good	---
WKH06	LVKBt	5-46	21-Sep-06	4455060921304	5.20	0.06	0.2	<0.1	1	2.0	0.6	1	Subsoil	Good	Good	---
WKH06	LVKCK	46-120	21-Sep-06	4455060921305	7.30	0.26	0.1	<0.1	2	20.9	4.1	<1	Subsoil	Good	Good	---
WKH15	MKWaa	0-40	22-Sep-06	4455060922300	4.40	0.43	0.1	<0.1	26	355	71.3	884	Topsoil	---	---	---
WKH16	MIL Of	10-0	22-Sep-06	4455060922301	4.30	0.35	0.1	<0.1	26	234	68.7	788	Topsoil	---	---	---
WKH16	MIL Ae	0-6	22-Sep-06	4455060922302	6.30	0.27	0.2	<0.1	2	11.3	3.9	<1	Topsoil	Good	Good	---
WKH16	MIL Bm	6-14	22-Sep-06	4455060922303	6.80	0.2	0.2	<0.1	2	10.3	3.1	<1	Subsoil	Good	Good	---
WKH16	MIL BC	14-120	22-Sep-06	4455060922304	6.40	0.11	0.2	<0.1	1	4.8	1.3	<1	Subsoil	Good	Good	---
LP12	MIL Of	8-0	19-Oct-05	4455051019206	4.20	0.52	<0.1	<0.1	8	169.0	44.0	269	Topsoil	---	---	380
LP12	MIL Ae	0-22	19-Oct-05	4455051019207	4.80	0.06	0.2	<0.1	1	1.4	0.4	<1	Topsoil	Good	Good	32
LP12	MIL Bm	22-42	19-Oct-05	4455051019208	5.60	0.06	0.2	<0.1	1	2.2	0.5	<1	Subsoil	Good	Good	35
LP12	MIL BC	42-82	19-Oct-05	4455051019209	5.80	0.05	0.3	<0.1	1	1.1	0.3	<1	Subsoil	Good	Good	30
LP12	MIL C	82-120	19-Oct-05	4455051019210	5.20	0.08	0.5	<0.1	2	1.6	0.5	1	Subsoil	Good	Good	34
WKH48	ALG Of	20-0	23-Sep-06	4455060923300	4.30	0.47	0.1	<0.1	16	107	50.8	1220	Topsoil	---	---	---
WKH48	ALG BCg	0-120	23-Sep-06	4455060923001	6.20	0.14	0.2	<0.1	2	7.3	3.5	1	Subsoil	Good	Good	---

TABLE 9B-1a. SOIL QUALITY RESULTS
DETAILED SALINITY - mg/kg
North American Oil Sands Corporation

Sample Point	Soil Series	Depth cm	Sample Date	MSI Sample Number	Lab pH	Lab EC dS/m	SAR	TGR tons/ac	Soluble Ions				Soil Quality Guidelines***			Saturation Percentage
									Na mg/kg	Ca mg/kg	Mg mg/kg	K mg/kg	Soil Horizon	Salinity Rating	Sodicity Rating	
SL57	KNSxc Bm	10-25	23-Sep-06	4455060923004	5.00	0.07	0.2	<0.1	1	3.1	1.0	1	Subsoil	Good	Good	---
SL57	KNSxc Bt	25-55	23-Sep-06	4455060923005	5.00	0.05	0.4	<0.1	2	1.3	0.6	<1	Subsoil	Good	Good	---
SL57	KNSxc IIC	55-100	23-Sep-06	4455060923006	5.00	0.07	0.5	<0.1	2	1.8	0.6	1	Subsoil	Good	Good	---
JB8	KNS Of	13-0	18-Oct-05	4455051018001	5.40	1.05	<0.1	<0.1	11	810.0	123.0	566	Topsoil	---	---	385
JB8	KNS Ae	0-14	18-Oct-05	4455051018002	5.10	0.2	0.2	<0.1	2	13.2	2.9	3	Topsoil	Good	Good	45
JB8	KNS Bt	14-50	18-Oct-05	4455051018003	5.40	0.16	0.2	<0.1	2	11.2	2.4	2	Subsoil	Good	Good	46
JB8	KNS BC	50-80	18-Oct-05	4455051018004	6.90	0.38	0.2	<0.1	2	27.8	7.2	1	Subsoil	Good	Good	43
JB8	KNS CK	80-120	18-Oct-05	4455051018005	7.60	0.42	0.2	<0.1	3	32.2	7.5	1	Subsoil	Good	Good	46
SA53	KNS LFH	8-0	20-Oct-05	4455051020430	4.10	0.87	0.2	<0.1	44	291.0	102.0	1230	Topsoil	---	---	609
SA53	KNS Ae	0-20	20-Oct-05	4455051020431	4.90	0.08	0.4	<0.1	2	2.8	0.9	1	Topsoil	Good	Good	38
SA53	KNS Bt1	20-50	20-Oct-05	4455051020432	4.70	0.08	0.5	<0.1	2	1.7	0.7	1	Subsoil	Good	Good	44
SA53	KNS Bt2	50-80	20-Oct-05	4455051020433	4.90	0.07	0.7	<0.1	2	1.2	0.5	<1	Subsoil	Good	Good	39
SA53	KNS BC	80-110+	20-Oct-05	4455051020434	5.00	0.09	0.6	<0.1	2	1.5	0.5	<1	Subsoil	Good	Good	30
JB45	MUS Of	0-20	21-Oct-05	4455051021025	3.50	0.2	0.2	<0.1	29	45.8	16.8	318	Topsoil	---	---	1680
JB45	MUS Of	20-40	21-Oct-05	4455051021026	3.50	0.17	0.1	<0.1	20	107.0	22.0	31	Subsoil	---	---	980
JB45	MUS Om	40-220	21-Oct-05	4455051021027	4.10	0.25	<0.1	<0.1	12	198.0	44.8	6	Subsoil	---	---	574
LP38	HRR LFH	5-0	20-Oct-05	4455051020216	6.00	1.75	<0.1	<0.1	10	702.0	270.0	1250	Topsoil	---	---	356
LP38	HRR Ae	0-5	20-Oct-05	4455051020217	7.20	0.35	0.1	<0.1	2	21.8	8.5	<1	Topsoil	Good	Good	39
LP38	HRR Bt	5-55	20-Oct-05	4455051020218	5.40	0.19	0.3	<0.1	3	9.2	4.1	2	Subsoil	Good	Good	42
LP38	HRR BCg	55-73	20-Oct-05	4455051020219	7.20	0.37	0.2	<0.1	4	26.7	8.6	<1	Subsoil	Good	Good	47
LP38	HRR CKg	73-110	20-Oct-05	4455051020220	7.60	0.32	0.2	<0.1	3	20.1	5.9	1	Subsoil	Good	Good	42
LP93	FORT Of	12-0	24-Oct-05	4455051024236	4.60	0.85	<0.1	<0.1	15	476.0	106.0	774	Topsoil	---	---	486
LP93	FORT Ae	0-6	24-Oct-05	4455051024237	3.70	0.17	0.2	<0.1	1	2.6	1.1	3	Topsoil	Good	Good	40
LP93	FORT Bm	6-33	24-Oct-05	4455051024238	4.90	0.1	0.2	<0.1	1	2.8	1.0	3	Subsoil	Good	Good	39
LP93	FORT Bt	33-52	24-Oct-05	4455051024239	4.60	0.07	0.5	<0.1	2	1.6	0.4	2	Subsoil	Good	Good	43
SN6	HLY Oh	0-65	23-Oct-05	4455051023460	5.30	0.27	0.2	<0.1	10	78.0	17.0	5	Topsoil	---	---	199
SN6	HLY Ahg	65-95	23-Oct-05	4455051023461	5.60	0.38	0.2	<0.1	5	41.0	10.7	2	Subsoil	Good	Good	76
SN6	HLY Bg	95-120	23-Oct-05	4455051023462	5.60	0.26	0.2	<0.1	3	15.6	4.5	3	Subsoil	Good	Good	50
Burned Sites																
SA5	STP Ah	0-10	18-Oct-05	4455051018400	6.20	0.29	0.1	<0.1	10	135.0	43.3	13	Topsoil	Good	Good	269
SA5	STP Bg	10-40	18-Oct-05	4455051018401	6.60	0.2	0.2	<0.1	2	12.2	3.8	2	Subsoil	Good	Good	40
SA5	STP BCg	40-110+	18-Oct-05	4455051018402	6.60	0.2	0.3	<0.1	3	8.6	3.1	2	Subsoil	Good	Good	40

TABLE 9B-1a. SOIL QUALITY RESULTS

DETAILED SALINITY - mg/kg

North American Oil Sands Corporation

Sample Point	Soil Series	Depth cm	Sample Date	MSI Sample Number	Lab pH	Lab EC dS/m	SAR	TGR tons/ac	Soluble Ions				Soil Quality Guidelines***			Saturation Percentage
									Na mg/kg	Ca mg/kg	Mg mg/kg	K mg/kg	Soil Horizon	Salinity Rating	Sodicity Rating	
Burned Sites																
SA26	MUS Of	0-20	19-Oct-05	4455051019409	3.50	0.19	0.2	<0.1	25	43.1	17.2	175	Topsoil	---	---	1440
SA26	MUS Of	20-200	19-Oct-05	4455051019410	3.50	0.18	0.2	<0.1	17	68.6	21.4	26	Subsoil	---	---	616
SA26	MUS Bg	200-220	19-Oct-05	4455051019411	4.20	0.3	0.3	<0.1	3	12.4	5.4	6	Subsoil	Good	Good	49
SA28	KNSzb LFH	5-0	19-Oct-05	4455051019412	3.90	0.3	0.1	<0.1	11	103.0	43.4	134	Topsoil	---	---	432
SA28	KNSzb Ae	0-18	19-Oct-05	4455051019413	4.00	0.13	0.4	<0.1	1	1.5	0.7	3	Topsoil	Good	Good	27
SA28	KNSzb Bm	18-50	19-Oct-05	4455051019414	5.10	0.07	0.3	<0.1	1	1.1	0.3	1	Subsoil	Good	Good	26
SA28	KNSzb Bt	50-90	19-Oct-05	4455051019415	4.90	0.09	0.8	<0.1	2	1.5	0.5	2	Subsoil	Good	Good	32
SA28	KNSzb BC	90-140	19-Oct-05	4455051019416	5.00	0.16	0.8	<0.1	5	3.8	1.4	3	Subsoil	Good	Good	41
CCME Industrial Guidelines*					6-8.5**	4	12	NS	NS	NS	NS	NS	-	-	-	NS
Alberta Tier I criteria**					6-8.5	NA	NA	NS	NS	NS	NS	NS	-	-	-	NS

Notes:

--- - not analyzed

NA - not applicable

NS - not specified

* - Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (CCME, 2006)

** - Alberta Tier I Criteria for Contaminated Soil Assessment and Remediation (AENV, 1994)

Italics - indicates that values exceed specified guideline

*** - Salt Contamination Assessment and Remediation Guidelines (AENV, 2001)

Good topsoil - EC <2 dS/m; SAR <4

Fair topsoil - EC 2 to 4 dS/m; SAR 4 to 8

Poor topsoil - EC 4 to 8 dS/m; SAR 8 to 12

Unsuitable topsoil - EC >8 dS/m; SAR >12

Good subsoil - EC <3 dS/m; SAR <4

Fair subsoil - EC 3 to 5 dS/m; SAR 4 to 8

Poor subsoil - EC 5 to 10 dS/m; SAR 8 to 12

Unsuitable subsoil - EC >10 dS/m; SAR >12

TABLE 9B-1a. SOIL QUALITY RESULTS
PARTICLE SIZE DISTRIBUTION AND INDICATOR PARAMETERS
North American Oil Sands Corporation

Site Name	Soil Series / Horizon	Sample Depth	Sample Date	Matrix Sample Number	CEC meq/100g	TEC meq/100g	ESP %	OM %	TKN %	TOC %	Texture			Classification (CSSC)
											% Sand	% Silt	% Clay	
WKH01	MLD Of	0-40	21-Sep-06	4455060921301	71.6	58	0.78	75	1.43	37.5	---	---	---	---
JB18	MLD Of	0-20	19-Oct-05	4455051019012	140	10	0.20	88.4	0.55	44.2	---	---	---	---
LP68	MLD Of	0-20	23-Oct-05	4455051023221	76.4	26	0.40	87.2	0.80	43.6	---	---	---	---
SL22	LVK Ae	0-10	22-Sep-06	4455060922001	3.33	<2	<2	1	0.03	0.70	61.4	34.2	4.4	Sandy Loam
SL22	LVK Bt	10-50	22-Sep-06	4455060922002	12.6	6	<0.4	<1	0.02	0.24	44.4	36.6	19.0	Loam
SL22	LVK BC	50-100	22-Sep-06	4455060922003	7.87	4	<0.7	<1	0.03	0.15	70.0	18.0	12.0	Sandy Loam
LP32	LVK LFH	8-0	19-Oct-05	4455051019211	54.2	21	<0.5	66.1	0.71	33.0	---	---	---	---
LP32	LVK Ae	0-12	19-Oct-05	4455051019212	7.3	<2	<0.7	1.5	0.05	0.8	53.6	5.6	40.8	Sandy Loam
LP32	LVK Bt	12-28	19-Oct-05	4455051019213	13.7	9	0.50	0.48	0.02	0.2	52.6	26.0	21.4	Sandy Clay Loam
LP32	LVK BC	28-96	19-Oct-05	4455051019214	---	---	---	---	---	---	55.6	24.0	20.4	Sandy Clay Loam
LP32	LVK Ck	96-120	19-Oct-05	4455051019215	---	---	---	---	---	---	53.6	22.6	23.8	Sandy Clay Loam
SA75	LVK LFH	10-0	22-Oct-05	4455051022450	114	17	0.30	71.8	0.96	35.9	---	---	---	---
SA75	LVK Ahe	0-3	22-Oct-05	4455051022451	13.8	<2	<0.4	3.94	0.09	2.0	22.6	15.6	61.8	Silt Loam
SA75	LVK Bt	3-40	22-Oct-05	4455051022452	0.38	<2	<10	0.42	0.05	0.2	22.6	13.6	63.8	Silt Loam
SA75	LVK BC	40-80	22-Oct-05	4455051022453	---	---	---	---	---	---	56.6	18.6	24.8	Sandy Loam
SA75	LVK C	80-110	22-Oct-05	4455051022454	---	---	---	---	---	---	51.6	25.6	22.8	Sandy Clay Loam
WKH06	LVK Of	5-0	21-Sep-06	4455060921302	69	49	<0.4	86	0.69	42.8	---	---	---	---
WKH06	LVK Ae	0-5	21-Sep-06	4455060921303	10.8	5	<0.5	4	0.10	1.85	55.4	36.6	8.0	Sandy Loam
WKH06	LVBt	5-46	21-Sep-06	4455060921304	18.3	10	<0.3	1	0.05	0.64	47.4	27.6	25.0	Sandy Clay Loam
WKH06	LVKck	46-120	21-Sep-06	4455060921305	14	26	<0.4	1	0.04	0.62	49.4	27.0	23.6	Sandy Clay Loam
WKH15	MKWaa Of	40-0	22-Sep-06	4455060922300	83.9	43	<0.3	84	0.59	42	---	---	---	---
WKH16	MIL Of	10-0	22-Sep-06	4455060922301	74.2	25	<0.4	86	0.45	42.8	---	---	---	---
WKH16	MIL Ae	0-6	22-Sep-06	4455060922302	8.85	7	<0.6	2	0.04	0.87	73.4	19.6	7.0	Sandy Loam
WKH16	MIL Bm	6-14	22-Sep-06	4455060922303	6.25	6	<0.8	<1	0.02	0.49	74.8	18.2	7.0	Sandy Loam
WKH16	MIL BC	14-120	22-Sep-06	4455060922304	8.42	7	<0.6	<1	0.03	0.20	69.4	17.0	13.6	Sandy Loam
LP12	MIL Of	8-0	19-Oct-05	4455051019206	61.2	10	<0.4	70.4	0.60	35.2	---	---	---	---
LP12	MIL Ae	0-22	19-Oct-05	4455051019207	2.87	<2	<2	<0.2	0.01	0.1	93.6	2.6	3.8	Sand
LP12	MIL Bm	22-42	19-Oct-05	4455051019208	---	---	---	---	---	---	91.6	5.6	2.8	Sand
LP12	MIL BC	42-82	19-Oct-05	4455051019209	---	---	---	---	---	---	89.6	6.6	3.8	Sand
LP12	MIL C	82-120	19-Oct-05	4455051019210	---	---	---	---	---	---	80.6	11.6	7.8	Sandy Loam
WKH48	ALG Of	20-0	23-Sep-06	4455060923300	90.1	24	<0.3	88	0.88	43.9	---	---	---	---
WKH48	ALG BCg	0-120	23-Sep-06	4455060923001	16.6	15	<0.3	2	0.06	0.78	20.4	53.2	26.4	Silt Loam
SL57	KNSxc Bm	10-25	23-Sep-06	4455060923004	11.7	3	<0.4	1	0.05	0.63	18.0	61.6	20.4	Silt Loam
SL57	KNSxc Bt	25-55	23-Sep-06	4455060923005	18.9	7	<0.3	<1	0.04	0.48	25.4	45.6	29.0	Clay Loam
SL57	KNSxc IIC	55-100	23-Sep-06	4455060923006	15.6	6	0.40	<1	0.07	0.42	57.4	25.0	17.6	Sandy Loam

TABLE 9B-1a. SOIL QUALITY RESULTS
PARTICLE SIZE DISTRIBUTION AND INDICATOR PARAMETERS
North American Oil Sands Corporation

Site Name	Soil Series / Horizon	Sample Depth	Sample Date	Matrix Sample Number	CEC meq/100g	TEC meq/100g	ESP %	OM %	TKN %	TOC %	Texture			Classification (CSSC)
											% Sand	% Silt	% Clay	
JB8	KNS Of	13-0	18-Oct-05	4455051018001	111	81	<0.2	52	1.26	26.0	---	---	---	---
JB8	KNS Ae	0-14	18-Oct-05	4455051018002	8.61	4	<0.6	1.6	0.05	0.8	57.6	9.6	32.8	Sandy Loam
JB8	KNS Bt	14-50	18-Oct-05	4455051018003	---	---	---	---	---	---	50.0	29.6	20.4	Sandy Clay Loam
JB8	KNS BC	50-80	18-Oct-05	4455051018004	---	---	---	---	---	---	51.6	25.6	22.8	Sandy Clay Loam
JB8	KNS CK	80-120	18-Oct-05	4455051018005	---	---	---	---	---	---	49.6	26.6	23.8	Sandy Clay Loam
SA53	KNS LFH	8-0	20-Oct-05	4455051020430	372	28	0.10	88	0.64	44.0	---	---	---	---
SA53	KNS Ae	0-20	20-Oct-05	4455051020431	29.1	<2	<0.2	0.49	0.03	0.2	32.6	14.6	52.8	Silt Loam
SA53	KNS Bt1	20-50	20-Oct-05	4455051020432	---	---	---	---	---	---	31.6	30.4	38	Clay Loam
SA53	KNS Bt2	50-80	20-Oct-05	4455051020433	---	---	---	---	---	---	46.0	21.4	32.6	Loam
SA53	KNS BC	80-110+	20-Oct-05	4455051020434	---	---	---	---	---	---	59.0	16.8	24.2	Sandy Loam
JB45	MUS Of	0-20	21-Oct-05	4455051021025	154	8	0.20	88.4	0.46	44.2	---	---	---	---
LP38	HRR LFH	5-0	20-Oct-05	4455051020216	82	64	<0.3	48.1	0.93	24.0	---	---	---	---
LP38	HRR Ae	0-5	20-Oct-05	4455051020217	10.7	9	0.99	1	0.05	0.5	21.6	15.6	62.8	Silt Loam
LP38	HRR Bt	5-55	20-Oct-05	4455051020218	21.3	14	0.42	0.72	0.03	0.4	25.2	30.0	44.8	Clay Loam
LP38	HRR BCg	55-73	20-Oct-05	4455051020219	---	---	---	---	---	---	35.6	21.6	42.8	Loam
LP38	HRR CKg	73-110	20-Oct-05	4455051020220	---	---	---	---	---	---	35.6	16.0	48.4	Loam
LP93	FORT Of	12-0	24-Oct-05	4455051024236	78.8	36	0.72	73.6	1.16	36.8	---	---	---	---
LP93	FORT Ae	0-6	24-Oct-05	4455051024237	6.99	<2	<0.7	1.2	0.04	0.6	62.0	5.2	32.8	Sandy Loam
LP93	FORT Bm	6-33	24-Oct-05	4455051024238	15	<2	<0.3	1.2	0.05	0.6	56.6	17.6	25.8	Sandy Loam
LP93	FORT Bt	33-52	24-Oct-05	4455051024239	---	---	---	---	---	---	53.2	22.0	24.8	Sandy Clay Loam
SN6	HLY Oh	0-65	23-Oct-05	4455051023460	341	37	<0.08	33.8	1.34	16.9	---	---	---	---
SN6	HLY Ahg	65-95	23-Oct-05	4455051023461	---	---	---	---	---	---	38.7	20.0	41.3	Loam
SN6	HLY Bg	95-120	23-Oct-05	4455051023462	---	---	---	---	---	---	54.6	16.6	28.8	Sandy Loam

TABLE 9B-1a. SOIL QUALITY RESULTS
PARTICLE SIZE DISTRIBUTION AND INDICATOR PARAMETERS
North American Oil Sands Corporation

Site Name	Soil Series / Horizon	Sample Depth	Sample Date	Matrix Sample Number	CEC meq/100g	TEC meq/100g	ESP %	OM %	TKN %	TOC %	Texture			Classification (CSSC)
											% Sand	% Silt	% Clay	
Burned Sites														
SA5	STP Ah	0-10	18-Oct-05	4455051018400	149	122	<0.2	30.8	1.00	15.4	59.2	4.0	36.8	Sandy Loam
SA5	STP Bg	10-40	18-Oct-05	4455051018401	13.7	12	0.99	1.2	0.05	0.6	59.6	18.0	22.4	Sandy Loam
SA5	STP BCg	40-110+	18-Oct-05	4455051018402	---	---	---	---	---	---	43.6	32.6	23.8	Clay Loam
SA26	MUS Of	0-20	19-Oct-05	4455051019409	377	8	0.08	86.9	0.48	43.4	---	---	---	---
SA26	MUS Of	200-220	19-Oct-05	4455051019411	---	---	---	---	---	---	29.6	23.0	47.4	Loam
SA28	KNSzb LFH	5-0	19-Oct-05	4455051019412	443	10	0.06	38.4	0.60	19.2	---	---	---	---
SA28	KNSzb Ae	0-18	19-Oct-05	4455051019413	16.9	<2	<0.3	0.63	0.02	0.3	84.6	3.0	12.4	Loamy Sand
SA28	KNSzb Bm	18-50	19-Oct-05	4455051019414	---	---	---	---	---	---	81.6	6.0	12.4	Loamy Sand
SA28	KNSzb Bt	50-90	19-Oct-05	4455051019415	---	---	---	---	---	---	59.6	20.0	20.4	Sandy Clay Loam
SA28	KNSzb BC	90-140	19-Oct-05	4455051019416	---	---	---	---	---	---	57.6	19.0	23.4	Sandy Loam
Laboratory detection limit					NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CCME Agricultural Guidelines*					NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CCME Residential/Parkland Guidelines*					NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CCME Commercial Guidelines*					NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CCME Industrial Guidelines*					NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:

NS - not specified

* - Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (CCME, 2006)

Italics - indicates that values exceed CCME guidelines

Site #	LMB	Site Name	Analyzed	SAMPLED	Easting	Northing	Series with Modifier	Parent Material	LFH Depth (cm)	Organic Horizon	Organic Depth (cm)	A-Horizon	A-Depth (cm)	A-Texture	B-Horizon	B-Depth (cm)	B-Texture	BC/C-Horizon	BC/C-Depth (cm)	BC/C-Texture	C-Horizon	C-Depth (cm)	C-Texture	% Slope	Surface Expression	Slope Position	Slope Class	Slope Length	Aspect	Drainage	Surface Stoniness	Land Use	Comments
33		JB33	N	N	464842	6188806	KNS	TILL	7	---	---	Ae1 Ae2	0-4 4-17	SiL-L SiL-L	Bt	17-48	SiCL	BC	48-92	CL	Ck	92-	CL	4	U	M	4	3	S	MW	S0	W	Bt is high in Fe, lots of ppt's in Ck, aspen, j.pine, wt spruce
34		JB34	N	N	464278	618818	HRR	TILL	---	Of	10-0	Ae	0-15	SiL	Bt	15-44	SiCL-CL	BC	44-61	CL	Ck	61-100	CL	4	U	U	4	2	E	MW	S1	W	willow, wt spruce, feather moss
35		JB35	N	N	463918	6188831	MRN	O/GLLC	---	Of	0-100	---	---	---	Bg	100-120	SiCL	---	---	---	---	---	---	---	L	L	2	4	---	VP	S0	M	bl spruce, lab tea and sphagnum
36		JB36	N	N	463733	6188801	MUS	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	L	2	4	---	VP	S0	M	bl spruce, sphagnum, tamarack
37		JB37	N	N	463497	6188829	MUS	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	E	2	4	---	VP	S0	M	bl spruce, poor bog
38		JB38	N	N	463247	6188840	MUS	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	L	L	2	4	---	VP	S0	M	bl spruce, sedge grass
39		JB39	N	N	463579	6189046	MUS	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	L	L	2	---	---	VP	S0	M	lab tea, sedge grasses
40		JB40	N	N	463467	6189316	KNS	TILL	---	Of	4-0	Ae	0-24	SiL	Bt	24-47	SiCL	BC1 BC2	47-85 85-	SiCL-SiC SCL-CL	---	---	---	1-2	L	L	3	4	---	MW	S0	W	j. pine, lab tea, wt spruce
41		JB41	N	N	463283	6189850	KNS	TILL	7	---	---	Ae1 Ae2	0-7 7-18	SiL SiL	Bt	18-49	CL	BC	49-120	CL	---	---	---	3-4	U	U	3	3	E	MW	S0	W	J.pine, aspen, low bush cranberry
42		JB42	N	N	463181	6190059	BMT	GLFL	---	Of	0-30	Aeg	30-40	SCL	Bg	40-120	SCL	---	---	---	---	---	---	1-2	U	D	2	4	---	VP	S0	M	---
43		JB44	N	N	464498	6186805	HLY	O/GLFL	---	Om	0-140	---	---	---	Bg	140-220	SCL	---	---	---	---	---	---	---	L	L	2	---	---	VP	S0	M	tamarack, bog birch, sedge grass
44		JB45	Y	Y	463784	6186983	MUS	O	---	Of Om	0-40 40-	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	L	2	---	---	VP	S0	M	frozen @100cm, sphagnum, lichen
45		JB46	N	N	463531	6186993	KNSptgl	TILL	---	Of Oh	6-0	Ahe	0-10	L-CL	Bt	10-40	CL	---	---	---	Ckg	40-110	CL	2-3	L - U	L	3	---	---	P	S0	W	CaCO3 starts @ 40, gleying starts at 40cm
46		JB47	N	N	463981	6186980	MUS	O	---	Of Om	0-65 65-220	---	---	---	---	---	---	---	---	---	---	---	---	---	L	L	2	---	---	VP	S0	M	sedge grass, very wet, bl spruce dying off
47		JB48	N	N	464671	6186971	MUS	O	---	Of Om	0-150 150-220	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	L	2	---	---	VP	S0	M	bl spruce, lab tea, sphagnum
48		JB49	N	N	465263	6187026	KNS	TILL	---	Of	7-0	Ae1 Ae2	0-5 5-20	SiL SiL	Bt IBt	20-32 32-46	SiL-SiCL CL	IIBC	46-	CL	---	---	---	3-4	U	C	3	3	---	MW	S0	W	washed till with sand lenses loess, silty material on top
49		JB50	N	N	465483	6187001	MRN	O/GLLC	---	Om Oh Om	0-30 30-100 100-120	---	---	---	Bg	120-	CL	---	---	---	---	---	---	1-2	L	L	2	---	---	VP	S0	M	willow, bog birch, bl spruce
50		JB51	N	N	464807	6187128	KNSgl	TILL	---	Of	8-0	Ae	0-8	SiL	Bt	8-52	CL	BC	52-63	CL	CK(g)	63-	CL	3-4	U	U	4	3	SW	---	S0	W	Fe concnctions in Ck or Ig, bright mottles, j.pine, bl spruce
51		JB52	N	N	464208	6187450	KNS	TILL	6	---	---	Ae	0-6	SL	Bt	6-42	CL	BC	42-97	CL	CK(g)	97-120	CL	4-5	R	M	5	3	S	MW	S0	W	aspen, bl spruce, paper birch
52		JB53	N	N	463992	6187658	HLY	O	---	Of Om	0-100 100-155	---	---	---	Bg	155-	CL	---	---	---	---	---	---	1-2	L	L	2	---	---	VP	S0	M	bl spruce, sphagnum, lab tea
53		JB54	N	N	463633	6187677	MLD	O	---	Of Om	0-120 120-220	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	D	2	2	---	VP	S0	M	willow, sphagnum, bl spruce, sedge grass
54		JB55	N	N	464736	6187608	MRN	O TILL	---	Om Oh	0-30 30-95	Ahg	95-100	---	Bg	100-120	---	---	---	---	---	---	---	1-2	L	L	2	2-3	---	VP	S0	M	open canopy, bl spruce, poor bog
55		JB56	N	N	465033	6187649	DOV	GLLC	6-0	---	---	Ae	0-6	SiL	Bt	6-37	SiCL	BC	37-95	SiCL	CKgj	95-120	SiCL-SiC	3-4	U	U - M	4	3	W	MW	S0	W	mottling at 110cm, some varving *No coarse fragments or till factors varving evident in BC, aspen, willow, alder
56		JB59	N	N	464085	6187860	HLY	O TILL	---	Of Om	0-60 60-80	---	---	---	Bg	80-120	SiCL-CL	---	---	---	---	---	---	1-2	L	L	2	---	---	VP	S0	M	bl spruce, bog birch, grasses
57		JB60	N	N	463674	6188564	HLY	O/GLLC	---	Of	0-135	---	---	---	Bg	135-160	SiCL	---	---	---	---	---	---	1-2	L	L	2	---	---	VP	S0	M	bl spruce, sedge grass, bog
58		JB61	N	N	462972	6190563	HLY	O TILL	---	Of	0-100	---	---	---	Bg	100-120	CL	---	---	---	---	---	---	---	L	L	2	---	---	VP	S0	M	sedge grass, sphagnum, bog birch
59		JB62	N	N	478160	6218829	MRN	O TILL	---	Of Om	0-40 40-60	---	---	---	Bg	60-120	SiCL	---	---	---	---	---	---	1-2	L	---	2	4	---	VP	S0	M	bl spruce, lab tea, sphagnum, lichens
60		JB63	N	N	477813	6218820	LVKpt	GLFL/TILL	---	Of	20-0	Ahe Ae	0-8 8-17	SiL SiL	Bt	17-45	SiCL	IIBC IIBCg	45-80 80-120	LS CL	---	---	---	4 TOPO	I - U	M	4	3	E	MW	S0	W	wet profile could be gleyed but not gleying and no mottling black spruce forest
61		JB64	N	N	478489	6219148	STPptxszh	GLFL/TILL	---	Of/Om	15-0	Aheg	0-8	L	Btg	8-42	SiCL	IIBCg IIBCg	42-80 80-120	LS CL	---	---	---	2-3	U	E	2	4	---	P	S0	W	bk spruce forest
62		JB65	N	N	478487	6220056	STPptzh	TILL	---	Of Oh	30-10 10-0	Ahg	0-30	L	Bg	30-80	SiCL-SiC	---	---	---	---	---	---	2-3	U	T	2	4	N	VP	S0	W	Bg = gleyed through out black spruce forest
63		JB66	N	N	478492	6220478	MUS	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	L	2	---	---	VP	S0	M	bk spruce bog/fen
64		JB67	N	N	478500	6221342	MRN	TILL	---	Of	0-70	---	---	---	Bg	70-120	SiCL	---	---	---	---	---	---	1-2	L	L	2	---	---	VP	S0	M	bk spruce bog (poor)

Site #	LMB	Site Name	Analyzed	SAMPLED	Easting	Northing	Series with Modifier	Parent Material	LFH Depth (cm)	Organic Horizon	Organic Depth (cm)	A-Horizon	A-Depth (cm)	A-Texture	B-Horizon	B-Depth (cm)	B-Texture	BC/C-Horizon	BC/C-Depth (cm)	BC/C-Texture	C-Horizon	C-Depth (cm)	C-Texture	% Slope	Surface Expression	Slope Position	Slope Class	Slope Length	Aspect	Drainage	Surface Stoniness	Land Use	Comments
65	JB68	N	N	477699	6221323	KNS	TILL	---	Of	12-0	Ahe Aegj	0-4 4-22	SiL SiL	Bt	22-52	SiCL-CL	I BC IIBC	52-79 79-120	CL CL	---	---	---	3	U	M	3	4	NE	MW	S0	W	Mixed Wood Forest, aspen, bl spruce, willow	
66	JB70	N	N	477045	6221403	MLD	O TILL	---	Of Om	0-160 160-195	---	---	---	Bg	195-210	CL	---	---	---	---	---	---	1-2	L	---	2	4	---	VP	S0	M	bl spruce, sphagnum, bog birch	
67	JB71	N	N	476822	6221375	LVKpt	GLFL/TILL	---	Of	25-0	Ahe Ae	0-4 4-11	SiL SiL-SiCL	Bt	11-42	SiCL	BC1 IIBC2	42-95 95-120	SL-LS CL	---	---	---	2-3 TOPO	U	M	3	2	NE	MW	S0	M	bl spruce, sphagnum, lab tea	
68	JB72	N	N	476227	6221405	MRN	O TILL	---	Of	0-60	Ah	60-70	SiL-SiCL	Bg	70-85	SiCL	BC	85-120	CL	---	---	---	1-2	L	M	2	4	E	P	S0	M	bl spruce, sphagnum, lab tea	
69	JB73	N	N	475519	6221368	STPpt	TILL	---	Of	0-25	---	---	---	Bg	25-50	SiCL	BCg	50-90	SiCL	Cg	90-120	C	2-3	U	M	3	2-3	N	P	S0	M	black spruce, bog, closed canopy	
70	JB74	N	N	475218	6221422	MUS	O/GLLC	---	Of Om	0-120 120-200	---	---	---	---	---	---	BCg	200-220	SiC-SiCL	---	---	---	1-2	L	---	2	4	---	VP	S0	M	bl spruce, peat, sphagnum, lab tea	
71	JB75	N	N	474938	6221412	KNS	TILL	12	---	---	Ae	0-9	SiL	Bt	17411	SiCL	BC	47-120	CL	---	---	---	2-3	U	M	3	1-2	W	MW	S0	W	bl spruce, sphagnum, lichen	
72	JB76	N	N	474428	6221440	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	---	2	4	---	VP	S0	M	sedge fen black spruce	
73	JB77	N	N	474297	6221439	KNS	TILL	10	---	---	Ae	0-10	SiL	Bt	10-35	SiCL	BC	35-120	SiCL	---	---	---	2-3	U	M	3	2	W	MW	S0	W	sphagnum, feather moss, lab tea, mostly understory	
74	JB78	N	N	473766	6221447	MRN	O GLTL	---	Of	0-70	---	---	---	Bg	70-120	SCL-CL	---	---	---	---	---	---	1-2	L	---	2	4	---	VP	S0	M	bl spruce, sphagnum, lab tea	
75	JB79	N	N	473388	6221491	KNS	TILL	15	---	---	Ahe	0-5	SiL	Bt	5-35	SiCL-CL	BC	35-120	SiCL-CL	---	---	---	3	U	M	3	1-2	SE	WM	S0	W	bl spruce, understory sphagnum, peat,	
76	JB80	N	N	472888	6221476	MUS	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	---	2	4	---	VP	S0	M	bl spruce, sphagnum, lab tea	
77	JB81	N	N	473562	6221857	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	---	2	4	---	VP	S0	M	tamarack, sphagnum, peat	
78	JB82	N	N	473717	6222524	DOV	GLLC	---	Of	12-0	Ahe	0-15	SiL	Bt	15-37	SiCL-SiC	BC	37-120	SiCL-SiC	---	---	---	2-3	U	M	3	2	S	MW	S0	W	jackpine, bl spruce, lichen	
79	JB83	N	N	474887	6222891	KNS	TILL	6	---	---	Ahe	0-14	SiL-L	Bt	14-42	CL	BC	42-120	CL	---	---	---	4	U	E	4	3	S	MW	S0	W	jackpine, bl spruce, club moss	
80	JB84	N	N	475493	6222771	LVKgl	GLFL/TILL	---	Of	0-10	Ahe	0-7	SiL	Btgj	7-40	SiCL-CL	I BC III BC	40-75 75-120	LS CL-SL	---	---	---	3	U	M	3	3	N	IMP MW	S0	W	bl spruce, poplar, lab tea	
81	JB85	N	N	475778	6222824	MRN	O TILL	---	Om	0-50	Ahbq	50-60	SiL-L	Btg	60-75	CL	BCg	75-120	SCL	---	---	---	1-2	L	---	2	4	---	IMP-P	S0	M	till indicators, bl spruce	
82	JB86	N	N	476213	6222789	LVKptgl	GLFL/TILL	20	---	---	Aheqj	0-6	SiL	Bt	20-35	SiCL-SCL	I BCg	35-100	CL	---	---	---	2-3	U	M	3	3-4	E	IMP-MW	S0	---	bl spruce 100%, feather moss	
83	JB87	N	N	476881	622812	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	---	2	4	---	VP	S0	M	bl spruce, sphagnum, bog birch, tamarack	
84	JB88	N	N	477130	6222784	DOV	GLLC/GLFL	2	---	---	Ae	0-8	SiL-L	Bt	8-34	CL	I BC II BC	34-55 55-120	CL-SCL LS	---	---	---	3	U	M	3	2	N	MW-W	S0	W	bl spruce, jackpine, bog cran	
85	JB89	N	N	467741	6221563	MUS	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	---	2	4	---	VP	S0	M	lab tea, bl spruce, sphagnum	
86	JB90	N	N	467964	6221540	MLD	O	---	Of Om	0-170 170-220	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	---	2	4	---	VP	S0	M	aspen, bl spruce, leather leaf	
87	JB91	N	N	468276	6221555	KNSpt	TILL	---	Of	0-21	Ae Ae2	0-8 8-16	SiL-L SiL-L	Bt	16-42	CL	BC	42-120	CL	---	---	---	4-5	R	M	4	2	E	MW	S1-2	W	bl spruce, feather moss, bunchberry	
88	JB92	N	N	468733	6221549	FIR	GLFL	---	---	---	Ae	0-18	LS-S	Bm	18-42	LS-S	BC	42-90	LS-SCL	---	---	---	3-4	R	M	4	3	W	R	S1-2	W	bl spruce, jackpine, lichen	
89	JB93	N	N	469039	6221522	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	---	2	4	---	VP	S0	M	bl spruce, moss, lab tea	
90	JB94	N	N	469024	6221264	HLY	O/GLFL	---	Of	0-130	Ahg	130-140	SiCL-SCL	Bg	140-150	SCL	---	---	---	---	---	---	1-2	L	---	2	4	---	VP	S0	M	sedge grass, sphagnum, bog birch	
91	JB95	N	N	468985	6220926	DOV	GLLC	---	Of	20-0	Ae	0-6	SiL	Bt	14-34	SiCL	BC	34-120	SiCL	---	---	---	3	U	M-L	3	2-3	W	MW	S0	W	bl spruce, feather moss	
92	JB96	N	N	468948	6220668	HLY	O/GLFL	---	Of	0-80	---	---	---	Bg	80-120	CSC-SCL	---	---	---	---	---	---	1-2	L	---	2	5	---	VP	S0	M	bl spruce, sedge grass, sphagnum	
93	JB97	N	N	468991	6220210	MLD	O/GLFL	---	Of Om	0-40 40-160	---	---	---	Bg	160-180	MA SCL-SL	---	---	---	---	---	---	1-2	L	---	2	5	---	VP	S0	M	bl spruce, sedge grass, sphagnum	
94	JB98	N	N	468980	6219697	HLY	O/GLFL	---	Of	0-90	---	---	---	Bg	90-120	SCL-SC	---	---	---	---	---	---	1-2	L	---	2	5	---	VP	S0	M	bl spruce, sedge grass, sphagnum	
95	JB99	N	N	468978	6218953	BMT	GLFL	---	Of/Om	0-35	Aeg	35-45	SL	Btg	45-60	SCL	BC	60-	SCL-SC	---	---	---	2-3	U	M	3	1-2	SW	I-P	S1	W	bl spruce, lab tea, lichen	
96	JB100	N	N	468931	6218485	MLD	O/GLFL	---	Of	0-160	---	---	---	Bg	160-170	SiCL	---	---	---	---	---	---	1-2	L	---	2	5	---	VP	S0	M	dead tamarack, bl spruce, leather leaf, sphagnum	

Site # LMB	Site Name	Analyzed	SAMPLED	Easting	Northing	Series with Modifier	Parent Material	LFH Depth (cm)	Organic Horizon	Organic Depth (cm)	A-Horizon	A-Depth (cm)	A-Texture	B-Horizon	B-Depth (cm)	B-Texture	BC/C-Horizon	BC/C-Depth (cm)	BC/C-Texture	C-Horizon	C-Depth (cm)	C-Texture	% Slope	Surface Expression	Slope Position	Slope Class	Slope Length	Aspect	Drainage	Surface Stoniness	Land Use	Comments
161	LP41	N	N	479944	6183733	FORTzb	GLFL	---	Of	0-3	Ae	0-18	LS	Bm Bt	18-38 38-78	LS SCL	BC	78+	SC	---	---	---	4	U	U	4	1	NW	W-R	S0	W	jack pine, white spruce, labrador tea; auger refusal at 78 cm due to gravel
162	LP42	N	N	457004	6192549	LVKgr	GLFL/TILL	---	Of	13-0	Ae	0-11	SiL	Bt	11-37	CL	BC	37-88	SC	Ck	88-120+	SC	3	U	L	3	2	NE	MW-I	S0	W	bl spruce, feather moss, jackpine
163	LP43	N	N	---	---	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	L	E	2	---	---	VP	S0	W	bl spruce, tamarack, lab tea
164	LP44	N	N	456210	6193024	LVKgl	GLFL/TILL	11	---	---	Ae	0-26	SiL	Bt	26-42	CL	BC	42-72	SIC	Ck	72-120+	SiCL	---	L	E	2	---	---	MW	S0	W	wt spruce, aspen, lots of dead fall
165	LP45	N	N	455742	6193350	MRN	O TILL	---	Of	0-58	---	---	---	---	---	---	BCg	58-110	CL	Cg	110-	SCL	---	L	E	2	---	---	---	S0	W	bl spruce, lab tea, bog birch, willow, sedge
166	LP46	N	N	455353	6193847	KNSgl	TILL	5	---	---	Ahe Ae	0-8 8-28	SiL SiL	Bt	28-41	CL	BC	41+	SCL-CL	---	---	---	2	U	M	2	4	SW	MW	S0	W	wt spruce, aspen, paper birch, rose
167	LP47	N	N	455310	6194486	MLD	O/GLLC	---	Of Om	0-150 150-165	---	---	---	---	---	---	---	---	---	Cg	165+	SiCL	---	L	E	2	---	---	P-VP	S0	W	bl spruce, willow, sedge, lab tea
168	LP48	N	N	455363	6194838	MRN	O/GLLC	---	Of Oh	0-52 52-63	---	---	---	---	---	---	BCg	63-120+	SC	---	---	---	---	L	E	2	---	---	---	---	---	bl spruce, sphagnum, lab tea
169	LP49	N	N	455129	6195052	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	L	E	2	---	---	VP,VP	S0	W	bl spruce, sedge, sphagnum
170	LP50	N	N	455389	6195575	MLD	O/GLLC	---	Of Om Oh	0-100 100-115 115-125	---	---	---	---	---	---	BCg	125-185	SIC	---	---	---	2	U	T	2	5-6	NW	VP	S0	W	bl spruce, sedges, sphagnum
171	LP51	N	N	455866	6195610	LVKgl	GLFL/TILL	---	Of	15-0	Ae1 Ae2	0-14 14-38	SiL SiCL	Bt	38-52	CL	BC	52-120+	SIC	---	---	---	3	M - U	M	3	4	E-SE	MW	---	W	j. pine, bl spruce, feather moss, lab tea
172	LP52	N	N	456291	6195494	MUS	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	E	2	---	---	VP	S0	W	---
173	LP53	N	N	456379	6195465	MUS	O	---	Of	0-125	---	---	---	---	---	---	---	---	---	---	---	---	---	L	E	2	---	---	VP	S0	W	---
174	LP54	N	N	456604	6194424	MLD	O	---	Of	0-320	---	---	---	---	---	---	---	---	---	---	---	---	---	L	E	2	---	---	P	S0	W	bl spruce, lab tea, sedges
175	LP55	N	N	456093	6194447	KNS	Till	14	---	---	Ae	0-21	SiL	Bt	21-45	SiCL	BC	45-	CL	Ck	---	CL	3	M	U	3	3	N	MW	S0	W	aspen, wt spruce, alder, lab tea
176	LP56	N	N	478411	6218873	MRN	O TILL	---	Of	0-60	---	---	---	---	---	---	---	---	---	Cg	60-120	SiC	---	L	E	2	---	---	P	S0	W/M	bl spruce, lab tea, horsetail
177	LP57	N	N	478419	6218439	FORTpt	GLFL	---	Of	15-0	Ae	0-9	SL	Bt	9-32	SCL	BC	32-82	SL	C	---	SL-vcS	---	L	E	2	---	---	MW	S0	W	bl spruce, lab tea, feather moss, rose
178	LP58	N	N	478470	6218285	LVK	GLFL/TILL	---	Of	6-0	Ahej	0-8	SiL	Bt	8-32	SiCL	BC	32-54	SCL	C	54-120+	CL	---	L	E	2	---	---	P	S0	W	bl spruce, j.pine, lab tea
179	LP59	N	N	478445	6219280	LVK	GLFL/TILL	10	---	---	Ahe Ae	0-11 11-38	SiL SiL	Bt	38-58	SiCL-CL	BC	58-110	SIC	C	110+	C	3	M - U	L - T	3	3-4	W	MW	S0	W	Aspen, wt spruce, willow
180	LP60	N	N	478486	6219868	KNS	TILL	3	---	---	Ae	0-3	SiL	Bt	3-31	SiCL	BC	31+	CL	---	---	---	3	M - U	L - T	3	4	E	I-MW	S0	W	bl spruce, poplar, paper birch, feather moss
181	LP61	N	N	478479	6220258	MRN	O	---	Of	0-100	---	---	---	---	---	---	---	---	---	Cg	100+	SiL-SiCL	---	L	E	2	---	---	P	S0	W	bl spruce, lab tea, sphagnum
182	LP62	N	N	478490	6220832	STPzh	TILL	---	Of	14-0	Ahe Ae	0-4 4-12	SiCL SiL	Btg	12-42	SiCL	BCg	42+	SCL	---	---	---	3	U	L	3	3-4	S	I-P	S0	W	bl; spruce, lab tea, bog cran
183	LP63	N	N	478087	6221287	STPzh	TILL	---	Of	38-0	Ahe Ae	0-4 4-12	SiCL SiL	Btg	12-31	SiCL	BC	31-75	CL	C	75-120	CL	---	L	E	2	---	---	P	S0	W	bl; spruce, lab tea, feather moss
184	LP64	N	N	473178	6227609	MUS	O TILL	---	Of Om Oh	0-85 85-100 100-130	Ah	130-145	SiCL-CL	Bt	145-160	CL	BCg	160-180	CL-C	---	---	---	---	L	E	2	---	---	P	S0	W	bl; spruce, lab tea, feather moss
185	LP65	N	N	472767	6231249	FORT	FLEOGLFL	---	Of	13-0	Ae	0-8	SiL	Bt	38593	SiCL-CL	BC	29-85	CL	C	85-120+	S	3-4	M	U	4	3-4	N	MW	S0	W	bl; spruce, lab tea, feather moss
186	LP66	N	N	472517	6230882	MRN	O TILL	---	Of Om Oh	0-50 50-65 65-75	Ah	75-85	SiC	Bg	85-110	SiC	---	---	---	C	110+	C	---	L	E	2	---	---	P	S0	W	bl; spruce, lab tea, feather moss
187	LP67	N	N	472529	6230486	MRN	O TILL	---	Of Om Oh	0-40 40-55 55-75	Ah	75-95	SiC	Bg	95-110	SC	---	---	---	C	110+	SiC	---	L	E	2	---	---	VP	S0	W	bl; spruce, lab tea, feather moss
188	LP68	Y	Y	472443	6229737	MLD	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	E	2	---	---	VP	S0	W	bl spruce, lab tea, sphagnum
189	LP69	N	N	471973	6229598	HLY	O TILL	---	Of	0-83	---	---	---	Bg	83-120+	SiC	---	---	---	---	---	---	---	U - L	E	2	---	---	VP	S0	W	bl spruce, lab tea, sphagnum
190	LP70	N	N	471702	6229623	KNS	TILL	---	Of	14-0	Ae	0-8	SiL	Bt	8-41	CL	BC	41-65	CL	C II C	65-82 82+	SiC SC	7	H	M - U	6	1	S	MW	S0	W	bl spruce, poplar feather moss
191	LP71	N	Y	473226	6229612	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	L	D	2	---	---	VP,VP	S0	M	feather moss, sedge, sphagnum, no trees
192	LP72	N	N	473124	6229585	KNS	TILL	9	---	---	Ahe	0-6	SL	Bt	6-33	CL	BC	33-110	SiC	C	110+	SiC	3	H	U	3	3-4	NE	MW-I	S0	W	bl spruce, rose, poplar

Site # LMB	Site Name	Analyzed	SAMPLED	Easting	Northing	Series with Modifier	Parent Material	LFH Depth (cm)	Organic Horizon	Organic Depth (cm)	A-Horizon	A-Depth (cm)	A-Texture	B-Horizon	B-Depth (cm)	B-Texture	BC/C-Horizon	BC/C-Depth (cm)	BC/C-Texture	C-Horizon	C-Depth (cm)	C-Texture	% Slope	Surface Expression	Slope Position	Slope Class	Slope Length	Aspect	Drainage	Surface Stoniness	Land Use	Comments
193	LP73	N	N	472457	6229426	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	L	E	2	---	---	VP	S0	M	bl spruce, lab tea, sphagnum
194	LP74	N	N	472420	6229049	STPptzh	TILL	---	Of	0-51	Ae	51-56	SiL	Btg	56-72	SiCL	BCg	72-120+	SiC	---	---	---	---	L	E	2	---	---	VP	S0	W	bl spruce, feather moss, lab tea
195	LP75	N	N	472382	6228801	HLY	O TILL	---	Of	0-61	---	---	---	---	---	---	BCg	61-90	SiCL	C	90+	---	2	U	T	2	4	S	VP	S0	M	---
196	LP76	N	Y	472356	6228631	MLD	O	---	Of Om	0-90 90-220	---	---	---	---	---	---	---	---	---	---	---	---	---	L	D	2	---	---	VP	S0	M	mineral content increased with depth but is still distinctly organic, sedge willow, feather moss
197	LP77	N	N	472343	6228273	MLD	O TILL	---	Of Om	0-155 155-220	---	---	---	---	---	---	---	---	---	Cg	220+	SiC	---	L	D	2	---	---	VP	S0	M	bl spruce, bog birch, sedges
198	LP78	N	N	472359	6228088	LVKzb	GLFL/TILL	---	Of	11-0	Ae	0-8	SL	Bm Bt	8-20 20-52	LS-SL SCL	BC	52-82	SL	Ck	82-120+	---	5	M - H	M - L	5	2-3	N-NE	MW	S0	W	bl spruce, feather moss, lab tea
199	LP79	N	N	472333	6227837	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	h	E	2	---	---	---	---	---	bl spruce, sedge, sphagnum
200	LP80	N	N	472599	6228185	MUS	O TILL	---	Of Om	0-115 115-164	---	---	---	---	---	---	BC	164-200	CL	Cg	200	SiC-C	---	L	D	2	---	---	VP	S0	M	bl spruce, sphagnum, lab tea, frozen at 65cm
201	LP81	N	N	473193	6228100	KNS	TILL	---	Of	7-0	Ae	0-7	SL	Bt	7-45	SCL	BC	45-70	CL	C	70-120	C-CL	---	L	E	2	---	---	MW	S0	W	bl spruce, lab tea, dead j.pine
202	LP82	N	Y	473411	6228144	KNS	TILL	16	---	---	Ae	0-8	SiL	Bt	8-32	SiCL	BC	32-75	CL	C	75-80	CS	5	M - H	U	5	3	NW	MW	S0	W	bl spruce, paper birch, lab tea
203	LP83	N	N	473612	6228143	MUS	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	D	2	---	---	P	S0	W	bl spruce, lab tea, sphagnum
204	LP84	N	N	473932	6228110	MUS	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	D	2	---	---	VP	S0	W	bl spruce, feather moss, lab tea
205	LP85	N	N	474456	6228102	MLD	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	D	2	---	---	VP	S0	M	sedge, feather moss, bog cran
206	LP86	N	N	474842	6228120	MUS	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	E	2	---	---	VP	S0	M/W	bl. Spruce, larch, sedge
207	LP87	N	N	475196	6228100	KNS	TILL	---	Of	13-0	Ae	0-11	SiL	Bt	11-37	SiCL	BC	37-120	CL-SiCL	---	---	---	6	M - H	U	6	3-4	N	MW	S0	W	bl spruce, poplar, club moss
208	LP88	N	N	475467	6228123	KNS	TILL	---	Of	14-0	Ae1 Ae2	0-12 12-25	SL SL	Bt	25-45	CL	BC	45-75	SL	C	75-120+	CL-SCL	5-6	M - H	C	5	2	N	MW	S0	W	bl spruce, lab tea, jackpine
209	LP89	N	Y	475583	6228096	KNSpt	TILL	---	Of	16-0	Ahe/Ae	0-9	SiL	Bt	9-48	CL	BC	48-62	CL	C	62+	---	2	M	T	2	3	NE	MW-I	S0	W	bl spruce, feather moss, jackpine
210	LP90	N	N	475989	6228110	MRN	O TILL	---	Of	0-105	Ah Ae	105-115 115-120	SiCL SiL	---	---	---	---	---	---	---	---	---	variable	M	M	---	4	E	MW	S0	M/W	frozen 75-105, bl spruce, lab tea
211	LP91	N	N	475904	6227835	MUS	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	D - E	2	---	---	VP	S0	M/W	bl spruce, lab tea, sphagnum
212	LP92	N	N	476064	6627693	KNS	TILL	---	Of	12-0	Ae	0-11	SL	Bt	11-36	CL	BC	36-74	SCL	C	74+	SCL	---	M - H	L - M	---	2	SE	MW	S0	M/W	bl spruce, jackpine, feather moss
213	LP93	Y	Y	476459	6227575	FORTzb	GLFL	---	Of	12-0	Ae	0-6	SL	Bm Bt	6-33 33-52	SL SCL	BC	52-120	SCL-SL	---	---	---	6	M	U	6	3	N	MW	S0	W	bl spruce, feather moss, lab tea
214	LP94	N	N	475966	6227542	KNS	TILL	---	Of	5-0	Ae	0-11	SL	Bt	11-37	CL	BC	37-110	CL	C	1100-120+	SiC	6	M	---	6	3	E	MW	S0	W	aspen, wt spruce, feather moss
215	LP95	N	N	475661	6227313	MUS	O/GLFL	---	Of	0-149	---	---	---	---	---	---	---	---	---	Cg	149-220	LS	---	L	D	2	---	---	VP	S0	M/W	bl spruce, lab tea sphagnum
216	LP96	N	N	475686	6226904	MUS	O TILL	---	Of Om	0-160 160-170	Ah Aeg	170-195 195-210	SiCL SiL	Btg	210-220	SiC	---	---	---	---	---	---	---	L	D	2	---	---	VP	S0	M/W	bl spruce, sphagnum, lab tea
217	LP97	N	N	475639	6227508	MUS	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	L	D	2	---	---	VP	S0	M/W	bl spruce, sphagnum, lab tea
218	LP98	N	N	475410	6227498	MUS	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	D	2	---	---	VP	S0	M/W	bl spruce, sphagnum, lab tea
219	LP99	N	N	475095	6227487	MUS	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	D	2	---	---	---	S0	M/W	bl spruce, sphagnum, lab tea
220	LP100	N	N	474899	6227480	MUS	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	E	2	---	---	VP	S0	M	bl spruce, lab tea, leather leaf
221	LP101	N	N	474690	6227471	MLD	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	E	2	---	---	VP	S0	M	lab tea, sphagnum, bog birch, no trees
222	LP102	N	N	474250	6227453	MLD	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	D	2	---	---	VP	S0	W	sedge, leather leaf, sphagnum
223	LP103	N	N	474271	6227015	MLD	O/GLLC	---	Of	0-200	---	---	---	---	---	---	BCg	200-220	CL	---	---	---	---	L	D	2	---	---	VP	S0	M/W	bl spruce, sphagnum, lab tea
224	LP104	N	N	474044	6227180	MRN	O/GLLC	---	Of Om	0-70 70-90	Ah	90-100	CL	Bg	100-120	SCL-CL	---	---	---	---	---	---	---	L	D	2	---	---	VP	S0	M/W	bl spruce, lab tea, feather moss

Site #	LMB	Site Name	Analyzed	SAMPLED	Easting	Northing	Series with Modifier	Parent Material	LFH Depth (cm)	Organic Horizon	Organic Depth (cm)	A-Horizon	A-Depth (cm)	A-Texture	B-Horizon	B-Depth (cm)	B-Texture	BC/C-Horizon	BC/C-Depth (cm)	BC/C-Texture	C-Horizon	C-Depth (cm)	C-Texture	% Slope	Surface Expression	Slope Position	Slope Class	Slope Length	Aspect	Drainage	Surface Stoniness	Land Use	Comments	
225		LP105	N	N	473749	6227067	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	L	D	2	---	---	VP	S0	M/W	sedge, leather leaf, sphagnum	
226		LP106	N	N	473600	6227430	MLD	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	D	2	---	---	VP	S0	M/W	---	
227		LP107	N	N	473556	6227435	MRN	O/GLLC	---	Of Om	0-66 66-80	Ae	80-100	SiC	---	---	---	---	---	---	---	---	---	---	L	D	2	---	---	VP	S0	W	black spruce, lab tea, feather moss	
228		LP108	N	N	472248	6626541	KNSpt	TILL	---	Of	16-0	Ae	0-7	SiL	Bt	7-25	SiCL	BC	25-62	CL	C II C	62-110 110+	SiC SC	5	M - H	U	4	2	SW	MW	S0	W	bl spruce, feather moss, bunchberry	
229		LP109	N	N	472274	not on datasheet	MRN	O/GLLC	---	Of Om	0-60 60-90	---	---	---	Bg	90-120	CL-SiCL	---	---	---	---	---	---	---	L	D	2	---	---	VP	S0	W	bl spruce, feather moss, sphagnum	
230		LP110	N	N	472264	6227320	MLD	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	D	2	---	---	VP	---	W	sedge, sphagnum, bog birch	
231		LP111	N	N	472766	6226882	KNS	TILL	---	Of	14-0	Ae	0-12	SiL	Bt	12-32	SiCL	BC	32-75	CL	C	75-	SCL	3	M - H	T	3	1	N	I	S0	W	bl spruce, feather moss, lab tea	
232		LP112	N	N	472773	6227368	KNS	TILL	---	Of	7-0	Ahe	0-9	SiL	Bt	9-42	CL-SiCL	BC	42-62	CL	Cg	62-120+	SiC	---	L	E	2	---	---	I-P	S0	W	bl spruce, leather leaf, sphagnum	
233		LP113	N	N	473012	6227409	MRN	O TILL	---	Of	0-75	---	---	---	Bg	75-110	SiC	---	---	---	Cg	110-	SiCL	---	L	D	2	---	---	P	S0	W	---	
234		LP114	N	N	473248	6227415	MRN	O	---	Of Om	0-85 85-90	---	---	---	Btg	90-120	SCL	---	---	---	---	---	---	---	L	E	2	---	---	P-VP	S0	W	frozen 50-70, bl spruce, lab tea, feather moss	
235		SA1	N	N	470850	6180641	MKWaa	O	---	Of Om Omz	0-40 40-60 60+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	E	2	---	---	P-VP	S0	M	bl spruce, bog birch, sedge	
236		SA2	N	N	470916	6180486	HLY	O	---	Of Om Of	0-40 40-120 120-220+	---	---	---	---	---	---	---	---	---	---	---	---	---	L	E	2	---	---	VP	S0	M	bl spruce, lab tea, bog cran	
237		SA3	N	N	470819	6180764	KNS	TILL	---	Of	10-0	Ae	0-8	SL	Bt	18-60	CL-C	BC	60-110	CL	---	---	---	4	H	M	4	2	S	MW	S1-2	W	bl spruce, tamarack, sedge	
238		SA4	N	N	470500	6180939	DOVgl	GLLC	5	---	---	Ae	0-5	SiL	Btgj	15-70	C	BC	70-100	C	Ck	100-110+	C	2-3	U	M - U	3	3	S	MU-I	S0	W	bl spruce, tamarack, sphagnum	
239		SA5	Y	Y	470027	6180948	STP	TILL	---	---	---	Ah	0-10	SL	Bg	10-40	SL	BCg	40-110+	CL	---	---	---	---	L	E	2	---	---	P	S0	M	bl spruce, lab tea, sedge, burnt	
240		SA6	N	N	469451	6180952	HLY	O TILL	---	Of Om	0-10 10-50	---	---	---	Bg	50-75	SL	BCg	75-100	SCL	---	---	---	2-3	U	L	3	4	S	P	S0	M	bl spruce, tamarack, alder	
241		SA7	N	N	468995	618094	MRN	O TILL	---	Of Om	0-10 10-80	---	---	---	Bg	80-110+	CL	---	---	---	---	---	---	---	L	E	2	---	---	P	S0	M	bl spruce, tamarack, moss	
242		SA8	N	N	468475	6180966	MIL	GLFL	---	---	---	Ae	0-10	LS	Bm	10-120	LS	---	---	---	C	120-130	LS	4-5	H	C	4	4-5	---	W-R	S0	W	j.pine, bl spruce, aspen	
243		SA9	N	N	467946	6180967	HLY	O TILL	---	Of Om	0-20 20-120	---	---	---	Bg	120-130	CL	---	---	---	---	---	---	2	L	E	2	3	---	P	S0	M	j.pine, black spruce, sphagnum	
244		SA10	N	N	4677472	6181380	KNS	TILL	---	---	---	Ae	0-10	SiL	Bt	40-90	SiCL	BC	90-110+	CL	---	---	---	4-5	H	C	4	2-3	---	MW	S0	W	aspen, j.pine, bl spruce	
245		SA11	N	N	466992	6182015	HLY	O TILL	---	Of Om	0-100 100-120	---	---	---	Bg	120-130	CL	---	---	---	---	---	---	2	L	E	2	3	---	P	---	M	bl spruce, lab tea, moss	
246		SA12	N	N	466519	6182611	STPpt	TILL	---	Of Om	0-40 40-50	---	---	---	Bg	50-100	---	---	---	---	---	---	---	3	U	M	3	2	N	P	S1	M	sedge, tamarack, bl spruce	
247		SA13	N	N	467223	6182702	MUS	O	---	Of	0-200	---	---	---	Bg	200-210	CL	---	---	---	---	---	---	---	L	E	2	---	---	VP	S0	M	bl spruce, tamarack, willow	
248		SA14	N	N	467846	6182693	MUS	O	---	Of Om	0-80 80-100	---	---	---	Bg	100-110+	CL	---	---	---	---	---	---	---	2	L	E	2	---	---	VP	S0	M	j.pine, bl spruce, moss
249		SA15	N	N	468807	6182688	MRN	O TILL	---	Of	0-75	---	---	---	Bg	75-85+	CL	---	---	---	---	---	---	2-3	I	M	3	4	E	P	S0	M	bl spruce, j.pine, moss	
250		SA16	N	N	470014	6182678	MIL	GLFL	3	---	---	Ae	0-5	SL	Bm1 Bm2	5-45 45-100	SL SL	BC	100-120	L	---	---	---	3	I	M	3	4	E	P	S0	M	aspen, bl spruce, fireweed	
251		SA17	N	N	470254	6182000	MRN	O	---	Of Om	0-20 20-110	---	---	---	Bg	110-120	SCL	---	---	---	---	---	---	3-4	I	T	4	3	N	VO	S0	M	bl spruce, lab tea, moss	
252		SA18	N	N	499306	6157035	MUS	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	L	E	2	---	---	VP	S0	M	bl spruce, sphagnum, lab tea	
253		SA19	N	N	499297	6156944	MRN	O	---	Of	0-110	---	---	---	Bg	110-150	SL	---	---	---	---	---	---	---	L	E	2	---	---	P	S0	M	bl spruce, lab tea, moss	
254		SA20	N	N	499266	6156863	MIL	GLFL	3	---	---	Ae	0-15	LS	Bjm	15-70	LS	BC	70-120	LS	---	---	---	4	I	M	4	4	S	R	S0	W	bl spruce, lab tea, moss	
255		SA21	N	N	464672	6169907	BTM	GLFL	---	Ofm	0-10	---	---	---	Bg1 Bg2	10-50 50-100	LS LS	---	---	---	---	---	---	1-2	L	E	2	---	---	P	---	M	bl spruce, carex, lab tea	
256		SA22	N	N	465534	6169898	STPpt	TILL	---	Of Om	0-23 23-45	---	---	---	Bg	45-110	CL	---	---	---	---	---	---	1-2	L	E	2	---	---	P	---	M	bl spruce, carex, lab tea	

Site # LMB	Site Name	Analyzed	SAMPLED	Easting	Northing	Series with Modifier	Parent Material	LFH Depth (cm)	Organic Horizon	Organic Depth (cm)	A-Horizon	A-Depth (cm)	A-Texture	B-Horizon	B-Depth (cm)	B-Texture	BC/C-Horizon	BC/C-Depth (cm)	BC/C-Texture	C-Horizon	C-Depth (cm)	C-Texture	% Slope	Surface Expression	Slope Position	Slope Class	Slope Length	Aspect	Drainage	Surface Stoniness	Land Use	Comments
257	SA23	N	N	465513	6169908	KNSgl	TILL	---	Ofm	0-10	---	---	---	Bg	10-120	SCL	---	---	---	---	---	---	---	---	M	---	---	---	P	S2	M	moss, sedge, few bl spruce
258	SA24	N	Y	466339	6169939	HLY	O TILL	---	Of	0-120	---	---	---	Bg	120-140	CL	---	---	---	---	---	---	---	L	E	2	---	---	P	S0	M	bl spruce, sedge, moss
259	SA25	N	N	466948	6169944	STPpt	TILL	---	Of	0-20	Ahg Aeg	20-22 22-45	SIL SIL	Btg	45-85	HCL	BCg	85-110	CL	---	---	---	---	L	E	2	---	---	P	S1-2	M	bl spruce, moss, j.pine
260	SA26	Y	Y	466949	6168934	MUS	O TILL	---	Of	0-200	---	---	---	Il Bg	200-220	CL	---	---	---	---	---	---	---	h	E	2	---	---	P	---	---	bl spruce, moss, j.pine, burnt
261	SA27	N	N	466927	6168123	HLY	O/GLFL	---	Of	0-135	---	---	---	Bg	135-150	SC	---	---	---	---	---	---	---	L	E	2	---	---	P	S0	M	bl spruce, moss, j.pine
262	SA28	Y	Y	465853	6168132	KNSzb	TILL	5	---	---	Ae	0-18	SL-LS	Bm Bt	18-50 50-90	SL CL	BC	90-140	CL	---	---	---	3	U	M	3	3	NW	MW	S2	M	bl spruce, carex, bog birch, burnt
263	SA29	N	N	464826	6168142	MUS	O TILL	---	Of Om	0-190 190-220	---	---	---	Bg	220-230	SCL	---	---	---	---	---	---	---	L	E	2	---	---	P	---	M	bl spruce, j.pine, moss
264	SA30	N	N	464023	6168490	KNSgl	TILL	10	---	---	Aeg	0-5	SiL	Bt	5-45	CL	BC	45-110	CL	---	---	---	3	U	L	3	3	S	I	S1	M	bl spruce, lab tea, moss
265	SA31	N	N	463576	6168823	MRN	O TILL	---	Of	0-80	---	---	---	Bg	80-100	CL	---	---	---	---	---	---	3-4	L - T	M	2	4	---	P	S2	M	bl spruce, moss
266	SA32	N	N	463096	6169193	MUS	O	---	Of	0-200+	---	---	---	---	---	---	---	---	---	---	---	---	---	h	E	2	---	---	P	S0	---	aspen, bl spruce, j.pine
267	SA33	N	N	462895	6169768	MUS	O/TILL	---	Of Om	0-40 40-200	---	---	---	Bg	200-210	CL	---	---	---	---	---	---	---	L	E	2	---	---	P	---	M	bl spruce, larch, sedge
268	SA34	N	N	462899	6170504	MRN	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	h	E	2	---	---	VP	S0	M	bl spruce, tamarack, sedge
269	SA35	N	N	463627	6170922	STPpt	TILL	---	Of	0-50	---	---	---	Il Bg	50-90	CL	---	---	---	---	---	---	---	L	E	2	---	---	P	---	M	burned area
270	SA36	N	N	463103	6170967	MUS	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	h	E	2	---	---	---	---	---	sedge, bog birch
271	SA37	N	N	463414	6171267	MUS	O	---	Of Om	0-100 100-220	---	---	---	---	---	---	---	---	---	---	---	---	---	L	E	2	---	---	VP	S0	M	bl spruce, birch, grasses
272	SA38	N	N	463689	6171676	MRN	O TILL	---	Of	0-100	Ahg	100-110	CL	Bg	110-130	CL	---	---	---	---	---	---	---	L	E	2	---	---	P	S0	M	bl spruce, lab tea, moss
273	SA39	N	N	463459	6172025	MRN	O/GLLC	---	Of	0-80	Ahg	80-90	SiCL	Bg	90-110	C	---	---	---	---	---	---	---	L	E	2	1-2	---	P	S0	M	bl spruce, lab tea, peat moss
274	SA40	N	N	463133	6172546	KNS	TILL	10	---	---	Ae	0-10	SiL	Bt	45-90	C	BC	90-120	CL	---	---	---	2-3	U	M	3	4	NE	MW	S0	M	j.pine alder, grass
275	SA41	N	N	462871	6172973	KNS	TILL	5	---	---	Ae	0-12	SIL	Bt	45-100	C	BC	100-120+	CL	---	---	---	2-3	U	M	3	4	N	MW	S1	M	j.pine, fireweed, grass
276	SA42	N	N	462927	6172864	MRN	O TILL	---	Of	0-80	Ahg	80-90	CL	Bg	90-100	CL	---	---	---	---	---	---	---	L	M	2	---	---	P	S0	M	bl spruce, lab tea, bog cran
277	SA43	N	N	480263	6201853	KNS	TILL	7	---	---	Ae	0-10	SiL	Bt1 Bt2	10-50 50-120+	CL CL	---	---	---	---	---	---	---	U	M	3	3	NE	MW	S0	M	j.pine, bl spruce, bog cran
278	SA44	N	N	480203	6202386	KNS	TILL	5	---	---	Ae	0-10	SiL	Bt1 Bt2	10-70 70-130+	SiCL CL	---	---	---	---	---	---	---	U	M	4	2	E	MW	S0	M	Bt2 is definitely till but the top 70cm could be Eolian or Lacustrine Overlay, j.pine, bl spruce, lab tea
279	SA45	N	N	480188	6203048	KNS	TILL	---	---	---	Ae	0-15	SiL	Bt	50-110	CL-C	---	---	---	---	---	---	---	U	M	3	3	N	MW	S1	M	bl spruce, lab tea, moss
280	SA46	N	N	480121	6203693	KNS	TILL	10	---	---	Ae	0-15	SiL	Bt	25-70	CL	BCg	70-110	CL	---	---	---	2	U	M	2	3	E	I	S0	M	bl spruce, moss, bunchberry
281	SA47	N	N	480759	6203707	KNS	TILL	15	---	---	Ae	0-30	SiL	Bt	30-80	CL	BC	80-120	CL	---	---	---	3-4	U	M	4	4	S	MW	S0	M	bl spruce, j.pine, moss
282	SA48	N	N	481119	6203768	HLY	O TILL	---	Of	0-140	---	---	---	Bg	140-150	CL	---	---	---	---	---	---	---	L	E	2	---	---	VP	S0	M	bl spruce, tamarack, grass
283	SA49	N	N	481715	6203766	HLY	O TILL	---	Of	0-80	---	---	---	Bg	80-100	CL	---	---	---	---	---	---	---	L	E	2	---	---	P	---	M	bl spruce, lab tea
284	SA50	N	N	482053	6203789	ALGpt	GLLC	---	Of	0-50	Il Ahg	50-60	CL	Bg	60-80	CL	---	---	---	---	---	---	---	L	E	2	---	---	P	---	M	bl spruce, lab tea, bog cran, moss
285	SA51	N	N	482613	6203830	ALGpt	GLLC	---	Of	0-50	Ahg	50-60	CL	Bg	60-80	CL	BCg	80-90	CL	---	---	---	---	L	E	2	---	---	P	S0	M	bl spruce
286	SA52	N	N	483081	6203867	KNS	TILL	10	---	---	Ae	0-25	SiL	Bt	25-75	CL	BC	75-100	CL	---	---	---	2-3	U	M	3	4	E	MW	S0	M	bl spruce, j.pine, moss, lab tea
287	SA53	Y	Y	483731	6203918	KNS	TILL	8	---	---	Ae	0-20	SiL	Bt1 Bt2	20-50 50-80	CL L	BC	80-110+	SL	---	---	---	2-3	U	M	3	4	NE	MW	S0	M	j.pine, lab tea, bl spruce
288	SA54	N	N	484143	6203519	KNS	TILL	15	---	---	Ae	0-20	SiL	Bt1	20-70	SiCL	BC	70-110	CL	---	---	---	2-3	U	M	3	3	N	MW	S0	M	j.pine, bl spruce, moss

Site #	LMB	Site Name	Analyzed	SAMPLED	Easting	Northing	Series with Modifier	Parent Material	LFH Depth (cm)	Organic Horizon	Organic Depth (cm)	A-Horizon	A-Depth (cm)	A-Texture	B-Horizon	B-Depth (cm)	B-Texture	BC/C-Horizon	BC/C-Depth (cm)	BC/C-Texture	C-Horizon	C-Depth (cm)	C-Texture	% Slope	Surface Expression	Slope Position	Slope Class	Slope Length	Aspect	Drainage	Surface Stoniness	Land Use	Comments
289		SA55	N	N	484426	6203269	KNS	TILL	12	---	---	Ae	0-25	SiL	Bt	25-60	SiCL	BC	60-100	CL	---	---	---	2-3	U	M	3	3	S	MW	S0	M	bl spruce, aspen, j.pine
290		SA56	N	N	484171	6203947	KNS	GLLC/TILL	---	Of	0-20	Aeg	20-35	SiL	Btg	35-70	SiCL	II BCg	70-100	CL	---	---	---	---	L	E	2	---	---	P	S0	M	j.pine, aspen, moss
291		SA57	N	N	484442	6203953	MRN	O TILL	---	Of	0-80	Ahg	80-90	L	Bg	90-120	CL	---	---	---	---	---	---	1-2	L	E	2	---	---	p	S0	M	bl spruce, lab tea, moss
292		SA58	N	N	485082	6204002	MRN	O TILL	---	Of	0-70	AhG	70-80	L	Bg	80-110	SiCL	---	---	---	---	---	---	1-2	L	E	2	---	---	P	S0	M	bl spruce, lab tea, moss
293		SA59	N	Y	485477	6203919	LVK	GLLC TILL	8	---	---	Aegj	0-30	SiL	Btgj II Bt	30-40 40-80	SiCL CL	BC	80-120	CL	---	---	---	3	U	M-U	3	3	N	MW	S0	M	aspen, bl spruce, j.pine
294		SA60	N	N	485569	6204102	MUS	O	---	Of Om	0-160 160-220	---	---	---	---	---	---	---	---	---	---	---	---	4-5	U	L	4	3	N	VP	S0	M	bl. Spruce, tamarack, willow
295		SA61	N	N	485827	6204686	LVK	FLEO TILL	8	---	---	Ae	0-20	SiL	Bt	20-80	SiCL	BC	80-95	CL	---	---	---	3	U	M	3	3	N	MW	S0	M	aspen, bl spruce, moss
296		SA62	N	N	---	---	LVK	FLEO TILL	8	---	---	Ae	0-25	SiL	Bt1 II Bt2	25-50 50-80	SiCL CL	BC	80-100	CL	---	---	---	3	U	M	3	3	S	MW	S0	M	bl spruce, j.pine, moss
297		SA63	N	N	485767	6205178	LVK	FLEO TILL	7	---	---	Ae	0-22	SiL	Bt1 II Bt2	22-50 50-80	SiCL CL	BC	80-100	CL	---	---	---	3	U	M	3	3	E	MW	S1	M	aspen, j.pine, bl spruce
298		SA64	N	N	486273	6204993	LVK	FLEO TILL	10	---	---	Ahe Ae	0-10 10-22	SiL SiL	II Bt	22-90	CL	BC	90-110	CL	---	---	---	2-3	U	M	3	3	NW	MW	S1	M	birch, j.pine bl spruce
299		SA65	N	N	486595	6204653	LVK	FLEO TILL	20	---	---	Ae	0-30	SiL	Bt1 II Bt2	30-50 50-90	SiCL CL	BC	90-110	CL	---	---	---	2-3	U	M	3	4	S	MW	S1	M	j.pine, bl spruce, aspen
300		SA66	N	N	487340	6203903	LVK	FLEO TILL	12	---	---	Ae	0-23	SiL	II Bt	23-70	CL-SCL	BC	70-110	CL-SCL	---	---	---	2-3	U	M	3	3	NW	MW	S0	M	bl spruce, j.pine, moss
301		SA67	N	N	487863	6204052	LVK	FLEO TILL	8	---	---	Ae	0-30	SiL	Bt1 II Bt2	30-50 50-80	SiCL SCL	BC	80-100	CL	---	---	---	3-4	U	C	3	4	---	MW	S0	M	birch, bl spruce, aspen
302		SA68	N	N	488532	6204047	HLY	O TILL	---	Of	0-100	---	---	---	By	100-110	CL	---	---	---	---	---	---	1-2	L	E	2	4	---	V	S0	M	bl spruce, birch, alder
303		SA69	N	N	488470	6204837	LVK	FLEO TILL	20	---	---	Ae	0-10	SiL	Bt1 II Bt	10-30 30-80	SiCL CL	BC	80-100	CL	---	---	---	3	U	M	3	3	S	MW	---	M	j.pine, birch, aspen,bl spruce
304		SA70	N	N	487913	6204763	STPpt	TILL	---	Of	0-40	---	---	---	Bg	40-60	CL	---	---	---	---	---	---	6	U	D	6	3	S	VP	S0	W	alder, marsh grass
305		SA71	N	N	488081	6204781	KNS	TILL	4	---	---	Ae	0-20	SL	Bt	40-80	CL	BC	80-100	SCL	---	---	---	2-3	U	C	3	3	SW	MW	S1	M	aspen, bl spruce, rose
306		SA72	N	N	489146	6204780	KNS	TILL	7	---	---	Ae	0-25	SL	Bt	25-80	CL	BC	80-100	CL	---	---	---	2-3	U	M	3	4	W	MW	S1	M	bl spruce, aspen, moss
307		SA73	N	N	488523	6204563	LVKpt	FLEO TILL	---	Of	30-0	Ae	0-20	SiL	Bt	40-80	CL	BCgj	80-90	CL	---	---	---	3-4	U	L	4	3	N	MW	S1	M	bl spruce, moss, bunchberry
308		SA74	N	N	485779	6205602	LVK	FLEO TILL	25	---	---	Ahe Ae	0-5 5-25	SiL SiL	II Btgj	40-90	CL	BC	90-100	CL	---	---	---	2-3	U	M	3	4	NW	MW	S0	M	j.pine, aspen, bl spruce
309		SA75	Y	Y	485712	6206191	LVK	FLEO TILL	10	---	---	Ahe Ae	0-3 3-40	SiL SiL	Bt1 II Bt2	40-80 80-110+	SCL CL	---	---	---	---	---	---	2-3	U	M	3	3	E	MW	S1	M	j.pine, aspen, bl spruce, silly putty Ae
310		SA76	N	N	485721	6207292	LVK	FLEO TILL	8	---	---	Ae	0-27	SiL	Bt1 II Bt2	27-45 45-80	SiCL SCL	BC	80-110	CL	---	---	---	2-3	U	M	3	3	E	MW	S1	M	j.pine, bl spruce, moss
311		SA77	N	N	485474	6207262	MRN	O TILL	---	Of	0-90	---	---	---	Bg	90-100	CL	---	---	---	---	---	---	1-2	L	E	2	4	---	VP	S0	M	bl spruce, mos, grass
312		SA78	N	N	484757	6207263	LVK	FLEO TILL	10	---	---	Ae	0-30	SiL	Bt1 II Bt2	30-50 50-70	SiCL CL	BC	70-110+	CL	---	---	---	1-2	L	E	2	4	---	MW	S0	M	jackpine, bl spruce, moss
313		SA79	N	N	484257	6207272	HLY	O/GLLC	---	Of	0-80	---	---	---	Bg	80-100	SiL	---	---	---	---	---	---	1-2	L	E	2	4	---	VP	S0	M	bl spruce, grass
314		SA80	N	N	483649	6207273	ALG	GLLC	---	Of	0-40	Ahg Aeg	40-50 50-80	SiL SiL	Btg	80-100	CL	---	---	---	---	---	---	1-2	L	E	2	4	---	VP	S0	M	tamarack, bl spruce, alder
315		SA81	N	N	483186	6207286	HLY	O/GLLC	---	Of Oh	0-80 80-90	---	---	---	Bg	90-100	SiL	---	---	---	---	---	---	1-2	L	E	2	4	---	VP	S0	M	grasses, tamarack, bl spruce
316		SA82	N	N	482571	6207277	ALGpt	GLLC	---	Of Om	0-15 15-25	Ahg	25-30	SiL	Bg	30-80	SiCL	---	---	---	---	---	---	---	L	E	2	---	---	P	---	M	lab tea, sphagnum, moss
317		SA83	N	N	481733	6207280	STP	TILL	---	Of	0-25	---	---	---	Bg	25++	CL	---	---	---	---	---	---	1-2	L	E	2	4	---	P	S0	M	bl spruce, moss, lab tea
318		SA84	N	N	481383	6207305	ALG	GLLC TILL	---	Of	0-50	Ahg	50-60	SiL	Bg II Bg	60-80 80-100	SiL CL	---	---	---	---	---	---	1-2	L	E	2	4	---	P	S0	M	bl spruce, moss, lab tea
319		SA85	N	N	480907	6207292	HLY	O/GLLC	---	Of Om	0-130 130150	---	---	---	Bg	150-170	SiL	---	---	---	---	---	---	1-2	L	E	2	4	---	VP	S0	M	bl spruce, grass
320		SA86	N	N	480580	6207100	LVK	GLLC TILL	25	---	---	Ae	25-40	SiL	Bt1 II Bt2	40-60 60-100	SiCL SCL	---	---	---	---	---	---	2-3	U	C	3	4	---	MW	S1	W	j.p bl spruce, tamarack

Site # LMB	Site Name	Analysed	SAMPLED	Easting	Northing	Series with Modifier	Parent Material	LFH Depth (cm)	Organic Horizon	Organic Depth (cm)	A-Horizon	A-Depth (cm)	A-Texture	B-Horizon	B-Depth (cm)	B-Texture	BC/C-Horizon	BC/C-Depth (cm)	BC/C-Texture	C-Horizon	C-Depth (cm)	C-Texture	% Slope	Surface Expression	Slope Position	Slope Class	Slope Length	Aspect	Drainage	Surface Stoniness	Land Use	Comments
353	SL31	N	N	470681	6183801	MLD	O	---	Of	0-200	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	5	---	P	S0	B	bl spruce, lab tea, sphagnum
354	SL32	N	N	470728	6183810	BTMpt	GLFL	---	Om	30-0	Aeg	0-40	LS	Btg	40-70	SL	---	---	---	---	---	---		L	E	2	5	---	P	S0	B	bl spruce, lab tea, feather moss
355	SL33	N	N	470777	6183791	MRN	O	---	Om Oh	35-10 10-0	---	---	---	---	---	---	---	---	---	Cg	0-110	SL		L	E	2	4	---	P	S0	B	bl spruce, lab tea, bog cran
356	SL34	N	N	470775	6183729	HLY	O/GLFL	---	Of Om Oh	0-25 25-50 50-65	Ah	65-80	L	---	---	---	---	---	---	Cg	80-100	SL		h	E	2	5	---	P	S0	B	bl spruce, willow, feather moss
357	SL35	N	N	470768	6183671	MLD	O/GLLC	---	Of	0-210	---	---	---	---	---	---	---	---	---	Cg	210-220	CL		h	E	2	5	---	P	S0	B	bl spruce, tamarack, lab tea
358	SL36	N	N	470840	6183673	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	4	---	P	S0	B	bl spruce, lab tea, sphagnum
359	SL37	N	N	470719	6183674	MLD	O	---	Of	0-200	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	4	---	P	S0	B	bl spruce, lab tea, sphagnum
360	SL38	N	N	470606	6183682	HLY	O/GLFL	---	Of	0-75	---	---	---	---	---	---	---	---	---	Cg	75-100	SL		h	E	2	4	---	P	S0	B	bl spruce, lab tea, sphagnum
361	SL39	N	N	469956	6181607	HLY	O/GLFL	---	Of Om	0-60 60-135	---	---	---	---	---	---	---	---	---	Cg	135-150	SCL		h	E	2	4	---	VP	S0	B	bl spruce, lab tea, sphagnum
362	SL40	N	N	469920	6181602	MIL	GLFL/GLLC	1-0	---	---	Ae	0-8	SL	BM1 BM2	8-23 23-55	SL	---	---	---	IIC	55+	CL		R	C	6	1	---	MW	S0	W	j.pine, rein lichen, moss
363	SL41	N	N	469868	6181644	MLD	O	---	Of	0-200	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	5	---	VP	S0	F	bl spruce, lab tea, larch
364	SL42	N	N	469820	6181651	MLD	O	---	Of	0-200	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	5	---	VP	S0	F	tamarack, bl spruce, bog cran
365	SL43	N	N	469753	6181654	MIL	GLFL	1-0	---	---	Ae	0-8	LS	Bm	8-60	LS	BC	60-100	LS-S	---	---	---		R	M	4	1	E	R	S0	W	j.pine, grass
366	SL44	N	N	point on datasheet		HLY	O	---	Of	0-175	---	---	---	---	---	---	---	---	---	Cg	175-190	SL		h	E	2	4	---	P	S0	B	burned - formerly bl spruce, lab tea
367	SL45	N	N	469765	6181587	MLD	O	---	Of	0-200	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	5	---	VP	S0	F	tamarack, bl spruce, bog birch
368	SL46	N	N	469829	6181567	HLY	O/GLLC	---	Of	0-70	---	---	---	---	---	---	---	---	---	Cg	70-100	C		h	E	2	5	---	P	S0	B	burned - formerly bl spruce, lab tea
369	SL47	N	N	469886	6181590	MIL	O/GLFL	---	Of	0-15	---	---	---	Bm	15-55	CL	BCg	CL	---	---	---	---		M	T	5	1	---	I	S0	W	j.pine, wt spruce, lab tea
370	SL48	N	N	469906	6181591	MIL	GLFL	2-0	---	---	Ae	0-12	LS	Bm	12-40	LS	BC	40-50	LS	---	---	---		R	C	5	1	N	R	S0	W	j.pine, wt spruce, rein lichen
371	SL49	N	N	485435	6203269	DOVzb	GLLC	---	Of	13-0	Ae	0-8	SiL	Bm Bt	8-38 38-68	SiL CL	BC	68-100	SL-SCL	---	---	---		U	M	3	3	SW	W	S0	W	j.pine, wt spruce, aspen
372	SL50	N	N	485376	6203340	KNSxc	GLLC/TILL	---	Oh	14-0	Ae	0-10	SiL	Bm Bt	10-35 35-65	SiL CL	IIC	65-100	CL	---	---	---		U	M	2	4	S	W	S0	W	j.pine, wt spruce, aspen
373	SL51	N	N	485349	6203434	KNS	GLLC TILL/GLFL	---	Of	17-0	Ae	0-4	SiL	Bm IBt	4-60 60-75	SiL-SCL CL	IIIIC	75-100	SL	---	---	---		U	M	2-3	4	S	MW	S0	W	j.pine, birch, moss
374	SL52	N	N	485327	3203602	KNSptgkxc	GLLC/TILL	---	Of	40-0	Ah Ae	0-7 7-11	SiL SiL	Bm Btg	11-50 50-90	SiL CL	---	---	---	IIC	90-100	CL		L	E	2	4	---	MW	S0	W	j.pine, aspen, wt spruce
375	SL53	N	N	485313	6203763	HLY	O/GLLC	---	Of	0-80	---	---	---	---	---	---	---	---	---	Cg	80-100	SiC		h	E	2	4	---	P	S0	B	bl spruce, lab tea, feather moss
376	SL54	N	N	485225	6203683	HLY	O/GLLC	---	Of Oh	0-90 90-100	---	---	---	---	---	---	---	---	---	Cg	100-120	C		h	E	2	4	---	P	S0	B	bl spruce, lab tea, feather moss
377	SL55	N	N	485222	6203765	MLD	O	---	Of	0-160	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	4	---	P	S0	B	bl spruce, lab tea, feather moss
378	SL56	N	N	485219	6203604	STPptzxc	GLLC/TILL	---	Of	20-0	Ah	0-4	SiL	---	---	---	---	---	---	Cg IICg	4-60 60-100	SiC CL		L	E	2	4	---	P	S0	W	j.pine, wt spruce, lab tea, feather moss
379	SL57	Y	Y	485204	6203513	KNSxc	GLLC/TILL	---	Of	8-0	Ah Ae	0-2 2-10	L SiL	Bm Bt	10-25 25-55	SiL CL	---	---	---	IIC	55-100	SCL		U	M	2-3	4	NW	MW	S0	W	Till indicators in IIC, aspen, st spruce, feather moss
380	SL58	N	N	485074	6203692	KNSptxc	GLLC/TILL	---	Of	25-0	Ah Ae	0-4 4-12	SiL SiL	Btg	12-60	CL	---	---	---	IICg	60-100	SCL		U	M	2-3	4	NE	P	S0	W	j.pine, aspen, wt spruce
381	SL59	N	N	485054	6203596	KNSptgkxc	GLLC/TILL	---	Of	20-0	Aeg	0-20	SiL	Btgj	20-60	CL	---	---	---	IICg	60-100	CL-SCL		U	U	3	3	NW	MW	S0	W	j.pine, aspen, wt spruce
382	SL60	N	N	485043	6203442	KNSpt	TILL	---	Of/m	19-0	Aeg	0-35	SiL	Btg	35-65	CL	BCg	65+	CL-SCL	---	---	---		U	M	2-3	4	S	D	S0	W	j.pine, aspen, wt spruce
383	SL61	N	N	485066	6203328	MILxct	GLFL/TILL	10	---	---	Ae	0-17	SiL	Bm	17-60	SiL	---	---	---	IIC IIC	60-100 100-120	SL CL		U	M	3	4	S	W	S0	W	aspen, birch, poplar
384	SL62	N	N	484140	6204717	MLD	O/GLLC	---	Of Oh	0-160 160-180	---	---	---	---	---	---	---	---	---	Cg	180-200	C		h	E	2	5	---	P	S0	B	60m easting shift, bl spruce, tamarack, bog birch

Site #	LMB	Site Name	Analyzed	SAMPLED	Easting	Northing	Series with Modifier	Parent Material	LFH Depth (cm)	Organic Horizon	Organic Depth (cm)	A-Horizon	A-Depth (cm)	A-Texture	B-Horizon	B-Depth (cm)	B-Texture	BC/C-Horizon	BC/C-Depth (cm)	BC/C-Texture	C-Horizon	C-Depth (cm)	C-Texture	% Slope	Surface Expression	Slope Position	Slope Class	Slope Length	Aspect	Drainage	Surface Stoniness	Land Use	Comments
417		SN6	Y	Y	482803	6204797	HLY	O/GLFL	---	Oh	0-65	Ahg	65-95	L	Bg	95-120	CL-SCL	---	---	---	---	---	---	1-2	L	D	---	---	---	VP	S0	M	bl spruce, alder, willow
418		SN7	N	N	483189	6204410	BMT	GLFL	---	Of Oh	0-30 30-50	---	---	---	Bg	50-60	SiCL	II BCg	60-120+	SCL-CL	---	---	---	1-2	L	---	4	4	---	P	S0	M	bl spruce, tamarack, moss
419		SN8	N	N	483434	6204203	LVK	FLEO TILL	---	Of	12-0	Aegj	0-18	SiL	Bt1 II Bt	18-38 38-65	SiCL SCL	BC	65-100	SCL	---	---	---	2-3	U	M	4	4	SE	MW-I	S0	W	j.pine, bl spruce, aspen
420		SN9	N	N	483738	6203922	FORT	FLEO/GLFL	---	Of	12-0	Ae	0-10	SiL	Bt II Bt2	19-35 35-85	SiCL SCL	II BC	85-100	SL	---	---	---	1-2	L	L	---	---	---	MW-I	S0	W	j.pine, bl spruce, sphagnum
421		SN10	N	N	484177	6203490	FORT	FLEO/GLFL	---	Of	0-40	Ae	40-50	SiL	Bt	65-80	SiCL	BC II BC	80-90 90-120	SiCL SL	---	---	---	1-2	L	L	---	---	---	MW-I	S0	W	aspen, j.pine, bl spruce
422		SN11	N	N	484180	6204142	MUS	O TILL	---	Of	0-210	---	---	---	Bg	120++	SiCL	---	---	---	---	---	---	1-2	L	M	2	4	---	VP	S0	M	bl spruce, lab tea, moss
423		SN12	N	N	484186	6204428	MUS	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	L	L	---	---	---	VP	S0	M	sedge, tamarack, bl spruce
424		SN13	N	N	484198	6204973	MUS	O TILL	---	Of Om	0-170 170-220	---	---	---	Bg	220+	SiCL	---	---	---	---	---	---	1-2	L	L	---	---	---	VP	S0	M	bl spruce, tamarack, willow
425		SN14	N	N	484729	6205208	LVKzb	GLFL/TILL	---	Of	15-0	Ae	0-15	SiL	Bm Bt	15-22 22-60	LS SCL	BC	80-120++	CL-SCL	---	---	---	3	U	M	3	3	N	MW	S0	M	j.pine, bl spruce, moss
426		SN15	N	N	485350	6205168	FORT	FLEO/GLFL	---	Of	17-0	Ae	0-11	SiL	II Bt	30-45	SCL	II BC	45-120+	SL	---	---	---	3-4	U	M	3	3	NW	MW	S1	M	bl spruce, j.pine, moss
427		SN16	N	N	486316	6204937	FORT	GLFL	12	---	---	Ahe Ae	0-5 5-30	SiL SiL	II Bt	30-80	SCL	BC	80-100+	SCL	---	---	---	2-3	U	M	3	3	E	MW	S1	W	aspen, bl spruce, fireweed
428		SN17	N	N	475707	6226491	MUS	O	---	Of	0-220+	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	M	2	4	---	P	S0	M	bl spruce, lab tea, moss
429		SN18	N	N	475700	6225767	KNSpt	TILL	---	Of	16-0	Ae	0-6	SiL	Bt	6-60	SiCL	BC	60-110	CL	---	---	---	3-4	U	M	3	3	NW	P	S0	W/M	bl spruce, sphagnum, lab tea
430		SN19	N	N	475737	6224912	MRN	O TILL	---	Of Om	0-70 70-120	Ahg Aeg	120-125 125-130	SiL SiL	Bg	130++	CL	---	---	---	---	---	---	2-3	U	M	3	3	E	P	S0	M	bl spruce, lab tea, moss
431		SN20	N	N	475162	6224909	KNSpt	TILL	---	Of	25-0	Ae	0-10	SiL	Bt	20-60	SiC	BC	60-110+	CL	---	---	---	2-3	U	M - U	4	4	E	MW-I	S0	W	bl spruce, lab tea, moss
432		SN21	N	N	474739	6224892	MUS	O TILL	---	Of	0-180	---	---	---	Bg	180-190	SiCL	---	---	---	---	---	---	---	L	L	---	---	---	VP	S0	M	bl spruce, lab tea, sphagnum
433		SN22	N	N	474001	6224852	STPpt	TILL	---	Of	0-30	Aeg	30-65	SiL	Bg	65++	SiCL	---	---	---	---	---	---	1-2	L	L	---	---	---	VP	S0	W/M	bl spruce, lab tea, carex
434		SN23	N	N	473729	6224868	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	1-2	L	M	4	4	---	VP	S0	M	bl spruce, sedge grass
435		SN24	N	N	473455	6224849	MUS	O TILL	---	Of	0-180	---	---	---	Bg	180++	CL	---	---	---	---	---	---	1-2	L	M	2	4	---	VP	S0	M	bl spruce, sedge grass, moss
436		SN25	N	N	472890	6224820	KNS	FLEO TILL	---	Of	20-0	Ae	0-11	SiL	Bt	20-42	SiCL	BC	42-110+	CL	---	---	---	3-4	U	M	3	3	E	MW	S1	W	bl spruce, moss, lab tea
437		SN26	N	N	472155	6224819	STP	GLFL/TILL	---	Of	50-0	Aheg	0-15	SiCL	Btg 2	15-70	SiCL	II BC1 BC2	70-100 100-120	SCL CL	---	---	---	2-3	U	M	4	4	E	I-P	S1	W	bl spruce, lab tea, moss
438		SN27	N	N	472188	6225423	KNSpt	TILL	---	Of	20-0	Ae	0-5	SiL	Bt	5-45	SiCL	BC	45-110+	CL	---	---	---	4-5	U	M	3	3	NW	W-MW	S0	W	bl spruce, j.pine, moss
439		SN28	N	N	472273	6226178	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	L & 6	L - I	T	2	---	---	VP	S0	W	bl spruce, carex, bog birch
440		SN29	N	N	472730	6226207	KNSpt	TILL	---	Of	22-0	Ae	0-8	SiL	Bt	18-70	SiCL	BC	70-	---	---	---	---	5-6	R	C	1	1	E-W	MW-W	S1	W	bl spruce, j.pine, moss
441		SN30	N	N	473697	6226264	STP	TILL	---	Of	0-40	Ahg Ae	40-50 50-60	SiL SiL-SiCL	Bt	60-100	SiC	BC	100-120	CL	---	---	---	3-4	R	M - L	1	1	W	MW	S0	W	bl spruce, lab tea, moss
442		SN31	N	N	474260	6225777	KNSpt	TILL	---	Of	20-0	Ae1 Ae2	0-8 8-18	SiL SiL	Bt	18-50	SiC-SiCL	BC	50-100	CL	---	---	---	4-5	U	M	3	3	S	MW	S0	W	bl spruce, moss
443		SN32	N	N	474936	6226315	KNSpt	TILL	---	Of	20-0	Ahe Ae	0-4 4-19	L SiL	Bt	19-45	SiCL	BC	45-90	CL	---	---	---	4-5	R	U	2	2	SE	MW	S0	W	aspen, bl spruce, j.pine
444		WKH1	Y	Y	471152	6184510	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	h	E	2	---	---	VP	S0	F	sedge, bog birch, moss
445		WKH2	N	N	471160	6184629	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---	---	h	E	2	---	---	VP	S0	F	willow, bog birch, moss
446		WKH3	N	N	471239	6184916	HLY	O/GLFL	---	Of Oh	0-80 80-100	Aheg	100-120	SL	---	---	---	---	---	---	---	---	---	---	h	E	2	---	---	VP	S0	F	sedge, willow, tamarack
447		WKH4	N	N	471371	6185125	HLY	O GLLC	---	Of Oh	0-80 80-100	---	---	---	Bg	100-120	CL	---	---	---	---	---	---	---	h	E	2	---	---	VP	S0	F	willow, moss, sedge
448		WKH5	N	N	471418	6185418	HLY	GLFL/GLLC	---	Of	0-70	---	---	---	Bg	70-100	SL	BCg	100-120	CL	---	---	---	---	h	E	2	---	---	VP	S0	F	Bum area, sedge, grass, moss

Site # LMB	Site Name	Analyzed	SAMPLED	Easting	Northing	Series with Modifier	Parent Material	LFH Depth (cm)	Organic Horizon	Organic Depth (cm)	A-Horizon	A-Depth (cm)	A-Texture	B-Horizon	B-Depth (cm)	B-Texture	BC/C-Horizon	BC/C-Depth (cm)	BC/C-Texture	C-Horizon	C-Depth (cm)	C-Texture	% Slope	Surface Expression	Slope Position	Slope Class	Slope Length	Aspect	Drainage	Surface Stoniness	Land Use	Comments
449	WKH6	Y	Y	471522	6185676	LVK	GLFL/TILL	---	Of	5-0	Ae	0-5	LS	Bt	5-46	SCL	---	---	---	Ck	46-120	SCL		U-I	M-U	2	3	W	MW	S0	WF	Rocks @ 80cm; burn area, bl spruce, blueberry, tamarack
450	WKH7	N	N	471645	6185758	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---		h	U	2	3	3	P	S0	F	burn area, bl spruce, blueberry, tamarack
451	WKH8	N	N	471813	6185631	KNS	TILL	---	Of	2-0	Ae	0-18	FSL	Bt	18-45	SCL	BC	45-120	CL	---	---	---		M-I	M	2-3	3	4	MW	S1	W	burned area, aspen, pine, fireweed
452	WKH9	N	N	471696	6185464	KNS	TILL	4-0	---	---	Ae	0-10	FSL	Bt	10-43	SCL	BC	43+	CL	---	---	---		M	U	3	5	2	MW	S0	W	aspen, pine, fireweed
453	WKH10	N	N	471690	6185599	KNS	TILL	4-0	---	---	Ae	0-17	L	Bt	17-50	CL	BC	50-120	CL	---	---	---		M	M	3	3	2	MW	S0	W	burned area, grass, aspen, moss
454	WKH11	N	N	471595	6185632	KNSzb	TILL	---	Of	2-0	Ae	0-8	SL	BM Bt	8-18 18-52	SCL SCL	BC	52-65	CL	---	---	---		M	E	3-4	2	4	MW	S0	W	burned area, horsetail, fireweed
455	WKH12	N	N	471667	6185840	KNS	TILL	---	Of	4-0	Ae	0-6	FSL	Bt	6-55	SiCL	BC	55-120	CL	---	---	---		M	E	3	2	5	MW-W	S0	W	burned area, pine, bl spruce, lab tea
456	WKH13	N	N	471885	6185725	KNS	TILL	4-0	---	---	Ae	0-6	FSL	Bt	6-52	CL	BC	52-120	CL	---	---	---		M	M	4	5	---	MW	S0	W	aspen, wt spruce, bunchberry
457	WKH14	N	N	469900	6184735	HLY	O/GLFL	---	Of Oh	0-20 20-70	---	---	---	Bg	70-83	SL	BCg	83-120	S	---	---	---		h	E	2	---	---	P	S0	B	bl spruce, lab tea, moss
458	WKH15	Y	Y	470116	6184763	MKWaa	O/GLFL	---	Of Omz	0-20 20-75	---	---	---	---	---	---	BCg	75-120	SCL	---	---	---		h	E	2	---	---	VP	S0	F	bl spruce, lab tea, moss
459	WKH16	Y	Y	470339	6184748	MIL	GLFL	---	Of	10-0	Ae	0-6	S	Bm	6-14	S	BC	14-120	SL	---	---	---		L	E	2	---	---	VP	S0	B	bl spruce, lab tea, pine, SIDE OF ESKER
460	WKH17	N	N	470590	6134763	BTMpt	GLFL	---	Of	25-0	---	---	---	Bg	0-10	SL	BC	10-95	LS	---	---	---		U	M	2-3	3	S	P	S0	B	bl spruce, moss, lab tea
461	WKH18	N	N	470810	6184734	MIL	GLFL	6	---	---	Ae	0-8	LS	Bm	8-7	LS	BC	?-120	S	---	---	---		R	M	3	4	NE	R	S0	W	pine, rein lichen, blueberry
462	WKH19	N	N	470036	6182419	HLY	O/GLFL	---	Of	0-90	---	---	---	Bg	90-120	SL	---	---	---	---	---	---		h	E	2	---	---	VP	S0	F	bl spruce, leather leaf, sedge
463	WKH20	N	N	470043	6182517	MLD	O	---	Of Ofz Of	0-50 50-80 80-220	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, lab tea, lowbush cran
464	WKH21	N	N	470146	6182499	BTMpt	GLFL	---	Of	35-0	---	---	---	Bg	0-85	SCL-SL	---	---	---	---	---	---		L	E	2	---	---	VP	S0	B	bl spruce, moss, sedges
465	WKH22	N	N	470222	6182494	MIL	GLFL	4-0	---	---	Ae	0-9	SL	Bm	9-23	S	BC	23-120	S	---	---	---		R	M	2-3	2	E	R	S0	W	pine, rose, moss, lab tea
466	WKH23	N	N	470215	6182404	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	---	---	VP	S0	F	bl spruce, lab tea, sedges
467	WKH24	N	N	470130	6182401	HLY	O/GLFL	---	Of	0-80	---	---	---	Bg	80-120	SCL	---	---	---	---	---	---		h	E	2	---	---	VP	S0	F	tamarack, bl spruce, lab tea
7	WKH25	N	N	470162	6182463	MIL	GLFL	---	Of	3-0	Ae	0-10	S	Bm	10-25	S	BC	25-120	S	---	---	---		R	M	4	1-2	W	R	S0	W	Esker, pine, bl spruce, lab tea
469	WKH26	N	N	470270	6181667	LVK	GLFL/TILL	4-0	---	---	Ae	0-10	S	Bt	10-47	SCL	BC	47-120	CL	---	---	---		R	M	2-3	2	NE	W-R	S0	W	pine, bl spruce, lab tea
470	WKH27	N	N	470422	6181645	MILpt	GLFL	---	Of	0-20	Ae	20-33	S	Bm	33-42	S	BC	42-120	S	---	---	---		L	E	2	---	---	VP	S0	B	bl spruce, lab tea, rein lichen
471	WKH28	N	N	470543	6181627	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	---	---	VP	S0	F	tamarack, bl spruce, sedge
472	WKH29	N	N	470545	6181514	HLY	O/GLLC	---	Of Om	0-21 21-85	---	---	---	---	---	---	BC	85-120	CL	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, willow, sedge
473	WKH30	N	N	470453	6181561	LVKzb	GLFL/TILL	---	Of	9-0	Ae	0-8	S	Bm Bt	8-18 18-28	S SCL	BC	28-120	CL	---	---	---		U	M	2	2-3	N	W	S0	W	bl spruce, pine, lab tea
474	WKH31	N	N	470368	6181573	LVKzb	GLFL/TILL	2-0	---	---	Ae	0-8	LS	Bm Bt	8-22 22-56	S SCL	BC	56-120	CL	---	---	---		R	M	3	1-2	S	W	S0	W	pine, bl spruce, lab tea
475	WKH32	N	N	470343	6181506	LVKgl	GLFL/TILL	---	Of	5-0	Ae	0-15	SL	Bt	15-27	CL	BCg	27-120	CL	---	---	---		U	M	1-2	4	SE	P	S0	W	pine, bl spruce, lab tea
476	WKH33	N	N	485668	6207201	LVKzb	GLFL/TILL	---	Of	4-0	Ae	0-9	SL	Bm Bt	9-26 26-34	SL CL	BC	34-120	CL	---	---	---		L	E	2	---	---	VP	S0	BW	pine, bl spruce, lab tea
477	WKH34	N	N	485630	6207101	HLY	O/GLFL	---	Of	0-50	---	---	---	Bg	50-65	SiCL	BCg	65+	SL	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss
478	WKH35	N	N	485813	6207073	STPpt	TILL	---	Of	15-0	---	---	---	Bg	0-20	SCL	BC	20-120	CL	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss
479	WKH36	N	N	485852	6207197	HLY	O/TILL	---	Of	0-45	Ahe Aeg	45-51 51-71	SIL L	Bg	71-120	SCL	---	---	---	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss
480	WKH37	N	N	484628	6203430	KNS	TILL	5	---	---	Ae	0-22	L	Bt	22-32	SCL	BC	32+	CL	---	---	---		U-H	M-E	1-2	4-5	S	MW	S0	W	bl spruce, aspen, moss

Site #	LMB	Site Name	Analyzed	SAMPLED	Easting	Northing	Series with Modifier	Parent Material	LFH Depth (cm)	Organic Horizon	Organic Depth (cm)	A-Horizon	A-Depth (cm)	A-Texture	B-Horizon	B-Depth (cm)	B-Texture	BC/C-Horizon	BC/C-Depth (cm)	BC/C-Texture	C-Horizon	C-Depth (cm)	C-Texture	% Slope	Surface Expression	Slope Position	Slope Class	Slope Length	Aspect	Drainage	Surface Stoniness	Land Use	Comments
481		WKH38	N	N	487765	6203422	KNS	TILL	---	Of	10-0	Ae	0-15	L	Bt	15-51	CL	BC	51+	SCL	---	---	---		U-H	M-E	1-2	3	NW	P	S0	W	bl spruce, j.pine, aspen, moss
482		WKH39	N	N	484894	6203290	MIL	GLFL	6	---	---	Ae	0-17	L	Bm	17-42	SL	BC	42-120	S	---	---	---		U	M	2	4	S	R	S0	W	bl spruce, j.pine, aspen, moss
483		WKH40	N	N	484791	6203281	MILxt	GLFL/TILL	6	---	---	Ae	0-15	L	Bm	15-52	S	BC	52+	SCL	---	---	---		U	M	2	4	SW	MW	S0	W	aspen, wt spruce, fireweed
484		WKH41	N	N	484965	6203210	MILxt	GLFL/TILL	6	---	---	Ae	0-14	SL	Bm	14-40	LS	BC	40-45	SCL	---	---	---		U	D	2	3-4	S	MW	S0	W	Auger refusal @ 45cm, aspen, wt spruce, moss
485		WKH42	N	N	484999	6203347	KNS	TILL	5	---	---	Ae	0-12	L	Bt	12-45	SCL	BC	45-120	CL	---	---	---		U-I	M	2-3	4	S	MW	S0	W	birch aspen, wt spruce
486		WKH43	N	N	484969	6203511	KNSpt	TILL	---	Of	16-0	Ae	0-24	L	Bt	24-50	CL	BC	50-120	CL	---	---	---		U	M	2	4	NE	MW	S0	W	pine, aspen, moss
487		WKH44	N	N	484908	6203567	HLY	O/TILL	---	Of	0-50	Ahe Ae	50-56 56-66	L	Bg	66-120	CL	---	---	---	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss
488		WKH45	N	N	484757	6203630	KNS	TILL	---	Of	10-0	Ae	0-24	L	Bt	24-45	CL	BC	45-120	CL	---	---	---		U	M	2	4	NW	MW	S0	W	pine, aspen, moss
489		WKH46	N	N	484581	6203701	HLY	O/TILL	---	Of Om	0-30 30-80	---	---	---	Bg	80-120	CL	---	---	---	---	---	---		h	E	2	---	---	VP	S0	F	tamarack, bl spruce, sedge
490		WKH47	N	N	484659	6203804	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss
491		WKH48	Y	Y	484834	6203798	ALGpt	GLLC	---	Of	20-0	---	---	---	---	---	---	BCg	0-120	C	---	---	---		h	E	2	---	---	VP	S0	WB	poplar wt spruce, moss, rose
492		WKH49	N	N	484918	6203722	KNSpt	TILL	---	Of	15-0	Ae	0-14	L	Bt	14-52	CL	BC	52-120	CL	---	---	---		U	M	2	4	SE	MW	S0	W	pine, spruce, aspen, moss, lab tea
493		WKH50	N	N	486229	6205159	KNS	TILL	8-0	---	---	Ae	0-24	L	Bt	24-48	SCL	BC	48-120	CL	---	---	---		U	M	2	4	E	MW	S0	W	aspen, pine, poplar, fireweed
494		WKH51	N	N	485873	6205022	KNS	TILL	10-0	Of	10-0	Ae	0-7	SiL	B	7-55	CL	BC	55-120	CL	---	---	---		U	M	2	4	SE	MW	S0	W	wt spruce, aspen, pine
495		WKH52	N	N	485890	6205315	KNS	TILL/GLFL	---	Of	13-0	Ae	0-18	SiL	Bt	18-55	CL	BC	55-120	LS	---	---	---		U	M	2	4	S	MW	S0	W	wt spruce, aspen, pine
496		WKH53	N	N	482555	6204100	MLD	O	---	Of	0-220	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	---	---	VP	S0	F	tamarack, bl spruce, sedge
497		WKH54	N	N	483458	6205050	MLD	O	---	Of Om	0-80 80-200	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	---	---	VP	S0	F	tamarack, willow, sedge
498		WKH55	N	N	483437	6204824	MLD	O	---	Of Om Oh	0-70 70-180 180-200	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	---	---	VP	S0	F	tamarack, willow, bl spruce
499		WKH56	N	N	483437	6204590	HLY	TILL	---	Of Om	0-30 30-60	---	---	---	---	---	---	BC	60-120	C	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, moss, lab tea
500		WKH57	N	N	482532	6205746	HLY	O	---	Of Om	0-30 30-65	---	---	---	Bg	65+	CL	---	---	---	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, moss, sedge
501		WKH58	N	N	482532	3205865	HLY	O	---	Of	0-100	---	---	---	Bg	100-120	C	---	---	---	---	---	---		h	E	2	---	---	VP	S0	F	bl spruce, tamarack, sedge
502		WKH59	N	N	482527	6206037	HLY	O/TILL	---	Of Om	0-50 50-70	---	---	---	Bg	70-120	C	---	---	---	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, willow, sedge
503		WKH60	N	N	482536	6206269	MKWaa	O	---	Of Ofz	0-40 40-60	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	---	---	VP	S0	B	Frozen @ 60cm, bl spruce, lab tea, moss
504		WKH61	N	N	482536	6206530	HLY	O/TILL	---	Of Om	0-40 40-80	---	---	---	Bg	80-120	C	---	---	---	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss
505		WKH62	N	N	482542	6206659	HLY	O/GLFL	---	Of	0-110	---	---	---	---	---	---	BC	110-120	SL	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss
506		WKH63	N	N	481990	6207167	MLD	O	---	Of Om	0-100 100-200	---	---	---	---	---	---	---	---	---	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss
507		WKH64	N	N	481739	6207215	HLY	O/TILL	---	Of	0-50	---	---	---	---	---	---	BCg	50-120	C	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss
508		WKH65	N	N	481685	6206727	HLY	O/TILL	---	Of Om Oh	0-50 50-90 90-120	---	---	---	---	---	---	BCg	120-130	C	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss
509		WKH66	N	N	480959	6209526	STPpt	TILL	---	Of	30-0	---	---	---	---	---	---	Bg	0-120	CL	---	---	---		h	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss, horsetail
510		WKH67	N	N	480938	6209471	KNSpt	TILL	---	Of	30-0	Ae	0-12	CL	Bt	12-50	C	BC	50-120	C	---	---	---		L	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss
511		WKH68	N	N	480875	6209460	KNSpt	TILL	---	Of	30-0	Ae	0-10	CL	Bt	10-56	SiCL	BC	56-120	CL	---	---	---		L	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss
512		WKH69	N	N	480802	6209465	KNSpt	TILL	---	Of	30-0	Ae	0-9	SiL	Bt	9-53	C	BC	53-120	C	---	---	---		L	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss

Site #	LMB	Site Name	Analyzed	SAMPLED	Easting	Northing	Series with Modifier	Parent Material	LFH Depth (cm)	Organic Horizon	Organic Depth (cm)	A-Horizon	A-Depth (cm)	A-Texture	B-Horizon	B-Depth (cm)	B-Texture	BC/C-Horizon	BC/C-Depth (cm)	BC/C-Texture	C-Horizon	C-Depth (cm)	C-Texture	% Slope	Surface Expression	Slope Position	Slope Class	Slope Length	Aspect	Drainage	Surface Stoniness	Land Use	Comments
513		WKH70	N	N	480729	6209478	LVKpt	GLFL/TILL	---	Of	25-0	Ae	0-10	SL	Bt	10-55	SiCL	BC	55-120	SCL	---	---	---		L	E	2	---	---	VP	S0	B	bl spruce, lab tea, moss
514		WKH71	N	N	480610	6209520	HLY	O/GLLC	---	Of	0-65	---	---	---	Bg	65-120	C	---	---	---	---	---	---		h	E	2	---	---	VP	S0	F	tamarack, sedge, bog birch
515		WKH72	N	N	480625	6209629	HLY	O/GLLC	---	Of	0-100	---	---	---	Bg	100-120	CL	---	---	---	---	---	---		h	E	2	---	---	VP	S0	F	tamarack, sedge, bog birch
516		WKH73	N	N	480730	6209601	KNSpt		---	Of	20-0	Ae	0-5	SL	Bt	5-58	CL	BC	58-120	SCL	---	---	---		L	E	2	---	---	VP	S0	B	bl spruce, pine, lab tea, moss
517		WKH74	N	N	480819	6209586	HLY	O/GLLC	---	Of	0-100	---	---	---	Bg	100-120	CL	---	---	---	---	---	---		h	E	2	---	---	VP	S0	F	bl spruce, tamarack, lab tea, moss
518		WKH75	N	N	480903	6209564	ALGpt	GLLC	---	Of	50-0	---	---	---	Bg	0-120	CL	---	---	---	---	---	---		h	E	2	---	---	VP	S0	F	bl spruce, willow, tamarack, sedge
Nexen																																	
128		KH12	Y	Y	502721	6237981	DOV	GLLC	10-0	---	---	Ahe Ae	0-4 4-28	SIL SiCL	Bt	28-53	CL	BC	53-120	SiC	---	---	---	---	M	E	3	4-5	E	MW	SO	W	POPLAR, ASPEN, SIDE HILL, DYING OUT BIRCH, BEARBERRY

SITE INSPECTION LIST LEGEND

Soil Subgroup				Soil Series	
E.EB	Eluviated Eutric Brunisol	T.H	Terric Humisol	ALG	Algar
				DOV	Dover
ME.OC	Mesic Organic Cryosol	BR.GL	Brunisolic Gray Luvisol	FIR	Firebag
TME.OC	Terric Mesic Organic Cryosol	GL.GL	Gleyed Gray Luvisol	HRR	Horse Rive
		D.GL	Dark Gray Luvisol	KNS	Kinosis
ME.F	Mesic Fibrisol	O.GL	Orthic Gray Luvisol	LVK	Livock
TY.F	Typic Fibrisol	GLD.GL	Gleyed Dark Gray Luvisol	MER	Meander
T.F	Terric Fibrisol			MIL	Mildred
		T.M	Terric Mesisol	MKW	Mikwaa
HU.LG	Humic Luvic Gleysol	TY.M	Typic Mesisol	MLD	McLelland
O.HG	Orthic Humic Gleysol			MRN	Mariana
O.G	Orthic Gleysol			MUS	Muskeg
				STP	Steepbank
				WNF	Winefred

Modifier		Surface Expression		Slope Position	
sh	Shallow	H	Hummocky	C	Crest
pt	Peaty	I	Inclined	U	Upper
st	Stoney	L	Level	M	Mid
gl	Gleyed	R	Ridged	L	Lower
zm	Mesic	U	Undulating	T	Toe
gr	Gravelly	M	Rolling	D	Depressior
xt	Till at 30-99cm	S	Steep	E	Level
yt	Till at 100-200cm	T	Terraced		

Drainage		Parent Material		Slope Length (m)	
VP	Very Poor	GLFL	Glaciofluvial	1	0-25
P	Poor	TILL	Till (morainal)	2	25-50
I	Imperfect	O	Organic	3	50-100
MW	Moderately Well	GLLC	Glaciolacustrine	4	100-500
W	Well	GLTL	Glaciolacustrine (till-like)	5	500-1000
R	Rapid	EOLI	Eolian	6	>1000

Land Use		Slope Class		Surface Stoniness (% of ground surface covered)	
W	Woodland	1	0-0.05%	S0	non-stony (<0.01)
M	Bog, Fen, Marsh	2	0.05-2.0%	S1	slightly stony (0.01-0.1)
		3	2-5%	S2	moderately stony (0.1-
		4	5-9%		
		5	9-15%		

Texture					
Coarse Textures		Medium Textures		Fine Textures	
S	Sand	SL	Sandy Loam	C	Clay
LS	Loamy Sand	fSL	Fine Sandy Loam	SiC	Silty Clay
		L	loam	SC	Sandy Clay
		SiL	Silt Loam		
		SCL	Sandy Clay Loam		
		CL	Clay Loam		
		SiCL	Silty Clay Loam		

E.EB	MIL FIR	0% Stones Stones in profile	AGRASID Data
O.GL	Dover Horse River Kinosis Livock Meander	GLLC Till Till GLFL/Till Till	Calc Coarse Frags Non Calc
O	McLelland	Fen	
O	Muskeg	Bog	



Analytical Report

Norwest Labs
 7217 Roper Road NW
 Edmonton, AB. T6B 3J4
 Phone: (780) 438-5522
 Fax: (780) 438-0396

Bill to: Matrix Solutions Inc.
Report to: Matrix Solutions Inc.
 230, 319 - 2 Avenue S. W.
 Calgary, AB, Canada
 T2P 0C5
 Attn: Andre Peloquin
 Sampled By: JB/NM
 Company: Matrix

Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

NWL Number	421431-1	421431-2	421431-12
Sample Date	Oct 18, 2005	Oct 18, 2005	Oct 19, 2005
Sample Description	JB8 / 4455051018001 / 13-0 / cm / Of	JB8 / 4455051018002 / 0-14 / cm / Ae	JB18 / 4455051019012 / 0-20 / cm / Of
	Matrix	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Classification					
Total Nitrogen	TKN %	1.26	0.05	0.55	0.01
Calcium	Cations mg/kg	14100	565	800	4
Magnesium	Cations mg/kg	880	64	280	2
Potassium	Cations mg/kg	1400	70	1500	20
Sodium	Cations mg/kg	<60	<10	70	12
Base saturation	%	73	41	8	1
Calcium	meq/100g	70.2	2.82	4.0	0.0003
Magnesium	meq/100g	7.2	0.52	2.3	0.0008
Sodium	meq/100g	<0.3	<0.05	0.3	0.003
Potassium	meq/100g	3.5	0.2	3.8	0.003
ESP	%	<0.2	<0.6	0.2	0.2
TEC	meq/100g	81	4	10	2
Cation Exchange Capacity	meq/100g	111	8.61	140	
Organic Matter	%	52.0	1.6	88.4	.15
Carbon	Total Organic % dry weight	26.0	0.79	44.2	0.05



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 T2P 0C5
 Attn: Andre Peloquin
 Sampled By: JB/NM
 Company: Matrix

Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

NWL Number	421431-1	421431-2	421431-3
Sample Date	Oct 18, 2005	Oct 18, 2005	Oct 18, 2005
Sample Description	JB8 / 4455051018001 / 13-0 / cm / Of Soil	JB8 / 4455051018002 / 0-14 / cm / Ae Soil	JB8 / 4455051018003 / 14-50 / cm / Bt Soil

Analyte	Units	Results	Results	Results	Detection Limit
Salinity					
pH	Saturated Paste	pH	5.4	5.1	5.4
Electrical Conductivity	Saturated Paste	dS/m at 25 C	1.05	0.20	0.16
SAR	Saturated Paste		<0.1	0.2	0.2
% Saturation		%	385	45	46
Calcium	Saturated Paste	meq/L	10.5	1.46	1.21
Calcium	Saturated Paste	mg/kg	810	13.2	11.2
Magnesium	Saturated Paste	meq/L	2.65	0.54	0.44
Magnesium	Saturated Paste	mg/kg	123	2.9	2.4
Sodium	Saturated Paste	meq/L	0.12	0.16	0.17
Sodium	Saturated Paste	mg/kg	11	2	2
Potassium	Saturated Paste	meq/L	3.77	0.16	0.13
Potassium	Saturated Paste	mg/kg	566	3	2
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1

NWL Number	421431-2	421431-3	421431-4
Sample Date	Oct 18, 2005	Oct 18, 2005	Oct 18, 2005
Sample Description	JB8 / 4455051018002 / 0-14 / cm / Ae Soil	JB8 / 4455051018003 / 14-50 / cm / Bt Soil	JB8 / 4455051018004 / 50-80 / cm / BC Soil

Analyte	Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties					
Texture		Sandy Loam	Sandy Clay Loam	Sandy Clay Loam	
Sand	Soil Texture	% by weight	57.6	50.0	51.6
Silt	Soil Texture	% by weight	32.8	20.4	22.8
Clay	Soil Texture	% by weight	9.6	29.6	25.6



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Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

NWL Number	421431-13	421431-14	421431-15
Sample Date	Oct 19, 2005	Oct 19, 2005	Oct 19, 2005
Sample Description	JB18 / 4455051019013 / 20-50 / cm / Of	JB18 / 455051019014 / 50-130 / cm / Of	JB18 / 4455051019015 / 130-220 / cm / Om
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Salinity						
pH	Saturated Paste	pH	4.7	5.1	5.6	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.17	0.22	0.19	0.01
SAR	Saturated Paste		0.1	0.1	<0.1	
% Saturation		%	815	806	499	
Calcium	Saturated Paste	meq/L	1.35	1.81	2.07	0.01
Calcium	Saturated Paste	mg/kg	220	292	206	
Magnesium	Saturated Paste	meq/L	0.56	0.71	0.94	0.02
Magnesium	Saturated Paste	mg/kg	55.5	69.0	56.5	
Sodium	Saturated Paste	meq/L	0.14	0.15	0.11	0.04
Sodium	Saturated Paste	mg/kg	25	27	13	
Potassium	Saturated Paste	meq/L	0.12	0.18	<0.03	0.03
Potassium	Saturated Paste	mg/kg	38	56	<5	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



Analytical Report

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Report to: Matrix Solutions Inc.
 230, 319 - 2 Avenue S. W.
 Calgary, AB, Canada
 T2P 0C5
 Attn: Andre Peloquin
 Sampled By: JB/NM
 Company: Matrix

Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

NWL Number	421431-22	421431-23	421431-24
Sample Date	Oct 21, 2005	Oct 21, 2005	Oct 21, 2005
Sample Description	JB45 / 4455051021025 / 0-20 / cm / Of	JB45 / 4455051021026 / 20-40 / cm / Of	JB45 / 4455051021027 / 40-220 / cm / Om
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Salinity						
pH	Saturated Paste	pH	3.5	3.5	4.1	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.20	0.17	0.25	0.01
SAR	Saturated Paste		0.2	0.1	<0.1	
% Saturation		%	1680	980	574	
Calcium	Saturated Paste	meq/L	0.14	0.55	1.72	0.01
Calcium	Saturated Paste	mg/kg	45.8	107	198	
Magnesium	Saturated Paste	meq/L	0.08	0.18	0.64	0.02
Magnesium	Saturated Paste	mg/kg	16.8	22.0	44.8	
Sodium	Saturated Paste	meq/L	0.08	0.09	0.09	0.04
Sodium	Saturated Paste	mg/kg	29	20	12	
Potassium	Saturated Paste	meq/L	0.48	0.08	<0.03	0.03
Potassium	Saturated Paste	mg/kg	318	31	6	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



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Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

NWL Number	421431-22	421431-30	421431-31
Sample Date	Oct 21, 2005	Oct 19, 2005	Oct 19, 2005
Sample Description	JB45 / 4455051021025 / 0-20 / cm / Of	LP12 / 4455051019206 / 8-0 / cm / Of	LP12 / 4455051019207 / 0-22 / cm / Ae
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Classification					
Total Nitrogen	TKN %	0.46	0.60	0.01	0.01
Calcium	Cations mg/kg	700	1860	24	4
Magnesium	Cations mg/kg	250	240	5	2
Potassium	Cations mg/kg	900	700	<20	20
Sodium	Cations mg/kg	60	<60	<10	12
Base saturation	%	5	21	5	1
Calcium	meq/100g	3.5	9.31	0.12	0.0003
Magnesium	meq/100g	2.0	2.0	0.04	0.0008
Sodium	meq/100g	0.3	<0.3	<0.05	0.003
Potassium	meq/100g	2	2	<0.05	0.003
ESP	%	0.2	<0.4	<2	0.2
TEC	meq/100g	8	10	<2	2
Cation Exchange Capacity	meq/100g	154	61.2	2.87	
Organic Matter	%	88.4	70.4	<0.2	.15
Carbon	Total Organic % dry weight	44.2	35.2	0.06	0.05



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Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
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Acct. Code:

NWL Lot ID: 421431
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 Report Number: 966613

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NWL Number	421431-30	421431-31	421431-32
Sample Date	Oct 19, 2005	Oct 19, 2005	Oct 19, 2005
Sample Description	LP12 / 4455051019206 / 8-0 / cm / Of	LP12 / 4455051019207 / 0-22 / cm / Ae	LP12 / 4455051019208 / 22-42 / cm / Bm
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Salinity						
pH	Saturated Paste	pH	4.2	4.8	5.6	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.52	0.06	0.06	0.01
SAR	Saturated Paste		<0.1	0.2	0.2	
% Saturation		%	380	32	35	
Calcium	Saturated Paste	meq/L	2.22	0.21	0.32	0.01
Calcium	Saturated Paste	mg/kg	169	1.4	2.2	
Magnesium	Saturated Paste	meq/L	0.96	0.09	0.12	0.02
Magnesium	Saturated Paste	mg/kg	44.0	0.4	0.5	
Sodium	Saturated Paste	meq/L	0.09	0.09	0.10	0.04
Sodium	Saturated Paste	mg/kg	8	1	1	
Potassium	Saturated Paste	meq/L	1.82	0.07	0.07	0.03
Potassium	Saturated Paste	mg/kg	269	<1	<1	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



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Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
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NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

NWL Number	421431-33	421431-34	421431-35
Sample Date	Oct 19, 2005	Oct 19, 2005	Oct 19, 2005
Sample Description	LP12 / 4455051019209 / 42-82 / cm / BC	LP12 / 4455051019210 / 82-120 / cm / C	LP32 / 4455051019211 / 8-0 / cm / Of
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Salinity						
pH	Saturated Paste	pH	5.8	5.2	4.2	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.05	0.08	0.67	0.01
SAR	Saturated Paste		0.3	0.5	0.1	
% Saturation		%	30	34	624	
Calcium	Saturated Paste	meq/L	0.19	0.23	2.08	0.01
Calcium	Saturated Paste	mg/kg	1.1	1.6	260	
Magnesium	Saturated Paste	meq/L	0.09	0.13	1.06	0.02
Magnesium	Saturated Paste	mg/kg	0.3	0.5	80.0	
Sodium	Saturated Paste	meq/L	0.12	0.22	0.18	0.04
Sodium	Saturated Paste	mg/kg	1	2	26	
Potassium	Saturated Paste	meq/L	0.08	0.10	3.63	0.03
Potassium	Saturated Paste	mg/kg	<1	1	884	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	

NWL Number	421431-33	421431-34	421431-36
Sample Date	Oct 19, 2005	Oct 19, 2005	Oct 19, 2005
Sample Description	LP12 / 4455051019209 / 42-82 / cm / BC	LP12 / 4455051019210 / 82-120 / cm / C	LP32 / 4455051019212 / 0-12 / cm / Ae
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties						
Texture			Sand	Sandy Loam	Sandy Loam	
Sand	Soil Texture	% by weight	89.6	80.6	53.6	
Silt	Soil Texture	% by weight	3.8	7.8	40.8	
Clay	Soil Texture	% by weight	6.6	11.6	5.6	



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 Company: Matrix

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Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

NWL Number	421431-35	421431-36	421431-37
Sample Date	Oct 19, 2005	Oct 19, 2005	Oct 19, 2005
Sample Description	LP32 / 4455051019211 / 8-0 / cm / Of	LP32 / 4455051019212 / 0-12 / cm / Ae	LP32 / 4455051019213 / 12-28 / cm / Bt
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Classification						
Total Nitrogen	TKN	%	0.71	0.05	0.02	0.01
Calcium	Cations	mg/kg	2740	190	1200	4
Magnesium	Cations	mg/kg	380	31	337	2
Potassium	Cations	mg/kg	1700	50	90	20
Sodium	Cations	mg/kg	<60	<10	20	12
Base saturation		%	39	18	66	1
Calcium		meq/100g	13.7	0.95	5.99	0.0003
Magnesium		meq/100g	3.2	0.26	2.77	0.0008
Sodium		meq/100g	<0.3	<0.05	0.07	0.003
Potassium		meq/100g	4.3	0.1	0.2	0.003
ESP		%	<0.5	<0.7	0.5	0.2
TEC		meq/100g	21	<2	9	2
Cation Exchange Capacity		meq/100g	54.2	7.30	13.7	
Organic Matter		%	66.1	1.5	0.48	.15
Carbon	Total Organic	% dry weight	33.0	0.76	0.24	0.05



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Name: NAOS
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NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

NWL Number	421431-36	421431-37	421431-38
Sample Date	Oct 19, 2005	Oct 19, 2005	Oct 19, 2005
Sample Description	LP32 / 4455051019212 / 0-12 / cm / Ae	LP32 / 4455051019213 / 12-28 / cm / Bt	LP32 / 4455051019214 / 28-96 / cm / BC
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Salinity					
pH	Saturated Paste	pH	4.0	4.7	5.3
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.19	0.08	0.10
SAR	Saturated Paste		0.2	0.4	0.4
% Saturation		%	42	44	39
Calcium	Saturated Paste	meq/L	1.02	0.37	0.46
Calcium	Saturated Paste	mg/kg	8.6	3.3	3.6
Magnesium	Saturated Paste	meq/L	0.49	0.19	0.26
Magnesium	Saturated Paste	mg/kg	2.5	1.0	1.2
Sodium	Saturated Paste	meq/L	0.16	0.21	0.24
Sodium	Saturated Paste	mg/kg	2	2	2
Potassium	Saturated Paste	meq/L	0.22	0.06	0.05
Potassium	Saturated Paste	mg/kg	4	1	<1
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1

NWL Number	421431-37	421431-38	421431-39
Sample Date	Oct 19, 2005	Oct 19, 2005	Oct 19, 2005
Sample Description	LP32 / 4455051019213 / 12-28 / cm / Bt	LP32 / 4455051019214 / 28-96 / cm / BC	LP32 / 4455051019215 / 96-120 / cm / Ck
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties					
Texture		Sandy Clay Loam	Sandy Clay Loam	Sandy Clay Loam	
Sand	Soil Texture	% by weight	52.6	55.6	53.6
Silt	Soil Texture	% by weight	21.4	20.4	23.8
Clay	Soil Texture	% by weight	26.0	24.0	22.6



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 Company: Matrix

Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

NWL Number	421431-39	421431-40	421431-41
Sample Date	Oct 19, 2005	Oct 20, 2005	Oct 20, 2005
Sample Description	LP32 / 4455051019215 / 96-120 / cm / Ck	LP38 / 4455051020216 / 5-0 / 4455051020217 / 0-5 / cm / LFH	LP38 / cm / Ae
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Salinity						
pH	Saturated Paste	pH	7.3	6.0	7.2	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.44	1.75	0.35	0.01
SAR	Saturated Paste		0.2	<0.1	0.1	
% Saturation		%	40	356	39	
Calcium	Saturated Paste	meq/L	3.08	9.87	2.78	0.01
Calcium	Saturated Paste	mg/kg	24.6	702	21.8	
Magnesium	Saturated Paste	meq/L	1.42	6.29	1.78	0.02
Magnesium	Saturated Paste	mg/kg	6.9	270	8.5	
Sodium	Saturated Paste	meq/L	0.30	0.12	0.20	0.04
Sodium	Saturated Paste	mg/kg	3	10	2	
Potassium	Saturated Paste	meq/L	0.04	8.99	0.05	0.03
Potassium	Saturated Paste	mg/kg	<1	1250	<1	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



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NWL Number	421431-40	421431-41	421431-42
Sample Date	Oct 20, 2005	Oct 20, 2005	Oct 20, 2005
Sample Description	LP38 / 4455051020216 / 5-0 / cm / LFH	LP38 / 4455051020217 / 0-5 / cm / Ae	LP38 / 4455051020218 / 5-55 / cm / Bt
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit	
Classification						
Total Nitrogen	TKN	%	0.93	0.05	0.03	0.01
Calcium	Cations	mg/kg	9350	1330	1790	4
Magnesium	Cations	mg/kg	1460	312	632	2
Potassium	Cations	mg/kg	2000	60	100	20
Sodium	Cations	mg/kg	<60	24	20	12
Base saturation		%	78	88	68	1
Calcium		meq/100g	46.6	6.63	8.92	0.0003
Magnesium		meq/100g	12.0	2.57	5.19	0.0008
Sodium		meq/100g	<0.3	0.11	0.089	0.003
Potassium		meq/100g	5.2	0.1	0.4	0.003
ESP		%	<0.3	0.99	0.42	0.2
TEC		meq/100g	64	9	14	2
Cation Exchange Capacity		meq/100g	82.0	10.7	21.3	
Organic Matter		%	48.1	1.0	0.72	.15
Carbon	Total Organic	% dry weight	24.0	0.52	0.36	0.05

NWL Number	421431-41	421431-42	421431-43
Sample Date	Oct 20, 2005	Oct 20, 2005	Oct 20, 2005
Sample Description	LP38 / 4455051020217 / 0-5 / cm / Ae	LP38 / 4455051020218 / 5-55 / cm / Bt	LP38 / 4455051020219 / 55-73 / cm / BCg
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties					
Texture		Silt Loam	Clay Loam	Loam	
Sand	Soil Texture	% by weight	21.6	25.2	35.6
Silt	Soil Texture	% by weight	62.8	44.8	42.8
Clay	Soil Texture	% by weight	15.6	30.0	21.6



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NWL Number	421431-42	421431-43	421431-44
Sample Date	Oct 20, 2005	Oct 20, 2005	Oct 20, 2005
Sample Description	LP38 / 4455051020218 / 5-55 / cm / Bt	LP38 / 4455051020219 / 55-73 / cm / BCg	LP38 / 4455051020220 / 73-110 / cm / Ckg
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Salinity						
pH	Saturated Paste	pH	5.4	7.2	7.6	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.19	0.37	0.32	0.01
SAR	Saturated Paste		0.3	0.2	0.2	
% Saturation		%	42	47	42	
Calcium	Saturated Paste	meq/L	1.08	2.81	2.39	0.01
Calcium	Saturated Paste	mg/kg	9.2	26.7	20.1	
Magnesium	Saturated Paste	meq/L	0.80	1.50	1.16	0.02
Magnesium	Saturated Paste	mg/kg	4.1	8.6	5.9	
Sodium	Saturated Paste	meq/L	0.29	0.34	0.28	0.04
Sodium	Saturated Paste	mg/kg	3	4	3	
Potassium	Saturated Paste	meq/L	0.09	0.05	0.07	0.03
Potassium	Saturated Paste	mg/kg	2	<1	1	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	

NWL Number	421431-44	421431-61	421431-62
Sample Date	Oct 20, 2005	Oct 24, 2005	Oct 24, 2005
Sample Description	LP38 / 4455051020220 / 73-110 / cm / Ckg	LP93 / 4455051024237 / 0-6 / cm / Ae	LP93 / 4455051024238 / 6-33 / cm / Bm
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties						
Texture			Loam	Sandy Loam	Sandy Loam	
Sand	Soil Texture	% by weight	35.6	62.0	56.6	
Silt	Soil Texture	% by weight	48.4	32.8	25.8	
Clay	Soil Texture	% by weight	16.0	5.2	17.6	



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NWL Number	421431-45	421431-46	421431-60
Sample Date	Oct 23, 2005	Oct 23, 2005	Oct 24, 2005
Sample Description	LP68 / 4455051023221 / 0-20 / cm / Of	LP68 / 4455051023222 / 20-220 / cm / Of	LP93 / 4455051024236 / 12-0 / cm / Of
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Salinity						
pH	Saturated Paste	pH	4.0	4.5	4.6	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.32	0.29	0.85	0.01
SAR	Saturated Paste		0.1	0.2	<0.1	
% Saturation		%	1280	413	486	
Calcium	Saturated Paste	meq/L	0.70	1.83	4.90	0.01
Calcium	Saturated Paste	mg/kg	178	151	476	
Magnesium	Saturated Paste	meq/L	0.59	0.96	1.80	0.02
Magnesium	Saturated Paste	mg/kg	91.8	47.7	106	
Sodium	Saturated Paste	meq/L	0.11	0.19	0.14	0.04
Sodium	Saturated Paste	mg/kg	32	18	15	
Potassium	Saturated Paste	meq/L	1.44	0.32	4.09	0.03
Potassium	Saturated Paste	mg/kg	717	52	774	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



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Acct. Code:

NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

NWL Number	421431-45	421431-60	421431-61
Sample Date	Oct 23, 2005	Oct 24, 2005	Oct 24, 2005
Sample Description	LP68 / 4455051023221 / 0-20 / cm / Of	LP93 / 4455051024236 / 12-0 / cm / Of	LP93 / 4455051024237 / 0-6 / cm / Ae
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit	
Classification						
Total Nitrogen	TKN	%	0.80	1.16	0.04	0.01
Calcium	Cations	mg/kg	2920	5470	56	4
Magnesium	Cations	mg/kg	890	530	20	2
Potassium	Cations	mg/kg	1300	1600	80	20
Sodium	Cations	mg/kg	60	130	<10	12
Base saturation		%	33	46	9	1
Calcium		meq/100g	14.6	27.3	0.28	0.0003
Magnesium		meq/100g	7.3	4.4	0.1	0.0008
Sodium		meq/100g	0.3	0.57	<0.05	0.003
Potassium		meq/100g	3.4	4.2	0.2	0.003
ESP		%	0.4	0.72	<0.7	0.2
TEC		meq/100g	26	36	<2	2
Cation Exchange Capacity		meq/100g	76.4	78.8	6.99	
Organic Matter		%	87.2	73.6	1.2	.15
Carbon	Total Organic	% dry weight	43.6	36.8	0.58	0.05



Analytical Report

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Bill to: Matrix Solutions Inc.
Report to: Matrix Solutions Inc.
 230, 319 - 2 Avenue S. W.
 Calgary, AB, Canada
 T2P 0C5
 Attn: Andre Peloquin
 Sampled By: JB/NM
 Company: Matrix

Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
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NWL Number	421431-61	421431-62	421431-63
Sample Date	Oct 24, 2005	Oct 24, 2005	Oct 24, 2005
Sample Description	LP93 / 4455051024237 / 0-6 / cm / Ae	LP93 / 4455051024238 / 6-33 / cm / Bm	LP93 / 4455051024239 / 33-52 / cm / Bt
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Salinity						
pH	Saturated Paste	pH	3.7	4.9	4.6	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.17	0.10	0.07	0.01
SAR	Saturated Paste		0.2	0.2	0.5	
% Saturation		%	40	39	43	
Calcium	Saturated Paste	meq/L	0.32	0.36	0.18	0.01
Calcium	Saturated Paste	mg/kg	2.6	2.8	1.6	
Magnesium	Saturated Paste	meq/L	0.23	0.20	0.09	0.02
Magnesium	Saturated Paste	mg/kg	1.1	1.0	0.4	
Sodium	Saturated Paste	meq/L	0.13	0.12	0.18	0.04
Sodium	Saturated Paste	mg/kg	1	1	2	
Potassium	Saturated Paste	meq/L	0.18	0.20	0.12	0.03
Potassium	Saturated Paste	mg/kg	3	3	2	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



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NWL Lot ID: 421431
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NWL Number	421431-62	421431-64	421431-65
Sample Date	Oct 24, 2005	Oct 22, 2005	Oct 22, 2005
Sample Description	LP93 / 4455051024238 / 6-33 / cm / Bm	SA75 / 4455051022450 / 10-0 / cm / LFH	SA75 / 4455051022451 / 0-3 / cm / Ahe
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit	
Classification						
Total Nitrogen	TKN	%	0.05	0.96	0.09	0.01
Calcium	Cations	mg/kg	211	2040	64	4
Magnesium	Cations	mg/kg	50	310	28	2
Potassium	Cations	mg/kg	100	1400	70	20
Sodium	Cations	mg/kg	<10	70	<10	12
Base saturation		%	11	14	5	1
Calcium		meq/100g	1.05	10.2	0.32	0.0003
Magnesium		meq/100g	0.41	2.5	0.23	0.0008
Sodium		meq/100g	<0.05	0.3	<0.05	0.003
Potassium		meq/100g	0.2	3.6	0.2	0.003
ESP		%	<0.3	0.3	<0.4	0.2
TEC		meq/100g	<2	17	<2	2
Cation Exchange Capacity		meq/100g	15.0	114	13.8	
Organic Matter		%	1.2	71.8	3.94	.15
Carbon	Total Organic	% dry weight	0.58	35.9	1.97	0.05

NWL Number	421431-63	421431-65	421431-66
Sample Date	Oct 24, 2005	Oct 22, 2005	Oct 22, 2005
Sample Description	LP93 / 4455051024239 / 33-52 / cm / Bt	SA75 / 4455051022451 / 0-3 / cm / Ahe	SA75 / 4455051022452 / 3-40 / cm / Ae
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties					
Texture		Sandy Clay Loam	Silt Loam	Silt Loam	
Sand	Soil Texture	% by weight	53.2	22.6	22.6
Silt	Soil Texture	% by weight	24.8	61.8	63.8
Clay	Soil Texture	% by weight	22.0	15.6	13.6



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Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
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Acct. Code:

NWL Lot ID: 421431
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NWL Number	421431-64	421431-65	421431-66
Sample Date	Oct 22, 2005	Oct 22, 2005	Oct 22, 2005
Sample Description	SA75 / 4455051022450 / 10-0 / cm / LFH	SA75 / 4455051022451 / 0-3 / cm / Ahe	SA75 / 4455051022452 / 3-40 / cm / Ae
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Salinity						
pH	Saturated Paste	pH	3.6	4.0	5.0	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.75	0.22	0.08	0.01
SAR	Saturated Paste		0.2	0.4	0.4	
% Saturation		%	471	52	32	
Calcium	Saturated Paste	meq/L	2.43	0.44	0.27	0.01
Calcium	Saturated Paste	mg/kg	229	4.6	1.7	
Magnesium	Saturated Paste	meq/L	1.25	0.46	0.18	0.02
Magnesium	Saturated Paste	mg/kg	71.2	2.9	0.7	
Sodium	Saturated Paste	meq/L	0.25	0.29	0.21	0.04
Sodium	Saturated Paste	mg/kg	27	4	2	
Potassium	Saturated Paste	meq/L	3.42	0.22	0.10	0.03
Potassium	Saturated Paste	mg/kg	629	4	1	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



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NWL Lot ID: 421431
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 Report Number: 966613

NWL Number	421431-66	421431-69	421431-70
Sample Date	Oct 22, 2005	Oct 18, 2005	Oct 18, 2005
Sample Description	SA75 / 4455051022452 / 3-40 / cm / Ae	SA5 / 4455051018400 / 0-10 / cm / Oh	SA5 / 4455051018401 / 10-40 / cm / Bg
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit	
Classification						
Total Nitrogen	TKN	%	0.05	1.00	0.05	0.01
Calcium	Cations	mg/kg	180	20400	1840	4
Magnesium	Cations	mg/kg	49	2340	360	2
Potassium	Cations	mg/kg	50	100	100	20
Sodium	Cations	mg/kg	<10	<60	31	12
Base saturation		%	360	82	92	1
Calcium		meq/100g	0.88	102	9.20	0.0003
Magnesium		meq/100g	0.40	19.2	2.96	0.0008
Sodium		meq/100g	<0.05	<0.3	0.14	0.003
Potassium		meq/100g	0.1	0.3	0.2	0.003
ESP		%	<10	<0.2	0.99	0.2
TEC		meq/100g	<2	122	12	2
Cation Exchange Capacity		meq/100g	0.38	149	13.7	
Organic Matter		%	0.42	30.8	1.2	.15
Carbon	Total Organic	% dry weight	0.21	15.4	0.63	0.05



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 Sampled By: JB/NM
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Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
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Acct. Code:

NWL Lot ID: 421431
 Control Number: M 009708
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	NWL Number	421431-67	421431-68	421431-69
Sample Date	Oct 22, 2005	Oct 22, 2005	Oct 18, 2005	
Sample Description	SA75 / 4455051022453 / 40-80 / cm / Bt1	SA75 / 4455051022454 / 80-110 / cm / IIBt2	SA5 / 4455051018400 / 0-10 / cm / Oh	
Matrix	Soil	Soil	Soil	

Analyte	Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties					
Texture		Sandy Loam	Sandy Clay Loam	Sandy Loam	
Sand	Soil Texture	% by weight	56.6	51.6	59.2
Silt	Soil Texture	% by weight	24.8	22.8	36.8
Clay	Soil Texture	% by weight	18.6	25.6	4.0
Salinity					
pH	Saturated Paste	pH	4.8	5.1	6.2
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.07	0.08	0.01
SAR	Saturated Paste		0.6	0.7	0.1
% Saturation		%	31	42	269
Calcium	Saturated Paste	meq/L	0.18	0.28	2.50
Calcium	Saturated Paste	mg/kg	1.1	2.4	135
Magnesium	Saturated Paste	meq/L	0.11	0.11	1.33
Magnesium	Saturated Paste	mg/kg	0.4	0.6	43.3
Sodium	Saturated Paste	meq/L	0.24	0.31	0.16
Sodium	Saturated Paste	mg/kg	2	3	10
Potassium	Saturated Paste	meq/L	0.09	0.07	0.12
Potassium	Saturated Paste	mg/kg	1	1	13
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1



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NWL Lot ID: 421431
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NWL Number	421431-70	421431-71	421431-74
Sample Date	Oct 18, 2005	Oct 18, 2005	Oct 19, 2005
Sample Description	SA5 / 4455051018401 / 10-40 / cm / Bg	SA5 / 4455051018402 / 40-110+ / cm / BCg	SA26 / 4455051019409 / 0-20 / cm / Of
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Salinity					
pH	Saturated Paste	pH	6.6	6.6	3.5
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.20	0.20	0.01
SAR	Saturated Paste		0.2	0.3	0.2
% Saturation		%	40	40	1440
Calcium	Saturated Paste	meq/L	1.51	1.06	0.01
Calcium	Saturated Paste	mg/kg	12.2	8.6	43.1
Magnesium	Saturated Paste	meq/L	0.78	0.64	0.10
Magnesium	Saturated Paste	mg/kg	3.8	3.1	17.2
Sodium	Saturated Paste	meq/L	0.20	0.32	0.08
Sodium	Saturated Paste	mg/kg	2	3	25
Potassium	Saturated Paste	meq/L	0.12	0.16	0.31
Potassium	Saturated Paste	mg/kg	2	2	175
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1

NWL Number	421431-70	421431-71	421431-76
Sample Date	Oct 18, 2005	Oct 18, 2005	Oct 19, 2005
Sample Description	SA5 / 4455051018401 / 10-40 / cm / Bg	SA5 / 4455051018402 / 40-110+ / cm / BCg	SA26 / 4455051019411 / 200-220 / cm / IIBg
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties					
Texture		Sandy Loam	Clay Loam	Loam	
Sand	Soil Texture	% by weight	59.6	43.6	29.6
Silt	Soil Texture	% by weight	22.4	23.8	47.4
Clay	Soil Texture	% by weight	18.0	32.6	23.0



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Project
ID: 4455-514
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NWL Lot ID: 421431
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 Date Received: Nov 04, 2005
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 Report Number: 966613

NWL Number	421431-74	421431-77	421431-78
Sample Date	Oct 19, 2005	Oct 19, 2005	Oct 19, 2005
Sample Description	SA26 / 4455051019409 / 0-20 / cm / Of	SA28 / 4455051019412 / 5-0 / cm / LFH	SA28 / 4455051019413 / 0-18 / cm / Ae
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Classification						
Total Nitrogen	TKN	%	0.48	0.60	0.02	0.01
Calcium	Cations	mg/kg	870	1830	45	4
Magnesium	Cations	mg/kg	260	320	8	2
Potassium	Cations	mg/kg	500	500	20	20
Sodium	Cations	mg/kg	70	60	<10	12
Base saturation		%	2	3	2	1
Calcium		meq/100g	4.3	9.14	0.23	0.0003
Magnesium		meq/100g	2.2	2.6	0.06	0.0008
Sodium		meq/100g	0.3	0.3	<0.05	0.003
Potassium		meq/100g	1	1	0.07	0.003
ESP		%	0.08	0.06	<0.3	0.2
TEC		meq/100g	8	10	<2	2
Cation Exchange Capacity		meq/100g	377	443	16.9	
Organic Matter		%	86.9	38.4	0.63	.15
Carbon	Total Organic	% dry weight	43.4	19.2	0.32	0.05



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NWL Number	421431-75	421431-76	421431-77
Sample Date	Oct 19, 2005	Oct 19, 2005	Oct 19, 2005
Sample Description	SA26 / 4455051019410 / 20-200 / cm / Of	SA26 / 4455051019411 / 200-220 / cm / IIBg	SA28 / 4455051019412 / 5-0 / cm / LFH
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Salinity						
pH	Saturated Paste	pH	3.5	4.2	3.9	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.18	0.30	0.30	0.01
SAR	Saturated Paste		0.2	0.3	0.1	
% Saturation		%	616	49	432	
Calcium	Saturated Paste	meq/L	0.56	1.26	1.20	0.01
Calcium	Saturated Paste	mg/kg	68.6	12.4	103	
Magnesium	Saturated Paste	meq/L	0.29	0.91	0.83	0.02
Magnesium	Saturated Paste	mg/kg	21.4	5.4	43.4	
Sodium	Saturated Paste	meq/L	0.12	0.31	0.11	0.04
Sodium	Saturated Paste	mg/kg	17	3	11	
Potassium	Saturated Paste	meq/L	0.11	0.29	0.80	0.03
Potassium	Saturated Paste	mg/kg	26	6	134	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



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NWL Number	421431-78	421431-79	421431-80
Sample Date	Oct 19, 2005	Oct 19, 2005	Oct 19, 2005
Sample Description	SA28 / 4455051019413 / 0-18 / cm / Ae	SA28 / 4455051019414 / 18-50 / cm / Bm	SA28 / 4455051019415 / 50-90 / cm / Bt
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit	
Physical and Aggregate Properties						
Texture		Loamy Sand	Loamy Sand	Sandy Clay Loam		
Sand	Soil Texture	% by weight	84.6	81.6	59.6	
Silt	Soil Texture	% by weight	12.4	12.4	20.4	
Clay	Soil Texture	% by weight	3.0	6.0	20.0	
Salinity						
pH	Saturated Paste	pH	4.0	5.1	4.9	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.13	0.07	0.09	0.01
SAR	Saturated Paste		0.4	0.3	0.8	
% Saturation		%	27	26	32	
Calcium	Saturated Paste	meq/L	0.28	0.21	0.22	0.01
Calcium	Saturated Paste	mg/kg	1.5	1.1	1.5	
Magnesium	Saturated Paste	meq/L	0.22	0.10	0.14	0.02
Magnesium	Saturated Paste	mg/kg	0.7	0.3	0.5	
Sodium	Saturated Paste	meq/L	0.18	0.13	0.34	0.04
Sodium	Saturated Paste	mg/kg	1	1	2	
Potassium	Saturated Paste	meq/L	0.31	0.12	0.17	0.03
Potassium	Saturated Paste	mg/kg	3	1	2	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



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 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

NWL Number	421431-81	421431-82	421431-83
Sample Date	Oct 19, 2005	Oct 20, 2005	Oct 20, 2005
Sample Description	SA28 / 4455051019416 / 90-140 / cm / BC	SA53 / 4455051020430 / 8-0 / cm / LFH	SA53 / 4455051020431 / 0-20 / cm / Ae
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Salinity					
pH	Saturated Paste	pH	5.0	4.1	4.9
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.16	0.87	0.08
SAR	Saturated Paste		0.8	0.2	0.4
% Saturation		%	41	609	38
Calcium	Saturated Paste	meq/L	0.46	2.39	0.36
Calcium	Saturated Paste	mg/kg	3.8	291	2.8
Magnesium	Saturated Paste	meq/L	0.27	1.38	0.19
Magnesium	Saturated Paste	mg/kg	1.4	102	0.9
Sodium	Saturated Paste	meq/L	0.49	0.31	0.22
Sodium	Saturated Paste	mg/kg	5	44	2
Potassium	Saturated Paste	meq/L	0.19	5.18	0.09
Potassium	Saturated Paste	mg/kg	3	1230	1
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1

NWL Number	421431-81	421431-83	421431-84
Sample Date	Oct 19, 2005	Oct 20, 2005	Oct 20, 2005
Sample Description	SA28 / 4455051019416 / 90-140 / cm / BC	SA53 / 4455051020431 / 0-20 / cm / Ae	SA53 / 4455051020432 / 20-50 / cm / Bt1
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties					
Texture		Sandy Loam	Silt Loam	Clay Loam	
Sand	Soil Texture	% by weight	57.6	32.6	31.6
Silt	Soil Texture	% by weight	23.4	52.8	38.0
Clay	Soil Texture	% by weight	19.0	14.6	30.4



Analytical Report

Norwest Labs
 7217 Roper Road NW
 Edmonton, AB. T6B 3J4
 Phone: (780) 438-5522
 Fax: (780) 438-0396

Bill to: Matrix Solutions Inc.
Report to: Matrix Solutions Inc.
 230, 319 - 2 Avenue S. W.
 Calgary, AB, Canada
 T2P 0C5
 Attn: Andre Peloquin
 Sampled By: JB/NM
 Company: Matrix

Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

NWL Number	421431-82	421431-83	421431-92
Sample Date	Oct 20, 2005	Oct 20, 2005	Oct 23, 2005
Sample Description	SA53 / 4455051020430 / 8-0 / cm / LFH	SA53 / 4455051020431 / 0-20 / cm / Ae	SN6 / 4455051023460 / 0-65 / cm / Oh
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit	
Classification						
Total Nitrogen	TKN	%	0.64	0.03	1.34	0.01
Calcium	Cations	mg/kg	3410	170	6560	4
Magnesium	Cations	mg/kg	600	41	490	2
Potassium	Cations	mg/kg	2300	60	<100	20
Sodium	Cations	mg/kg	90	<10	<60	12
Base saturation		%	8	4	11	1
Calcium		meq/100g	17.0	0.84	32.7	0.0003
Magnesium		meq/100g	4.9	0.34	4.0	0.0008
Sodium		meq/100g	0.4	<0.05	<0.3	0.003
Potassium		meq/100g	5.8	0.1	<0.2	0.003
ESP		%	0.1	<0.2	<0.08	0.2
TEC		meq/100g	28	<2	37	2
Cation Exchange Capacity		meq/100g	372	29.1	341	
Organic Matter		%	88.0	0.49	33.8	.15
Carbon	Total Organic	% dry weight	44.0	0.24	16.9	0.05



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Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

NWL Number	421431-84	421431-85	421431-86
Sample Date	Oct 20, 2005	Oct 20, 2005	Oct 20, 2005
Sample Description	SA53 / 4455051020432 / 20-50 / cm / Bt1	SA53 / 4455051020433 / 50-80 / cm / Bt2	SA53 / 4455051020434 / 80-110+ / cm / BC
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Salinity					
pH	Saturated Paste	pH	4.7	4.9	5.0
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.08	0.07	0.09
SAR	Saturated Paste		0.5	0.7	0.6
% Saturation		%	44	39	30
Calcium	Saturated Paste	meq/L	0.20	0.16	0.25
Calcium	Saturated Paste	mg/kg	1.7	1.2	1.5
Magnesium	Saturated Paste	meq/L	0.14	0.10	0.14
Magnesium	Saturated Paste	mg/kg	0.7	0.5	0.5
Sodium	Saturated Paste	meq/L	0.19	0.25	0.29
Sodium	Saturated Paste	mg/kg	2	2	2
Potassium	Saturated Paste	meq/L	0.07	0.05	0.07
Potassium	Saturated Paste	mg/kg	1	<1	<1
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1

NWL Number	421431-85	421431-86	421431-93
Sample Date	Oct 20, 2005	Oct 20, 2005	Oct 23, 2005
Sample Description	SA53 / 4455051020433 / 50-80 / cm / Bt2	SA53 / 4455051020434 / 80-110+ / cm / BC	SN6 / 4455051023461 / 65-95 / cm / Ahg
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties					
Texture		Loam	Sandy Loam	Loam	
Sand	Soil Texture	% by weight	46.0	59.0	38.7
Silt	Soil Texture	% by weight	32.6	24.2	41.3
Clay	Soil Texture	% by weight	21.4	16.8	20.0



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Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 421431
Control Number: M 009708
Date Received: Nov 04, 2005
Date Reported: Feb 15, 2007
Report Number: 966613

NWL Number	421431-92	421431-93	421431-94
Sample Date	Oct 23, 2005	Oct 23, 2005	Oct 23, 2005
Sample Description	SN6 / 4455051023460 / 0-65 / cm / Oh	SN6 / 4455051023461 / 65-95 / cm / Ahg	SN6 / 4455051023462 / 95-120 / cm / Bg
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Salinity						
pH	Saturated Paste	pH	5.3	5.6	5.6	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.27	0.38	0.26	0.01
SAR	Saturated Paste		0.2	0.2	0.2	
% Saturation		%	199	76	50	
Calcium	Saturated Paste	meq/L	1.96	2.71	1.55	0.01
Calcium	Saturated Paste	mg/kg	78.0	41.0	15.6	
Magnesium	Saturated Paste	meq/L	0.71	1.17	0.74	0.02
Magnesium	Saturated Paste	mg/kg	17.0	10.7	4.5	
Sodium	Saturated Paste	meq/L	0.21	0.29	0.26	0.04
Sodium	Saturated Paste	mg/kg	10	5	3	
Potassium	Saturated Paste	meq/L	0.07	0.06	0.14	0.03
Potassium	Saturated Paste	mg/kg	5	2	3	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	

NWL Number	421431-94
Sample Date	Oct 23, 2005
Sample Description	SN6 / 4455051023462 / 95-120 / cm / Bg
Matrix	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties						
Texture			Sandy Loam			
Sand	Soil Texture	% by weight	54.6			
Silt	Soil Texture	% by weight	28.8			
Clay	Soil Texture	% by weight	16.6			

Approved by:

Anthony Neumann, MSc
 Laboratory Operations Manager



Quality Control

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Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 421431
Control Number: M 009708
Date Received: Nov 04, 2005
Date Reported: Feb 15, 2007
Report Number: 966613

Classification

Blanks	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
Calcium	mg/kg	6	0.0	-1.0	1.0	✓
Magnesium	mg/kg	3	0.0	-0.5	0.5	✓
Potassium	mg/kg	<20	0	-5	5	✓
Sodium	mg/kg	<10	0.0	-3.0	3.0	✓
Ammonium - N	mg/kg	503	4.15	-2.87	11.17	✓
Material Used: Edmonton Method Blank						
Date Acquired: Feb 08, 2007						
Acquired By: Gordon Grensmann						
Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	meq/100g	70.2	70.8	9.9900	0.0009	✓
Magnesium	meq/100g	7.2	7.2	9.9900	0.0024	✓
Sodium	meq/100g	0.3	0.3	9.990	0.009	✓
Potassium	meq/100g	3.5	3.5	9.990	0.009	✓
Cation Exchange Capacity	meq/100g	377	367	9.99	0.10	✓
Material Used: Edmonton Duplicate						
Date Acquired: Feb 08, 2007						
Acquired By: Gordon Grensmann						
Carbon	% dry weight	<0.05	0.05	20.01	0.10	✓
Material Used: FSJ Duplicate						
Date Acquired: Feb 09, 2007						
Acquired By: Deanna Turner						
Control Sample	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
Carbon	% dry weight	4.18	4.41	3.09	5.73	✓
Material Used: 2001 Farm Soil Standard						
Date Acquired: Feb 08, 2007						
Acquired By: Alecia Honkanen						
Calcium	meq/100g	16.4	16.2000	6.4500	25.9500	✓
Magnesium	meq/100g	8.61	13.8000	5.4000	22.2000	✓
Sodium	meq/100g	6.98	6.600	2.550	10.650	✓
Potassium	meq/100g	0.56	0.532	0.202	0.862	✓
Cation Exchange Capacity	meq/100g	32.4	31.50	16.50	46.50	✓
Material Used: 2003 CEC Standard						
Date Acquired: Feb 07, 2007						
Acquired By: Gordon Grensmann						
Total Nitrogen	%	0.16	0.15	0.06	0.24	✓
Material Used: S-2005-B						
Date Acquired: Feb 09, 2007						
Acquired By: Alison Zook						



Quality Control

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 Sampled By: JB/NM
 Company: Matrix

Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Sand	% by weight	UNDEFINED		10.0	0.1	✓
Silt	% by weight	UNDEFINED		10.0	0.1	✓
Clay	% by weight	UNDEFINED		10.0	0.1	✓

Material Used: Edmonton Duplicate
 Date Acquired: Feb 08, 2007
 Acquired By:

Control Sample	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
Sand	% by weight	47.6	46.6	40.7	52.5	✓
Silt	% by weight	27.2	25.7	20.4	31.0	✓
Clay	% by weight	29.6	28.8	23.9	33.7	✓

Material Used: 2006-Physical Standard
 Date Acquired: Feb 08, 2007
 Acquired By: Chris Miller



Quality Control

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 Company: Matrix

Project
ID: 4455-514
Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 421431
 Control Number: M 009708
 Date Received: Nov 04, 2005
 Date Reported: Feb 15, 2007
 Report Number: 966613

Salinity						
Blanks	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	<0.2	0.0	-0.2	0.2	✓
Magnesium	mg/L	<0.2	0.0	-0.8	0.7	✓
Sodium	mg/L	<1	0	-1	1	✓
Potassium	mg/L	<1	0.1	-0.4	0.5	✓
Material Used: Edmonton Method Blank						
Date Acquired: Feb 13, 2007						
Acquired By: Bvul Sim						
Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
pH	pH	5.4	5.5	0.3	0.3	✓
Electrical Conductivity	dS/m at 25 C	1.05	1.07	9.99	0.01	✓
Calcium	mg/kg	810	892	10.0	0.6	✓
Sodium	mg/kg	32	38	10	1	✓
Potassium	mg/kg	717	687	10	1	✓
Material Used: Edmonton Duplicate						
Date Acquired: Feb 07, 2007						
Acquired By: Bvul Sim						
Control Sample	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
pH	pH	7.9	7.5	6.0	9.0	✓
Electrical Conductivity	dS/m at 25 C	5.72	5.70	3.57	7.83	✓
% Saturation	%	77	74	67	81	✓
Calcium	mg/L	93.6	71.1	39.0	103.2	✓
Magnesium	mg/L	19.0	14.8	5.9	23.7	✓
Sodium	mg/L	1300	1133	719	1547	✓
Potassium	mg/L	<10	5.7	2.4	9.1	✓
Material Used: 2006 Salinity Standard						
Date Acquired: Feb 13, 2007						
Acquired By: Bvul Sim						



Methodology and Notes

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Project
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Name: NAOS
Location: Christina Lake
LSD:
P.O.:
Acct. Code:

NWL Lot ID: **421431**
Control Number: M 009708
Date Received: Nov 04, 2005
Date Reported: Feb 15, 2007
Report Number: 966613

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Method of Analysis:

MethodName	Reference	Method	Date Analysis Started	Location
Carbon and Nitrogen in soil (FSJ)	SSSA Book Series 5	* Total Carbon, Organic Carbon, and Organic Matter, Ch 34	9-Feb-07	Norwest Labs Fort St. John
Carbon and Nitrogen in soil (FSJ)	SSSA Book Series 5	* Total Carbon, Organic Carbon, and Organic Matter, Ch 34	12-Feb-07	Norwest Labs Fort St. John
Cation Exchange Capacity (CEC) - Ammonium	McKeague	* CEC and Exchangeable Cations by NH4OAc at pH 7, 3.32	9-Feb-07	Norwest Labs Edmonton
Cation Exchange Capacity (CEC) for General Soil	McKeague	* CEC and Exchangeable Cations by NH4OAc at pH 7, 3.32	8-Feb-07	Norwest Labs Edmonton
Cation Exchange Capacity (CEC) for General Soil	McKeague	* CEC and Exchangeable Cations by NH4OAc at pH 7, 3.32	9-Feb-07	Norwest Labs Edmonton
Particle Size Analysis - GS	Carter	* Hydrometer Method, 47.3	8-Feb-07	Norwest Labs Edmonton
Particle Size Analysis - GS	Carter	* Hydrometer Method, 47.3	9-Feb-07	Norwest Labs Edmonton
Particle Size Analysis - GS	Carter	* Hydrometer Method, 47.3	13-Feb-07	Norwest Labs Edmonton
Saturated Paste in General Soil	McKeague	* EC of Saturated Soil Paste, 4.13	8-Feb-07	Norwest Labs Edmonton
Saturated Paste in General Soil	McKeague	* EC of Saturated Soil Paste, 4.13	13-Feb-07	Norwest Labs Edmonton
Saturated Paste in General Soil	McKeague	* pH of Saturated Soil Paste, 3.14	8-Feb-07	Norwest Labs Edmonton
Saturated Paste in General Soil	McKeague	* pH of Saturated Soil Paste, 3.14	13-Feb-07	Norwest Labs Edmonton
Saturated Paste in General Soil	McKeague	* Soluble Salts in Saturation Extract, 3.21	8-Feb-07	Norwest Labs Edmonton
Saturated Paste in General Soil	McKeague	* Soluble Salts in Saturation Extract, 3.21	13-Feb-07	Norwest Labs Edmonton

Please direct any inquiries regarding this report to our Client Services group.
 Results relate only to samples as submitted

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Page: 33 of 33

* Norwest method(s) is based on reference method

References:

Carter	Soil Sampling and Methods of Analysis
McKeague	Manual on Soil Sampling and Methods of Analysis
SSSA Book Series 5	Methods of Soil Analysis, Part 3

Comments:

Client specified they would like the samples dried and ground and then put on hold for further analysis.

PS1 analysis cancelled on the following samples: 1, 12-15,22,23,24,30,35,40,45,46,60,64,74,75,77,82 and 92 sample matrix was found to be peat.

This report was issued to include addition of salinites and particle size analysis requested by Susan McGillivray of Matrix on Feb. 12th. Report 966613 is an addendum to report 964596.

This report was issued to include addition of salinites, particle size, CEC, cations, and TKN analysis requested by Susan McGillivray of Matrix on Feb. 6th. Report 964596 is an addendum to report 776560.

This report was issued to include addition of TOC and % organic matter analysis requested by Susan McGillivray of Matrix on Feb. 6th. Report 964602 is an addendum to report 964596.

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 Company: Matrix

Project
ID: 4455-514
Name: NAOSC EIA
Location: Corner and Lesimer
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 495268
 Control Number: M 015006
 Date Received: Sep 25, 2006
 Date Reported: Oct 04, 2006
 Report Number: 909487

NWL Number	495268-1	495268-2	495268-3
Sample Date	Sep 21, 2006	Sep 21, 2006	Sep 21, 2006
Sample Description	MLD / 4455060921301 / 0-40 / cm	KWS Of / 4455060921302 / 0-5 / cm	KWS Ae / 4455060921303 / 0-5 / cm
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Classification						
Total Nitrogen	TKN	%	1.43	0.69	0.10	0.01
Calcium	Cations	mg/kg	9190	8450	845	4
Magnesium	Cations	mg/kg	1060	700	77	2
Potassium	Cations	mg/kg	1000	300	90	20
Sodium	Cations	mg/kg	130	<60	<10	12
Base saturation		%	80	71	47	1
Calcium		meq/100g	45.9	42.2	4.22	0.0003
Magnesium		meq/100g	8.72	5.8	0.64	0.0008
Sodium		meq/100g	0.56	<0.3	<0.05	0.003
Potassium		meq/100g	2	0.8	0.2	0.003
ESP		%	0.78	<0.4	<0.5	0.2
TEC		meq/100g	58	49	5	2
Cation Exchange Capacity		meq/100g	71.6	69.0	10.8	
Organic Matter		%	75	86	4	1
Carbon	Total Organic	%	37.5	42.8	1.85	0.05
Salinity						
pH	Saturated Paste	pH	6.1	5.8	5.3	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.32	0.09	0.11	0.01
SAR	Saturated Paste		0.6	0.1	0.1	
% Saturation		%	544	702	62	
Calcium	Saturated Paste	meq/L	1.02	0.67	0.55	0.01
Calcium	Saturated Paste	mg/kg	111	94.0	6.9	
Magnesium	Saturated Paste	meq/L	0.49	0.25	0.25	0.02
Magnesium	Saturated Paste	mg/kg	32.6	21.0	1.9	
Sodium	Saturated Paste	meq/L	0.53	0.05	0.09	0.04
Sodium	Saturated Paste	mg/kg	67	9	1	
Potassium	Saturated Paste	meq/L	1.22	0.19	0.15	0.03
Potassium	Saturated Paste	mg/kg	258	51	4	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



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 Company: Matrix

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Name: NAOSC EIA
Location: Corner and Lesimer
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 495268
 Control Number: M 015006
 Date Received: Sep 25, 2006
 Date Reported: Oct 04, 2006
 Report Number: 909487

NWL Number	495268-3	495268-4	495268-5
Sample Date	Sep 21, 2006	Sep 21, 2006	Sep 21, 2006
Sample Description	KWS Ae / 4455060921303 / 0-5 / cm	KWS Bt / 4455060921304 / 5-46 / cm	KWS Ck / 4455060921305 / 46-120 / cm
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties					
Texture		Sandy Loam	Sandy Clay Loam	Sandy Clay Loam	
Sand	Soil Texture	% by weight	55.4	47.4	49.4
Silt	Soil Texture	% by weight	36.6	27.6	27.0
Clay	Soil Texture	% by weight	8.0	25.0	23.6



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 Company: Matrix

Project
ID: 4455-514
Name: NAOSC EIA
Location: Corner and Lesimer
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 495268
Control Number: M 015006
Date Received: Sep 25, 2006
Date Reported: Oct 04, 2006
Report Number: 909487

NWL Number	495268-4	495268-5	495268-6
Sample Date	Sep 21, 2006	Sep 21, 2006	Sep 22, 2006
Sample Description	KWS Bt / 4455060921304 / 5-46 / cm	KWS Ck / 4455060921305 / 46-120 / cm	MIL Of / 4455060922301 / 0-10 / cm
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Classification						
Total Nitrogen	TKN	%	0.05	0.04	0.45	0.01
Calcium	Cations	mg/kg	1500	4730	2600	4
Magnesium	Cations	mg/kg	220	303	530	2
Potassium	Cations	mg/kg	100	80	3000	20
Sodium	Cations	mg/kg	<10	<10	<60	12
Base saturation		%	52	188	34	1
Calcium		meq/100g	7.47	23.6	13.0	0.0003
Magnesium		meq/100g	1.81	2.49	4.4	0.0008
Sodium		meq/100g	<0.05	<0.05	<0.3	0.003
Potassium		meq/100g	0.3	0.2	7.6	0.003
ESP		%	<0.3	<0.4	<0.4	0.2
TEC		meq/100g	10	26	25	2
Cation Exchange Capacity		meq/100g	18.3	14.0	74.2	
Organic Matter		%	1	1	86	1
Carbon	Total Organic	%	0.64	0.62	42.8	0.05
Salinity						
pH	Saturated Paste	pH	5.2	7.3	4.3	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.06	0.26	0.35	0.01
SAR	Saturated Paste		0.2	0.1	0.1	
% Saturation		%	46	55	1010	
Calcium	Saturated Paste	meq/L	0.22	1.91	1.16	0.01
Calcium	Saturated Paste	mg/kg	2.0	20.9	234	
Magnesium	Saturated Paste	meq/L	0.10	0.61	0.56	0.02
Magnesium	Saturated Paste	mg/kg	0.6	4.1	68.7	
Sodium	Saturated Paste	meq/L	0.10	0.13	0.11	0.04
Sodium	Saturated Paste	mg/kg	1	2	26	
Potassium	Saturated Paste	meq/L	0.07	<0.03	2.00	0.03
Potassium	Saturated Paste	mg/kg	1	<1	788	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



Analytical Report

Norwest Labs
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 Phone: (780) 438-5522
 Fax: (780) 438-0396

Bill to: Matrix Solutions Inc.
Report to: Matrix Solutions Inc.
 230, 319 - 2 Avenue S. W.
 Calgary, AB, Canada
 T2P 0C5
 Attn: Andre Peloquin
 Sampled By: Kyle Hodgson
 Company: Matrix

Project
ID: 4455-514
Name: NAOSC EIA
Location: Corner and Lesimer
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 495268
Control Number: M 015006
Date Received: Sep 25, 2006
Date Reported: Oct 04, 2006
Report Number: 909487

NWL Number	495268-7	495268-8	495268-9
Sample Date	Sep 22, 2006	Sep 22, 2006	Sep 22, 2006
Sample Description	WHK 15 Of / 4455060922300 / 0-4 / cm Soil	MIL Ae / 4455060922302 / 0-6 / cm Soil	MIL Bm / 4455060922303 / 6-14 / cm Soil
Matrix			

Analyte	Units	Results	Results	Results	Detection Limit	
Classification						
Total Nitrogen	TKN	%	0.59	0.04	0.02	0.01
Calcium	Cations	mg/kg	6680	1150	886	4
Magnesium	Cations	mg/kg	660	170	130	2
Potassium	Cations	mg/kg	1700	20	20	20
Sodium	Cations	mg/kg	<60	<10	<10	12
Base saturation		%	52	81	89	1
Calcium		meq/100g	33.4	5.75	4.42	0.0003
Magnesium		meq/100g	5.4	1.4	1.1	0.0008
Sodium		meq/100g	<0.3	<0.05	<0.05	0.003
Potassium		meq/100g	4.4	0.06	0.06	0.003
ESP		%	<0.3	<0.6	<0.8	0.2
TEC		meq/100g	43	7	6	2
Cation Exchange Capacity		meq/100g	83.9	8.85	6.25	
Organic Matter		%	84	2	<1	1
Carbon	Total Organic	%	42.0	0.87	0.49	0.05
Salinity						
pH	Saturated Paste	pH	4.4	6.3	6.8	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.43	0.27	0.22	0.01
SAR	Saturated Paste		0.1	0.2	0.2	
% Saturation		%	926	32	32	
Calcium	Saturated Paste	meq/L	1.92	1.78	1.61	0.01
Calcium	Saturated Paste	mg/kg	355	11.3	10.3	
Magnesium	Saturated Paste	meq/L	0.64	1.01	0.80	0.02
Magnesium	Saturated Paste	mg/kg	71.3	3.9	3.1	
Sodium	Saturated Paste	meq/L	0.12	0.22	0.21	0.04
Sodium	Saturated Paste	mg/kg	26	2	2	
Potassium	Saturated Paste	meq/L	2.45	0.04	0.03	0.03
Potassium	Saturated Paste	mg/kg	884	<1	<1	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



Analytical Report

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Report to: Matrix Solutions Inc.
 230, 319 - 2 Avenue S. W.
 Calgary, AB, Canada
 T2P 0C5
 Attn: Andre Peloquin
 Sampled By: Kyle Hodgson
 Company: Matrix

Project
ID: 4455-514
Name: NAOSC EIA
Location: Corner and Lesimer
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 495268
 Control Number: M 015006
 Date Received: Sep 25, 2006
 Date Reported: Oct 04, 2006
 Report Number: 909487

NWL Number	495268-8	495268-9	495268-10
Sample Date	Sep 22, 2006	Sep 22, 2006	Sep 22, 2006
Sample Description	MIL Ae / 4455060922302 / 0-6 / cm	MIL Bm / 4455060922303 / 6-14 / cm	MIL Bc / 4455060922304 / 14-120 / cm
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties					
Texture		Sandy Loam	Sandy Loam	Sandy Loam	
Sand	Soil Texture	% by weight	73.4	74.8	69.4
Silt	Soil Texture	% by weight	19.6	18.2	17.0
Clay	Soil Texture	% by weight	7.0	7.0	13.6



Analytical Report

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 Attn: Andre Peloquin
 Sampled By: Kyle Hodgson
 Company: Matrix

Project
ID: 4455-514
Name: NAOSC EIA
Location: Corner and Lesimer
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 495268
 Control Number: M 015006
 Date Received: Sep 25, 2006
 Date Reported: Oct 04, 2006
 Report Number: 909487

NWL Number	495268-10	495268-11	495268-12
Sample Date	Sep 22, 2006	Sep 23, 2006	Sep 23, 2006
Sample Description	MIL Bc / 4455060922304 / 14-120 / cm	STP Of / 4455060923300 / 0-20 / cm	STP BCa / 4455060923001 / 20-120 / cm
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Classification						
Total Nitrogen	TKN	%	0.03	0.88	0.06	0.01
Calcium	Cations	mg/kg	1050	1780	1880	4
Magnesium	Cations	mg/kg	190	560	619	2
Potassium	Cations	mg/kg	40	4000	100	20
Sodium	Cations	mg/kg	<10	<60	<10	12
Base saturation		%	82	26	89	1
Calcium		meq/100g	5.23	8.88	9.38	0.0003
Magnesium		meq/100g	1.6	4.6	5.09	0.0008
Sodium		meq/100g	<0.05	<0.3	<0.05	0.003
Potassium		meq/100g	0.1	10	0.3	0.003
ESP		%	<0.6	<0.3	<0.3	0.2
TEC		meq/100g	7	24	15	2
Cation Exchange Capacity		meq/100g	8.42	90.1	16.6	
Organic Matter		%	<1	88	2	1
Carbon	Total Organic	%	0.20	43.9	0.78	0.05
Salinity						
pH	Saturated Paste	pH	6.4	4.3	6.2	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.11	0.47	0.14	0.01
SAR	Saturated Paste		0.2	0.1	0.2	
% Saturation		%	28	874	54	
Calcium	Saturated Paste	meq/L	0.85	0.61	0.68	0.01
Calcium	Saturated Paste	mg/kg	4.8	107	7.3	
Magnesium	Saturated Paste	meq/L	0.39	0.48	0.54	0.02
Magnesium	Saturated Paste	mg/kg	1.3	50.8	3.5	
Sodium	Saturated Paste	meq/L	0.20	0.08	0.16	0.04
Sodium	Saturated Paste	mg/kg	1	16	2	
Potassium	Saturated Paste	meq/L	0.04	3.57	0.05	0.03
Potassium	Saturated Paste	mg/kg	<1	1220	1	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



Analytical Report

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Report to: Matrix Solutions Inc.
 230, 319 - 2 Avenue S. W.
 Calgary, AB, Canada
 T2P 0C5
 Attn: Andre Peloquin
 Sampled By: Kyle Hodgson
 Company: Matrix

Project
ID: 4455-514
Name: NAOSC EIA
Location: Corner and Lesimer
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 495268
 Control Number: M 015006
 Date Received: Sep 25, 2006
 Date Reported: Oct 04, 2006
 Report Number: 909487

	NWL Number	495268-12	495268-13	495268-14
Sample Date	Sep 23, 2006	Sep 22, 2006	Sep 22, 2006	Sep 22, 2006
Sample Description	STP BCa / 4455060923001 / 20-120 / cm	KWS Ae / 4455060922001 / 0-10 / cm	KWS Bt / 4455060922002 / 10-50 / cm	
Matrix	Soil	Soil	Soil	

Analyte	Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties					
Texture		Silt Loam	Sandy Loam	Loam	
Sand	Soil Texture	% by weight	20.4	61.4	44.4
Silt	Soil Texture	% by weight	53.2	34.2	36.6
Clay	Soil Texture	% by weight	26.4	4.4	19.0



Analytical Report

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 Calgary, AB, Canada
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 Attn: Andre Peloquin
 Sampled By: Kyle Hodgson
 Company: Matrix

Project
ID: 4455-514
Name: NAOSC EIA
Location: Corner and Lesimer
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 495268
 Control Number: M 015006
 Date Received: Sep 25, 2006
 Date Reported: Oct 04, 2006
 Report Number: 909487

NWL Number	495268-13	495268-14	495268-15
Sample Date	Sep 22, 2006	Sep 22, 2006	Sep 22, 2006
Sample Description	KWS Ae / 4455060922001 / 0-10 / cm	KWS Bt / 4455060922002 / 10-50 / cm	KWS Bc / 4455060922003 / 50-100 / cm
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit	
Classification						
Total Nitrogen	TKN	%	0.03	0.02	0.03	0.01
Calcium	Cations	mg/kg	213	782	506	4
Magnesium	Cations	mg/kg	30	273	180	2
Potassium	Cations	mg/kg	50	80	30	20
Sodium	Cations	mg/kg	<10	<10	<10	12
Base saturation		%	43	50	52	1
Calcium		meq/100g	1.06	3.90	2.52	0.0003
Magnesium		meq/100g	0.25	2.24	1.5	0.0008
Sodium		meq/100g	<0.05	<0.05	<0.05	0.003
Potassium		meq/100g	0.1	0.2	0.08	0.003
ESP		%	<2	<0.4	<0.7	0.2
TEC		meq/100g	<2	6	4	2
Cation Exchange Capacity		meq/100g	3.33	12.6	7.87	
Organic Matter		%	1	<1	<1	1
Carbon	Total Organic	%	0.70	0.24	0.15	0.05
Salinity						
pH	Saturated Paste	pH	4.6	4.9	5.0	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.12	0.05	0.04	0.01
SAR	Saturated Paste		0.2	0.5	0.7	
% Saturation		%	57	36	29	
Calcium	Saturated Paste	meq/L	0.67	0.07	0.07	0.01
Calcium	Saturated Paste	mg/kg	7.7	0.5	0.4	
Magnesium	Saturated Paste	meq/L	0.31	0.07	0.07	0.02
Magnesium	Saturated Paste	mg/kg	2.1	0.3	0.2	
Sodium	Saturated Paste	meq/L	0.12	0.14	0.19	0.04
Sodium	Saturated Paste	mg/kg	2	1	1	
Potassium	Saturated Paste	meq/L	0.18	0.05	0.03	0.03
Potassium	Saturated Paste	mg/kg	4	<1	<1	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



Analytical Report

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Report to: Matrix Solutions Inc.
 230, 319 - 2 Avenue S. W.
 Calgary, AB, Canada
 T2P 0C5
 Attn: Andre Peloquin
 Sampled By: Kyle Hodgson
 Company: Matrix

Project
ID: 4455-514
Name: NAOSC EIA
Location: Corner and Lesimer
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 495268
 Control Number: M 015006
 Date Received: Sep 25, 2006
 Date Reported: Oct 04, 2006
 Report Number: 909487

	NWL Number	495268-15	495268-16	495268-17
Sample Date	Sep 22, 2006	Sep 23, 2006	Sep 23, 2006	Sep 23, 2006
Sample Description	KWS Bc / 4455060922003 / 50-100 / cm	WNF Bm / 4455060923004 / 10-25 / cm	WNF Bt / 4455060923005 / 25-55 / cm	
Matrix	Soil	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties					
Texture		Sandy Loam	Silt Loam	Clay Loam	
Sand	Soil Texture	% by weight 70.0	18.0	25.4	
Silt	Soil Texture	% by weight 18.0	61.6	45.6	
Clay	Soil Texture	% by weight 12.0	20.4	29.0	



Analytical Report

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Report to: Matrix Solutions Inc.
 230, 319 - 2 Avenue S. W.
 Calgary, AB, Canada
 T2P 0C5
 Attn: Andre Peloquin
 Sampled By: Kyle Hodgson
 Company: Matrix

Project
ID: 4455-514
Name: NAOSC EIA
Location: Corner and Lesimer
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 495268
 Control Number: M 015006
 Date Received: Sep 25, 2006
 Date Reported: Oct 04, 2006
 Report Number: 909487

NWL Number	495268-16	495268-17	495268-18
Sample Date	Sep 23, 2006	Sep 23, 2006	Sep 23, 2006
Sample Description	WNF Bm / 4455060923004 / 10-25 / cm	WNF Bt / 4455060923005 / 25-55 / cm	WNF Ilc / 4455060923006 / 55-100 / cm
Matrix	Soil	Soil	Soil

Analyte		Units	Results	Results	Results	Detection Limit
Classification						
Total Nitrogen	TKN	%	0.05	0.04	0.07	0.01
Calcium	Cations	mg/kg	430	953	820	4
Magnesium	Cations	mg/kg	78	254	240	2
Potassium	Cations	mg/kg	60	90	80	20
Sodium	Cations	mg/kg	<10	<10	10	12
Base saturation		%	25	37	40	1
Calcium		meq/100g	2.15	4.76	4.09	0.0003
Magnesium		meq/100g	0.64	2.09	1.97	0.0008
Sodium		meq/100g	<0.05	<0.05	0.06	0.003
Potassium		meq/100g	0.2	0.2	0.2	0.003
ESP		%	<0.4	<0.3	0.4	0.2
TEC		meq/100g	3	7	6	2
Cation Exchange Capacity		meq/100g	11.7	18.9	15.6	
Organic Matter		%	1	<1	<1	1
Carbon	Total Organic	%	0.63	0.48	0.42	0.05
Salinity						
pH	Saturated Paste	pH	5.0	5.0	5.0	
Electrical Conductivity	Saturated Paste	dS/m at 25 C	0.07	0.05	0.07	0.01
SAR	Saturated Paste		0.2	0.4	0.5	
% Saturation		%	49	53	45	
Calcium	Saturated Paste	meq/L	0.32	0.12	0.20	0.01
Calcium	Saturated Paste	mg/kg	3.1	1.3	1.8	
Magnesium	Saturated Paste	meq/L	0.16	0.09	0.11	0.02
Magnesium	Saturated Paste	mg/kg	1.0	0.6	0.6	
Sodium	Saturated Paste	meq/L	0.12	0.12	0.20	0.04
Sodium	Saturated Paste	mg/kg	1	2	2	
Potassium	Saturated Paste	meq/L	0.06	0.05	0.08	0.03
Potassium	Saturated Paste	mg/kg	1	<1	1	
TGR	Saturated Paste	T/ac	<0.1	<0.1	<0.1	



Analytical Report

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Report to: Matrix Solutions Inc.
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Calgary, AB, Canada
T2P 0C5
Attn: Andre Peloquin
Sampled By: Kyle Hodgson
Company: Matrix

Project
ID: 4455-514
Name: NAOSC EIA
Location: Corner and Lesimer
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 495268
Control Number: M 015006
Date Received: Sep 25, 2006
Date Reported: Oct 04, 2006
Report Number: 909487

NWL Number 495268-18
Sample Date Sep 23, 2006
Sample Description WNF IIc /
4455060923006 /
55-100 / cm
Matrix Soil

Analyte	Units	Results	Results	Results	Detection Limit
Physical and Aggregate Properties					
Texture		Sandy Loam			
Sand	Soil Texture	% by weight	57.4		
Silt	Soil Texture	% by weight	25.0		
Clay	Soil Texture	% by weight	17.6		

Approved by:

Anthony Neumann, MSc
Laboratory Operations Manager



Quality Control

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Project
ID: 4455-514
Name: NAOSC EIA
Location: Corner and Lesimer
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 495268
 Control Number: M 015006
 Date Received: Sep 25, 2006
 Date Reported: Oct 04, 2006
 Report Number: 909487

Classification

Blanks	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
Calcium	mg/kg	7	0.0	-1.0	1.0	✓
Magnesium	mg/kg	<2	0.0	-0.5	0.5	✓
Potassium	mg/kg	<20	0	-5	5	✓
Sodium	mg/kg	<10	0.0	-3.0	3.0	✓
Ammonium - N	mg/kg	73.7	4.15	-2.87	11.17	✓
Material Used: Edmonton Method Blank						
Date Acquired: Sep 28, 2006						
Acquired By: Gordon Grensmann						
Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Calcium	meq/100g	45.9	45.5	9.9900	0.0009	✓
Magnesium	meq/100g	8.72	8.71	9.9900	0.0024	✓
Sodium	meq/100g	0.56	0.51	9.990	0.009	✓
Potassium	meq/100g	2	2	9.990	0.009	✓
Cation Exchange Capacity	meq/100g	71.6	77.5	9.99	0.10	✓
Material Used: Edmonton Duplicate						
Date Acquired: Sep 28, 2006						
Acquired By: Gordon Grensmann						
Carbon	%	0.49	0.48	20.01	0.10	✓
Material Used: FSJ Duplicate						
Date Acquired: Sep 29, 2006						
Acquired By: Alecia Honkanen						
Control Sample	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
Carbon	%	4.32	4.41	3.09	5.73	✓
Material Used: 2001 Farm Soil Standard						
Date Acquired: Sep 29, 2006						
Acquired By: Alecia Honkanen						
Calcium	meq/100g	15.9	16.2000	6.4500	25.9500	✓
Magnesium	meq/100g	8.70	13.8000	5.4000	22.2000	✓
Sodium	meq/100g	7.11	6.600	2.550	10.650	✓
Potassium	meq/100g	0.54	0.532	0.202	0.862	✓
Cation Exchange Capacity	meq/100g	32.6	31.50	16.50	46.50	✓
Material Used: 2003 CEC Standard						
Date Acquired: Sep 28, 2006						
Acquired By: Gordon Grensmann						
Total Nitrogen	%	0.15	0.15	0.06	0.24	✓
Material Used: S-2005-B						
Date Acquired: Oct 03, 2006						
Acquired By: Alison Zook						



Quality Control

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 Attn: Andre Peloquin
 Sampled By: Kyle Hodgson
 Company: Matrix

Project
ID: 4455-514
Name: NAOSC EIA
Location: Corner and Lesimer
LSD:
P.O.:
Acct. Code:

NWL Lot ID: 495268
Control Number: M 015006
Date Received: Sep 25, 2006
Date Reported: Oct 04, 2006
Report Number: 909487

Physical and Aggregate Properties

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Sand	% by weight	65.6	64.6	10.0	0.1	✓
Silt	% by weight	31.6	31.6	10.0	0.1	✓
Clay	% by weight	30.4	30.0	10.0	0.1	✓

Material Used: Edmonton Duplicate
 Date Acquired: Sep 28, 2006
 Acquired By: Holly Fairbairn

Control Sample	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
Sand	% by weight	47.2	46.6	40.7	52.5	✓
Silt	% by weight	25.2	25.7	20.4	31.0	✓
Clay	% by weight	29.4	28.8	23.9	33.7	✓

Material Used: 2006-Physical Standard
 Date Acquired: Sep 28, 2006
 Acquired By: Jessica Lam

Salinity

Blanks	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
Calcium	mg/L	<0.2	0.4	-0.5	1.3	✓
Magnesium	mg/L	<0.2	0.1	-0.3	0.5	✓
Sodium	mg/L	<1	3	-2	8	✓
Potassium	mg/L	<1	0.1	-0.4	0.6	✓

Material Used: Edmonton Method Blank
 Date Acquired: Sep 28, 2006
 Acquired By: Bvul Sim

Control Sample	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
pH	pH	7.8	7.5	6.0	9.0	✓
Electrical Conductivity	dS/m at 25 C	4.95	5.70	3.57	7.83	✓
% Saturation	%	71	74	67	81	✓
Calcium	mg/L	63.6	71.1	39.0	103.2	✓
Magnesium	mg/L	11.8	14.8	5.9	23.7	✓
Sodium	mg/L	1200	1133	719	1547	✓
Potassium	mg/L	12	5.7	2.4	9.1	✓

Material Used: 2006 Salinity Standard
 Date Acquired: Sep 28, 2006
 Acquired By: Bvul Sim



Methodology and Notes

Norwest Labs
7217 Roper Road NW
Edmonton, AB. T6B 3J4
Phone: (780) 438-5522
Fax: (780) 438-0396

Bill to: Matrix Solutions Inc.
Report to: Matrix Solutions Inc.
230, 319 - 2 Avenue S. W.
Calgary, AB, Canada
T2P 0C5
Attn: Andre Peloquin
Sampled By: Kyle Hodgson
Company: Matrix

Project
ID: 4455-514
Name: NAOSC EIA
Location: Corner and Lesimer
LSD:
P.O.:
Acct. Code:

NWL Lot ID: **495268**
Control Number: M 015006
Date Received: Sep 25, 2006
Date Reported: Oct 04, 2006
Report Number: 909487

Page: 14 of 14

Method of Analysis:

MethodName	Reference	Method	Date Analysis Started	Location
Carbon and Nitrogen in soil (FSJ)	SSSA Book Series 5	* Total Carbon, Organic Carbon, and Organic Matter, Ch 34	2-Oct-06	Norwest Labs Fort St. John
Cation Exchange Capacity (CEC) - Ammonium	McKeague	* CEC and Exchangeable Cations by NH4OAc at pH 7, 3.32	29-Sep-06	Norwest Labs Edmonton
Cation Exchange Capacity (CEC) for General Soil	McKeague	* CEC and Exchangeable Cations by NH4OAc at pH 7, 3.32	29-Sep-06	Norwest Labs Edmonton
Particle Size Analysis - GS	Carter	* Hydrometer Method, 47.3	28-Sep-06	Norwest Labs Edmonton
Saturated Paste in General Soil	McKeague	* EC of Saturated Soil Paste, 4.13	28-Sep-06	Norwest Labs Edmonton
Saturated Paste in General Soil	McKeague	* EC of Saturated Soil Paste, 4.13	28-Sep-06	Norwest Labs Edmonton
Saturated Paste in General Soil	McKeague	* pH of Saturated Soil Paste, 3.14	28-Sep-06	Norwest Labs Edmonton
Saturated Paste in General Soil	McKeague	* pH of Saturated Soil Paste, 3.14	28-Sep-06	Norwest Labs Edmonton
Saturated Paste in General Soil	McKeague	* Soluble Salts in Saturation Extract, 3.21	28-Sep-06	Norwest Labs Edmonton
Saturated Paste in General Soil	McKeague	* Soluble Salts in Saturation Extract, 3.21	28-Sep-06	Norwest Labs Edmonton

* Norwest method(s) is based on reference method

References:

Carter Soil Sampling and Methods of Analysis
McKeague Manual on Soil Sampling and Methods of Analysis
SSSA Book Series 5 Methods of Soil Analysis, Part 3

Comments:

Particle size analysis could not be performed on samples 1, 2, 6, 7 and 11 as these samples were a peat matrix.

Please direct any inquiries regarding this report to our Client Services group.
Results relate only to samples as submitted

The test report shall not be reproduced except in full, without the written approval of the laboratory



**NORWEST
LABS**

Confirmation of Analysis

Lot: 470192

Number of Samples: 125

Printed Date: Jun 15, 2006

Norwest Labs Edmonton

7217 Roper Road NW Edmonton, AB Canada T6B 3J4

Tel: (780) 438-5522

Fax: (780) 438-0396

(800) 661-7645

Main Contact:

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Matrix Solutions Inc.
230, 319 - 2 Avenue S. W.
Calgary, AB T2P 0C5
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Primary Administrator Contact:

Attn: Andre Peloquin
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Bill Paid by:

Attn: Marim Halat
Matrix Solutions Inc.
230, 319 - 2 Avenue S. W.
Calgary, AB T2P 0C5
Phone: (403) 237-0606
Fax: (403) 263-2493

Agreement Id	<u>15610</u>	Project Id	<u>4706-514</u>	PO #	_____
Project Name	<u>Nexen Longlake EIA</u>		Project Location	_____	
Project Accounting Code	_____		Project LSD	_____	

Control ID: M 013602 Sampled by: NM/SM
Completion Date: **15-Jun-2006** Company: Matrix Solutions
Received Date: 12-Jun-2006

<i>Other Billable Services</i>	<i>Service</i>	<i>Service Name</i>	<i>Quantity</i>

		<i>Sample Descriptors</i>	<i>Service</i>	<i>Service Name</i>
Sample Id:	1 1895128	Sample depth 15-0 Sample depth UOM cm Sample Description 476060605100 Site I.D. SM02-LFH	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority:	Normal			
Date Sampled:	05-Jun-2006			
Time Sampled:				
Sampling Method:	Grab			
Sample Location:				
Sample Id:	2 1895229	Sample depth 0-14 Sample depth UOM cm Sample Description 476060605101 Site I.D. SM02-Ae	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority:	Normal			
Date Sampled:	05-Jun-2006			
Time Sampled:				
Sampling Method:	Grab			
Sample Location:				

Please verify that the above information is correct. If not or if you have any questions, please contact Client Services at Tel: (780) 438-5522

Sample Id: 108 1895335	Sample depth 0-20 Sample depth UOM cm Sample Description 476060605311 Site I.D. KH9-Om	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority: Normal Date Sampled: Time Sampled: Sampling Method: Grab Sample Location:			
Sample Id: 109 1895336	Sample depth 20-66 Sample depth UOM cm Sample Description 476060605312 Site I.D. KH9-Om	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority: Normal Date Sampled: Time Sampled: Sampling Method: Grab Sample Location:			
Sample Id: 110 1895337	Sample depth 66-120 Sample depth UOM cm Sample Description 476060605313 Site I.D. KH9-Bg	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority: Normal Date Sampled: Time Sampled: Sampling Method: Grab Sample Location:			
Sample Id: 111 1895338	Sample depth 0-20 Sample depth UOM cm Sample Description 476060605314 Site I.D. KH11-Of	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority: Normal Date Sampled: Time Sampled: Sampling Method: Grab Sample Location:			
Sample Id: 112 1895339	Sample depth 20-220 Sample depth UOM cm Sample Description 476060605315 Site I.D. KH11-Of	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority: Normal Date Sampled: Time Sampled: Sampling Method: Grab Sample Location:			
Sample Id: 113 1895344	Sample depth 10-0 Sample depth UOM cm Sample Description 476060605316 Site I.D. KH12-LFH	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority: Normal Date Sampled: Time Sampled: Sampling Method: Grab Sample Location:			
Sample Id: 114 1895345	Sample depth 0-4 Sample depth UOM cm Sample Description 476060605317 Site I.D. KH12-Ahe	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority: Normal Date Sampled: Time Sampled: Sampling Method: Grab Sample Location:			

Please verify that the above information is correct. If not or if you have any questions, please contact Client Services at Tel: (780) 438-5522

Sample Id: 115 1895346	Sample depth 4-28 Sample depth UOM cm Sample Description 476060605318 Site I.D. KH12-Ae	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority: Normal Date Sampled: Time Sampled: Sampling Method: Grab Sample Location:			
Sample Id: 116 1895347	Sample depth 28-53 Sample depth UOM cm Sample Description 476060605319 Site I.D. KH12-Bt	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority: Normal Date Sampled: Time Sampled: Sampling Method: Grab Sample Location:			
Sample Id: 117 1895348	Sample depth 53-120 Sample depth UOM cm Sample Description 476060605320 Site I.D. KH12-BC	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority: Normal Date Sampled: Time Sampled: Sampling Method: Grab Sample Location:			
Sample Id: 118 1895349	Sample depth 5-0 Sample depth UOM cm Sample Description 476060606321 Site I.D. KH5-LFH	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority: Normal Date Sampled: Time Sampled: Sampling Method: Grab Sample Location:			
Sample Id: 119 1895350	Sample depth 0-16 Sample depth UOM cm Sample Description 476060606322 Site I.D. KH5-Ahe/Ae	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority: Normal Date Sampled: Time Sampled: Sampling Method: Grab Sample Location:			
Sample Id: 120 1895351	Sample depth 16-25 Sample depth UOM cm Sample Description 476060606323 Site I.D. KH5-Bm	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority: Normal Date Sampled: Time Sampled: Sampling Method: Grab Sample Location:			
Sample Id: 121 1895352	Sample depth 25-50 Sample depth UOM cm Sample Description 476060606324 Site I.D. KH5-Bt	05 DISP HOLD	Drying and Grinding Disposal of Soil/Water Sample Hold
Priority: Normal Date Sampled: Time Sampled: Sampling Method: Grab Sample Location:			

*Please verify that the above information is correct. If not or if you have any questions,
please contact Client Services at Tel: (780) 438-5522*

Appendix 10A Concordance of Alberta Wetland (AWI) Classification with Ecosite Phase Classification of Beckingham and Archibald (1996) for Terrestrial and Wetland Communities

Land Group	Beckingham & Archibald Ecosite Phase		AWI	
	Central Mixedwood	Lower Boreal Highland		
Terrestrial	a1	a1	n/a	
	b1	b1	n/a	
	b2	n/a	n/a	
	b3	b2	n/a	
	b4	b3	n/a	
	c1	c1	n/a	
	d1	d1	n/a	
	d2	d2	n/a	
	d3	d3	n/a	
	d4	n/a	n/a	
	e2	n/a	n/a	
	e3	e1	n/a	
	f1	n/a	n/a	
	f2	n/a	n/a	
	f3	f1	n/a	
	g1	g1	n/a	
	h1	n/a	n/a	
Wetland			Wetland	Peatland
	h1	n/a	Swamp (SFNN, STNN)	NO
	i1	h1	Treed Bog (BFXC, BFXN,BTNI, BTNN, BTNR, BTXC, BTXN)	YES
	i2	h2	Shrubby Bog (BONS, BOXC, BOXN)	YES
	j1	i1	Treed Fen (FTNI, FTNN, FTNR, FTPN)	YES
	j2	i2	Shrubby Fen (FONG, FONS, FOPN)	YES
	k1	j1	Treed Fen (FTNI, FTNN, FTNR, FTPN)	YES
	k2	j2	Shrubby Fen (FONG, FONS, FOPN)	YES
	k3	j3	Graminoid Fen (FONG)	YES
	l1	n/a	Marsh (MONG)	NO
n/a	n/a	Shrubby Swamp (SONS)	NO	
n/a	n/a	Shallow Open Water (WONN)	NO	

Central Mixedwood Ecosite Phase Descriptions

Ecosite Phase	Description
a1	Upland - Coniferous forest of Jack pine (<i>Pinus banksiana</i>). Shrub species include Blueberry (<i>Vaccinium myrtilloides</i>), Bearberry (<i>Arctostaphylos uva-ursi</i>), Bog cranberry (<i>Vaccinium vitis-idaea</i>), and Sand heather (<i>Hudsonia tomentosa</i>). Reindeer lichen (<i>Cladina</i> species) and other lichens carpet the forest floor. This ecosite has dry moisture conditions, rapidly drained, sandy, usually acidic soil (Brunisols), and poor nutrient status.
b1	Upland - Mixedwood forest of Jack pine (<i>Pinus banksiana</i>), and Aspen (<i>Populus tremuloides</i>). Some White birch (<i>Betula papyrifera</i>) may also be present. Shrub species include Blueberry (<i>Vaccinium myrtilloides</i>), Labrador tea (<i>Ledum groenlandicum</i>), and Prickly rose (<i>Rosa acicularis</i>). Ground cover is typically composed of Bog cranberry (<i>Vaccinium vitis-idaea</i>), Bearberry (<i>Arctostaphylos uva-ursi</i>), Twin-flower (<i>Linnaea borealis</i>), and Feather mosses. Reindeer lichen (<i>Cladina</i> species) may also be present. Underlying soils (Brunisols, Luvisols) associated with this ecosite phase can be fine to coarse sands or gravels, and glacial till (a mixture ranging from clay to boulders). Moisture conditions and nutrient conditions are dry to moderate and poor to medium respectively.
b2	Upland - Deciduous forest of Aspen (<i>Populus tremuloides</i>) and White birch (<i>Betula papyrifera</i>). White spruce (<i>Picea glauca</i>) may also be present. Shrub species include Bearberry, Labrador tea, Blueberry, Green alder, Bog cranberry, Prickly rose and Twin-flower. Feather mosses may be present. Underlying soils (Brunisols, Luvisols) associated with this ecosite phase can be fine to coarse sands or gravels, and glacial till (a mixture ranging from clay to boulders). Moisture conditions range from slightly dry to slightly moist and the nutrient regime ranges from poor to rich.
b3	Upland - Mixedwood forest of Aspen and White spruce. White birch and Jack pine may be present, usually <10% of canopy cover. Shrubs include Blueberry, Bearberry, Bog cranberry, Prickly rose, and occasionally Green alder (<i>Alnus crispa</i>). Underlying soils (Brunisols, Luvisols) associated with this ecosite phase can be fine to coarse sands or gravels, and glacial till (a mixture ranging from clay to boulders). Moisture conditions range from slightly moist to moist. The nutrient regime ranges from poor to medium.
b4	Upland - Coniferous forest of White spruce (<i>Picea glauca</i>) and Jack pine. White birch and Aspen may be present. Shrubs include Bearberry, Blueberry, Prickly rose, Labrador tea, and Saskatoon (<i>Amelanchier alnifolia</i>). Ground cover species may include Bunchberry (<i>Cornus canadensis</i>), wild lily-of-the-valley (<i>Maianthemum canadense</i>), Hairy wild rye (<i>Elymus innovatus</i>), Feather mosses and Reindeer lichens. Associated soils may be composed of coarse sands, gravels, rock and/or lake deposited sediment (Brunisols and Luvisols). The moisture regime ranges from dry to moderate and nutrient conditions range from poor to medium.
c1	Upland - Coniferous forest of Jack pine and Black spruce (<i>Picea mariana</i>). Shrubs consist of Labrador tea and Blueberry, and the ground cover is typically Bog cranberry, Feather mosses and Reindeer lichen. Labrador tea and Bog cranberry are indicative of acidic surface soil conditions. Associated soils (Brunisols, Luvisols) may be coarse sands and gravels, and glacial till. Moisture conditions range from slightly dry to slightly moist and it has a nutrient poor substrate.
d1	Upland - Deciduous forest composed mainly of Aspen. Balsam poplar (<i>Populus balsamifera</i>), White birch and White spruce may also be present. Shrubs that may be present include Prickly rose, Low-bush cranberry (<i>Viburnum edule</i>), Canada buffaloberry (<i>Shepherdia canadensis</i>), Beaked hazelnut (<i>Corylus cornuta</i>), and Saskatoon. Ground cover is typically composed of Twin-flower, Wild sarsaparilla (<i>Aralia nudicalis</i>), Bunchberry, Fireweed (<i>Epilobium angustifolium</i>), Marsh reed grass (<i>Calamagrostis canadensis</i>) and Hairy wild rye. Soils may be coarse sands and gravels, glacial till, or lake deposited sediment (Luvisols). It has a moderate moisture regime and a medium nutrient regime.
d2	Upland - Mixedwood forest of Aspen and White spruce. Balsam poplar, White birch, Balsam fir (<i>Abies balsamea</i>) and Black spruce may be present. Shrubs include Low-bush cranberry, Prickly rose, Canada buffaloberry, Saskatoon, Beaked hazelnut, Pin cherry (<i>Prunus pensylvanica</i>) and Choke cherry (<i>Prunus virginiana</i>). Ground cover species include Bunchberry, Wild sarsaparilla, Dewberry (<i>Rubus pubescens</i>), Fireweed, Marsh reed grass, Hairy wild rye and Feather mosses. Associated soils (Luvisols, Brunisols) are coarse sands and gravels, glacial till and lake deposited sand, silt or clay. Moisture is moderate and nutrient conditions are medium.
d3	Upland - Coniferous forest of White spruce (<i>Picea glauca</i>). Balsam fir, Aspen, White birch, Balsam poplar and Black spruce may also be present. Shrub species include Twin-flower, Low-bush cranberry, Prickly rose, Green alder and Buffaloberry. Soils may be coarse sands and gravels, glacial till, or lake deposited sediment (Luvisols). Moisture is moist to slightly wet and the Nutrient Regime ranges from poor to rich.
e1	Upland - Deciduous forest of Balsam poplar and Aspen. White birch and White spruce may be present in small percentages. Occasionally in some sites White birch may be dominant. Dogwood is the characteristic shrub species. Other shrubs may include Prickly rose, Low-bush cranberry, Bracted honeysuckle, Green and River alder, Willow, Currants, Red raspberry. Although an upland site the moisture regime is moist to slightly wet because they typically occur in lower slope positions or near water courses, seepages or flood waters. They are often old-growth forests due to fire skips. Underlying soil conditions are water deposited sediment (Gleysols, Luvisols). The nutrient regime is medium to rich and is a highly productive site.
e2	Upland - Mixedwood forest of Balsam poplar and White spruce. Aspen, White birch and Balsam fir may also be present. Shrub species include Dogwood, Low-bush cranberry, Prickly rose, Currant, Red raspberry, Wild sarsaparilla, Dewberry, Bunchberry and Horsetail and Feather mosses are typical understorey species. Although an upland site the moisture regime is moist to slightly wet because they typically occur in lower slope positions or near water courses, seepages or flood waters. They are often old-growth forests due to fire skips. Associated soils include glacial deposit till (mixture ranging from clay to boulders, lake and flowing water deposit sediment, post-glacial deposit of fine sand, silt or clay in lakebed (Gleysols, Luvisols). The nutrient regime is medium to rich and is a highly productive site.
e3	Upland - Coniferous forest of White spruce. Balsam fir, Balsam poplar, White birch and Aspen may also be present. Shrub species include Low-bush cranberry, Prickly rose, Alder, and Currants. Although an upland site the moisture regime is moist to slightly wet because they typically occur in lower slope positions or near water courses, seepages or flood waters. They are often old-growth forests due to fire skips. Associated soils include glacial deposit till (mixture ranging from clay to boulders, lake and flowing water deposit sediment, post-glacial deposit of fine sand, silt or clay in lakebed [Gleysols, Luvisols]). The nutrient regime is medium to rich and is a highly productive site.
f1	Upland - Deciduous forest of Aspen and Balsam poplar. White birch and White spruce may also be present. Characteristic of these sites are the presence of Horsetails in the understorey. Typical shrubs include Willow, Prickly rose, Alder and Dogwood. Although an upland site, the moisture regime is moist to wet because they typically occur in lower slope positions or near water courses, seepages or flood waters. Associated soils may consist of rock, lake deposit sediment, slumps (Regosols, Gleysols). Nutrient regime is medium to very rich.
f2	Upland - Mixedwood forest of White spruce and Birch. Balsam poplar, Aspen and Balsam fir may also be present. Characteristic of these sites are the presence of Horsetails in the understorey. Typical shrubs include Willow, Prickly rose, Dogwood and Low-bush cranberry. Although an upland site, the moisture regime is moist to wet because they typically occur in lower slope positions or near water courses, seepages or flood waters. Associated soils may be composed of lake and flowing water deposit of sediment, glacial deposit coarse sands and gravels, water deposit sediment (Gleysols). Nutrient regime is medium to rich.

Central Mixedwood Ecosite Phase Descriptions

Ecosite Phase	Description
f3	Upland - Coniferous of White spruce. Balsam fir, Aspen, Balsam poplar and White birch may be present but <10 % of canopy cover. Characteristic of these sites is Horsetails in the understorey. Shrubs include Twin-flower, Prickly rose, Low-bush cranberry and Currants. Although an upland site, the moisture regime is moist to wet because they typically occur in lower slope positions or near water courses, seepages or flood waters. Underlying soils may be composed of glacial deposit till (mixture ranging from clay to boulders), lake and flowing water deposit sediment, glacial deposit coarse sands and gravels (Gleysols). Nutrient status is medium to rich.
g1	Upland - Coniferous forest of Black spruce and Jack pine. Shrubs consist of Labrador tea and Blueberry. Prickly rose may also be present. Ground cover species include Bog cranberry, Twin-flower, Feather mosses and Peat mosses (<i>Sphagnum</i> species). Reindeer lichen may or may not be present. Labrador tea, Blueberry and Bog cranberry indicate acidic surface soil conditions. This ecosite phase tends to be found at lower topographic positions, has high soil water content and is imperfectly to very poorly drained. Associated soils include glacial deposit till (mixture ranging from clay to boulders), accumulation of organic matter, glacial deposit coarse sands and gravels, and lake deposit sediment (Gleysols, Luvisols). Nutrient regime is poor.
h1	Upland - Coniferous forest of White spruce and Black spruce. A very small percentage of White birch and Tamarack may be present. Shrubs include Labrador tea, Bog cranberry, Willow, Prickly rose and Twin-flower. Horsetails are common in the understorey as are mosses due to the high moisture content. These sites are located in lower slope positions and therefore have medium to wet moisture conditions. Associated soils include lake and flowing water deposit of sediment, and glacial deposit of coarse sands, gravels and till (mixture ranging from clay to boulders), postglacial deposit of sand, silt or clay on a lake bed (Gleysols, Luvisols). Nutrient condition is poor to rich.
Wetlands and Peatlands	
Bogs	
i1	Wetland - Treed bog with Black spruce. Bogs are peatlands that develop in small basins and depressions with hummocky terrain and restricted water flow. They can also form in fen complexes and along drainage divides. They receive water only from precipitation. The dominant tree species is Black spruce. Ground cover typically includes Labrador tea, Bog cranberry, Cloudberry (<i>Rubus chamaemorus</i>), Peat mosses, Feather mosses and Reindeer lichen. These peatland areas have organic soils, acidic conditions and slow decomposition. Typically they are poor to very poorly drained and have very poor to poor nutrient conditions. Peat accumulation in these areas is enhanced by poor drainage, high water tables, acidic conditions and slow decomposition. Growth and successional rates are slow which results in slow recovery rates from disturbance. Soils are organic.
i2	Wetland - Shrubby bog. Open shrubby bog with sparse Black spruce and Bog birch. Organic material or organic material over lake deposit sediment. Permafrost may be present at some sites.
j1	Wetland - Treed fen with Tamarack (<i>Larix laricina</i>) and Black spruce. Fens are peatlands affected by mineral ground and/or surface water and have water levels at or near the surface. The nutrient regime in fens can range from poor to rich resulting in different assemblages of plant species. Changes in water flow can result in changes in species assemblages. Poor fens have fewer indicator species than do rich fens. Poor fens are acidic (pH 4.5-5.5), low in base cations (Ca, Mg, K, Na) and have no or very low alkalinity (HCO ₃). The dominant tree species is Black spruce. Other trees and shrubs that may be present include Tamarack, Willow, White birch and Bog birch. Ground cover consists mainly of sedges, grasses, Feather mosses, Golden mosses and Sphagnum mosses. Recovery from disturbance is slow. Rich fens have flowing water, a more basic pH (6-7), high alkalinity and are high in base cations. They have similar tree and shrub species; however, Tamarack is the dominant tree species instead of Black spruce. Ground cover is similar to that of poor fens with the exception that Golden and Brown mosses are dominant. Recovery from disturbance is slow. This wetland type is home to many of Alberta's rare plant species.
j2	Wetland - Poor shrubby fen. Generally flat or sloping gently in the direction of drainage. Shrubs include Bog birch and Willow. Black spruce may appear as a shrub. Surface water is often present. Generally composed of organic material, glacial deposit till (mixture ranging from clay to boulders). Soils organic or mineral.
k1	Wetland - Treed fen with Tamarack (<i>Larix laricina</i>) and Black spruce. Fens are peatlands affected by mineral ground and/or surface water and have water levels at or near the surface. The nutrient regime in fens can range from poor to rich resulting in different assemblages of plant species. Changes in water flow can result in changes in species assemblages. Poor fens have fewer indicator species than do rich fens. Poor fens are acidic (pH 4.5-5.5), low in base cations (Ca, Mg, K, Na) and have no or very low alkalinity (HCO ₃). The co-dominant tree species are Tamarack and Black spruce. Other trees and shrubs that may be present include Willow, White birch and Bog birch. Ground cover consists mainly of sedges, grasses, Feather mosses, Golden mosses and Sphagnum mosses. Recovery from disturbance is slow. Rich fens have flowing water, a more basic pH (6-7), high alkalinity and are high in base cations. They have similar tree and shrub species; however, Tamarack is the dominant tree species. Ground cover is similar to that of poor fens with the exception that Golden and Brown mosses are dominant. Recovery from disturbance is slow. This wetland type is home to many of Alberta's rare plant species.
k2	Wetland - Open rich shrubby fen. Generally flat or sloping gently in the direction of drainage. Shrubs include Bog birch and Willow. Tamarack may appear as a shrub. Surface water is often present. Generally composed of organic material, glacial deposit till (mixture ranging from clay to boulders). Soils organic or mineral.
k3	Wetland - Grassy fen. These fens are peatland with low percent cover of shrubs and are dominated by graminoids with a high cover of sedges (<i>Carex</i> spp.). They can be poor to rich in nutrients. They often occur as collapse scars or adjacent to non-peat forming wetlands such as marshes or shallow open water. Soils are organic or mineral.
l1	Wetland - Graminoid (Sedges and Grasses) marsh. Marshes are characterized by frequent flooding and fluctuating water levels. They are located adjacent to shallow open water bodies, lakes and streams. Due to relatively greater water fluctuations and faster flowing water, mosses and shrubs do not readily establish. The resulting and characteristic vegetation is grasses, sedges (<i>Carex</i> species), rushes and reeds (<i>Juncus</i> and <i>Scirpus</i> species) and often cattail (<i>Typha latifolia</i>). Nutrient regime is rich due to decomposition of organic matter and therefore vascular plant production is much greater than in fens and bogs. Marshes are not considered as peatlands because high decomposition rates do not allow for peat accumulation. Lack of shrub cover and greater water fluctuations differentiate marshes from swamps.

Table 10C-1 Provincial Community Conservation Ranks

Alberta Rank	Rank Description
S1	5 or fewer occurrences or very few remaining hectares.
S2	6 to 20 occurrences or few remaining hectares.
S3	21 to 80 occurrences. May be rare and local throughout its range or found locally, even abundantly, in a restricted range (e.g., a single western province or a physiographic region in the East).
S4	Apparently secure globally (State/Province wide), though it may be quite rare in parts of its range, especially at the periphery.
S5	Demonstrably secure globally (State/Province wide), though it may be quite rare in parts of its range, especially at the periphery.
SNR	Element is not yet ranked.
SNU	Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA	Not Applicable —A conservation status rank is not applicable because the element is not a suitable target for conservation activities.
S#S#	Range Rank* —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
Modifiers	
Q	Can be added to any global rank to denote questionable taxonomy (e.g., G2Q = 6 to 20 known occurrences, but questions exist concerning the classification of this type). Cannot be used with provincial ranks.
?	Can be added to any rank to denote an inexact numeric rank (e.g., S1? = Believed to be 5 or less occurrences, but some doubt exists concerning status).

Notes:

* Ranks can be combined to indicate a range (e.g., S2S3 = May be between 6 to 80 occurrences throughout Alberta, but the exact status is uncertain). Combined ranks indicate a larger margin of error than ranks assigned a "?" qualifier.

Source: ANHIC website, May 2006

Appendix 10D Summary of Plot Type and Frequency by Ecosite Phase

Ecosite Phase/Transition	Plot Type		Grand Total
	Meander	Plot	
a1	4	2	6
b1	4	2	6
b1-c1 (Transition)	1		1
b1-h1(Transition)	1		1
b3		1	1
BU	1		1
c1	29	6	35
c1-g1(Transition)	3		3
c1-h1(Transition)	3		3
d1	7	5	12
d1-h1(Transition)	1		1
d2	8	7	15
d3	2	2	4
disturbance	8		8
e1	2	1	3
g1	14	6	20
g1-h1(Transition)	3		3
g1-i1(Transition)	2		2
h1	34	3	37
h1-i1(Transition)	1		1
h1-j1(Transition)	1		1
h2	2	1	3
i1	13	1	14
i2	1	1	2
j1	25	7	32
j2	8	2	10
j3	5	1	6
Grand Total	183	48	231

Appendix E Species List for Each Ecosite in the Area of the LSA in the Central Mixedwood and Lower Boreal Highland Subregions

Ecosite Phase	Scientific Name	Common Name	Life Form	Rare (Yes/No)
a1	<i>Arctostaphylos uva-ursi</i>	Bearberry	Shrub	N
a1	<i>Campanula rotundifolia</i>	Bluebell	Forb	N
a1	<i>Carex siccata</i>	Dry spike sedge	Grass	N
a1	<i>Cladina mitis</i>	Yellow reindeer lichen	Lichen	N
a1	<i>Cladina rangiferina</i>	Reindeer lichen	Lichen	N
a1	<i>Cladina stellaris</i>	Cauliflower heads	Lichen	N
a1	<i>Cornus canadensis</i>	Bunchberry	Forb	N
a1	<i>Dryopteris assimilis</i>	Broad spinulose shield fern	Grass	N
a1	<i>Elymus innovatus</i>	Hairy wild rye	Grass	N
a1	<i>Epilobium angustifolium</i>	Fireweed	Forb	N
a1	<i>Equisetum arvense</i>	Common horsetail	Forb	N
a1	<i>Equisetum sylvaticum</i>	Woodland horsetail	Forb	N
a1	<i>Galium boreale</i>	Northern bedstraw	Forb	N
a1	<i>Ledum groenlandicum</i>	Labrador tea	Shrub	N
a1	<i>Linnaea borealis</i>	Twin-flower	Shrub	N
a1	<i>Lycopodium annotinum</i>	Stiff club-moss	Forb	N
a1	<i>Maianthemum canadense</i>	Wild lily-of-the-valley	Forb	N
a1	<i>Oryzopsis pungens</i>	Northern ricegrass	Grass	N
a1	<i>Peltigera aphthosa</i>	Freckle pelt	Lichen	N
a1	<i>Picea mariana</i>	Black spruce	Shrub	N
a1	<i>Pinus banksiana</i>	Jack pine	Shrub	N
a1	<i>Pleurozium schreberi</i>	Big red stem	Moss	N
a1	<i>Potentilla tridentata</i>	Three-toothed cinquefoil	Forb	N
a1	<i>Rosa acicularis</i>	Prickly rose	Shrub	N
a1	<i>Salix bebbiana</i>	Beaked willow	Shrub	N
a1	<i>Smilacina trifolia</i>	Three-leaved Solomon's-seal	Forb	N
a1	<i>Solidago spathulata</i>	Spike-like goldenrod	Forb	N
a1	<i>Vaccinium myrtilloides</i>	Blueberry	Shrub	N
a1	<i>Vaccinium vitis-idaea</i>	Bog cranberry	Shrub	N
a1	<i>Viburnum edule</i>	Low-bush cranberry	Shrub	N
b1	<i>Achillea millefolium</i>	Yarrow	Forb	N
b1	<i>Actaea rubra</i>	Baneberry	Forb	N
b1	<i>Arctostaphylos uva-ursi</i>	Bearberry	Shrub	N
b1	<i>Aster ciliolatus</i>	Lindley's aster	Forb	N
b1	<i>Astragalus americanus</i>	American milk-vetch	Forb	N
b1	<i>Aulacomnium palustre</i>	Tufted moss	Moss	N
b1	<i>Calypto bulbosa</i>	Venus' slipper	Forb	N
b1	<i>Cornus canadensis</i>	Bunchberry	Forb	N
b1	<i>Elymus innovatus</i>	Hairy wild rye	Grass	N
b1	<i>Epilobium angustifolium</i>	Fireweed	Forb	N
b1	<i>Equisetum arvense</i>	Common horsetail	Forb	N
b1	<i>Equisetum sylvaticum</i>	Woodland horsetail	Forb	N
b1	<i>Fragaria virginiana</i>	Wild strawberry	Forb	N
b1	<i>Galium boreale</i>	Northern bedstraw	Forb	N
b1	<i>Geocaulon lividum</i>	Northern bastard toadflax	Forb	N
b1	<i>Goodyera repens</i>	Rattlesnake plantain	Forb	N
b1	<i>Habenaria orbiculata</i>	Round-leaved orchid	Forb	N
b1	<i>Hieracium umbellatum</i>	Narrow-leaved hawkweed	Forb	N
b1	<i>Hylacomium splendens</i>	Stair-step moss	Moss	N
b1	<i>Lathyrus ochroleucus</i>	Creamy peavine	Forb	N
b1	<i>Ledum groenlandicum</i>	Labrador tea	Shrub	N
b1	<i>Linnaea borealis</i>	Twin-flower	Forb	N
b1	<i>Listera cordata</i>	Heart-leaved twayblade	Forb	N
b1	<i>Lonicera caerulea</i>	Fly honeysuckle	Shrub	N
b1	<i>Lonicera dioica</i>	Twining honeysuckle	Shrub	N
b1	<i>Lonicera involucrata</i>	Bracted honeysuckle	Shrub	N
b1	<i>Lycopodium annotinum</i>	Stiff club-moss	Forb	N
b1	<i>Lycopodium clavatum</i>	Common club-moss	Forb	N
b1	<i>Lycopodium complanatum</i>	Ground cedar	Forb	N
b1	<i>Lycopodium dendroideum</i>	Round-branched ground-pine	Forb	N
b1	<i>Maianthemum canadense</i>	Wild lily-of-the-valley	Forb	N
b1	<i>Mertensia paniculata</i>	Tall mertensia	Forb	N
b1	<i>Mitella nuda</i>	Bishop's-cap, Mitrewort	Forb	N
b1	<i>Orthelia secunda</i>	One-sided wintergreen	Forb	N
b1	<i>Pedicularis labradorica</i>	Labrador lousewort	Forb	N
b1	<i>Petasites palmatus</i>	Palmate-leaved coltsfoot	Forb	N
b1	<i>Picea glauca</i>	White spruce	Shrub	N
b1	<i>Picea mariana</i>	Black spruce	Shrub	N
b1	<i>Pinus banksiana</i>	Jack pine	Shrub	N
b1	<i>Pleurozium schreberi</i>	Big red stem	Moss	N
b1	<i>Polytrichum spp.</i>		Moss	N
b1	<i>Populus balsamifera</i>	Balsam poplar	Tree	N
b1	<i>Populus tremuloides</i>	Trembling aspen	Shrub	N
b1	<i>Potentilla tridentata</i>	Three-toothed cinquefoil	Forb	N
b1	<i>Ptilium crista-castrensis</i>	Knight's plume	Moss	N
b1	<i>Pyrola asarifolia</i>	Pink wintergreen	Forb	N
b1	<i>Rosa acicularis</i>	Prickly Rose	Shrub	N
b1	<i>Rubus pubescens</i>	Dewberry, Running raspberry	Forb	N
b1	<i>Salix bebbiana</i>	Beaked willow	Shrub	N
b1	<i>Salix pyrifolia</i>	Balsam willow	Shrub	N
b1	<i>Salix scouleriana</i>	Scouler's willow	Shrub	N
b1	<i>Shepherdia canadensis</i>	Canadian Buffalo-berry	Shrub	N
b1	<i>Solidago spp.</i>		Forb	N
b1	<i>Trientalis borealis</i>	Star Flower	Forb	N
b1	<i>Vaccinium myrtilloides</i>	Blueberry	Shrub	N
b1	<i>Vaccinium vitis-idaea</i>	Bog cranberry	Shrub	N
b1	<i>Viburnum edule</i>	Low-bush cranberry	Shrub	N
b1	<i>Vicia americana</i>	Wild vetch	Forb	N

Appendix E Species List for Each Ecosite in the Area of the LSA in the Central Mixedwood and Lower Boreal Highland Subregions

Ecosite Phase	Scientific Name	Common Name	Life Form	Rare (Yes/No)
b1	<i>Viola renifolia</i>	Kidney-leaved violet	Forb	N
b3	<i>Alnus crispa</i>	Green alder	Shrub	N
b3	<i>Arctostaphylos uva-ursi</i>	Bearberry	Shrub	N
b3	<i>Cladina mitis</i>	Yellow reindeer lichen	Lichen	N
b3	<i>Cladina rangiferina</i>	Reindeer lichen	Lichen	N
b3	<i>Cornus canadensis</i>	Bunchberry	Shrub	N
b3	<i>Elymus innovatus</i>	Hairy wild rye	Grass	N
b3	<i>Ledum groenlandicum</i>	Labrador tea	Shrub	N
b3	<i>Picea glauca</i>	White spruce	Shrub	N
b3	<i>Pinus banksiana</i>	Jack pine	Trees	N
b3	<i>Pleurozium schreberi</i>	Big red stem	Moss	N
b3	<i>Potentilla tridentata</i>	Three-toothed cinquefoil	Forb	N
b3	<i>Rosa woodsii</i>	Common wild rose	Shrub	N
b3	<i>Shepherdia canadensis</i>	Canadian Buffalo-berry	Shrub	N
b3	<i>Usnea spp.</i>		Lichen	N
b3	<i>Vaccinium myrtilloides</i>	Blueberry	Shrub	N
b3	<i>Vaccinium vitis-idaea</i>	Bog cranberry	Shrub	N
c1	<i>Achillea millefolium</i>	Yarrow	Forb	N
c1	<i>Alnus crispa</i>	Green alder	Shrub	N
c1	<i>Antennaria neglecta</i>	Broad-leaved everlasting	Forb	N
c1	<i>Arctostaphylos uva-ursi</i>	Bearberry	Shrub	N
c1	<i>Aster ciliolatus</i>	Lindley's aster	Forb	N
c1	<i>Aulacomnium palustre</i>	Tufted moss	Moss	N
c1	<i>Betula glandulosa</i>	Bog birch	Shrub	N
c1	<i>Betula neoalaskana</i>	Alaska birch	Shrub	N
c1	<i>Betula occidentalis</i>	Black birch	Shrub	N
c1	<i>Betula pumila</i>	Dwarf birch	Shrub	N
c1	<i>Bryoria spp.</i>		Lichen	N
c1	<i>Calamagrostis canadensis</i>	Bluejoint, Marsh reed grass	Grass	N
c1	<i>Calliergon giganteum</i>	Giant water moss	Moss	N
c1	<i>Caltha palustris</i>	Marsh marigold	Forb	N
c1	<i>Campanula rotundifolia</i>	Bluebell	Forb	N
c1	<i>Carex brunnescens</i>	Brownish sedge	Grass	N
c1	<i>Carex chordorrhiza</i>	Creeping sedge	Grass	N
c1	<i>Carex disperma</i>	Two seeded sedge	Grass	N
c1	<i>Carex spp.</i>		Grass	N
c1	<i>Carex vaginata</i>	Sheathed sedge	Grass	N
c1	<i>Ceratophyllum demersum</i>	Hornwort	Moss	N
c1	<i>Cetraria spp.</i>		Lichen	N
c1	<i>Cladina mitis</i>	Yellow reindeer lichen	Forb	N
c1	<i>Cladina rangiferina</i>	Reindeer lichen	Lichen	N
c1	<i>Cladina spp.</i>		Lichen	N
c1	<i>Cladina stellaris</i>	Cauliflower heads	Lichen	N
c1	<i>Cladonia spp.</i>		Lichen	N
c1	<i>Cladonia uncialis</i>	Prickle cladonia	Lichen	N
c1	<i>Climacium dendroides</i>	Common tree moss	Moss	N
c1	<i>Coptis trifolia</i>	Goldthread	Forb	N
c1	<i>Cornus canadensis</i>	Bunchberry	Forb	N
c1	<i>Delphinium glaucum</i>	Tall larkspur	Forb	N
c1	<i>Dicranum polysetum</i>	Electric eels	Moss	N
c1	<i>Dicranum spp.</i>		Moss	N
c1	<i>Dicranum undulatum</i>	Wavy dicranum	Moss	N
c1	Diphasiastrum sitchense	Ground-fir	Forb	Y
c1	<i>Elymus innovatus</i>	Hairy wild rye	Grass	N
c1	<i>Epilobium angustifolium</i>	Fireweed	Forb	N
c1	<i>Equisetum arvense</i>	Common horsetail	Forb	N
c1	<i>Equisetum pratense</i>	Meadow horsetail	Forb	N
c1	<i>Equisetum scirpoides</i>	Dwarf scouring rush	Forb	N
c1	<i>Equisetum sylvaticum</i>	Woodland horsetail	Forb	N
c1	Euphrasia hudsoniana	Hudson Bay eyebright	Forb	Y
c1	<i>Galium boreale</i>	Northern bedstraw	Forb	N
c1	<i>Geocaulon lividum</i>	Northern bastard toadflax	Forb	N
c1	<i>Hylocomium splendens</i>	Stair-step moss	Moss	N
c1	<i>Jamesoniella autumnalis</i>	Jameson's liverwort	Moss	N
c1	<i>Larix laricina</i>	Tamarack	Shrub	N
c1	<i>Lathyrus ochroleucus</i>	Creamy peavine	Forb	N
c1	<i>Ledum groenlandicum</i>	Labrador tea	Shrub	N
c1	<i>Linnaea borealis</i>	Twin-flower	Shrub	N
c1	<i>Lonicera caerulea</i>	Fly honeysuckle	Shrub	N
c1	<i>Lonicera caerulea var. villosa</i>	Fly honeysuckle	Shrub	N
c1	<i>Lycopodium annotinum</i>	Stiff club-moss	Forb	N
c1	<i>Lycopodium clavatum</i>	Common club-moss	Forb	N
c1	<i>Lycopodium complanatum</i>	Ground cedar	Forb	N
c1	<i>Lycopodium obscurum</i>	Ground pine	Forb	N
c1	<i>Maianthemum canadense</i>	Wild lily-of-the-valley	Forb	N
c1	<i>Melampyrum lineare</i>	Cow-wheat	Forb	N
c1	<i>Mertensia paniculata</i>	Tall mertensia	Forb	N
c1	<i>Mitella nuda</i>	Bishop's-cap, Mitrewort	Forb	N
c1	<i>Orthelia secunda</i>	One-sided wintergreen	Forb	N
c1	<i>Ornizopsis pungens</i>	Northern ricegrass	Grass	N
c1	<i>Pedicularis labradorica</i>	Labrador lousewort	Forb	N
c1	<i>Peltigera aphthosa</i>	Freckle pelt	Lichen	N
c1	<i>Peltigera canina</i>	dog lichen	Lichen	N
c1	<i>Peltigera spp.</i>		Lichen	N
c1	<i>Petasites palmatus</i>	Palmate-leaved coltsfoot	Forb	N
c1	<i>Picea glauca</i>	White spruce	Shrub	N
c1	<i>Picea mariana</i>	Black spruce	Shrub	N
c1	<i>Pinus banksiana</i>	Jack pine	Shrub	N