

Table S1. A summary of the cores collected during this study.

Creamer's Field transect

Distance: 1 m	Depth start (cm)	Depth finish (cm)	Gravimetric moisture content (g/g) %	Description
2/25/2014	75	90	743.1	Organics with ice
Geoprobe	120	135	223.4	Organics with ice
	180	195	376.5	Organics with ice
	240	255	40.7	Silt with no visible ice
	270	285	38.5	Sandy silt with no visible ice
	300	315	32.1	Sandy silt with no visible ice
	345	360	37.5	Silt with no visible ice
	390	405	25	Silty sand
	435	450	28.9	Silty sand
	510	525	29.5	Silty sand

Distance: 17 m	Depth start (cm)	Depth finish (cm)	Gravimetric moisture content (g/g) %	Description
2/25/2014	45	60	281.7	Thawed; Organics with ice
Geoprobe	60	255	N/A	Ice wedge ice
	270	285	54.3	Silty sand
	300	315	30.8	Silty sand
	375	390	26.2	Sand
	435	450	27.8	Sand

Distance: 80 m	Depth start (cm)	Depth finish (cm)	Gravimetric moisture content (g/g) %	Frozen bulk density (kg/m ³)	Description
5/2/2017	0	15	85.8	1079	Peat
SIPRE	15	30	80.3	1113	Peat
	30	54	71.3	973	Peat
	54	71	81.0	1155	Peat
	71	92	72.6	946	Peat
	92	106	79.6	1046	Peat
	106	127	81.8	1012	Peat
	127	145	93.3	1095	Peat
	145	161	79.6	1017	Peat
	161	178	86.4	1040	Peat with minor ice visible
	178	196	84.6	1039	Peat with minor ice visible
	196	220	79.3	1034	Peat with minor ice visible
	220	234	77.3	1140	Peat with minor ice visible
	234	249	79.8	1117	Peat with minor ice visible
	249	268	68.4	1090	Silt with minor ice visible
	268	297	32.1	776	Silt with minor ice visible
	297	317	63.2	1043	Silty sand
	317	337	51.1	1297	Sand
	337	351	71.0	1389	Sand
	351	368	49.4	1240	Sand

Distance: 269 m	Depth start (cm)	Depth finish (cm)	Gravimetric moisture content (g/g) %	Frozen bulk density (kg/m ³)	Description
5/3/2017	0	8	71.7	754	Peat with visible ice
SIPRE	8	21	95.2	1045	Peat with visible ice
	21	35	86.6	1083	Peat with visible ice
	35	49	78.4	1269	Peat with visible ice
	49	63	81.1	1202	Peat with visible ice
	63	75	93.7	1096	Peat with visible ice
	75	80	254.1	3159	Peat with visible ice
	80	96	80.1	895	Peat with visible ice
	96	110	81.9	904	Peat with visible ice
	110	127	87.1	925	Peat with visible ice
	127	144	83.7	912	Silt with minor ice visible
	144	159	86.5	958	Silt with minor ice visible
	159	173	81.9	943	Silt with minor ice visible
	173	185	95.5	1100	Silt with minor ice visible
	185	197	88.8	1009	Silt with minor ice visible
	197	213	95.9	1090	Silt with minor ice visible
	213	230	92.9	1051	Silt with minor ice visible
	230	255	71.4	865	Silt with minor ice visible
	255	273	86.3	1058	Silt with minor ice visible
	273	289	86.4	1200	Silt with minor ice visible
	289	306	87.8	1230	Silt with minor ice visible
	306	322	86.9	1231	Silt with minor ice visible
	322	332	89.3	1109	Silt with minor ice visible
	332	342	92.6	1221	Silt with minor ice visible

Distance: 272 m	Depth start (cm)	Depth finish (cm)	Gravimetric moisture content (g/g) %	Description
2/27/2014	30	45	446	Peat with visible ice
Geoprobe	90	105	519.7	Peat with visible ice
	135	150	488.5	Peat with visible ice
	195	210	486.4	Peat with visible ice
	285	300	130.6	Silt with visible ice
	345	360	210.8	Silt with visible ice

Distance: 297 m	Depth start (cm)	Depth finish (cm)	Gravimetric moisture content (g/g) %	Description
3/4/2014	105	120	579.4	Organics with visible ice
Geoprobe	225	240	1230	Organics with visible ice
	285	300	37.1	Silt with organics and visible ice
	324	339	112.8	Silt with visible ice
	369	384	112.2	Silt with visible ice
	390	405	86.55	Silt with visible ice
	405	420	107.9	Silt with no visible ice
	426	441	93.1	Silt with no visible ice
	444	459	53.1	Silt with no visible ice
	480	495	36.8	Sandy silt
	510	525	36	Sandy silt
	540	555	43.1	Sandy silt
	600	615	42.1	Silt with no visible ice
	645	660	36.4	Silt with no visible ice
	720	735	51.4	Silt with no visible ice
	750	765	33.5	Sand
	810	825	44.6	Silty sand with organics
	855	870	32.6	Sand
	930	945	33.9	Sandy silt with gravel

Distance: 445 m	Depth start (cm)	Depth finish (cm)	Gravimetric moisture content (g/g) %	Description
2/27/2014	21	36	307.1	Organics with visible ice
Geoprobe	90	105	244	Organics with visible ice
	150	165	101.6	Silt with visible ice
	180	195	98.7	Silt with no visible ice
	204	219	139.6	Silt with no visible ice
	225	240	52.4	Silt with no visible ice
	279	294	179	Silt with organics and no visible ice
	294	309	84.8	Silt with visible ice
	315	330	114.1	Silt with organics and visible ice
	360	465	91.4	Silt with minor visible ice
	390	405	182	Silt with no visible ice
	414	429	131.1	Silt with minor visible ice
	450	465	107.5	Silt with no visible ice
	510	525	94.4	Silt with no visible ice
	570	585	94.3	Silt with no visible ice
	615	630	182.9	Silt with no visible ice
	660	675	219.7	Silt with no visible ice
	690	705	36.7	Sandy silt with no visible ice

Farmer's Loop transect 1

Distance: 39 m	Depth start (cm)	Depth finish (cm)	Gravimetric moisture content (g/g) %	Description
3/25/2014	75	90	29.2	Silt with no visible ice
Geoprobe	90	105	82.7	Peaty silt
	120	135	44.4	Peaty silt with visible ice
	165	180	22.7	Silt with no visible ice
	225	240	48.4	Silt with no visible ice
	279	294	115.7	Silt with visible ice
	312	327	45.3	Silt with no visible ice
	327	342	123.4	Silt with minor peat
	360	375	46.2	Silt with no visible ice
	420	435	98	Silt with no visible ice
	450	465	98.9	Silt with minor peat
	480	495	95.1	Silt with no visible ice
	510	525	65	Silt with no visible ice
	570	585	77.2	Silt with no visible ice
	591	606	256.2	Peat
	645	660	41.3	Silt with no visible ice
	675	690	49.8	Silt with no visible ice
	705	720	36.9	Silt with no visible ice
	765	780	34.1	Silt with no visible ice
	840	855	94.6	Silt with no visible ice
	930	945	32.3	Silt with no visible ice
	1050	1065	38.5	Silt with no visible ice
	1110	1125	37.6	Silt with no visible ice
	1170	1185	36.1	Silt with no visible ice
	1215	1230	34.5	Silt with no visible ice
	1260	1275	47.2	Silt with no visible ice
	1335	1350	38.1	Silt with no visible ice

Distance: 87 m	Depth start (cm)	Depth finish (cm)	Gravimetric moisture content (g/g) %	Frozen bulk density (kg/m ³)	Description
5/3/2017	0	16	88.2	1032	Peat
SIPRE	16	32	56.3	1364	Silt with peat
	32	46	76.6	1176	Silt with peat
	46	62	79.1	1360	Thawed silty peat
	62	73	63.0	1038	Thawed silty peat
	73	84	59.5	1133	Thawed silty peat
	84	102			Missing; thawed silty mud
	102	116	87.5	1267	Silt with minor ice visible
	116	128	75.0	1647	Silt with minor ice visible
	128	136	98.4	2104	Silt with minor ice visible
	136	149	57.9	1653	Silt with minor ice visible
	149	160	88.5	1519	Silt with minor ice visible
	160	171	84.3	1523	Silt with minor ice visible
	171	182	83.2	1548	Silt with minor ice visible
	182	191	74.7	1424	Silt with minor ice visible

Distance: 94 m	Depth start (cm)	Depth finish (cm)	Gravimetric moisture content (g/g) %	Description
4/22/2014	90	105	59.9	Silt with no visible ice
Geoprobe	114	129	201.9	Peat
	135	150	68.6	Silt with no visible ice
	180	195	77.6	Silt with no visible ice
	210	225	111.8	Peaty silt with visible ice
	225	240	66.8	Silt with minor visible ice
	255	270	31.6	Silt with no visible ice
	300	315	83.3	Peaty silt with visible ice
	375	390	95.3	Peaty silt with visible ice
	390	405	111.3	Peaty silt with visible ice
	420	435	87.4	Silt with no visible ice
	465	480	54.5	Silt with no visible ice
	495	510	40.4	Silt with no visible ice
	510	525	75.9	Silt with minor visible ice
	540	555	34.1	Silt with no visible ice
	585	600	46.7	Silt with minor visible ice
	615	630	104.2	Silt with minor visible ice
	645	660	46.4	Peaty silt with visible ice
	690	705	46.7	Silt with no visible ice
	735	750	37.2	Silt with minor visible ice
	750	765	33.2	Silt with minor visible ice
	810	825	99.4	Peaty silt with visible ice
	825	840	79.7	Silt with minor visible ice
	855	870	34.2	Silt with minor visible ice
	870	885	42.8	Silt with minor visible ice
	960	975	35.6	Silt with minor visible ice

Distance: 306 m	Depth start (cm)	Depth finish (cm)	Gravimetric moisture content (g/g) %	Description
4/2/2014	60	75	341	Organics with visible ice
Geoprobe	105	120	514.1	Organics with visible ice
	195	210	355.6	Organics with visible ice
	420	435	52.3	Silt with minor visible ice
	456	471	37.6	Silt with minor visible ice
	480	495	82.5	Silt with no visible ice
	540	555	117	Organic rich silt
	570	585	78	Silt with minor visible ice
	600	615	59.6	Silt with minor visible ice
	615	630	40.6	Silt with minor visible ice
	660	675	330.9	Peat with visible ice
	705	720	338.5	Peat with visible ice
	780	795	43.4	Silt with minor visible ice
	840	855	39.6	Silt with minor visible ice
	900	915	40.1	Silt with minor visible ice
	945	960	47.7	Silt with minor visible ice
	1020	1022		Wood fragment ¹⁴ C age: 10,360 +/- 260; $\delta^{13}\text{C}$: -27.7 per mil
	1050	1065	64.4	Silt with minor visible ice
	1080	1095	41.8	Silt with minor visible ice
	1155	1170	79.9	Silt with minor visible ice
	1230	1245	35	Silt with minor visible ice
	1275	1290	30.8	Silt with minor visible ice
	1290	1305	39.6	Silt with minor visible ice
	1365	1380	20.6	Silt with minor visible ice

Distance: 358 m	Depth start (cm)	Depth finish (cm)	Gravimetric moisture content (g/g) %	Description
3/26/2014	120	135	324.4	Organics with visible ice
Geoprobe	225	240	187.8	Silt with organics
	360	375	54.9	Silt
	420	435	45	Silt with minor ice
	450	465	41	Silt
	471	486	216.7	Peat layer
	480	495	95.1	Silt
	525	540	781.2	Peat with visible ice
	645	660	62.6	Peat with visible ice
	667	669		Wood fragment ¹⁴ C age: 10,160 +/- 160; $\delta^{13}\text{C}$: -28.0 per mil
	750	765	234	Peat with minor visible ice
	834	849	301.4	Silt with visible ice
	915	930	161.2	Soft thawed silt
	1020	1035	213.1	Soft thawed silt

Farmer's Loop transect 2

Distance: 50 m	Start (cm)	End (cm)	Gravimetric moisture content (g/g) %	Description
5/5/2014	30	45	26.6	Organics
Geoprobe	90	105	48.5	Silt with no visible ice
	120	135	34.7	Silt with no visible ice
	150	165	50.8	Silt with no visible ice
	195	210	42.0	Silt with no visible ice
	315	330	52.4	Silt with no visible ice
	360	375	71.4	Silt with no visible ice
	435	450	95.6	Silt with minor visible ice
	540	555	40.5	Silt with no visible ice
	585	600	29.9	Silt with no visible ice
	675	690	31.9	Silt with no visible ice
	735	750	35.9	Silt with no visible ice
	780	795	36.5	Silt with no visible ice
	825	840	38.4	Silt with no visible ice
	870	885	43.9	Silt with no visible ice
	900	915	43.2	Silt with no visible ice
	960	975	55.0	Silt with minor visible ice

Distance: 71 m	Start (cm)	End (cm)	Description
5/25/2018	0	15	Organics
SIPRE	15	60	Sandy silt with no visible ice
	60	84	Silt with peat
	84	117	Thawed silty peat
	117	165	Silt with visible ice
	174	222	Silt with visible ice
	222	345	Silt with visible ice

Distance: 197 m	Start (cm)	End (cm)	Gravimetric moisture content (g/g) %	Frozen bulk density (kg/m ³)	Description
5/3/2017	0	22	43.8	950	Organics
SIPRE	22	36	73.1	1515	Silt with visible ice
	36	48	33.8	1607	Silt with visible ice
	48	61	51.4	1708	Silt with visible ice
	61	76	52.3	1494	Silt with visible ice
	76	90	46.0	1537	Silt with visible ice
	90	106	148.3	1294	Silt with visible ice
	106	123	66.7	1287	Peat with visible ice
	123	132	301.7	1326	Peat with visible ice
	132	145	138.6	1370	Peat with visible ice
	145	159	100.8	1356	Peat with visible ice
	159	174	88.3	1406	Silt with visible ice
	174	187	52.5	1538	Silt with visible ice
	187	201	55.0	1402	Silt with visible ice

Distance: 210 m	Start (cm)	End (cm)	Gravimetric moisture content (g/g) %	Description
5/1/2014	90	105	185.2	Organics with peat
Geoprobe	120	135	122.4	Silt with visible ice
	165	180	202.2	Peat with visible ice
	225	240	199.6	Silt with visible ice
	270	285	153	Silt with visible ice
	315	330	79.0	Silt with no visible ice
	375	390	56.44	Silt with visible ice
	390	405	56.8	Silt with visible ice
	435	450	69.7	Silt with visible ice
	525	540	49.7	Silt with minor visible ice
	570	585	44.8	Silt with minor visible ice
	645	660	37.9	Silt with no visible ice
	690	705	41.9	Silt with no visible ice
	780	795	42.5	Silt with no visible ice
	825	840	44.7	Silt with no visible ice
	900	915	44.3	Silt with no visible ice
	945	960	46.1	Silt with no visible ice
	1020	1035	48.4	Silt with no visible ice
	1065	1080	48.1	Silt with visible ice

Distance: 220 m	Start (cm)	End (cm)	Description
5/25/2018	0	15	Organics with peat
SIPRE	15	27	Peat with minor silt layers
	30	66	Peat
	66	81	Peat with minor silt layers
	81	120	Peat with minor silt layers
	120	138	Peat with minor silt layers
	138	153	Silt with visible ice
	153	264	Ice with silt
	264	318	Ice with silt

Distance: 222 m	0	15	Organics with peat
5/25/2018	15	111	Peat with minor silt layers
SIPRE	111	150	Peat with minor silt layers and visible ice
	150	219	Silt with visible ice
	219	267	Silt with visible ice

Distance: 235 m	Start (cm)	End (cm)	Gravimetric moisture content (g/g) %	Frozen bulk density (kg/m ³)	Description
5/3/2017	0	13	82.3	935	Organics with peat
SIPRE	13	26	91.1	1221	Organics with peat
	26	40	92.8	1158	Organics with peat
	40	54	72.7	1004	Organics with peat
	54	68	79.1	940	Organics with peat
	68	82	88.8	1206	Organics with peat
	82	90	74.4	1018	Organics with peat
	90	104	77.4	1088	Organics with peat
	104	119	52.5	1109	Silt with visible ice
	119	129	78.0	781	Clear ice ice
	129	138	78.3	1080	Peat with visible ice
	138	150	88.5	1038	Peat with visible ice
	150	163	82.6	1186	Peat with visible ice
	163	173	85.1	1193	Peat with visible ice
	173	192	69.9	992	Peat with visible ice
	192	210	73.4	1080	Silt with visible ice
	210	234	48.8	1058	Silt with visible ice
	234	256	62.9	1065	Silt with visible ice

Distance: 330 m	Start (cm)	End (cm)	Gravimetric moisture content (g/g) %	Description
5/2/2014	45	60	544.6	Organics with peat
Geoprobe	90	105	648.4	Silt with visible ice
	150	165	648.4	Silt with visible ice
	240	255	117.4	Silt with visible ice
	255	270	144.1	Silt with visible ice
	345	360	69.0	Silt with visible ice
	375	390	253.7	Silt with visible ice
	405	420	419.1	Silt with visible ice
	435	450	234.6	Silt with organics and visible ice
	465	480	341.4	Silt with organics and visible ice
	495	510	561.7	Silt with organics and visible ice
	510	5250	774.8	Silt with organics and visible ice
	555	570	517.9	Silt with organics and visible ice
	600	615	128.0	Silt with visible ice
	630	645	397.1	Silt with organics and visible ice
	675	690	387.6	Silt with organics and visible ice
	705	720	321.6	Silt with organics and visible ice
	735	750	114.2	Silt with organics and visible ice
	795	810	63.7	Silt with organics and visible ice
	840	855	63.6	Silt with visible ice
	870	885	65.0	Silt with visible ice
	975	990	89.7	Organic rich silt with visible ice
	1020	1035	79.5	Silt with minor visible ice
	1080	1095	47.6	Silt with minor visible ice

Distance: 401 m	Start (cm)	End (cm)	Gravimetric moisture content (g/g) %	Frozen bulk density (kg/m ³)	Description
5/3/2017	0	15	87.3	1150	Organics with peat
SIPRE	15	27	98.7	1136	Organics with peat
	27	37	91.4	1241	Organics with peat
	37	53	35.6	1572	Silt with visible ice
	53	69	32.6	1616	Silt with visible ice
	69	83	28.8	1697	Silt with visible ice
	83	100	62.0	1450	Silt with visible ice
	100	114	46.7	1361	Silt with visible ice
	114	128	84.4	1373	Silt with visible ice
	128	142	60.9	1594	Silt with visible ice
	142	156	76.9	1490	Silt with visible ice
	156	176	37.7	1233	Silt with visible ice
	176	197	50.2	1323	Silt with visible ice

Distance: 420 m	Start (cm)	End (cm)	Gravimetric moisture content (g/g) %	Description
5/8/2014	90	105	69.6	Silt with no visible ice
Geoprobe	150	165	31.3	Silt with no visible ice
	240	255	88.9	Silt with no visible ice
	300	315	44.4	Silt with visible ice
	360	375	55.7	Silt with visible ice
	390	405	76.2	Silt with visible ice
	435	450	518.0	Ice rich peat
	493	495		Wood fragment ¹⁴ C age: 7,200 +/- 190; d ¹³ C: -28.7 per mil
	540	555	85.2	Silt with visible ice
	600	615	57.2	Silt with visible ice
	690	705	41.5	Silt with visible ice
	750	765	44.1	Silt with minor visible ice
	810	825	43.0	Silt with minor visible ice
	930	945	39.6	Silt with minor visible ice
	1020	1035	40.8	Silt with no visible ice

Distance: 431 m	Start (cm)	End (cm)	Gravimetric moisture content (g/g) %	Frozen bulk density (kg/m ³)	Description
5/3/2017	0	6	69.4	815	Organics with peat
SIPRE	6	21	88.6	1145	Organics with peat
	21	34	78.4	1143	Organics with peat
	34	45	105.6	1436	Organics with peat
	45	59	65.0	1180	Organics with peat
	59	72	93.4	1188	Silt with visible ice
	72	84	91.7	1338	Silt with visible ice
	84	106	55.8	1097	Silt with no visible ice
	106	118	70.0	1591	Silt with no visible ice
	118	132	59.4	1394	Silt with no visible ice
	132	147	50.6	1494	Silt with no visible ice
	147	161	55.6	1565	Silt with no visible ice
	161	175	58.9	1617	Silt with no visible ice
	175	188	63.6	1500	Silt with no visible ice
	188	200	81.9	1482	Silt with no visible ice
	200	220	40.6	1078	Silt with no visible ice

Permafrost Tunnel Transect

Distance: 52 m	Depth start (cm)	Depth finish (cm)	Description
6/5/2018	0	17	Thawed peat
SIPRE	17	31	Frozen silt with visible ice
	31	49	Muddy thawed silt
	49	74	Silt with visible ice
	74	100	Silt with visible ice

Distance: 305 m	Depth start (cm)	Depth finish (cm)	Description
3/25/2018	0	15	Peat
SIPRE	15	45	Frozen silt with visible ice
	45	70	Muddy thawed silt
	70	249	Silt with visible ice

Distance: 402 m	Depth start (cm)	Depth finish (cm)	Gravimetric moisture content (g/g) %	Description
3/5/2014	75	90	91.4	Silt with no visible ice
Geoprobe	150	165	148.8	Silt with no visible ice
	216	232.5	119.7	Silt with visible ice
	240	255	145.9	Silt with visible ice
	345	360	96.5	Silt with visible ice
	420	435	23.6	Silty sand
	495	510	77.7	Silt with visible ice
	585	600	57.5	Silt with visible ice
	645	660	83.3	Silt with visible ice
	720	735	57.2	Silt with visible ice
	930	945	53.4	Silt with visible ice
	1020	1035	85.9	Silt with visible ice
	1125	1140	94.1	Silt with visible ice
	1230	1245	66.8	Silt with visible ice
	1380	1395	56.3	Silt with visible ice
	1485	1500	37.3	Silt with visible ice
	1515	1530	25.3	Silt with visible ice
	1545	1560	40.7	Silt with visible ice