

# Geology and mineral potential of the northwestern Aishihik Lake map area, parts of NTS 115H/12 and 13

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Israel, S. and Westberg, E., 2012. Geology and mineral potential of the northwestern Aishihik Lake map area, parts of NTS 115H/12 and 13. *In: Yukon Exploration and Geology 2011*, K.E. MacFarlane and P.J. Sack (eds.), Yukon Geological Survey, p. 103-113.

## **ABSTRACT**

Bedrock geological mapping in the northwestern Aishihik Lake map sheet in the summer of 2011 extended previous 1:50 000 scale geology mapping towards the Nisling River to the north. Mapping identified a complex of Paleocene volcanic and high-level intrusions assigned to the Rhyolite Creek complex, overlying polydeformed schist, quartzite, and gneiss of the Yukon-Tanana terrane. The youngest phase of deformation is characterized by north to northwest striking high-angle faults that are likely, in part, syn-eruption of the Rhyolite Creek complex and likely control some of the deposition of the volcanic rocks. Paleocene intrusions associated with both the Ruby Range batholith and the Rhyolite Creek complex have mutual crosscutting relationships with each other and with overlying volcanic rocks.

The area is most prospective for copper-gold porphyry and epithermal gold mineralization. Samples obtained during 2011 fieldwork returned some anomalous values for silver, arsenic, mercury, zinc, copper and gold. Mineralization observed during mapping, is structurally controlled along late brittle faults and fractures.

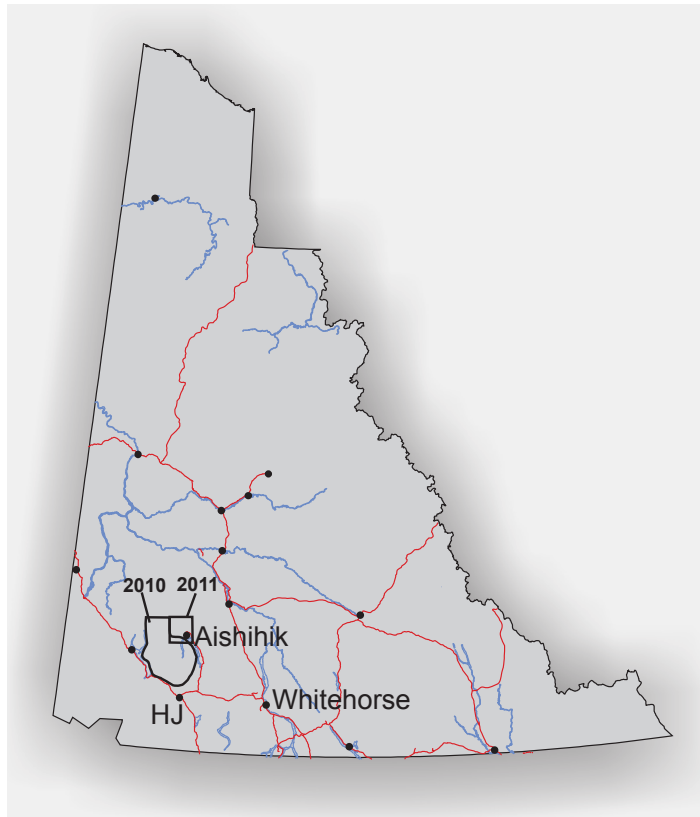
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## INTRODUCTION

Bedrock mapping in the northwestern Aishihik Lake map sheet in 2011 continued geological field work begun under the Coast Belt project in the 2010 (Fig. 1). Nearly two 1:50 000 scale map sheets (NTS 115H/12 and 13) were completed in the summer of 2011, with the aim of extending new mapping towards the north and east of previous work.

The project area was first described during reconnaissance mapping by Cockfield (1927) and Templeman-Kluit (1974); however, no detailed bedrock mapping has taken place prior to this study. Fieldwork in 2011 overlaps slightly with work completed in 2010 (Israel *et al.*, 2011a,b) and includes some revision to the interpreted geology from that mapping (Israel and Westberg, 2011).

Access to the northwestern Aishihik project area is mainly by helicopter, staged out of a decommissioned airstrip near the old town site of Aishihik (Fig. 1). The project area is characterized by broad, rounded ridges separated by wide, vegetated valleys. Topography generally slopes towards the north and becomes quite gentle near the Nisling River, the northern boundary of the project area.



**Figure 1.** Location of 2011 northwestern Aishihik Lake project area, outlined by black box. Fieldwork in 2010 is labeled and outlined. HJ-Haines Junction.

Outcrop exposure is moderate to poor, with the general trend of becoming poorer to the north. A few, higher, rugged peaks north of Albert Creek offer the best outcrop exposures in the project area.

This paper reports on general lithologic relationships and observed mineralization within the project area. It is intended as companion text for Yukon Geological Survey, Open File 2011-31 (Israel and Westberg, 2011). For a more comprehensive description of regional structure and metallogeny see Israel *et al.* (2011a).

## LITHOLOGY

The project area is underlain by Proterozoic to Mississippian schist, marble, and metavolcanic rocks of the Yukon-Tanana terrane, intruded and overlain by the Paleocene Ruby Range batholith and Rhyolite Creek complex, respectively (Figs. 2 and 3). Volcanic and intrusive rocks make up the majority of the high ground in the project area, particularly in the central portion; the metamorphic rocks outcrop in valleys and on lower slopes.

## YUKON-TANANA TERRANE

### SNOWCAP ASSEMBLAGE

The Snowcap assemblage is abundant north of Albert Creek and is found in less extensive exposures northeast and northwest of Stevens Lake (Fig. 2). It is structurally interleaved with the Finlayson assemblage and intruded and overlain by Paleocene igneous rocks. The Snowcap assemblage, in the project area, is characterized by quartz-muscovite  $\pm$  garnet schist, beige to white and grey quartzite, and cream-coloured marble. Schist and quartzite make up the majority of the assemblage and are found interlayered with one another on the centimetre to metre-scale (Fig 4a). The schist is psammitic in composition with abundant quartz and shows a strong internal foliation. Quartzite varies from 'dirty' (*i.e.*, some micas and feldspars) to a massive, nearly pure orthoquartzite. Layering in the quartzite is characterized by thin mica-rich zones up to a few millimetres wide. Cream-weathered marble is found locally as thin (less than 2 m) layers within schist and quartzite, and rarely in bands several metres thick. Amphibolite was not observed within the project area but is known to occur within the Snowcap assemblage further south and west (Murphy *et al.*, 2009; Israel *et al.*, 2011a). Rare metaplutonic rocks are found within the Snowcap assemblage, just north of Albert Creek (Fig. 2). These metaplutonic rocks are strongly deformed,

hornblende-biotite-quartz-diorite to granodiorite in composition. The age of the metaplutonic rocks is not well constrained, they are tentatively correlated with the Mississippian Simpson Range suite, found elsewhere in the Yukon-Tanana terrane (Murphy *et al.*, 2006). Alternatively, it is possible that the metaplutonic rocks are Permian in age and correlate with the Sulphur Creek plutonic suite found in the Klondike region (Mortensen, 1990). The age of the Snowcap assemblage is Proterozoic to Devonian based on work elsewhere in the Yukon-Tanana terrane (Colpron *et al.*, 2006).

### FINLAYSON ASSEMBLAGE

The Finlayson assemblage outcrops in the southern and northern portions of the project area (Fig. 2). The relationship between the Finlayson assemblage and the underlying Snowcap assemblage is interpreted as a structurally modified unconformity (Murphy *et al.*, 2009). The mapped contacts between the two assemblages reflect this complex relationship and in places it is difficult to determine the true geologic boundary. The Finlayson assemblage in the project area is characterized by carbonaceous quartzite and schist, marble and amphibolite (Fig. 4b). Schists are mainly psammitic in composition with locally abundant interlayered pelitic material. The schist almost ubiquitously weathers a dark grey to black, owing to the high carbon content. Quartzite is fine to medium grained and weathers a dark to light grey. Marble is found as interlayered units within the schist and quartzite, generally on the metre-scale, but can be up to several metres thick. The marble weathers white to light grey. It is massive to banded and shows varying amounts of deformation and recrystallization. Amphibolite is only locally observed, usually in association with the marble. The amphibolite probably represents strongly deformed and metamorphosed basalt or basaltic intrusions. It is fine grained, dark green to black, and locally contains abundant centimetre-scale garnet. The age of the Finlayson assemblage is Upper Devonian to Lower Mississippian (Murphy *et al.*, 2006).

### RUBY RANGE BATHOLITH

The Ruby Range batholith, in the current project area, includes intrusive rocks of quartz diorite, tonalite and granodiorite compositions. They are mapped separately from the porphyritic rocks of the Rhyolite Creek complex (see below) but are likely comagmatic with respect to the complex. The Ruby Range batholith rocks are generally equigranular, fine to medium grained and include biotite

and/or hornblende (Fig. 4c). Magnetite is a common accessory mineral, making some of the intrusions strongly magnetic in character. Mirolitic cavities are found throughout indicating emplacement at high crustal levels. The age of the batholith is ca. 64-57 Ma (Murphy and Israel, *unpublished data*).

### RHYOLITE CREEK COMPLEX

The Rhyolite Creek complex is here defined as including Paleocene mafic to felsic volcanic rocks and age equivalent high-level porphyritic intrusions. The complex is named for exposures of volcanic rocks and porphyries found near Rhyolite Creek with preliminary Paleocene (ca. 57 Ma) U-Pb zircon ages (Murphy, *unpublished data*). Regionally the complex includes rocks assigned to the Mount Crendon volcanics (Johnston and Timmerman, 1994), rocks south of the Nisling River previously included in the Mount Nansen Group, and varicoloured acid tuffs east of Aishihik Lake described by Tempelman-Kluit (1974). Extensive exposures of the complex occur throughout the study area, with a concentration near the centre of the area (Fig. 2). The Rhyolite Creek complex is comagmatic with the younger phases of the Ruby Range batholith exhibited by mutual crosscutting relationships between the high-level porphyry and the granodiorite to quartz diorite intrusive bodies.

### VOLCANIC ROCKS

Volcanic rocks within the Rhyolite Creek complex range in composition from felsic to mafic with the majority being of intermediate composition. Felsic volcanic rocks include rhyolite flows, tuffs, and breccias. Flows are generally light grey, green or maroon, often flow-banded, and variably quartz ± feldspar phyric (Fig. 4d). Where flows are quartz phyric, the quartz is smokey grey in colour and up to 2 mm in diameter. Tuffs are aphanitic and banded with smokey quartz phenocrysts. Breccias are characterized by angular clasts of rhyolite flows and tuffs up to several centimetres in width, within a crystal-rich matrix of the same composition. Isolated, small (up to tens of metres) exposures of black to dark grey obsidian are found in several localities where it is spatially associated with larger rhyolitic deposits. The obsidian is often flow-banded and variably devitrified and/or recrystallized.

Volcanic rocks of intermediate composition are spatially the most common within the Rhyolite Creek complex. They consist of dacite to andesite breccias, flows, and dikes (Fig. 4e,f). Breccias vary from pumice fragments up to 2 cm in diameter within a crystal-rich, fine-grained

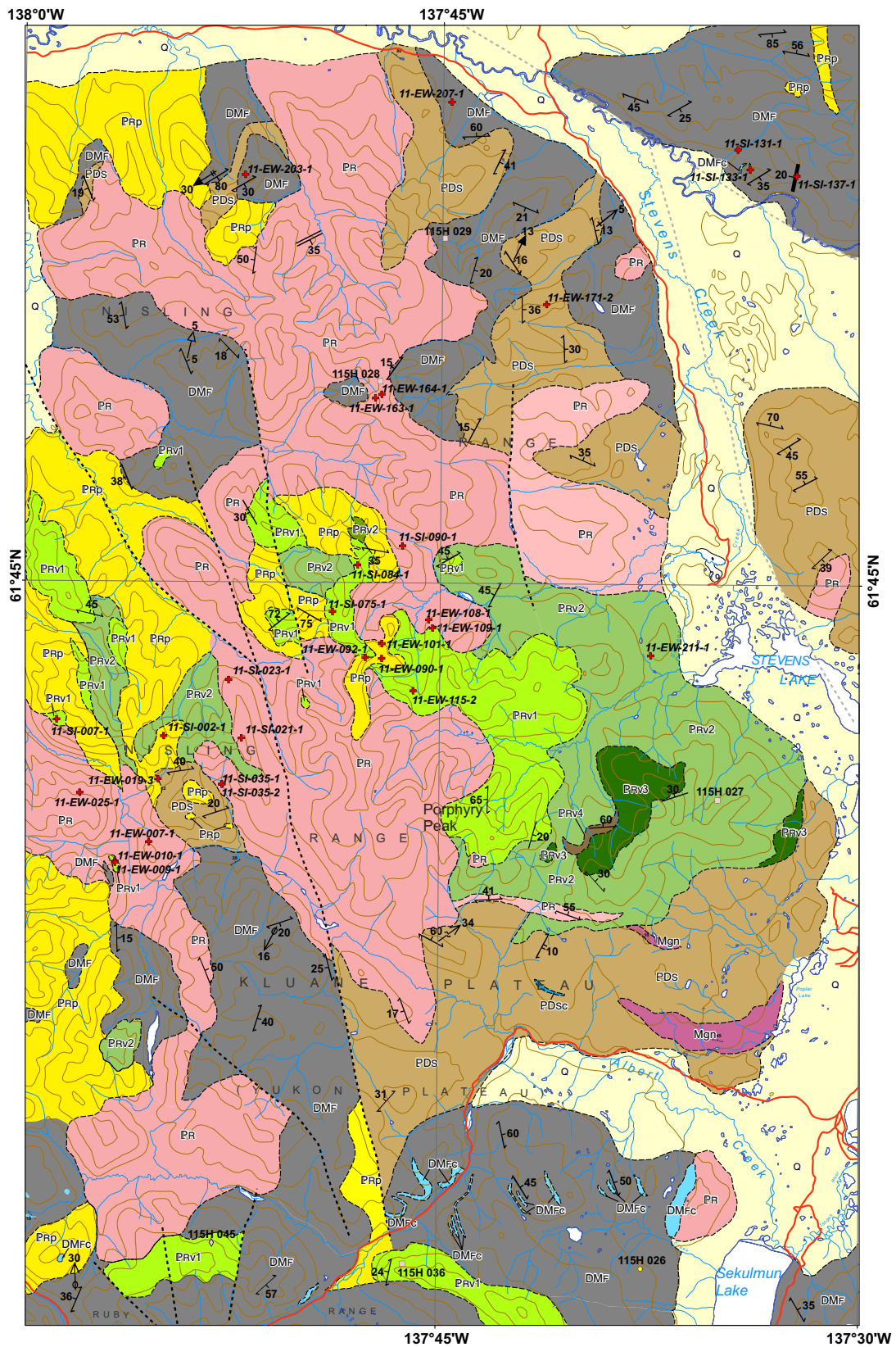
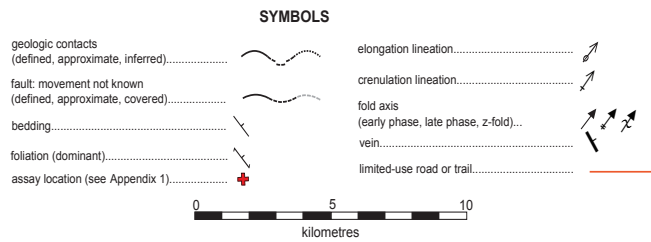
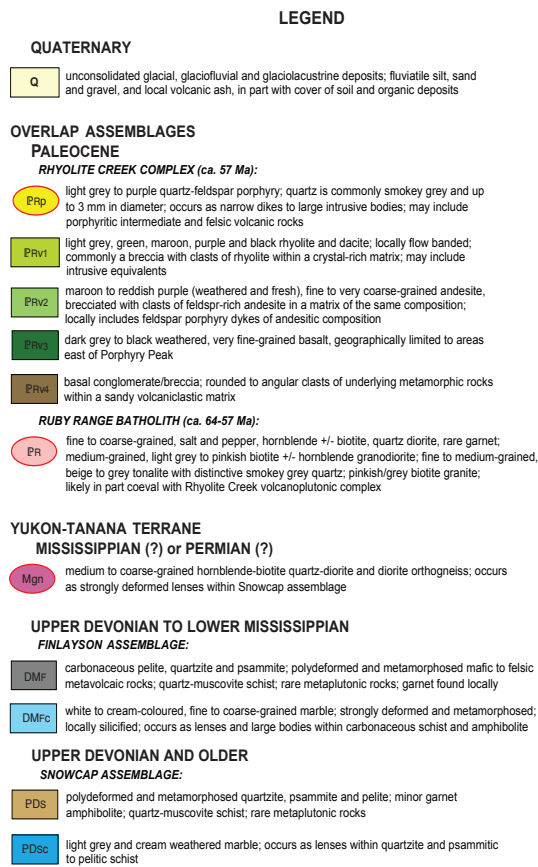


Figure 2. Preliminary geology map of the northwestern Aishihik Lake area, parts of NTS 115H/12 and 13.



MINFILE Occurrences (November, 2011)			
Number	Name	Deposit Type	Commodity/Status
115H045	Al	Au-Quartz Veins	◇ Au, Ag, Showing
115H036	Bilquist	Porphyry	□ Cu, Mo/Unknown
115H029	Occident	Porphyry	□ Cu, Mo/Anomaly
115H028	Canopus	Porphyry	□ Cu, Mo/Anomaly
115H027	Poplar	Porphyry	□ Mo, Zn/Anomaly
115H026	Thatch	Skarn	Au, Ag, Cu/Drilled prospect

Figure 2 con'd.

matrix to boulder-sized clasts of porphyritic andesite within a fine to medium-grained crystal-rich matrix. Compositionally the breccias do not vary too much, appearing to be dacitic to andesitic. Colour changes do occur within the clasts themselves and the matrix, mainly from greenish grey to maroon. The breccias represent both pyroclastic and autoclastic deposits, likely formed near a volcanic centre. Intermediate flows are only locally preserved and are dominated by dacitic flow banded, plagioclase ± quartz-phyric flows or plagioclase ± hornblende-phyric andesite. It is difficult to separate out plagioclase porphyry dykes of andesitic composition from the flows, mainly because of the lack of exposure and the similarity between the two rock types. Where dykes can be observed, they are generally one to two metres in width, nearly vertical and crosscut the breccia deposits.

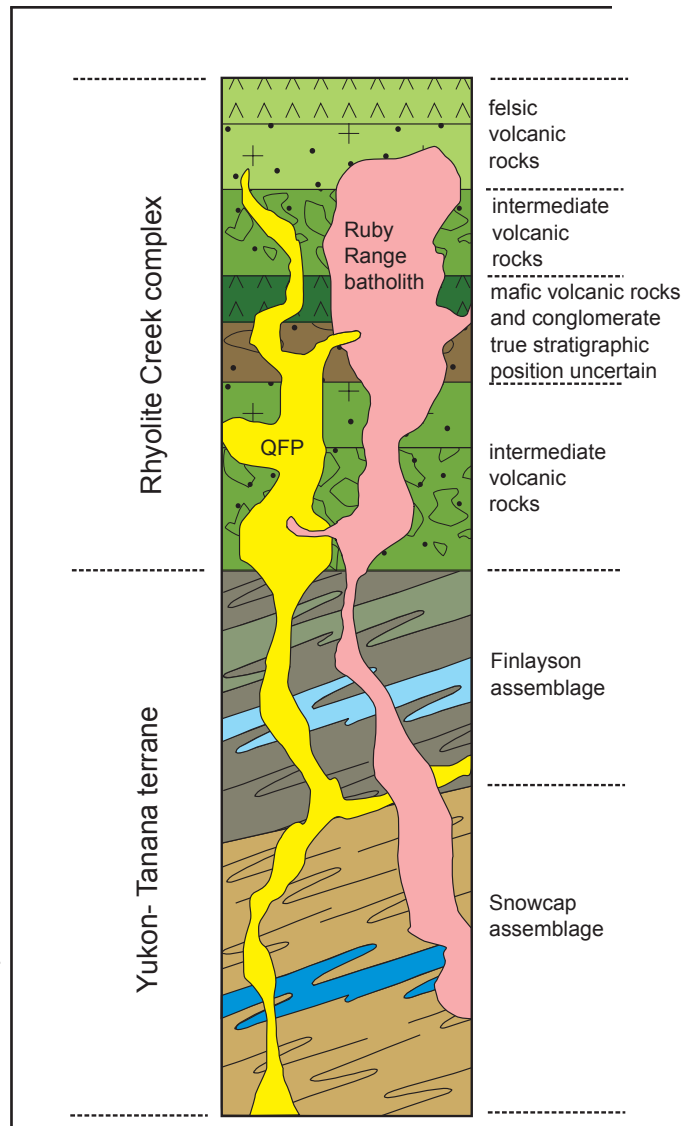
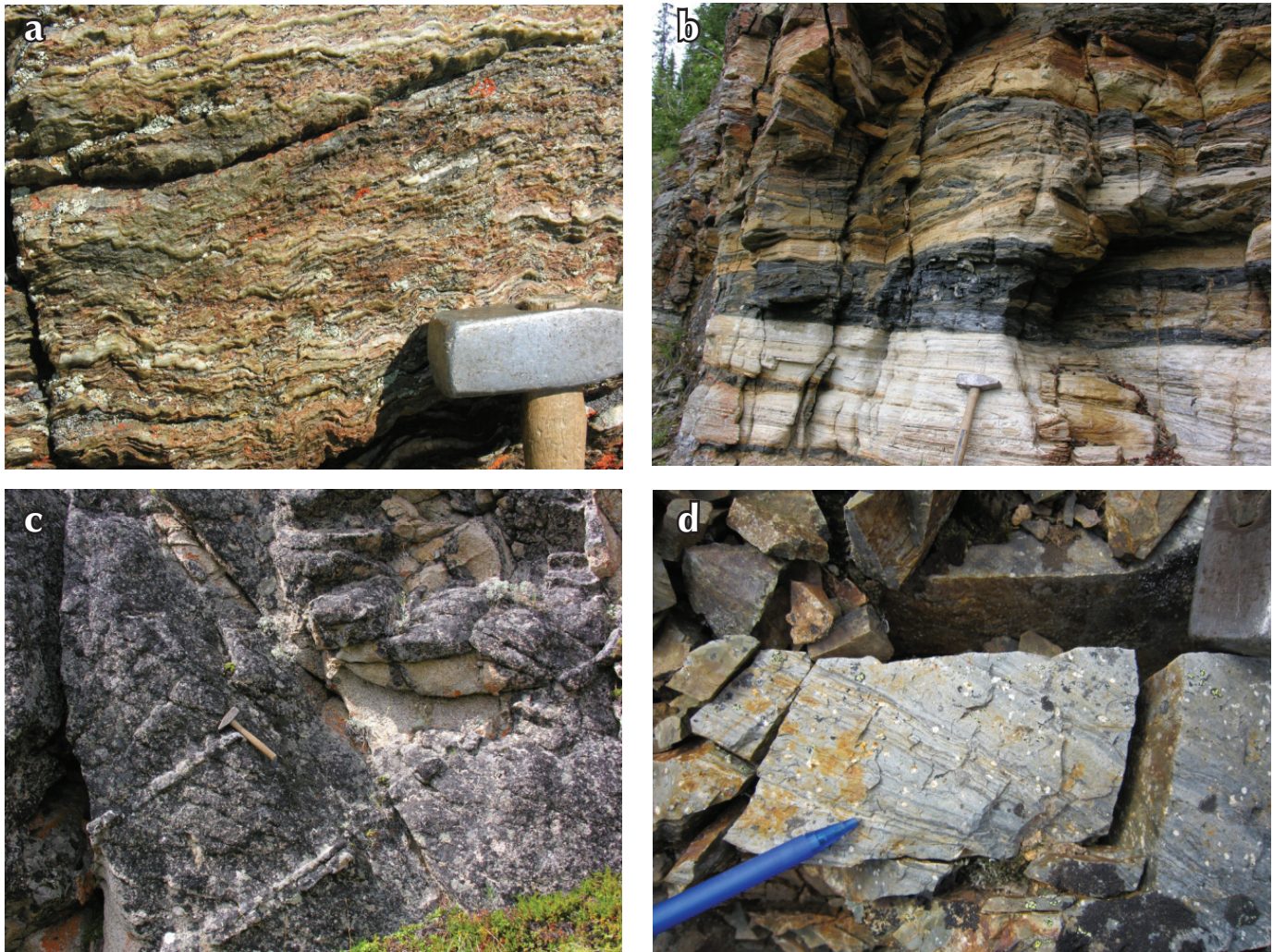


Figure 3. Generalized stratigraphic column for the northwestern Aishihik Lake area. QFP-quartz-feldspar porphyry of the Rhyolite Creek complex.



**Figure 4.** Photographs of lithologic units from the northwestern Aishihik Lake area: **(a)** interlayered quartzite and psammitic schist typical of the Snowcap assemblage; **(b)** structurally interleaved marble, carbonaceous schist and amphibolite of the Finlayson assemblage; **(c)** massive, equigranular granodiorite to tonalite of the Ruby Range batholith; **(d)** flow-banded rhyolite of Rhyolite Creek complex.

Mafic volcanic rocks are the least represented in the study area and are restricted to outcrops east of Porphyry Peak in the central part of the map sheet (Fig. 2). They are characterized by massive, brown weathered pyroxene-phyric basalt (Fig. 4g). Pyroxenes are up to 1 mm wide, black, and make up to 2-3% of the rock. Devitrified glassy black fragments are found throughout the basalt and can be up to 2-3 mm in length. The basalt is moderately to strongly magnetic.

Spatially associated with the basalt is a package of conglomerate/breccia up to several metres thick. Outcrops of the conglomerate/breccia are restricted to an area just west of Porphyry Peak where it overlies and is interlayered with the basalt. The unit is characterized by angular to rounded clasts of all compositions of volcanic rocks as well as metamorphic rocks from the underlying

Yukon-Tanana terrane. Clasts range in size from less than one centimetre up to one metre across. The largest clasts appear to be of basalt.

#### INTRUSIVE ROCKS

Intrusive rocks of the Rhyolite Creek complex include distinctive quartz-feldspar porphyry that outcrops throughout the project area, but is concentrated in the western portions (Fig. 2). The porphyry occurs as both large intrusive bodies and smaller, metre-scale dikes. It intrudes into and is overlain by the volcanic rocks and has mutual crosscutting relationships with the Ruby Range batholith rocks. In the most common form, the porphyry is orange to beige weathering, beige on fresh surfaces, with smokey grey quartz and creamy white feldspar phenocrysts up to 3 mm in length in a fine-grained matrix

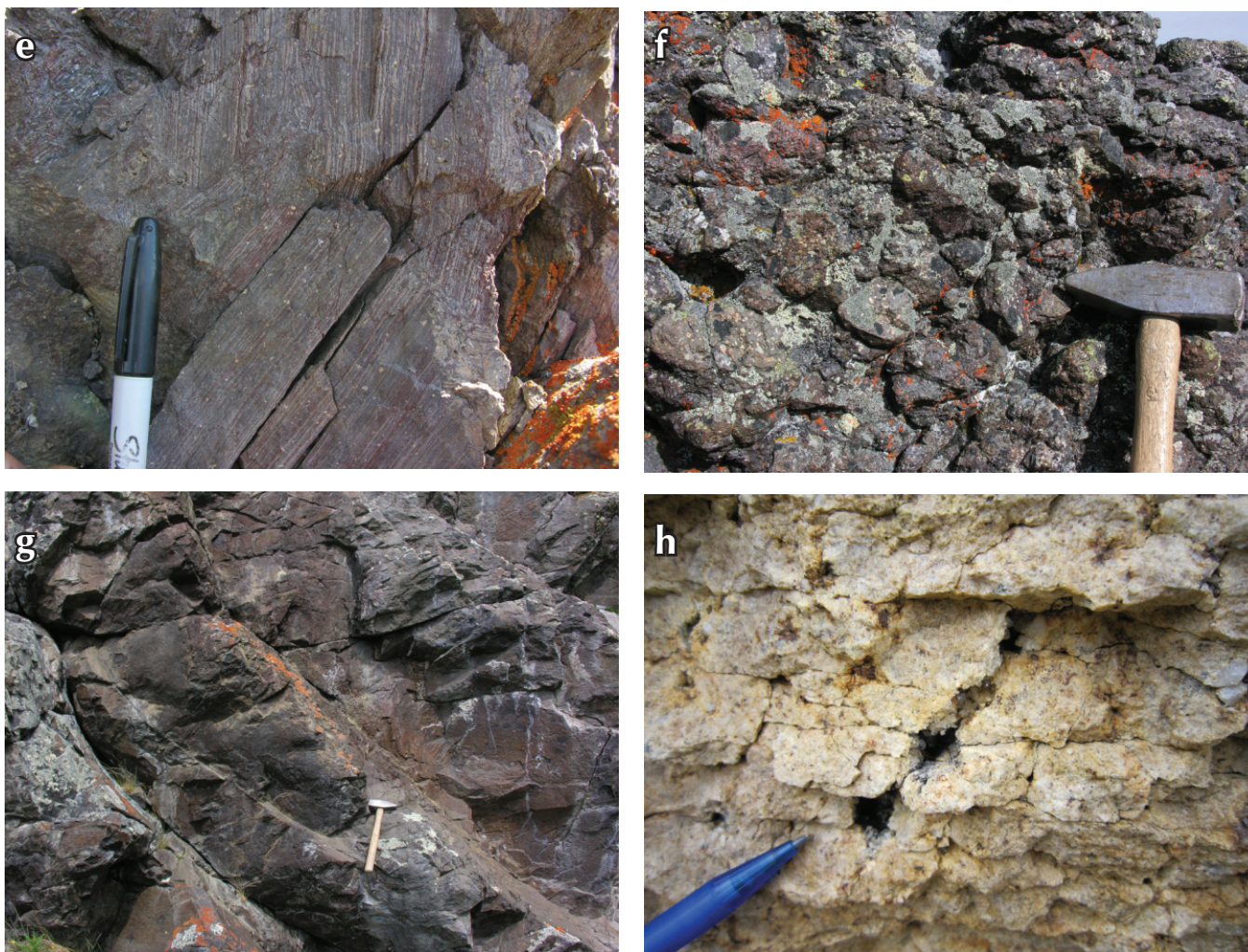


Figure 4 con'd. **(e)** plagioclase and quartz phyric, flow-banded dacite of the Rhyolite Creek complex; **(f)** andesite breccia of the Rhyolite Creek complex; **(g)** massive, pyroxene-phyric basalt of the Rhyolite Creek complex; **(h)** miarolitic cavity within quartz-feldspar porphyry of the Rhyolite Creek complex.

of quartz and feldspar. Locally the feldspar phenocrysts are up to 1 cm in length and the abundance of quartz decreases to near absence. In other places the porphyry is almost aphanitic with only a slight increase in size of feldspar and quartz crystals from the matrix. Miarolitic cavities are found throughout the intrusive bodies, and occur as open spaces up to 1-2 cm in length with quartz crystals formed along the edges of the openings (Fig. 4h). The mutual crosscutting nature of the porphyry with the Ruby Range batholith and the overlying volcanic rocks suggests the age of the porphyry is likely ca. 57 Ma.

## MINERAL POTENTIAL

Mineral potential in the project area is likely related to either porphyry or epithermal deposit types. The general lithologic relationships observed in the northwestern

Aishihik Lake area suggests that intrusive rocks of both the Ruby Range batholith and the Rhyolite Creek complex were intruded at high crustal levels, within the top few kilometres to near surface. This is the geologic setting where porphyry and epithermal mineralization would be expected. Porphyry occurrences do occur in the uppermost portion of the Ruby Range batholith, elsewhere in the region. No large alteration systems were identified during the mapping program; however, structurally controlled alteration and mineralization was observed, characterized by zones of weathered sulphides within brittle shear zones (Fig. 5a-d). Some large quartz veins were found in the northeastern portion of the map area; however, the depth at which these formed and their regional structural context is not yet known. Values for standard assays of rock samples taken throughout the project area, including anomalous arsenic, mercury, lead,

zinc, silver and minor gold in a few of the samples are provided in Appendix A (see Fig. 2 for sample locations).

## DISCUSSION

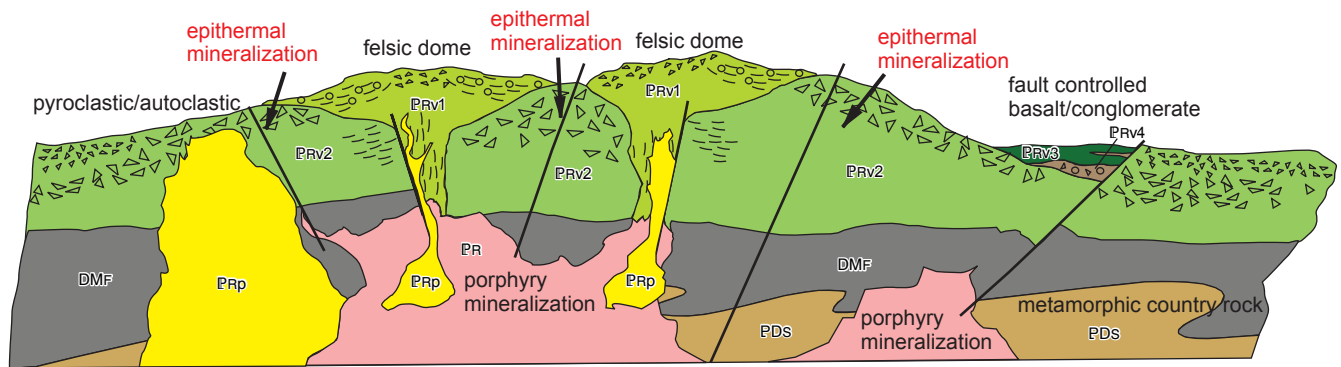
The northwestern Aishihik Lake map area is characterized by Proterozoic to Mississippian metamorphosed basement rock, overlain by Paleocene volcanic and intrusive rocks. The lithologic relationships suggest that the area is likely the site of a Paleocene volcanic centre. Some of the north to northwest-striking structures observed in the field (Fig. 2) are likely syn-volcanic faults. The distribution of volcanic and intrusive rocks suggest a central zone of felsic material, likely defining rhyolite domes, flanked by more intermediate pyroclastic and autoclastic deposits (Fig. 6). The restricted distribution of the basalt may,

in part, be related to an association with a fault off the side of the main volcanic axis that allowed the last gasp (volumetrically small) of volcanic material to flow out of the magma chamber. The central portion of the volcanic complex was intruded by its own magma chamber, likely near the end of the eruptive cycle.

Mineralization associated with volcanic centres can include porphyry and epithermal styles (Fig. 6). The main porphyry occurrences may be somewhat deeper in the system in the project area, and may outcrop lower in the valleys rather than up on ridges. The strong structural control on mineralization observed in the project area, may indicate epithermal systems associated with syn-volcanic structures were active during eruption.



**Figure 5.** Structurally controlled mineralization within the northwestern Aishihik Lake area: **(a)** limonitic alteration of volcanic rocks of the Rhyolite Creek complex, 11-SI-084-1; **(b)** rusty weathered and fractured quartz-feldspar porphyry of the Rhyolite Creek complex, 11-SI-005-1; **(c)** weathered sulphides within fracture cutting through felsic volcanic rocks of the Rhyolite Creek complex, 11-SI-007-1; **(d)** quartz vein within carbonaceous schist of the Finlayson assemblage, 11-SI-137-1. See Figure 2 for sample location and Appendix 1 for assay values.



**Figure 6.** Conceptual diagram illustrating the depositional setting for the Rhyolite Creek complex and location for possible related mineralization (labels same as Figure 2, for rock descriptions see Figure 2 legend).

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Appendix A. Table of assay values.

Sample	UTMNorth	UTMEast	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppb	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppb	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm
11-EW-002-1	630825	6790218	1.55	86.89	15.44	90.0	188	57.4	23.4	720	4.26	15.6	1.0	0.8	3.3	56.9	0.12	0.14	0.11
11-EW-007-1	345358	6841628	3.73	3.93	11.73	50.3	47	0.5	0.2	30	0.58	0.5	4.8	<0.2	24.4	1.1	0.22	0.07	0.05
11-EW-009-1	344268	6841051	3.66	5.22	9.63	30.5	216	1.1	0.6	112	1.70	0.2	2.3	<0.2	12.6	6.5	0.15	0.15	0.26
11-EW-010-1	344267	6841015	2.84	7.10	6.60	38.1	149	0.4	0.4	377	1.83	0.1	1.8	<0.2	13.2	9.4	0.26	0.09	0.14
11-EW-019-3	345717	6843592	1.33	18.91	5.88	104.6	80	3.2	19.0	1284	5.72	2.4	0.5	<0.2	3.2	226.2	0.21	0.15	0.02
11-EW-023-1	343228	6342797	2.01	3.24	10.81	77.1	118	0.3	0.1	70	0.64	0.7	4.1	<0.2	17.9	1.1	0.10	0.09	0.07
11-EW-025-1	343239	6843257	0.46	1.06	15.22	29.7	28	0.7	0.5	95	0.79	0.1	1.9	<0.2	10.2	7.3	0.05	0.03	0.02
11-EW-090-1	352888	6847132	1.58	2.72	6.44	75.9	48	0.2	0.3	253	1.27	0.3	6.4	<0.2	21.5	2.6	0.18	0.03	0.47
11-EW-092-1	352370	6847180	0.32	2.82	22.90	57.4	97	0.1	0.1	39	0.73	3.1	5.5	<0.2	11.6	6.1	0.10	0.06	0.23
11-EW-101-1	352911	6847600	0.26	2.35	2.65	28.4	47	0.3	0.2	115	0.63	0.2	0.5	<0.2	1.7	2.9	0.12	<0.02	0.02
11-EW-108-1	354409	6848297	3.01	2.68	8.72	23.6	66	0.6	0.2	107	1.36	3.1	2.7	<0.2	12.2	1.8	0.03	0.21	0.06
11-EW-109-1	354522	6848028	0.98	21.49	6.84	108.3	93	38.9	17.7	552	4.09	0.7	1.4	<0.2	3.8	61.5	0.28	0.12	0.05
11-EW-115-2	353840	6846080	4.55	2.48	4.68	53.6	105	0.8	0.3	29	0.96	1.7	1.5	0.6	9.1	1.6	0.15	0.29	1.14
11-EW-163-1	352983	6855332	0.45	8.14	9.00	64.4	41	0.7	0.4	54	1.98	24.3	1.5	<0.2	13.5	5.4	0.09	0.36	0.22
11-EW-164-1	353185	6855438	0.79	7.08	1.77	2.3	87	2.8	0.7	24	0.45	20.4	0.3	2.2	0.1	1.5	<0.01	0.23	0.74
11-EW-171-2	358472	6858077	1.41	22.93	12.63	13.8	117	3.3	2.6	91	1.55	6.2	1.7	<0.2	6.1	38.0	0.05	2.08	0.15
11-EW-203-1	349142	6862505	0.27	38.13	3.94	1.6	128	1.6	0.5	41	1.15	139.1	0.3	6.4	2.5	9.9	0.05	1.25	0.30
11-EW-207-1	355713	6864552	1.21	28.21	6.86	11.3	624	2.6	0.9	154	1.01	1.5	2.7	<0.2	2.5	24.5	0.05	4.83	0.10
11-EW-211-1	361355	6846915	0.56	19.99	4.55	89.5	86	12.6	22.1	683	4.84	4.7	0.4	0.9	2.2	167.9	0.22	0.93	<0.02
11-SI-002-1	345945	6844943	0.24	1.32	11.47	63.1	56	0.7	0.3	82	0.64	0.4	3.2	<0.2	17.5	4.7	0.09	0.05	0.11
11-SI-005-1	343051	6345052	8.51	15.72	12.34	126.7	166	0.4	0.3	42	0.95	24.0	8.5	<0.2	17.9	3.2	0.16	0.30	0.39
11-SI-007-1	342595	6845586	8.68	142.24	4.26	119.8	320	47.1	19.0	263	4.54	2.6	1.8	0.4	1.7	155.2	0.54	0.51	0.10
11-SI-021-1	348385	6844785	1.35	3.22	11.20	91.0	70	0.5	0.2	98	1.02	0.9	2.6	<0.2	17.0	1.9	0.10	0.07	0.32
11-SI-023-1	348050	6846639	2.00	3.03	11.49	71.0	105	1.0	0.4	373	0.94	0.4	6.2	1.5	23.4	2.5	0.85	0.05	0.06
11-SI-035-2	347721	6843356	3.31	5.36	16.07	79.0	226	1.5	3.6	318	1.83	7.5	5.0	<0.2	17.1	7.9	0.78	0.37	0.27
11-SI-035-1	347721	6843356	2.54	15.14	20.43	23.2	234	0.9	0.3	40	0.75	111.7	2.7	1.8	15.6	4.1	1.07	0.21	0.83
11-SI-075-1	351394	6848660	5.29	2.81	4.22	60.6	146	0.4	0.1	160	0.66	84.8	6.4	<0.2	18.7	3.0	0.09	0.59	1.46
11-SI-084-1	352234	6850102	18.68	15.18	15.72	40.4	197	12.3	10.4	414	3.31	436.4	2.2	1.5	4.8	22.6	0.11	1.82	0.09
11-SI-090-1	353670	6850647	0.76	9.86	10.49	71.2	23	2.5	2.0	90	1.37	1.6	2.7	<0.2	16.8	7.6	0.06	0.07	0.08
11-SI-131-1	364662	6862732	0.90	13.70	1.99	15.4	237	13.2	4.4	60	0.75	2.8	0.7	0.6	2.4	19.4	0.10	0.07	0.03
11-SI-133-1	365025	6862091	0.43	30.81	0.89	44.2	131	7.1	1.2	170	3.59	1.6	0.9	0.3	0.4	4.1	0.03	0.37	<0.02
11-SI-137-1	366480	6861837	0.42	9.61	0.41	1.6	46	2.9	0.6	28	0.27	1.3	<0.1	0.4	<0.1	<0.5	<0.01	0.41	<0.02

Note: coordinates are NAD 83 UTM Zone 8

Appendix A con'd

Sample	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Sc ppm	Tl ppm	S %	Hg ppb	Se ppm	Te ppm	Ga ppm
11-EW-002-1	67	1.28	0.113	5.7	88.2	1.86	90.6	0.013	1	2.58	0.008	0.14	<0.1	4.8	<0.02	0.03	<5	0.8	0.05	6.5
11-EW-007-1	<2	0.07	0.001	16.9	4.2	<0.01	40.0	0.003	<1	0.22	0.048	0.11	0.4	0.3	0.05	<0.02	<5	0.2	<0.02	1.8
11-EW-009-1	<2	0.18	0.012	29.5	6.2	0.03	131.1	0.084	<1	0.33	0.064	0.11	0.4	3.3	0.06	0.13	<5	1.2	0.08	4.1
11-EW-010-1	<2	0.50	0.010	47.4	3.5	0.07	161.0	0.125	<1	0.31	0.106	0.15	0.7	5.3	0.03	<0.02	<5	0.2	0.09	3.3
11-EW-019-3	90	4.65	0.210	22.8	14.7	0.90	168.5	0.061	<1	3.59	0.438	0.22	<0.1	16.3	0.12	0.08	7	0.3	0.03	9.7
11-EW-023-1	<2	0.03	0.001	29.0	2.6	<0.01	29.8	0.036	<1	0.21	0.055	0.12	0.8	0.4	0.08	<0.02	<5	0.2	<0.02	2.9
11-EW-025-1	<2	0.09	0.016	34.5	2.7	0.02	156.7	<0.001	<1	0.32	0.049	0.19	<0.1	1.2	0.05	<0.02	<5	0.1	<0.02	1.7
11-EW-090-1	<2	0.17	0.005	44.8	1.8	0.03	32.1	0.026	<1	0.56	0.056	0.18	<0.1	2.5	0.09	<0.02	<5	0.2	<0.02	5.1
11-EW-092-1	<2	0.93	0.001	44.0	0.9	<0.01	12.9	0.020	<1	1.03	1.231	0.22	<0.1	1.1	0.08	<0.02	<5	<0.1	<0.02	5.7
11-EW-101-1	<2	0.11	0.004	9.0	1.0	0.01	33.1	0.016	<1	0.15	0.445	0.19	<0.1	0.5	0.04	<0.02	<5	<0.1	<0.02	0.9
11-EW-108-1	<2	0.01	0.003	5.2	2.4	<0.01	23.3	0.025	<1	0.32	0.071	0.17	<0.1	0.4	0.04	<0.02	<5	<0.1	<0.02	1.8
11-EW-109-1	69	1.24	0.256	37.6	67.5	1.38	91.7	0.230	<1	1.63	0.158	0.17	0.2	4.0	<0.02	<0.02	<5	0.2	<0.02	6.7
11-EW-115-2	<2	0.02	0.002	25.9	3.2	<0.01	22.2	0.007	<1	0.24	0.035	0.19	0.2	0.2	0.10	0.62	13	0.1	<0.02	1.4
11-EW-163-1	<2	0.06	0.006	2.4	2.8	0.03	50.7	0.002	<1	0.39	0.058	0.08	0.4	1.1	0.03	<0.02	<5	0.5	<0.02	3.4
11-EW-164-1	<2	<0.01	0.008	<0.5	19.8	<0.01	46.3	<0.001	<1	0.02	0.002	<0.01	<0.1	0.1	<0.02	<0.02	<5	0.6	0.07	0.3
11-EW-171-2	39	0.33	0.083	14.9	14.2	0.43	71.9	0.109	<1	1.45	0.079	0.08	0.3	2.6	0.03	0.04	<5	0.2	0.05	6.4
11-EW-203-1	7	<0.01	0.008	9.6	13.5	<0.01	208.7	0.004	<1	0.17	0.002	0.06	0.1	0.8	0.06	<0.02	11	0.7	0.21	1.9
11-EW-207-1	100	0.18	0.227	11.2	37.4	0.35	1442.7	0.014	<1	0.68	0.006	0.30	0.1	1.7	0.14	0.13	7	5.1	0.07	3.4
11-EW-211-1	71	3.17	0.159	18.2	46.7	2.22	254.9	0.171	<1	3.78	0.295	0.10	0.1	8.0	0.03	<0.02	<5	0.2	<0.02	10.1
11-SI-002-1	<2	0.08	<0.001	11.3	2.5	0.01	18.8	0.003	<1	0.48	0.035	0.26	<0.1	0.2	0.12	<0.02	<5	0.2	<0.02	4.0
11-SI-005-1	<2	0.04	0.005	43.9	2.6	0.02	44.9	0.010	<1	0.58	0.058	0.11	0.1	2.2	0.07	<0.02	<5	0.5	0.02	4.8
11-SI-007-1	225	1.17	0.107	5.2	36.2	1.28	103.7	0.058	1	3.80	0.159	0.61	<0.1	10.1	0.67	0.98	<5	9.6	0.09	9.8
11-SI-021-1	<2	0.02	0.001	18.2	2.3	<0.01	39.9	0.030	<1	0.33	0.053	0.13	0.9	0.5	0.15	<0.02	<5	0.2	<0.02	3.6
11-SI-023-1	<2	0.07	0.001	16.4	4.3	<0.01	39.3	0.003	<1	0.40	0.039	0.14	0.4	0.4	0.06	<0.02	<5	0.3	<0.02	2.4
11-SI-035-2	12	0.13	0.038	40.6	6.5	0.19	120.9	0.041	<1	0.74	0.052	0.12	0.2	3.7	0.10	0.31	<5	0.3	<0.02	5.8
11-SI-035-1	<2	0.01	0.003	20.3	4.6	<0.01	43.3	<0.001	<1	0.17	0.068	0.15	0.1	0.6	0.06	0.19	<5	0.4	<0.02	1.1
11-SI-075-1	<2	0.04	<0.001	13.0	8.0	0.01	21.3	0.019	<1	0.45	0.054	0.20	0.3	0.5	0.20	<0.02	<5	0.2	<0.02	4.6
11-SI-084-1	65	0.69	0.131	24.5	34.2	0.45	112.1	0.003	<1	1.03	0.055	0.16	<0.1	3.5	0.38	0.54	3328	0.1	<0.02	5.9
11-SI-090-1	<2	0.03	0.003	16.1	1.4	0.02	62.1	0.014	<1	0.68	0.066	0.14	0.3	1.0	0.06	<0.02	12	0.2	<0.02	6.2
11-SI-131-1	7	0.45	0.021	7.7	14.0	0.14	51.4	0.041	1	0.56	0.013	0.05	0.2	0.8	<0.02	<0.02	23	0.4	0.04	1.9
11-SI-133-1	11	<0.01	0.032	2.3	14.1	<0.01	19.8	<0.001	<1	0.03	0.003	0.03	<0.1	0.2	<0.02	0.06	<5	1.0	<0.02	0.2
11-SI-137-1	<2	<0.01	<0.001	<0.5	19.4	<0.01	9.3	<0.001	<1	0.01	<0.001	<0.01	<0.1	<0.1	<0.02	<0.02	<5	<0.1	0.02	0.1

Note: coordinates are NAD 83 UTM Zone 8

