

**GEOCHEMICAL EXPLORATION
MODELS, VOLUME 2: SHALE
HOSTED Pb-Zn-Ag DEPOSITS IN
NORTH-EASTERN BRITISH
COLUMBIA (94F/13, 94K/4 AND
94L/1)**

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ABSTRACT

Open File 2001-07 describes the detailed surveys carried out by the British Columbia Geological Survey Branch in the Gataga District of north eastern B.C. to improve geochemical exploration techniques for sedex type Pb-Zn-Ag sulphide deposits and develop geochemical exploration models. Over 300 soil, rock, stream sediment, moss mat sediment, stream water and spring water samples were collected from five areas around Driftpile Creek including the Driftpile Creek Pb-Zn-Ag deposit (MINFILE 94K066), the Bear sulphide occurrence (MINFILE 94F024) and at the Spa Occurrence (MINFILE 94F003), a large, metal-rich surface ferricrete deposit. Rock, soil and sediment samples were analysed for more than 60 elements by methods that included instrumental neutron activation (INAA), aqua regia-inductively coupled plasma emission spectroscopy (ICPES) and sequential extraction analysis with hydroxylamine hydrochloride and hydrofluoric acid. Filtered, acidified water samples were analysed by inductively coupled plasma mass spectroscopy (ICPMS).

Iron-oxide spring deposits and soil close to the sedex mineralization at Driftpile Creek and the Bear occurrence have high Pb, Ag, Ba, Hg and Tl content. The spring water is acid and has elevated Ba, Al, Pb, and Tl. Other iron-oxide spring deposits such as the Spa have very high As, Cd, Co, Ni, Mo, U and V. Spring waters are alkaline and have high Ca, As, Cd, Co, Ni, Mo, U and V. Both acid and alkaline spring water samples have high Zn and SO₄. Sequential extraction analysis reveals that Co is associated with Mn-oxides in spring deposits whereas Mo, Ni and Zn are bound to Fe oxides. The partitioning of Pb into the different Fe-oxide phases changes as the maturity of spring deposits increases. Moss mat sediment generally has higher Pb and Ba than stream sediment. The multi-media geochemistry suggests that there may be additional sedex Pb-Zn mineralization near Saint Creek, north of Driftpile Creek and in an area north of the Bear occurrence where there is also evidence of Au mineralization. A geochemical exploration model (GEM) developed from survey results more clearly identifies the different sources for the metal and the barriers that give rise to geochemical anomalies.

INTRODUCTION

This Open File describes the results of detailed studies carried out by the British Columbia Geological Survey Branch in the Gataga District of north eastern BC (Figure 1) to study the geochemical response of massive sulphide mineralization in stream sediment, moss mat sediment, spring sediment, spring water, soil and till. These studies were carried out in conjunction with geological mapping and mineral deposit studies (Ferri *et al.* 1995). Lett and Jackaman, 1995, reported the results of geochemical orientation studies around Driftpile Creek. The detailed geochemical studies reported in this Open File were carried out to improve geochemical exploration techniques for shale-hosted sedex Pb-Zn-Ag deposits and to develop geochemical models for simplifying data interpretation.

The Open File is published in two Parts. Part 1 describes a geochemical exploration model (GEM) for sedex Pb-Zn-Ag sulphide deposits in the Gataga District developed from detailed survey data for five areas north and south of the Driftpile Creek deposit. The geology, topography, soils and survey results for the areas are summarized in Part 1. Survey results are augmented by assessment report data. Part 2 describes the results of the geochemical surveys in more detail with all of the supporting field and analytical data. Essentially, Part 1 provides a "Readers Digest" of the information compiled in Part 2.

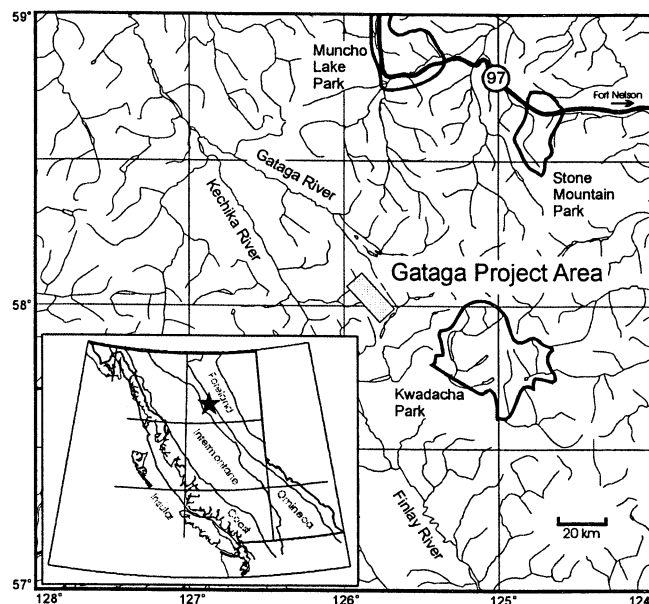


Figure 1. Location of the project area

PART 1

BACKGROUND

A problem commonly encountered in geochemical exploration for shale-hosted Pb-Ag-Zn deposits is that very high Zn and Ag background levels mask the surface expression of the sulphide mineralization. The high Zn-Ag backgrounds reflect subsurface weathering and oxidation of metal-rich, carbonaceous and pyritic shale that releases metals (e.g. Fe, Zn, Co, Ni, U, V) into ground water. Metals accumulate in soil and sediment by clastic dispersion of weathered shale fragments, by adsorption from ground water solutions to clay and secondary Fe-Mn minerals and by precipitation. Surface discharge of acid ground water, produced by oxidation of the pyritic shale can give rise to secondary Fe oxide spring precipitates and ferricrete deposits. Depending on the pH and Eh of the near-surface environment, the secondary iron oxide minerals can accumulate up to several thousand ppm of As, Ba, Cu, Pb and Zn (Hassen and Bourezg, 1990).

The very colourful surface Fe-oxide deposits in shale basins can give a misleading impression of the actual base metal sulphide mineral potential of an area. In the Gataga District the numerous Fe-oxide spring deposits are associated with ground water draining Palaeozoic basinal-facies clastic rocks that host the Stronsay (Cirque), Bear and Driftpile Creek Pb-Zn-Ag-Ba sedex deposits (MacIntyre, 1992). Soils and stream sediments can contain several thousand ppm of Zn with significant amounts of Ag, Mo and other metals.

Previous studies in northern BC, the Yukon Territory and Alaska have recognized the problems of geochemical exploration for shale-hosted sulphide deposits. Carne (1983) established thresholds of 175 ppm Pb, 700 ppm Zn and 0.6 ppm Ag in soil around the Driftpile Creek deposit. Iron-oxide spring deposits in the area were found to have one percent Zn, and 400 ppm Pb with elevated As and Mo. The highest concentrations in iron oxide spring deposits occur where the deposit has formed from neutral to alkaline ground water. Where ground water is acid Fe-oxide spring deposits are smaller and do not accumulate Co, Cu, Ni or Zn to high concentrations (Fletcher and Doyle, 1974). Other surface water pH related changes in shale basins include the formation of a white coloured precipitate (aluminium hydroxide) coating stream sediment (Earle, 1976).

A variety of spring deposits occur in the Gataga District. The most common are:

- Small (10-20 cm high) mounds surrounding the actual spring discharge. The 'cold-spring' mounds consist of laminated red to dark brown Fe-oxide terracettes (Plate 1).
- Surface crusts of laminated Fe-oxide that are probably derived from the physical erosion of the cold spring deposits. The surface crusts also consist of variegated, friable Fe-oxide sinter that can form slabs scattered over the surface of vegetation kill zones (Plate 2).
- Ferricrete deposits consisting of rounded Paleozoic pebbles and cobbles cemented with sandy

textured ferruginous material. These deposits may be several metres thick and can extend for several hundred metres along the side of creeks. Typically, no active springs are associated with the ferricrete deposits.

- White-coloured, laminated precipitate coating clastic sediment and vegetation debris in stream channels. This type of precipitate is less common than the ferruginous deposits and is most likely to consist of aluminium hydroxide or secondary barite. The precipitate is not generally found in surrounding springs, but is most visible in the channel several metres downstream from the spring (Plate 3).
- White-coloured, laminated travertine and calcrete

Analysis of different grain and density fractions from stream sediment samples previously collected in the Driftpile Creek area indicate that pH changes in the stream water result in separation of Pb from Zn sediment anomalies. This partitioning is due to the different geochemical mobility of two of the metals. Lead and Ba shales in heavy mineral fractions of stream sediments can help avoid high background effects with support from geochemical pathfinders such as Cd and Hg (Ballantyne, 1992).

Weathering of metal-enriched, fine clastic sedimentary rocks, erosion of surficial deposits and oxidation-solution of mineral sulphides are the principal processes by which metals are released into the near-surface environment. Elements concentrate in streams as detrital minerals, by absorption to

secondary Fe or Mn oxides or by precipitation in response to changing stream water pH. Multi-media studies are designed to identify the metal sources and the processes leading to geochemical anomaly formation. The results of multi-media studies can be more easily explained and interpreted using a geochemical exploration model.



Plate 1. "Cold Spring" iron-oxides



Plate 2. Surface iron-oxide deposit



Plate 3. White stream precipitate

SEDEX DEPOSIT GEM

The geochemical exploration model (GEM) described in this Open File is based on a series of conceptual, three dimensional models first proposed by Bradshaw, 1974, for the Canadian Cordillera and later modified by Kauranne, 1976, Lovering and McCarthy, 1978 and Butt and Smith, 1980. Lett and Jackaman, 2000 and Lett, 2002 have used similar models to interpret geochemical data for volcanogenic massive sulphide (VMS) and platinum-rich sulphide deposits in southern B.C. A model summarizing the geochemical behaviour of elements in bedrock and the surface environment for sedimentary exhalative (sedex) Pb-Zn-Ag-Ba mineralization is shown in Figure 2. In Figure 2, the relationship between bedrock geology, sedex mineralization, surficial deposits (soil, till, etc.) and surface drainage is displayed three-dimensionally by a series of stacked, block diagrams. These diagrams are linked to a series of geochemical landscape layers showing the geochemical expression of mineralization traced from the bedrock interface into the surficial deposits, soil, stream sediment and water. The ice-flow direction and the projected expression of mineralization from the bedrock onto the layers are also shown on the diagrams.

Ideally, a mineral deposit primary trace element signature will be reflected in till, soil, vegetation, stream water and stream sediment geochemistry. Metals typically enriched in sedex sulphides (e.g. Hg, Cd, Pb, Se, Ag, Tl, Zn), in the sulphide host-rocks (e.g. Ba, Mn) and in carbonaceous shales (e.g. As, Co, Ni, Cu, Mo, V, U, Zn) are identified on the bedrock geochemistry layer. The element association shown in Figure 2 is partly based on the sedex deposit profile E 14 (Lefebure and Ray, 1995) that is typical of base-metal deposits in the Gataga District (e.g. Driftpile Creek). Primary geochemical haloes shown on the bedrock layer have no scale because the actual lithogeochemical anomaly size varies from deposit to deposit.

Till and colluvial dispersal trains from sedex mineralization and metal-rich shale are displayed on the surficial geochemistry layer in Figure 2. An indication for the size and contrast of the till and colluvial anomalies is shown by shaded horizontal and vertical patterns. Element associations identified on the plumes are intended to distinguish between the different bedrock sources for the surficial anomalies such as Ag-Ba-Cd-Mn-Pb-Tl-Zn from sedex sulphide-barite deposits and As-Co-Ni-Mo-V-U-Zn from shale host rocks.

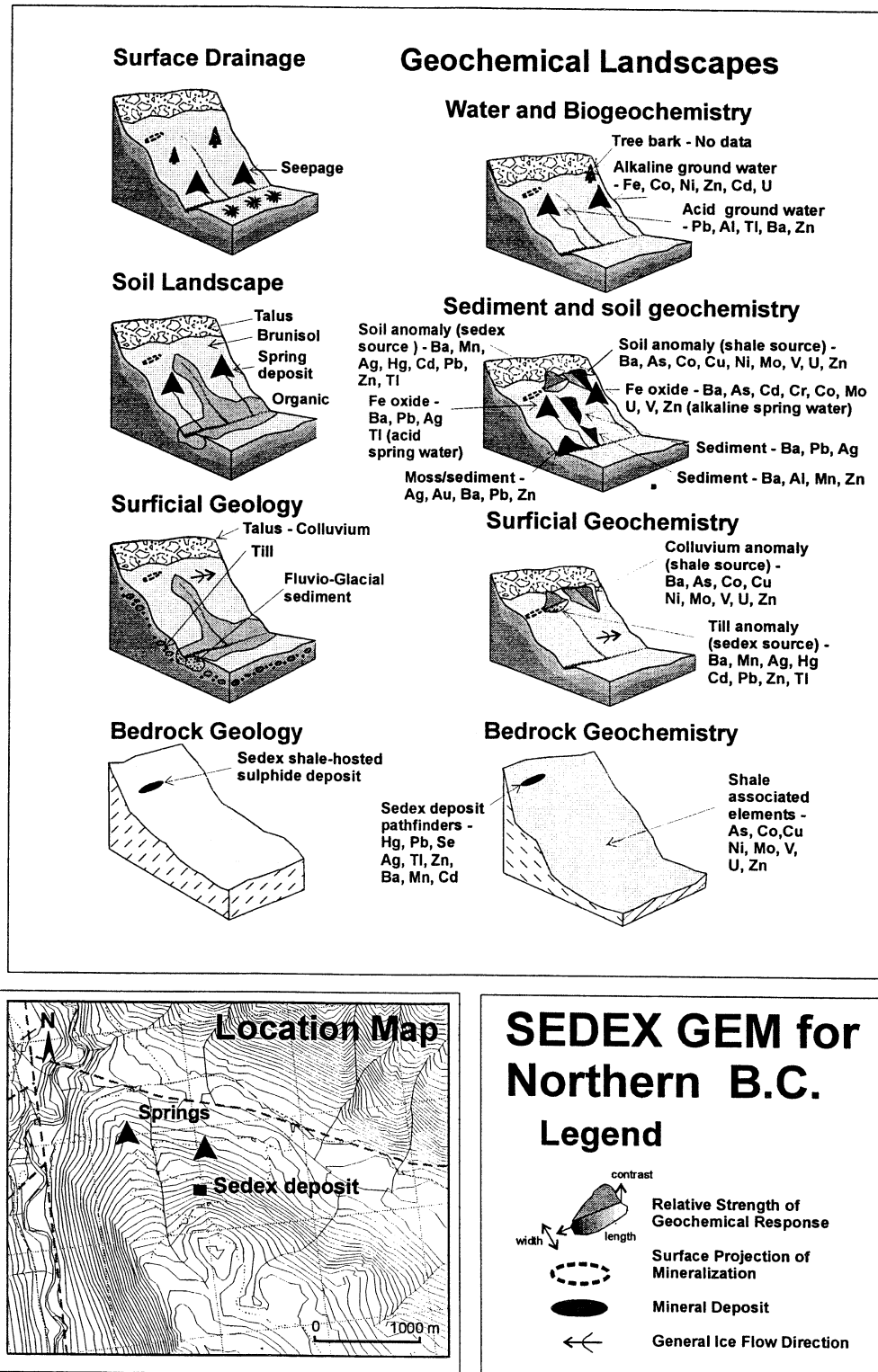


Figure 2. GEM for sedex Pb-Zn-Ag sulphide deposits

The soil landscape layer combines the topography, drainage and predominant soil types typical of the bioclimate zones and landscapes found in the Gataga District. The patterns on the soil-sediment geochemistry layer are intended to indicate the relative strength of geochemical response in B-horizon soil, stream sediment, spring deposits and spring water. In the B-horizon elements characteristic of sedex mineralization and shale bedrock are shown. Elements elevated in deposits associated with alkaline and acid spring water are distinguished on the soil geochemistry layer and water layer.

The geochemical exploration models described in this Open File are classified according to a hierarchical scheme similar to that proposed by Butt and Smith, 1979, and modified to be more applicable to British Columbia climatic zones, landscapes and surficial geology. Ideally, a GEM can represent data collected in mountainous, alpine areas (Topography Class A), more moderate relief (Topography Class B) and almost flat terrain (Topography Class C). Within each topographic class the different surficial sediments (e.g. basal till, colluvium) are assigned a number code. Table 1 shows the sediments in topography class C and the corresponding code for each type. The same sediment code is used in topography classes A and C, although some sediment types may not be represented. As an example, the GEM class C3 (high relief, colluviated till) shown in Figure 1 commonly represents the relief and surficial geology of the Gataga District.

Table 1. GEM classification for a high relief area

Code	Surficial Deposit
C1	Bedrock
C2	Colluvium - Talus
C3	Colluviated till
C4	Basal till - single ice advance
C5	Basal till - multiple ice advance
C6	Melt-out (ablation till)
C7	Glacio-fluvial sediment
C8	Glacio-lacustrine sediment
C9	Fluvial sediment
C10	Lacustrine sediment
C11	Organic deposit (wetland, bog, fen)
C12	Glacio-marine sediment
C13	Residual sediment

SUMMARY OF DETAILED SURVEY RESULTS

The GEM presented in this Open File has been developed from geochemical surveys over six areas (Figure 3) in the Gataga District. These are described in detail in Part 2. In this section of Part 1 the information for each area, the survey results, relevant assessment report and other published data have been compiled in a standard format as follows:

- 1) Name and location (NTS Sheet, Lat, Long).
- 2) Geology
- 3) Mineralization
- 4) Topography, glacial deposits, soil types, vegetation
- 5) Soil geochemistry
- 6) Stream sediment and stream water geochemistry
- 7) Rock and other data

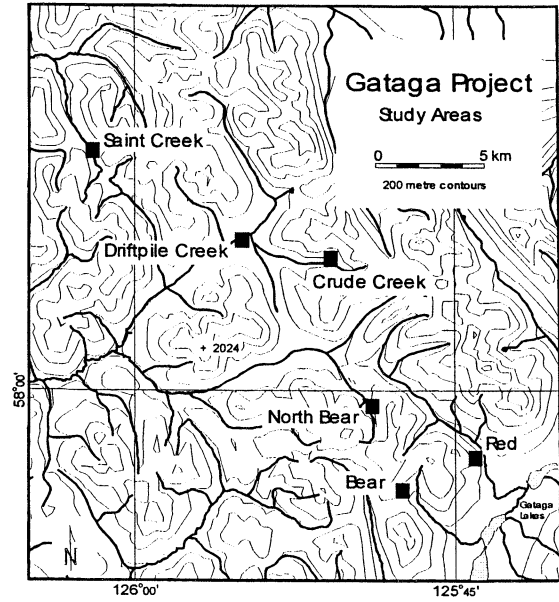


Figure 3. Location of detailed surveys

The soil landscape layer combines the topography, drainage and predominant soil types typical of the bioclimate zones and landscapes found in the Gataga District. The patterns on the soil-sediment geochemistry layer are intended to indicate the relative strength of geochemical response in B-horizon soil, stream sediment, spring deposits and spring water. In the B-horizon elements characteristic of sedex mineralization and shale bedrock are shown. Elements elevated in deposits associated with alkaline and acid spring water are distinguished on the soil geochemistry layer and water layer.

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C11	Organic deposit (wetland, bog, fen)
C12	Glacio-marine sediment
C13	Residual sediment

MAIN BEAR AREA

1. Location

NTS 94F/13E; 57° 57' 46" N 125° 47' 08" W. Soil, rock and spring water samples collected from the Bear occurrence (MINFILE 94F024) and along tributaries of Bear Creek (local names).

2. Geology

A thick sequence of unmetamorphosed upper Devonian Gunsteel Formation (Earn Group) black shales, siltstones, mudstones and turbidites strike northwest and, structurally, have been influenced by northeast directed folding and thrusting. The Gunsteel Formation is bounded to the west by the Waldemar thrust, which juxtaposes lower Devonian age chert-pebble conglomerate of the Besa River Formation with the Gunsteel Formation. The sulphide-barite mineralization occurs towards the base of the Gunsteel Formation (Evans, 1995).

3. Mineralization

Sulphide mineralization has been traced by diamond drilling for more than 600 metres along strike and has been intersected over 200 metres below the surface. The mineralized zone in the Gunsteel Formation consists of basal cherts and graphitic shales containing pyrite laminations with disseminated galena and sphalerite. Above these rocks are massive barite, Ag-Pb-Zn-sulphides and pyrite. The massive sulphides are overlain by graphitic and siliceous shale containing laminated pyrite, carbonate and barite. At the top of the sequence is black shale containing carbonate, barite and pyrite nodules that grade into well-laminated turbidites. Grades of 1.6 gram/tonne Ag, 5.28 per cent Zn and

0.11 per cent Pb, over 6.0 metres have been reported by Evans, 1995, in the massive sulphides.

4. Topography, glacial deposits, soil types, vegetation

The Bear occurrence is in an area of high relief on a southeast facing hill slope at an elevation of 1600 metres. A barite covered "kill-zone" represents surface expression of the sulphide mineralization. There are also scattered, weathered sulphide showings and numerous Fe oxide spring and ferricrete deposits along creeks draining the occurrence. Above tree-line (1500 metres) outcrop is almost continuous or covered by felsenmeer and talus fans. At lower elevations colluvium and/or glacial sediments cover bedrock.

5. Soil geochemistry

An assessment reported soil survey (Carne, 1983) over the area underlain by the sulphide mineralization outlined a northwest trending Pb anomaly (>175 ppm) up to 500 metres long and 100 metres wide. The highest Pb concentration reported in the soil was 4000 ppm and the anomaly peak was only metres from the surface projection of the sulphide mineralization. Zinc soil anomalies (>700 ppm), however, were several hundred metres down slope from the mineralization. Silver anomalies (>0.6 ppm) showed a similar pattern to Pb. New geochemical data indicates that high Ba (27,000 ppm), Pb (13,466 ppm), and Ag (30.2 ppm) levels are present in the B and C soil horizons. These levels persist for 300 metres across the projected surface extension of the massive sulphide body. The soil also has up to 9050 ppb Hg, 13 ppm Se, 14 ppm Sb, but less than 1000 ppm Zn. Barium

values determined by aqua regia-ICP in soil over the mineralization are below 100 ppm compared to levels up to 28,000 ppm Ba by INAA. This difference reflects the high content of acid resistant barite in the soil.

6. Stream sediment and water geochemistry

An assessment reported stream sediment survey (one sample/100 metres) showed that Pb decreased from one percent near the sulphide mineralization to 300 ppm at a point 800 metres downstream. Zinc values exceeded 1000 ppm for 2.3 kilometres and the stream sediment Zn threshold was estimated to be 500 ppm (Carne, 1983). New geochemical data show that stream sediment close to the Bear Creek source contains 15,000 ppm Ba, 4949 ppm Pb and 73 ppm Ag. The Ba values fall to 13,000 ppm below the confluence of the two branches of Bear Creek. Barium, Pb and Ag are higher in moss mat sediment samples compared to stream sediment. Lead values are over 200 ppm along a 3 kilometre reach of Bear Creek and zinc values increase erratically downstream from mineralization. Spring water draining into the upper part of the Bear creek is acid (< pH 5) and has up to 392 ppb Pb, 2.73 ppb Tl and 119 ppm SO₄. Acid water (pH 3.85) from another spring contains 1398 ppb Al and has a thick, white precipitate coating the sediment.

7. Rock geochemistry

Fe-rich spring sediment, ferricrete and soil samples have high As, Sb, Ba, Co, Cr, Mo, Ni, Pb, V and Zn. The matrix of ferricrete close to the Bear occurrence has up to 37,000 ppm Ba, 1256 ppm Pb, 2500 ppb Hg, 3 ppm Ag, but less than

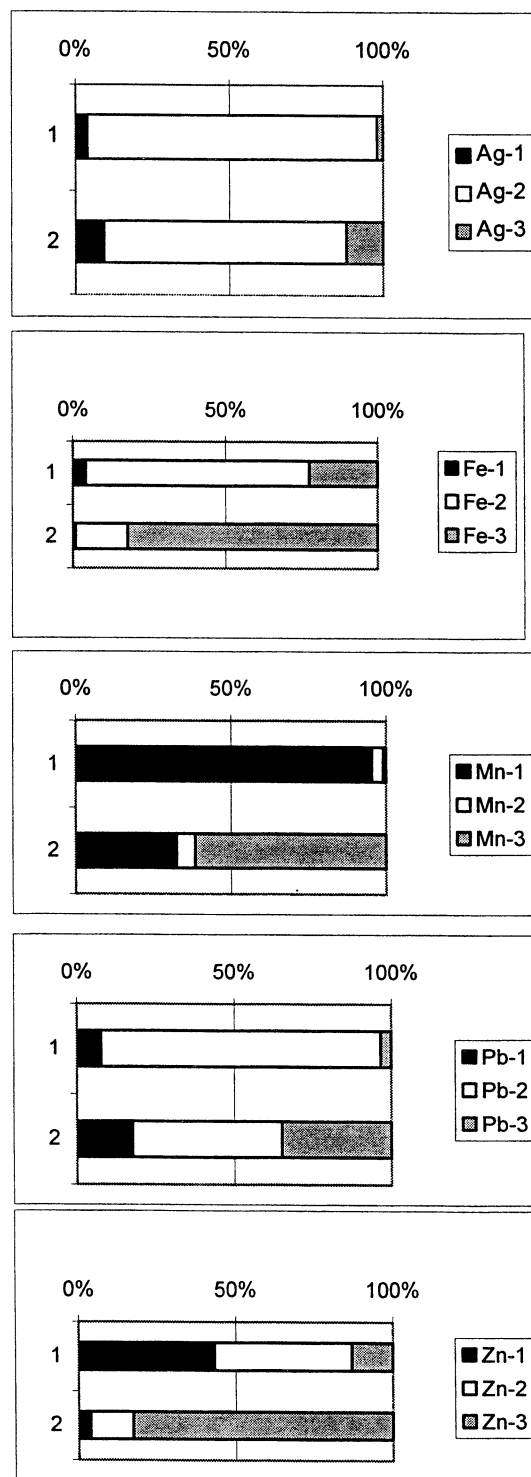


Figure 4. Percent metal extracted by 0.25M NH₂OH HCl (1) 1M NH₂OH HCl (2) and HF-HCL-HNO₃ (3) from fresh Fe oxide precipitate (1) and mature ferricrete (2) from the Bear area.

300 ppm Zn. Recently formed, laminated Fe-oxide by a spring on the east branch of the creek has less than 3000 ppm Ba, but more than 10,000 ppm Pb and 32 ppm Ag.

More of the total Fe, Zn and Co is dissolved by 1M NH₂OH HCl from recent Fe-oxide spring deposit (sample 945017) than from a mature ferricrete deposit (sample 945024). However, more Fe is extracted from ferricrete by HF-HClO₄-HNO₃-HCl acids compared to 1M NH₂OH HCl. (Figure 4). More Zn Co and Mn are also released by the 0.25M and 1M NH₂OH HCl from the Fe-oxide spring deposit compared to the ferricrete suggesting that, as the deposit matures, metals become associated with the most resistant minerals. A higher proportion of Pb and Ag are extracted by 1 M NH₂OH HCl from the recently formed Fe-oxide spring deposit compared to amounts dissolved from ferricrete. This suggests that Pb is more mobile in the early stages of deposit formation and may be relatively weakly bound to the oxide surface or precipitated as Pb sulphate.

NORTH BEAR AREA

1. Location

NTS 094K/4 and 094K/13. 58° 00' 00" N 125° 49' 00" W. Soil, rock, spring water, stream water, stream sediment and moss mat samples were collected along a valley north of the Bear occurrence.

2. Geology

The Gunsteel and Besa River Formations underlying the valley consist of non-siliceous, thick-bedded gritty black shale, a medium to thick bedded,

siliceous and non-siliceous shale and a cherty black argillite containing barite, traces of pyrite, galena and sphalerite. The Gunsteel Formation is in thrust contact with silty black shale and conglomerate of the Besa River Formation to the west. The valley forms the axis of an overturned syncline and the contact between the Gunsteel and Besa River Formation is commonly a low-angled, west-dipping thrust fault. Ferricrete deposits are common along both sides of the valley around springs discharging along faults.

3. Mineralization

The only reported sulphide mineralization is the Bob occurrence (MINFILE # 094K085) where barite-Pb-Zn-rich massive pyrite occurs in tightly folded, thinly bedded black shale, cherty argillite, and baritic-pyritic mudstone. The BOB occurrence is north of the area covered by the detailed sampling.

4. Topography, glacial deposits, soil types, vegetation

Numerous Fe oxide spring and ferricrete deposits are scattered along both sides of a U shaped valley. Above tree-line (1500 metres) outcrop is almost continuous or covered by felsenmeer and talus fans. At lower elevations bedrock is covered with colluvium or till that was most likely deposited by ice advancing parallel to the valley axis. Alluvium and glacio-fluvial deposits are also present on the valley floor. Several of the first-order streams draining into the main creek have a thick, white precipitate coating boulders and bottom sediments.

5. Soil geochemistry

Iron-rich spring deposit and ferricrete samples are typically enriched in As, Sb,

Ba, Co, Cr, Mo, Ni, Pb, V and Zn. One Fe-rich soil sample close on the east site of the valley has elevated Au - 63 ppb and Pb - 2708 ppm. Weakly acid spring water near the Au-rich soil, has elevated Fe, Sb and As and graphitic shales have up to 157 ppb Au, 233 ppm Pb, 0.7 ppm Ag and 45 ppm Sb.

6. Stream sediment and water geochemistry

Anomalous Au, As, Sb, Pb, Zn and Hg occur in moss mat sediment for 2 kilometres along the stream. Spring waters are acid (pH 4.44), oxygenated (DO 8.3 ppm) with high Pb, Tl, Al, Co, Ni, Cd, Zn, and rare earth element contents or are weakly alkaline (pH 7.2), oxygen depleted (DO 0.2 ppm) and have a high Fe content. A thick Fe-oxide precipitate surrounds alkaline springs whereas acid springs have thick, white precipitate coating sediment.

7. Rock geochemistry

Rocks have Ba (INAA) levels above 2.1 percent and up to 3.8 percent. Highest concentrations are from the east side of the valley. However, the Ba-rich rock only has weakly anomalous (< 90 percentile) Pb, Zn and Ag levels.

RED GOSSAN (SPA SHOWING) AREA

1. Location

NTS 94K/13E. 57° 57' 45" N 125° 44' 00" W. MINFILE 94F 003. Samples were collected in the valley of a south flowing creek. Sampling focused on several large iron spring deposits on the west side of the valley.

2. Geology

The most impressive surface feature of the Spa showing is a large area (350 by 100 metres) of dry Fe oxide sinter up

to 6 metres thick that most likely reflects a past episode of Fe precipitation from ground water flowing from a west dipping thrust fault. The sinter is underlain by gritty black shale and siltstone of the Besa River formation (the eastern equivalent of the Earn Group).

3. Mineralization

Sub-surface mineralization at the Spa showing consists of secondary zinc minerals (hydrozincite, melanterite) along fractures in the shale, barite beds, nodular barite and a thin (5 mm) barite-sphalerite-ankerite vein. Minor disseminated and laminated pyrite has also been reported (Somerville, 1980).

4. Topography, glacial deposits, soil types, vegetation

A large dry, surface Fe-oxide deposit (the Spa Mineral Showing) extends over several square kilometres at 1200 metres elevation on the west side of the valley. The creek in this valley flows south into Gataga lakes. There are a number of smaller Fe-oxide deposits associated with active springs roughly two kilometres to the north. Glacial sediments are most likely till deposited on the gently- sloping valley side surrounding the dry Fe oxide-deposit. Vegetation consists of alpine fir, black spruce and alder at lower elevations and scattered alpine fir and willow above 1500 metres.

5. Soil geochemistry

Soil sampling and diamond drilling carried out by Archer, Cathro and Associates in 1980 detected percent levels of zinc in soil samples from the Spa Showing (Somerville, 1980).

On the surface at the Spa showing deposits consist of loose, Fe-oxide cemented shale clasts. Beneath this Fe-oxide sinter is an Fe-stained blocky clay containing mixed with shale clasts. New geochemical data shows that Ag, Cd, Co, Fe, Hg, Mn, Ni, U and Zn are higher in the surface deposits sinter compared to underlying clay-rich sediment whereas As, Ba, Cr, Cu, Mo, Sb and V increase down the profile (Figure 5).

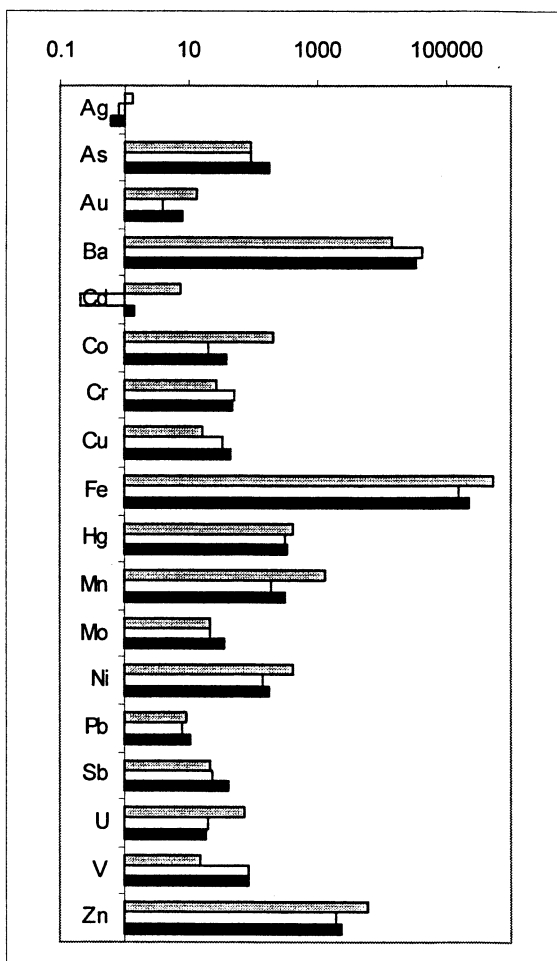


Figure 5. Distribution of elements at 0.3, 0.65 and 0.75 metres depth, Spa Showing. Au and Hg in ppb. Other elements in ppm.

The surface sinter contains up to 60 percent Fe up to 6.4 percent Ba with several 100 ppm As, Sb, Co, Cr, Ni, Mn, Hg, Mo, Ni, W, V and U. Iron oxides

deposited around active springs north of the Spa showing have similar metal concentrations. However, the highest Pb in the sinter and Fe spring deposits is only 23 ppm whereas Ag reaches 13 ppm.

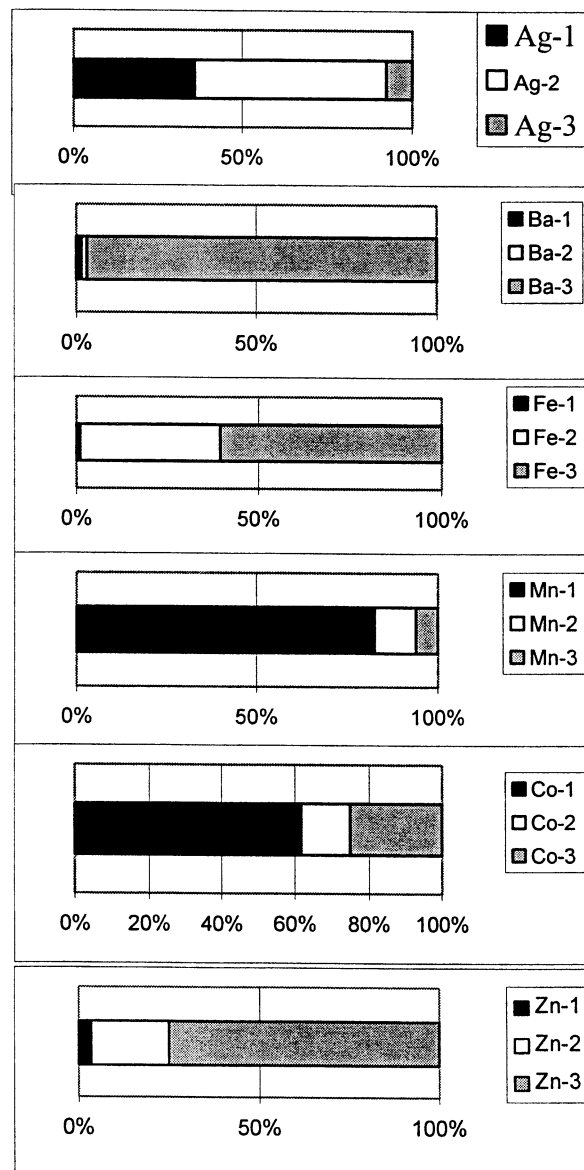


Figure 6. Percent metal extracted by 0.25M $\text{NH}_2\text{OH HCl}$ (1) 1M $\text{NH}_2\text{OH HCl}$ (2) and HF-HCL- HNO_3 (3) from Fe oxide surface sinter on the Spa showing.

Sequential extraction analysis shows that more than 90 per cent of As, Ba, Mo and V is bound in the most resistant fraction (HF-HClO₄-HCl-HNO₃ extractable) of the soil (Figure 6). However, more Zn, Ag, Co and Ni is extracted by NH₂OH HCl₂ suggesting that these metals were abundant in ground water flowing when the springs were active and were absorbed by Fe hydroxides during an early phase of sinter formation.

6. Stream sediment and water geochemistry

The active springs near the Spa prospect are along the west side of the valley two kilometres to the north where the spring water is typically neutral to weakly alkaline, high in Ca, Mg, Sr, Fe and SO₄ and has low dissolved O₂ levels. Concentrations to 466 ppb Ni, 21 ppb As, 4000 ppb Zn and 91 ppb Cd occur in the spring water, but Pb levels are below 0.2 ppb.

7. Rock Geochemistry

No Data.

DRIFTPILE DEPOSIT - CRUDE CREEK AREA

1. Location

NTS 92K/13. 58° 03' 59" N 125° 54' 35" W UTM: MINFILE 94K066

2. Geology

Nelson et al., 1995, have described the geology of the Driftpile deposit (MINFILE # 94K066). Massive sphalerite, galena and pyrite occur in blue-grey weathering, carbonaceous black shale and silty mudstone, cherty argillite and radiolarian chert of the Gunsteel Formation. The rocks are preserved in a broad, northwest-trending,

tightly folded synclinalorium that has been disrupted by moderately dipping, northeast verging, thrust faults. Gunsteel Formation clastic sediments are interbedded with barite and/or pyrite-enriched siliceous shale or cherty argillite. The barite is nodular, disseminated, intercalated as thin laminae, or present as massive, centimetre-scale beds. Pyrite is generally laminated in mudstone, or associated with barite, or present as carbonate concretions. The Gunsteel Formation is in contact with the underlying Ordovician to lower Devonian Road River Group within the hanging-wall of the Mount Waldemar thrust fault to the south west of Driftpile Creek.

3. Mineralization

The Driftpile deposit (MINFILE 94K066) consists of at least two stratiform sulphide-carbonate and barite bodies. The lower or 'main' zone up to 70 metres thick is primarily a sulphide-carbonate facies interbedded by black graphitic shale or mudstone. Within the zone fine-grained, finely laminated or framboidal pyrite is associated with irregular bands and concretions of calcite. Sphalerite and galena can occur with the pyrite, but are most abundant as a layer of fine-grained massive sulphide near the base of the zone.

The 'upper' zone, 100 to 200 metres higher in the Gunsteel formation, consists of barite-sulphide mineralization, in siliceous or non-siliceous mudstone with pyritic laminations. Barite occurs in massive beds or laminations, or in nodules. Pyrite is subordinate to barite, but may form massive layers, locally accompanied by abundant sphalerite and galena.

Previous diamond drilling has established that sulphide mineralization typically grading 10 per cent Zn and 1 per cent Pb extends down dip for at least 100 metres, can be traced over a strike length up to 3 kilometres and has a surface width of 1.5 kilometres. The most recent reserve estimate (lower mineralized sub-unit of the 'main zone') is 2.44 million tonnes averaging 11.9 per cent Zn and 3.1 per cent Pb.

The DR barite occurrence (MINFILE # 94K077) is 2.5 kilometres southeast of the Driftpile deposit on Crude creek. Mineralization consists of nodules and thin lenses of massive barite in blue-grey weathering black shale and siliceous argillite of the Gunsteel Formation.

4. Topography, glacial deposits, soils and vegetation

The Driftpile Creek barite-Pb-Zn deposit is located near the headwaters of Driftpile Creek close to the western edge of the Muskwa Ranges. Driftpile Creek flows to the west through a winding U shaped valley into the Kechika River. Terraces and ridges at the 1350-metre elevation along both sides of the Driftpile Creek valley indicate proglacial lakeshore and fluvio-glacial sediments. The terraces mark a gradient change from steeper slopes close to the valley floor to a more subdued upland topography.

Sulphide mineralization is rarely visible at surface. However, there is one limonitic gossan capping an outcrop containing sulphides close to Driftpile Creek ("Discovery Zone"). This gossan has an associated barite "kill zone". In addition, several other "kill zones", iron-

spring and ferricrete deposits occur along the Driftpile creek valley and also close to the headwaters of Crude Creek, a tributary of Driftpile Creek.

5. Soil geochemistry

Soil and gossan material from two vertical profiles at the "Discovery Showing" kill zone have up to 7900 ppm Pb, 6400 ppm Zn, 34,000 ppm Ba

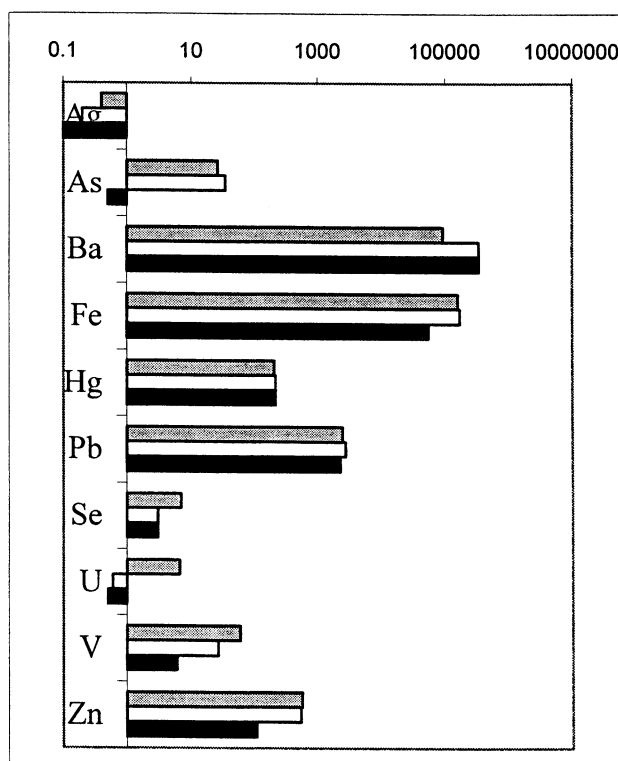


Figure 7. Distribution of elements at 5 cm, 15 cm and 25 cm depth, Driftpile "Discovery" zone. Hg is in ppb. Other elements are in ppm.

and 0.5 ppm Ag. A soil profile on the "Discovery Showing" (Figure 7) shows that Fe and Zn decrease sharply from elevated levels in the gossanous surface material to lower concentrations in the underlying mottled soil whereas Pb, Hg and Ba are almost constant down the soil profile. Results of the sequential extraction

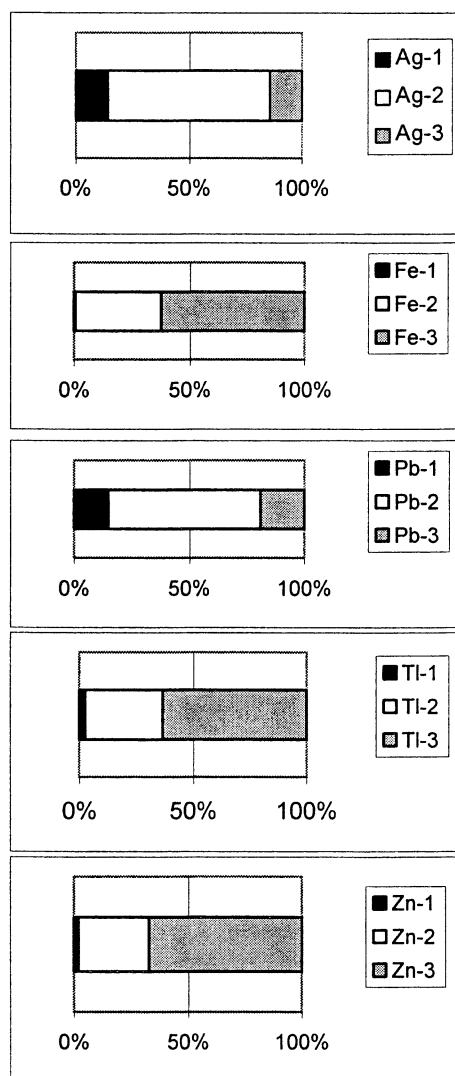


Figure 8. Percent metal extracted by 0.25M $\text{NH}_2\text{OH HCl}$ (1) 1M $\text{NH}_2\text{OH HCl}$ (2) and HF-HCl-HNO_3 (3) from soil sample at 5 cm depth surface on the Driftpile "Discovery" zone.

analysis (Figure 8) indicate that Pb and Ag are bound in the 0.25 M $\text{NH}_2\text{OH HCl}$ fraction whereas Zn, Tl and Fe are dissolved by 1 M $\text{NH}_2\text{OH HCl}$ and $\text{HF-HClO}_4\text{-HCl}$. The association of Zn, Tl and Fe as distinct from Pb and Ag in

the extracts suggests that the soil contains galena or Pb sulphate. Sphalerite has been largely oxidized to more soluble secondary Zn minerals that have been incorporated in Fe oxides.

6. Stream sediment and water geochemistry

The Driftpile deposit was discovered in 1973 following a 1970 regional stream sediment geochemical survey carried out by Geophoto Consultants (Wise, 1974). New data allows a comparison of stream sediment and moss mat sediment geochemistry for streams draining Pb-Zn sulphide mineralized (e.g. Driftpile deposit area) and non-mineralized areas (e.g. Crude Creek). Elements typically concentrated in heavy minerals (e.g. Ag, Au, W, Pb) are higher in moss mat sediment compared to the stream sediment. However, this trend is not always consistent. Other elements (e.g. As, Ni, Zn, Mn, Cd, Cu, Mo) are higher in the stream sediment compared to the moss mat sediment or show no obvious preference for sample media. Most moss and stream sediments have more than 1000 ppm Zn. However, only streams within 2 kilometres of the Driftpile creek deposit have more than 100 ppm Pb and 1 ppm Ag.

7. Rock Geochemistry

Ferricrete rubble covers the surface of a large "kill zone" roughly 150 metres by 30 metres in area located on the north side of the Driftpile Creek valley two kilometers east of the "Discovery" gossan. This "kill zone" is most likely underlain by rocks of the Upper Road River group. Results of sequential extraction analysis of samples from a

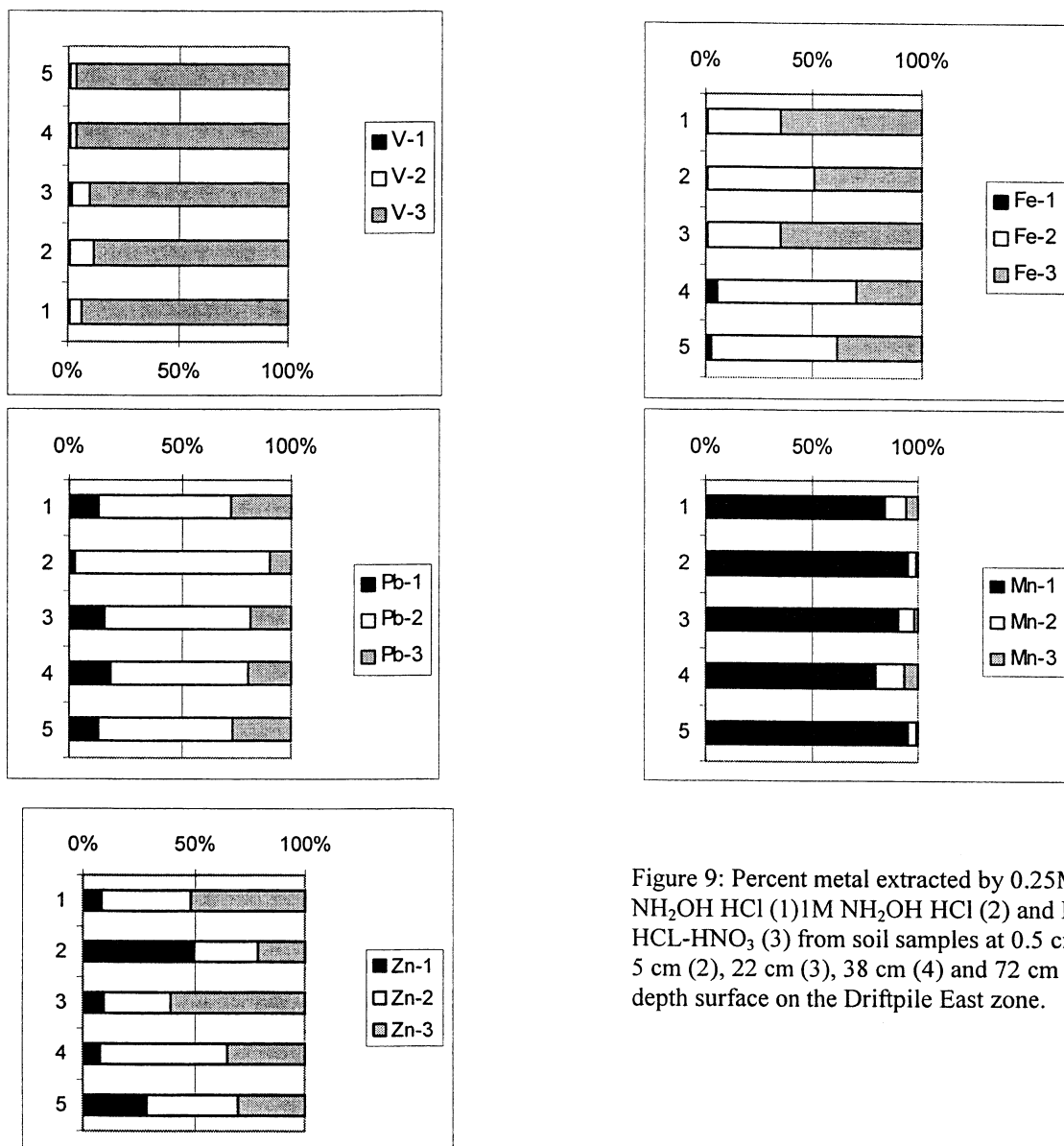


Figure 9: Percent metal extracted by 0.25M $\text{NH}_2\text{OH HCl}$ (1) 1M $\text{NH}_2\text{OH HCl}$ (2) and HF-HCL- HNO_3 (3) from soil samples at 0.5 cm (1), 5 cm (2), 22 cm (3), 38 cm (4) and 72 cm (5) depth surface on the Driftpile East zone.

SAINT CREEK AREA

1. Location

NTS 094K/4W. Latitude/Longitude: 58° 07' 26'' N 125° 59' 07'' W; UTM: zone 10 6446394 N 324188 E. Water, sediment and iron oxide spring deposit samples were collected along a valley west of Saint Creek (local name). The area was within the boundary of the Saint-Flaco mineral claims, a property staked by Archer and Cathro Associates in 1980.

2. Geology

Rocks of the Gunsteel Formation underlie the area north of the creek. Lithologies range from bluish-grey weathering carbonaceous cherty argillite, siliceous shale and bedded chert, with subordinate mudstone, to siltstone and coarser siliciclastics. Nodular, laminated or massive lenticular barite occurs at a number of horizons known to host Pb-Zn-Ag sedex mineralization at Driftpile Creek. The rocks are thrust faulted and tightly folded into a series of north easterly-overtaken anticlines and synclines resulting in repetition of the baritic horizons on the surface. The Gunsteel rocks generally strike northwest and dip moderately to steeply southwest. In the southwest corner of the claims, a thrust juxtaposes dolomitic siltstones of the Ordovician-Devonian Road River Group onto the Gunsteel Formation. The iron-oxide spring deposits have up to one per cent Zn, but are not associated with the baritic horizons.

3. Mineralization

On the Saint-Flaco claims, barite-bearing strata have up to 5 per cent disseminated or laminated pyrite traces

of galena and sphalerite. (Carne, 1982; Insley and McClay, 1986).

4. Topography, glacial sediments, soils and vegetation

Iron-oxide spring deposits are located along the east side of a steep sided, narrow northwest-trending U shaped valley west of Saint Creek. The unnamed creek flows northwest through Braid Creek into the Kechika River. The valley sides are covered with talus and colluvium. Unsorted, coarse textured, glacial sediments fill the valley floor. The tree line reaches up to 1500 metres with mixed woodland and grassland in the valley bottom and alpine fir, black spruce and alder extending up the valley sides. Surface flora above 1500 metres consists of scattered alpine fir, willow and heather.

5. Soil geochemistry

Soil and Fe-oxide spring deposit geochemical surveys by Carne, 1983, over the Saint-Flaco claims outlined Pb and Zn soil anomalies. An area roughly 1200 metres by 400 metres on the west side of Saint creek is covered by soil that has above 175 ppm Pb. The Pb concentrations reach 6200 ppm and the anomaly trends northwest. Zinc levels above 1000 ppm and up to 10,000 ppm in soil occur in an area 1200 metres by 100 metres parallel to the creek. The peak of the Zn soil anomaly appears to be centred on the creek. Geochemical analysis of the Fe-oxide spring deposits was aimed at distinguishing between "exotic" anomalies caused by adsorption of metals from ground water and metals derived from sulphides in the underlying bedrock. The Fe-oxide spring deposits were found to have varying enrichment

in Pb, Zn, Mn, As, Mo, Co and Ni. Cobalt/Ni ratios in spring deposit samples were tested as a tool to distinguish between pyrite formed with VMS mineralization and diagenetic pyrite. The Co/Ni ratios for most samples were found to be less than 0.5. Higher ratios (> 0.5) were found in Fe-oxide spring deposits at the south end area close to the headwaters of the creek (Carne, 1983). A prominent source of metals in the Fe-oxide spring deposits was identified as ground water flowing from a thrust on the east side of the creek.

6. Stream sediment and water

Spring waters are mainly neutral to alkaline and have very high concentrations of Ca, Mg, Na, Fe, Co, Ni, Cd and Zn. The most acid spring water (pH 6.4) found is at the south end of the area and drains into the headwaters of the creek. This water also has the elevated Ba (83 ppb) and Al (361 ppm), but less than 0.1 ppb Pb.

Lead and Ba are higher in moss mat sediment compared to the stream sediment. However, this trend is not followed by other elements. For example, Cd and Hg are much higher in one sediment sample compared to the moss sediment from the same site. A low aqua regia-ICP extractable Zn value compared to 1720 ppm Zn by INAA accompanying the elevated Cd and Hg (1860 ppb) suggests the presence of sphalerite in the sediment. There are

significantly elevated levels of Pb, Ba, Ag and Zn levels in stream sediment and moss mat sediment over 3 kilometre

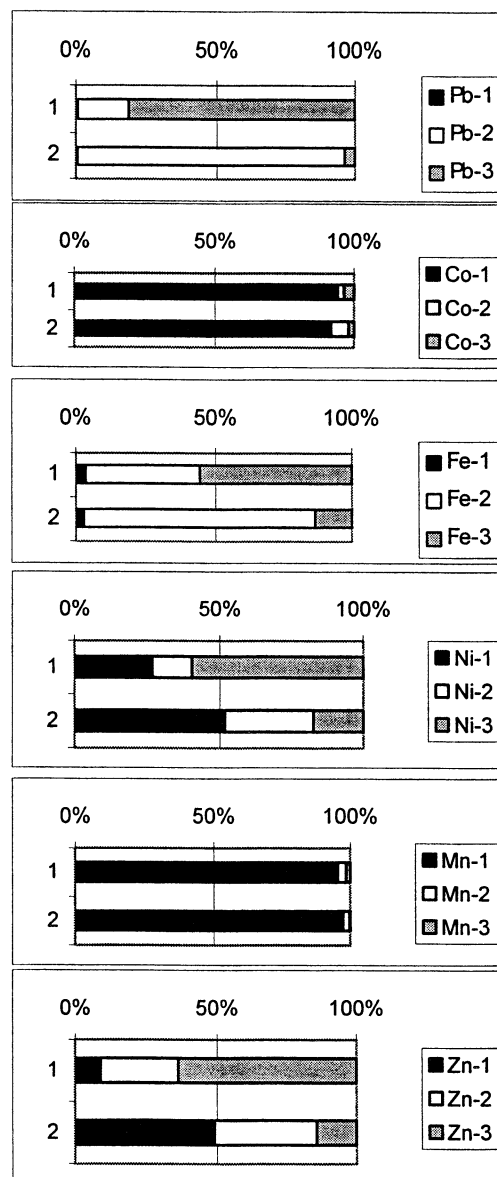


Figure 11. Percent metal extracted by 0.25M NH₂OH HCl (1) 1M NH₂OH HCl (2) and HF-HCl-HNO₃ (3) from a ferricrete sample 5032 (1) and a fresh Fe-oxide spring deposit, 1202 (2). Sample 5032 contains 457 ppm Pb and 1202 contains 153 ppm Pb.

along the creek. Values are higher in the sediment from streams draining the east side of the valley.

7. Rock geochemistry

Iron oxide-spring samples from the east side of the creek have elevated As, Cd, Sb, Ni, Co, Mn, U and Zn similar to those found by Carne, 1983. Some of the samples also have up to 153 ppm Pb and 155 ppb Hg. Sequential extraction analysis shows that 0.25 M $\text{NH}_2\text{OH HCl}$ extracts much of the Mn and Co from both Fe oxide spring deposits and ferricrete suggesting that Mn-oxides adsorb Co and that the maturity of the deposit has little effect on the absorption ability of the Mn oxide (Figure 11). More of the Fe, Ni, Zn and Pb are liberated by 1M $\text{NH}_2\text{OH HCl}$ and HF- $\text{HClO}_4\text{-HCl-HNO}_3$ acids and the association of metals in the Fe-oxide spring deposits is different than in the ferricrete. The difference suggests that, as the Fe-oxide deposit matures to ferricrete, the metals become more strongly bound and more likely to be transported by mechanical rather than hydromorphic dispersion.

GUIDES TO GEOCHEMICAL DATA INTERPRETATION

Formation of geochemical anomalies in different surficial media (e.g. till, soil, stream sediment, lake sediment, water, vegetation) depends on interrelated factors such as size and type of bedrock mineralization, ice-flow direction, thickness and type of glacial deposit, topography, drainage, climate, vegetation and the geochemical mobility of elements. There are numerous possible combinations of these variables producing anomalies with many different variations of size and contrast. Models can simplify this complexity by displaying the geochemical anomaly pattern that can be anticipated for a specific combination of key variables such as till thickness and drainage. Element variations are most commonly displayed on maps by different size symbols or by contours. Therefore, the three dimensional models showing an expected anomaly pattern are linked to idealized two dimensional symbol maps. An example of a model and the expected geochemical symbol map for a survey carried out in a high relief area where there is a single mineralized bedrock source covered by colluvium is shown in Figure 12. Three potential sources for a stream sediment anomaly are shown in the Figure. Sulphides from the mineralization and metal-rich spring sediments are transported by gravity into the stream at A and B. Metals also enter the stream in ground water from a mineralized seepage at C.

Models can help simplify multi-media geochemical data interpretation by

more clearly showing the relationship between bedrock and surficial geochemistry and identifying geochemical pathfinders for sedex type mineralization. They can also be used to better define such geochemical exploration guidelines as optimum sample density, sample media and pathfinder element suites for different types of mineral deposit. A summary of the geochemical characteristics for sedex type Pb-Zn-Zn-Ba deposits is shown in Table 2.

Table 2. Geochemical summary

Media	Pathfinders	Anomaly Size	Remarks
Rock	Ag, Ba, Cd, Hg, Pb, Mn, Tl, Se, Ba	Unknown	Ba and Mn may form haloes around sulphides.
B Soil horizon /glacial sediment	Ag, Ba (INAA), Pb, Hg, Zn	100 m x 1000 m Pb BG = 200 ppm Zn BG = 1000 ppm. Pb contrast can be 50-60.	Little displacement of Pb-Ba-Ag anomalies from mineralization. Zn anomalies show large displacement.
Sediment	Pb, Ag, Ba, Cd, Hg	Zn-Zn-Ba anomalies can persist 2-3 km downstream from mineralization.	Pb-Ba levels generally higher in moss compared to sediment. Other elements show little difference.
Spring-stream water	Low pH, Al, Pb, Tl, Ba.	Elevated values decay to background within 100 m from acid spring.	Elevated As, Ca, Co, Ni, Mo, U, V, Zn indicates ground water from thrusts in pyritic shale. SO ₄ not specific to sedex deposits.
Fe-oxide spring deposits	Pb-Ag	May cover several Km ² in area. May be several m thick.	High Pb-Tl-Hg indicate sedex source. Elevated As, Co, Ni, Mo, U, V, Zn caused by adsorption from ground water by Fe oxides. Co typically associated with Mn oxides.

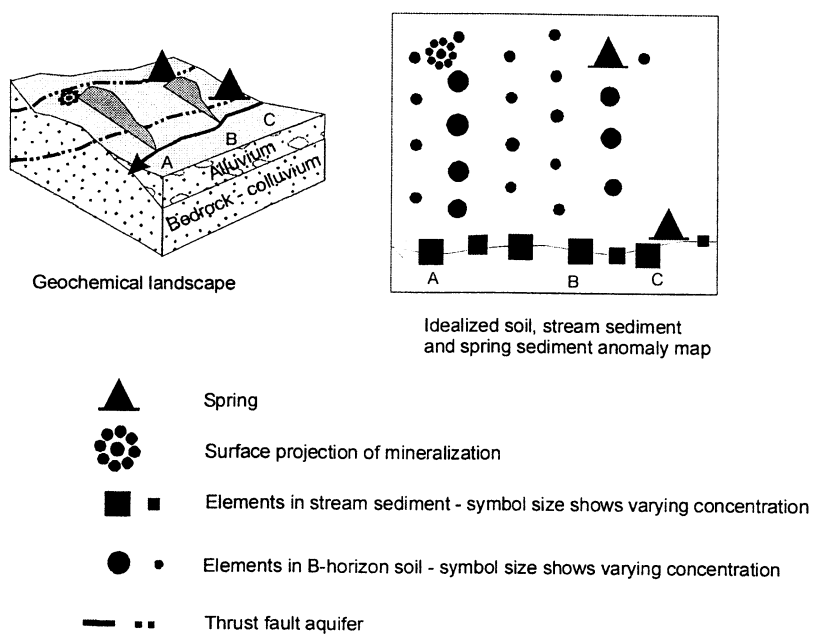


Figure 12. Geochemical model and idealized anomaly map for spring geochemistry

PART 2

GEOCHEMICAL RESULTS

Part 2 of Open File 2001-07 describes the results of detailed spring sediment, soil, till and spring water geochemical studies carried out in the Driftpile Creek area in 1994 by the British Columbia Geological Survey to study these problems. It consists of the following sections:

- Location, regional geology and geochemical signature of sedex mineralization
- Surficial sediments and spring related deposits
- Sampling and field methods
- Sample analysis and quality control
- Summary statistics for stream and moss mat sediments, spring and stream water, soil and rock samples
- Location, surficial geology, local geology, mineralization and geochemical results for each area.
- Summary of results
- Sample location and selected element symbol maps
- Listings of field variables, analytical and quality control data (Appendix A, B, C, D, E, F)

Analytical and field data are included as an ASCII file on a 3.5-inch high-density diskette located in the back pocket of the Open File.

Table 1. Summary of mineralization, surficial deposits and environment for detailed study areas.

Area	Mineralization	Surficial Deposits	Surface environment -soils
Bear	Massive and laminated pyrite, galena, sphalerite and barite. Ferricrete and iron oxide spring deposits.	Felsenmeer, talus, colluvium, glacial sediments. 20-30% bedrock exposure.	Steep and inclined topography, Boreal forest, Sombric brunisol and organic soils. Limited surface exposure of mineralization.
North Bear	Traces of barite, pyrite, galena and sphalerite. Ferricrete and iron oxide spring deposits.	Felsenmeer, talus, colluvium, till and fluvio-glacial deposits. 20-30% bedrock exposure.	Steep and inclined topography, Boreal forest, Sombric brunisol and organic soils.
Spar	Traces of pyrite, hydrozincite and barite. Large ferricrete and iron oxide spring deposits.	Felsenmeer, talus, colluvium, till and fluvio-glacial deposits. 10-20% bedrock exposure.	Steep, rolling and inclined topography, Boreal forest, Sombric brunisol.
Driftpile	Massive and laminated pyrite, galena sphalerite and barite. Ferricrete, gossan and iron oxide spring deposits.	Felsenmeer, talus, colluvium, till, fluvio-glacial and alluvial deposits. 10-20% bedrock exposure.	Steep and rolling topography, Boreal forest, Sombric brunisol and organic soil. Limited surface exposure of mineralization. Extensive surface disturbance due to trenching and road building.
Saint	Traces of barite, pyrite, galena and sphalerite. Ferricrete and iron oxide spring deposits.	Felsenmeer, talus, colluvium, till, fluvio-glacial and alluvial deposits. 10-20% bedrock exposure.	Steep and inclined topography, Boreal forest, Sombric brunisol and organic soils. Limited surface exposure of mineralization.

SURVEY AREA DESCRIPTIONS

Five sites neighbouring Driftpile Creek were selected for detailed geochemical sampling and study. Characteristics are summarized in Table 1. The region, situated east of the Rocky Mountain Trench in the Muskwa Range of the northern Rocky Mountains is characterized by northwest-trending mountain ridges which are 1000 metres to over 2000 metres in elevation. Evidence of alpine glaciation can be found throughout the area. The rugged topography reflects rapid physical erosion of the Palaeozoic sedimentary rocks. Streams flow in a predominantly trellised drainage pattern. Steep sided, narrow northwest-trending valleys are intersected by larger, subsequent, east to west-trending valleys. The tree line reaches up to 1500 metres with mixed woodland and grassland in the valley bottoms and alpine fir, black spruce and alder extending up the valley sides. Surface flora above 1500 metres consists of scattered alpine fir, willow and heather. Irregular patches of soil, covered by Fe-oxide crusts, are common throughout the area. Many of these non-vegetated 'kill zones' are associated with active springs and seepages; others reflect high levels of elements such as Pb, Ba, Zn and Ag in the Fe-oxide deposits.

REGIONAL GEOLOGY

The geology, mineralization and structure of the Driftpile Creek area have been previously described by Carne (1983), McClay and Insley (1985) and MacIntyre, (1992) and by Ferri *et al.* (1995). Bedrock geology consists of a

northwest-trending belt of tightly folded, predominantly black, fine-grained siliciclastic Paleozoic rocks typical of euxinic basinal sediments. Locally, the oldest rocks are Ordovician carbonaceous black argillites, cherts and thin limestone beds succeeded by Silurian orange-weathering dolomitic micaceous siltstone. The siltstone is overlain by lower Devonian recessive silver-grey weathering black argillite, chert and, locally, crinoidal limestone. These strata form the Road River Group.

Above the Road River Group is a conformable sequence of Middle to Upper Devonian laminated siltstone grading up into recessive, silver-weathering black argillites, cherty argillite, thin-bedded chert and, locally, chert-pebble conglomerate. These rocks form the Gunsteel formation of lower Earn Group in the Gataga district. The Gunsteel formation hosts several stratiform barite-pyrite-galena-sphalerite deposits such as the Bear and Driftpile Creek. The geological structure of the Gataga District is dominated by northwest-striking, steeply dipping chevron folds and west-dipping thrusts such as the Mount Waldemar thrust. This structure separates the Road River Group in the west from the lower Earn Group rocks in the east.

GEOCHEMICAL SIGNATURE OF MINERALIZATION

Sedex sulphide deposits in the Gataga district consist of sphalerite, galena, pyrite, pyrrhotite and rare chalcopyrite with or without barite (MacIntyre, 1995). Sedimentation and sulphide deposition demonstrate a rhythmic pattern characterized by pyrite-

laminated siliceous argillite at the base of the sequence succeeded by laminated pyrite-sphalerite-galena; massive barite and carbonate nodules and blebby barite at the top (Nelson *et al.*, 1995). Sedex sulphide mineralization typically has a distinct geochemical signature. Deposits are typically zoned with high Pb close to an exhalative vent and increasing Zn levels outward and upward from the vent. High Cu is usually associated with the vent feeder zone. Barite, exhalative chert and hematite-chert iron formation, if present, are usually found as a distal facies to the vent. Sediments such as pelagic limestone interbedded with the ore zone may be enriched in Mn. Some deposits are known to have NH₄, Zn, Pb, Cd, Hg and Mn haloes. Regionally, the sedex host rocks can be Ba-rich.

SURFICIAL DEPOSITS

Glaciogenic landforms typical of the region around Driftpile Creek include long, U-shaped valleys, hanging side valleys and proglacial lake strandlines. Air photos indicate that ice flow through major valleys was, most likely, topographically controlled. This interpretation is based on the presence of numerous, sharp, arêtes and horns that occur in the cirque valleys above the South Gataga River valley. These peaks may not have been completely ice-covered during the last continental glaciation.

Ice flow through the South Gataga River valley was, most likely, to the southeast based on streamlined landforms. However there are large lateral (and medial) moraines that begin in smaller cirque valleys and extend and bend to the southeast when they reach

the Gataga valley. In order for this to occur, ice must be flowing to the southeast in the Gataga valley.

A prominent terrace at the 1350-metre elevation along both sides of Driftpile Creek marks a transition from the steeper valley side to the more subdued upland topography. The terrace consists of sandy textured deposits. Well-sorted, gravel-textured deposits also occur at the 1600-metre elevation on a steep, south-facing hill slope close to the Bear occurrence and could be moraine or proglacial lakeshore sediment. Irregular mounds and short ridges cover the floor of a valley south of Driftpile Creek. These features may represent ice melt-out sediments.

Valley floor and lower hill slopes are mantled by an unknown thickness of till and colluvium. Above tree line, ridge crests and steeper hill slopes are covered with rock talus and felsenmeer. A typical soil catena consists of regosols, alpine dystric brunisols above tree line, orthic dystric brunisols on moderate hill slopes, gleysols and organic soils along the margins of streams.

SPRING-RELATED DEPOSITS

A variety of spring deposits occur in the Gataga District. The most common are:

- Small (10-20 cm high) mounds surrounding the actual spring discharge. The 'cold-spring' mounds consist of laminated red to dark brown Fe-oxide terracettes.
- Laminated, Fe-oxide surface crusts that are probably derived from the physical erosion of the cold spring deposits. The surface crusts also

consist of variegated, friable Fe-oxide sinter that can form slabs scattered over the surface of vegetation kill zones. In the Red Gossan area Fe-oxide sinter is associated with kill zones of 1 square kilometre in size, with no related groundwater discharge.

- Ferricrete deposits consisting of rounded Paleozoic pebbles and cobbles cemented with sandy textured ferruginous material. These deposits may be several metres thick and can extend for several hundred metres along the side of creeks. No active springs are associated with the deposits.
- White-coloured, laminated precipitate coating clastic sediment and vegetation debris in stream channels. This type of precipitate is less common than the ferruginous deposits and is most likely to consist of aluminium hydroxide or secondary barite. The precipitate is not generally found in surrounding springs, but is most evident in the channel several metres downstream from the discharge. White precipitates occur in streams draining the Bear occurrence and the streams draining into the north Bear valley.
- White-coloured, laminated travertine and calcrete. This type of deposit is found locally forming the bank of a small pool surrounding a spring in the upper reaches of Crude Creek.

SAMPLING AND FIELD METHODS

Geochemical samples were collected around the five areas by helicopter supported ground traverses:

- Bear Property area

- North of the Bear Property
- Red Gossan zone area
- Driftpile Creek deposit-Crude Creek
- Saint Creek

Samples of the following media were collected:

1. Water from seeps, springs and surface streams. Water pH and temperature were measured at the sample site with a Corning Checkmate meter. Dissolved solids (conductivity) were measured with a Hanna Model 3ATC meter and dissolved oxygen using a Hanna 8543 oxymeter. Sufficient water was collected to prepare a filtered (0.45 µm), acidified (ultrapure nitric acid to pH 2) sample and a non-acidified sample in the field laboratory. Sulphate and alkalinity were also measured in a field laboratory within 24 hours of collection with Hach analytical kits.
2. Spring precipitate and ferruginous sinter. Sample structure, texture and sample colour were recorded at each site. These samples were treated as soil or sediment if the material was soft and easily crushed.
3. Soil and surficial sediment from the area immediately surrounding some of the spring deposits and from sites along two detailed traverses crossing the sulphide-barite mineralized zone at the Bear Property. Sample structure, texture and sample colour were recorded at each site.
4. Rock and ferricrete. The ferricrete represented mature, hard Fe-oxide deposits or the matrix from rock clasts cemented with Fe-oxide.
5. Sediment and moss-mat samples from first and second order streams

at 250 metre intervals. The samples were taken to compare the geochemical expression of the sulphide mineralization in conventional and moss mat sediment. Sample texture, colour and other field data were recorded at each site.

SAMPLE ANALYSIS AND QUALITY CONTROL

The analytical methods used in this study include instrumental neutron activation (INAA) and acid digestion followed by inductively coupled emission spectroscopy (ICP-ES) for soil, sediment and rock, inductively coupled mass spectroscopy (ICP-MS) for waters and sequential extraction analysis of metals from rock and soil samples. These methods are described in more detail below.

Geochemical data interpretation relies on separating real geochemical trends caused by natural geological or environmental processes, from data fluctuations introduced by sampling and/or sample analysis. These fluctuations are measured in terms of accuracy (i.e. the difference between a measured value for an element and that reported in a standard reference material) and precision (i.e. difference between random duplicate analyses) from data generated by the routine analysis of reference standards and duplicate samples. The quality control scheme used to monitor the data reported in this Open File is based on inserting reference standards and duplicates into a batch of 20 samples collected and analysed. Each batch contains seventeen routine

samples, a field duplicate sample collected adjacent to one of the routine samples, a blind duplicate sample split from one of the 17 routine samples prior to analysis and a control reference standard containing material of known element concentrations (either Canada Centre for Mineral and Energy Technology certified standard or a Geological Survey Branch 'prepared' bulk sediment sample). The locations of blind duplicate and control reference samples are selected before sampling, whereas field duplicate sites are chosen randomly during fieldwork. Blind duplicate samples have not been used in the quality control scheme for water sample analysis.

WATER

Filtered, acidified water samples were analysed for 66 elements by inductively coupled plasma mass spectroscopy and inductively coupled plasma emission spectroscopy (Perkin Elmer Elan 6000 mass spectrometer) at Activation Laboratories Ltd., Ancaster, Ontario. Several of the elements determined are not reported because of known inter-element interference (Ti) and the probable post-sampling decay of element concentrations (Hg, Au, Pt). The water data quality was monitored by the results of filtered, acidified distilled water blanks, blind sample replicates and standards prepared by spiking bulk-filtered water from Crude and Driftpile Creeks with Cd, Cu, As, Co, Ni and Zn. Sulphate and F were measured by ion chromatography-specific ion electrode by Chemex Laboratories, Vancouver. Instrumental detection limits (IDL) and method detection limits (MDL) for each element are listed in Table 2. The method detection limit is calculated at

the mean + 3 standard deviation concentration from data for the ultrapure nitric acid filtered, acidified, distilled, deionized water blanks inserted into sample batches before routine analysis. The method detection limit indicates contamination caused by field-based sample filtration. Analytical precision is estimated from percent relative standard

deviation values calculated from repeated analyses of the GSB Driftpile and Crude Creek water standards. Percent relative standard deviation values for elements including Ba, Pb, Cu, As, Co, Ni, Zn and Cd are listed in Table 2. The relative standard deviation at concentrations above 10x IDL is typically less than 5 percent.

Table 2. Detection limits and analytical precision for water analysis.

	UNITS	IDL	MDL	943020	943036	Mean	% RSD	943059	943080	943113	Mean	% RSD
Al	ppb	0.2	117	73	83	78	9	70	72	73	72	2
As	ppb	0.1	0.6	17.8	17.2	18	2	0.1	0.1	-0.1	0	346
Ba	ppb	0.01	6.34	39.21	38.76	39	1	104.93	101.51	103.41	103	2
Bi	ppb	0.01	0.04	-0.01	-0.01	0.01	-1	-0.01	-0.01	-0.01	0.01	-1
Ca	ppb	1	8480	100520	95652	98086	4	48120	45432	49839	47797	5
Cd	ppb	0.01	0.09	32.41	36.03	34	7	1.43	1.2	1.39	1	9
Ce	ppb	0.01	0.04	0.33	0.31	0.32	4	0.03	0.02	0.03	0.02	22
Co	ppb	0.01	0.27	43.81	45.96	45	3	2.56	2.41	2.49	2	3
Cr	ppb	0.1	0.99	0.5	0.4	0.45	16	0.6	0.4	0.6	1	22
Cs	ppb	0.01	0.01	0.01	0.02	0.02	47	0.01	0.01	0.02	0.02	43
Cu	ppb	0.01	1.44	21.61	20.64	21	3	3.55	3.16	3.85	4	10
Dy	ppb	0.01	0.01	0.04	0.04	0.04	-1	-0.01	-0.01	-0.01	0.01	-1
Er	ppb	0.01	0.01	0.01	0.02	0.01	47	-0.01	-0.01	-0.01	0.01	-1
Eu	ppb	0.01	0.01	0.04	0.03	0.03	20	0.07	0.04	0.06	0.05	27
F	ppb	20	20	110	100	105	79	110	100	120	110	13
Fe	ppb	1	138	194	188	191	2	93	79	89	87	8
Ga	ppb	0.01	0.01	0.14	0.14	0.14	-1	0.03	0.03	0.06	0.04	43
Gd	ppb	0.01	0.01	0.09	0.05	0.07	40	-0.01	0.02	0.02	0.02	173
Ge	ppb	0.01	0.01	0.12	0.08	0.10	28	0.07	0.03	0.1	0.07	53
Ho	ppb	0.01	0.01	-0.01	0.02	0.01	424	-0.01	-0.01	-0.01	0.01	-1
K	ppb	1	93	557	584	571	3	261	268	295	275	7
La	ppb	0.01	0.03	0.31	0.31	0.31	-1	0.03	0.03	0.03	0.03	-1
Li	ppb	0.1	0.44	5.7	5.1	5.4	105	5.7	4.4	5	4.7	13
Mg	ppb	0.5	757	28100	27550	27825	1	13600	13750	13600	13650	1
Mn	ppb	0.1	10.3	408.8	392.6	401	3	35	34.3	35.9	35	2
Mo	ppb	0.1	0.1	1.4	1.4	1	-1	1.7	1.6	2	2	12
Na	ppb	1	249	1046	1145	1096	6	1143	1035	1124	1101	5
Nd	ppb	0.01	0.1	0.24	0.22	0.21	6	0.02	0.01	0.02	0.02	35
Ni	ppb	0.01	4.47	355.89	369.88	363	3	39.7	36.16	38.83	38	5
Pb	ppb	0.3	1	17.25	17.24	17	0	0.25	0.19	0.13	0	32
Pr	ppb	0.01	0.03	0.06	0.05	0.05	13	0.01	0.01	-0.01	0.01	346
Rb	ppb	0.01	0.15	0.73	0.79	1	6	0.26	0.32	0.3	0.3	10
Sb	ppb	0.01	0.01	0.2	0.2	0.2	-1	0.3	0.3	0.4	0.3	17
Se	ppb	0.1	4.27	6.9	-0.1	3	146	-0.1	4.8	-0.1	2	185
Si	ppb	1	128	2650	2650	2650	-1	2600	2650	2650	2633	1
Sm	ppb	0.01	0.01	0.05	0.06	0.06	13	-0.01	-0.01	-0.01	0.01	-1
Sn	ppb	0.01	0.47	0.19	0.23	0.20	13	0.13	0.28	0.28	0.28	38
SO4	ppm	1	1	87	119	130	116		110	81	96	21
Sr	ppb	0.01	14.3	471.89	429.06	450	7	229.83	231.04	237.5	233	2
Th	ppb	0.02	0.06	0.04	0.05	0.05	16	0.09	0.03	0.02	0.04	81
Tl	ppb	0.01	0.03	0.08	0.04	0.06	47	0.02	0.01	0.01	0.01	43
U	ppb	0.01	0.08	0.79	0.61	1	18	1.52	1.44	1.58	2	5
W	ppb	0.01	0.43	0.04	0.01	0.03	85	0.01	-0.01	-0.01	0.01	-346
Y	ppb	0.01	0.11	0.55	0.5	1	7	0.13	0.12	0.14	0.13	8
Zn	ppb	0.01	130.6	2108.8	2145.12	2127	1	130.37	120.15	122.99	125	4
Zr	ppb	0.01	0.01	0.44	1.73	1	84	0.7	0.8	0.78	1	7

***SPRING DEPOSIT, SOIL, STREAM
SEDIMENT AND MOSS MAT
SEDIMENT***

Spring deposit and soil and samples were air dried and sieved to - 230 mesh (<0.063 mm) size. Stream sediment and moss mat samples were air dried and sieved to - 80 mesh (<0.180 mm) size. Both size fractions were analysed by Acme Analytical (Vancouver) for 29 elements (Mo, Cu, Pb, Zn, Ag, Ni, Co, Mn, Fe, As, U, Th, Sr, Cd, Sb, Bi, V, Ca, P, La, Cr, Mg, Ba, Ti, B, Al, Na, K and W) by aqua regia digestion and inductively coupled plasma emission spectroscopy (ICPES). Mercury was analysed by cold vapour atomic absorption spectrometry. Thirty-five additional elements (Au, Ag, As, Ba, Br, Ca, Co, Cr, Cs, Fe, Hf, Hg, Ir, Mo, Na, Ni, Rb, Sb, Sc, Se, Sn, Sr, Ta, Th, U, W, Zn, La, Ce, Nd, Sm, Eu, Tb, Yb and Lu) were determined by thermal instrumental neutron activation analysis (INAA) by Activation Laboratories, Ancaster, Ontario. Neutron activation is non-destructive to the sample and provides a "total" estimate of an element concentration. It cannot, however, measure elements such as Pb and Cu.

These can be determined on a separate sample by an aqua regia digestion and ICPES. An aqua regia digestion, while very effective for dissolving Au, carbonates and sulphides, cannot completely break down alumino-silicate, oxide and other refractory minerals such as barite. Consequently, element concentrations determined by aqua regia-ICPES are "partial" rather than "total". Detection limits for elements determined by INAA and aqua regia-ICPES are listed in Table 3. Percent relative standard deviation (mean/standard deviation) calculated from duplicate analyses of a GSB standard and the USGS rock standard GXR 1 is also shown in Table 3 with the recommended values for standard (Glasney and Roelandts, 1988).

Precision (%RSD) for massive sulphide indicator elements (e.g. Ag, As, Au, Ni, Cd, Co, Pb, Zn) is typically below 10 percent at concentrations above 10x IDL. The percentage difference between values for the blind duplicate field and analytical samples for elements such as Pb, Zn and Ag is typically below 15 percent.

Table 3. Detection limits and precision for soils analysed by INAA⁽¹⁾ and aqua regia-ICPES⁽²⁾

ELEMENT	UNITS	IDL	GSB STD	GSB STD	RSD (%)	GXR 1	GXR 1	RSD (%)	GXR 1 ⁽¹⁾
			941325	941425		941031	941201		
Ag ⁽¹⁾	ppm	5	8	11	22	25	26	3	31
Ag ⁽²⁾	ppm	0.3	8	8.4	3	25.7	24.3	4	31
Al ⁽²⁾	%	0.01	1.06	1.02	3	0.3	0.29	2	3.51
As ⁽¹⁾	ppm	0.5	79	94	12	470	420	8	427
As ⁽²⁾	ppm	2	83	89	5	344	358	3	427
Au ⁽¹⁾	ppb	2	11	10	7	4010	3980	1	3300
B ⁽²⁾	ppm	3	2	2	<1	6	18	71	15
Ba ⁽¹⁾	ppm	50	1100	1300	12	720	710	1	750
Ba ⁽²⁾	ppm	1	51	55	5	386	366	4	750
Bi ⁽²⁾	ppm	2	-2	-2	0	1773	1667	4	1380
Br ⁽¹⁾	ppm	0.5	1.8	2.2	14	-0.5	-0.5	0.5	0.5
Ca ⁽¹⁾	%	1	-1	-1	<1	2	2	2	1
Ca ⁽²⁾	%	0.01	0.81	0.78	3	0.80	0.78	2	0.96
Cd ⁽²⁾	ppm	0.2	9.6	9.5	1	-0.2	-0.2	-2	3.3
Ce ⁽¹⁾	ppm	0.3	89	110	15	22	23	3	17
Co ⁽¹⁾	ppm	1	13	15	10	8	9	8	8.2
Co ⁽²⁾	ppm	1	13	13	<1	8	8	0	8
Cr ⁽¹⁾	ppm	5	97	120	15	17	18	4	12
Cr ⁽²⁾	ppm	1	26	25	3	11	9	14	12
Cs ⁽¹⁾	ppm	1	4	5	16	4	2	47	3
Cu ⁽²⁾	ppm	1	82	72	9	1110	1037	5	1110
Eu ⁽¹⁾	ppm	0.2	1.9	2.4	16	1.2	0.6	47	0.7
Fe ⁽¹⁾	%	0.01	4.17	4.94	12	25.4	24.1	4	25
Fe ⁽²⁾	%	0.01	4.17	3.94	4	26.02	25.09	3	25
Hf ⁽¹⁾	ppm	1	9	11	14	-1	-1	-1	0.96
Hg ⁽²⁾	ppb	10	25	30	13	190	200	4	390
K ⁽²⁾	%	0.01	0.1	0.1	<1	0.03	0.02	28	0.05
La ⁽¹⁾	ppm	0.5	51	61	13	9.6	8.8	6	7.5
La ⁽²⁾	ppm	1	18	18	<1	5	4	16	7.5
Lu ⁽¹⁾	ppm	0.05	0.53	0.67	16	0.37	0.3	15	0.3
Mg ⁽²⁾	%	0.01	0.81	0.68	12	0.17	0.17	0	0.22
Mn ⁽²⁾	ppm	2	1332	1275	3	706	685	2	880
Mo ⁽¹⁾	ppm	1	3	4	20	31	28	7	18
Mo ⁽²⁾	ppm	1	7	8	9	22	26	12	18
Na ⁽¹⁾	%	0.01	1.32	1.56	12	0.05	0.05	0.05	0.05
Na ⁽²⁾	%	0.01	0.01	0.01	0.01	0.04	0.04	0.04	0.05
Nd ⁽¹⁾	ppm	5	40	50	16	10	6	35	18
Ni ⁽²⁾	ppm	1	64	67	3	44	45	2	41
P ⁽²⁾	%	0.001	0.097	0.093	3	0.025	0.024	3	0.06
Pb ⁽²⁾	ppm	3	695	655	4	513	505	1	730
Rb ⁽¹⁾	ppm	5	81	92	9	-15	-15	-15	14
Sb ⁽¹⁾	ppm	0.01	7.1	8.6	14	120	120	120	122
Sb ⁽²⁾	ppm	2	4	5	16	64	62	2	122
Sc ⁽¹⁾	ppm	0.1	12	14	11	1.8	1.6	8	1.58
Se ⁽¹⁾	ppm	5	4	-3	990	15	-3	212	16
Sm ⁽¹⁾	ppm	0.1	7.1	8.9	16	3.1	2.8	7	2.7
Sr ⁽²⁾	ppm	1	53	54	1	151	144	3	275
Ta ⁽¹⁾	ppm	0.5	0.9	1.7	44	-0.5	-0.5	0	0.1
Tb ⁽¹⁾	ppm	0.5	1.2	1.3	6	0.9	0.9	0	0.8
Th ⁽¹⁾	ppm	0.2	12	15	16	2.3	2.7	11	2.4
Th ⁽²⁾	ppm	2	6	6	6	7	6	11	2.4
Ti ⁽²⁾	%	0.01	0.04	0.04	0.04	0.01	0.01	0.01	0.03
U ⁽¹⁾	ppm	0.5	4.5	5.4	13	35	34	2	35
V ⁽²⁾	ppm	1	29	29	29	65	62	3	80
W ⁽¹⁾	ppm	1	3	4	20	190	170	8	164
Yb ⁽¹⁾	ppm	0.2	4.2	5	12	2.6	2.7	3	32
Zn ⁽¹⁾	ppm	50	2360	2900	15	700	680	2	760
Zn ⁽²⁾	ppm	1	1936	1987	2	598	581	2	760

FERRICRETE AND ROCK SAMPLES

Ferricrete samples were broken up in a ceramic mortar and crushed material sieved to - 80 mesh (0.180 mm). Rock samples were crushed and ground in a tungsten carbide mill to - 150 mesh (0.075 mm). The sieved/milled samples were analysed for 34 elements (Mo, Cu, Pb, Zn, Ag, Ni, Co, Mn, Fe, As, U, Th, Sr, Cd, Sb, Bi, V, Ca, P, La, Cr, Mg, Ba, Ti, Al, Na, K, W, Zr, Sn, Y, Nb, Be, Sc) by hydrofluoric-nitric-perchloric-hydrochloric (HF-HNO₃-HClO₄-HCl) acid digestion - ICPEs and for 32 elements by INAA. Mercury was analysed by cold vapour atomic absorption spectrometry. Detection limits for elements determined by INAA and hydrofluoric-nitric-perchloric-hydrochloric acid ICPEs are listed in Table 4 with precision (% relative standard deviation) from duplicate analyses of USGS standard GXR-1.

SEQUENTIAL EXTRACTION ANALYSIS

Elements in selected iron oxide-spring deposit, rock and soil samples

were determined by a sequential extraction analysis at XRAL Laboratories, Toronto. One gram of the sieved or milled sample was extracted with 0.25M-hydroxylamine hydrochloride (NH₂OH HCl) for 2 hours at 60°C. The residue from the 0.25M NH₂OH HCl extracted with 1 M NH₂OH HCl - acetic acid for 3 hours at 90°C and the residue from this extraction then digested in concentrated HF-HNO₃-HClO₄-HCl acids for 1 hour at 90°C. The extracts were analysed for V, Mn, Co, Ni, Cu, Zn, As, Mo, Ag, Cd, Sb, Ba, Tl and Pb by ICPEs. Detection limits for elements determined in the three extractions and the precision (expressed as % relative standard deviation based on repeated analysis of USGS standard GXR 1) are listed in Table 5. The precision for Ag, Cu, Mn, Pb, V and Zn in all extractions is better than 10 per cent. Poorer precision for other elements reflects low concentration in specific extractions or, in the case of Sb-3, an isolated low value for one determination of GXR-1.

Table 4. Detection limits and precision (GXR-1) for rocks analysed by INAA⁽¹⁾ HF ICPES⁽²⁾

ELEMENT	UNITS	IDL	945025	945072	%RSD	ELEMENT	UNITS	IDL	945025	945072	%RSD
Ag ¹	ppm	5	32	25	17	Mg ²	%	0.01	0.19	0.2	4
Ag ²	ppm	0.5	24.8	26.4	4	Mn ²	ppm	5	704	1079	30
Al ²	%	0.01	0.71	0.73	2	Mo ¹	ppm	1	31	31	<1
As ¹	ppm	0.5	340	350	2	Mo ²	ppm	2	15	16	5
As ²	ppm	5	318	344	6	Na ²	%	0.01	0.04	0.05	16
Au ¹	ppb	2	3050	3740	14	Nb ²	ppm	2	2	2	<1
Ba ¹	ppm	50	600	650	6	Nd ¹	ppm	5	9	12	20
Ba ²	ppm	1	707	780	7	Ni ¹	ppm	20	-26	-41	-32
Be ²	ppm	1	1	3	71	Ni ²	ppm	2	33	39	12
Bi ²	ppm	5	1308	1448	7	P ²	%	0.002	0.05	0.055	7
Br ¹	ppm	0.5	-0.5	-0.5	<1	Pb ²	ppm	5	545	612	8
Ca ¹	%	1	-1	-1	<1	Rb ¹	ppm	5	-15	-15	<1
Ca ²	%	0.01	0.7	0.77	7	Sb ¹	ppm	0.1	96	110	10
Cd ²	ppm	0.4	2.2	7.5	77	Sb ²	ppm	5	74	87	11
Ce ¹	ppm	3	16	18	8	Sc ¹	ppm	0.1	1.3	1.4	5
Co ¹	ppm	1	8	7	9	Sc ²	ppm	1	1	1	<1
Co ²	ppm	2	4	5	16	Se ¹	ppm	5	20	18	7
Cr ¹	ppm	5	12	9	20	Sm ¹	ppm	0.1	2.1	3.2	29
Cr ²	ppm	2	13	13	<1	Sn ²	ppm	2	20	17	11
Cs ¹	ppm	1	3	3	<1	Sr ²	ppm	2	269	280	3
Cu ¹	ppm	2	1051	1109	4	Ta ¹	ppm	0.5	-0.5	-0.5	<1
Eu ¹	ppm	0.2	1	1	<1	Tb ¹	ppm	0.5	1	-0.5	424
Fe ¹	%	0.01	23	23.3	1	Th ¹	ppm	0.2	2.2	2.2	<1
Fe ²	%	0.01	22.13	22.29	1	Th ²	ppm	2	3	3	<1
Hf ¹	ppm	1	1	-1	<1	Ti ²	%	0.01	0.01	0.01	<1
Hg	ppb	10	1900	210	113	U ¹	ppm	0.5	24	25	3
Ir ¹	ppb	5	-5	-5	<1	V ²	ppm	2	57	62	6
K ²	%	0.01	0.03	0.04	20	W ¹	ppm	1	160	170	4
La ¹	ppm	0.5	6.8	7.6	8	W ²	ppm	4	172	192	8
Lu ¹	ppm	0.05	0.36	0.35	2						
Y ²	ppm	2	22	23	3						
Yb ¹	ppm	0.2	2.3	2	10						
Zn ¹	ppm	50	751	760	1						
Zn ²	ppm	2	607	656	5						
Zr ²	ppm	2	16	17	4						

Table 5. Detection limits and precision for GXR 1 analysed sequentially by ¹ = 0.25M NH₂OH HCl; ²=1 M NH₂OH HCl -acetic acid; ³ = HF-HNO₃-HCl-HClO₄. Elements in extracts determined by ICPES.

EXTRACT	UNITS	IDL	945010	945025	945059	941031	941120	941201	941425	%RSD
Ag-1	ppm	0.1	19.8	20.2	20.4	19.6	18.2	18	16.9	7
Ag-2	ppm	0.1	18.1	19.3	18	18.9	20.8	20.7	23	9
Ag-3	ppm	0.1	2.5	2.7	2.5	2.5	2.7	2.4	2.5	4
As-1	ppm	3	-3	-3	-3	-3	-3	-3	-3	<1
As-2	ppm	3	-3	-3	-3	4	-3	4	-3	<342
As-3	ppm	3	353	365	354	356	358	340	355	2
Ba-1	ppm	1	133	134	128	134	128	119	123	5
Ba-2	ppm	1	206	218	206	201	255	259	264	12
Ba-3	ppm	1	257	263	256	262	362	352	375	18
Cd-1	ppm	1	2	1	2	1	1	1	1	38
Cd-2	ppm	1	-1	-1	-1	-1	-1	-1	-1	<1
Cd-3	ppm	1	-1	-1	-1	-1	21	17	-1	208
Co-1	ppm	1	2	2	2	2	2	2	2	<1
Co-2	ppm	1	1	2	1	2	1	2	1	37
Co-3	ppm	1	4	4	4	4	4	4	4	<1
Cu-1	ppm	0.5	397	368	388	375	311	333	301	11
Cu-2	ppm	0.5	499	529	499	513	533	513	543	3
Cu-3	ppm	0.5	251	260	251	243	254	243	245	3
Fe-1	%	0.01	0.7	0.66	0.69	0.68	0.55	0.63	0.57	9
Fe-2	%	0.01	7.56	7.98	7.8	8.72	7.21	7.47	7.37	7
Fe-3	%	0.01	20.6	21.4	21.7	20.3	20.4	21	20.7	3
Mn-1	ppm	2	635	637	626	633	611	624	615	2
Mn-2	ppm	2	190	201	188	192	200	197	201	3
Mn-3	ppm	2	55	57	55	52	61	59	60	6
Mo-1	ppm	1	-1	-1	-1	-1	-1	-1	-1	<1
Mo-2	ppm	1	2	2	2	2	1	2	1	28
Mo-3	ppm	1	10	11	10	10	11	9	10	7
Ni-1	ppm	1	2	2	2	2	1	1	1	34
Ni-2	ppm	1	9	9	8	8	8	8	8	6
Ni-3	ppm	1	17	17	18	16	18	16	18	5
Pb-1	ppm	2	17	14	15	15	10	10	11	21
Pb-2	ppm	2	449	456	445	443	406	422	424	4
Pb-3	ppm	2	261	267	263	257	258	250	254	2
Sb-1	ppm	5	-5	-5	-5	-5	-5	-5	-5	<1
Sb-2	ppm	5	6	6	7	9	-5	8	8	86
Sb-3	ppm	5	65	80	19	68	69	16	75	48
Tl-1	ppm	0.1	0.3	0.3	0.3	0.3	0.2	0.2	0.2	21
Tl-2	ppm	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	<1
Tl-3	ppm	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	<106
V-1	ppm	2	17	18	17	17	15	15	14	9
V-2	ppm	2	42	42	42	42	39	40	40	3
V-3	ppm	2	33	35	33	32	34	33	33	3
Zn-1	ppm	0.5	156	148	153	152	128	139	129	8
Zn-2	ppm	0.5	263	277	267	277	258	253	261	3
Zn-3	ppm	0.5	351	373	347	340	349	329	339	4

SUMMARY STATISTICS

Mean, median and percentile values, calculated from soil, spring deposit, rock and water data for all of the survey areas, are listed in Tables 6 through 13. Data for each sample type (e.g. rock, water) has been subdivided according to the two main contrasting media represented. For example, stream sediment data has been subdivided into sediment or moss mat sediment data, water into stream or spring-seep water data, soil into Fe-rich oxide or Fe-poor samples and rock into Fe-rich or Fe-poor sediment.

The mean, median and maximum concentrations of most elements are higher in moss mat sediment samples (Table 6) compared to conventional stream sediments (Table 7). The

differences are greatest for Au, Ba, and Pb that are most likely to be transported and concentrated as heavy mineral grains. Most geochemically mobile elements such as As, Cd, Co, Cu, Hg, Ni, Mo, U and Zn are much higher in Fe-rich samples (Table 8) compared to the Fe-poor (predominantly shale) samples (Table 9). However, Au and Ba are higher in Fe-poor material because there are barite-rich and quartz-vein Au-rich samples from the North Bear area in the data set. Aluminium, As, Cd, Co, Fe, K, Mn, Ni and Zn are higher in spring waters (Table 10) whereas Ba, Ca, Mg and Pb are higher in stream waters (Table 11). Cobalt, Cu, Fe, Mo, Ni, U and Zn are higher in Fe-rich soils typically associated with Fe oxide-spring deposits (Table 12) whereas Ag, As, Au, Ba, Cd, Hg, Pb, Sb and Se are higher in soil, till and colluvium (Table 13).

Table 6. Moss mat sediment statistics. ⁽¹⁾ = INAA ⁽²⁾ = Aqua regia-ICPES

ELEMENT	UNITS	COUNT	MEAN	MEDIAN	MIN	MAX	50%ILE	90%ILE	95%ILE	98%ILE
Ag ⁽¹⁾	ppm	36	9	5	5	150	5	5	5	65
Ag ⁽²⁾	ppm	36	4.5	0.7	0.1	164.4	0.7	1.8	2.3	53.4
Al ⁽²⁾	%	36	0.90	0.73	0.26	2.58	0.73	1.655	1.9775	2.457
As ⁽¹⁾	ppm	36	22.3	22	6.3	45	22	29.5	30	33.1
As ⁽²⁾	ppm	36	22	23	2	47	23	29	30	33
Au ⁽¹⁾	ppb	36	5	3	2	21	3	.8	11	14
B ⁽²⁾	ppm	36	5	5	2	12	5	9	10	11
Ba ⁽¹⁾	ppm	36	10756	9500	1200	71000	9500	16000	19750	37500
Ba ⁽²⁾	ppm	36	613	640.5	70	1031	640.5	849.5	903	954
Bi ⁽²⁾	ppm	36	2	2	2	4	2	2	3	4
Br ⁽¹⁾	ppm	36	7.0	3.8	0.5	66.0	3.8	10.5	20.0	49.1
Ca ⁽¹⁾	%	36	1	1	1	5	1	3	3.8	4
Ca ⁽²⁾	%	36	0.84	0.42	0.03	4.15	0.42	2.64	3.05	3.46
Cd ⁽²⁾	ppm	36	9.4	7.3	0.2	35.6	7.3	20.0	24.2	32.7
Ce ⁽¹⁾	ppm	36	73.3	64.5	34	160	64.5	110	127.5	137
Co ⁽¹⁾	ppm	36	32	16	4	270	16	59	117	201
Co ⁽²⁾	ppm	36	35	18.5	5	299	18.5	69	134	202
Cr ⁽¹⁾	ppm	36	77	79	32	100	78.5	92	96.75	100
Cr ⁽²⁾	ppm	36	11	10	5	23	10	15	20	21
Cs ⁽¹⁾	ppm	36	8	7	3	22	7	11	14	16
Cu ⁽²⁾	ppm	36	69	63	18	158	63	108	123	124
Eu ⁽¹⁾	ppm	36	1.7	1.5	0.7	3.6	1.5	2.4	2.7	3.3
Fe ⁽¹⁾	%	36	4.01	3.42	1.71	14.2	3.42	6.415	7.78	12.08
Fe ⁽²⁾	%	36	3.99	3.53	1.51	13.46	3.53	6.71	7.60	12.81
Hf ⁽¹⁾	ppm	36	7	6	2	23	6	12	13	20
Hg ⁽²⁾	ppb	36	258	133	55	5770	133	260	510	840
K ⁽²⁾	%	36	0.13	0.12	0.08	0.47	0.12	0.17	0.20	0.24
La ⁽¹⁾	ppm	36	40.2	37.5	13.0	82.0	37.5	58.0	68.3	70.0
La ⁽²⁾	ppm	36	17	17	3	41	17	31	34	36
Lu ⁽¹⁾	ppm	36	0.54	0.52	0.22	1.02	0.52	0.70	0.76	0.83
Mg ⁽²⁾	%	36	0.47	0.12	0.02	2.85	0.12	1.66	1.86	2.23
Mn ⁽²⁾	ppm	36	974	594	161	8805	594	1928	3310	4340
Mo ⁽¹⁾	ppm	36	13	11	1	51	11	24	31	44
Mo ⁽²⁾	ppm	36	24	20	3	81	20	43	47	66
Na ⁽¹⁾	%	36	0.09	0.08	0.04	0.35	0.08	0.18	0.20	0.21
Na ⁽²⁾	%	36	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01
Nd ⁽¹⁾	ppm	36	32	29	11	71	29	47	51	56
Ni ⁽²⁾	ppm	36	196	171	21	880	171	352	415	535
P ⁽²⁾	%	36	0.110	0.108	0.056	0.203	0.108	0.143	0.162	0.180
Pb ⁽²⁾	ppm	36	308	107	12	5325	107	365	862	3771
Rb ⁽¹⁾	ppm	36	89	87	64	140	87	110	120	127
Sb ⁽¹⁾	ppm	36	7.7	7.3	1.5	17.0	7.3	11.0	12.8	13.7
Sb ⁽²⁾	ppm	36	7	6	2	15	6	11	12	14
Sc ⁽¹⁾	ppm	36	9.2	9.0	6.6	13.0	9.0	11.0	11.8	12.0
Se ⁽¹⁾	ppm	36	4	3	3	10	3	5	6	8
Sm ⁽¹⁾	ppm	36	6.1	5.6	1.9	11.0	5.6	9.4	10.0	10.7
Sr ⁽²⁾	ppm	36	68	64	24	133	64	96	107	120
Ta ⁽¹⁾	ppm	36	0.7	0.5	0.5	1.2	0.5	1.0	1.1	1.2
Tb ⁽¹⁾	ppm	36	1.0	0.9	0.5	2.5	0.9	1.5	1.9	2.1
Th ⁽¹⁾	ppm	36	10.0	9.7	2.3	15.0	9.7	13.0	13.8	14.7
Th ⁽²⁾	ppm	36	3	3	2	7	3	5	6	6
Ti ⁽²⁾	ppm	36	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01
U ⁽¹⁾	ppm	36	11.0	10.0	5.2	33.0	10.0	15.0	17.5	22.1
U ⁽²⁾	ppm	36	6	5	5	28	5	10	12.5	16.8
V ⁽²⁾	ppm	36	90	58	17	559	58	158	292	323
W ⁽¹⁾	ppm	36	2	1	1	7	1	3.5	5	6.4
W ⁽²⁾	ppm	36	1	1	1	1	1	1	1	1
Yb ⁽¹⁾	ppm	36	3.4	3.2	1.4	6.9	3.2	4.6	4.9	5.7
Zn ⁽¹⁾	ppm	36	2016	1630	114	8120	1630	3720	4165	6441
Zn ⁽²⁾	ppm	36	1763	1424	87	6862	1424	3236	4125	6093

Table 7. Stream sediment statistics. ⁽¹⁾ = INAA ⁽²⁾ = Aqua regia-ICPES

ELEMENT	UNITS	COUNT	MEAN	MEDIAN	MIN	MAX	50%ILE	90%ILE	95%ILE	98%ILE
Au ⁽¹⁾	ppb	23	4	4	2	8	4	7	8	8
Ag ⁽¹⁾	ppm	23	5	5	5	5	5	5	5	5
Ag ⁽²⁾	ppm	23	0.6	0.6	0.1	1.5	0.6	0.8	0.9	1.2
Al ⁽²⁾	%	23	0.67	0.71	0.24	1.54	0.71	0.86	0.99	1.30
As ⁽¹⁾	ppm	23	23.3	22.0	17.0	32.0	22.0	29.8	30.0	31.1
As ⁽²⁾	ppm	23	24	24	16	31	24	30	31	31
B ⁽²⁾	ppm	23	5	5	2	11	5	8	9	10
Ba ⁽¹⁾	ppm	23	14652	8200	1300	96000	8200	23000	56500	80160
Ba ⁽²⁾	ppm	23	617	614	143	900	614	828	834	871
Bi ⁽²⁾	ppm	23	2	2	2	4	2	3	4	4
Br ⁽¹⁾	ppm	23	3.0	2.7	0.5	11.0	2.7	3.9	8.4	10.1
Ca ⁽¹⁾	%	23	1.17	1	1	4	1	1	1.9	3.12
Ca ⁽²⁾	%	23	0.66	0.29	0.03	3.22	0.29	1.44	2.45	2.93
Cd ⁽²⁾	ppm	23	7.0	7.3	0.2	16.9	7.3	11.5	13.5	15.5
Ce ⁽¹⁾	ppm	23	66.9	59	44	140	59	95.2	108.7	126.8
Co ⁽¹⁾	ppm	23	20	16	3	47	16	40	44	46
Co ⁽²⁾	ppm	23	23	17	4	58	17	47.6	52.5	55.8
Cr ⁽¹⁾	ppm	23	79	81	62	100	81	91	97	99
Cr ⁽²⁾	ppm	23	10	9	5	22	9	13	15	19
Cs ⁽¹⁾	ppm	23	8	7	5	21	7	12	20	21
Cu ⁽²⁾	ppm	23	61	64	27	92	64	85	87	90
Eu ⁽¹⁾	ppm	23	1.4	1.3	0.8	2.0	1.3	1.7	1.9	2.0
Fe ⁽¹⁾	%	23	3.62	3.55	1.87	8.92	3.55	4.43	5.47	7.45
Fe ⁽²⁾	%	23	3.59	3.67	1.63	9.07	3.67	4.35	5.37	7.49
Hf ⁽¹⁾	ppm	23	6	5	4	12	5	7	9	11
Hg ⁽²⁾	ppb	23	147	130	65	610	130	191	236	447
K ⁽²⁾	%	23	0.11	0.11	0.06	0.16	0.11	0.14	0.15	0.16
La ⁽¹⁾	ppm	23	37.2	34.0	25.0	71.0	34.0	51.6	55.7	64.4
La ⁽²⁾	ppm	23	16	16	5	30	16	27	30	30
Lu ⁽¹⁾	ppm	23	0.45	0.46	0.27	0.65	0.46	0.55	0.56	0.61
Mg ⁽²⁾	%	23	0.36	0.10	0.01	1.97	0.10	0.81	1.45	1.77
Mn ⁽²⁾	ppm	23	699	567	128	2198	567	1236	1298	1803
Mo ⁽¹⁾	ppm	23	11	10	1	28	10	20	20	24
Mo ⁽²⁾	ppm	23	21	19	9	41	19	34	39	40
Na ⁽¹⁾	%	23	0.09	0.08	0.05	0.20	0.08	0.15	0.19	0.20
Na ⁽²⁾	%	23	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Nd ⁽¹⁾	ppm	23	29	28	5	55	28	39	45	51
Ni ⁽²⁾	ppm	23	137	137	19	243	137	202	222	235
P ⁽²⁾	%	23	0.104	0.100	0.057	0.172	0.100	0.131	0.142	0.159
Pb ⁽²⁾	ppm	23	159	97	14	586	97	430	537	568
Rb ⁽¹⁾	ppm	23	94	93	70	150	93	110	110	132.4
Sb ⁽¹⁾	ppm	23	8	7	3	12	7	11	12	12
Sb ⁽²⁾	ppm	23	8	7	4	15	7	11	11	13
Sc ⁽¹⁾	ppm	23	9.5	9.3	6.7	14.0	9.3	11.0	11.9	13.1
Se ⁽¹⁾	ppm	23	3	3	3	9	3	4	5	7
Sm ⁽¹⁾	ppm	23	5.3	5.2	2.4	9.3	5.2	6.7	8.0	8.8
Sr ⁽²⁾	ppm	23	61	59	33	103	59	85	91	98
Ta ⁽¹⁾	ppm	23	0.7	0.5	0.5	1.1	0.5	1.1	1.1	1.1
Tb ⁽¹⁾	ppm	23	0.8	0.8	0.5	1.4	0.8	1.1	1.2	1.3
Th ⁽¹⁾	ppm	23	9.5	9.0	6.6	14.0	9.0	12.0	12.9	13.6
Th ⁽²⁾	ppm	23	3	3	2	6	3	6	6	6
Ti ⁽²⁾	ppm	23	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
U ⁽¹⁾	ppm	23	9.8	9.6	5.6	17.0	9.6	12.0	12.0	14.8
U ⁽²⁾	ppm	23	5	5	5	5	5	5	5	5
V ⁽²⁾	ppm	23	87	53	32	308	53	169	179	252
W ⁽¹⁾	ppm	23	1	1	1	4	1	2	4	4
W ⁽²⁾	ppm	23	1	1	1	1	1	1	1	1
Yb ⁽¹⁾	ppm	23	2.9	2.8	1.7	4.1	2.8	3.7	3.9	4.0
Zn ⁽¹⁾	ppm	23	1433	1520	131	2780	1520	2212	2400	2622
Zn ⁽²⁾	ppm	23	1264	1207	104	2331	1207	2045	2282	2318

Table 8. Fe-oxide sample statistics. INAA = ⁽¹⁾; Cold vapour AAS = ⁽²⁾; HF-ICPES = ⁽³⁾

ELEMENT	UNITS	COUNT	MEAN	MEDIAN	MIN	MAX	50%ILE	90%ILE	95%ILE	98%ILE
Ag ⁽¹⁾	ppb	42	6	5	5	33	5	5	5	12
Ag ⁽³⁾	ppm	42	1.4	0.3	0.3	31.9	0.3	1.5	2.5	9.2
Al ⁽³⁾	ppm	42	1.20	0.47	0.01	4.90	0.47	3.25	4.03	4.74
As ⁽¹⁾	%	42	219.0	35.5	1.8	1300.0	35.5	1010.0	1110.0	1300.0
As ⁽³⁾	ppm	42	202	42	4	1111	42	931	985	1042
Au ⁽¹⁾	ppm	42	3	2	2	14	2	6	11	12
Ba ⁽¹⁾	ppm	42	4081	685	50	37000	685	11300	21000	24520
Ba ⁽³⁾	ppm	42	1838	169	13	9542	169	6365	7732	8671
Be ⁽³⁾	ppm	42	5	4	1	15	4	9	12	15
Bi ⁽³⁾	ppm	42	4	4	4	4	4	4	4	4
Br ⁽¹⁾	ppm	42	0.9	0.5	0.5	5.7	0.5	1.6	2.7	3.7
Ca ⁽¹⁾	%	42	2.08	1.00	1.00	32.00	1.00	2.00	2.00	8.60
Ca ⁽³⁾	%	42	0.76	0.02	0.01	28.45	0.02	0.10	0.24	6.59
Cd ⁽³⁾	ppm	42	28	14	0	187	14	57	102	143
Ce ⁽¹⁾	ppm	42	59	26	3	400	26	179	238	294
Co ⁽¹⁾	ppm	42	74	54	1	590	54	121	142	418
Co ⁽³⁾	ppm	42	70	43	2	582	43	116	139	453
Cr ⁽¹⁾	ppm	42	21	9	5	86	9	60	78	81
Cr ⁽³⁾	ppm	42	20	11	2	77	11	54	64	74
Cs ⁽¹⁾	ppm	42	3	1	1	14	1	9	11	12
Cu ⁽³⁾	ppm	42	42	14	2	342	14	123	165	306
Eu ⁽¹⁾	ppm	42	2.5	0.9	0.2	18.9	0.9	8.3	8.7	13.2
Fe ⁽¹⁾	%	42	35.76	40.75	1.55	49.70	40.75	47.93	49.01	49.31
Fe ⁽³⁾	%	42	37.17	40.94	1.67	55.27	40.94	50.88	54.21	55.18
Hf ⁽¹⁾	ppm	42	1	1	1	4	1	2	4	4
Hg ⁽²⁾	ppb	42	243	90	5	2625	90	546	689	2060
K ⁽³⁾	%	42	0.41	0.02	0.01	3.31	0.02	1.44	1.56	2.04
La ⁽¹⁾	ppm	42	32.1	8.9	0.5	237.0	8.9	87.6	133.0	200.3
La ⁽³⁾	ppm	42	26	5	2	197	5	73	119	168
Lu ⁽¹⁾	ppm	42	0.99	0.26	0.05	5.31	0.26	3.32	4.08	5.19
Mg ⁽³⁾	%	42	0.10	0.05	0.03	0.43	0.05	0.22	0.31	0.41
Mn ⁽³⁾	ppm	42	1790	478	5	26032	478	2557	7413	13968
Mo ⁽¹⁾	ppm	42	66	31	1	280	31	182	203	257
Mo ⁽³⁾	ppm	42	65	19	2	357	19	216	267	345
Na ⁽¹⁾	%	42	0.02	0.01	0.01	0.07	0.01	0.03	0.05	0.06
Na ⁽³⁾	%	42	0.02	0.01	0.01	0.07	0.01	0.04	0.05	0.05
Nb ⁽³⁾	ppm	42	2	2	2	4	2	3	3	4
Nd ⁽¹⁾	ppm	42	34	12	5	228	12	111	131	162
Ni ⁽³⁾	ppm	42	653	259	2	2109	259	1726	1873	1949
P ⁽³⁾	ppm	42	0.044	0.013	0.002	0.237	0.013	0.164	0.197	0.233
Pb ⁽³⁾	ppm	42	410	4	4	10072	4	338	1318	4167
Rb ⁽¹⁾	ppm	42	35	15	15	120	15	97	110	112
Sb ⁽¹⁾	ppm	42	11.4	4.9	0.1	95.0	4.9	23.5	51.8	73.2
Sb ⁽³⁾	ppm	42	12	4	4	82	4	32	44	69
Sc ⁽¹⁾	ppm	42	2.8	1.9	0.1	10.0	1.9	7.6	8.3	9.9
Sc ⁽³⁾	ppm	42	3	2	1	11	2	9	9	11
Se ⁽¹⁾	ppm	42	5	3	3	24	3	6	14	20
Sm ⁽¹⁾	ppm	42	7.2	3.2	0.1	50.0	3.2	23.1	31.1	36.0
Sn ⁽³⁾	ppm	42	2	2	2	5	2	3	4	4
Sr ⁽¹⁾	ppm	42	72	14	2	853	14	153	219	458
Ta ⁽¹⁾	ppm	42	0.5	0.5	0.5	1.1	0.5	0.6	0.8	0.9
Tb ⁽¹⁾	ppm	42	2.5	0.5	0.5	15.0	0.5	7.8	9.4	10.8
Th ⁽¹⁾	ppm	42	1.5	0.3	0.2	6.8	0.3	5.3	5.9	6.7
Th ⁽³⁾	ppm	42	3	2	2	8	2	6	6	7
Ti ⁽³⁾	ppm	42	0.03	0.01	0.01	0.18	0.01	0.10	0.13	0.14
U ⁽¹⁾	ppm	42	58.2	38.0	0.5	260.0	38.0	124.0	173.0	236.6
U ⁽³⁾	ppm	42	76	45	10	310	45	156	219	302
V ⁽³⁾	ppm	42	128	22	2	639	22	446	601	634
W ⁽¹⁾	ppm	42	13	12	1	48	12	24	34	47
W ⁽³⁾	ppm	42	6	3	2	36	3	13	18	35
Y ⁽³⁾	ppm	42	138	24	2	659	24	410	487	547
Yb ⁽¹⁾	ppm	42	6.4	1.3	0.2	37.7	1.3	20.5	26.0	32.2
Zn ⁽¹⁾	ppm	42	11921	7300	190	36700	7300	24060	25680	30772
Zn ⁽³⁾	ppm	42	8750	5492	161	23173	5492	18048	19048	20236
Zr ⁽³⁾	ppm	42	14	7	2	54	7	36	50	52

Table 9. Shale sample statistics. INAA = ⁽¹⁾; Cold vapour AAS = ⁽²⁾; HF-ICPES = ⁽³⁾

ELEMENT	UNITS	COUNT	MEAN	MEDIAN	MIN	MAX	50%II F	90%II F	95%II F	98%II F
Ac ⁽¹⁾	ppm	24	5	5	5	5	5	5	5	5
Ag ⁽³⁾	ppm	24	1	0	0	2	0	1	1	2
Al ⁽³⁾	%	24	3.89	3.80	0.32	8.25	3.80	6.59	6.79	7.58
As ⁽¹⁾	ppm	24	7.8	7.2	1.1	22.0	7.2	12.7	19.0	21.1
As ⁽²⁾	ppm	24	7	5	4	19	5	15	18	19
Au ⁽¹⁾	ppb	24	14	3	2	157	3	7	83	129
Ba ⁽¹⁾	ppm	24	56630	4800	550	380000	4800	229000	292500	343200
Ba ⁽³⁾	ppm	24	5465	4997	707	13829	4997	11652	12743	13405
Be ⁽²⁾	ppm	24	2	2	1	4	2	2	3	4
Bi ⁽¹⁾	ppm	24	4	4	4	6	4	4	4	5
Br ⁽¹⁾	ppm	24	0.5	0.5	0.5	0.6	0.5	0.5	0.6	0.6
Ca ⁽¹⁾	%	24	1	1	1	5	1	1	1	3
Ca ⁽²⁾	%	24	0.24	0.02	0.01	4.63	0.02	0.12	0.30	2.65
Cd ⁽³⁾	ppm	24	2	0	0	15	0	2	8	12
Ce ⁽¹⁾	ppm	24	37	36	6	78	36	73	75	77
Co ⁽¹⁾	ppm	24	62	64	5	150	64	95	96	125
Co ⁽²⁾	ppm	24	60	63	4	154	63	90	94	126
Cr ⁽¹⁾	ppm	24	50	48	7	89	48	83	86	88
Cr ⁽²⁾	ppm	24	47	48	2	85	48	80	84	85
Cs ⁽¹⁾	ppm	24	6.2	4.5	1.0	25.0	4.5	11.4	12.0	19.0
Cu ⁽²⁾	ppm	24	12	5	2	59	5	27	46	54
Eu ⁽¹⁾	ppm	24	0.5	0.4	0.2	1.9	0.4	0.9	1.1	1.5
Fe ⁽¹⁾	%	24	1.1	0.7	0.2	5.3	0.7	2.1	3.4	4.5
Fe ⁽²⁾	%	24	1.19	0.70	0.11	5.64	0.70	2.21	3.72	4.87
Hf ⁽¹⁾	ppm	24	2.0	1.5	1.0	5.0	1.5	3.7	4.0	4.5
Hg ⁽²⁾	ppb	24	248	130	15	975	130	658	712	858
K ⁽²⁾	%	24	1.31	1.28	0.07	2.92	1.28	2.18	2.45	2.72
La ⁽¹⁾	ppm	24	19.4	19.2	2.6	37.3	19.2	34.2	35.8	36.7
La ⁽²⁾	ppm	24	11	11	2	22	11	19	21	22
Lu ⁽¹⁾	ppm	24	0.21	0.21	0.05	0.42	0.21	0.33	0.35	0.39
Mg ⁽²⁾	%	24	0.26	0.24	0.01	1.55	0.24	0.42	0.52	1.08
Mn ⁽¹⁾	ppm	24	80	33	5	1007	33	87	154	619
Mo ⁽¹⁾	ppm	24	9	8	1	35	8	14	17	27
Mo ⁽²⁾	ppm	24	7	5	2	24	5	12	15	20
Na ⁽¹⁾	%	24	0.08	0.03	0.01	0.78	0.03	0.17	0.26	0.55
Na ⁽²⁾	%	24	0.09	0.03	0.01	0.78	0.03	0.18	0.28	0.55
Nb ⁽²⁾	ppm	24	5	5	2	11	5	10	11	11
Nd ⁽¹⁾	ppm	24	16	17	5	31	17	28	30	31
Ni ⁽¹⁾	ppm	24	75	27	20	800	27	150	167	510
Ni ⁽²⁾	ppm	24	20	11	2	92	11	50	62	79
P ⁽²⁾	%	24	0.034	0.022	0.003	0.161	0.022	0.068	0.078	0.124
Pb ⁽³⁾	ppm	24	79	20	5	434	20	277	361	406
Rb ⁽¹⁾	ppm	24	77	83	15	190	83	120	129	162
Sb ⁽¹⁾	ppm	24	6.1	2.6	0.2	45.0	2.6	8.1	38.0	44.1
Sb ⁽²⁾	ppm	24	9	4	4	59	4	10	48	57
Sc ⁽¹⁾	ppm	24	6	6	0	15	6	11	12	14
Sc ⁽²⁾	ppm	24	7	7	1	15	7	12	12	14
Se ⁽¹⁾	ppm	24	4	3	3	11	3	5	5	8
Sm ⁽¹⁾	ppm	24	2.5	2.6	0.2	5.1	2.6	4.6	4.7	4.9
Sn ⁽²⁾	ppm	24	2	2	2	2	2	2	2	2
Sr ⁽²⁾	ppm	24	84	45	4	673	45	134	161	439
Ta ⁽¹⁾	ppm	24	0.7	0.5	0.5	2.2	0.5	1.1	1.4	1.8
Tb ⁽¹⁾	ppm	24	0.56	0.50	0.50	1.20	0.50	0.70	0.79	1.02
Th ⁽¹⁾	ppm	24	4.6	4.3	0.3	9.2	4.3	8.4	8.7	9.0
Th ⁽²⁾	ppm	24	4	5	2	8	5	7	8	8
Ti ⁽¹⁾	ppm	24	0.16	0.16	0.01	0.29	0.16	0.26	0.29	0.29
U ⁽¹⁾	ppm	24	2.8	2.7	0.5	9.1	2.7	4.4	7.5	8.6
V ⁽¹⁾	ppm	24	306	284	61	856	284	594	697	788
W ⁽¹⁾	ppm	24	203	79	27	1500	79	499	648	1118
W ⁽²⁾	ppm	24	227	90	33	1390	90	610	730	1094
Y ⁽²⁾	ppm	24	6	6	2	16	6	9	12	14
Yb ⁽¹⁾	ppm	24	1.21	1.20	0.20	2.40	1.20	2.00	2.26	2.35
Zn ⁽¹⁾	ppm	24	190	76	50	1400	76	530	767	1115
Zn ⁽²⁾	ppm	24	149	53	3	1261	53	474	674	995
Zr ⁽²⁾	ppm	24	36	37	3	70	37	59	60	65

Table 10. Spring and seep water statistics

PARAMETER	UNITS	COUNT	MEAN	MEDIAN	MIN	MAX	50%ILE	90%ILE	95%ILE	98%ILE
Ag	ppb	52	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02
Al	ppb	52	383	16	1	4525	16	1099	1533	4279
Alk	ppm	51	5.2	3.0	0.0	60.0	3.0	9.0	14.0	20.0
As	ppb	52	1.19	0.15	0.10	21.30	0.15	2.30	4.98	10.80
Ba	ppb	52	51.15	22.65	7.76	489.51	22.65	115.22	150.95	164.77
Bi	ppb	52	0.02	0.01	0.01	0.09	0.01	0.03	0.06	0.07
Ca	ppb	52	73364	52524	3318	419332	52524	154183	168048	175845
Cd	ppb	52	8.74	3.67	0.02	91.26	3.67	13.35	38.50	46.24
Ce	ppb	52	0.17	0.02	0.01	4.00	0.02	0.26	0.61	1.00
Co	ppb	52	16.4	5.4	0.1	162.5	5.4	34.4	55.6	146.7
Conductivity	ppm	52	290	245	20	910	245	606	684	720
Cr	ppb	52	0.37	0.35	0.1	1.1	0.35	0.6	0.645	0.798
Cs	ppb	52	0.35	0.18	0.01	2.38	0.18	0.82	0.99	2.20
Cu	ppb	52	2.54	0.90	0.25	31.21	0.90	4.00	8.52	22.04
Dy	ppb	52	0.26	0.02	0.01	5.26	0.02	0.37	1.15	2.32
Er	ppb	52	0.09	0.01	0.01	1.54	0.01	0.14	0.35	0.68
Eu	ppb	52	0.10	0.04	0.01	1.67	0.04	0.14	0.35	0.72
Fe	ppb	52	3974.58	576	25	35454	576	10007.7	15319.2	25151
F	ppb	52	366	330	40	1490	330	676	878	900
Ga	ppb	52	0.13	0.07	0.01	0.88	0.07	0.29	0.46	0.75
Gd	ppb	52	0.33	0.04	0.01	7.13	0.04	0.44	1.39	3.41
Ge	ppb	52	0.07	0.05	0.01	0.23	0.05	0.14	0.18	0.22
Hf	ppb	52	0.02	0.01	0.01	0.08	0.01	0.04	0.05	0.06
Ho	ppb	52	0.05	0.01	0.01	0.89	0.01	0.08	0.22	0.43
I	ppb	52	0.35	0.2	0.2	3.3	0.2	0.6	1.1	1.3
In	ppb	52	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
K	ppb	52	1047	779	246	2636	779	2205	2350	2555
La	ppb	52	0.08	0.02	0.01	1.17	0.02	0.26	0.35	0.43
Li	ppb	52	11.9	6.7	0.2	70.5	6.7	22.9	46.8	69.4
Lu	ppb	52	0.02	0.01	0.01	0.23	0.01	0.02	0.04	0.10
Mg	ppb	52	9781	6177	541	39450	6177	23235	29638	38593
Mn	ppb	52	540.6	204.3	0.4	4940.0	204.3	1131.3	3033.6	4140.4
Mo	ppb	52	1.5	0.1	0.1	22.2	0.1	1.9	8.3	20.3
Na	ppb	52	918	614	117	6353	614	2088	2580	2942
Nb	ppb	52	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02
Nd	ppb	52	0.41	0.03	0.01	10.55	0.03	0.80	1.45	3.54
Ni	ppb	52	176.1	102.4	10.2	728.4	102.4	399.1	607.2	676.5
O2	ppm	52	4.7	5.1	0.0	11.7	5.1	9.4	10.7	11.7
Pb	ppb	52	10.11	0.15	0.01	196.07	0.15	6.43	48.23	190.34
Pd	ppb	52	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2
pH		52	6.3	6.8	3.7	8.0	6.8	7.5	7.8	8.0

Table 10. Spring and seep water statistics (Continued)

PARAMETER	UNITS	COUNT	MEAN	MEDIAN	MIN	MAX	50%ILE	90%ILE	95%ILE	98%ILE
Pr	ppb	52	0.07	0.01	0.01	1.56	0.01	0.16	0.28	0.53
Rb	ppb	52	2.32	1.91	0.29	7.42	1.91	5.37	5.84	6.12
Re	ppb	52	0.01	0.01	0.01	0.10	0.01	0.01	0.01	0.10
Ru	ppb	52	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sb	ppb	52	0.35	0.1	0.1	3.2	0.1	0.9	1.6	2.8
Sc	ppb	52	0.35	0.3	0.1	0.7	0.3	0.59	0.6	0.6
Se	ppb	52	1.40	0.10	0.10	10.50	0.10	3.99	5.36	7.77
Si	ppb	52	4082	3850	1550	9500	3850	6310	6910	7791
Sm	ppb	52	0.21	0.01	0.01	5.30	0.01	0.28	0.75	2.22
Sn	ppb	52	0.12	0.09	0.01	0.50	0.09	0.24	0.31	0.39
SO4	ppm	52	183	117	15	707	117	435	526	619
Sr	ppb	52	417.28	255.95	12.71	1914.66	255.95	1057.20	1147.87	1325.70
T	°C	52	4.2	3.7	0.0	11.8	3.7	7.1	7.9	8.5
Ta	ppb	52	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Tb	ppb	52	0.05	0.01	0.01	0.93	0.01	0.07	0.18	0.45
Te	ppb	52	0.13	0.1	0.1	0.8	0.1	0.2	0.2	0.5
Th	ppb	52	0.04	0.02	0.01	0.48	0.02	0.06	0.09	0.14
Tl	ppb	52	0.50	0.08	0.01	4.96	0.08	1.76	2.99	4.14
Tm	ppb	52	0.02	0.01	0.01	0.21	0.01	0.03	0.05	0.09
U	ppb	52	1.41	0.08	0.01	14.80	0.08	3.71	9.59	13.80
V	ppb	52	0.10	0.1	0.1	0.2	0.1	0.1	0.1	0.2
W	ppb	52	0.07	0.01	0.01	0.29	0.01	0.21	0.22	0.25
Y	ppb	52	1.93	0.42	0.02	26.80	0.42	3.50	8.20	14.42
Yb	ppb	52	0.08	0.01	0.01	1.45	0.01	0.12	0.28	0.63
Zn	ppb	52	2197.5	1480.4	37.1	23100.0	1480.4	4006.7	6535.9	9538.3
Zr	ppb	52	1.19	0.80	0.01	6.36	0.80	3.26	4.06	5.53

Table 11. Stream water statistics

PARAMETER	UNITS	COUNT	MEAN	MEDIAN	MIN	MAX	50%ILE	90%ILE	95%ILE	98%ILE
Ag	ppb	37	0.01	0.01	0.01	0.03	0.01	0.01	0.02	0.02
Al	ppb	37	343	36	1	4279	36	903	1499	2302
Alk	ppm	35	5	2	0	20	2	18	18	19
As	ppb	37	0.7	0.1	0.1	10.8	0.1	0.9	2.8	6.6
Ba	ppb	37	83.08	53.47	12.25	336.10	53.47	175.03	210.72	248.26
Be	ppb	37	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Bi	ppb	37	0.02	0.01	0.01	0.08	0.01	0.05	0.06	0.07
Ca	ppb	37	57962	25884	1988	216760	25884	171167	195657	214349
Cd	ppb	37	5.08	1.52	0.05	46.24	1.52	11.71	21.12	40.67
Ce	ppb	37	0.17	0.03	0.01	1.23	0.03	0.53	0.69	1.07
Co	ppb	37	14.7	3.7	0.1	146.7	3.7	27.8	69.1	129.8
Cond	ppm	37	244	100	10	750	100	645	712	728
Cr	ppb	37	0.4	0.4	0.1	0.8	0.4	0.7	0.7	0.8
Cs	ppb	37	0.21	0.04	0.01	2.20	0.04	0.52	0.85	1.33
Cu	ppb	37	3.3	1.1	0.1	22.0	1.1	8.3	9.7	15.4
Dy	ppb	37	0.26	0.02	0.01	2.32	0.02	0.99	1.25	1.84
Er	ppb	37	0.08	0.01	0.01	0.68	0.01	0.31	0.38	0.54
Eu	ppb	37	0.11	0.07	0.01	0.72	0.07	0.28	0.37	0.51
F	ppb	36	233	185	40	900	185	425	727	885
Fe	ppb	37	1684.2	89.0	16.0	25151.0	89.0	3019.8	11070.0	18072.1
Ga	ppb	37	0.10	0.03	0.01	0.75	0.03	0.28	0.48	0.62
Gd	ppb	37	0.33	0.02	0.01	3.41	0.02	1.23	1.74	2.49
Ge	ppb	37	0.06	0.04	0.01	0.22	0.04	0.12	0.18	0.21
Hf	ppb	37	0.02	0.01	0.01	0.06	0.01	0.03	0.04	0.05
Ho	ppb	37	0.05	0.01	0.01	0.43	0.01	0.17	0.24	0.36
I	ppb	37	0.3	0.2	0.2	1.3	0.2	0.8	1.1	1.2
K	ppb	37	791	434	174	3209	434	2432	2900	3025
La	ppb	37	0.09	0.04	0.01	0.43	0.04	0.23	0.36	0.40
Li	ppb	37	11.0	5.5	0.4	69.4	5.5	24.8	49.1	61.2
Lu	ppb	37	0.02	0.01	0.01	0.10	0.01	0.04	0.05	0.08
Mg	ppb	37	11331	5477	671	59900	5477	26000	31429	44559
Mn	ppb	37	434.5	69.4	0.9	4140.4	69.4	823.2	3226.9	4039.3
Mo	ppb	37	2.1	0.3	0.1	20.3	0.3	7.4	7.7	11.6
Na	ppb	37	910	694	130	3514	694	2285	2860	3102
Nb	ppb	37	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02
Nd	ppb	37	0.41	0.05	0.01	3.54	0.05	1.47	1.83	3.04
Ni	ppb	37	142.4	53.5	8.8	676.5	53.5	437.9	531.4	626.6
O2	ppm	37	6	9	0	18	9	11	12	14
Pb	ppb	37	18.37	0.21	0.01	392.07	0.21	14.57	76.65	246.82
Pd	ppb	37	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2
pH		37	7.1	7.3	4.3	9.0	7.3	8.1	8.5	8.7

Table 11. Stream water statistics (Continued)

PARAMETER	UNITS	COUNT	MEAN	MEDIAN	MIN	MAX	50%ILE	90%ILE	95%ILE	98%ILE
Pr	ppb	37	0.07	0.01	0.01	0.53	0.01	0.23	0.31	0.48
Rb	ppb	37	1.50	0.72	0.15	6.12	0.72	5.39	5.53	5.92
Re	ppb	37	0.01	0.01	0.01	0.10	0.01	0.01	0.02	0.05
Ru	ppb	37	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sb	ppb	37	0.3	0.1	0.1	2.8	0.1	0.4	1.0	1.9
Sc	ppb	37	0.3	0.2	0.1	0.6	0.2	0.594	0.6	0.6
Se	ppb	37	0.9	0.1	0.1	7.8	0.1	4.4	5.5	6.4
Si	ppb	37	3414	3200	1100	7791	3200	5600	6430	7157
Sm	ppb	37	0.22	0.01	0.01	2.22	0.01	0.76	1.01	1.83
Sn	ppb	37	0.14	0.13	0.01	0.43	0.13	0.27	0.33	0.40
SO4	ppm	36	154	67	7	758	67	437	549	661
Sr	ppb	37	361.9	110.3	15.3	1368.4	110.3	1171.6	1327.2	1343.1
T	°C	37	4.5	4.7	0.0	9.5	4.7	7.8	8.5	8.9
Ta	ppb	37	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Tb	ppb	37	0.05	0.01	0.01	0.45	0.01	0.16	0.21	0.32
Te	ppb	37	0.1	0.1	0.1	0.5	0.1	0.2	0.2	0.3
Th	ppb	37	0.03	0.02	0.01	0.14	0.02	0.06	0.10	0.14
Tl	ppb	37	0.39	0.05	0.01	4.14	0.05	0.97	2.63	3.31
Tm	ppb	37	0.02	0.01	0.01	0.09	0.01	0.03	0.06	0.08
U	ppb	37	1.23	0.10	0.01	13.80	0.10	3.20	7.17	10.77
V	ppb	37	0.1	0.1	0.1	0.3	0.1	0.1	0.2	0.3
W	ppb	37	0.08	0.03	0.01	0.50	0.03	0.22	0.24	0.32
Y	ppb	37	1.81	0.27	0.01	14.42	0.27	6.69	8.73	11.85
Yb	ppb	37	0.07	0.01	0.01	0.63	0.01	0.23	0.32	0.49
Zn	ppb	37	1090.6	386.0	56.8	9538.3	386.0	1909.8	4512.5	7376.6
Zr	ppb	37	1.31	0.94	0.01	5.53	0.94	3.31	3.52	4.47

Table 12. "Iron Oxide" soil statistics. ⁽¹⁾ = INAA ⁽²⁾ = Aqua regia-ICPES

ELEMENT	UNITS	COUNT	MEAN	MEDIAN	MIN	MAX	50%ILE	90%ILE	95%ILE	98%ILE
Ag ⁽¹⁾	ppb	80	5	5	5	13	5	5	5	9
Ag ⁽²⁾	ppm	80	0.5	0.3	0.1	7.9	0.3	1.3	1.7	2.1
Al ⁽²⁾	%	80	0.58	0.24	0.01	8.43	0.24	1.11	1.38	4.16
As ⁽¹⁾	ppm	80	175	45	4	1700	45	474	799	1426
As ⁽²⁾	ppm	80	116	36	2	1159	36	270	585	966
Au ⁽¹⁾	ppb	80	4	2	2	65	2	10	12	12
B ⁽²⁾	ppm	80	7	5	2	26	5	18	21	23
Ba ⁽¹⁾	ppm	80	12336	1050	50	89000	1050	47200	61150	74940
Ba ⁽²⁾	ppm	80	271	133	6	1605	133	739	987	1346
Bi ⁽²⁾	ppm	80	12	12	2	28	12	22	25	27
Br ⁽¹⁾	ppm	80	3.9	0.5	0.5	45.0	0.5	9.5	14.3	19.4
Ca ⁽¹⁾	%	80	2	1	1	14	1	2	4	6
Ca ⁽²⁾	%	80	0.50	0.13	0.01	10.06	0.13	0.84	2.35	3.68
Cd ⁽²⁾	ppm	80	31.8	6.6	0.2	290.2	6.6	82.3	178.6	241.2
Ce ⁽¹⁾	ppm	80	37.0	21.5	0.3	290.0	21.5	66.9	130.5	208.4
Co ⁽¹⁾	ppm	80	168	57	2	1800	57	491	700	1036
Co ⁽²⁾	ppm	80	154	55	1	1586	55	388	659	905
Cr ⁽¹⁾	ppm	80	33	24	1	100	24	76	83	95
Cr ⁽²⁾	ppm	80	7	4	1	24	4	16	17	23
Cs ⁽¹⁾	ppm	80	5	2	1	47	2	14	20	27
Cu ⁽²⁾	ppm	80	29	12	1	302	12	71	150	181
Eu ⁽¹⁾	ppm	80	2.4	1.2	0.2	20.0	1.2	5.8	8.5	12.5
Fe ⁽¹⁾	%	80	39.43	44.85	1.44	62.20	44.85	58.00	59.53	61.06
Fe ⁽²⁾	%	80	35.36	38.13	1.41	58.59	38.13	55.79	57.56	58.44
Hf ⁽¹⁾	ppm	80	3	1	1	9	1	6	7	7
Hg ⁽²⁾	ppb	80	99	55	5	525	55	317	381	450
Ir ⁽¹⁾	ppm	80	5	5	5	5	5	5	5	5
K ⁽²⁾	%	80	0.04	0.01	0.01	0.24	0.01	0.12	0.13	0.19
La ⁽¹⁾	ppm	80	24.9	15.0	0.5	170.0	15.0	38.1	95.8	148.4
La ⁽²⁾	ppm	80	13	5	2	110	5	21	69	88
Lu ⁽¹⁾	ppm	80	0.81	0.35	0.05	5.53	0.35	2.21	2.58	3.29
Mg ⁽²⁾	%	80	0.05	0.03	0.01	1.00	0.03	0.06	0.07	0.12
Mn ⁽²⁾	ppm	80	3263	744	2	51916	744	9205	12131	21148
Mo ⁽²⁾	ppm	80	43	24	1	398	24	94	129	270
Na ⁽¹⁾	%	80	0.04	0.02	0.01	0.18	0.02	0.08	0.09	0.14
Na ⁽²⁾	%	80	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Nd ⁽¹⁾	ppm	80	21	14	5	170	14	52	67	113
Ni ⁽¹⁾	ppm	80	512	305	20	2500	305	1410	1905	2042
Ni ⁽²⁾	ppm	80	495	380	4	2192	380	1260	1518	1927
P ⁽²⁾	%	80	0.037	0.025	0.001	0.521	0.025	0.068	0.089	0.097
Pb ⁽²⁾	ppm	80	129	8	2	2708	8	348	531	1388
Rb ⁽¹⁾	ppm	80	40	15	15	170	15	92	111	128
Sb ⁽¹⁾	ppm	80	34.7	7.7	0.2	430.0	7.7	88.2	129.0	330.0
Sb ⁽²⁾	ppm	80	23	12	2	210	12	32	68	184
Sc ⁽¹⁾	ppm	80	4.4	3.4	0.2	16.0	3.4	9.6	12.0	13.4
Se ⁽¹⁾	ppm	80	3	3	3	12	3	3	3	9
Sm ⁽¹⁾	ppm	80	4.7	2.8	0.1	27.0	2.8	13.3	20.2	25.0
Sr ⁽²⁾	ppm	80	87	55	5	480	55	207	268	310
Ta ⁽¹⁾	ppm	80	0.5	0.5	0.5	1.1	0.5	0.6	0.8	0.9
Tb ⁽¹⁾	ppm	80	1.8	0.5	0.5	9.9	0.5	4.6	6.6	8.7
Th ⁽¹⁾	ppm	80	3.0	1.2	0.2	12.0	1.2	8.2	9.6	10.8
Th ⁽²⁾	ppm	80	9	8	2	30	8	14	15	26
Ti ⁽²⁾	%	80	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
U ⁽¹⁾	ppm	80	109.4	26.0	0.5	600.0	26.0	371.0	404.5	516.8
U ⁽²⁾	ppm	80	58	6	5	370	6	206	227	281
V ⁽¹⁾	ppm	80	33	9	2	247	9	90	174	206
W ⁽¹⁾	ppm	80	2	1	1	16	1	1	4	9
W ⁽²⁾	ppm	80	1	1	1	18	1	1	3	5
Yb ⁽¹⁾	ppm	80	5.6	2.5	0.2	37.6	2.5	15.0	18.5	21.7
Zn ⁽¹⁾	ppm	80	11809	7285	160	100000	7285	23580	33575	50664
Zn ⁽²⁾	ppm	80	6427	3984	78	51431	3984	13002	17952	35915

Table 13. "Non Fe-Oxide" soil statistics. ⁽¹⁾ = INAA ⁽²⁾ = Aqua regia-ICPES

ELEMENT	UNITS	SOIL	MEAN	MEDIAN	MIN	MAX	50%ILE	90%ILE	95%ILE	98%ILE
Ag ⁽¹⁾	ppb	68	5.7	5.0	5.0	31.0	5.0	5.0	5.0	17.3
Ag ⁽²⁾	ppm	68	1.4	0.6	0.1	30.2	0.6	1.7	3.4	12.7
Al ⁽²⁾	%	68	0.598	0.535	0.010	1.390	0.535	1.073	1.220	1.327
As ⁽¹⁾	ppm	68	180.9	28.5	0.5	4500.0	28.5	104.6	373.0	3193.0
As ⁽²⁾	ppm	68	130	23	2	3440	23	65	277	2115
Au ⁽¹⁾	ppb	68	4	2	2	17	2	8	10	14
B ⁽²⁾	ppm	68	5	5	2	22	5	8	12	20
Ba ⁽¹⁾	ppm	68	33941	6000	50	340000	6000	67500	252500	319600
Ba ⁽²⁾	ppm	68	455	356	12	3524	356	843	981	2148
Bi ⁽²⁾	ppm	68	6	2	2	27	2	19	22	25
Br ⁽¹⁾	ppm	68	6.0	4.3	0.5	23.0	4.3	12.3	17.6	22.0
Ca ⁽¹⁾	%	68	1	1	1	4	1	2	2	2
Ca ⁽²⁾	%	68	0.10	0.02	0.01	3.41	0.02	0.15	0.25	0.32
Cd ⁽²⁾	ppm	68	13.8	0.2	0.2	451.2	0.2	28.6	53.2	109.7
Ce ⁽¹⁾	ppm	68	70.5	71.5	0.3	140.0	71.5	120.0	130.0	140.0
Co ⁽¹⁾	ppm	68	35	4	1	330	4	130	217	263
Co ⁽²⁾	ppm	68	34	4	1	283	4	131	210	245
Cr ⁽¹⁾	ppm	68	90	105	5	160	105	150	150	150
Cr ⁽²⁾	ppm	68	11	11	1	25	11	18	21	22
Cs ⁽¹⁾	ppm	68	13	13	1	35	13	24	28	28
Cu ⁽²⁾	ppm	68	24	22	1	74	22	42	54	60
Eu ⁽¹⁾	ppm	68	1.6	1.4	0.2	8.0	1.4	2.5	4.7	6.8
Fe ⁽¹⁾	%	68	17.05	6.40	0.97	56.40	6.40	49.24	53.13	53.53
Fe ⁽²⁾	%	68	15.88	6.38	0.42	56.40	6.38	51.15	53.84	54.59
Hf ⁽¹⁾	ppm	68	7	7	1	17	7	11	13	15
Hg ⁽²⁾	ppb	68	366	105	5	9050	105	255	1574	3537
Hg ⁽³⁾	ppm	68	1	1	1	13	1	1	2	5
K ⁽²⁾	%	68	0.114	0.110	0.010	0.550	0.110	0.170	0.246	0.392
La ⁽¹⁾	ppm	68	40.1	41.5	0.5	83.0	41.5	71.3	76.3	79.3
La ⁽²⁾	ppm	68	14	14	2	60	14	28	38	42
Lu ⁽¹⁾	ppm	68	0.67	0.52	0.05	4.01	0.52	1.18	1.90	3.40
Mg ⁽²⁾	%	68	0.05	0.03	0.01	0.32	0.03	0.09	0.11	0.21
Mn ⁽²⁾	ppm	68	2631	73	2	48286	73	4355	10137	35191
Mo ⁽²⁾	ppm	68	32	17	6	460	17	63	79	122
Na ⁽¹⁾	%	68	0.15	0.14	0.01	0.83	0.14	0.25	0.32	0.58
Na ⁽²⁾	%	68	0.011	0.010	0.010	0.070	0.010	0.010	0.010	0.010
Nd ⁽¹⁾	ppm	68	31	31	5	85	31	52	56	67
Ni ⁽¹⁾	ppm	68	162	32	20	2100	32	460	778	1430
Ni ⁽²⁾	ppm	68	155	28	1	2443	28	348	674	1657
P ⁽²⁾	%	68	0.153	0.079	0.005	2.919	0.079	0.152	0.225	1.302
Pb ⁽²⁾	ppm	68	804	124	2	13466	124	2328	4067	6062
Rb ⁽¹⁾	ppm	68	100	110	15	220	110	160	167	183
Sb ⁽¹⁾	ppm	68	32.4	5.9	1.1	760.0	5.9	15.8	75.3	509.8
Sb ⁽²⁾	ppm	68	17	3	2	392	3	18	52	236
Sc ⁽¹⁾	ppm	68	10	11	0	19	11	15	17	18
Se ⁽¹⁾	ppm	68	4	3	3	13	3	7	8	10
Sm ⁽¹⁾	ppm	68	8.9	5.4	0.1	227.0	5.4	8.4	16.0	20.3
Sr ⁽²⁾	ppm	68	58	52	4	451	52	90	95	134
Ta ⁽¹⁾	ppm	68	0.8	0.5	0.5	2.1	0.5	1.6	1.9	2.1
Tb ⁽¹⁾	ppm	68	1.2	0.8	0.5	8.9	0.8	2.0	3.1	6.9
Th ⁽¹⁾	ppm	68	10.6	11.5	0.2	23.0	11.5	17.3	19.0	19.7
Th ⁽²⁾	ppm	68	7	4	2	85	4	8	9	49
Ti ⁽²⁾	%	68	0.01	0.01	0.01	0.02	0.01	0.01	0.02	0.02
U ⁽¹⁾	ppm	68	28.8	10.0	0.5	310.0	10.0	48.9	143.0	252.8
U ⁽²⁾	ppm	68	17	5	5	220	5	22	89	186
V ⁽²⁾	ppm	68	69	56	2	203	56	138	177	191
W ⁽¹⁾	ppm	68	2	1	1	15	1	2	5	9
W ⁽²⁾	ppm	68	1	1	1	3	1	1	1	2
Yb ⁽¹⁾	ppm	68	4.5	3.7	0.4	24.0	3.7	7.5	13.0	20.6
Zn ⁽¹⁾	ppm	68	4078	347	50	59000	347	14890	17930	21660
Zn ⁽²⁾	ppm	68	2778	258	26	50243	258	8373	12865	17357

RESULTS

1. MAIN BEAR AREA

Location: NTS 094F/13E;
Latitude/Longitude: 57° 57' 46" N 125° 47' 08" W. MINFILE 94F024. Soil, rock and spring water samples were collected around the Bear sulphide occurrence. Stream sediment and water samples were also taken along the east branch and west branches of Bear Creek (local names).

Topography and surface environment

The Bear occurrence is located at an elevation of 1600 metres on a southeast facing hill slope. The only surface expression of the sulphide mineralization is a non-vegetated, barite covered "kill zone". There are also scattered, weathered sulphide showings along creeks and numerous Fe oxide spring and ferricrete deposits close to the headwaters of Bear Creek. Above tree-line (1500 metres) outcrop is almost continuous or covered by felsenmeer and talus fans. At lower elevations colluvium and/or glacial sediments cover bedrock.

Local geology and mineralization

Evans, 1995, has described the geology of the Bear massive sulphide occurrence. A thick sequence of unmetamorphosed upper Devonian Gunsteel Formation (Earn Group) black shales, siltstones, mudstones and turbidites strike northwest and, structurally, have been influenced by northeast directed folding and thrusting. The Gunsteel Formation is bounded to the west by the Waldemar thrust, which juxtaposes lower Devonian age chert-

pebble conglomerate of the Besa River Formation with the Gunsteel Formation. The sulphide-barite mineralization occurs towards the base of the Gunsteel Formation.

Sulphide mineralization has been traced by diamond drilling for more than 600 metres along strike and has been intersected over 200 metres below the surface. The mineralized zone in the Gunsteel Formation consists of basal cherts and graphitic shales containing pyrite laminations with disseminated galena and sphalerite. Massive barite and pyrite overlay the mineralized zone and are succeeded by siliceous shale containing laminated pyrite, carbonate and barite. At the top of the sequence is black shale containing carbonate, barite and pyrite nodules that grade into well-laminated turbidites. Grades of 1.6 gram/tonne Ag, 5.28 percent Zn and 0.11 percent Pb, over 6.0 metres have been reported by Evans, 1995, in the massive sulphides.

Results

A stream sediment survey (1 sample/100 metres) by Archer, Cathro and Associates in 1982 revealed that Pb decreased rapidly from one percent near the sulphide mineralization to a point 800 metres downstream where the sediment contained 200-300 ppm. The pattern of Ag variation in sediment was similar to Pb and the highest Ag concentration near the mineralization was greater than 10 ppm. Zinc was above 1000 ppm over an interval of 2.3 kilometres. Zinc threshold in stream sediments was determined at 500 ppm (Carne, 1983). A soil survey over the area underlain by the sulphide

mineralization outlined a northwest trending Pb anomaly up to 500 metres long and 100 metres wide with values above a 175 ppm threshold and up to 4000 ppm Pb. The peak of Pb anomaly was only displaced a small distance from the surface projection of the sulphide mineralization. Zinc soil anomalies above a 700 ppm threshold and up to 3000 ppm were displaced several hundred metres down slope. The distribution of Ag above a 0.6 ppm threshold was similar to Pb. (Carne, 1983).

Rock and water locations samples taken during the present detailed studies are shown on Map 1. Stream sediment locations are shown on Map 2 and soil sample locations on Map 3. Arsenic, Sb, Ba, Co, Cr, Mo, Ni, Pb, V and Zn are highly elevated in Fe-rich spring sediment, ferricrete and soil samples. Elevated Ba (> 74940 ppm by INAA), Pb (>1388 ppm), and Ag (> 2.1 ppm) occur in the B and C soil horizons over a 300 metre interval across the projected surface extension of the massive sulphide body (Maps 4 to 6). The B-horizon soil samples also have up to 9050 ppb Hg, 13 ppm Se, 14 ppm Sb, but Zn values less than 400 ppm (Map 7). The difference between the Pb and Zn B-horizon soil geochemistry most likely reflects higher Zn mobility in the acid soil caused by oxidizing pyrite. Aqua regia-ICP Ba values less than 100 ppm compare to INAA Ba levels in soil up to 28,000 ppm. The difference between the aqua regia-ICP Ba and INAA Ba in the B-horizon can be explained by the high concentration of refractory barite in the soil close to sulphide-barite mineralization.

Up to 37,000 ppm Ba in rock (Map 8) occurs in the matrix of a ferricrete outcrop on Bear Creek (west branch). This sample also has 1256 ppm Pb (Map 9), 2500 ppb Hg, 3 ppm Ag (Map 10), but less than 300 ppm Zn (Map 11). The Ba-Pb anomaly could reflect metals precipitated from acid ground water solution at high pH and adsorbed by the Fe-oxide. A sample of recently formed, laminated Fe-oxide by a spring on the east branch of the creek only has 2800 ppm Ba, but over 10,000 ppm Pb and 32 ppm Ag (sample 945017 on Map 1). Again, precipitation of PbSO_4 from mineralized spring water is the most likely source for the metal enrichment.

Barium (INAA) levels in stream sediment (Map 12) reach 15000 ppm close to the Bear Creek (east branch) headwaters. Values fall to 13,000 ppm below the confluence of the two branches of the creek (sample site 947022). The sediments have aqua regia-ICPES Ba values below 800 ppm suggesting that barite is present in the sediment. Mean and median Ba values are also higher in moss mat sediment, supporting the presence of barite. Sediment Pb (Map 13) and Ag (Map 14) are highest close to the source of the creek. Moss mat sediment Pb close to the source of Bear Creek east branch (947006) is 4949 ppm; Ag is 73 ppm. Lead decreases downstream, but remains above 200 ppm over a 3 kilometre reach of Bear Creek. Mean and medium Ag and Pb in moss mat sediment are much higher than in stream sediments.

Increasing Zn (Map 15) in sediment downstream from mineralization reflects decreasing Zn mobility with increasing water pH. Spring water draining into the

upper part of the Bear Creek has a pH below 5 (Map 21) and contains up to 392 ppb Pb (Map 17), 2.73 ppb Tl (Map 20),

over 6535 ppb Zn (Map 19) and 119 ppm SO₄.

Table 14. Metals extracted by 0.25M NH₂OH HCl, (e.g. Ag-1) 1 M NH₂OH HCl (e.g. Ag-2) and HF-HClO₄-HCl-HNO₃ (e.g. Ag-3) from a recent Fe-spring sediment (945017) mature ferricrete (945018, 945024)

Extract	Unit	945017	945018	945024	Unit	945017	945018	945024
Ag-1	PPM	2.6	0.3	0.4	%	4	14	10
Ag-2	PPM	59.3	1.4	3.3	%	94	67	79
Ag-3	PPM	1.1	0.4	0.5	%	2	19	12
As-1	PPM	3	3	3	%	8	33	33
As-2	PPM	3	3	3	%	8	33	33
As-3	PPM	34	3	3	%	85	33	33
Ba-1	PPM	675	212	137	%	24	6	10
Ba-2	PPM	89	169	128	%	3	4	9
Ba-3	PPM	2040	3400	1120	%	73	90	81
Cd-1	PPM	13	5	1	%	41	71	33
Cd-2	PPM	18	1	1	%	56	14	33
Cd-3	PPM	1	1	1	%	3	14	33
Co-1	PPM	29	9	1	%	85	75	33
Co-2	PPM	3	1	1	%	9	8	33
Co-3	PPM	2	2	1	%	6	17	33
Cu-1	PPM	0.7	0.6	0.5	%	4	1	2
Cu-2	PPM	10.2	19.6	5.9	%	60	26	28
Cu-3	PPM	6	54.9	15	%	36	73	70
Fe-1	%	2.15	0.2	0.13	%	4	1	1
Fe-2	%	37.5	6.01	2.48	%	74	24	17
Fe-3	%	11.2	19	12.1	%	22	75	82
Mn-1	PPM	2230	707	11	%	95	91	32
Mn-2	PPM	86	30	2	%	4	4	6
Mn-3	PPM	21	38	21	%	1	5	62
Mo-1	PPM	1	1	1	%	14	13	8
Mo-2	PPM	1	1	1	%	14	13	8
Mo-3	PPM	5	6	10	%	71	75	83
Ni-1	PPM	31	13	5	%	60	23	50
Ni-2	PPM	11	19	2	%	21	33	20
Ni-3	PPM	10	25	3	%	19	44	30
Pb-1	PPM	1080	99	266	%	8	25	17
Pb-2	PPM	12700	248	728	%	89	64	48
Pb-3	PPM	482	43	527	%	3	11	35
Sb-1	PPM	5	5	5	%	33	33	33
Sb-2	PPM	5	5	5	%	33	33	33
Sb-3	PPM	5	5	5	%	33	33	33
Tl-1	PPM	7.8	3.3	0.8	%	50	28	10
Tl-2	PPM	2.4	4.2	1.1	%	15	36	14
Tl-3	PPM	5.3	4.2	5.8	%	34	36	75
V-1	PPM	2	2	2	%	2	1	0
V-2	PPM	18	9	15	%	16	3	3
V-3	PPM	96	279	503	%	83	96	97
Zn-1	PPM	3520	361	13.7	%	43	16	4
Zn-2	PPM	3570	833	49.4	%	44	36	13
Zn-3	PPM	1070	1130	305	%	13	49	83

Another spring of acid water (pH 3.85) flowing into the lower part of Bear Creek (west branch) has over 1100 ppb Al (Map 18) and 164 ppb Ba (Map 16).

A white precipitate coats the sediment around this acid spring.

Metal concentrations and percentages of the total metal extracted by 0.25M $\text{NH}_2\text{OH HCl}$, 1 M $\text{NH}_2\text{OH HCl}$ - acetic acid and concentrated $\text{HF-HClO}_4\text{-HCl-HNO}_3$ from a recently formed Fe oxide-spring sediment sample and a mature ferricrete deposit sample are listed in Table 14.

More of the total Fe, Zn and Co is dissolved by 1M $\text{NH}_2\text{OH HCl}$ from recent Fe-oxide spring deposit (sample 945017) than from a mature ferricrete deposit (sample 945024). However, more Fe is extracted from ferricrete by $\text{HF-HClO}_4\text{-HNO}_3\text{-HCl}$ acids compared to 1M $\text{NH}_2\text{OH HCl}$. More Zn Co and Mn are also released by the 0.25M and 1M $\text{NH}_2\text{OH HCl}$ from the Fe-oxide spring deposit compared to the ferricrete suggesting that, as the deposit matures, metals become associated with the most resistant minerals. A higher proportion of Pb and Ag are extracted by 1 M $\text{NH}_2\text{OH HCl}$ from the recently formed Fe-oxide spring deposit compared to amounts dissolved from ferricrete. This suggests that Pb is more mobile in the early stages of deposit formation and may be relatively weakly bound to the oxide surface or precipitated as Pb sulphate.

2. NORTH BEAR AREA

Location: NTS 094K/4 and 094K/13; Latitude/Longitude: $58^\circ 00' 00'' \text{ N } 125^\circ 49' 00'' \text{ W}$. Soil, rock and spring water samples were collected along a valley extending north from the Bear occurrence.

Topography and surface environment

The North Bear area is a U shaped valley one kilometre north of the Bear

occurrence. Numerous Fe oxide spring and ferricrete deposits are scattered along both sides of the valley. Above tree-line (1500 metres) outcrop is almost continuous or covered by felsenmeer and talus fans. At lower elevations bedrock is covered with colluvium or till that was most likely deposited by ice advancing parallel to the valley axis. Alluvium and glacio-fluvial deposits are also present on the valley floor. Several of the first-order streams draining into the main creek have a thick, white precipitate coating boulders and bottom sediments.

Local geology and mineralization

Rocks of the Gunsteel and Besa River Formations extend into the North Bear valley from the Bear occurrence. Rock types include non-siliceous, thick-bedded gritty black shale, a medium to thick bedded, siliceous and non-siliceous shale and a cherty black argillite containing blebby barite and traces of pyrite, galena and sphalerite. The Gunsteel Formation is in thrust contact with silty black shale and conglomerate of the Besa River Formation to the west. The valley forms the axis of an overturned syncline and the contact between the Gunsteel and Besa River Formation is commonly a low-angled, west-dipping thrust fault. Ferricrete deposits are common along both sides of the valley around springs discharging from thrust faults.

The only reported sulphide mineralization in the North Bear valley is the Bob occurrence (MINFILE # 094K085) where barite-Pb-Zn-rich massive pyrite mineralization (0.38 % Zn) has been found by diamond drilling in tightly folded, thinly bedded black

shale, cherty argillite, and baritic-pyritic mudstone. This occurrence is north and downstream of the area covered by the sampling.

Results

Rock and water sample locations are shown on Map 22; stream sediment and soil sample locations on Map 23. The highest INAA Ba levels (>21000 ppm and up to 3.8 %) in rock samples are from the east side of the valley (Map 24). However, these samples have low Pb, Zn and Ag values falling in the 50 to 90 percentile range (Maps 25, 26, 27).

Iron-rich spring deposit and ferricrete samples in the North Bear area have high Ba, Pb, Ag and Zn levels (Maps 28-31) and are enriched in As, Sb, Co, Mo, Ni, and V. The highest Pb (2798 ppm) detected in the spring deposits is in sample 941043 close to the main creek on the east side of the valley. This sample also has 63 ppb Au. The spring water (943079) in contact with this sediment is weakly acid, and has elevated Fe, Sb and As levels. An outcrop of graphitic shale close to the mineralized spring contains 157 ppb Au (Map 36), 233 ppm Pb, 0.7 ppm Ag and 45 ppm Sb. Other acid springs (Map 32) on the east side of the valley have high Al (Map 33), Pb (Map 34) and Zn (Map 35). The source of high Au, Pb (Map 37), As (Map 38) and Ag (Map 39) in moss sediment for 2 kilometres in the main stream could be the Au-Pb enriched graphitic shale that has enhanced Au and Sb.

Different sources for ground water are demonstrated by the chemistry of two springs only metres apart on the east side of the valley (Area A). Sample 943086 is

acid (pH 4.44), oxygenated (DO 8.3 ppm) and has elevated Pb, Tl, Al, Co, Ni, Cd, Zn, and rare earth elements, but is low in Fe. Spring water sample 943087, however, is weakly alkaline (pH 7.2), oxygen depleted (DO 0.2 ppm), high in Fe and has non-detectable levels of rare earth elements. A thick Fe-oxide precipitate surrounds this spring. There is no sediment surrounding the adjacent acid spring (943086), but a thick Al-Fe precipitate coats sediment down-stream from the source at a point where the water pH becomes weakly alkaline.

3. RED GOSSAN (SPA SHOWING) AREA

Location: NTS 94K/13E;
Latitude/Longitude: 57° 57' 45" N, 125° 44' 00" W. MINFILE 94F 003. Samples were collected in the valley of a south flowing creek. Sampling focused on several large iron spring deposits on the west side of the valley.

Topography and surface environment

A large dry, surface Fe-oxide deposit (the Spa Mineral Showing) extends over several square kilometres at 1200 metres elevation on the west side of the valley. The creek in this valley flows south into Gataga lakes. There are several, smaller Fe-oxide deposits, each associated with an active spring, roughly two kilometres to the north. Glacial sediments are most likely till deposited on the gently-sloping valley side surrounding the dry Fe oxide-deposit. Vegetation consists of alpine fir, black spruce and alder at lower elevations and scattered alpine fir and willow above 1500 metres.

Local geology and mineralization

The most impressive surface feature of the Spa showing is a large area (350 by 100 metres) of dry Fe oxide sinter up to 6 metres thick that most likely reflects a past episode of Fe precipitation from ground water flowing from a west dipping thrust fault. The sinter is underlain by gritty black shale and siltstone of the Besa River formation (the eastern equivalent of the Earn Group). Sub-surface mineralization at the Spa showing consists of secondary zinc minerals (hydrozincite, melanterite) along fractures in the shale, barite beds, nodular barite and a thin (5 mm) barite-sphalerite-ankerite vein. Minor disseminated and laminated pyrite has also been reported (Somerville, 1980).

Results

Soil sampling and diamond drilling carried out by Archer, Cathro and Associates in 1980 detected percent levels of zinc in soil (Somerville, 1980).

Soil sample locations are shown on Map 40; rock and water sample locations on Map 41. The geochemistry of a soil profile below the area of dry sinter at the Spa showing is shown in Table 15. The surface deposit consists of loose, Fe-oxide cemented shale clasts (941108). Below this material is Fe-stained blocky clay containing up to 50 percent shale clasts (941109, 941110). Silver, Cd, Co, Fe, Hg, Mn, Ni, U and Zn are higher in the surface deposits sinter compared to

underlying clay-rich sediment whereas As, Ba, Cr, Cu, Mo, Sb and V increase down the profile. Results of soil geochemistry for the Spa and Area B (Maps 44 to 45) show the reported high Zn and Ba up to 6.4 percent in the sinter. Arsenic, Sb, Co, Cr, Ni, Mn, Hg, Mo, Ni, W, V and U typically exceed several hundred parts per million in the sinter. Rock samples from Fe-oxide deposits associated with the active springs north of the Spa showing (Area B) have similar concentrations of these metals. However, the highest Pb in the sinter and Fe spring deposits in Area B is only 23 ppm. The distribution of Ba, Pb, Ag, and Zn in rock samples from the Spa and Area B is shown in Maps 46 to 49.

Table 15: Geochemistry of a Spa soil profile.
INAA = ⁽¹⁾. Aqua-regia-ICPES = ⁽²⁾

ELEMENT	UNITS	941108	941109	941110
Depth	cm	30	65	75
Ag ²	ppm	1.3	0.8	0.6
Al ²	%	0.55	0.86	0.91
As ¹	ppm	91	94	180
Au ¹	ppb	13	4	8
Ba ¹	ppm	14000	42000	33000
Ba ²	ppm	112	139	131
Bi ²	ppm	17	4	3
Br ¹	ppm	9.8	6.5	5.1
Cd ²	ppm	7.7	-0.2	1.4
Co ¹	ppm	200	21	38
Co ²	ppm	182	23	38
Cr ¹	ppm	27	51	48
Cs ¹	ppm	-1	6	5
Cu ²	ppm	17	35	45
Fe ¹	%	52.7	15.4	22.2
Hg ²	ppb	435	315	340
Mn ²	ppm	1294	188	320
Mo ²	ppm	22	22	36
Ni ²	ppm	421	141	180
Pb ²	ppm	9	8	11
Sb ¹	ppm	22	23	41
Se ¹	ppm	-3	-3	5
U ¹	ppm	74	21	19
V ²	ppm	15	86	84
Zn ²	ppm	5903	1902	2319

Table 16. Metals extracted with 0.25M NH₂OH HCl, (e.g. Ag-1) 1 M NH₂OH HCl (e.g. Ag-2) and HF-HClO₄-HCl-HNO₃ (e.g. Ag-3) from a profile below the surface of the Spar showing.

EXTRACT	UNITS	941108	941109	941110	Units	941108	941109	941110
Ag-1	ppm	1.4	0.7	0.5	%	36	44	42
Ag-2	ppm	2.2	0.8	0.6	%	56	50	50
Ag-3	ppm	0.3	0.1	0.1	%	8	6	8
As-1	ppm	3	3	3	%	7	4	2
As-2	ppm	3	3	3	%	7	4	2
As-3	ppm	39	68	136	%	87	92	96
Ba-1	ppm	56	48	32	%	1	1	1
Ba-2	ppm	56	82	55	%	1	2	2
Ba-3	ppm	3730	4190	2710	%	97	97	97
Cd-1	ppm	9	2	2	%	64	50	50
Cd-2	ppm	2	1	1	%	14	25	25
Cd-3	ppm	3	1	1	%	21	25	25
Co-1	ppm	98	8	10	%	62	33	30
Co-2	ppm	21	6	9	%	13	25	27
Co-3	ppm	40	10	14	%	25	42	42
Cu-1	ppm	0.5	0.9	1	%	2	2	2
Cu-2	ppm	11.1	19.5	21.3	%	45	52	43
Cu-3	ppm	13	17.2	27	%	53	46	55
Fe-1	%	0.41	0.43	0.51	%	1	2	2
Fe-2	%	16	9.22	11.6	%	38	51	48
Fe-3	%	25.2	8.55	12.1	%	61	47	50
Mn-1	ppm	1460	124	130	%	82	44	33
Mn-2	ppm	203	107	199	%	11	38	51
Mn-3	ppm	108	51	62	%	6	18	16
Mo-1	ppm	1	1	1	%	6	6	4
Mo-2	ppm	1	1	2	%	6	6	9
Mo-3	ppm	14	14	20	%	88	88	87
Ni-1	ppm	20	4	4	%	7	4	3
Ni-2	ppm	73	35	37	%	27	36	31
Ni-3	ppm	179	59	78	%	66	60	66
Pb-1	ppm	2	2	2	%	14	20	13
Pb-2	ppm	5	6	9	%	36	60	60
Pb-3	ppm	7	2	4	%	50	20	27
Sb-1	ppm	5	5	5	%	23	22	14
Sb-2	ppm	5	5	5	%	23	22	14
Sb-3	ppm	12	13	25	%	55	57	71
Tl-1	ppm	1.3	0.2	0.2	%	62	15	17
Tl-2	ppm	0.3	0.1	0.1	%	14	8	8
Tl-3	ppm	0.5	1	0.9	%	24	77	75
V-1	ppm	2	2	2	%	2	0	0
V-2	ppm	8	9	14	%	6	2	3
V-3	ppm	117	457	406	%	92	98	96
Zn-1	ppm	252	78.2	86.3	%	3	4	3
Zn-2	ppm	1700	828	931	%	21	40	33
Zn-3	ppm	5960	1160	1780	%	75	56	64

Concentrations and percentages of metals extracted with 0.25M NH₂OH HCl, 1 M NH₂OH HCl and HF-HClO₄-HCl-HNO₃ acids from Spa profile samples 941108, 1109 and 1110 are listed in Table 16. In most of the samples more than 90 per cent of the total As, Ba, Mo and V is bound in the most resistant fraction (HF-HClO₄-HCl-HNO₃ extractable) suggesting that these metals

occur in shale or in mature "aged" Fe-oxide. More of the total Zn, Ag, Co and Ni is extracted by the 0.25 and 1.0 NH₂OH HCl₂ indicating that these metals were most likely concentrated by Fe-oxides from ground water when the Spa springs were active

Presently, the active springs near the Spa prospect are along the west side of the valley 2 kilometres to the north (Area B). The spring water pH is typically > 7

(Map 52), and has a high Ca, Mg, Sr, Fe and SO₄ content, but low dissolved O₂. The water has up to 466 ppb Ni, 91 ppb Cd, 21 ppb As, 4000 ppb Zn (Map 51) and 6.3 ppb Pb (Map 50).

Low Pb and elevated As, Co, Cr, U, V and Zn in the Spa oxide sinter suggest that the weathered shale is the main source of the metals rather than Pb-Zn sulphides.

4. DRIFTPILE CREEK-CRUDE CREEK AREA

Location: NTS 94K/04

Latitude/Longitude: 58° 03' 59" N, 125° 54' 35" W; MINFILE 94K066

Topography and surface environment

The Driftpile Creek barite-Pb-Zn deposit (MINFILE 94K066) is located near the headwaters of Driftpile Creek close to the western edge of the Muskwa Ranges. Driftpile Creek flows to the west through a winding U shaped valley into the Kechika River. Terraces and ridges at the 1350-metre elevation along both sides of the Driftpile Creek valley indicate proglacial lakeshore and fluvio-glacial sediments. The terraces mark a gradient change from steeper slopes close to the valley floor to a more subdued upland topography.

Sulphide mineralization is rarely visible at surface. However, there is one limonitic gossan capping an outcrop containing sulphides close to Driftpile Creek ("Discovery Zone"). This gossan has an associated barite "kill zone". In addition, several other "kill zones", iron-spring and ferricrete deposits occur along the Driftpile creek valley and also

close to the headwaters of Crude Creek, a tributary of Driftpile Creek.

Local geology and mineralization

The geology of the Driftpile deposit (MINFILE # 94K066) has been described by Nelson *et al.*, 1995. Massive sphalerite, galena and pyrite occur in blue-grey weathering, carbonaceous black shale and silty mudstone, cherty argillite and radiolarian chert of the Gunsteel Formation. The rocks are preserved in a broad, northwest-trending, tightly folded synclorium that has been disrupted by moderately dipping, northeast verging, thrust faults. Gunsteel Formation clastic sediments are interbedded with barite and/or pyrite-enriched siliceous shale or cherty argillite. The barite is nodular, disseminated, intercalated as thin laminae, or present as massive, centimetre-scale beds. Pyrite is generally laminated in mudstone, or associated with barite, or present as carbonate concretions. The Gunsteel Formation is in contact with the underlying Ordovician to lower Devonian Road River Group within the hanging-wall of the Mount Waldemar thrust fault to the south west of Driftpile Creek.

The Driftpile deposit consists of at least two stratiform sulphide-carbonate and barite bodies. The lower or 'main' zone up to 70 metres thick is primarily a sulphide-carbonate facies interbedded by black graphitic shale or mudstone. Within the zone fine-grained, finely laminated or framboidal pyrite is associated with irregular bands and concretions of calcite. Sphalerite and galena can occur with the pyrite, but are most abundant as a layer of fine-grained

massive sulphide near the base of the zone.

The 'upper' zone, 100 to 200 metres higher in the Gunsteel Formation, consists of barite-sulphide mineralization, in siliceous or non-siliceous mudstone with pyritic laminations. Barite occurs in massive beds or laminations, or in nodules. Pyrite is subordinate to barite, but may form massive layers, locally accompanied by abundant sphalerite and galena.

Previous diamond drilling has established that sulphide mineralization typically grading 10 per cent Zn and 1 per cent Pb extends down dip for at least 100 metres, can be traced over a strike length up to 3 kilometres and has a surface width of 1.5 kilometres. The most recent reserve estimate (lower mineralized sub-unit of the 'main zone') is 2.44 million tonnes averaging 11.9 per cent Zn and 3.1 per cent Pb.

The DR barite occurrence (MINFILE # 94K077) is 2.5 kilometres southeast of the Driftpile deposit on Crude creek. Mineralization consists of nodules and thin lenses of massive barite in blue-grey weathering black shale and siliceous argillite of the Gunsteel Formation.

Results

The Driftpile deposit was discovered in 1973 following a 1970 regional stream sediment geochemical survey carried out by Geophoto Consultants (Wise, 1974).

Table 17: Soil profile geochemistry at the Driftpile "Discovery" occurrence. INAA data = ⁽¹⁾. Aqua-regia-ICPES data = ⁽²⁾

SAMPLE	UNITS	941432	941433	941434
Depth	cm	5	15	25
Ag ²	ppm	0.4	0.2	0.1
Al ²	%	0.71	0.4	0.12
As ¹	ppm	26	34	-0.5
As ²	ppm	22	25	7
Au ¹	ppb	9	-3	-2
B ²	ppm	6	6	4
Ba ¹	ppm	92000	340000	340000
Ba ²	ppm	89	65	28
Bi ²	ppm	-2	-2	-2
Br ¹	ppm	7	9.5	3.8
Ca ²	%	0.01	0.02	0.01
Cd ²	ppm	-0.2	-0.2	-0.2
Ce ¹	ppm	43	28	26
Co ²	ppm	2	1	-1
Cr ¹	ppm	69	31	25
Cr ²	ppm	9	5	-1
Cs ¹	ppm	17	9	7
Cu ²	ppm	32	21	6
Eu ¹	ppm	0.4	-0.2	-0.2
Fe ¹	%	15.7	17	5.51
Fe ²	%	14.01	13.66	5.09
Hg ²	ppb	200	210	210
K ²	%	0.07	0.05	0.27
La ¹	ppm	25	17	15
La ²	ppm	8	4	-2
Lu ¹	ppm	0.17	0.13	0.09
Mg ²	%	0.03	0.02	0.01
Mn ²	ppm	32	-2	-2
Mo ²	ppm	24	15	6
Na ¹	%	0.13	0.32	0.83
Na ²	%	0.01	0.01	0.07
Ni ²	ppm	14	6	2
P ²	%	0.078	0.052	0.01
Pb ²	ppm	2464	2720	2270
Rb ¹	ppm	95	44	44
Sb ¹	ppm	7.7	7.2	5.1
Sb ²	ppm	2	4	7
Sc ¹	ppm	6.9	3.8	2.8
Se ¹	ppm	7	-3	-3
Sm ¹	ppm	1.7	1.5	1.1
Sr ²	ppm	76	127	60
Tb ¹	ppm	-0.5	-0.5	-0.5
Th ¹	ppm	7.6	6.2	5.5
Th ²	ppm	5	5	-2
U ¹	ppm	6.6	-0.6	-0.5
V ²	ppm	58	26	6
W ¹	ppm	11	-1	-1
Yb ¹	ppm	1.2	0.8	0.4
Zn ¹	ppm	840	883	179
Zn ²	ppm	558	534	105

Spring deposit and stream sediment sample locations are shown on Map 54; rock and water sample locations on Map 53. The soil and rock sampling was designed to establish the geochemical signature of the Ag-Pb-Zn sulphide mineralization.

Soil and gossan material from two vertical profiles (samples 941430 to 941434) at the "Discovery Showing"

kill zone have up to 7900 ppm Pb, 6400 ppm Zn, 34,000 ppm Ba and 0.5 ppm Ag.

Table 18. Metals extracted with 0.25M NH₂OH HCl (e.g. Ag-1), 1 M NH₂OH HCl (e.g. Ag-2) and HF-HClO₄-HCl-HNO₃ (e.g. Ag-3) from a gossan (945084) sample and profile from the Driftpile "Discovery" occurrence

EXTRACT	UNITS	945084	941432	941433	941434	UNITS	945084	941432	941433	941434
Ag-1	ppm	0.1	0.1	0.1	0.1	%	11	14	20	33
Ag-2	ppm	0.4	0.5	0.3	0.1	%	44	71	60	33
Ag-3	ppm	0.4	0.1	0.1	0.1	%	44	14	20	33
As-1	ppm	3	3	3	3	%	17	17	14	33
As-2	ppm	3	3	3	3	%	17	17	14	33
As-3	ppm	12	12	15	3	%	67	67	71	33
Ba-1	ppm	219	368	364	141	%	44	12	28	23
Ba-2	ppm	29	62	21	9	%	6	2	2	1
Ba-3	ppm	250	2550	924	463	%	50	86	71	76
Cd-1	ppm	9	1	1	1	%	75	33	33	33
Cd-2	ppm	2	1	1	1	%	17	33	33	33
Cd-3	ppm	1	1	1	1	%	8	33	33	33
Co-1	ppm	9	1	1	1	%	82	33	33	33
Co-2	ppm	1	1	1	1	%	9	33	33	33
Co-3	ppm	1	1	1	1	%	9	33	33	33
Cu-1	ppm	0.5	0.5	0.5	0.5	%	3	2	3	10
Cu-2	ppm	4.8	13.1	7.7	2.8	%	33	43	39	54
Cu-3	ppm	9.3	16.8	11.8	1.9	%	64	55	59	37
Fe-1	%	0.17	0.09	0.06	0.07	%	0	1	0	2
Fe-2	%	8.3	5.86	5.32	3.38	%	22	37	35	78
Fe-3	%	29.1	9.86	9.63	0.9	%	77	62	64	21
Mn-1	ppm	78	24	9	4	%	66	31	26	29
Mn-2	ppm	15	18	7	2	%	13	23	20	14
Mn-3	ppm	25	35	19	8	%	21	45	54	57
Mo-1	ppm	1	1	1	1	%	14	5	8	17
Mo-2	ppm	1	2	1	1	%	14	11	8	17
Mo-3	ppm	5	16	10	4	%	71	84	83	67
Ni-1	ppm	19	1	1	1	%	27	9	25	33
Ni-2	ppm	37	3	1	1	%	53	27	25	33
Ni-3	ppm	14	7	2	1	%	20	64	50	33
Pb-1	ppm	2090	425	451	95	%	21	15	15	5
Pb-2	ppm	6650	1900	1540	955	%	66	66	53	51
Pb-3	ppm	1360	544	926	829	%	13	19	32	44
Sb-1	ppm	5	5	5	5	%	33	33	33	33
Sb-2	ppm	5	5	5	5	%	33	33	33	33
Sb-3	ppm	5	5	5	5	%	33	33	33	33
Tl-1	ppm	4.1	0.6	1.1	1.9	%	12	3	5	1
Tl-2	ppm	15.7	8	14.3	101	%	45	34	64	70
Tl-3	ppm	14.8	15	6.8	40.6	%	43	64	31	28
V-1	ppm	2	2	2	2	%	2	1	1	2
V-2	ppm	17	17	8	2	%	17	5	5	2
V-3	ppm	84	297	136	118	%	82	94	93	97
Zn-1	ppm	2760	11	13.8	6	%	36	2	3	5
Zn-2	ppm	2830	172	177	51.7	%	37	31	33	47
Zn-3	ppm	2100	376	339	53.2	%	27	67	64	48

The geochemistry of a vertical profile on the "Discovery Showing" is shown in Table 17. Iron and Zn decrease sharply from elevated levels in the gossanous surface material to lower concentrations in the underlying mottled soil whereas

Pb, Hg and Ba are almost constant down the soil profile. Results of the sequential extraction analysis (Table 18) show that much of the Pb is bound in the 1 M NH₂OH HCl and HF-HClO₄-HCl-HNO₃ acid extractable fractions. Most of the

Zn, however, is bound in the 0.25 $\text{NH}_2\text{OH HCl}$ extractable fraction. The differences between the partitioning of Pb and Zn suggest that more resistant galena or Pb sulphate is still present in the spring deposit, but sphalerite has been largely oxidized to more soluble secondary Zn minerals. The distribution of Ba, Pb, Ag and Zn is shown in Maps 55 to 58).

Ferricrete rubble covers the surface of a large "kill zone" roughly 150 metres by 30 metres in area located on the north side of the Driftpile Creek valley two kilometers east of the "Discovery" gossan. This "kill zone" is most likely underlain by rocks of the Upper Road River group. Barium, Pb, Mn, V and Tl increase with depth down a vertical profile below the surface of the "kill zone" whereas Fe, and Zn decrease with depth. Results of sequential extraction analysis on samples from the profile (Table 19) show that the 0.25 M $\text{NH}_2\text{OH HCl}$ extracts most of the Mn, Tl and Co, 1.0 M $\text{NH}_2\text{OH HCl}$ removes much of the Pb; the $\text{HF-HClO}_4\text{-HCl}$ acids largely extract V, Cu and Ba. Proportions of Zn and Fe liberated by the three reagents change with depth. In the surface ferricrete more of the Fe and Zn is bound by $\text{HF-HClO}_4\text{-HCl-HNO}_3$ extractable phase whereas in the underlying soil the 1.0 M $\text{NH}_2\text{OH HCl}$ extracts more of the metals. This suggests that Mn oxides are responsible for scavenging Co and Tl from ground water whereas Fe oxides adsorb Zn and Pb. Barium and V are present in resistant soil-forming minerals and are less susceptible to solution by acid ground water.

Maps 59 to 62 show the distribution of pH, Zn, Al and Pb in spring and

seepage water samples. A ground water source for the metals is suggested by the chemistry of a water sample collected from the bottom of a profile pit at Area A (Sample 943062). This water is acid (pH 3.7), SO_4 -rich (324 ppm) and contains 1697 ppb Al, 91 ppb Ni, and 23100 ppb Zn, 7.3 ppb Pb and 3.3 ppb Tl (Maps 59-62).

Ferricrete samples from a vertical profile near the headwaters of Crude Creek (Area B) located four kilometres east of the Driftpile deposit have up to 2 percent Zn, 1000 ppm Ni, 1000 ppm As, 100 ppm U, 100 ppm Co and 800 ppm Mo but less than 20 ppm Pb, 1 ppm Tl and 1 ppm Ag. Sequential extraction data (Table 20) shows that more than 75 percent of the Fe, As, Ba, Mo, Ni, Sb, V and Zn are bound in the $\text{HF-HClO}_4\text{-HCl-HNO}_3$ extractable fraction whereas more of the Mn (75-80%) is dissolved by 0.25 M $\text{NH}_2\text{OH HCl}$. Other metals (e.g. Co, Zn) do not appear to associated with oxides dissolved by the 0.25 M $\text{NH}_2\text{OH HCl}$. Most metals (e.g. Ba, Fe, Ni, V, Zn) increase down the profile from the ferricrete into the underlying sediment. Arsenic and Ba, however, decrease with depth. Spring water close to the ferricrete deposits is alkaline and has elevated levels of Fe, Ni, Mn and Zn, but no detectable Pb or Tl.

The distribution of Ba, Ag, Pb and Zn in moss and stream sediment samples from streams draining into Driftpile creek is shown in Map 63-66. Most moss and stream sediments have more than 1000 ppm Zn. However, only streams within two kilometres of the Driftpile creek deposit have more than 100 ppm Pb and 1 ppm Ag.

Comparison between the geochemistry of stream sediment and moss mat sediment samples from streams draining Pb-Zn sulphide mineralized (e.g. Driftpile deposit area) and non-mineralized areas (e.g. Crude Creek) are shown in Table 21. Elements typically concentrated in the heavy mineral fraction (e.g. Ag, Au, W, Pb) are higher in moss mat sediment compared to the stream sediment. However, this

trend is not always consistent because Pb is higher in the sediment for the sample pair 947043 and 44. Other elements (e.g. As, Ni, Zn, Mn, Cd, Cu, Mo) are higher in the stream sediment compared to the moss mat sediment or show no obvious preference for sample type.

Table 19. Metals extracted with 0.25M NH₂OH HCl, (e.g. Ag-1) 1 M NH₂OH HCl (e.g. Ag-2) and HF-HClO₄-HCl-HNO₃ (Ag-3) from surface ferricrete samples (945048 and 49) and from profile soil samples (941408-1411) under a "kill zone" in Area A.

EXTRACT	UNITS	945048	945049	941408	941409	941410	941411		945048	945049	941408	941409	941410	941411
Depth	cm	0.5	0.5	5	22	38	75		0.5	0.5	5	22	38	75
Ag-1	ppm	0.1	0.2	1.3	0.4	0.1	0.4	%	25	40	59	44	11	67
Ag-2	ppm	0.1	0.1	0.7	0.1	0.7	0.1	%	25	20	32	11	78	17
Ag-3	ppm	0.2	0.2	0.2	0.4	0.1	0.1	%	50	40	9	44	11	17
As-1	ppm	3	3	3	3	3	3	%	33	33	33	33	14	12
As-2	ppm	3	3	3	3	3	3	%	33	33	33	33	14	12
As-3	ppm	3	3	3	3	16	19	%	33	33	33	33	73	76
Ba-1	ppm	738	164	384	28	24	21	%	22	10	6	1	0	0
Ba-2	ppm	168	94	231	48	132	36	%	5	6	4	2	2	1
Ba-3	ppm	2520	1330	5320	2190	5760	4800	%	74	84	90	97	97	99
Cd-1	ppm	4	2	34	4	1	2	%	67	50	89	67	33	50
Cd-2	ppm	1	1	3	1	1	1	%	17	25	8	17	33	25
Cd-3	ppm	1	1	1	1	1	1	%	17	25	3	17	33	25
Co-1	ppm	6	8	69	26	3	11	%	67	73	85	81	43	69
Co-2	ppm	1	2	9	3	1	2	%	11	18	11	9	14	13
Co-3	ppm	2	1	3	3	3	3	%	22	9	4	9	43	19
Cu-1	ppm	0.5	0.5	0.9	0.5	0.5	0.5	%	3	3	5	2	1	2
Cu-2	ppm	5.8	6.5	8.7	6.8	18.4	9.2	%	40	38	47	34	49	43
Cu-3	ppm	8.3	10	9.1	12.9	18.5	11.6	%	57	59	49	64	49	54
Fe-1	%	0.35	0.29	0.27	0.52	0.4	0.45	%	1	1	1	1	6	3
Fe-2	%	14.2	14.4	20.1	16.5	4.66	9	%	37	34	50	34	65	58
Fe-3	%	23.5	27.9	20.2	31.8	2.14	6.11	%	62	66	50	65	30	39
Mn-1	ppm	278	606	27600	5700	618	5680	%	65	84	96	91	80	96
Mn-2	ppm	103	76	1060	457	102	212	%	24	11	4	7	13	4
Mn-3	ppm	48	37	144	114	52	51	%	11	5	0	2	7	1
Mo-1	ppm	1	1	1	1	1	1	%	13	13	13	10	6	7
Mo-2	ppm	1	1	1	1	5	2	%	13	13	13	10	29	13
Mo-3	ppm	6	6	6	8	11	12	%	75	75	75	80	65	80
Ni-1	ppm	3	1	99	1	1	1	%	25	8	81	6	3	4
Ni-2	ppm	4	6	12	4	13	9	%	33	46	10	25	39	35
Ni-3	ppm	5	6	11	11	19	16	%	42	46	9	69	58	62
Pb-1	ppm	25	19	14	56	122	70	%	10	14	3	16	18	13
Pb-2	ppm	172	83	474	226	411	312	%	70	59	87	65	62	60
Pb-3	ppm	47	38	55	65	130	139	%	19	27	10	19	20	27
Sb-1	ppm	5	5	5	5	5	5	%	33	33	33	33	33	33
Sb-2	ppm	5	5	5	5	5	5	%	33	33	33	33	33	33
Sb-3	ppm	5	5	5	5	5	5	%	33	33	33	33	33	33
Tl-1	ppm	0.9	1.9	18.8	19	2.5	11.5	%	27	54	74	83	29	72
Tl-2	ppm	0.1	0.1	3	1.7	0.7	1.3	%	3	3	12	7	8	8
Tl-3	ppm	2.3	1.5	3.5	2.3	5.3	3.1	%	70	43	14	10	62	19
V-1	ppm	2	2	2	2	2	2	%	1	1	1	2	0	1
V-2	ppm	8	9	15	9	12	10	%	4	5	10	8	3	3
V-3	ppm	178	159	134	106	424	327	%	95	94	89	91	97	96
Zn-1	ppm	898	367	4960	424	86.1	524	%	17	8	49	9	8	28
Zn-2	ppm	1860	1760	2900	1350	645	757	%	36	40	29	30	57	41
Zn-3	ppm	2410	2310	2170	2790	398	563	%	47	52	22	61	35	31

Table 20. Metals extracted by 0.25M NH₂OH HCl (e.g. Ag-1), 1 M NH₂OH HCl (e.g. Ag-2) and HF-HClO₄-HCl-HNO₃ (e.g. Ag-3) from surface ferricrete samples (945048, 945049) and a soil profile (941408-1411) from Crude creek (Area B).

EXTRACT UNITS									UNITS								
		945082	945080	945079	945078	945076	945075	945074		5082	5080	5079	5078	5076	5075	5074	
Depth	cm	5	22	58	62	62	95	100	cm	5	22	58	62	62	95	100	
Ag-1	ppm	0.1	0.1	0.1	0.1	0.1	0.1	0.5	%	33	33	33	33	33	33	71	
Ag-2	ppm	0.1	0.1	0.1	0.1	0.1	0.1	0.1	%	33	33	33	33	33	33	14	
Ag-3	ppm	0.1	0.1	0.1	0.1	0.1	0.1	0.1	%	33	33	33	33	33	33	14	
As-1	ppm	3	3	3	3	3	3	3	%	0	1	0	0	0	0	3	
As-2	ppm	3	3	3	3	3	3	3	%	0	1	0	0	0	0	3	
As-3	ppm	943	406	864	842	1200	639	87	%	99	99	99	99	100	99	94	
Ba-1	ppm	24	32	17	39	8	36	214	%	43	48	40	64	20	21	10	
Ba-2	ppm	4	2	1	1	1	7	129	%	7	3	2	2	2	4	6	
Ba-3	ppm	28	33	25	21	32	131	1870	%	50	49	58	34	78	75	85	
Cd-1	ppm	16	10	8	11	9	44	15	%	53	67	57	55	35	72	83	
Cd-2	ppm	11	4	5	8	16	16	2	%	37	27	36	40	62	26	11	
Cd-3	ppm	3	1	1	1	1	1	1	%	10	7	7	5	4	2	6	
Co-1	ppm	17	30	60	78	12	12	5	%	40	38	63	58	23	13	10	
Co-2	ppm	2	11	5	10	6	11	19	%	5	14	5	7	11	11	38	
Co-3	ppm	23	39	30	47	35	73	26	%	55	49	32	35	66	76	52	
Cu-1	ppm	0.5	0.5	0.5	0.5	0.5	0.5	6.2	%	10	8	9	9	9	4	8	
Cu-2	ppm	0.5	1.3	0.5	0.5	0.5	4.2	53.3	%	10	21	9	9	9	37	69	
Cu-3	ppm	4.1	4.3	4.4	4.6	4.7	6.8	18.1	%	80	70	81	82	82	59	23	
Fe-1	%	0.19	0.25	0.13	0.08	0.08	0.05	0.06	%	0	0	0	0	0	0	0	
Fe-2	%	9.14	8.19	6.19	6.61	4.77	7.16	4.64	%	17	15	11	12	8	14	31	
Fe-3	%	43.9	46.5	48.2	49.2	53	43.5	10.4	%	82	85	88	88	92	86	69	
Mn-1	ppm	156	261	428	828	40	45	18	%	75	67	83	84	37	24	10	
Mn-2	ppm	10	39	26	53	12	16	47	%	5	10	5	5	11	9	27	
Mn-3	ppm	42	89	62	102	55	126	107	%	20	23	12	10	51	67	62	
Mo-1	ppm	1	1	1	1	1	1	1	%	1	1	1	1	0	0	1	
Mo-2	ppm	11	7	16	13	20	60	29	%	8	9	10	7	9	9	28	
Mo-3	ppm	123	68	144	184	191	574	75	%	91	89	89	93	90	90	71	
Ni-1	ppm	113	153	123	156	60	289	80	%	13	12	10	9	5	15	15	
Ni-2	ppm	191	315	288	377	222	639	270	%	22	25	23	21	19	34	50	
Ni-3	ppm	579	789	824	1240	869	948	194	%	66	63	67	70	75	51	36	
Pb-1	ppm	2	2	2	2	2	2	2	%	14	13	13	13	14	15	13	
Pb-2	ppm	2	2	2	2	2	2	12	%	14	13	13	13	14	15	75	
Pb-3	ppm	10	11	11	12	10	9	2	%	71	73	73	75	71	69	13	
Sb-1	ppm	5	5	5	5	5	5	5	%	14	25	21	33	33	17	25	
Sb-2	ppm	5	5	5	5	5	5	5	%	14	25	21	33	33	17	25	
Sb-3	ppm	26	10	14	5	5	19	10	%	72	50	58	33	33	66	50	
Ti-1	ppm	0.2	0.1	0.3	0.6	0.1	0.5	0.4	%	50	33	60	75	33	71	22	
Ti-2	ppm	0.1	0.1	0.1	0.1	0.1	0.1	0.1	%	25	33	20	13	33	14	6	
Ti-3	ppm	0.1	0.1	0.1	0.1	0.1	0.1	1.3	%	25	33	20	13	33	14	72	
V-1	ppm	2	2	2	2	2	2	5	%	3	3	6	7	7	4	1	
V-2	ppm	12	18	3	2	2	4	20	%	17	28	8	7	7	8	4	
V-3	ppm	55	45	31	25	26	45	449	%	80	69	86	86	87	88	95	
Zn-1	ppm	2560	2730	2160	2310	1450	4480	1580	%	10	10	9	11	6	18	26	
Zn-2	ppm	4110	3990	2960	2860	2840	4830	2460	%	16	15	13	14	11	19	40	
Zn-3	ppm	19700	19700	18200	15700	20800	15500	2120	%	75	75	78	75	83	62	34	

Table 21. Comparison of elements in moss mat and stream sediment samples from the Driftpile Creek area. Results for INAA = ⁽¹⁾; Aqua regia-ICPES = ⁽²⁾.

ELEMENT	UNITS	947043	947044	947051	947053	947085	947086	947088	947089	947096	947097
Type		Moss	Sed.	Moss	Sed.	Moss	Sed.	Moss	Sed.	Moss	Sed.
Ag ²	ppm	0.40	0.10	1.00	0.10	0.30	0.40	0.70	0.70	0.70	0.50
Al ²	%	0.24	0.49	0.91	2.00	1.21	0.87	0.56	0.54	0.58	0.59
As ¹	ppm	20	21	29	30	15	17	21	23	21	24
As ²	ppm	17	15	23	3	24	26	16	16	18	33
Au ¹	ppb	3	-2	7	5	-2	7	2	4	-2	-2
B ²	ppm	5	4	9	2	3	9	10	6	6	8
Ba ¹	ppm	71000	60000	45000	25000	17000	7500	5500	4200	20000	15000
Ba ²	ppm	143	553	670	57	662	687	804	900	828	502
Br ¹	ppm	3.5	2.3	2.2	1.2	3.3	2.8	3.1	2.7	2.1	-0.5
Ca ²	%	2.56	0.18	0.70	0.79	0.55	0.47	1.15	1.18	1.37	1.87
Cd ²	ppm	5.9	6.8	13.1	0.2	23.5	13.7	10.2	10.2	9.9	20.9
Ce ¹	ppm	48	44	63	55	82	63	81	62	160	140
Co ¹	ppm	10	11	15	14	14	16	16	16	34	23
Co ²	ppm	7	10	29	10	76	58	17	18	17	27
Cr ¹	ppm	64	70	80	83	66	82	87	98	62	67
Cr ²	ppm	7	5	21	20	10	8	13	13	15	23
Cs ¹	ppm	22	21	11	10	5	6	5	6	5	6
Cu ²	ppm	33	31	88	182	94	78	46	50	52	70
Eu ¹	ppm	0.9	0.8	1.2	1.1	1.4	1.1	1.5	1.3	2.3	2.0
Fe ¹	%	4.36	4.49	3.75	3.60	2.35	2.46	2.50	2.88	3.85	4.01
Fe ²	%	1.63	4.23	2.53	4.62	4.75	4.15	2.4	2.28	2.27	3.77
Hf ¹	ppm	5	5	8	6	12	6	8	5	11	7
Hg ²	ppb	100	90	115	25	70	65	160	170	195	120
La ¹	ppm	30	28	42	36	41	32	42	35	82	71
La ²	ppm	20	10	28	6	32	25	20	16	18	22
Lu ¹	ppm	0.30	0.30	0.47	0.44	0.52	0.41	0.58	0.49	0.62	0.47
Mg ²	%	1.52	0.03	0.26	0.78	0.36	0.32	0.59	0.62	0.71	0.99
Mn ²	ppm	320	2759	589	411	1470	1086	537	567	537	734
Mo ²	ppm	24	16	31	14	22	20	32	26	29	71
Nd ¹	ppm	19	18	27	21	36	29	38	28	71	55
Ni ²	ppm	95	60	309	15	366	243	205	190	200	421
P ²	%	0.096	0.056	0.165	0.048	0.08	0.082	0.115	0.109	0.135	0.089
Pb ²	ppm	92	584	171	10	19	14	133	95	60	26
Rb ¹	ppm	92	110	96	99	83	84	81	82	100	110
Sb ¹	ppm	4.9	4.9	11.0	11.0	7.3	8.0	10.0	12.0	7.3	7.9
Sb ²	ppm	8	5	10	3	2	4	6	9	8	11
Sc ¹	ppm	8.7	9.0	9.2	9.2	7.4	8.1	8.4	8.5	9.4	10.0
Se ¹	ppm	-3	-3	-3	-3	-3	3	4	5	-3	3
Sm ¹	ppm	2.8	2.6	4.2	3.9	5.9	4.8	6.2	5.2	11.0	9.3
Sr ²	ppm	35	46	58	55	91	82	59	58	61	90
Ta ¹	ppm	0.7	-0.5	-0.5	-0.5	-0.5	0.7	0.5	0.7	-0.5	1.0
Tb ¹	ppm	-0.5	0.6	0.7	0.6	0.7	0.6	0.7	0.6	1.1	1.0
Th ¹	ppm	7.9	8.1	9.5	8.8	8.8	8.1	9.2	8.5	12.0	11.0
Th ²	ppm	4	2	3	2	6	5	2	2	2	4
U ¹	ppm	8.6	9.1	13.0	12.0	9.1	8.9	13.0	12.0	10.0	12.0
V ²	ppm	43	32	295	99	54	53	148	146	180	559
W ¹	ppm	7	-1	7	-1	-1	-1	-1	-1	-1	-1
Yb ¹	ppm	1.9	2.0	2.7	2.5	3.1	2.5	3.5	3.0	3.6	3.3
Zn ¹	ppm	3280	2780	2490	2180	1690	1630	1570	1720	2430	1850
Zn ²	ppm	1180	2548	1730	47	4161	2331	1805	1611	1516	4017

5. SAINT CREEK AREA

Location: NTS 094K04W.

Latitude/Longitude: 58° 07' 26'' N, 125° 59' 07'' W. Water, sediment and iron oxide spring deposit samples were collected along a valley west of Saint Creek (local name). The area was within the boundary of the Saint-Flaco mineral claims, a property staked by Archer and Cathro Associates in 1980.

Topography and surface environment

Iron-oxide spring deposits are located along the east side of a steep sided, narrow northwest-trending U shaped valley west of Saint Creek. The unnamed creek flows northwest through Braid Creek into the Kechika River. The valley sides are covered with talus and colluvium. Unsorted, coarse textured, glacial sediments fill the valley floor. The tree line reaches up to 1500 metres with mixed woodland and grassland in the valley bottom and alpine fir, black spruce and alder extending up the valley sides. Surface flora above 1500 metres consists of scattered alpine fir, willow and heather.

Local geology and mineralization

Rocks of the Gunsteel Formation underlie the area north of the creek. Lithologies range from bluish-grey weathering carbonaceous cherty argillite, siliceous shale and bedded chert, with subordinate mudstone, to siltstone and coarser siliciclastics. Nodular, laminated or massive lenticular barite occurs at a number of horizons known to host Pb-Zn-Ag sedex mineralization at Driftpile Creek. However, on the Saint-Flaco claims, the barite-bearing strata (8 to 45

metres thick) have up to 5 per cent disseminated or laminated pyrite traces of galena and sphalerite (Carne, 1982; Insley and McClay, 1986). The rocks are thrust faulted and tightly folded into a series of northeasterly-overtaken anticlines and synclines resulting in repetition of the baritic horizons on the surface. The Gunsteel rocks generally strike northwest and dip moderately to steeply southwest. In the southwest corner of the claims, a thrust juxtaposes dolomitic siltstones of the Ordovician-Devonian Road River Group onto the Gunsteel Formation. The iron-oxide spring deposits have up to one per cent Zn, but are not associated with the baritic horizons.

Results

Soil and Fe-oxide spring deposit geochemical surveys by Carne, 1983, over the Saint-Flaco claims outlined Pb and Zn soil anomalies. Soil with Pb above 175 ppm covers an area roughly 1200 metres by 400 metres on the west side of the creek. Lead concentrations reach 6200 ppm and the peak on the Pb soil anomaly trends northwest. Zinc levels above 1000 ppm and up to 10,000 ppm in soil occur in an area 1200 metres by 100 metres parallel to the creek. The peak of the Zn soil anomaly appears to be centered on the creek. Geochemical analysis of the Fe-oxide spring deposits was aimed at distinguishing between "exotic" anomalies caused by adsorption of metals from ground water and metals derived from sulphides in the underlying bedrock. The Fe-oxide spring deposits were found to have varying enrichment in Pb, Zn, Mn, As, Mo, Co and Ni. Cobalt/Ni ratios in spring deposit samples were tested as a tool to

distinguish between pyrite formed with VMS mineralization and diagenetic pyrite. The Co/Ni ratios for most samples were found to be less than 0.5. Higher ratios (> 0.5) were found in Fe-oxide spring deposits at the south end area close to the headwaters of the creek (Carne, 1983). A prominent source of metals in the Fe-oxide spring deposits was identified as ground water flowing from a thrust on the east side of the creek.

Soil and sediment sample locations are shown on Map 67; water and rock sample locations are shown on Map 68. Spring waters have a $\text{pH} > 7$ and have very high concentrations of Ca, Mg, Na, Fe, Co, Ni, Cd and Zn (Map 70). The most acid spring water ($\text{pH} 6.4$) found is at the south end of the area and drains into the headwaters of the creek (sample 943053). This water also has the elevated Ba (83 ppb) and Al (361 ppm), but less than 0.1 ppb Pb (Map 69).

Table 22. Stream and moss mat sediment geochemistry of the Saint creek area. Results for INAA = (¹); Aqua regia-ICPES = (²).

ELEMENT	UNITS	947033	947034	947035	947036	947037	947038	947040	947042
Type		Moss	Moss	Sed	Moss	Moss	Moss	Moss	Sed
Ag ²	ppm	0.5	0.6	6.8	0.6	0.9	0.5	0.5	0.5
Al ²	ppm	0.28	0.33	1.88	0.26	0.26	0.32	0.27	0.25
As ¹	ppm	19	20	18	14	20	31	19	18
As ²	ppm	16	19	41	17	12	18	18	18
Au ¹	ppb	3	5	-2	3	3	6	5	-2
B ²	ppm	2	4	32	5	5	5	5	5
Ba ¹	ppm	4500	3300	1700	1800	1900	14000	1200	1300
Ba ²	ppm	528	728	182	299	352	371	169	150
Bi ²	ppm	2	2	18	2	2	2	2	2
Br ¹	ppm	3.1	3.1	2	2.6	3.2	3.9	2.8	1.8
Ca ¹	%	4	2	4	5	3	-1	2	2
Ca ²	%	3.34	2.5	0.5	3.22	4.15	2.58	2.88	2.63
Cd ²	ppm	6.3	5.1	16.7	8.3	4.4	11.5	8.8	6
Ce ¹	ppm	90	74	68	70	75	55	76	76
Co ¹	ppm	13	16	12	6	14	77	9	8
Co ²	ppm	12	16	30	11	6	15	10	7
Cr ¹	ppm	74	75	75	91	69	88	63	68
Cr ²	ppm	6	6	53	7	8	7	8	7
Cs ¹	ppm	4	5	5	4	5	10	4	5
Cu ²	ppm	38	39	59	38	40	42	38	34
Eu ¹	ppm	1.5	1.3	1.3	1.1	1.3	1.6	1.3	1.3
Fe ¹	%	2.26	2.4	1.97	1.82	2.21	5.15	1.88	1.87
Fe ²	%	2.14	2.24	3.96	1.77	1.54	2.01	1.82	1.65
Hf ¹	ppm	23	12	9	13	12	6	13	12
Hg ²	ppb	135	120	1860	120	125	155	145	105
K ²	%	0.09	0.09	0.15	0.08	0.1	0.09	0.09	0.08
La ¹	ppm	51	43	39	41	43	36	45	45
La ²	ppm	17	17	41	19	19	19	21	21
Lu ¹	ppm	0.73	0.58	0.47	0.58	0.54	0.53	0.55	0.51
Mg ²	%	2.36	1.66	0.93	1.97	2.85	1.58	1.82	1.58
Mn ²	ppm	447	568	1057	438	161	599	422	319
Mo ²	ppm	36	27	18	22	13	29	26	23
Na ¹	%	0.07	0.08	0.07	0.07	0.09	0.08	0.08	0.08
Na ²	%	0.01	0.01	0.06	0.01	0.01	0.01	0.01	0.01
Nd ¹	ppm	33	31	31	29	33	21	35	36
Ni ²	ppm	153	152	73	122	105	186	136	97
P ²	%	0.105	0.105	0.089	0.1	0.094	0.09	0.096	0.097
Pb ²	ppm	134	91	38	74	39	112	122	84
Rb ¹	ppm	75	86	93	77	84	83	80	82
Sb ¹	ppm	7.6	7.8	7.2	7.6	7.5	13	7.1	6.9
Sb ²	ppm	7	7	14	11	10	9	11	10
Sc ¹	ppm	7.2	7.4	7	7.8	7	9	6.7	6.7
Se ¹	ppm	-3	3	-3	5	-3	7	-3	-3
Sm ¹	ppm	6	5.2	4.8	4.8	5.3	5	5.3	5.6
Sr ²	ppm	55	55	50	50	56	45	38	37
Ta ¹	ppm	1.1	0.8	0.6	-0.5	1	-0.5	-0.5	1.1
Tb ¹	ppm	0.9	0.8	0.8	0.7	0.9	1.1	0.9	0.9
Th ¹	ppm	15	12	12	13	12	9.7	13	13
Th ²	ppm	2	2	35	5	4	3	3	5
Ti ²	ppm	0.01	0.01	0.08	0.01	0.01	0.01	0.01	0.01
U ¹	ppm	12	11	9.9	8.5	11	18	11	10
V ²	ppm	48	49	60	50	49	46	48	44
W ¹	ppm	-1	-1	1	-1	1	-1	-1	-1
Yb ¹	ppm	4.9	3.6	3.2	3.8	3.5	3.6	3.6	3.7
Zn ¹	ppm	2520	2010	1720	1100	2790	4060	1590	1590
Zn ²	ppm	1811	1493	131	1287	829	2122	1476	1191

Stream sediment and moss mat sediment geochemistry is shown in Table 22. At two sites along the creek (samples 947034/35, 947040/42) both moss mat and stream sediment were

collected. The results show that Pb and Ba are higher in moss mat sediment compared to the stream sediment. However, this trend is not followed by other elements. For example, Cd and Hg

are much higher in sediment sample 947035 than in moss sediment 947034. A low aqua regia-ICP Zn value (131 ppm) in this sediment compared to a much higher INAA Zn (1720 ppm) accompanying the elevated Cd and Hg (1860 ppb) suggests that there could be sphalerite present. There are significantly elevated levels of Pb, Ba, Ag and Zn in stream sediment and moss mat sediment over a 3 kilometre reach of the creek. Values are higher in the sediment from streams draining the east side of the valley (Maps 71-74).

transported physically rather than chemically.

Iron oxide-spring samples from the east side of the creek have elevated As, Cd, Sb, Ni, Co, Mn, U and Zn similar to those found by Carne, 1983. Some of the samples also have up to 153 ppm Pb and 155 ppb Hg. There is similar Pb enrichment of metals up to 457 ppm in ferricrete deposits from outcrops along the east side of the valley close to the south end of the valley.

Results of sequential extraction analysis for Fe-oxide spring and ferricrete samples are listed in Table 23. The 0.25 M NH_2OH HCl extracts much of the Mn, Co, Ni, Tl and Zn suggesting that Mn-oxides adsorb these metals. Most of the Ba, Fe and Pb is liberated by 1M NH_2OH HCl indicating an association of these elements with Fe oxide. Vanadium, Ba and Pb are also released by $\text{HF-HClO}_4\text{-HCl-HNO}_3$. The partitioning of the metals into the different phases varies from the Fe-oxide spring deposits to the ferricrete suggesting that as Fe-oxide spring deposits mature to ferricrete the metals become more strongly bound and would therefore be more likely to be

Table 23. Metals extracted by 0.25M NH₂OH HCl (e.g. Ag-1), 1 M NH₂OH HCl (Ag-2) and HF-HClO₄-HCl-HNO₃ (Ag-3) from ferricrete samples 945032,33,34 and iron spring sediments 941201-941206.

ELEMENT	UNITS	5032	5033	5034	1202	1203	1204	1205	1206	UNIT	5032	5033	5034	1202	1203	1204	1205	1206
Ag-1	ppm	0.8	0.6	0.4	0.1	0.2	0.1	0.1	0.1	%	36	35	20	33	29	25	8	33
Ag-2	ppm	1	1	1.5	0.1	0.4	0.1	0.8	0.1	%	45	59	75	33	57	25	67	33
Ag-3	ppm	0.4	0.1	0.1	0.1	0.1	0.2	0.3	0.1	%	18	6	5	33	14	50	25	33
As-1	ppm	3	3	3	3	3	3	3	3	%	4	10	20	2	2	1	21	3
As-2	ppm	3	3	3	3	11	3	3	3	%	4	10	20	2	9	1	21	3
As-3	ppm	72	23	9	179	109	221	8	101	%	92	79	60	97	89	97	57	94
Ba-1	ppm	27	163	870	157	107	27	80	63	%	4	3	15	72	51	69	68	72
Ba-2	ppm	50	239	522	17	78	8	25	10	%	7	4	9	8	38	21	21	11
Ba-3	ppm	687	5220	4500	43	23	4	12	15	%	90	93	76	20	11	10	10	17
Cd-1	ppm	5	2	17	86	189	29	42	67	%	71	29	55	53	47	21	59	60
Cd-2	ppm	1	4	9	75	211	108	26	44	%	14	57	29	46	53	78	37	39
Cd-3	ppm	1	1	5	1	1	2	3	1	%	14	14	16	1	0	1	4	1
Co-1	ppm	131	2	12	240	188	30	32	133	%	94	25	71	92	66	75	67	95
Co-2	ppm	3	1	2	16	95	5	8	6	%	2	13	12	6	33	13	17	4
Co-3	ppm	5	5	3	5	1	5	8	1	%	4	63	18	2	0	13	17	1
Cu-1	ppm	0.5	1.5	0.8	0.5	0.5	0.5	0.5	0.5	%	1	1	1	9	8	6	8	8
Cu-2	ppm	7	27	29.8	4	4.4	4.9	2.8	4.6	%	16	23	35	70	73	62	44	72
Cu-3	ppm	36.9	90.8	54.4	1.2	1.1	2.5	3.1	1.3	%	83	76	64	21	18	32	48	20
Fe-1	%	1.16	0.07	0.04	1.28	0.07	1.25	1.09	2.98	%	4	0	0	3	0	2	2	25
Fe-2	%	13.2	2.31	2.29	40.3	38.8	40.9	32.6	0.01	%	41	16	13	84	98	63	54	0
Fe-3	%	17.9	12.3	15.4	6.4	0.63	22.4	26.9	9.02	%	55	84	87	13	2	35	44	75
Mn-1	ppm	2530	22	211	5900	7550	544	391	3300	%	96	24	81	97	90	89	77	96
Mn-2	ppm	76	19	22	131	862	51	83	112	%	3	20	8	2	10	8	16	3
Mn-3	ppm	41	52	27	24	8	14	31	13	%	2	56	10	0	0	2	6	0
Mo-1	ppm	1	1	1	1	1	1	1	1	%	1	1	2	2	25	1	11	3
Mo-2	ppm	3	7	10	24	1	23	1	5	%	4	10	17	39	25	32	11	17
Mo-3	ppm	64	59	47	37	2	47	7	23	%	94	88	81	60	50	66	78	79
Ni-1	ppm	37	23	42	320	598	152	137	223	%	27	18	15	52	34	42	46	73
Ni-2	ppm	19	42	129	193	1140	116	91	56	%	14	33	47	31	65	32	31	18
Ni-3	ppm	83	64	102	106	18	95	67	28	%	60	50	37	17	1	26	23	9
Pb-1	ppm	3	2	3	2	2	2	2	2	%	1	1	1	1	2	4	13	5
Pb-2	ppm	96	89	156	252	125	46	6	28	%	18	46	71	96	96	81	38	70
Pb-3	ppm	430	104	62	9	3	9	8	10	%	81	53	28	3	2	16	50	25
Sb-1	ppm	5	5	5	5	5	5	5	5	%	24	23	24	9	11	31	33	33
Sb-2	ppm	5	5	5	13	23	5	5	5	%	24	23	24	24	52	31	33	33
Sb-3	ppm	11	12	11	36	16	6	5	5	%	52	55	52	67	36	38	33	33
Tl-1	ppm	0.7	0.1	0.1	0.5	0.3	0.4	1.3	1.2	%	33	4	4	71	50	67	87	86
Tl-2	ppm	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	%	5	4	4	14	33	17	7	7
Tl-3	ppm	1.3	2.2	2.4	0.1	0.1	0.1	0.1	0.1	%	62	92	92	14	17	17	7	7
V-1	ppm	4	3	2	2	2	2	2	2	%	1	0	0	5	6	7	7	7
V-2	ppm	46	20	20	24	24	15	14	18	%	7	3	3	59	67	54	48	64
V-3	ppm	640	689	713	15	10	11	13	8	%	93	97	97	37	28	39	45	29
Zn-1	ppm	303	429	904	6870	19900	4010	3750	3860	%	9	17	19	49	23	36	32	50
Zn-2	ppm	906	730	1690	5150	66200	4130	4750	2670	%	27	29	36	37	77	37	41	34
Zn-3	ppm	2130	1340	2090	1950	363	2900	3170	1220	%	64	54	45	14	0	26	27	16

SUMMARY

- Elevated Pb, Ag, Ba, Se, Hg and Tl in soil and stream sediment are pathfinders for sedex type Pb-Zn-Ag mineralization at Driftpile Creek and at the Bear occurrence.
- Elevated Pb, Tl, Al and Ba in acid spring water reflect oxidation and solution of Fe, Pb and Zn sulphides by ground water.
- Elevated As, Ca, Co, Ni, Fe, U, V, Zn and SO₄ concentrations in neutral to alkaline spring water reflect weathering of shale and transport of ground water to the surface along thrust faults. Elevated As, Co, Ni, Mo, U and Zn in Fe-oxide spring deposits reflect adsorption of metals from the mineralized ground water.
- Manganese oxides mainly accumulate Co and Zn in Fe-oxide spring deposits whereas Fe-oxides accumulate more As, Ni, Mo, Pb and Tl. Vanadium and Ba are in the most resistant phase of secondary Fe-oxides.
- The source for the metals at the Spar (Red Gossan) occurrences appears to be pyrite-bearing Gunsteel sediments that have background Pb and Zn levels.
- Additional sedex mineralization may be present along the east side of the valley north of the Bear occurrence and west of Saint creek. There may also be gold mineralization in the North Bear valley.

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APPENDIX A - WATER SAMPLE DESCRIPTIONS AND ANALYTICAL DATA

Reference Guide to Field Observations

MAP	1:50 000 NTS Map Sheet Number		
ID	Sample ID Number		
UTMZ	UTM Zone		
UTME	UTM East Coordinate (NAD 83)		
UTMN	UTM North Coordinate (NAD 83)		
STN	Replicate Sample Status :		
	0 - Routine Sample		
	1 - 1st Field Duplicate		
	2 - 2nd Field Duplicate		
TYPE	Sample type		
	SP - Spring	SE - Seepage	
	ST - Stream		
FLOW	Water flow		
	S - Slow	M - Medium	
	F - Fast		
COMMENTS	Additional comment about sample		

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Appendix A - Water Geochemical data

MAP	SAMPLE	STN	UTMZ	UTME	UTMN	TYPE	FLOW	COMMENT	Ag	Al	Alk	As	Ba	Be	Bi
									ppb	ppb	ppm	ppb	ppb	ppb	ppb
94F/13	943002	0	10	334700	6428120	SP	S	Bear area spring.	-0.01	4	0.3	0.2	24.69	-0.1	-0.01
94F/13	943003	0	10	334610	6428090	SP	S	Bear area spring.	-0.01	66	1	-0.1	89.3	-0.1	-0.01
94F/13	943005	0	10	334730	6427828	SP	M	Bear area spring.	-0.01	340	1	-0.1	56.76	-0.1	-0.01
94F/13	943006	0	10	334730	6427830	SP	M	Bear area spring.	-0.01	745	1	-0.1	164.98	-0.1	-0.01
94F/13	943007	1	10	334540	6428030	SE	S	Bear area. Water from sample pit.	-0.01	462	1	0.1	17.88	-0.1	-0.01
94F/13	943008	0	10	334540	6428030	ST	M	Bear area stream.	-0.01	772	NM	0.1	109.28	-0.1	-0.01
94F/13	943009	0	10	334600	6428050	SE	S	Bear area. Water from pit drainage.	0.01	7	3	-0.1	14.69	-0.1	-0.01
94F/13	943010	0	10	337930	6429610	ST	M	Red area. Stream 0.5 m wide.	-0.01	2	19	0.7	13.77	-0.1	-0.01
94F/13	943011	0	10	337950	6429690	ST	M	Red area. Stream 0.5 m wide.	0.01	1	17	0.8	12.25	-0.1	-0.01
94F/13	943012	0	10	338100	6429710	ST	M	Red area. Stream 0.5 m wide.	-0.01	28	18	0.7	17.72	-0.1	-0.01
94F/13	943013	0	10	337930	6429730	ST	M	Red area. Stream 0.2 m wide.	-0.01	6	2	0.1	336.1	-0.1	-0.01
94F/13	943014	0	10	334850	6428100	SE	S	Red area. Seepage.	-0.01	16	1	-0.1	90.82	-0.1	0.02
94F/13	943015	0	10	334885	6428150	ST	M	Red area. Stream 2 m wide.	0.03	97	1	-0.1	76.78	-0.1	0.03
94F/13	943016	0	10	335000	6428050	SP	M	Bear area spring.	0.01	10	6	0.2	13.94	-0.1	-0.01
94F/13	943017	0	10	335150	6428050	SP	M	Bear area spring.	0.01	125	1	-0.1	92.81	-0.1	-0.01
94F/13	943018	0	10	335250	6428050	SP	M	Bear area spring.	0.01	126	1	-0.1	87.48	-0.1	-0.01
94F/13	943022	0	10	335280	6428000	ST	F	Bear area. Stream 2 m wide.	-0.01	30	NM	-0.1	209.87	-0.1	-0.01
94F/13	943023	0	10	335580	6427630	ST	M	Bear area. Stream 0.2 m wide	-0.01	284	2	-0.1	25.82	-0.1	-0.01
94F/13	943024	0	10	334750	6428160	SP	M	Bear area spring.	0.01	1178	1	-0.1	116.86	-0.1	-0.01
94F/13	943025	2	10	334680	6427980	SE	S	Bear area. 943007 duplicate.	-0.01	500	60	0.1	24.03	-0.1	-0.01
94F/13	943026	0	10	334825	6427950	SP	M	Bear area spring.	0.01	878	NM	-0.1	82.47	-0.1	-0.01
94F/13	943027	0	10	334840	6427910	SE	M	Bear area seepage.	-0.01	205	1	-0.1	100.46	-0.1	-0.01
94F/13	943028	0	10	334910	6427950	SP	M	Bear area spring.	0.01	158	2	-0.1	144.01	-0.1	-0.01
94F/13	943029	0	10	334830	6427730	SP	S	Bear area spring.	-0.01	51	1	-0.1	489.51	-0.1	-0.01
94F/13	943030	0	10	334850	6427620	SE	M	Bear area seepage.	0.01	39	1	-0.1	51.52	-0.1	-0.01
94F/13	943031	0	10	334970	6427430	ST	M	Bear area. Stream 2m wide.	-0.01	96	2	-0.1	178.38	-0.1	-0.01
94F/13	943032	1	10	335060	6427180	SE	S	Bear area seepage.	0.01	1398	1	0.1	47.65	-0.1	-0.01
94F/13	943033	0	10	335055	6427185	ST	M	Bear area. Stream 2m wide.	-0.01	134	1	-0.1	138.91	-0.1	-0.01
94K/4	943042	0	10	323380	6446820	SE	S	Saint Creek area. Sample from pool.	-0.01	3	14	1.4	19.29	-0.1	-0.01
94K/4	943043	0	10	323420	6446790	SE	S	Saint Creek area.	-0.01	4	3	-0.1	15.19	-0.1	-0.01
94K/4	943044	0	10	323470	6446710	SP	M	Saint Creek area. Pool overflow.	-0.01	8	5	1.1	11.57	-0.1	-0.01
94K/4	943045	0	10	323495	6446630	SP	M	Saint Creek area spring.	0.01	7	14	0.3	7.94	-0.1	-0.01
94K/4	943046	0	10	323540	6446570	SP	M	Saint Creek area spring.	-0.01	30	3	2.4	7.76	-0.1	-0.01
94K/4	943047	0	10	323570	6446470	SE	S	Saint Creek area seepage.	0.01	4	5	1.1	8.5	-0.1	-0.01
94K/4	943048	1	10	323320	6446900	SP	M	Saint Creek area spring.	-0.01	6	5	-0.1	14.45	-0.1	-0.01
94K/4	943049	2	10	323320	6446900	SP	M	Saint Creek area. 943048 duplicate.	0.01	82	7	-0.1	18.45	-0.1	-0.01
94K/4	943050	0	10	323560	6446455	SP	M	Saint Creek area spring.	0.02	-1	7	0.3	35.78	-0.1	-0.01
94K/4	943051	0	10	324380	6445800	ST	M	Saint Creek area. Stream 0.2 m wide.	-0.01	9	2	-0.1	17.53	-0.1	-0.01
94K/4	943052	0	10	324460	6445690	ST	M	Saint Creek area. Stream 0.2 m wide.	-0.01	29	NM	-0.1	17.35	-0.1	-0.01
94K/4	943053	0	10	324390	6445680	SP	M	Saint Creek area spring.	-0.01	361	20	-0.1	26.55	-0.1	-0.01
94K/4	943054	0	10	324270	6445760	ST	M	Saint Creek area. Stream 1.0 m wide.	-0.01	173	2	-0.1	83.33	-0.1	-0.01
94K/4	943055	0	10	324160	6445740	SP	M	Saint Creek area spring.	-0.01	6	3	-0.1	31.69	-0.1	-0.01
94K/4	943056	0	10	324120	6445743	SP	M	Saint Creek area spring.	-0.01	9	6	0.3	11.89	-0.1	-0.01
94K/4	943057	0	10	324050	6445950	ST	M	Saint Creek area. Stream 1.0 m wide.	-0.01	19	1	-0.1	25.34	-0.1	-0.01
94K/4	943062	0	10	328700	6440880	SE	S	Driftpile area seepage.	-0.01	12	2	0.1	41.17	-0.1	0.02
94K/4	943063	0	10	328700	6440880	SE	S	Driftpile area seepage.	0.02	1697	0	0.1	42.63	-0.1	0.09
94K/4	943064	0	10	328840	6440950	ST	M	Driftpile area. Stream 1.0 m wide.	0.01	28	1	0.3	64.49	-0.1	0.03
94K/4	943065	0	10	328840	6440920	ST	M	Driftpile area. Stream 1.0 m wide.	-0.01	24	2	0.1	93.58	-0.1	0.02
94K/4	943066	0	10	329050	6440670	ST	M	Driftpile area. Stream 1.0 m wide.	-0.01	36	2	0.1	155.31	-0.1	0.05
94F/13	943067	0	10	337810	6429800	SP	S	Spar (Red Gossan) area spring.	-0.01	8	6	0.2	14.41	-0.1	0.04
94F/13	943068	0	10	337770	6429810	SP	M	Spar (Red Gossan) area spring.	0.01	13	5	0.1	13.65	-0.1	0.02
94F/13	943069	0	10	337705	6429800	SP	S	Spar (Red Gossan) area spring.	-0.01	10	8	5.7	11.71	-0.1	-0.01
94F/13	943070	0	10	337655	6429805	SP	S	Spar (Red Gossan) area spring.	-0.01	7	8	21.3	10.24	-0.1	-0.01
94F/13	943071	0	10	337645	6429810	SP	M	Spar (Red Gossan) area spring.	-0.01	3	9	10.9	10.93	-0.1	-0.01
94K/4	943072	0	10	333380	6430380	SE	S	North Bear area seepage.	0.01	71	1	0.2	13.29	-0.1	-0.01
94K/4	943073	0	10	333320	6430630	SE	S	North Bear area seepage.	0.01	1110	1	0.1	19.03	-0.1	0.03
94K/4	943074	0	10	333980	6430830	SE	S	North Bear area seepage.	-0.01	13	3	0.2	32.55	-0.1	0.03
94K/4	943076	0	10	334140	6429950	ST	M	North Bear area. Stream 0.3 m wide.	0.01	16	1	-0.1	22.42	-0.1	0.08
94K/4	943077	0	10	334005	6430120	ST	M	North Bear area. Stream 1.0 m wide.	-0.01	11	2	0.1	49.08	-0.1	0.06
94K/4	943078	0	10	333998	6430120	SE	S	North Bear area seepage.	0.01	1000	2	0.3	41.66	-0.1	0.07
94K/4	943079	0	10	333890	6430490	SP	M	North Bear area spring.	-0.01	10	4	4.4	21.26	-0.1	0.01
94K/4	943082	1	10	333610	6430900	ST	F	North Bear area. Stream 1.0 m wide.	0.01	165	NM	0.1	37.09	-0.1	-0.01
94K/4	943083	3	10	333610	6430900	ST	F	North Bear area. Stream 1.0 m wide.	-0.01	140	NM	-0.1	32.96	-0.1	0.03
94K/4	943084	0	10	333605	6430900	ST	F	North Bear area. Stream 1.0 m wide.	-0.01	104	NM	-0.1	69.8	-0.1	0.02

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NTS MAP	SAMPLE	STN	UTMZ	UTME	UTMN	TYPE	FLOW	COMMENT	Ag	Al	Alk	As	Ba	Be	Bi
94K/4	943085	0	10	333570	6431600	ST	M	North Bear area. Stream 1.0 m wide.	-0.01	63	NM	0.1	81.68	-0.1	0.05
94K/4	943086	0	10	333905	6431530	SP	M	North Bear area spring.	0.02	4525	1	0.2	18.6	-0.1	0.07
94K/4	943087	0	10	333905	6431525	SP	M	North Bear area spring.	0.01	15	4	0.9	8.96	-0.1	0.03
94K/4	943088	0	10	333800	6431610	ST	F	North Bear area. Stream 0.5 m wide.	0.02	551	1	0.3	16.95	-0.1	-0.01
94K/4	943089	0	10	333920	6431390	SP	M	North Bear area spring.	-0.01	8	4	0.3	17.06	-0.1	-0.01
94K/4	943090	0	10	333920	6431395	SP	S	North Bear area spring.	-0.01	258	2	0.1	42.58	-0.1	0.01
94K/4	943091	0	10	333592	6431390	SP	M	North Bear area spring.	0.01	4332	1	0.2	11.92	-0.1	-0.01
94K/4	943092	0	10	333595	6431395	ST	F	North Bear area. Stream 1.0 m wide.	-0.01	1491	1	0.1	24.67	-0.1	-0.01
94K/4	943093	0	10	333050	6431350	ST	F	North Bear area. Stream 2.0 m wide.	0.01	531	1	-0.1	33.72	-0.1	-0.01
94K/4	943094	0	10	333230	6431850	ST	F	North Bear area. Stream 1.0 m wide.	0.01	773	1	0.2	42.58	-0.1	-0.01
94K/4	943095	0	10	333340	6432180	SP	M	North Bear area spring.	-0.01	36	3	1.3	11.96	-0.1	0.01
94K/4	943097	0	10	332800	6431770	SP	M	North Bear area spring.	-0.01	11	5	0.9	49.09	-0.1	0.05
94K/4	943098	0	10	332800	6438100	SP	M	Driftpile-Crude creek area spring.	0.01	32	5	1.2	11.13	-0.1	0.01
94K/4	943099	0	10	332960	6438100	SP	S	Driftpile-Crude creek area spring.	0.01	6	9	3.8	12.98	-0.1	0.02
94K/4	943102	0	10	332680	6438220	ST	M	Driftpile-Crude creek area. Pond overflow.	0.01	10	18	1	26.64	-0.1	0.02
94K/4	943103	0	10	332460	6438230	ST	M	Driftpile-Crude creek area. Stream 0.5 m wide.	-0.01	6	3	0.1	22.44	-0.1	0.02
94K/4	943104	0	10	332460	6438340	ST	F	Driftpile-Crude creek area. Stream 2.0 m wide.	-0.01	36	3	0.1	35.79	-0.1	-0.01
94K/4	943105	0	10	328000	6439560	ST	F	Driftpile-Crude Creek area. Stream 1.0 m wide.	0.01	19	7	0.1	130.98	-0.1	0.04
94K/4	943106	0	10	327890	6439560	ST	M	Driftpile-Crude Creek area. Stream 0.3 m wide.	0.01	5	8	0.1	172.79	-0.1	0.01
94K/4	943107	1	10	327850	6439480	SP	M	Driftpile-Crude Creek area. Stream 1.0 m wide.	-0.01	4	7	0.1	154.69	-0.1	-0.01
94K/4	943108	2	10	327850	6439780	SP	M	Driftpile-Crude Creek area 943107 duplicate.	0.01	3	7	0.2	147.89	-0.1	-0.01
94K/4	943109	0	10	328500	6439920	ST	M	Driftpile-Crude Creek area. Stream 2.0 m wide.	-0.01	61	5	0.2	53.47	-0.1	0.02
94K/4	943110	0	10	328220	6440500	ST	M	Driftpile-Crude Creek area. Stream 0.2 m wide.	-0.01	20	1	0.1	214.1	-0.1	0.04
94K/4	943111	1	10	328110	6443980	SP	F	Drill hole water. Driftpile area	0.01	8	13	-0.1	423.23	-0.1	-0.01

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Appendix A - Water Geochemical data

SAMPLE	Br	Ca	Cd	Ce	Co	Cond.	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge	Hf	Ho	I	In	K
	ppb	ppb	ppb	ppb	ppb	uS	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
943002	-10	38633	1.09	0.01	15.04	210	0.5	0.4	1.11	-0.01	-0.01	0.03	2700	0.14	-0.01	0.03	-0.01	-0.01	-0.2	-0.01	1055
943003	-10	5610	0.08	0.02	0.21	30	0.4	-0.01	0.64	0.04	-0.01	0.06	36	-0.01	0.06	0.01	-0.01	-0.01	-0.2	-0.01	252
943005	-10	12920	0.13	0.01	3.7	30	0.3	0.02	1.86	0.08	0.03	0.04	3159	0.04	0.05	-0.01	-0.01	0.03	-0.2	-0.01	734
943006	-10	3318	0.26	0.03	2.38	40	0.2	0.01	5.54	0.08	0.05	0.13	29	0.02	0.08	-0.01	-0.01	0.02	-0.2	-0.01	304
943007	-10	14882	0.52	0.01	13.8	95	0.3	0.16	0.68	0.23	0.12	0.05	10091	0.02	0.3	0.1	0.01	0.07	-0.2	-0.01	821
943008	-10	1988	0.38	0.08	3.66	120	-0.1	0.06	8.08	0.11	0.05	0.1	49	-0.01	0.13	0.07	0.01	0.02	-0.2	-0.01	216
943009	-10	31584	12.45	0.01	12.69	20	0.2	0.87	1.44	-0.01	-0.01	-0.01	9245	0.23	-0.01	0.03	0.03	-0.01	-0.2	-0.01	1708
943010	-10	216760	6.2	-0.01	17.87	750	0.3	0.44	0.38	-0.01	-0.01	0.02	295	0.05	-0.01	0.11	-0.01	-0.01	-0.2	-0.01	2954
943011	-10	213411	5.19	0.01	18.76	620	0.4	0.41	0.28	-0.01	-0.01	-0.01	269	0.06	-0.01	0.09	-0.01	-0.01	-0.2	-0.01	3209
943012	-10	191219	3.24	0.09	13.93	61	0.3	0.41	0.6	0.03	0.02	0.02	310	0.1	0.04	0.05	-0.01	-0.01	-0.2	-0.01	2886
943013	-10	8873	0.88	0.01	0.15	30	0.2	-0.01	0.57	-0.01	-0.01	0.19	24	-0.01	-0.01	-0.01	0.02	-0.01	-0.2	-0.01	587
943014	-10	21749	2.58	-0.01	0.49	100	0.2	0.22	0.44	-0.01	-0.01	0.07	29	-0.01	-0.01	0.04	0.01	-0.01	-0.2	-0.01	753
943015	-10	15119	8.54	0.05	1.94	90	-0.1	0.24	1.13	0.03	-0.01	0.06	36	0.02	0.03	0.07	-0.01	-0.01	-0.2	-0.01	693
943016	-10	78235	0.08	0.02	5.08	200	0.2	0.45	0.49	-0.01	-0.01	-0.01	3328	0.15	-0.01	0.07	0.03	-0.01	-0.2	-0.01	1902
943017	-10	11350	6.24	0.03	1.21	60	0.2	0.27	0.81	-0.01	-0.01	0.05	58	0.01	0.03	-0.01	-0.01	-0.01	-0.2	-0.01	675
943018	-10	6664	3.69	0.06	0.96	30	0.1	0.15	0.86	0.02	-0.01	0.07	29	-0.01	0.04	0.01	-0.01	-0.01	-0.2	-0.01	546
943022	-10	5716	1.44	0.01	0.58	30	0.2	0.06	0.37	-0.01	-0.01	0.13	16	-0.01	-0.01	-0.01	-0.01	-0.01	-0.2	-0.01	356
943023	-10	20041	3.35	0.23	3.84	100	0.2	0.06	8.89	0.37	0.11	0.11	21	0.02	0.53	0.04	-0.01	0.06	-0.2	-0.01	625
943024	-10	4694	0.55	0.07	5.16	70	-0.1	0.11	3.04	0.16	0.04	0.12	518	0.02	0.2	0.02	0.01	0.03	-0.2	-0.01	769
943025	-10	13075	0.42	0.01	13.35	120	0.2	0.17	1.28	0.32	0.14	0.06	9258	0.08	0.32	0.08	-0.01	0.08	-0.2	-0.01	921
943026	-10	7411	0.21	0.02	5.47	60	0.2	0.06	2.57	0.06	0.03	0.08	39	0.04	0.05	0.01	-0.01	0.02	-0.2	-0.01	421
943027	-10	5440	0.1	0.02	3.18	40	0.2	-0.01	0.84	0.02	-0.01	0.06	234	-0.01	0.04	0.02	-0.01	-0.01	-0.2	-0.01	318
943028	-10	5458	0.19	0.03	1.23	30	-0.1	0.02	0.98	0.02	0.01	0.09	26	0.02	0.05	0.02	-0.01	-0.01	-0.2	-0.01	246
943029	-10	6675	0.32	0.05	0.13	30	0.2	-0.01	0.81	0.02	0.01	0.33	25	0.02	0.02	0.04	-0.01	-0.01	-0.2	-0.01	249
943030	-10	12715	0.02	-0.01	1.28	80	-0.1	0.03	0.35	-0.01	-0.01	0.04	101	-0.01	-0.01	-0.01	0.02	-0.01	-0.2	-0.01	773
943031	-10	8161	0.32	0.03	0.67	30	-0.1	0.01	1.54	0.02	-0.01	0.11	39	0.01	0.02	-0.01	-0.01	-0.01	-0.2	-0.01	295
943032	-10	21066	9.83	0.63	5.39	220	-0.1	1.07	4.06	0.37	0.14	0.19	474	0.07	0.45	0.03	-0.01	0.07	-0.2	-0.01	1248
943033	-10	7303	0.62	0.03	0.56	40	0.2	0.06	1.11	0.04	0.01	0.09	89	-0.01	0.04	0.02	0.01	-0.01	-0.2	-0.01	364
943042	-10	145997	11.24	0.05	13.29	610	0.1	0.3	0.59	0.07	0.03	0.04	2300	0.09	0.05	0.06	0.01	0.02	-0.2	-0.01	1290
943043	-10	47042	11.9	-0.01	0.22	210	0.1	0.05	0.7	-0.01	-0.01	-0.01	80	-0.01	-0.01	0.07	0.02	-0.01	-0.2	-0.01	743
943044	-10	96231	13.01	0.13	17.75	380	0.3	0.21	0.62	0.11	0.06	0.03	5764	0.14	0.08	0.1	-0.01	0.03	-0.2	-0.01	1152
943045	-10	108589	3.49	0.02	16.58	610	0.2	0.21	0.64	-0.01	-0.01	-0.01	6273	0.12	0.02	0.08	0.03	-0.01	-0.2	-0.01	1221
943046	-10	166218	7.23	0.19	30.08	210	0.3	0.39	0.56	0.27	0.12	0.04	13008	0.25	0.28	0.16	-0.01	0.07	-0.2	-0.01	1520
943047	-10	175958	6.04	0.05	34.93	380	0.4	0.44	0.51	0.07	0.02	0.02	7970	0.22	0.06	0.2	0.02	0.02	-0.2	-0.01	1602
943048	-10	133723	36.23	-0.01	0.66	450	0.4	0.08	1.57	-0.01	-0.01	0.02	217	0.03	-0.01	0.11	-0.01	-0.01	-0.2	-0.01	1418
943049	-10	123592	38.74	0.03	0.68	630	0.4	0.06	1.42	0.03	0.02	0.02	182	0.02	0.04	0.04	-0.01	-0.01	-0.2	-0.01	1504
943050	-10	419332	18.58	-0.01	29.48	700	1.1	0.92	1.14	-0.01	-0.01	0.03	704	0.12	-0.01	0.22	-0.01	-0.01	0.3	-0.01	2636
943051	-10	23034	1.52	0.01	0.81	570	0.7	0.03	0.09	-0.01	-0.01	-0.01	33	0.02	-0.01	0.06	0.03	-0.01	-0.2	-0.01	319
943052	-10	21814	1.3	-0.01	0.76	310	0.5	0.01	0.57	-0.01	-0.01	-0.01	49	0.06	-0.01	0.02	0.01	-0.01	-0.2	-0.01	323
943053	-10	38880	12.9	0.03	10.19	910	0.4	0.17	3.25	-0.01	-0.01	0.02	56	0.14	0.02	0.05	0.01	-0.01	-0.2	-0.01	887
943054	-10	15747	1.91	0.07	3.06	130	0.3	0.04	3.29	0.04	0.01	0.05	75	0.03	0.05	0.02	0.03	-0.01	-0.2	-0.01	196
943055	-10	49705	12.56	0.01	0.24	260	0.3	0.14	0.94	-0.01	-0.01	0.02	66	0.03	-0.01	0.02	0.01	-0.01	-0.2	-0.01	689
943056	-10	121139	11.53	0.03	48.61	400	0.3	0.47	1.09	0.07	0.04	0.02	10162	0.33	0.06	0.12	-0.01	0.02	0.3	-0.01	1369
943057	-10	50245	10.62	0.01	2.57	80	0.2	0.08	0.64	-0.01	-0.01	0.02	76	0.03	-0.01	0.04	0.02	-0.01	-0.2	-0.01	647
943062	-10	63900	13.12	0.01	11.7	310	0.4	2.38	3.41	-0.01	-0.01	0.02	3885	0.75	-0.01	0.04	0.03	-0.01	3.3	0.01	1505
943063	-10	70763	41.28	0.6	12.37	670	0.8	2.22	6.76	0.43	0.17	0.1	573	0.88	0.52	0.04	0.02	0.08	1.3	-0.01	1585
943064	-10	25470	0.76	0.04	0.25	80	0.4	0.64	0.79	-0.01	-0.01	0.05	160	0.02	-0.01	-0.01	0.02	-0.01	1.2	-0.01	613
943065	-10	21620	0.95	0.03	0.18	70	0.6	0.28	0.8	-0.01	-0.01	0.06	90	0.02	-0.01	0.04	0.02	-0.01	0.8	-0.01	474
943066	-10	25913	0.42	0.06	0.33	30	0.8	0.07	0.85	0.02	-0.01	0.08	124	0.02	0.02	0.02	-0.01	-0.01	0.8	-0.01	478
943067	-10	124554	91.26	0.01	0.94	500	0.5	0.59	1.38	-0.01	-0.01	0.02	191	0.03	-0.01	0.04	-0.01	-0.01	0.6	0.01	2285
943068	-10	137968	46.34	0.02	3.28	440	0.5	0.69	2.1	-0.01	-0.01	-0.01	252	0.07	-0.01	0.09	0.01	-0.01	0.4	-0.01	2262
943069	-10	139660	9.49	0.01	15.35	550	0.6	0.79	0.59	-0.01	-0.01	-0.01	5532	0.05	-0.01	0.11	0.05	-0.01	1.1	-0.01	2239
943070	-10	165601	8.5	0.02	18.3	500	0.5	0.82	0.61	0.06	0.04	-0.01	8265	0.09	0.04	0.08	-0.01	0.02	1.1	-0.01	2558
943071	-10	148410	9.77	0.01	18.5	480	0.6	0.77	0.71	0.03	0.02	-0.01	3451	0.08	-0.01	0.05	0.02	-0.01	1	-0.01	2430
943072	-10	60517	0.16	0.13	3.79	230	0.5	0.07	0.39	0.14	0.05	0.09	882	0.02	0.17	0.04	0.04	0.04	0.2	-0.01	596
943073	-10	63361	3.64	0.55	5.57	290	0.5	0.06	3.27	1.91	0.57	0.38	139	0.07	2.4	0.08	0.08	0.34	-0.2	-0.01	575
943074	-10	32044	0.02	0.02	1.15	120	0.2	0.14	0.25	-0.01	-0.01	0.02	579	0.02	-0.01	0.03	0.02	-0.01	0.2	-0.01	362
943076	-10	12069	0.77	0.01	0.3	70	0.4	0.08	0.63	-0.01	-0.01	0.02	54	0.01	0.02	0.02	-0.01	-0.01	-0.2	-0.01	266
943077	-10	12786	0.7	0.02	0.12	80	0.5	0.02	0.78	-0.01	-0.01	0.02	21	-0.01	-0.01	0.06	-0.01	-0.01	-0.2	-0.01	174
943078	-10	25760	1.54	0.26	4.88	80	0.7	0.04	10.67	0.52	0.16	0.14	214	0.11	0.56	0.02	0.02	0.12	-0.2	-0.01	498
943079	-10	31488	0.94	0.02	3.16	170															

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Appendix A - Water Geochemical data

SAMPLE	Br	Ca	Cd	Ce	Co	Cond.	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge	Hf	Ho	I	In	K
943085	-10	28916	0.82	0.03	17.57	80	0.7	0.04	2.34	0.07	0.02	0.07	1002	0.27	0.09	0.01	-0.01	0.02	-0.2	-0.01	328
943086	-10	96523	6.13	1.01	148.38	470	0.6	0.42	31.21	2.33	0.68	0.73	210	0.59	3.43	0.14	0.04	0.43	-0.2	-0.01	771
943087	-10	154732	0.66	0.02	162.48	720	0.5	0.34	0.72	-0.01	-0.01	-0.01	35454	0.29	-0.01	0.23	-0.01	-0.01	0.2	-0.01	996
943088	-10	100831	4.2	0.49	123.17	450	0.4	0.29	12.82	1.1	0.35	0.33	5427	0.57	1.64	0.21	0.02	0.2	-0.2	-0.01	782
943089	-10	42757	0.02	0.02	2.16	210	0.3	0.26	0.33	-0.01	-0.01	0.02	1501	0.07	-0.01	0.03	-0.01	-0.01	-0.2	-0.01	316
943090	-10	26396	0.57	0.13	2.73	130	0.4	0.1	1.97	0.18	0.06	0.09	102	0.06	0.22	-0.01	0.01	0.03	-0.2	-0.01	328
943091	-10	86744	3.72	4	64.12	420	0.6	0.18	22.27	5.26	1.54	1.67	176	0.35	7.13	0.12	0.06	0.89	-0.2	-0.01	616
943092	-10	46950	1.86	1.23	21.94	270	0.7	0.04	5.81	1.65	0.49	0.43	92	0.13	2.13	0.06	0.03	0.33	-0.2	-0.01	380
943093	-10	14737	1.82	0.24	5.02	80	0.5	0.02	6.82	0.33	0.12	0.07	79	0.04	0.3	0.04	-0.01	0.06	-0.2	-0.01	274
943094	-10	25884	1.73	0.59	11.99	170	0.4	0.02	5.04	0.91	0.28	0.24	88	0.08	1.12	0.09	0.03	0.15	-0.2	-0.01	372
943095	-10	44771	0.48	0.15	23.1	270	0.6	0.33	0.52	0.34	0.13	0.08	18144	0.12	0.34	0.1	0.05	0.08	-0.2	-0.01	632
943097	-10	62700	0.1	0.01	11.83	270	0.3	0.07	0.5	-0.01	-0.01	0.03	7487	0.12	-0.01	0.05	0.01	-0.01	-0.2	-0.01	785
943098	-10	149242	7.52	0.23	36.54	570	0.4	0.26	1.26	0.09	0.06	0.02	25294	0.19	0.09	0.16	0.01	0.03	-0.2	-0.01	1877
943099	-10	170285	0.38	0.02	7.71	510	0.5	0.15	0.57	0.02	0.03	-0.01	4859	0.06	0.02	0.13	0.03	-0.01	-0.2	-0.01	1833
943102	-10	158955	0.05	0.03	4.65	710	0.2	0.13	0.41	0.02	-0.01	0.02	836	0.04	-0.01	0.04	-0.01	-0.01	-0.2	-0.01	821
943103	-10	40508	0.63	0.01	9.32	230	0.6	0.04	0.51	-0.01	-0.01	-0.01	1415	0.12	-0.01	0.04	-0.01	-0.01	-0.2	-0.01	581
943104	-10	94641	16.77	0.12	23.29	470	0.7	0.01	1.65	-0.01	-0.01	0.03	434	0.13	-0.01	0.1	0.01	-0.01	-0.2	-0.01	553
943105	-10	35737	1.16	0.03	0.3	280	0.5	0.02	1.43	-0.01	-0.01	0.08	103	-0.01	-0.01	0.04	-0.01	-0.01	-0.2	-0.01	268
943106	-10	43128	1.7	0.01	0.26	330	0.3	-0.01	0.9	-0.01	-0.01	0.11	66	-0.01	-0.01	0.01	-0.01	-0.01	-0.2	-0.01	258
943107	-10	57124	11.98	-0.01	0.29	280	0.6	0.01	1.05	-0.01	-0.01	0.09	85	0.03	-0.01	-0.01	0.02	-0.01	-0.2	-0.01	381
943108	-10	55343	13.37	-0.01	0.24	280	0.5	0.02	1.52	-0.01	-0.01	0.08	81	-0.01	-0.01	0.04	-0.01	-0.01	-0.2	-0.01	400
943109	-10	78499	5.18	0.06	7.83	410	0.5	0.01	1.1	-0.01	-0.01	0.04	125	0.09	-0.01	-0.01	0.01	-0.01	-0.2	-0.01	457
943110	-10	12223	0.59	0.03	0.17	10	0.2	0.02	1.12	-0.01	-0.01	0.15	59	-0.01	0.02	0.04	-0.01	-0.01	-0.2	0.01	253
943111	54	6585	0.01	0.01	0.12	480	-0.1	5.37	0.64	-0.01	-0.01	0.27	43	0.01	-0.01	1.01	0.01	-0.01	16.1	-0.01	462

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Appendix A - Water Geochemical data

SAMPLE	La	Li	Lu	Mg	Mn	Mo	Na	Nb	Nd	Ni	DO	Os	Pb	Pd	pH	F	Pr	Rb	Re	Ru	Sb
	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppb		ppb	ppb	ppb	ppb	ppb	ppb
943002	0.03	11.1	-0.01	6313	521.5	0.2	210	0.02	0.01	75.23	1.3	-0.01	0.75	-0.1	7.23	160	0.01	2.02	-0.01	-0.1	-0.1
943003	0.01	7.8	-0.01	957	5.7	-0.1	147	-0.01	0.05	10.23	7.7	-0.01	0.06	-0.1	7.33	40	0.01	0.36	-0.01	-0.1	-0.1
943005	0.01	0.2	0.01	1812	96.9	-0.1	160	0.02	0.03	36.47	4.7	-0.01	0.14	-0.1	4.31	280	0.01	1.21	-0.01	-0.1	-0.1
943006	0.03	0.4	0.01	541	28.8	-0.1	170	-0.01	0.11	29.9	6.8	-0.01	0.12	-0.1	4.2	110	0.02	0.64	-0.01	-0.1	-0.1
943007	0.01	15.6	0.02	3625	210.7	-0.1	229	-0.01	0.06	105.21	1.4	-0.01	0.04	-0.1	4.97	680	0.01	1.37	-0.01	-0.1	-0.1
943008	0.04	4.8	0.01	807	32.7	-0.1	140	0.02	0.13	26.18	NM	-0.01	0.07	-0.1	4.79	80	0.02	0.58	-0.01	-0.1	-0.1
943009	-0.01	5.2	-0.01	3146	716.7	0.2	220	-0.01	-0.01	114.05	7.4	-0.01	0.05	0.1	6.14	420	-0.01	6.12	-0.01	-0.1	-0.1
943010	-0.01	13	-0.01	25450	305.7	3.2	1149	0.02	-0.01	466.46	0	-0.01	-0.01	-0.1	6.81	310	-0.01	4.81	0.02	-0.1	0.1
943011	0.01	9.4	-0.01	25150	291.8	7.2	1020	-0.01	-0.01	418.87	10.2	-0.01	-0.01	-0.1	7.4	280	-0.01	5.41	0.01	-0.1	0.1
943012	0.05	12.7	-0.01	25150	231	7.6	1410	-0.01	0.06	385.52	9.6	-0.01	0.03	-0.1	8	240	0.02	5.45	0.01	-0.1	0.1
943013	0.03	0.6	-0.01	1192	1.6	0.4	330	-0.01	0.02	17.24	7.6	-0.01	-0.01	-0.1	8.59	40	-0.01	0.72	-0.01	-0.1	0.1
943014	0.01	4.9	-0.01	2340	0.9	0.1	148	0.02	-0.01	36.32	7	-0.01	192.31	-0.1	6.91	100	-0.01	2.59	-0.01	-0.1	0.1
943015	0.04	4.1	-0.01	1987	79.7	0.1	154	0.02	0.06	41.77	7.4	-0.01	392.07	-0.1	4.27	90	0.01	2.45	-0.01	-0.1	0.1
943016	0.01	3.8	-0.01	4175	652.1	0.1	217	0.02	0.02	39.79	0.7	-0.01	1.37	-0.1	6.81	520	0.01	4.68	-0.01	-0.1	-0.1
943017	0.03	1.3	-0.01	1130	58	-0.1	141	-0.01	0.05	22.55	7.4	-0.01	196.07	-0.1	4.7	80	0.01	2.31	-0.01	-0.1	-0.1
943018	0.04	1.1	-0.01	879	42.9	-0.1	121	-0.01	0.08	16.3	7.2	-0.01	93.8	-0.1	4.65	70	0.02	1.93	-0.01	-0.1	-0.1
943022	0.02	0.4	-0.01	701	23.1	0.1	145	-0.01	0.02	15.05	NM	-0.01	26.77	-0.1	6.4	70	-0.01	0.81	-0.01	-0.1	-0.1
943023	0.1	18.8	0.02	5552	65.5	-0.1	444	0.02	0.5	67.59	NM	-0.01	1.72	-0.1	5.7	180	0.06	0.93	-0.01	-0.1	-0.1
943024	0.03	7.4	0.01	1515	79.1	0.1	200	-0.01	0.16	46.27	11.7	-0.01	2.06	-0.1	4.48	150	0.01	1.05	-0.01	-0.1	-0.1
943025	-0.01	14.5	0.02	3365	210.9	-0.1	230	-0.01	0.03	99.67	11.7	-0.01	0.5	-0.1	5.55	470	-0.01	1.18	-0.01	-0.1	-0.1
943026	0.02	9.7	-0.01	1834	98.5	-0.1	136	-0.01	0.07	35.26	4.1	-0.01	0.42	-0.1	4.47	150	-0.01	0.74	-0.01	-0.1	-0.1
943027	0.02	7.6	-0.01	1494	51.1	-0.1	144	-0.01	0.06	18.61	9.1	-0.01	0.15	-0.1	5.24	80	0.01	0.57	-0.01	-0.1	-0.1
943028	0.02	5.7	-0.01	997	21.9	-0.1	117	-0.01	0.05	13.56	9.1	-0.01	0.14	-0.1	4.81	50	0.01	0.38	-0.01	-0.1	0.1
943029	0.07	1.6	-0.01	870	1.7	0.1	160	-0.01	0.04	10.3	9.1	-0.01	3.63	-0.1	5.51	40	0.01	0.49	-0.01	-0.1	0.1
943030	0.01	2.4	-0.01	2432	59.6	-0.1	234	-0.01	0.01	14.76	9.4	-0.01	0.12	-0.1	6.13	1490	-0.01	0.82	-0.01	-0.1	-0.1
943031	0.03	0.8	-0.01	1528	9.5	0.3	130	-0.01	0.02	12.73	6.1	-0.01	0.27	-0.1	6.61	130	0.01	0.46	-0.01	-0.1	0.1
943032	0.28	4.3	0.02	1627	336.1	-0.1	265	-0.01	0.89	33.38	9.4	-0.01	10.95	-0.1	3.85	140	0.17	6.07	-0.01	-0.1	-0.1
943033	0.03	0.6	-0.01	1699	16.2	0.3	140	-0.01	0.04	12.11	10.5	-0.01	0.9	-0.1	6.75	ND	0.01	0.76	-0.01	-0.1	0.1
943042	0.05	6.3	0.01	23400	315.9	2.3	2262	-0.01	0.06	314.83	0.7	-0.01	0.28	-0.1	6.84	500	0.02	1.87	-0.01	-0.1	0.8
943043	0.01	0.7	-0.01	6872	0.8	0.1	627	-0.01	0.01	94.83	8.9	-0.01	0.1	-0.1	7.5	310	-0.01	1.31	-0.01	-0.1	0.1
943044	0.08	2.2	-0.01	13050	417.5	0.9	1174	0.02	0.18	328.12	0.1	-0.01	0.41	-0.1	7.01	500	0.04	2.33	-0.01	-0.1	0.1
943045	0.01	3.7	-0.01	14150	380.2	0.3	1221	-0.01	0.02	293.12	0.7	-0.01	0.05	-0.1	6.84	690	-0.01	2.19	-0.01	-0.1	-0.1
943046	0.13	7	0.02	21750	836.9	1.1	2518	-0.01	0.29	356.74	8.9	-0.01	0.19	-0.1	7.5	900	0.07	2.25	-0.01	-0.1	0.3
943047	0.05	6.6	-0.01	26600	959.8	0.3	2948	-0.01	0.08	403.79	0.1	-0.01	0.03	-0.1	7.01	900	0.02	2.55	-0.01	-0.1	-0.1
943048	0.01	5	-0.01	33350	3	-0.1	1787	-0.01	0.02	620.83	7.1	-0.01	0.14	-0.1	7	640	-0.01	2.92	-0.01	-0.1	0.1
943049	0.02	3.2	-0.01	32950	5.6	0.1	1687	-0.01	0.02	613.63	0.5	-0.01	0.46	-0.1	6.98	620	0.01	3.16	-0.01	-0.1	0.1
943050	-0.01	17.1	-0.01	39450	714.7	10.1	6353	0.02	-0.01	728.44	0.2	-0.01	-0.01	0.1	6.99	470	-0.01	3.67	0.02	-0.1	1.1
943051	-0.01	2.9	-0.01	3936	16.9	-0.1	756	-0.01	-0.01	68.4	8.9	-0.01	-0.01	-0.1	7.35	190	-0.01	0.45	-0.01	-0.1	-0.1
943052	-0.01	3.1	-0.01	4480	23.3	-0.1	824	-0.01	-0.01	63.75	NM	-0.01	0.09	-0.1	7.95	160	-0.01	0.46	-0.01	-0.1	0.1
943053	0.02	4.5	-0.01	3779	269.4	-0.1	601	-0.01	0.01	290.22	0.7	-0.01	0.07	-0.1	6.46	860	0.01	1.89	0.01	-0.1	0.1
943054	-0.03	1.4	-0.01	1870	61.4	-0.1	465	-0.01	0.1	44.74	9.4	-0.01	0.09	-0.1	6.43	80	0.02	0.34	-0.01	-0.1	-0.1
943055	-0.01	7.5	-0.01	10450	1.7	0.4	302	-0.01	0.01	128.93	10.3	-0.01	0.03	-0.1	7.95	200	-0.01	2.1	-0.01	-0.1	0.1
943056	0.03	14.9	-0.01	20650	1150.3	1.2	486	-0.01	0.05	328.56	0.1	-0.01	0.04	-0.1	6.81	420	0.01	2.92	-0.01	-0.1	-0.1
943057	0.01	4	-0.01	11350	49.5	0.7	777	-0.01	0.01	178.36	9.2	-0.01	0.05	-0.1	6.99	410	-0.01	1.23	-0.01	-0.1	-0.1
943062	0.01	4.4	-0.01	1580	2488.7	0.1	1157	-0.01	0.02	71.81	4.1	-0.01	0.43	-0.1	6.98	250	-0.01	5.65	-0.01	-0.1	-0.1
943063	0.32	5.8	0.02	1568	3699.7	0.1	1369	0.02	0.85	91.18	11.2	-0.01	7.31	0.2	3.67	390	0.2	7.42	-0.01	-0.1	-0.1
943064	0.06	2.2	-0.01	1460	14.4	0.1	889	-0.01	0.04	15.6	10.8	-0.01	0.36	-0.1	7.6	120	0.01	1.89	-0.01	-0.1	-0.1
943065	0.05	1.6	-0.01	1079	9.2	0.2	699	-0.01	0.06	10.28	10.9	-0.01	0.36	-0.1	7.56	110	0.01	1.11	-0.01	-0.1	0.1
943066	0.05	1.6	-0.01	1700	9.9	0.5	694	-0.01	0.03	11.52	9.2	-0.01	0.32	-0.1	8.31	90	0.01	0.88	0.01	-0.1	0.3
943067	0.02	9.1	-0.01	12850	2.5	1.6	694	-0.01	0.02	320.86	5.4	-0.01	0.16	-0.1	6.91	400	0.01	5.02	-0.01	-0.1	0.6
943068	0.02	8.5	-0.01	12150	49.2	0.9	670	-0.01	0.02	264.67	8	-0.01	0.07	-0.1	7.26	430	-0.01	5.21	-0.01	-0.1	0.3
943069	0.01	6.6	-0.01	12650	215.7	1.2	601	-0.01	-0.01	204.26	0	-0.01	0.11	0.1	7.65	440	0.01	5.18	-0.01	-0.1	1.3
943070	0.01	9.1	0.01	13150	244.6	1.9	686	-0.01	0.02	221.68	0	-0.01	0.11	-0.1	7.4	440	0.01	5.39	-0.01	-0.1	3.2
943071	0.01	8.1	-0.01	13450	225	1.6	632	-0.01	0.02	257.64	0	-0.01	0.05	-0.1	7	450	-0.01	5.4	-0.01	-0.1	2.8
943072	0.04	31.5	0.01	11900	74.9	0.1	887	-0.01	0.14	123.54	7.8	-0.01	0.08	0.2	7.59	350	0.03	0.5	-0.01	-0.1	0.1
943073	0.43	26.4	0.07	15350	166.8	0.1	957	-0.01	1.96	143.01	9.6	-0.01	0.26	0.2	5.35	480	0.37	1.13	-0.01	-0.1	-0.1
943074	0.02	18.2	-0.01	9320	84	0.1	1356	-0.01	0.03	12.65	0	-0.01	0.14	-0.1	6.8	190	0.01	0.54	-0.01	-0.1	0.1
943076	0.01	10.1	-0.01	3634	3.2	-0.1	945	-0.01	0.02	20.08	9.4	-0.01	0.19	-0.1	7.79	170	-0.01	0.4	-0.01	-0.1	-0.1
943077	0.01	9.1	-0.01	3696	2.3	0.1	846	-0.01	0.01	25.97	9	-0.01	0.21	-0.1	6.89	210	0.01	0.28	-0.01	-0.1	0.1
943078	0.19	4.1	0.02	2925	135	0.1	427	-0.01	1.03	52.95	NM	-0.01	6.74	-0.1	4.91	190	0.17	1.01	-0.01	-0.1	0.1
943079	0.02	16.5	-0.01	10823	187.7	0.3	1436	-0.01	-0.01	44.7	0.3	-0.01	0.45								

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Appendix A - Water Geochemical data

SAMPLE	La	Li	Lu	Mg	Mn	Mo	Na	Nb	Nd	Ni	DO	Os	Pb	Pd	pH	F	Pr	Rb	Re	Ru	Sb
943085	0.05	12.9	-0.01	5728	617.9	-0.1	523	-0.01	0.15	86.62	NM	-0.01	0.29	-0.1	7.2	90	0.02	0.67	-0.01	-0.1	0.1
943086	0.38	69.5	0.1	26450	4940	0.2	1415	-0.01	3.57	596	8.3	-0.01	0.37	-0.1	4.44	420	0.53	1.95	-0.01	-0.1	-0.1
943087	0.02	70.5	-0.01	38700	4149.4	0.3	2121	-0.01	0.02	677.67	0.2	-0.01	0.14	0.1	7.17	300	0.01	1.25	-0.01	-0.1	-0.1
943088	0.21	58	0.05	26150	4000	0.1	1327	-0.01	1.58	512.45	9.9	-0.01	0.11	0.2	6.27	330	0.24	1.58	-0.01	-0.1	-0.1
943089	0.01	23.2	-0.01	8662	200	0.2	1700	-0.01	-0.01	20.06	0.3	-0.01	0.08	-0.1	6.9	230	0.01	0.4	-0.01	-0.1	-0.1
943090	0.06	20	0.01	6192	58.3	0.1	1325	-0.01	0.33	33.2	7	-0.01	1.42	-0.1	7	150	0.06	0.58	-0.01	-0.1	0.1
943091	1.17	65.6	0.23	19050	1368.4	0.1	791	-0.01	10.55	260.84	0.2	-0.01	0.79	-0.1	5.12	540	1.56	1.2	-0.01	-0.1	-0.1
943092	0.39	27.8	0.07	10150	411.8	-0.1	579	-0.01	2.84	128.53	12.1	-0.01	0.38	-0.1	5.62	440	0.46	0.67	-0.01	-0.1	-0.1
943093	0.1	2.7	0.02	1832	129.4	-0.1	166	-0.01	0.56	69.9	NM	-0.01	0.1	-0.1	5.78	190	0.09	0.58	-0.01	-0.1	-0.1
943094	0.2	13.8	0.04	5477	263.3	-0.1	344	-0.01	1.51	93.81	12.6	-0.01	0.14	-0.1	5.69	290	0.22	0.65	-0.01	-0.1	0.1
943095	0.07	18.7	0.02	10900	446.1	0.3	2656	-0.01	0.29	140.1	0.5	-0.01	0.12	0.1	6.33	250	0.05	0.65	-0.01	-0.1	-0.1
943097	0.01	6.8	-0.01	4885	373.7	1.1	188	-0.01	0.01	115.25	1	-0.01	0.1	-0.1	7.3	170	-0.01	2.25	-0.01	-0.1	-0.1
943098	0.27	5.3	-0.01	5441	546.2	1	768	-0.01	0.12	492.35	0.8	-0.01	1.86	-0.1	5.91	550	0.03	5.2	-0.01	-0.1	0.1
943099	0.02	3.9	-0.01	5898	208.6	6.8	1652	-0.01	0.02	174.73	0.4	-0.01	0.09	-0.1	7.34	370	-0.01	2.63	-0.01	-0.1	0.9
943102	0.02	5.9	-0.01	59900	69.4	7.6	3514	-0.01	0.02	47.23	18	-0.01	0.34	0.1	7.81	240	-0.01	0.42	-0.01	-0.1	0.3
943103	0.01	11.7	-0.01	12850	241.2	1	2840	-0.01	0.02	77.27	3	-0.01	0.17	-0.1	7.9	210	-0.01	0.48	-0.01	-0.1	-0.1
943104	0.16	6	-0.01	25900	362.4	1.2	1084	-0.01	0.09	335.38	3	-0.01	0.11	-0.1	7.7	210	0.03	0.72	-0.01	-0.1	0.2
943105	0.04	1.8	-0.01	9336	4.7	6.2	259	-0.01	0.03	13.58	10.4	-0.01	0.85	-0.1	8.03	70	0.01	0.22	0.01	-0.1	0.4
943106	0.02	1.5	-0.01	12350	0.9	7.1	310	-0.01	0.01	25.34	10.1	-0.01	0.18	-0.1	8.51	60	-0.01	0.15	0.03	-0.1	0.5
943107	0.01	4.7	-0.01	5984	0.4	22.2	364	-0.01	0.02	94.59	8.6	-0.01	0.15	-0.1	8.02	200	-0.01	0.34	0.1	-0.1	0.5
943108	0.02	4.6	-0.01	6161	0.9	20.5	357	-0.01	-0.01	95.72	8.6	-0.01	0.47	-0.1	8.02	190	-0.01	0.29	0.1	-0.1	0.6
943109	0.06	10.3	-0.01	22650	134.6	1.9	1641	-0.01	0.04	134.47	NM	-0.01	0.1	-0.1	8.95	200	0.01	0.43	-0.01	-0.1	0.2
943110	0.06	1	-0.01	671	3.3	0.3	451	-0.01	0.06	8.81	NM	-0.01	0.33	-0.1	6.5	50	0.01	0.24	-0.01	-0.1	0.1
943111	0.06	394.1	-0.01	8334	4.4	0.1	103650	-0.01	0.01	0.54	8.9	-0.01	0.55	-0.1	8.56	1280	0.01	0.71	-0.01	-0.1	-0.1

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Appendix A - Water Geochemical data

SAMPLE	Sc	Se	Si	Sm	Sn	SO ₄	Sr	T	Ta	Tb	Te	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
	ppb	ppb	ppb	ppb	ppb	ppm	ppb	°C	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
943002	0.3	-0.1	3700	-0.01	0.16	80	158.35	6.3	-0.01	-0.01	0.1	0.05	0.14	-0.01	0.21	-0.1	-0.01	0.02	-0.01	1451.71	-0.01
943003	0.2	-0.1	2150	0.03	0.02	15	31.63	7.5	-0.01	-0.01	0.1	0.02	0.02	-0.01	0.05	-0.1	-0.01	0.13	0.01	37.08	-0.01
943005	0.3	3.6	3700	-0.01	0.05	54	23.55	2.6	-0.01	-0.01	0.2	0.06	0.08	-0.01	0.01	-0.1	-0.01	0.94	0.05	111.8	0.37
943006	0.2	1.5	2550	0.04	0.05	19	12.71	3.7	-0.01	0.02	-0.1	-0.01	0.04	-0.01	0.04	-0.1	-0.01	0.8	0.05	49.87	-0.01
943007	0.3	-0.1	4100	0.08	0.05	98	88.13	7.1	-0.01	0.05	-0.1	0.03	0.04	0.02	0.02	-0.1	-0.01	2.95	0.08	396.2	0.47
943008	0.2	-0.1	2350	0.08	0.05	21	15.25	7.1	-0.01	0.02	-0.1	0.04	0.04	-0.01	0.06	-0.1	-0.01	0.73	0.04	56.84	0.65
943009	0.5	-0.1	6450	-0.01	0.16	88	156.26	11.8	-0.01	-0.01	-0.1	0.48	1.18	-0.01	0.03	-0.1	-0.01	0.09	-0.01	5207.65	2.03
943010	0.6	-0.1	5200	-0.01	0.09	286	1368.4	4.2	-0.01	-0.01	-0.1	-0.01	0.39	-0.01	2.86	-0.1	-0.01	0.42	-0.01	2177.98	1.26
943011	0.5	5.9	5100	0.02	0.02	272	1333.33	5.3	-0.01	-0.01	-0.1	0.01	0.34	-0.01	1.14	-0.1	-0.01	0.39	-0.01	1731.09	0.46
943012	0.6	5	5100	0.02	0.05	273	1207.19	9.5	-0.01	-0.01	-0.1	0.04	0.45	-0.01	6.56	-0.1	-0.01	0.69	0.02	1017.23	1.47
943013	0.2	-0.1	2300	-0.01	0.02	8.7	69.45	3.2	-0.01	-0.01	-0.1	-0.01	0.04	-0.01	0.15	-0.1	-0.01	0.01	-0.01	60.12	0.82
943014	0.4	-0.1	4500	-0.01	0.05	112	96.78	5	-0.01	-0.01	0.1	-0.01	1.82	-0.01	0.05	-0.1	-0.01	0.02	-0.01	994.02	1.08
943015	0.3	-0.1	3500	0.02	0.05	114	70.72	2.7	-0.01	-0.01	0.1	-0.01	2.54	-0.01	0.04	-0.1	-0.01	0.16	-0.01	1550.61	0.32
943016	0.3	-0.1	3350	-0.01	0.05	119	339.59	4.1	-0.01	-0.01	-0.1	0.04	2.73	-0.01	0.23	-0.1	-0.01	0.08	-0.01	1509.15	3.28
943017	0.3	2.8	3250	-0.01	0.02	46	50.2	4.1	-0.01	-0.01	-0.1	-0.01	1.82	-0.01	0.02	-0.1	0.01	0.09	-0.01	1028.24	-0.01
943018	0.2	-0.1	3050	-0.01	0.05	36	37.62	3.1	-0.01	-0.01	-0.1	0.02	1.02	-0.01	0.03	-0.1	-0.01	0.14	-0.01	640.67	-0.01
943022	0.2	1.4	1900	-0.01	0.02	16	41.75	NM	-0.01	-0.01	-0.1	-0.01	0.26	-0.01	0.01	-0.1	-0.01	0.06	-0.01	329.39	0.13
943023	0.4	-0.1	4750	0.25	-0.01	84	168.22	NM	-0.01	0.06	-0.1	0.02	0.04	0.02	0.01	-0.1	0.02	2.32	0.11	361.71	-0.01
943024	0.3	-0.1	3200	0.1	0.05	36	35.55	5.5	-0.01	0.03	-0.1	0.02	0.08	-0.01	0.05	-0.1	0.01	0.91	0.04	142.67	1.17
943025	0.3	-0.1	4050	0.13	-0.01	96	87.48	5.8	-0.01	0.05	-0.1	0.06	0.05	0.02	0.02	-0.1	-0.01	3.04	0.06	399.11	-0.01
943026	0.2	-0.1	2950	0.06	0.02	53	43.47	6.7	-0.01	-0.01	-0.1	0.02	0.04	-0.01	0.03	-0.1	-0.01	0.44	0.02	120.09	-0.01
943027	0.2	-0.1	2700	0.03	0.09	28	37.35	5.4	-0.01	-0.01	-0.1	0.02	0.02	-0.01	0.01	-0.1	-0.01	0.14	0.01	55.67	0.26
943028	0.2	-0.1	2200	0.04	0.02	19	31.1	4.1	-0.01	-0.01	-0.1	-0.01	0.03	-0.01	0.02	-0.1	-0.01	0.16	0.01	43.9	1
943029	0.1	1.3	1550	0.03	0.02	15	30.89	3.3	-0.01	-0.01	-0.1	-0.01	0.04	-0.01	0.02	-0.1	-0.01	0.09	-0.01	92.47	-0.01
943030	0.3	2.6	4650	-0.01	0.02	62	94.82	6.9	-0.01	-0.01	-0.1	0.04	0.06	-0.01	0.01	-0.1	-0.01	0.02	-0.01	45.59	1.41
943031	0.2	1.1	2050	0.02	0.05	12	26.93	4	-0.01	-0.01	-0.1	0.02	0.07	-0.01	0.02	0.1	0.01	0.19	-0.01	94.02	0.02
943032	0.5	2.8	6550	0.29	0.02	112	94.89	8.5	-0.01	0.07	-0.1	0.02	4.96	0.03	0.27	-0.1	-0.01	2.45	0.12	1905.96	-0.01
943033	0.2	0.7	2300	0.03	-0.01	ND	31.96	4.4	-0.01	-0.01	-0.1	0.02	0.33	-0.01	0.06	0.1	-0.01	0.27	-0.01	147.33	0.94
943042	0.4	-0.1	3050	-0.01	0.05	219	526.97	2.1	-0.01	-0.01	0.1	0.06	0.11	-0.01	14.8	-0.1	-0.01	0.89	0.04	2844.69	0.76
943043	0.2	-0.1	3200	-0.01	0.05	103	230.3	1.3	-0.01	-0.01	-0.1	0.01	-0.01	-0.01	0.14	-0.1	-0.01	0.02	-0.01	1627.87	1.66
943044	0.4	-0.1	4200	0.03	0.05	192	414.89	2.1	-0.01	0.02	-0.1	0.02	0.18	0.01	1.79	-0.1	-0.01	1.92	0.04	3093.76	0.78
943045	0.3	-0.1	3850	-0.01	0.16	243	508.41	2.1	-0.01	-0.01	-0.1	0.04	0.12	-0.01	1.15	-0.1	0.01	0.35	-0.01	2374.09	3.09
943046	0.4	3.1	5000	0.14	0.05	352	770.09	1.3	-0.01	0.04	-0.1	0.05	0.14	0.02	-0.01	-0.1	-0.01	3.62	0.12	2614.78	0.17
943047	0.4	-0.1	5200	0.02	0.05	707	907.82	2.1	-0.01	-0.01	-0.1	0.02	0.13	-0.01	3.47	-0.1	0.01	1.39	0.02	2545.93	1.26
943048	0.6	7.8	5800	-0.01	0.09	449	713.11	3.9	-0.01	-0.01	-0.1	0.01	0.03	-0.01	0.07	-0.1	-0.01	0.23	-0.01	6718.69	-0.01
943049	0.5	6.3	5700	0.02	0.05	470	666.89	2.78	-0.01	-0.01	-0.1	0.03	0.02	-0.01	0.72	-0.1	-0.01	0.79	-0.01	6362.5	0.22
943050	0.6	-0.1	2600	-0.01	-0.01	311	1914.66	2.8	-0.01	-0.01	0.8	-0.01	0.02	-0.01	-0.01	-0.1	-0.01	0.4	-0.01	6386.41	0.09
943051	0.2	-0.1	2400	-0.01	0.02	67	234.02	1.9	-0.01	-0.01	0.2	0.02	-0.01	-0.01	0.02	-0.1	-0.01	0.02	-0.01	386.03	3.39
943052	0.2	-0.1	2450	0.01	0.02	66	252.93	NM	-0.01	-0.01	-0.1	0.14	-0.01	-0.01	0.02	-0.1	0.01	0.06	-0.01	314.03	1.27
943053	0.2	4.6	2800	-0.01	0.02	206	190.75	3.3	-0.01	-0.01	-0.1	0.14	0.08	-0.01	0.09	-0.1	0.02	0.2	-0.01	2880.36	1.12
943054	0.2	-0.1	1950	0.05	-0.01	53	98.14	1.5	-0.01	-0.01	-0.1	0.04	0.02	-0.01	0.05	-0.1	0.01	0.5	0.02	378.53	3.11
943055	0.3	4	3300	-0.01	0.02	132	167.95	3.2	-0.01	-0.01	0.1	0.03	0.04	-0.01	0.05	0.1	-0.01	0.05	-0.01	1873.88	1.43
943056	0.3	-0.1	3700	0.03	0.09	286	402.72	2.7	-0.01	-0.01	-0.1	0.09	0.14	-0.01	0.41	-0.1	-0.01	1.46	0.03	3506.88	0.74
943057	0.2	-0.1	3250	0.01	0.17	158	363.11	1	-0.01	-0.01	0.1	0.07	0.06	-0.01	0.26	-0.1	-0.01	0.22	-0.01	1596.8	2.6
943062	0.7	1.3	9500	-0.01	0.17	177	415.51	7.5	-0.01	-0.01	0.1	0.09	4.16	-0.01	0.06	-0.1	0.17	0.09	-0.01	9595.89	4
943063	0.6	3.1	7800	0.34	0.39	324	258.57	8.3	-0.01	0.07	-0.1	0.09	3.3	0.03	0.75	0.1	0.19	4.27	0.15	23100	0.89
943064	0.4	-0.1	5000	-0.01	0.13	33	110.34	7.3	-0.01	-0.01	0.2	0.02	0.13	-0.01	0.03	0.1	0.08	0.1	-0.01	1250.47	1.57
943065	0.3	-0.1	4150	-0.01	0.17	28	104.46	7.2	-0.01	-0.01	-0.1	0.02	0.15	-0.01	0.04	0.1	0.08	0.07	-0.01	720.97	3.38
943066	0.3	0.9	3900	-0.01	0.17	19	105.66	6.1	-0.01	-0.01	-0.1	0.04	0.08	-0.01	0.06	0.1	0.18	0.13	0.01	437.17	0.45
943067	0.4	10.5	4300	-0.01	0.31	498	1044.19	3.5	-0.01	-0.01	-0.1	0.04	0.82	-0.01	7.18	0.1	0.1	0.18	-0.01	4062.2	0.32
943068	0.4	6.3	4000	-0.01	0.13	252	1090.77	4.1	-0.01	-0.01	0.5	0.04	0.52	-0.01	2.71	-0.1	0.18	0.26	-0.01	3277.67	1.43
943069	0.4	4.2	3850	-0.01	0.24	255	1144.36	5.1	-0.01	-0.01	0.3	0.06	0.34	-0.01	-0.01	-0.1	0.22	0.45	-0.01	2048.17	6.36
943070	0.4	-0.1	3950	0.02	0.31	263	1152.17	5.4	-0.01	-0.01	0.2	0.04	0.24	-0.01	12.54	-0.1	0.25	1.99	0.02	2115.54	0.24
943071	0.3	-0.1	3900	-0.01	0.17	266	1058.65	4.3	-0.01	-0.01	0.2	0.04	0.27	-0.01	13.83	-0.1	0.17	1.01	0.02	2031.25	1.54
943072	0.3	-0.1	3600	0.07	0.24	175	257.16	2.7	-0.01	0.03	-0.1	0.04	-0.01	0.01	0.06	-0.1	0.15	1.57	0.04	503.44	3.94
943073	0.3	-0.1	3550	1.12	0.13	219	326.25	5.2	-0.01	0.29	-0.1	0.01	0.05	0.09	0.07	-0.1	0.14	13	0.45	684.16	4.14
943074	0.4	-0.1	4000	-0.01	0.09	40	284.25	2.4	-0.01	-0.01	-0.1	0.01	-0.01	-0.01	0.04	-0.1	0.06	0.12	-0.01	130.69	0.86
943076	0.3	-0.1	3200	-0.01	0.09	37	97.17	5	-0.01	-0.01	-0.1	0.02	0.03	-0.01	0.02	-0.1	0.09	0.09	-0.01	112.72	0.21
943077	0.2	-0.1	3200	0.01	0.09	34	86.79	7.7	-0.01	-0.01	0.1	-0.01	0.02	-0.01	0.03	0.1	0.13	0.03	-0.01	157.21	-0.01
943078	0.2	-0.1	1800	0.44	0.5	67	95.31	3.4	-0.01</												

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Appendix A - Water Geochemical data

SAMPLE	Sc	Se	Si	Sm	Sn	SO ₄	Sr	T	Ta	Tb	Te	Th	Ti	Tm	U	V	W	Y	Yb	Zn	Zr
943085	0.2	-0.1	1700	0.08	0.43	80	216.92	NM	-0.01	0.02	-0.1	0.02	0.02	-0.01	0.06	-0.1	0.5	0.69	0.03	327.43	1.12
943086	0.5	-0.1	4800	2.24	0.2	560	854.11	2.1	-0.01	0.45	-0.1	0.02	0.14	0.08	0.13	-0.1	0.21	14.45	0.63	1884.78	0.81
943087	0.4	-0.1	4500	-0.01	0.2	620	1329.24	2.9	-0.01	-0.01	-0.1	0.05	0.04	-0.01	0.01	0.1	0.2	0.74	-0.01	1992.5	0.4
943088	0.3	-0.1	4050	0.84	0.24	439	926.2	8.6	-0.01	0.19	-0.1	0.01	0.1	0.04	0.04	-0.1	0.19	7.8	0.23	1532.07	1
943089	0.3	-0.1	4500	0.01	0.09	86	443.55	2.7	-0.01	-0.01	-0.1	0.02	-0.01	-0.01	0.13	-0.1	0.17	0.19	-0.01	148.4	-0.01
943090	0.3	3.9	4000	0.14	0.24	61	226.58	3.2	-0.01	0.04	-0.1	0.02	0.02	-0.01	0.11	-0.1	0.12	0.99	0.05	205.31	0.69
943091	0.5	3.1	5450	5.3	0.09	444	551.13	2.6	0.01	0.93	0.2	0.02	0.14	0.21	1	-0.1	0.12	26.8	1.45	726.98	1.04
943092	0.3	-0.1	3300	1.68	0.09	171	237.04	7.3	-0.01	0.27	-0.1	-0.01	0.05	0.07	0.24	-0.1	0.07	10.85	0.44	414.57	0.44
943093	0.1	-0.1	1100	0.22	0.21	62	55.8	4.6	-0.01	0.06	0.1	-0.01	0.05	0.02	0.22	-0.1	0.14	2.45	0.09	192.47	-0.01
943094	0.2	-0.1	2200	0.79	0.17	110	139.52	6.8	-0.01	0.14	0.2	0.04	0.03	0.03	0.16	-0.1	0.06	5.95	0.23	272.58	1.56
943095	0.6	-0.1	7350	0.12	0.09	146	433.87	3.9	-0.01	0.05	0.2	0.03	0.01	0.02	0.22	-0.1	0.12	3.48	0.1	557.44	5.56
943097	0.3	-0.1	3400	0.01	0.06	114	254.74	3.7	-0.01	-0.01	0.1	0.02	0.04	-0.01	0.15	-0.1	0.11	0.09	-0.01	685.5	0.63
943098	0.5	2.8	5950	0.04	0.28	298	661.84	NM	-0.01	-0.01	-0.1	0.01	0.28	0.01	1.7	-0.1	0.02	2.51	0.03	3211.86	0.84
943099	0.6	-0.1	6350	-0.01	0.09	194	1009.67	2.8	-0.01	-0.01	-0.1	0.02	0.07	-0.01	-0.01	0.2	0.29	1.31	0.04	737.83	3.09
943102	0.5	-0.1	4550	-0.01	0.13	256	581.42	4.5	-0.01	-0.01	0.1	0.02	0.01	-0.01	-0.01	0.1	0.24	0.39	0.02	188.51	2.24
943103	0.5	-0.1	6200	-0.01	0.13	101	509.39	NM	-0.01	-0.01	-0.1	0.01	0.03	-0.01	0.56	-0.1	0.02	0.19	-0.01	451.9	0.09
943104	0.3	-0.1	2950	-0.01	0.2	758	447.15	NM	-0.01	-0.01	0.1	0.01	0.06	-0.01	0.42	0.1	0.03	0.27	-0.01	1723.71	1.51
943105	0.2	-0.1	1950	-0.01	0.31	14	73.49	5.3	-0.01	-0.01	-0.1	-0.01	0.02	-0.01	1.02	0.3	0.02	0.13	-0.01	188.45	-0.01
943106	0.2	-0.1	1950	0.01	0.2	17	90.82	5.7	-0.01	-0.01	0.1	0.02	-0.01	-0.01	1.89	0.3	0.02	0.06	-0.01	425.49	0.37
943107	0.2	-0.1	2350	-0.01	0.2	40	180.21	4.5	-0.01	-0.01	-0.1	0.01	0.03	-0.01	3.74	0.1	-0.01	0.05	-0.01	2516.36	1.44
943108	0.2	-0.1	2450	-0.01	0.24	40	178.44	4.5	-0.01	-0.01	-0.1	-0.01	0.02	-0.01	5.33	-0.1	-0.01	0.05	-0.01	2601.91	-0.01
943109	0.3	-0.1	3400	-0.01	0.13	186	461.73	NM	-0.01	-0.01	0.2	0.01	0.03	-0.01	1.54	0.1	0.01	0.19	-0.01	558.3	0.98
943110	0.2	-0.1	2550	0.01	0.24	7	74.42	7.3	-0.01	-0.01	-0.1	0.04	0.02	-0.01	0.06	-0.1	0.03	0.08	-0.01	220.83	0.06
943111	0.3	-0.1	3450	-0.01	0.24	13	1180.45	7.6	-0.01	-0.01	-0.1	0.04	-0.01	-0.01	0.26	0.1	0.29	0.13	-0.01	23.9	0.98

Notes:

DO = Dissolved oxygen

uS = Conductivity in microseimens

NM = Not measured

ND = Not determined

APPENDIX B - SOIL SAMPLE DESCRIPTIONS AND ANALYTICAL DATA

Reference Guide to Field Observations

MAP	1:50 000 NTS Map Sheet Number
ID	Sample ID Number
UTMZ	UTM Zone
UTME	UTM East Coordinate (NAD 83)
UTMN	UTM North Coordinate (NAD 83)
STN	Replicate Sample Status : 0 - Routine Sample 1 - 1st Field Duplicate 2 - 2nd Field Duplicate
MED	Sample type: C - C soil horizon B - B soil horizon BC - BC soil horizon PPT - Iron oxide deposit
PDEPTH	Profile depth in metres
DEPTH	Sample depth in metres
STRU	Structure: Lo - Loose B - Blocky M - Massive
TEXT	Sample texture: Per cent pebbles (> 2 mm), sand (2-0.05 mm) Silt-clay (< 0.05 mm)
COL	Sample colour: R - Red G - Grey Y Yellow B Brown O - Olive D- Dark M - Medium L - Light
REMARKS	Additional comment about sample
DATE	Day/month/year

METHOD CODE 1 - INAA: 2 - Acid digestion - ICPES

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Appendix B - Soil Geochemical data

MAP	ID	UTMZ	UTME	UTMN	STN	MED	PDEPTH	DEPTH	STRU	TEXT	COL
94F/13	941002	10	334700	6428120	0	C	0.25	0.1	Lo	50/30/20	G
94F/13	941003	10	334700	6428120	0	BC	0.25	0.25	Lo	50/30/20	G
94F/13	941004	10	334700	6428120	0	PPT	0.20	0.2	Lo	0/0/100	R
94F/13	941005	10	334700	6428118	0	BC	0.20	0.1	Lo	60/20/20	RG
94F/13	941006	10	334700	6428116	0	BC	0.20	0.2	Lo	40/40/20	LB
94F/13	941007	10	334700	6428116	0	BC	0.20	0.08	Lo	40/40/20	GB
94F/13	941008	10	334730	6427830	0	FH	0.00	0.02	Lo	0/0/100	R
94F/13	941009	10	334730	6427830	0	C	0.30	0.2	Lo	10/30/60	YR
94F/13	941010	10	334730	6427830	0	C	0.30	0.3	Lo	10/30/60	YR
94F/13	941011	10	334540	6428030	0	C	0.20	0.1	Lo	5/80/20	B
94F/13	941012	10	334540	6428030	0	C	0.20	0.2	Lo	5/5/90	B
94F/13	941013	10	334540	6428030	1	BC	0.15	0.08	Lo	10/10/90	LB
94F/13	941014	10	334540	6428030	0	BC	0.15	0.15	Lo	10/10/80	RB
94F/13	941015	10	334540	6428030	2	BC	0.15	0.08	Lo	10/10/80	RB
94F/13	941016	10	334770	6428190	1	C	0.40	0.2	Lo	20/60/20	R
94F/13	941017	10	334770	6428190	0	C	0.40	0.4	Lo	20/60/20	LB
94F/13	941022	10	334750	6428160	0	B	0.20	0.2	Lo	80/20/0	RB
94F/13	941023	10	334680	6427980	0	B	0.20	0.2	Lo	80/10/10	LB
94F/13	941024	10	334840	6427910	0	PPT	0.01	0.01	Lo	0/0/100	R
94K/4	941025	10	333390	6430240	0	C	0.40	0.01	Lo	70/20/10	MRB
94K/4	941026	10	333390	6430240	0	C	0.40	0.4	Lo	70/20/10	MRB
94K/4	941027	10	333400	6430240	0	C	0.45	0.15	Lo	70/20/10	MRB
94K/4	941028	10	333400	6430240	0	C	0.45	0.45	Lo	70/20/10	MRB
94K/4	941029	10	333380	6430380	0	PPT	0.01	0.01	Lo	0/0/100	R
94K/4	941030	10	333980	6430830	0	PPT	0.01	0.01	Lo	0/0/100	R
94K/4	941032	10	334330	6429870	0	B	0.10	0.1	Lo	0/50/50	LB
94K/4	941033	10	334140	6429950	0	PPT	0.01	0.01	Lo	0/0/100	R
94K/4	941034	10	333890	6430485	0	PPT	0.01	0.01	Lo	0/0/100	R
94K/4	941035	10	333905	6431525	1		0.01	0.01	Lo	0/0/100	R
94K/4	941036	10	333905	6431525	2		0.01	0.01	Lo	0/0/100	R
94K/4	941037	10	333905	6431530	0	PPT	0.01	0.01	Lo	0/0/100	W
94K/4	941038	10	333900	6431525	0	B	0.01	0.01	Lo	40/60/0	LB
94K/4	941039	10	333850	6431610	0	PPT	0.01	0.01	Lo	0/0/100	RB
94K/4	941040	10	333800	6431610	0	PPT	0.01	0.01	Lo	0/0/100	LB
94K/4	941042	10	333920	6431390	0	PPT	0.01	0.01	Lo	0/0/100	R
94K/4	941044	10	333340	6432180	0	PPT	0.01	0.01	Lo	0/0/100	R
94K/4	941047	10	332800	6431770	1	PPT	0.01	0.01	Lo	0/0/100	R
94K/4	941048	10	332800	6431770	2	PPT	0.01	0.01	Lo	0/0/100	R
94F/13	941103	10	338240	6427900	0	B	0.90	0.15	Lo	5/45/50	BY
94F/13	941104	10	338240	6427900	0	C	0.90	0.35	M	5/45/50	BY
94F/13	941105	10	338240	6427900	0	C	0.90	0.9	BL	10/40/40	BG
94F/13	941106	10	338245	6427900	0	C	0.80	0.5	Lo	20/40/40	RB
94F/13	941107	10	338245	6427900	0	C	0.80	0.8	M	50/30/20	RB
94F/13	941108	10	338250	6427900	0	B	0.75	0.3	Lo	80/10/10	RB
94F/13	941109	10	338250	6427900	0	C	0.75	0.65	BL	30/30/30	RB
94F/13	941110	10	338250	6427900	0	C	0.75	0.75	Lo	60/30/10	RB
94F/13	941112	10	338260	6427900	1	C	0.910	0.55	BL	50/30/20	YB
94F/13	941113	10	338260	6427900	0	C	0.910	0.61	BL	20/40/40	DG
94F/13	941114	10	338260	6427900	2	C	0.910	0.55	BL	50/30/20	DG
94F/13	941115	10	338190	6428000	0	C	0.700	0.4	Lo	30/40/30	RB
94F/13	941116	10	338190	6428000	0	C	0.700	0.7	BL	10/40/50	OG
94F/13	941117	10	338195	6428000	0	b	0.550	0.35	BL	10/40/50	RB
94F/13	941118	10	338195	6428000	0	C	0.550	0.55	BL	80/20/0	RB
94F/13	941119	10	338320	6427895	0	B	0.150	0.15	Lo	30/40/30	RB
94F/13	941122	10	337825	6429530	0	B	0.010	0.01	Lo	10/40/50	R
94F/13	941123	10	337865	6429570	0	B	0.010	0.01	Lo	10/40/50	R
94F/13	941124	10	337910	6429600	0	B	0.100	0.1	Lo	90/10/0	IR
94F/13	941125	10	337910	6429600	0	C	0.250	0.25	Lo	90/10/0	GB
94F/13	941126	10	337930	6429610	0	PPT	0.010	0.01	Lo	0/0/100	R
94F/13	941127	10	337950	6429690	0	PPT	0.010	0.01	Lo	100/0/0	R
94F/13	941128	10	338100	6429710	0	PPT	0.010	0.01	Lo	0/0/100	R
94F/13	941129	10	338100	6429710	0	PPT	0.010	0.01	Lo	0/0/100	R
94F/13	941130	10	337810	6429800	0	PPT	0.010	0.01	Lo	0/0/100	R

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MAP	ID	UTMZ	UTME	UTMN	STN	MED	PDEPTH	DEPTH	STRU	TEXT	COL
94F/13	941131	10	337770	6429810	0	PPT	0.010	0.01	Lo	0/0/100	R
94F/13	941132	10	337705	6429800	0	PPT	0.010	0.01	Lo	0/0/100	R
94F/13	941133	10	337655	6429805	0	PPT	0.010	0.01	Lo	0/0/100	YB
94F/13	941134	10	337645	6429810	0	PPT	0.010	0.01	Lo	0/0/100	YB
94F/13	941135	10	337655	6429805	0	B	0.050	0.05	Lo	30/30/40	RB
94F/13	941136	10	337655	6429805	1	B	0.400	0.2	Lo	30/30/40	LG
94F/13	941137	10	337655	6429805	0	B	0.400	0.4	Lo	30/30/40	B
94K/4	941202	10	323380	6446820	0	PPT	0.010	0.01	Lo	0/0/100	YR
94K/4	941203	10	323380	6446810	0	PPT	0.010	0.01	Lo	0/0/100	YB
94K/4	941204	10	323460	6446710	0	B	0.010	0.01	Lo	20/40/40	YB
94K/4	941205	10	323470	6446710	0	B	0.200	0.1	Lo	0/0/100	YB
94K/4	941206	10	323470	6446710	0	B	0.200	0.2	Lo	20/40/40	YB
94K/4	941207	10	323495	6446630	0	PPT	0.010	0.01	Lo	0/0/100	R
94K/4	941208	10	323490	6446610	0	PPT	0.010	0.01	Lo	0/0/100	R
94K/4	941209	10	323490	6446610	0	PPT	0.010	0.01	Lo	50/25/25	YB
94K/4	941210	10	323540	6446570	0	PPT	0.010	0.01	Lo	0/0/100	YB
94K/4	941211	10	323545	6446570	0	PPT	0.010	0.01	Lo	0/0/100	B
94K/4	941212	10	323545	6446540	0	PPT	0.010	0.01	Lo	0/0/100	RB
94K/4	941213	10	323570	6446470	0	B	0.010	0.01	Lo	20/40/40	B
94K/4	941214	10	323570	6446470	0	PPT	0.010	0.01	Lo	0/0/100	YR
94K/4	941215	10	323560	6446455	0	PPT	0.010	0.01	M	0/0/100	RB
94K/4	941216	10	324390	6445680	0	PPT	0.010	0.01	Lo	0/0/100	R
94K/4	941217	10	324380	6445800	0	PPT	0.010	0.01	Lo	0/0/100	R
94K/4	941219	10	324120	6445741	0	PPT	0.010	0.01	M	0/0/100	R
94K/4	941220	10	324120	6445743	0	PPT	0.010	0.01	M	0/0/100	R
94F/13	941302	10	334730	6428310	0	B	0.300	0.3	Lo	10/50/40	GB
94F/13	941303	10	334725	6428280	0	B	0.400	0.4	Lo	10/50/40	GB
94F/13	941304	10	334720	6428235	0	B	0.300	0.3	Lo	20/40/40	GB
94F/13	941305	10	334695	6428195	1	B	0.400	0.4	Lo	70/20/10	DG
94F/13	941306	10	334695	6428195	2	B	0.400	0.4	Lo	70/20/10	DG
94F/13	941307	10	334620	6428130	0	B	0.400	0.4	Lo	80/10/10	GB
94F/13	941308	10	334580	6428100	0	B	0.450	0.25	Lo	50/40/10	DG
94F/13	941309	10	334580	6428100	0	C	0.450	0.45	Lo	10/40/50	DG
94F/13	941310	10	334530	6428100	0	B	0.300	0.3	Lo	20/40/40	GB
94F/13	941311	10	334510	6428110	0	B	0.250	0.25	Lo	30/40/30	GB
94F/13	941312	10	334505	6428115	0	B	0.400	0.4	Lo	10/60/30	GB
94F/13	941313	10	334495	6428120	0	B	0.300	0.3	Lo	40/30/30	GB
94F/13	941314	10	334485	6428125	0	B	0.300	0.3	Lo	40/30/30	GB
94F/13	941315	10	334470	6428130	0	C	0.800	0.35	Lo	80/10/10	GB
94F/13	941317	10	334470	6428130	0	C	0.800	0.6	Lo	50/40/10	OG
94F/13	941318	10	334470	6428130	1	C	0.800	0.85	Lo	50/40/10	OG
94F/13	941319	10	334380	6428050	0	C	0.300	0.3	Lo	60/30/10	DB
94F/13	941320	10	334430	6428050	0	C	0.300	0.3	Lo	30/50/20	GB
94F/13	941322	10	334470	6428030	0	C	0.400	0.4	Lo	30/50/20	B
94F/13	941323	10	334505	6428030	0	C	0.300	0.3	Lo	50/30/20	GB
94F/13	941324	10	334510	6428020	0	B	0.450	0.45	Lo	20/40/40	DG
94F/13	941326	10	334520	6428020	0	C	0.600	0.25	Lo	40/40/20	DG
94F/13	941327	10	334520	6428020	0	C	0.600	0.6	Lo	20/40/40	DG
94F/13	941328	10	334540	6428050	0	C	0.350	0.35	Lo	20/40/40	DG
94F/13	941329	10	334620	6428070	1	C	0.400	0.4	Lo	20/50/30	DG
94F/13	941330	10	334680	6428100	0	C	0.400	0.4	Lo	20/50/30	DG
94F/13	941331	10	334720	6428120	0	C	0.300	0.3	Lo	20/50/30	DG
94F/13	941332	10	334750	6428150	0	C	0.350	0.35	Lo	20/50/30	DG
94F/13	941333	10	334770	6428190	0	C	0.300	0.3	Lo	30/40/30	MB
94F/13	941334	10	334800	6428200	0	C	0.300	0.3	Lo	30/40/30	MB
94K/4	941402	10	328700	6448500	0	B	0.200	0.2	Lo	90/10/0	MB
94K/4	941403	10	328700	6448500	0	C	0.650	0.68	Lo	90/10/0	OB
94K/4	941404	10	328700	6448470	0	B	0.180	0.05	Lo	50/30/20	MG
94K/4	941405	10	328700	6448470	0	C	0.85	0.35	Lo	70/10/20	MB
94K/4	941406	10	328700	6448470	0	C	0.85	0.65	C	90/10/0	MB
94K/4	941407	10	328700	6448470	0	C	0.85	0.8	C	90/10/0	OB
94K/4	941408	10	328700	6448460	0	B	0.75	0.05	Lo	80/10/10	RB
94K/4	941409	10	328700	6448460	0	C	0.75	0.2	Lo	50/30/20	RB
94K/4	941410	10	328700	6448460	0	C	0.75	0.35	Lo	60/10/30	MG

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Appendix B - Soil Geochemical data

MAP	ID	UTMZ	UTME	UTMN	STN	MED	PDEPTH	DEPTH	STRU	TEXT	COL
94K/4	941411	10	328700	6448460	0	C	0.75	0.75	C	60/10/30	RB
94K/4	941412	10	328700	6448480	0	C	0.70	0.65	C	60/10/30	RB
94K/4	941413	10	328700	6448480	0	C	0.70	0.65	Lo	60/10/30	MB
94K/4	941414	10	328700	6448480	0	B	0.70	0.15	Lo	80/10/10	MB
94K/4	941415	10	328720	6448460	1	B	0.60	0.05	Lo	60/10/30	RB
94K/4	941416	10	328720	6448460	0	C	0.60	0.15	Lo	60/10/30	YB
94K/4	941417	10	328720	6448460	1	C	0.60	0.45	Lo	50/30/20	OG
94K/4	941418	10	328720	6448460	2	C	0.60	0.45	Lo	50/30/20	OG
94K/4	941419	10	328720	6448460	0	C	0.65	0.65	Lo	80/05/05	DG
94K/4	941422	10	328680	6448460	0	B	1.00	0.018	Lo	30/40/30	YB
94K/4	941423	10	328680	6448460	0	M	1.00	0.500	Lo	40/40/20	MG
94K/4	941424	10	328680	6448460	0	M	1.00	1.000	Lo	80/20/0	MG
94K/4	941426	10	332800	6438100	0	PPT	0.10	0.005	Lo	0/0/100	R
94K/4	941427	10	332960	6438100	0	PPT	0.10	0.005	Lo	0/0/100	R
94K/4	941428	10	332680	6438220	0	PPT	0.10	0.005	Lo	0/0/100	R
94K/4	941429	10	332460	6438230	0	PPT	0.10	0.005	Lo	0/0/100	R
94K/4	941430	10	328165	6439830	0	B	0.30	0.1	Lo	20/20/60	DB
94K/4	941431	10	328165	6439830	1	B	0.30	0.25	Lo	80/10/10	LB
94K/4	941432	10	328160	6439830	0	B	0.30	0.15	Lo	20/20/60	RB
94K/4	941433	10	328160	6439830	0	B	0.30	0.15	Lo	20/20/60	RB

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Appendix B - Soil Geochemical data

ID	REMARKS	DATE	Ag ⁽¹⁾	Ag ⁽²⁾	Al ⁽²⁾
			ppm	ppm	%
941002	Bear area profile.	22/06/94	-5	0.7	0.37
941003	Bear area profile.	22/06/94	-5	0.7	0.48
941004	Bear area Fe-oxide percolate	22/06/94	-5	-0.1	0.01
941005	Bear area profile.	22/06/94	-5	-0.1	0.28
941006	Bear area profile.	22/06/94	-5	-0.1	0.38
941007	Bear area profile.	22/06/94	-5	0.5	0.63
941008	Bear area Fe-oxide precipitate.	22/06/94	-5	-0.1	0.16
941009	Bear area Fe-oxide precipitate.	22/06/94	-5	0.6	1.23
941010	Bear area Fe-oxide precipitate.	22/06/94	-5	0.7	1.2
941011	Bear area profile.	22/06/94	-5	-0.1	1.08
941012	Bear area profile.	22/06/94	-5	-0.1	1.39
941013	Bear area profile.	22/06/94	-5	-0.1	1.13
941014	Bear area profile.	22/06/94	-5	-0.1	1.05
941015	Field duplicate sample 941013	22/06/94	-5	-0.1	1.07
941016	Bear area Fe-oxide percolate	22/06/94	-5	-0.1	1.33
941017	Bear area Fe-oxide percolate	22/06/94	-5	0.9	0.87
941022	Bear area Mainly angular Fe-oxide grains	26/06/94	-5	-0.1	0.61
941023	Bear area. 80% angular pebbles coated with Fe-oxide.	26/06/94	-5	-0.1	0.84
941024	Bear area. Abundant fresh Fe-oxide surrounding spring.	26/06/94	-5	0.2	1.37
941025	North Bear area. 70% angular shale clasts with Fe-oxide pebbles.	03/07/94	-5	0.6	0.63
941026	North Bear area. 70% angular shale clasts with Fe-oxide pebbles.	03/07/94	-5	0.4	0.43
941027	North Bear area. 70-80% angular shale clasts with Fe-oxide pebbles.	03/07/94	-5	0.8	0.75
941028	North Bear area. 70-80% angular shale clasts with Fe-oxide pebbles.	03/07/94	-5	0.5	0.38
941029	North Bear area. Thick Fe-hydroxide precipitate.	03/07/94	-5	-0.1	0.54
941030	North bear area. Gelatinous - filamentous red coating on shale pebbles & moss.	03/07/94	-5	-0.1	0.02
941032	North bear area. Pit at top of Fe-oxide stain zone.	03/07/94	-5	1.7	0.27
941033	North bear area - Fe hydroxide precipitate.	03/07/94	-5	0.1	0.62
941034	North bear area - Fe hydroxide precipitate.	03/07/94	-5	0.5	0.12
941035	North Bear area. Fe oxide crusts from surface - 1 m below spring.	05/07/94	-5	-0.1	0.01
941036	Field Duplicate sample 941035	05/07/94	-5	-0.1	0.01
941037	North Bear area. White precipitate coating talus	05/07/94	-5	0.4	7.62
941038	North Bear area. Soil-talus sample.	05/07/94	-5	0.4	0.83
941039	North Bear area. Fe-oxide crusts from around seepage.	05/07/94	-5	-0.1	0.91
941040	North Bear area. Light brown to white banded cold-spring deposit.	05/07/94	-5	1.4	8.43
941042	North Bear area. Iron precipitate surrounding spring and coating float.	05/07/94	-5	-0.1	0.09
941044	North Bear area. Fresh Fe-hydroxide 1 m below spring.	05/07/94	-5	-0.1	0.07
941047	North Bear area. Iron oxide precipitate coating float.	05/07/94	11	-0.1	0.03
941048	Field Duplicate sample 941047.	05/07/94	-5	-0.1	0.02
941103	Spar area. Pebbles 5% sub-angular shale.	23/06/94	-5	0.9	1.15
941104	Spar area. Pebbles 5% sub-angular shale.	23/06/94	-5	0.4	0.55
941105	Spar area. Pebbles 10% sub-angular shale	23/06/94	-5	0.5	0.65
941106	Spar area. Pebbles 10% sub-angular shale and barite.	23/06/94	-5	1.7	1.44
941107	Spar area. Pebbles 20% increasing to 40% at pit bottom. Sub-rounded shale & Fe stained material.	23/06/94	-5	1.4	1.38
941108	Spar area. Pebbles 20% sub-angular shale and ferricrete.	23/06/94	-5	1.3	0.55
941109	Spar area. Pebbles 50% sub-rounded shale in blocky Fe stained clay.	23/06/94	-5	0.8	0.86
941110	Spar area. Pebbles 50% rounded shale Minor Fe staining on pebbles	23/06/94	-5	0.6	0.91
941112	Spar area. Pebbles 50% sub-angular Fe-stained shale and gossan.	23/06/94	-5	0.1	1.11
941113	Spar area. Pebbles 20% angular and rounded.	23/06/94	-5	1.7	1.01
941114	Field duplicate 941112	23/06/94	-5	-0.1	0.99
941115	Spar area. Pebbles 50% sub-angular shale & ferricrete.	23/06/94	7	7.9	1.2
941116	Spar area. Pebbles 20% sub-rounded shale. Faint white mottles on clay.	23/06/94	-5	2.1	1.01
941117	Spar area. Pebbles 20% sub angular ferricrete and shale. Fe-oxide cement.	23/06/94	-5	-0.1	0.73
941118	Spar area. Pebbles 50% sub angular shale.	23/06/94	-5	-0.1	0.62
941119	Spar area. Pebbles 5% angular-ferricrete.	23/06/94	-5	2.2	0.14
941122	Spar area. Pebbles 60% angular shale with abundant Fe-oxide.	24/06/94	-5	0.6	0.64
941123	Spar area. Pebbles 80% angular-banded ferricrete.	24/06/94	-5	0.4	0.3
941124	Spar area. Pebbles angular.	24/06/94	-5	0.2	0.19
941125	Spar area. Pebbles 90% sub-rounded shale.	24/06/94	-5	0.6	0.57
941126	Spar area. Fe hydroxide precipitate.	24/06/94	-5	1.2	0.01
941127	Spar area. Fe hydroxide precipitate.	24/06/94	-5	0.6	0.01
941128	Spar area. Fe hydroxide precipitate.	24/06/94	-5	0.4	0.01
941129	Spar area. Moss Mat coated with iron ppt.	24/06/94	-5	0.7	0.01
941130	Spar area. Fresh Fe hydroxide 1 m from spring.	24/06/94	-5	0.3	0.08

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941131	Spar area. Fresh Fe hydroxide coating logs and vegetation.	24/06/94	13	0.6	0.31
941132	Spar area. Fresh Fe hydroxide around spring.	24/06/94	-5	-0.1	0.02
941133	Spar area. Fe hydroxide precipitate from small pool.	24/06/94	-5	0.2	0.02
941134	Spar area. Yellow to brown gelatinous clay from channel.	24/06/94	-5	0.4	0.02
941135	Spar area. Soil from 5 cm deep.	24/06/94	-5	1.7	0.09
941136	Spar area. Shale.	24/06/94	-5	1.7	0.19
941137	Spar area. Sand-silt and Fe-oxide cement.	24/06/94	-5	1	0.44
941202	Saint area. Fresh red-yellow gelatinous Fe precipitate 1 m from spring.	27/06/94	-5	0.5	0.03
941203	Saint area. Fresh yellow-brown Fe hydroxide 50 m down slope from spring on grey soil.	27/06/94	-5	-0.1	0.02
941204	Saint area. Yellow-brown, 80%clay/silt textured soil from area of previously active spring.	27/06/94	-5	0.5	0.09
941205	Saint area. Brown-yellow precipitate coating plant material	27/06/94	-5	-0.1	0.02
941206	Saint area. Soil from 20 cm deep.	27/06/94	-5	-0.1	0.04
941207	Saint area. Fresh colloidal Fe hydroxide precipitate.	27/06/94	-5	0.1	0.06
941208	Saint area. Hard, rippled, dark brown to black Fe-oxide.	27/06/94	-5	-0.1	0.02
941209	saint area. Yellow-brown water saturated sand, silt/clay mixture.	27/06/94	-5	0.6	0.21
941210	Saint area. Yellow-brown clay textured precipitate coating organic debris on edge of spring pool.	27/06/94	-5	0.4	0.08
941211	Saint area. Brown-black textured precipitate with terraced surface texture from flank of Fe-spring mound.	27/06/94	-5	0.3	0.09
941212	Saint area. Granular sandy red-brown oxide at 2-5 cm below surface above 1 m of water saturated soil.	27/06/94	-5	0.1	0.03
941213	Saint area. Brown-black sandy textured Fe-oxide material from 20-30 depth below surface.	27/06/94	-5	0.1	0.01
941214	Saint area. Yellow-red, clay textured precipitate by spring. Minor 'mature' Fe oxide mixed with sample.	27/06/94	-5	0.2	0.02
941215	Saint area. Light brown-red, silt clay textured fresh Fe precipitate 1 cm thick coating dark grey till or colluvium.	27/06/94	-5	0.6	0.1
941216	Saint area. Fresh terraced Fe-oxide coating surface of shale outcrop.	27/06/94	-5	0.4	1.66
941217	Saint area. Granular Fe-oxide coating on outcrop. No spring.	27/06/94	-5	-0.1	1.1
941219	Saint area. Fe-oxide on float in stream bed and terraced Fe precipitate from flank of spring mound.	27/06/94	-5	-0.1	0.04
941220	Saint area. Iron precipitate around spring.	27/06/94	-5	0.3	0.05
941302	Bear soil line 1. Pebbles 80%angular shale.	29/06/94	-5	1	0.61
941303	Bear soil line 1. Pebbles 80%angular shale.	29/06/94	-5	0.5	0.55
941304	Bear soil line 1. Pebbles 80%angular shale.	29/06/94	-5	0.8	0.5
941305	Bear soil line 1. Pebbles 40% angular shale and minor quartz.	29/06/94	-5	0.9	0.61
941306	Field duplicate sample 941305.	29/06/94	-5	0.8	0.61
941307	Bear soil line 1. Pebbles 30% ang-prismoidal shale ferricrete.	29/06/94	-5	0.9	0.49
941308	Bear soil line 1. Pebbles 50% ang/pris shale.	29/06/94	-5	0.4	0.56
941309	Bear soil line 1. Pebbles 50% sub ang pris shale.	29/06/94	-5	0.5	0.48
941310	Bear soil line 1. Pebbles 50% angular to sub-angular shale.	29/06/94	-5	0.1	0.57
941311	Bear soil line 1. Pebbles 30% angulat to sub-angular coarse clastic sediment and minor shale.	29/06/94	-5	0.2	0.4
941312	Bear soil line 1. Pebbles 60-70% angular shale.	29/06/94	-5	0.9	0.98
941313	Bear soil line 1. Pebbles 80% angular.	29/06/94	-5	1.2	0.48
941314	Bear soil line 1. Pebbles 80-90% sub-angular.	29/06/94	-5	1.2	0.52
941315	Bear soil line 1. Pebbles 80% sub-angular shale-varnished appearance. Fines appear washed out.	29/06/94	5	2.7	0.95
941317	Bear soil line 1. Pebbles 60% sub-angular shale. Fines more abundant than 941317.	29/06/94	-5	0.7	0.91
941318	Bear soil line 1. Mainly pebbles and cobbles	29/06/94	-5	0.6	0.75
941319	Bear soil line 2. Pebbles 80% sub-angular. No shale.	30/06/94	-5	0.8	0.54
941320	Bear soil line 2. Pebbles 60-70% Sub angular, dark grey sandstone.	30/06/94	-5	0.3	0.45
941322	Bear soil line 2. Pebbles 50% sub-angular light-grey shale.	30/06/94	-5	0.2	0.69
941323	Bear soil line 2. Pebbles 50% sub-rounded.	30/06/94	-5	0.4	0.48
941324	Bear soil line 2. Pebbles 30% sub-angular.	30/06/94	-5	0.2	0.44
941326	Bear soil line 2. Pebbles 20% sub-angular.	30/06/94	-5	0.2	0.59
941327	Bear soil line 2. Pebbles 20% sub-rounded.	30/06/94	-5	0.7	0.84
941328	Bear soil line 2. Pebbles 50% sub angular.	30/06/94	10	7.6	0.57
941329	Bear soil line 2. Pebbles 40% sub-angular shale. Sample from barite frost boil-kill zone.	30/06/94	31	30.2	0.46
941330	Bear soil line 2. Pebbles 50% ang shale and barite.	30/06/94	-5	2.4	0.22
941331	Bear soil line 2. Pebbles 50% angular.	30/06/94	21	15.3	0.11
941332	Bear soil line 2. Pebbles 50% sub angular shale.	30/06/94	-5	0.7	0.4
941333	Bear soil line 2. Pebbles 30% sub-angular ferricrete.	30/06/94	-5	3.7	0.87
941334	Bear soil line 2. Pebbles 30% sub-angular ferricrete & shale.	30/06/94	-5	1.2	0.42
941402	Driftpile area profile. Pebbles 80% sub-angular shale.	01/07/94	-5	1.7	1.32
941403	Driftpile area profile. Pebbles 80% su- rounded. Fines washed from sediment.	01/07/94	-5	0.8	0.84
941404	Driftpile area profile. Pebbles 50% sub-angular. Light brown sandy layer below sample.	01/07/94	-5	0.8	0.79
941405	Driftpile area profile. Pebbles 70% sub-rounded shale & ferricrete.	01/07/94	-5	0.6	0.53
941406	Driftpile area profile. Hard Fe-oxide layer.	01/07/94	-5	0.5	0.46
941407	Driftpile area profile. Pebbles 10%	01/07/94	-5	0.3	0.56
941408	Driftpile area profile. Pebbles 40-50% sub-angular.	01/07/94	-5	0.2	0.49
941409	Driftpile area profile. Pebbles 50% ferricrete.	01/07/94	-5	0.3	0.37
941410	Driftpile area profile. Pebbles 60-70% sub-rounded.	01/07/94	-5	0.3	0.27

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941411	Driftpile area profile. Hard red-brown layer containing shale.	01/07/94	5	0.2	0.19
941412	Driftpile area profile-Hard red-brown layer at base of pit.	01/07/94	-5	0.7	0.83
941413	Driftpile area profile. Moist sample.	01/07/94	-5	0.3	0.29
941414	Driftpile area profile. Pebbles strongly Fe stained.	01/07/94	-5	0.5	0.33
941415	Driftpile area profile-Ferricrete pebbles.	01/07/94	-5	0.3	0.51
941416	Driftpile area profile. Olive brown grades into yellow brown upper layer.	01/07/94	-5	0.1	0.23
941417	Driftpile area profile. 50% sub-rounded pebbels.	01/07/94	-5	0.2	0.23
941418	Field duplicate sample 941417.	01/07/94	-5	-0.1	0.25
941419	Driftpile area profil. Base of pit. 80-90% angular Fe stained shale pebbles.	01/07/94	-5	1	0.29
941422	Driftpile area profile. Pebbels 30% sub-rounded.	01/07/94	-5	0.2	0.53
941423	Driftpile area profile. Pebbels 40% sub-rounded.	01/07/94	-5	0.8	0.21
941424	Driftpile area profile. Soil at 100 cm depth.	01/07/94	-5	0.9	0.2
941426	Driftpile area. Recent Fe-oxide layers near spring.	01/06/94	-5	-0.1	0.05
941427	Driftpile area. Fe hydroxide precipitate.	01/06/94	-5	-0.1	0.01
941428	Driftpile area. Fe hydroxide precipitate by spring.	01/06/94	-5	-0.1	0.01
941429	Driftpile area. Fe hydroxide precipitate.	01/06/94	-5	-0.1	0.04
941430	Driftpile area profile.	01/06/94	-5	0.2	0.35
941431	Driftpile area profile - 80% angular clasts.	01/06/94	-5	0.1	0.18
941432	Driftpile area profile.	01/06/94	-5	0.4	0.71
941433	Driftpile area profile.	01/06/94	-5	0.2	0.4

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ID	As ⁽¹⁾	As ⁽²⁾	Au ⁽¹⁾	B ⁽²⁾	Ba ⁽¹⁾	Ba ⁽²⁾	Bi ⁽²⁾	Br ⁽¹⁾	Ca ⁽¹⁾	Ca ⁽²⁾	Cd ⁽²⁾	Ce ⁽¹⁾	Co ⁽¹⁾	Co ⁽²⁾	Cr ⁽¹⁾	Cr ⁽²⁾	Cs ⁽¹⁾	Cu ⁽²⁾	Eu ⁽¹⁾	Fe ⁽¹⁾	Fe ⁽²⁾	Hf ⁽¹⁾	Hg ⁽²⁾
	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppb
941002	18	15	2	5	5100	506	-2	-0.5	-1	0.04	0.2	140	5	3	140	15	11	19	1.6	2.73	1.66	14	25
941003	24	16	-2	4	6500	462	-2	-0.5	-1	0.03	0.5	130	7	6	150	16	15	26	1.9	3.29	1.93	12	25
941004	74	42	-2	-2	-50	63	18	-0.5	1	0.13	7.5	-3	40	43	11	3	-1	2	-0.2	51.1	53.03	-1	75
941005	42	30	-2	6	4100	504	7	4	-1	0.19	1.1	79	180	155	110	22	13	11	0.9	19	15.54	8	40
941006	120	83	-2	3	5000	839	12	12	-2	0.17	3.6	49	210	209	78	14	13	20	0.7	29.8	25.8	3	235
941007	27	24	8	5	4200	729	3	8.7	-1	0.28	3.1	78	67	63	100	18	15	15	1	6.29	5.88	8	110
941008	5	-2	-3	-2	-50	13	20	4.1	-2	0.01	-0.2	-3	-1	-1	-5	3	-1	5	-0.2	49	54.43	-1	45
941009	98	57	-2	-2	5700	149	16	23	-2	0.03	-0.2	16	2	-1	30	6	-1	9	2.3	46.9	42.86	2	220
941010	46	23	-2	-2	5800	94	22	19	-2	0.02	-0.2	11	2	-1	16	5	-1	14	1.6	51.8	51	-1	220
941011	10	-2	-2	-2	1600	122	18	6	-2	0.01	-0.2	13	4	2	37	4	3	40	1	53.6	51.49	1	70
941012	18	8	-2	5	7100	665	14	2.5	-2	0.03	-0.2	70	9	7	100	18	15	38	2.6	24.1	20.87	4	115
941013	22	6	-2	-2	4500	329	11	15	-2	0.01	-0.2	57	5	3	110	13	13	74	2.4	31.7	28.02	4	130
941014	53	25	-2	2	5200	206	26	4.3	-2	0.02	-0.2	79	4	2	140	22	14	26	5.3	28.2	23.79	5	180
941015	26	13	-2	-2	6300	291	17	12	-1	0.01	-0.2	60	4	3	110	17	14	60	2.5	28.6	25.73	5	105
941016	55	27	-2	-2	320	12	21	-0.5	-1	0.02	5.5	9	6	4	11	-1	-1	5	2.3	53.2	54.59	-1	20
941017	32	22	-2	9	9900	984	3	4.1	-1	0.10	2.7	77	10	9	110	21	23	39	3.5	19.5	15.65	7	115
941022	9.6	-2	-2	-2	8400	216	12	7.5	-1	0.01	-0.2	40	2	1	64	2	7	70	0.7	34.2	33.45	4	40
941023	21	10	-2	6	10000	354	7	6.8	-1	0.07	-0.2	66	5	3	100	24	14	37	1.3	20.8	18.87	7	70
941024	17	3	-2	-2	1200	149	11	45	-1	0.09	-0.2	14	4	2	29	6	2	34	0.9	30.3	29.89	1	135
941025	8.5	-2	-2	-2	530	35	20	9.3	-2	0.01	-0.2	42	94	98	20	3	-1	6	8.4	55.7	55.46	-1	75
941026	7.7	-2	-2	-2	700	54	22	-0.5	-2	-0.01	-0.2	21	130	141	23	4	2	5	4	53.5	55.47	-1	35
941027	9.7	-2	-2	-2	600	37	19	6.5	-2	-0.01	-0.2	44	97	102	14	1	-1	5	10.8	54	56.23	-1	35
941028	5.7	-2	-2	-2	490	40	21	-0.5	-2	-0.01	-0.2	20	120	132	25	2	-1	5	4.7	57.1	58.43	-1	40
941029	35	14	-3	-2	-52	133	12	3.8	-2	0.12	-0.2	34	610	614	11	9	-1	3	20	45.2	43.3	-1	20
941030	120	70	-2	-2	570	309	16	5.6	-2	0.43	-0.2	6	64	64	16	3	-1	3	0.3	45	42.69	-1	20
941032	26	15	-2	6	5400	664	18	5.5	-1	0.03	4.9	59	21	21	96	13	47	12	0.8	25.4	23.06	4	525
941033	24	14	-2	-2	2900	806	12	14	-1	0.21	29.6	29	360	378	49	14	8	120	1.4	26.3	27.28	3	330
941034	1300	903	65	-2	1700	205	17	-0.5	-2	0.27	14.6	24	12	10	48	4	6	79	1.2	44.5	38.56	1	470
941035	23	-2	-2	-2	-50	6	17	-0.5	-2	0.04	-0.2	-3	10	7	10	1	-1	2	-0.2	58.8	57.55	-1	5
941036	22	-2	-2	-2	-50	6	19	-0.5	-2	0.04	-0.2	-3	10	7	15	2	-1	1	-0.2	55.7	58.59	-1	15
941037	4.1	-2	-2	-2	-50	13	11	-0.5	-1	0.04	-0.2	7	6	5	8	3	-1	150	3.9	37.3	30.64	-1	15
941038	24	19	13	4	5700	486	-2	4.6	-1	0.01	-0.2	96	11	9	120	15	14	47	1.5	5.17	3.99	6	85
941039	24	-2	-2	-2	8000	697	7	4.8	1	0.42	1.7	12	200	182	24	-1	4	24	1.2	44.7	35.67	-1	110
941040	4.3	-2	-2	2	530	30	3	3.7	-1	0.02	1.3	8	60	57	14	6	2	96	1.4	23.2	18.83	-1	35
941042	83	38	-2	2	940	509	10	20	-1	0.79	3	8	220	207	14	4	2	12	1.1	42.3	34.43	-1	75
941044	110	38	-2	-2	-50	15	16	-0.5	-2	0.06	3.7	16	4	5	10	-1	-1	-1	6.1	58	48.04	-1	20
941047	200	97	7	-2	1000	319	14	-0.5	-2	0.31	4.7	7	130	120	22	-1	2	-1	-0.2	56.5	44.08	2	10
941048	160	79	-2	-2	870	348	19	1.9	-1	0.35	1.9	5	170	165	18	-1	-1	-1	-0.2	49.5	43.82	-1	20
941103	33	29	11	6	72000	731	-2	3.4	-1	0.01	0.5	48	3	3	59	16	5	10	0.6	1.91	1.84	5	65
941104	29	30	4	5	89000	658	-2	2.2	-1	0.02	1.5	51	3	4	54	13	4	22	0.8	1.52	1.41	6	105
941105	25	23	3	4	54000	979	-2	2.2	-1	0.01	0.3	57	2	2	51	10	4	7	0.6	1.44	1.42	7	25
941106	29	27	-2	8	61000	637	-2	2.8	-1	0.01	0.8	41	3	4	69	15	4	19	0.9	1.96	2.01	5	100
941107	52	39	11	14	79000	434	-2	7.5	-1	0.08	13.2	51	79	69	92	20	8	68	1.2	9.14	7.64	6	405
941108	91	27	13	-2	14000	112	17	9.8	-2	0.01	7.7	14	200	182	27	-1	-1	17	0.7	52.7	41.35	3	435
941109	94	76	4	7	42000	139	4	6.5	-1	0.01	-0.2	43	21	23	51	16	6	35	1	15.4	15.3	6	315
941110	180	132	8	3	33000	131	3	5.1	1	0.01	1.4	31	38	38	48	10	5	45	0.9	22.2	23.23	5	340
941112	960	598	2	-2	710	161	11	5.8	-2	0.02	17	-227	190	184	17	-1	-1	15	3.6	60.1	56.35	-1	265
941113	95	86	5	10	49000	1605	2	-0.5	-1	0.07	5.7	52	43	43	76	17	8	43	1.2	6.78	6.82	7	380
941114	850	567	-4	-2	640	225	11	7.7	-2	0.02	25	25	230	244	-5	-1	-1	19	3.6	49.8	56.4	-1	180
941115	34	34	7	9	64000	235	-2	5.5	-1	0.01	-0.2	44	3	3	80	15	6	51	1.3	4.99	5.65	5	145
941116	50	53	-2	12	56000	152	-2	2.6	-1	0.01	-0.2	43	2	2	83	17	8	47	1.4	2.64	2.93	7	365
941117	15	-2	4	-2	16000	72	19	7.2	-1	-0.01	1.5	17	22	22	66	11	2	193	0.5	48.5	42.05	3	90
941118	35	14	-2	-2	47000	76	5	-0.5	-1	-0.01	-0.2	32	22	20	62	12	3	153	0.8	30	26.4	6	115
941119	510	307	-3	-2	3000	1247	13	19	-2	0.12	40.1	-227	190	180	24	-1	3	3	-0.2	56.4	47.23	1	55
941122	130	64	-2	-2	5000	259	11	-0.5	-1	0.03	42.6	290	7	7	28	-1	4	22	12.4	40.7	32.99	2	145
941123	54	21	12	-2	6200	936	9	-0.5	-1	0.52	211.3	200	300	240	49	4	4	20	5.9	41.3	30.19	2	95
941124	45	12	6	-2	3300	1147	11	-0.5	-1	0.41	290.2	140	990	822	28	16	4	11	5	44.2	31.52	2	60
941125	120	72	12	3	12000	1482	4	-0.5	-1	0.21	30.2	96	67	59	94	14	14	30	2.4	22.3	17.28	6	195
941126	470	266	-2	-2	900	101	14	-0.5	4	1.29	50.3	220	330	277	9	-1	-1	-1	12.6	49.9	38.13	-1	10
941127	250	160	12	-2	-63	145	12	-0.5	3	2.38	118.3	130	530	474	14	9	-1	1	6.5	33.6	30.78	-1	25
941128	190	112	-4	5	-66	53	4	-0.5	14	10.06	97.7	79	300	208	-5	6	-1	2	4.1	18.9	12.95	-1	25
941129	230	166	-4	12	440	108	8	-0.5	4	3.41	133.2	110	280	246	-5	3	-1	2	5.8	31.6	25.75	-1	25
941130	640	438	-3	24	620	217	20	9.5	-2	0.37	176.9	-227	500	508	24	8	-1	15	-0.2	52.5	45.71	-1	50

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Appendix B - Soil Geochemical data

ID	As ⁽¹⁾	As ⁽²⁾	Au ⁽¹⁾	B ⁽²⁾	Ba ⁽¹⁾	Ba ⁽²⁾	Bi ⁽²⁾	Br ⁽¹⁾	Ca ⁽¹⁾	Ca ⁽²⁾	Cd ⁽²⁾	Ce ⁽¹⁾	Co ⁽¹⁾	Co ⁽²⁾	Cr ⁽¹⁾	Cr ⁽²⁾	Cs ⁽¹⁾	Cu ⁽²⁾	Eu ⁽¹⁾	Fe ⁽¹⁾	Fe ⁽²⁾	Hf ⁽¹⁾	Hg ⁽²⁾
941131	150	108	-3	22	1000	186	18	-0.6	-2	0.56	280.8	-227	1800	1586	12	23	4	302	1.5	49.4	38.13	-1	65
941132	710	488	-3	26	700	65	18	-0.5	-2	0.61	64.3	-227	170	170	14	6	-1	3	-0.2	58	52.09	1	10
941133	1700	1159	10	21	220	59	19	-0.5	-2	0.76	80.6	-227	94	91	10	5	-1	2	3	56.6	51.07	-1	15
941134	1600	1052	-2	19	2800	44	21	-0.5	-2	0.77	62	-227	84	74	8	3	-1	8	3.6	59.5	48.25	-1	10
941135	4500	2912	-9	22	930	73	22	-0.9	-2	0.28	54.7	64	330	283	-6	6	-1	2	7.3	53.4	50.44	-1	10
941136	4400	3440	4	21	1700	137	20	-0.8	-2	0.13	451.2	52	60	69	22	1	-1	10	8	48.6	54.59	-1	30
941137	450	337	-2	11	19000	1339	4	-0.5	-1	0.10	37	72	22	20	90	12	10	16	2	20.6	15.43	7	185
941202	240	159	4	11	590	140	20	-0.5	4	1.51	77.5	-227	320	252	6	6	-1	2	4.3	51	39.4	-1	40
941203	180	119	-3	8	1100	133	11	-0.5	4	2.35	212.6	31	330	249	13	3	-1	3	2.7	40.2	25.91	-1	15
941204	290	205	-2	16	580	30	22	-0.5	-2	0.13	73.7	47	40	40	13	4	-1	2	5.8	53.4	51.26	-1	10
941205	30	40	-2	21	950	96	27	-0.5	-1	0.15	33.1	-227	53	53	12	2	1	-1	0.6	58.7	55.9	-1	10
941206	130	114	-2	18	340	62	27	-0.5	-1	0.34	48.1	-227	130	143	10	3	-1	1	2.2	48.1	52.28	-1	5
941207	120	93	-2	18	350	32	21	-0.5	-2	0.23	25.1	-227	91	87	12	1	-1	1	2.3	56.1	52.47	-1	5
941208	15	32	-2	19	-50	86	27	-0.5	-1	0.28	22.1	15	63	67	-5	2	-1	2	-0.2	52.5	55.78	-1	5
941209	37	39	5	13	1500	489	16	4.8	-1	0.24	4.7	21	63	60	32	3	6	15	0.8	45	38.99	2	155
941210	140	115	-2	10	550	24	22	-0.5	-2	0.57	18.2	-227	15	13	13	2	-1	-1	4.1	52.9	50.14	-1	15
941211	180	130	4	13	310	26	23	-0.5	-2	0.52	34.8	75	36	33	14	2	-1	1	5	52.5	49.14	-1	5
941212	99	73	-2	13	560	26	25	-0.5	-1	0.29	27.4	-227	32	27	13	3	-1	-1	1.8	57.9	52.39	-1	-5
941213	89	71	-2	15	510	24	25	-0.5	-2	0.21	12.7	53	23	18	18	3	-1	-1	1.2	62.2	54.35	-1	5
941214	150	110	11	16	410	37	24	-0.5	-2	0.34	18	-227	41	38	12	2	-1	-1	1.7	56.9	54.45	-1	5
941215	230	151	-3	6	680	93	12	-0.5	5	2.63	35.4	60	490	362	26	14	3	14	3.8	38.8	26.76	5	95
941216	6.6	17	-2	10	490	59	21	-0.5	-1	0.14	27.9	31	25	21	17	2	-1	172	1.9	47.3	46.24	-1	20
941217	11	25	-2	10	2400	273	18	19	-1	0.27	49.3	16	1100	1020	31	23	5	48	0.7	40.7	30.04	-1	55
941219	3.8	21	-3	11	-50	58	26	1.5	-2	0.36	97.5	7	320	338	11	6	-1	2	0.3	50	53.13	-1	5
941220	19	34	-2	14	310	28	28	-0.5	-2	0.25	24.6	11	26	22	-1	3	-1	10	1.8	62.1	57.73	-1	40
941302	29	25	-2	5	6000	975	-2	4	1	0.01	-0.2	110	3	4	130	14	16	22	1.5	3.61	2.8	10	85
941303	32	26	-2	7	5900	652	-2	4.2	-1	0.02	-0.2	130	4	4	140	19	15	22	1.5	4.36	3.33	11	35
941304	31	25	-2	6	6000	378	-2	4.5	-1	0.02	-0.2	110	4	3	130	13	16	22	1.4	5.17	4.09	10	40
941305	35	27	-2	6	5100	613	2	3.4	-1	0.02	0.2	100	5	4	160	18	11	25	1.5	3.52	2.83	11	30
941306	36	28	-2	5	5300	602	-2	3.7	-1	0.02	0.2	100	4	4	150	16	11	26	1.5	3.65	2.86	11	30
941307	53	45	17	5	3800	84	2	6.1	-1	0.03	0.7	120	10	10	120	13	12	29	1.4	5.22	5.17	7	185
941308	5.7	3	6	4	3700	303	-2	2.5	-1	0.01	-0.2	130	2	1	120	12	20	7	1.6	0.97	0.42	6	30
941309	5.8	3	-2	3	4200	252	-2	-0.5	-1	0.01	-0.2	120	1	1	110	11	15	8	1.5	1.01	0.55	8	20
941310	27	23	-2	3	3800	502	-2	3.8	-1	0.02	-0.2	100	4	4	150	17	8	23	1.5	3.01	2.6	13	10
941311	24	20	-2	4	6700	512	-2	2.4	-1	0.07	0.2	88	2	2	130	8	19	13	1.1	2.23	2.07	6	10
941312	40	37	-2	6	8000	518	-2	11	-1	0.02	-0.2	71	4	4	130	14	28	58	1.7	4.58	4.27	7	130
941313	20	17	4	4	4800	635	-2	2.2	-1	0.03	0.2	100	3	3	130	14	11	22	1.5	2.57	2.23	12	30
941314	15	13	7	3	6100	581	-2	4.8	-1	0.02	-0.2	69	3	2	110	11	10	46	1.1	1.96	1.8	9	50
941315	36	32	-2	6	4200	378	-2	12	-1	0.06	-0.2	81	7	5	130	25	10	19	1.2	4.9	4.58	10	135
941317	29	24	6	5	27000	92	-2	4.3	1	0.19	0.3	140	7	5	150	21	6	26	2.3	4.4	3.52	17	50
941318	28	23	-2	6	19000	123	2	3.2	-1	0.11	0.4	100	6	5	120	16	7	26	1.8	5.12	4.92	15	60
941319	30	29	-2	6	4200	375	-2	3.8	-1	0.03	0.2	83	4	4	120	16	10	26	1.1	2.79	2.79	10	20
941320	15	14	-2	5	4100	724	-2	2.2	-1	0.02	-0.2	70	6	5	110	14	9	19	1	2.2	2.33	10	10
941322	19	18	-2	3	4100	165	3	7.2	-1	0.01	-0.2	64	4	5	110	8	19	29	0.9	6.91	7.52	5	85
941323	26	21	-2	5	4300	452	-2	2.5	-1	0.02	-0.2	110	4	4	150	12	10	25	1.5	2.75	2.15	12	15
941324	10	8	-2	5	9600	597	-2	3	-1	0.14	0.5	98	2	2	150	6	24	13	1.3	1.93	1.24	7	30
941326	10	9	-2	4	4600	267	-2	1.3	-1	0.01	-0.2	110	2	2	110	10	9	10	1.2	1.47	1.02	10	5
941327	38	28	11	5	6200	312	-2	6.7	-1	0.02	-0.2	92	4	3	140	19	13	16	1.2	4.36	3.54	8	135
941328	33	27	15	6	5900	475	-2	4.2	-1	0.07	0.4	140	2	2	150	13	35	30	2	3.68	3.17	9	1980
941329	13	8	-3	3	270000	109	-2	4.7	-1	0.05	0.2	45	4	2	53	7	5	22	0.9	2.05	1.71	9	9050
941330	35	24	-2	6	160000	41	-2	7.1	-1	0.01	-0.2	85	-1	1	110	8	23	26	0.9	4.27	3.73	10	4120
941331	22	14	-2	5	280000	28	-2	3.6	-1	0.01	-0.2	47	-1	1	57	9	8	13	-0.2	4.33	4.11	4	2405
941332	12	10	-2	6	6500	578	-2	-0.5	-1	0.01	-0.2	110	2	2	89	9	17	15	1.1	1.44	1.28	8	80
941333	19	18	7	5	6500	439	2	20	-1	0.01	-0.2	55	83	77	78	15	15	35	1.5	14.7	15.1	7	820
941334	31	28	-2	3	5300	602	-2	12	-1	0.05	0.3	81	3	2	110	10	27	43	1.9	8.92	7.42	8	200
941402	36	31	-2	4	13000	336	-2	13	-1	0.04	0.2	59	5	4	100	17	28	29	0.9	6.62	6.9	8	120
941403	32	29	7	5	57000	87	-2	9.4	-1	0.02	1.4	56	4	5	86	10	27	59	1.2	6.5	6.88	10	300
941404	18	15	-2	5	18000	3524	7	13	-1	0.03	50.4	56	130	126	80	18	22	21	0.9	15.6	13.1	6	165
941405	13	-2	-2	10	6000	880	-2	3	-1	0.01	-0.2	7	19	22	28	1	5	14	-0.2	56.4	52.73	-1	155
941406	27	18	-2	3	23000	886	-2	-0.5	-1	0.07	8.5	40	30	31	61	3	19	24	0.6	32.7	28.59	5	80
941407	33	21	-2	5	33000	851	-2	5.6	-1	0.06	5.6	46	40	39	58	6	17	30	1.1	28.7	24.94	6	90
941408	14	11	-2	-2	12000	524	7	8	-1	0.02	22.7	26	91	87	44	3	15	20	0.6	40.7	32.08	4	90
941409	23	6	-2	5	7500	43	-2	4.7	-2	0.01	0.7	17	35	40	32	-1	9	17	-0.2	39.7	44.93	-1	95
941410	31	28	-2	7	28000	204	-2	-0.5	-1	0.02	-0.2	56	7	8	79	5	27	42	0.8	6.21	7.12	9	125

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Appendix B - Soil Geochemical data

ID	As ⁽¹⁾	As ⁽²⁾	Au ⁽¹⁾	B ⁽²⁾	Ba ⁽¹⁾	Ba ⁽²⁾	Bi ⁽²⁾	Br ⁽¹⁾	Ca ⁽¹⁾	Ca ⁽²⁾	Cd ⁽²⁾	Ce ⁽¹⁾	Co ⁽¹⁾	Co ⁽²⁾	Cr ⁽¹⁾	Cr ⁽²⁾	Cs ⁽¹⁾	Cu ⁽²⁾	Eu ⁽¹⁾	Fe ⁽¹⁾	Fe ⁽²⁾	Hf ⁽¹⁾	Hg ⁽²⁾
941411	32	26	-2	7	29000	74	-2	-0.5	-1	0.02	-0.2	44	16	15	69	6	17	22	0.6	12.3	12.84	7	110
941412	9.8	15	-3	4	24000	2564	10	23	-2	0.02	64.2	20	220	211	39	11	9	22	1	30.1	27.92	6	355
941413	11	-2	3	-2	15000	833	-2	6.1	-1	0.03	14.6	12	87	83	30	2	9	16	0.5	53	42.14	-1	145
941414	22	9	-2	-2	15000	203	7	-0.5	-1	0.03	7.4	22	37	39	39	1	13	28	0.4	42.5	36.61	4	105
941415	20	16	-2	2	5600	122	-2	9.7	-1	0.01	8.8	28	130	136	39	6	16	15	0.4	39.7	34.03	2	105
941416	14	-2	-2	6	17000	60	-2	3.3	-1	-0.01	-0.2	19	13	14	37	1	10	17	0.2	48.5	43.11	-1	90
941417	23	19	4	8	28000	148	-2	-0.5	-1	0.01	-0.2	60	8	8	73	5	25	24	0.9	14.7	13.59	6	180
941418	27	19	-2	7	31000	118	-2	4.8	-1	0.01	-0.2	59	10	10	77	8	27	23	0.9	20.3	17.06	7	185
941419	30	30	-2	10	32000	113	2	4.1	-1	0.01	19.4	50	180	185	71	14	20	39	0.7	13.9	12.61	6	185
941422	23	19	-2	6	18000	41	-2	4.9	-1	0.02	-0.2	34	20	26	56	4	18	42	0.6	24.9	26.25	5	105
941423	31	24	9	7	39000	141	-2	3.8	-1	0.02	-0.2	74	5	5	99	3	25	34	1.1	4.95	4.3	8	200
941424	31	27	-2	7	37000	105	-2	-0.5	-1	0.02	0.9	79	10	10	100	3	28	36	1.1	5.78	4.82	8	190
941426	78	38	-2	18	430	34	-2	-0.5	-2	0.18	2.2	11	9	9	12	-1	-1	2	0.8	60.3	58.45	-1	15
941427	420	252	6	-2	520	233	-2	-0.5	3	1.79	5.7	12	120	103	12	-1	-1	2	0.9	50.5	37.51	-1	5
941428	790	584	-3	-2	640	275	-2	13	8	5.12	-0.2	10	700	658	-2	14	-1	2	0.6	35.5	31.71	1	30
941429	45	37	-3	-2	1100	452	-2	-0.5	-2	0.39	23.6	16	700	687	-2	11	-1	3	2.3	47.4	38.61	-1	15
941430	33	31	7	6	53000	72	3	6.8	-1	0.01	-0.2	50	2	3	83	5	23	25	0.7	13.8	12.46	7	195
941431	13	12	-2	5	220000	131	-2	4.9	-1	0.01	-0.2	32	1	1	59	3	15	13	-0.2	11.2	9.16	4	125
941432	26	22	9	6	92000	89	-2	7	-1	0.01	-0.2	43	2	2	69	9	17	32	0.4	15.7	14.01	6	200
941433	34	25	-3	6	340000	65	-2	9.5	-1	0.02	-0.2	28	-1	1	31	5	9	21	-0.2	17	13.66	3	210

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ID	K ⁽²⁾	La ⁽¹⁾	La ⁽²⁾	Lu ⁽¹⁾	Mg ⁽²⁾	Mn ⁽²⁾	Mo ⁽²⁾	Na ⁽¹⁾	Na ⁽²⁾	Nd ⁽¹⁾	Ni ⁽²⁾	P ⁽²⁾	Pb ⁽²⁾	Rb ⁽¹⁾	Sb ⁽¹⁾	Sb ⁽²⁾	Sc ⁽¹⁾	Se ⁽¹⁾	Sm ⁽¹⁾	Sr ⁽²⁾	Ta ⁽¹⁾	Tb ⁽¹⁾
	%	ppm	ppm	ppm	%	ppm	ppm	%	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
941002	0.17	78	29	0.68	0.02	30	18	0.25	-0.01	55	24	0.081	151	150	5.4	6	13	3	7.6	65	2.1	1.2
941003	0.16	73	21	0.8	0.01	141	18	0.21	-0.01	60	27	0.088	121	170	5.9	5	15	6	7.9	64	2.1	-0.5
941004	0.01	0.9	-2	-0.05	-0.01	838	42	0.01	-0.01	-5	131	0.021	8	-15	0.2	13	0.2	-3	-0.1	24	-0.5	-0.5
941005	0.13	46	14	0.43	0.04	5936	28	0.21	0.01	35	229	0.077	124	72	4.2	-2	9	-3	4.9	65	-0.5	1.2
941006	0.06	26	5	0.29	0.03	4529	62	0.07	-0.01	21	321	0.066	26	82	5.5	-2	8.6	-3	2.9	25	-0.5	-0.5
941007	0.13	43	15	0.49	0.04	4281	26	0.15	-0.01	31	167	0.112	124	89	5.9	3	11	-3	5.6	54	-0.5	-0.5
941008	0.01	-0.5	-2	0.09	-0.01	9	15	0.01	0.01	-5	1	0.174	-2	-15	5.1	23	0.5	-3	0.3	4	-0.5	-0.5
941009	0.02	3.4	-2	2.11	0.01	-2	65	0.03	-0.01	8	9	2.919	9	-15	72	59	5.5	-3	3.9	12	-0.5	2.4
941010	0.01	1.3	-2	1.36	-0.01	-2	52	0.02	-0.01	6	4	1.734	2	-15	42	37	3.4	-3	3.1	6	-0.5	-0.5
941011	0.03	7.6	2	0.27	-0.01	6	27	0.05	-0.01	6	28	0.069	3	-15	3.5	15	4.3	-3	2.3	10	-0.5	0.8
941012	0.07	34	3	0.86	0.06	60	22	0.21	0.01	32	67	0.078	9	110	4	-2	15	-3	7.5	41	-0.5	2
941013	0.06	32	2	0.72	0.06	30	28	0.19	0.01	28	57	0.072	18	130	5	5	16	-3	7	23	-0.5	2
941014	0.08	41	3	1.51	0.06	25	58	0.23	0.01	33	80	0.117	27	130	12	3	18	-3	14	34	0.8	3.5
941015	0.07	33	2	0.77	0.06	30	24	0.21	-0.01	23	54	0.068	13	110	4.1	-2	16	-3	7.4	26	-0.5	1.6
941016	0.01	2.1	-2	0.79	-0.01	33	91	-0.01	-0.01	13	102	0.025	2	-15	1.1	16	0.3	-3	6.2	7	-0.5	2.2
941017	0.12	42	16	0.82	0.06	121	19	0.13	-0.01	35	63	0.1	239	110	6.2	-2	12	-3	9.6	81	1.6	2
941022	0.04	20	-2	0.28	0.03	-2	3	0.05	-0.01	9	4	0.02	4	79	2	11	9.6	-3	3	9	0.8	-0.5
941023	0.13	37	8	0.4	0.06	29	12	0.18	0.01	20	39	0.094	11	120	3.3	-2	14	-3	5.3	59	-0.5	0.8
941024	0.03	7.3	-2	0.19	0.05	41	10	0.05	0.01	-5	18	0.101	21	-15	2.8	15	5.9	-3	3	15	-0.5	-0.5
941025	0.01	10	6	2.3	-0.01	624	19	0.01	-0.01	39	455	0.022	8	-15	1.3	31	4.3	-3	19	6	-0.5	6.7
941026	0.02	8	4	1.18	0.01	946	10	0.02	-0.01	11	615	0.014	-2	-15	1.2	27	2.9	-3	8.8	6	-0.5	4.1
941027	0.01	11	7	2.57	-0.01	672	14	0.01	-0.01	55	658	0.016	5	69	1	25	3.1	-3	25	5	0.6	9.3
941028	0.01	7.6	4	1.29	0.01	482	5	0.01	-0.01	17	649	0.012	7	-15	0.8	31	2	-3	10	6	-0.5	4.6
941029	0.02	8.2	5	2.2	0.02	9240	46	-0.01	-0.01	44	1080	0.034	8	-15	11	20	2.4	-3	23	18	-0.5	6.6
941030	0.01	2.5	-2	0.08	0.05	3330	1	0.02	-0.01	-5	395	0.089	4	-15	21	22	0.9	-3	0.4	136	1	-0.5
941032	0.11	32	16	0.33	0.04	476	18	0.06	-0.01	16	113	0.021	530	170	5	2	13	-3	2.7	8	-0.5	-0.5
941033	0.05	15	4	0.3	0.05	10021	12	0.04	0.01	10	816	0.031	96	47	3.7	4	4.8	-3	4.3	62	-0.5	1.1
941034	0.03	15	-2	0.5	0.06	141	60	0.03	-0.01	14	128	0.521	2708	62	330	203	5.8	-3	2.6	71	-0.5	-0.5
941035	-0.01	0.6	-2	-0.05	0.01	44	-1	0.01	-0.01	-5	53	0.006	-2	-15	0.5	32	0.2	-3	0.2	19	-0.5	-0.5
941036	-0.01	-0.5	-2	-0.05	-0.01	49	-1	0.01	-0.01	-5	55	0.006	7	-15	0.3	34	0.2	-3	-227	19	-0.5	-0.5
941037	-0.01	2	-2	0.76	0.05	26	-1	0.02	-0.01	-5	84	-0.001	-2	-15	0.3	10	1.7	-3	11	15	0.8	2.5
941038	0.13	53	6	0.44	0.1	127	8	0.14	0.01	46	50	0.088	29	170	6.2	4	15	-3	6.5	61	-0.5	0.9
941039	0.01	7.2	-2	0.18	0.04	2263	9	0.04	-0.01	-5	563	0.029	5	-15	1.3	6	3.4	-3	2.1	175	-0.5	0.5
941040	-0.01	3.7	-2	0.34	0.02	909	2	0.02	-0.01	6	48	0.002	3	-15	0.7	-2	1.4	-3	3.9	9	-0.5	-0.5
941042	0.02	2.3	-2	0.34	0.06	19196	2	0.02	-0.01	-5	1236	0.066	3	-15	5.6	-2	1.8	-3	1.5	259	-0.5	-0.5
941044	-0.01	5.1	-2	1.46	0.03	-2	7	0.02	-0.01	19	42	0.008	5	-15	1.3	7	2.2	-3	13	25	-0.5	4.9
941047	-0.01	3.9	-2	0.09	0.03	2909	48	0.02	-0.01	-5	387	0.041	7	-15	0.8	4	1.2	-3	-227	50	-0.5	-0.5
941048	-0.01	3	-2	-0.05	0.03	3947	43	0.01	-0.01	-5	533	0.034	13	-15	0.3	-2	0.9	-3	-227	53	-0.5	-0.5
941103	0.11	30	19	0.29	0.03	17	24	0.08	-0.01	20	65	0.036	13	67	17	13	6.7	-3	3.6	81	-0.5	0.6
941104	0.1	32	21	0.31	0.02	76	25	0.07	-0.01	25	42	0.032	11	71	20	15	6.5	-3	3.9	90	-0.5	-0.5
941105	0.06	34	24	0.29	0.02	14	21	0.12	-0.01	25	13	0.027	14	92	11	9	6.1	-3	3.5	64	-0.5	-0.5
941106	0.13	26	18	0.27	0.04	77	26	0.09	-0.01	20	125	0.034	15	77	17	11	7	-3	2.9	91	-0.5	-0.5
941107	0.24	29	15	0.42	0.05	1378	52	0.08	-0.01	22	224	0.059	20	96	43	19	12	-3	3.6	150	-0.5	0.9
941108	0.01	10	-2	0.35	0.03	1294	22	0.03	-0.01	-227	421	0.023	9	-15	22	11	3.4	-3	-227	17	-0.5	-0.5
941109	0.08	22	13	0.49	0.03	188	22	0.08	-0.01	30	141	0.035	8	43	23	13	7.2	-3	4	55	0.8	0.9
941110	0.08	18	10	0.4	0.03	320	36	0.07	-0.01	20	180	0.032	11	66	41	23	6.5	5	3.7	47	-0.5	-0.5
941112	-0.01	8.1	-2	2.12	0.03	578	96	0.01	-0.01	-227	1440	0.047	3	-15	300	150	6.2	-3	-227	11	-0.5	3.4
941113	0.15	30	19	0.6	0.05	791	26	0.15	-0.01	36	262	0.044	18	75	45	28	9.8	-3	4.7	122	-0.5	-0.5
941114	-0.01	5.7	-2	1.12	0.03	705	78	-0.01	-0.01	13	1463	0.032	5	-15	160	93	4.1	-3	4.6	12	-0.5	2
941115	0.16	26	20	0.29	0.03	21	34	0.05	-0.01	21	21	0.082	17	60	23	16	8.1	-3	4.3	115	-0.5	-0.5
941116	0.23	29	21	0.36	0.04	22	47	0.05	-0.01	21	28	0.06	23	89	36	23	10	12	5.4	148	0.6	-0.5
941117	0.01	6.6	-2	0.11	0.02	284	9	0.02	-0.01	8	8	0.05	7	-15	14	8	5.8	11	0.8	10	-0.5	-0.5
941118	0.05	22	7	0.26	0.02	294	23	0.06	-0.01	15	34	0.043	6	44	24	15	5.7	8	2.8	36	0.8	-0.6
941119	0.01	8.1	-2	-227	0.03	963	20	0.04	-0.01	-227	1966	0.037	-2	-15	19	-2	1.6	-3	-227	42	-0.5	0.6
941122	0.06	160	97	3.21	0.03	4	299	0.04	-0.01	170	149	0.022	5	39	9.2	8	5.7	-3	25	25	-0.5	8.3
941123	0.05	140	82	1.71	0.04	2735	29	0.06	-0.01	94	911	0.018	8	71	7.5	-2	5.4	-3	17	180	-0.5	4.8
941124	0.03	110	68	1.36	0.03	7799	36	0.04	-0.01	67	1499	0.015	3	-15	4.3	-2	3.2	-3	13	180	-0.5	3.9
941125	0.13	53	27	0.92	0.05	635	124	0.13	-0.01	48	988	0.044	13	140	15	-2	12	-3	7.8	92	-0.5	1.6
941126	-0.01	170	110	5.53	0.04	2571	218	0.02	-0.01	140	1014	0.014	10	-15	55	13	9	-3	27	275	-0.5	9.9
941127	-0.01	95	78	2.83	0.04	6318	29	-0.01	-0.01	72	2192	0.009	3	-15	26	3	4.8	-3	20	480	-0.5	5.4
941128	0.01	52	33	1.78	0.08	3552	6	0.01	-0.01	54	1874	0.006	8	-15	9.5	-2	5.1	-3	11	268	-0.5	2.9
941129	0.01	80	60	2.59	0.1	3539	13	0.01	-0.01	71	2443	0.006	4	-15	20	2	5	-3	17	451	1.5	5
941130	0.01	13	3	-227	0.03	4243	398	0.01	-0.01	-227	1437	0.022	2	-15	90	58	0.6	-3	-227	92	-0.5	1.1

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Appendix B - Soil Geochemical data

ID	K ⁽²⁾	La ⁽¹⁾	La ⁽²⁾	Lu ⁽¹⁾	Mg ⁽²⁾	Mn ⁽²⁾	Mo ⁽²⁾	Na ⁽¹⁾	Na ⁽²⁾	Nd ⁽¹⁾	Ni ⁽²⁾	P ⁽²⁾	Pb ⁽²⁾	Rb ⁽¹⁾	Sb ⁽¹⁾	Sb ⁽²⁾	Sc ⁽¹⁾	Se ⁽¹⁾	Sm ⁽¹⁾	Sr ⁽²⁾	Ta ⁽¹⁾	Tb ⁽¹⁾
941131	0.01	12	4	-227	0.05	9281	99	0.01	-0.01	-227	1053	0.007	2	-15	45	31	0.8	-3	-227	155	-0.5	1
941132	-0.01	11	-2	-227	0.03	1171	31	-0.01	-0.01	-227	387	0.003	-2	-15	96	64	0.3	-3	-227	206	-0.5	-0.5
941133	-0.01	17	2	0.92	0.03	697	44	0.02	-0.01	-227	415	0.004	-2	-15	330	170	0.7	-3	-227	215	-0.5	3
941134	-0.01	19	2	1.13	0.04	505	45	-0.01	-0.01	-227	383	0.005	-2	-15	430	210	0.8	-3	-227	206	-0.5	3.9
941135	0.01	20	7	4.01	0.02	2054	138	-0.01	-0.01	51	776	0.005	2	81	690	310	2.1	-5	19	89	-0.8	7.9
941136	0.01	19	8	3.81	0.03	327	460	-0.01	-0.01	35	1757	0.015	-2	-15	760	392	3.4	-4	21	31	-0.6	8.9
941137	0.12	43	15	1.31	0.06	69	66	0.11	-0.01	19	443	0.032	11	90	77	39	9.9	8	3.8	86	0.6	1.8
941202	0.02	32	11	2.55	0.07	3849	91	0.01	-0.01	-227	796	0.037	153	-15	120	61	10	-3	-227	173	-0.5	2.8
941203	0.01	15	5	1.96	0.08	5273	8	0.01	-0.01	26	1898	0.021	71	-15	56	16	8.8	-3	5.8	218	-0.5	1.7
941204	-0.01	37	19	1.89	0.01	406	105	0.01	-0.01	52	486	0.017	31	-15	11	23	0.5	-3	-227	29	-0.5	4.3
941205	-0.01	9.2	4	0.24	0.01	359	21	0.01	-0.01	-227	424	0.001	3	-15	6.3	25	0.2	-3	-227	40	-0.5	-0.5
941206	-0.01	14	8	0.78	0.02	2245	51	-0.01	-0.01	13	410	0.008	26	-15	7.1	12	0.3	-3	-227	64	-0.5	1.8
941207	-0.01	18	8	0.79	0.02	504	43	-0.01	-0.01	-227	412	0.003	8	-15	5.5	18	0.5	-3	-227	48	-0.5	1.5
941208	-0.01	8.2	5	-227	0.01	668	5	-0.01	-0.01	7	442	0.001	5	-15	0.6	19	0.3	-3	1.7	69	-0.5	-0.5
941209	0.03	15	5	0.29	0.05	437	23	0.03	-0.01	9	605	0.029	71	35	5.9	15	2.7	-3	-227	54	-0.5	-0.5
941210	-0.01	21	8	1.64	0.03	87	41	0.02	-0.01	28	359	0.018	61	-15	21	18	2	-3	-227	108	-0.5	3.4
941211	-0.01	31	9	2.25	0.04	419	47	0.01	-0.01	56	400	0.021	70	-15	26	16	2	-3	16	102	-0.5	3.8
941212	-0.01	19	5	0.62	0.03	194	42	0.01	-0.01	-227	373	0.003	8	-15	4.8	9	0.5	-3	-227	72	-0.5	1.5
941213	-0.01	27	4	-227	0.02	104	20	0.01	-0.01	24	377	0.001	4	-15	3.6	13	0.4	-3	6.5	55	-0.5	-0.5
941214	-0.01	21	7	0.64	0.03	529	31	0.02	-0.01	-227	401	0.003	6	-15	5.2	10	0.5	-3	-227	85	-0.5	1.4
941215	0.02	48	15	3.41	1	5162	249	0.02	-0.01	25	1370	0.041	540	-15	110	29	16	-3	8.6	115	-0.5	2.5
941216	0.01	12	7	0.47	0.03	231	9	0.01	-0.01	21	336	0.004	9	-15	1.8	8	1.4	-3	6.7	38	-0.5	1.5
941217	0.12	8.9	3	0.13	0.05	15029	3	0.04	0.01	8	1248	0.042	-2	43	5.5	-2	2.6	-3	1.8	85	-0.5	-0.5
941219	-0.01	1.7	-2	0.16	0.02	4400	24	-0.01	-0.01	6	667	-0.001	7	-15	0.7	9	0.3	-3	0.9	61	-0.5	-0.5
941220	-0.01	6.6	4	0.7	0.02	99	94	-0.01	-0.01	13	317	0.002	-2	51	1.5	9	0.2	-3	2.3	39	-0.5	1.6
941302	0.14	61	24	0.57	0.02	19	13	0.18	0.01	44	15	0.114	159	110	5.7	7	12	-3	6.4	53	1.3	0.9
941303	0.15	71	24	0.69	0.03	26	15	0.17	-0.01	50	20	0.115	113	130	6.1	2	14	-3	7.1	46	2.1	0.9
941304	0.19	59	17	0.58	0.03	31	13	0.2	0.01	40	18	0.143	163	130	5.7	3	13	5	6.4	63	1.3	0.8
941305	0.15	60	25	0.65	0.04	67	17	0.16	-0.01	46	39	0.142	217	130	8.9	3	13	4	6.7	93	0.6	1
941306	0.15	58	25	0.66	0.04	69	17	0.14	-0.01	47	38	0.143	204	130	9	3	13	5	6.6	93	1.1	1.1
941307	0.3	66	21	0.64	0.03	874	79	0.1	0.01	47	34	0.105	572	140	9.2	3	12	-3	7.6	69	1.6	-0.5
941308	0.08	73	39	0.56	0.02	4	9	0.1	-0.01	53	5	0.052	942	140	5.3	-2	14	-3	6.9	95	1.4	0.9
941309	0.07	72	36	0.58	0.01	6	8	0.15	-0.01	52	5	0.042	786	110	3.7	-2	11	-3	7.1	59	1.7	0.7
941310	0.13	60	30	0.59	0.04	51	18	0.14	-0.01	46	41	0.105	112	150	7.9	3	12	-3	6.5	79	1.2	0.8
941311	0.16	44	7	0.5	0.02	50	14	0.2	0.01	33	13	0.08	84	140	3.5	-2	15	-3	5.2	71	-0.5	-0.5
941312	0.12	37	6	0.46	0.08	126	16	0.14	-0.01	28	20	0.197	38	130	5.3	3	17	-3	6.7	68	-0.5	-0.5
941313	0.14	56	23	0.59	0.03	30	12	0.19	-0.01	44	28	0.101	50	120	4.7	2	11	-3	6.4	77	1.7	0.8
941314	0.13	42	15	0.51	0.02	19	10	0.18	-0.01	31	17	0.122	58	110	4.1	-2	11	-3	4.9	74	-0.5	0.7
941315	0.16	46	21	0.46	0.14	157	10	0.22	0.01	34	20	0.464	27	100	5.9	2	12	-3	5.5	69	-0.5	-0.5
941317	0.17	78	28	0.7	0.32	116	8	0.63	0.01	52	30	0.229	25	100	5.8	3	14	-3	9.4	85	1.5	1.4
941318	0.17	59	24	0.54	0.25	122	9	0.49	-0.01	45	23	0.217	24	82	5.9	2	12	-3	7	76	0.8	1.3
941319	0.16	46	24	0.38	0.04	60	13	0.18	-0.01	37	33	0.136	49	130	6.2	2	11	-3	5.2	87	-0.5	-0.5
941320	0.14	41	28	0.46	0.04	76	14	0.25	-0.01	31	40	0.069	57	130	4.7	2	8.9	-3	4.6	50	-0.5	-0.5
941322	0.06	36	2	0.35	0.02	86	6	0.31	0.01	26	12	0.058	24	140	3	-2	16	-3	4.2	26	-0.5	-0.5
941323	0.16	64	26	0.64	0.03	39	12	0.18	-0.01	46	25	0.081	86	160	5.3	-2	12	-3	6.3	51	2	0.9
941324	0.12	52	4	0.49	0.02	116	9	0.17	-0.01	32	13	0.092	50	220	2.2	-2	19	-3	5.3	40	1	-0.5
941326	0.08	63	23	0.55	0.02	14	7	0.2	-0.01	45	8	0.043	136	120	2.3	-2	12	-3	5.8	26	1.4	0.8
941327	0.11	52	13	0.53	0.11	47	15	0.23	-0.01	35	16	0.132	393	160	4.5	-2	15	4	5.3	29	1.2	-0.5
941328	0.2	83	43	0.55	0.04	17	32	0.11	-0.01	56	17	0.113	3619	160	14	7	17	7	8	61	1	1.1
941329	0.08	35	10	0.44	0.11	79	11	0.26	-0.01	20	11	0.058	6920	59	9.6	6	6.4	13	3.1	50	-0.5	-0.5
941330	0.55	56	11	0.42	0.01	-2	49	0.05	0.01	31	3	0.028	13466	190	14	9	13	9	3.1	31	1.3	0.8
941331	0.44	33	4	0.23	0.01	-2	32	0.03	0.01	85	2	0.028	4308	86	13	10	5.7	11	1.1	40	-0.5	-0.5
941332	0.15	67	39	0.55	0.02	20	27	0.09	-0.01	49	9	0.047	879	130	7.4	2	10	-3	6.1	28	-0.5	1
941333	0.1	30	14	0.46	0.04	3391	14	0.11	-0.01	22	25	0.108	198	68	4.3	-2	11	-3	6.2	40	-0.5	1.2
941334	0.09	44	16	0.55	0.03	26	15	0.13	-0.01	40	14	0.111	131	110	6.3	2	13	7	7.1	48	-0.5	1.1
941402	0.13	33	14	0.37	0.07	358	29	0.22	0.01	23	24	0.137	701	140	9.3	4	9.9	-3	3.5	24	-0.5	-0.5
941403	0.12	36	15	0.31	0.04	2494	24	0.16	0.01	22	47	0.103	1607	93	9.4	4	11	-3	4.2	49	-0.5	-0.5
941404	0.11	31	16	0.3	0.05	37505	17	0.16	-0.01	21	279	0.066	597	110	5.9	-2	8.8	-3	2.8	35	1.2	-0.5
941405	0.04	4.7	2	0.05	0.05	1176	21	0.02	-0.01	-5	78	0.033	511	42	4	-2	3.1	-3	-227	22	-0.5	-0.5
941406	0.07	22	8	0.23	0.05	3733	24	0.08	-0.01	17	74	0.044	347	79	5.7	-2	7.9	-3	2	28	-0.5	-0.5
941407	0.06	27	9	0.34	0.04	3456	31	0.08	-0.01	21	78	0.062	468	78	6.3	-2	8	-3	2.9	29	0.7	-0.5
941408	0.07	14	3	0.13	0.04	30699	9	0.08	-0.01	10	159	0.04	388	68	3.8	-2	4.7	-3	1	15	-0.5	-0.5
941409	0.05	7.7	2	0.12	0.05	5043	18	0.04	-0.01	7	50	0.029	232	-15	3.1	-2	3.3	-3	0.9	9	-0.5	-0.5
941410	0.08	35	15	0.29	0.02	810	21	0.09	0.01	25	45	0.094	665	98	9.4	6	9.6	-3	3.3	46	-0.5	-0.5

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Appendix B - Soil Geochemical data

ID	K ⁽²⁾	La ⁽¹⁾	La ⁽²⁾	Lu ⁽¹⁾	Mg ⁽²⁾	Mn ⁽²⁾	Mo ⁽²⁾	Na ⁽¹⁾	Na ⁽²⁾	Nd ⁽¹⁾	Ni ⁽²⁾	P ⁽²⁾	Pb ⁽²⁾	Rb ⁽¹⁾	Sb ⁽¹⁾	Sb ⁽²⁾	Sc ⁽¹⁾	Se ⁽¹⁾	Sm ⁽¹⁾	Sr ⁽²⁾	Ta ⁽¹⁾	Tb ⁽¹⁾
941411	0.11	28	8	0.2	0.02	5642	21	0.06	0.01	18	42	0.088	462	89	7.8	-2	7.8	-3	2.7	57	1.1	-0.5
941412	0.07	9.8	7	-0.05	0.05	48286	15	0.03	-0.01	-5	484	0.042	345	-15	5.4	-2	6.2	-3	2.6	26	-0.5	0.5
941413	0.07	7.5	2	0.07	0.05	10336	18	0.03	-0.01	-5	113	0.024	364	48	3.7	-2	3.9	-3	0.7	18	-0.5	-0.5
941414	0.07	13	3	0.14	0.05	3303	42	0.06	-0.01	7	71	0.04	512	57	5.6	2	4.8	-3	0.9	16	-0.5	-0.5
941415	0.11	14	4	0.17	0.05	23843	16	0.08	-0.01	7	36	0.063	356	52	3.6	-2	4.2	-3	1.4	9	-0.5	-0.5
941416	0.07	11	2	0.11	0.05	1516	10	0.04	-0.01	6	21	0.022	135	41	3.4	3	3.5	-3	0.9	14	-0.5	-0.5
941417	0.06	35	13	0.35	0.03	863	16	0.07	-0.01	25	26	0.055	239	110	7.2	2	8.5	-3	3.4	23	0.7	-0.5
941418	0.06	35	12	0.31	0.03	1275	19	0.08	-0.01	21	28	0.059	252	100	8.6	-2	8.7	-3	3.4	21	-0.5	-0.5
941419	0.13	29	10	0.25	0.02	51916	16	0.07	0.01	21	64	0.089	2386	120	8.6	-2	8.9	-3	2.9	41	0.7	-0.5
941422	0.05	21	7	0.19	0.04	3621	32	0.11	-0.01	16	24	0.067	108	91	5.5	2	8.6	-3	2.2	17	-0.5	-0.5
941423	0.11	44	14	0.33	0.01	776	16	0.08	0.01	30	31	0.088	522	130	8.1	6	12	-3	4.1	68	1.3	-0.5
941424	0.12	44	14	0.36	0.01	9766	16	0.08	0.01	29	38	0.094	601	160	8.5	6	12	-3	4.2	72	-0.5	0.5
941426	0.01	12	6	0.34	0.05	36	45	-0.01	-0.01	-227	210	0.009	9	-15	3.1	-2	0.2	-3	-227	36	-0.5	-0.5
941427	-0.01	11	3	1.26	0.06	2137	40	0.01	-0.01	-227	678	0.054	5	-15	88	26	1.7	-3	-227	351	-0.5	-0.5
941428	0.02	6.3	3	1.8	0.17	9201	64	0.02	0.01	-227	1193	0.029	-2	-15	65	22	1.7	-3	-227	280	-0.5	0.9
941429	0.01	13	6	0.75	0.06	11978	47	0.02	-0.01	15	805	0.011	9	-15	1.9	-2	0.7	-3	3.7	169	-0.5	1.8
941430	0.06	32	6	0.26	0.02	230	29	0.07	0.01	19	11	0.044	4397	130	7.8	4	8.8	-3	2.7	137	-0.5	-0.5
941431	0.05	24	3	0.21	0.02	95	15	0.09	0.01	-227	4	0.031	1789	90	6.5	6	5.1	7	1.3	94	-0.5	-0.5
941432	0.07	25	8	0.17	0.03	32	24	0.13	0.01	-227	14	0.078	2464	95	7.7	2	6.9	7	1.7	76	-0.5	-0.5
941433	0.05	17	4	0.13	0.02	-2	15	0.32	0.01	-227	6	0.052	2720	44	7.2	4	3.8	-3	1.5	127	-0.5	-0.5

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Appendix B - Soil Geochemical data

ID	Th ⁽¹⁾	Th ⁽²⁾	Ti ⁽²⁾	U ⁽¹⁾	U ⁽²⁾	V ⁽²⁾	W ⁽¹⁾	W ⁽²⁾	Yb ⁽¹⁾	Zn ⁽¹⁾	Zn ⁽²⁾
	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
941002	18	-2	0.01	11	-5	119	-1	1	5.4	255	119
941003	19	-2	-0.01	11	-5	119	-1	-1	5.6	232	132
941004	-0.2	8	-0.01	3.7	6	-2	-1	-1	-0.2	8050	3667
941005	12	5	-0.01	8.6	-5	87	-1	-1	3.1	4850	2566
941006	6.9	7	-0.01	11	-5	28	-1	-1	2.6	7280	3699
941007	9	2	-0.01	6.6	-5	99	-1	-1	3.4	1400	1417
941008	-0.5	7	-0.01	-0.5	-5	-2	-1	1	0.5	86	28
941009	1.8	7	-0.01	24	23	21	-1	-1	14.2	125	49
941010	1.9	7	-0.01	13	-5	10	-1	-1	9	164	39
941011	3.6	8	-0.01	4.6	-5	8	-1	-1	2.4	1760	788
941012	12	7	-0.01	11	-5	23	-1	-1	6.3	1320	694
941013	13	7	-0.01	16	-5	27	-1	-1	4.7	1010	469
941014	15	8	-0.01	30	-5	45	6	-1	10.8	675	281
941015	12	7	-0.01	15	-5	31	-1	-1	5.5	828	418
941016	-0.5	8	-0.01	51	55	-2	-1	-1	4	8300	5498
941017	13	8	0.01	60	16	112	-1	-1	5.1	5440	2903
941022	5.6	7	-0.01	5.5	-5	8	-1	-1	1.8	340	254
941023	12	5	-0.01	7.1	-5	64	-1	-1	2.9	827	415
941024	3.5	6	-0.01	3.8	-5	14	-1	-1	1.5	230	78
941025	-0.2	9	-0.01	29	-5	3	-1	-1	16.6	5250	2442
941026	0.9	9	-0.01	21	6	4	-1	-1	9.1	6270	3147
941027	-0.2	8	-0.01	27	-5	2	-1	-1	18.4	6290	3063
941028	-0.2	9	-0.01	16	-5	2	-1	-1	9.1	6580	3145
941029	-0.2	14	-0.01	9.2	-5	2	-1	-1	15.1	4610	2286
941030	1.2	8	-0.01	4	-5	-2	-1	-1	0.8	2280	1197
941032	9.5	7	-0.01	12	-5	25	-1	-1	2.2	6140	3303
941033	4.3	14	-0.01	5.4	-5	16	-1	-1	2.2	5800	4401
941034	4	7	-0.01	34	34	13	-1	-1	2.9	5330	2510
941035	-0.2	8	-0.01	-0.5	5	-2	-1	-1	-0.2	2370	1050
941036	-0.2	8	-0.01	2.4	9	-2	-1	-1	0.2	2270	1061
941037	-0.2	5	0.01	3.9	-5	-2	-1	5	5.2	1730	864
941038	17	5	0.01	6.3	-5	41	-1	1	3.2	350	230
941039	2.2	7	0.01	40	17	5	-1	-1	1.3	5150	3089
941040	1.3	3	0.01	2.9	-5	-2	-1	-1	2.5	940	501
941042	1.4	30	0.01	6.4	-5	-2	-1	-1	2.3	8860	5723
941044	-0.2	5	0.01	29	-5	-2	-1	-1	10	1360	670
941047	1	9	0.01	19	-5	2	-1	-1	0.6	8220	4465
941048	0.8	10	-0.01	15	-5	-2	-1	-1	0.5	8520	4758
941103	7.4	4	-0.01	-0.5	-5	150	8	-1	2	490	528
941104	7.1	3	0.01	6.9	-5	127	9	-1	2	300	300
941105	7.6	3	0.01	3.8	-5	194	-1	-1	2	160	162
941106	6.3	4	-0.01	5.5	-5	192	-1	-1	1.5	570	642
941107	10	4	-0.01	28	10	247	-1	-1	2.8	3120	1907
941108	2.3	8	-0.01	74	39	15	-1	-1	2.5	11900	5903
941109	5.9	5	-0.01	21	9	86	-1	-1	2.7	2100	1902
941110	4.9	5	-0.01	19	-5	84	-1	-1	2.4	2800	2319
941112	-0.2	7	-0.01	230	155	5	-1	18	15	22800	10627
941113	8.1	5	0.01	24	16	160	10	-1	3.4	2400	2442
941114	-0.5	6	-0.01	150	150	3	-1	3	8.6	14000	10943
941115	6.7	4	-0.01	12	-5	173	-1	-1	1.7	200	220
941116	6.9	4	-0.01	16	5	223	-1	-1	2.3	170	183
941117	2.8	6	-0.01	13	-5	25	-1	-1	0.7	666	275
941118	6.3	5	-0.01	13	-5	65	-1	-1	1.7	1570	788
941119	1.1	7	-0.01	170	110	6	-1	5	1.2	22400	10544
941122	3.8	-2	-0.01	600	370	39	-1	-1	21.7	5990	3530
941123	3.8	6	-0.01	84	31	26	-1	3	12.2	33500	16074
941124	2.6	15	-0.01	81	28	15	-1	3	9.8	46800	23619
941125	12	6	-0.01	54	18	79	-1	4	5.9	16100	8981
941126	-0.2	5	-0.01	210	100	17	-1	-1	37.6	19100	9428
941127	-0.5	12	-0.01	29	-5	12	-1	-1	20.9	35000	31844
941128	-0.5	6	-0.01	58	29	6	-1	-1	12.7	56000	41538
941129	-0.5	4	-0.01	28	-5	11	-1	-1	18.9	59000	50243
941130	-0.2	8	-0.01	370	190	56	-1	-1	1.7	31400	15515

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Appendix B - Soil Geochemical data

ID	Th ⁽¹⁾	Th ⁽²⁾	Ti ⁽²⁾	U ⁽¹⁾	U ⁽²⁾	V ⁽²⁾	W ⁽¹⁾	W ⁽²⁾	Yb ⁽¹⁾	Zn ⁽¹⁾	Zn ⁽²⁾
941131	-0.2	14	-0.01	310	175	12	-1	-1	2.5	27000	12893
941132	-0.2	9	-0.01	370	205	-2	-1	-1	2	23200	11173
941133	-0.2	9	-0.01	490	270	-2	-1	-1	7.6	19300	9035
941134	-0.3	8	-0.01	540	290	-2	-1	-1	8.9	17800	7381
941135	-0.5	9	-0.01	310	205	-2	-2	-1	21.5	22000	15918
941136	0.9	9	-0.01	280	220	10	-2	-1	24	21000	18099
941137	9.8	6	-0.01	130	60	74	-1	-1	7	9570	4430
941202	-0.2	9	-0.01	500	275	8	-1	-1	15.5	21100	9264
941203	0.8	9	-0.01	150	70	6	-1	-1	10.8	100000	51431
941204	-0.2	8	-0.01	400	225	-2	-1	-1	12.1	15700	7733
941205	-0.2	8	-0.01	180	95	-2	-1	-1	1.4	18400	9070
941206	-0.2	8	-0.01	200	105	-2	-1	-1	4.9	10000	5056
941207	-0.2	8	-0.01	260	125	-2	-1	-1	4.9	14400	6505
941208	0.6	9	-0.01	85	60	-2	-1	-1	1.4	13000	9844
941209	2.7	7	-0.01	120	45	20	-1	-1	1.9	14200	6565
941210	-0.2	7	-0.01	370	205	2	-1	-1	10.3	8960	3925
941211	-0.2	7	-0.01	370	205	2	-1	-1	12.2	10000	4326
941212	-0.2	8	-0.01	370	215	-2	-1	-1	4.4	15100	6602
941213	-0.2	8	-0.01	390	225	-2	-1	-1	2.6	16000	6836
941214	-0.2	9	-0.01	400	225	-2	-1	-1	4.3	13600	6008
941215	5.7	9	-0.01	380	205	28	-1	-1	21.8	29800	13983
941216	-0.5	8	-0.01	25	-5	9	-1	-1	3.5	12000	8063
941217	2.7	15	-0.01	19	-5	8	-1	-1	1.3	11100	5010
941219	-0.5	9	-0.01	23	-5	-2	-1	-1	1.2	22000	17654
941220	-0.2	9	-0.01	76	29	-2	-1	-1	4.6	17800	7946
941302	17	-2	-0.01	9.9	-5	119	-1	-1	4.3	181	100
941303	19	-2	-0.01	9.6	-5	151	-1	1	5.4	232	117
941304	16	-2	-0.01	10	-5	115	-1	-1	4.3	194	113
941305	17	-2	0.01	10	-5	190	-1	-1	4.6	276	185
941306	18	-2	0.01	10	-5	192	3	-1	4.5	302	193
941307	13	-2	-0.01	13	-5	203	-1	-1	4.1	350	398
941308	15	-2	-0.01	15	-5	115	5	-1	3.8	69	31
941309	15	-2	-0.01	13	-5	89	3	-1	4.2	72	39
941310	17	-2	0.01	9.9	-5	162	-1	-1	4.7	322	235
941311	13	-2	-0.01	7.3	-5	53	-1	-1	3	110	84
941312	13	-2	-0.01	11	-5	51	-1	-1	3.4	-50	62
941313	16	-2	0.01	8.6	-5	106	-1	-1	4.3	255	169
941314	11	-2	-0.01	7	-5	82	-1	-1	3.5	160	77
941315	15	-2	0.01	7.4	-5	93	-1	-1	3.3	180	86
941317	23	8	0.02	10	-5	54	-1	-1	5	151	101
941318	16	8	0.02	6.9	-5	47	-1	-1	3.7	200	95
941319	13	-2	-0.01	6.5	-5	118	-1	-1	3.2	210	191
941320	11	-2	0.01	6	-5	130	-1	-1	3.1	320	290
941322	11	-2	-0.01	4.8	-5	23	-1	-1	2.5	150	119
941323	19	-2	-0.01	9.3	-5	110	-1	-1	4.6	240	156
941324	17	-2	-0.01	9.5	-5	28	4	1	3.8	83	52
941326	15	-2	0.01	7.1	-5	60	-1	-1	3.9	80	47
941327	15	-2	0.01	7.7	-5	74	-1	1	3.6	150	81
941328	20	-2	0.01	16	-5	185	-1	-1	4.4	242	162
941329	7.5	2	0.02	-0.5	-5	38	-1	-1	1.8	170	124
941330	15	2	0.02	14	-5	133	15	1	3.3	92	46
941331	9.4	-2	0.01	9.2	-5	151	-1	1	1.4	55	26
941332	11	-2	-0.01	7.7	-5	133	-1	-1	3.8	110	83
941333	8	4	-0.01	19	8	82	-1	-1	2.9	1000	879
941334	15	-2	0.01	16	-5	85	-1	-1	3.7	344	185
941402	9.8	-2	-0.01	6.3	-5	110	-1	-1	2.5	470	386
941403	10	3	-0.01	15	-5	58	-1	-1	2.4	1000	1036
941404	8.4	61	-0.01	35	22	70	-1	2	2.2	16000	10354
941405	1.6	9	-0.01	48	-5	12	-1	-1	0.4	14500	7198
941406	7.1	9	-0.01	22	-5	35	-1	-1	1.5	12300	6647
941407	7.9	8	-0.01	39	-5	28	-1	-1	1.8	10400	5769
941408	3.9	-2	-0.01	42	-5	30	-1	-1	0.9	15800	8293
941409	2.5	13	-0.01	9.9	-5	17	-1	-1	0.6	5500	4196
941410	8.9	6	-0.01	6.7	-5	39	-1	-1	2	1100	1230

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Appendix B - Soil Geochemical data

ID	Th ⁽¹⁾	Th ⁽²⁾	Ti ⁽²⁾	U ⁽¹⁾	U ⁽²⁾	V ⁽²⁾	W ⁽¹⁾	W ⁽²⁾	Yb ⁽¹⁾	Zn ⁽¹⁾	Zn ⁽²⁾
941411	7.1	7	-0.01	7.2	-5	25	16	-1	1.7	1800	1712
941412	3	85	-0.01	28	-5	18	-1	-1	0.8	18000	13900
941413	2.4	25	-0.01	33	-5	21	-1	-1	0.5	17800	8561
941414	4.1	10	-0.01	30	-5	29	-1	-1	0.7	13000	6990
941415	4.2	11	0.01	19	-5	50	-1	-1	1	4850	2543
941416	3.9	8	-0.01	6.4	-5	25	-1	-1	0.6	4340	2132
941417	9.8	6	-0.01	11	-5	35	4	-1	2	1410	989
941418	9.6	6	-0.01	13	-5	37	-1	-1	2.1	1830	1082
941419	9.2	28	-0.01	15	-5	32	-1	-1	2.1	3490	2313
941422	6.8	6	0.01	9.9	-5	31	-1	-1	1.4	2010	1282
941423	13	6	-0.01	10	-5	31	-1	-1	2.7	824	587
941424	14	7	-0.01	8.7	-5	33	-1	-1	2.6	1220	870
941426	0.4	7	-0.01	130	45	-2	-1	-1	1.9	7190	3588
941427	-0.2	7	-0.01	81	16	19	-1	-1	6.8	14300	7014
941428	-0.2	23	-0.01	66	20	-2	-1	-1	12.7	7380	4043
941429	-0.2	25	-0.01	87	19	-2	-1	-1	4.7	12800	7042
941430	7.6	5	-0.01	7.3	-5	57	-1	-1	1.9	770	564
941431	6.2	4	-0.01	-0.5	-5	26	-1	-1	1.2	611	358
941432	7.6	5	-0.01	6.6	-5	58	11	-1	1.2	840	558
941433	6.2	5	-0.01	-0.6	-5	26	-1	-1	0.8	883	534

Notes:

Samples sieved at Geological Survey Branch Laboratory, Victoria to - 230 mesh

2 = aqua regia digestion - inductively coupled plasma emission spectroscopy at ACME Analytical, Vancouver.

1 = Instrumental neutron activation analysis at Activation Laboratories, Ancaster, Ontario.

APPENDIX C - ROCK SAMPLE DESCRIPTIONS AND ANALYTICAL DATA

Reference Guide to Field Observations

MAP 1:50 000 NTS Map Sheet Number

ID Sample ID Number

UTMZ UTM Zone

UTME UTM East Coordinate (NAD 83)

UTMN UTM North Coordinate (NAD 83)

TYPE Sample Type :

O - Fe-oxide: S - Shale:

B - Barite: G - Glacial sediment

DESCRIPTION Rock sample description

METHOD CODE 1 - INAA: 2 - Acid digestion - ICPES

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Appendix C - Rock Geochemical data

MAP	ID	UTMZ	UTME	UTMN	TYPE	DESCRIPTION
94F/13	945002	10	334950	6427730	O	Matrix from mature ferricrete.
94F/13	945003	10	338260	6427900	O	Broken ferricrete slabs from surface.
94F/13	945004	10	338195	6428000	O	Ferricrete sample from hard cemented layer 5-10 below surface.
94F/13	945005	10	338198	6428005	O	Ferricrete slabs from surface.
94F/13	945006	10	338205	6428005	O	Ferricrete slabs from surface.
94F/13	945007	10	338215	6428010	S	Medium grey weathering shale with minor limonitic staining.
94F/13	945008	10	338320	6427895	S	Medium-grey coloured weathered shale.
94F/13	945010	10	337825	6429530	O	Light grey iron stained shale. Scattered pyrite cubes.
94F/13	945011	10	337865	6429570	O	Banded ferricrete from dry creek bed.
94F/13	945012	10	337865	6429570	O	Matrix of mature ferricrete.
94F/13	945013	10	338070	6429570	O	Ferricrete crusts from surface of kill zone.
94F/13	945014	10	338100	6429710	O	Ferricrete from creek bed.
94F/13	945015	10	338030	6429630	O	Possibly smithsonite slabs on surface of kill zone.
94F/13	945017	10	335000	6428050	O	Very recently deposited banded cold spring iron oxide deposit.
94F/13	945018	10	335280	6428000	O	Matrix of mature ferricrete from W bank of creek.
94F/13	945019	10	335580	6427630	S	Rusty weathering black shale from W bank of creek.
94F/13	945020	10	334850	6427620	O	Sample of mature ferricrete.
94F/13	945022	10	334860	6427620	S	Sample from grey shale from W bank of creek.
94F/13	945023	10	334980	6427420	O	Matrix of mature ferricrete from large outcrop east of creek.
94F/13	945024	10	335060	6427170	O	Matrix of mature ferricrete from large outcrop east of creek.
94K/4	945026	10	323580	6446450	O	Sample of "Rippled -terraced" laminated iron oxide from surface.
94K/4	945027	10	323580	6446450	O	Granular to sandy textured red-brown iron oxide from surface.
94K/4	945029	10	323320	6446900	O	Pebble sized angular granular iron oxide clasts from surface.
94K/4	945030	10	323310	6446905	O	Pebble sized angular granular iron oxide clasts from surface 20m S from 945029.
94K/4	945031	10	323300	6446910	S	Dark grey graphitic shale from limb of small fold. Minor pyrite. Outcrop W of creek.
94K/4	945032	10	324140	6445970	O	Matrix of mature ferricrete from large outcrop on S side of creek.
94K/4	945033	10	324210	6445930	O	Matrix of mature ferricrete from large outcrop on S side of creek 20 m W of 945032.
94K/4	945034	10	324280	6445890	O	Matrix of mature ferricrete from large outcrop on S side of creek 50 m W of 945032.
94K/4	945035	10	324330	6445710	O	Ferricrete from east side of creek.
94K/4	945036	10	324210	6445740	O	Granular iron oxide.
94F/13	945042	10	334535	6428010	S	Light grey weathering. Medium to dark grey silty shale. Minor limonite on cleavages.
94F/13	945043	10	334540	6428030	S	Light grey weathering. Medium to dark grey silty shale. Minor limonite on cleavages.
94F/13	945044	10	334980	6427910	S	Grey weathering, cherty shale. Minor limonite staining and quartz veining.
94F/13	945045	10	334980	6428000	B	Float from surface of large barite kill zone.
94F/13	945046	10	334885	6428100	O	Ferricrete from base of pit.
94K/4	945047	10	328700	6440880	O	Ferricrete sample.
94K/4	945048	10	328710	6440880	O	Ferricrete crusts from surface of upper part of kill zone.
94K/4	945049	10	328710	6440860	O	Ferricrete crusts from surface of lower part of kill zone.
94F/13	945050	10	337600	6429805	O	Friable ferricrete from surface of shale talus fan 200 m north from 943070).
94F/13	945051	10	337600	6429805	O	Sample from slabs of dusky-red banded ferricrete 10 m from 945050.
94F/13	945052	10	337600	6429805	O	Sample of yellow-brown "veined" ferricrete from slabs scattered on talus 30 north of 945050.
94F/13	945053	10	333390	6430240	O	Granular ferricrete from surface of dry kill zone.
94F/13	945054	10	334490	6429360	S	Rusty weathering grey laminated silty shale outcrop 100m from ridge crest.
94F/13	945055	10	334485	6429355	S	Light grey weathering, blebby baritic shale from outcrop. Minor pyrite and limonite.
94F/13	945056	10	334485	6429335	S	Dark grey blebby shale from outcrop. Moderate graphite and minor limonite.
94F/13	945057	10	334490	6429350	S	Dark grey blebby shale from outcrop 10 north from 945056. Moderate graphite and minor limonite.
94F/13	945058	10	334485	6429348	S	Grey weathering, silty, carbonaceous shale.
94F/13	945060	10	333890	6430485	S	Tightly folded, graphitic black shale from outcrop.
94F/13	945062	10	333890	6430490	S	Tightly folded, graphitic black shale from outcrop.
94F/13	945063	10	334485	6429648	S	Grey weathering, dark grey graphitic shale.
94F/13	945064	10	333905	6431530	S	Light grey to brown weathering, medium grey silty shale 1 m above spring.
94F/13	945065	10	333900	6431525	S	Tightly folded light grey shale from OC 100m N from 945064. Minor Qtz veins.
94F/13	945066	10	333900	6431525	S	Ribbon-banded baritic shale 1-2 m north of 945065.
94F/13	945067	10	333850	6431610	S	Medium grey rusty mottled weathering dark grey shale cut by sheeted quartz veins.
94F/13	945068	10	333925	6431392	S	Medium grey shale from outcrop 1-2m east of spring.
94F/13	945069	10	333340	6432180	O	Friable red-brown ferricrete from slabs on surface of kill zone.
94F/13	945070	10	332360	6433000	S	Rusty, limonite stained, pyritic shale grey shale interbed in oxide sample 945077.
94F/13	945071	10	332360	6433000	S	Grey shale.
94L/1	945073	10	333200	6438045	O	Friable, dark red-black iron oxide from outcrop. Layer dips 10-15°W at 10-20 cm depth.
94L/1	945074	10	333150	6438040	G	Drift at 100 cm depth at base of profile.
94L/1	945075	10	333150	6438040	G	Medium brown sand 1-2 cm above 945074 at 95-96 cm depth.
94L/1	945076	10	333150	6438040	O	Laminated iron oxide layer at 92-94 cm depth.
94L/1	945077	10	333150	6438040	O	Laminated iron oxide containing wood at 88-90 cm depth.

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MAP	ID	UTMZ	UTME	UTMN	TYPE	DESCRIPTION
94L/1	945078	10	333150	6438040	G	Yellow to brown coloured massive sand with small discoid pebbles at 60-64 cm depth.
94L/1	945079	10	333150	6438040	O	Laminated iron oxide at 50-54 cm depth.
94L/1	945080	10	333150	6438040	O	Laminated iron oxide at 20-24 cm depth.
94L/1	945082	10	333150	6438040	O	Surface iron oxide deposits.
94L/1	945083	10	332790	6438120	O	Iron oxide crusts from surface of outcrop.
94L/1	945084	10	328170	6439830	O	Mature ferricrete from large slabs on kill zone.
94L/1	945085	10	328165	6439830	S	Light grey shale from outcrop at edge of road.

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ID	Ag ¹	Ag ²	Al ²	As ¹	As ²	Au ¹	Ba ¹	Ba ²	Be ²	Bi ²	Br ¹	Ca ¹	Ca ²	Cd ²	Ce ¹	Co ¹	Co ²	Cr ¹	Cr ²	Cs ¹	Cu ²	Eu ¹	Fe ¹
	ppm	ppm	%	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
945002	-5	1.7	0.48	80	80	4	850	86	5	-4	-0.5	-1	-0.01	-0.4	10	-1	-2	16	11	2	23	-0.2	32.4
945003	-5	0.7	0.27	190	169	-2	370	91	1	-4	-0.5	-1	0.01	21.4	7	130	124	-5	8	-1	25	-0.2	43.8
945004	-5	-0.3	0.62	2.9	6	-2	150	110	-1	-4	-0.5	-1	-0.01	0.4	-3	26	16	33	24	-1	342	-0.2	45.3
945005	-5	0.7	1.53	16	21	-2	21000	2636	6	-4	0.8	-1	0.01	1.7	16	45	42	24	22	1	158	0.9	25.6
945006	-5	-0.3	2.74	72	73	-2	-50	31	6	-4	-0.5	-1	-0.01	1.2	3	76	73	8	6	-1	296	0.4	38.6
945007	-5	1	4.87	3.6	-4	3	16000	13829	2	-4	-0.5	-1	0.05	0.6	52	36	32	89	85	4	5	0.4	0.49
945008	-5	2.1	4.76	22	16	-2	7300	9612	2	-4	-0.5	-1	0.1	14.7	44	76	73	69	69	6	5	0.5	1.55
945010	-5	1.3	1.66	5	325	14	840	1481	7	-4	-0.5	2	0.02	12.2	7	10	49	11	22	-1	13	2.7	43.7
945011	-5	0.5	0.38	64	61	4	560	166	9	-4	-0.5	-2	0.43	186.9	264	32	24	-5	10	-1	3	8.3	37.6
945012	6	0.8	2.51	20	23	-2	5300	6264	3	-4	-0.5	-1	0.04	4.5	61	14	8	35	31	4	14	-0.2	24.3
945013	-5	-0.3	0.02	6	6	-2	140	80	-1	-4	-0.5	32	28.45	66.6	5	120	116	-5	14	-1	-2	0.2	1.55
945014	-5	-0.3	0.19	150	126	4	710	45	2	-4	-0.5	-2	0.02	55.9	237	55	41	6	4	-1	3	11.6	47.3
945015	-5	0.4	0.41	190	149	2	1600	327	7	-4	-0.5	-2	0.02	131.1	400	37	25	6	6	-1	2	18.9	42.6
945017	33	31.9	0.67	35	23	12	2800	2448	4	-4	1.6	-1	0.23	12.1	7	30	22	11	10	-1	15	-0.2	36.1
945018	-5	1.1	3.77	12	10	-2	7600	2990	-1	-4	2.7	-1	0.04	5.3	33	11	6	79	63	9	76	0.7	18.7
945019	-5	0.6	6.75	10	-4	5	3100	1189	2	-4	-0.5	-1	0.12	2.2	53	36	34	77	76	7	49	0.9	2.27
945020	-5	-0.3	0.22	3.4	12	-2	-50	37	-1	-4	1.7	-1	0.02	2.4	-3	3	-2	6	2	-1	24	-0.2	40.4
945022	-5	0.3	1.31	5.4	10	6	1100	1258	-1	-4	-0.5	-1	0.01	-0.4	9	96	91	11	12	2	3	-0.2	0.16
945023	-5	0.3	0.85	5.1	12	-2	2200	2162	4	-4	1.3	-1	0.01	2.4	9	-1	-2	20	15	2	14	-0.2	39.5
945024	-5	2.8	3.99	10	7	11	37000	3416	-1	-4	0.7	-1	0.01	-0.4	43	2	-2	59	53	14	22	-0.2	11.2
945026	-5	-0.3	0.18	87	86	-2	460	19	6	-4	0.6	-1	0.02	100.5	14	66	58	-5	10	-1	3	0.8	44.4
945027	-5	-0.3	0.45	130	116	-2	220	36	9	-4	1.6	-1	0.01	30.5	24	55	44	6	8	2	4	1.4	44.8
945029	-5	-0.3	0.07	58	71	-2	-50	23	3	-4	-0.5	-1	0.07	30.3	14	68	60	8	9	-1	3	-0.2	45.7
945030	-5	-0.3	0.01	7.3	20	3	430	51	-1	-4	-0.5	-1	0.08	45.6	8	45	41	8	8	-1	3	-0.2	42.7
945031	-5	1.1	3.27	7.6	6	6	550	707	-1	-4	-0.5	-1	0.33	-0.4	38	48	45	51	47	5	5	1.1	0.56
945032	-5	1.5	2.44	87	79	-2	820	950	2	-4	-0.5	-1	0.05	7.5	31	130	120	53	43	10	47	0.8	25.1
945033	-5	1.4	4.69	36	32	-2	7500	7269	-1	-4	0.9	-1	0.05	3.2	54	7	5	86	73	11	121	1.4	11.4
945034	-5	1.4	4.9	27	29	-2	9600	9542	-1	-4	3.1	-1	0.12	23	45	16	14	78	77	12	87	1.2	12.8
945035	-5	2.5	3.19	55	52	4	1700	2052	-1	-4	1.1	-1	0.06	11.6	33	71	61	65	60	9	139	0.8	21
945036	-5	-0.3	0.32	1.8	17	5	230	190	-1	-4	-0.5	-1	0.01	17.4	7	75	65	7	8	-1	60	-0.2	44.6
945042	-5	0.4	5.89	4.3	4	-2	5600	7379	2	-4	0.6	-1	0.01	-0.4	54	72	72	73	77	12	8	0.5	0.73
945043	-5	-0.3	3.76	4.7	-4	3	1700	2388	-1	-4	-0.5	-1	0.01	-0.4	37	57	57	47	48	4	9	0.4	0.5
945044	-5	0.8	0.32	2.2	11	-2	42000	5778	-1	-4	-0.5	-1	0.01	-0.4	6	61	69	7	4	-1	3	-0.2	0.16
945045	34	19.8	0.04	0.7	-4	-2	370000	14447	-1	-4	-0.5	-1	0.01	-0.4	5	7	8	-5	2	-1	3	-0.2	0.11
945046	-5	-0.3	1.83	8.2	5	-2	3600	3626	6	-4	5.7	-1	0.01	11.3	26	90	89	27	25	3	52	0.9	29.5
945047	-5	0.9	2.26	6.6	-4	3	21000	8425	-1	-4	1.1	-1	0.02	46.6	26	89	90	30	34	9	19	1	18.6
945048	-5	-0.3	1.99	6.3	-4	-2	14000	6246	6	-4	-0.5	-1	0.02	9.2	18	8	6	27	28	9	12	-0.2	27.1
945049	-5	-0.3	1.71	6.6	-4	6	11000	3713	5	-4	-0.5	-1	0.01	6.8	15	11	7	27	23	7	16	-0.2	31.2
945050	-5	-0.3	0.21	33	26	-2	590	709	-1	-4	1	-1	0.01	50.2	41	370	417	7	7	2	6	2.3	41.1
945051	-5	-0.3	0.31	81	58	-2	490	171	-1	-4	-0.5	-2	0.01	25	52	52	36	-5	6	-1	5	5.8	49.2
945052	-5	-0.3	1.01	1000	930	-2	540	49	-1	-4	-0.5	-2	0.01	36.8	43	70	66	7	2	-1	43	4.9	46
945053	-5	-0.3	0.36	2.9	-4	-2	-50	145	2	-4	1	-1	0.01	4.1	13	110	107	9	4	1	4	2.2	43.7
945054	-5	-0.3	6.8	8.3	-4	2	3600	5067	2	-4	-0.5	-1	0.01	-0.4	78	21	20	78	85	12	26	0.7	1.47
945055	-5	0.3	2.55	7.1	5	-2	90000	4927	-1	-4	-0.5	-1	0.02	0.5	22	62	65	31	18	4	5	-0.2	0.47
945056	-5	0.3	1.47	7.2	5	-2	300000	11268	-1	-4	-0.5	-1	0.02	1.4	7	34	32	23	6	3	16	-0.2	0.52
945057	-5	0.5	2	8.5	8	-2	180000	12907	-1	-4	-0.5	-1	0.02	-0.4	14	22	23	29	11	2	9	-0.2	0.83
945058	-5	-0.3	4.11	4	-4	7	1700	2449	2	-4	-0.5	-1	0.01	-0.4	29	84	87	40	44	8	2	0.3	0.34
945060	-5	0.3	3.83	20	18	97	1900	2610	2	-4	-0.5	-1	-0.01	-0.4	34	84	78	48	53	10	3	0.4	0.7
945062	-5	0.7	1.49	10	19	157	760	988	-1	-4	-0.5	-1	0.02	-0.4	8	150	154	14	18	2	3	-0.2	0.4
945063	-5	0.7	3.31	3.7	-4	-2	1300	1847	2	6	0.6	-1	-0.01	-0.4	24	47	47	35	47	10	3	0.3	0.36
945064	-5	-0.3	5.82	5.8	-4	-2	7400	9301	2	-4	-0.5	-1	0.01	-0.4	59	68	63	74	75	6	3	0.5	0.67
945065	-5	-0.3	2.37	5.1	-4	-2	250000	2972	-1	-4	-0.5	-1	0.04	-0.4	15	11	10	36	12	2	14	-0.2	0.79
945066	-5	-0.3	0.39	1.1	7	-3	380000	9709	-1	-4	-0.5	-1	0.11	-0.4	7	5	4	30	2	-1	3	-0.2	0.16
945067	-5	-0.3	6.21	13	9	-2	40000	978	3	-4	-0.5	-1	0.05	-0.4	75	92	86	86	79	4	15	0.9	1.04
945068	-5	-0.3	5.79	11	4	-2	4000	5086	2	-4	-0.5	-1	0.02	0.8	59	65	62	71	77	6	27	0.6	1.45
945069	-5	-0.3	0.78	13	14	-2	6100	7695	7	-4	-0.5	-1	0.1	10.2	9	590	582	14	11	1	8	0.4	34.5
945070	-5	0.3	1.91	3.3	6	4	1400	1935	-1	-4	-0.5	5	4.63	9.4	22	65	59	19	22	3	59	1.9	3.63
945071	-5	-0.3	6.02	12	-4	6	3700	5149	2	-4	-0.5	-1	0.03	-0.4	68	96	94	69	80	9	19	0.8	1.71
945073	-5	-0.3	0.29	1300	1023	3	640	66	-12	-4	-0.5	-2	0.08	33	176	51	40	-5	5	-1	-2	8.6	46.7
945074	-5	0.5	4.85	100	54	12	2000	2758	2	-4	-0.5	-1	0.33	15.1	69	50	44	62	63	6	71	0.9	11
945075	-5	-0.3	0.53	710	439	4	700	221	5	-4	-0.5	-2	0.29	50.8	98	120	102	16	8	-1	9	4.1	44.7
945076	-5	-0.3	0.1	1300	1111	2	650	23	-10	-4	-0.5	-2	0.08	30.3	101	67	53	-5	11	-1	3	2.9	49.7
945077	-5	-0.3	0.04	1100	924	6	390	13	8	-4	-0.5	-2	0.07	18.2	78	59	51	11	11	-1	2	2.8	47.9

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ID	Ag ¹	Ag ²	Al ²	As ¹	As ²	Au ¹	Ba ¹	Ba ²	Be ²	Bi ²	Br ¹	Ca ¹	Ca ²	Cd ²	Ce ¹	Co ¹	Co ²	Cr ¹	Cr ²	Cs ¹	Cu ²	Eu ¹	Fe ¹
945078	-5	0.3	0.07	950	921	3	860	56	-16	-4	-0.5	-2	0.1	20.1	168	150	146	10	16	-1	3	4.9	49
945079	-5	0.4	0.16	980	935	3	660	31	-15	-4	-0.5	-2	0.06	14.5	131	110	101	-5	15	-1	3	4.6	49
945080	-5	-0.3	0.12	470	453	4	560	51	8	-4	-0.5	-2	0.09	13.6	89	92	86	-5	18	-1	3	3	46.7
945082	-5	0.5	0.24	1100	983	3	750	46	-15	-4	-0.5	-2	0.1	20.3	210	51	42	-5	21	-1	5	8.4	48.2
945083	-5	-0.3	0.26	94	104	-2	190	161	3	-4	-0.5	-1	0.02	9.8	13	130	150	9	13	-1	16	-0.2	44.7
945084	-5	0.3	1.41	28	23	-2	7800	511	5	-4	-0.5	-1	0.01	5.8	11	9	6	20	24	6	13	-0.2	25.3
945085	-5	0.5	8.25	8.2	11	4	16000	11816	4	-4	-0.5	-1	0.01	-0.4	75	89	86	85	75	25	5	0.6	5.31

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ID	Fe ²	Hf ¹	Hg	Ir ¹	K ²	La ¹	La ²	Lu ¹	Mg ²	Mn ²	Mo ¹	Mo ²	Na ¹	Na ²	Nb ²	Nd ¹	Ni ¹	Ni ²	P ²	Pb ²	Rb ¹	Sb ¹
ID	%	ppm	ppb	ppb	%	ppm	ppm	ppm	%	ppm	ppm	ppm	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
945002	33.39	-1	625	-5	3.31	6.6	5	-0.05	0.05	-5	9	6	0.02	0.01	-2	-5	-41	-2	0.237	2501	110	4.8
945003	45.92	-1	110	-5	0.01	4.8	-2	0.09	0.04	1215	-1	10	-0.01	-0.01	-2	-5	920	871	0.012	-4	-15	14
945004	47.06	-1	45	-5	0.01	-0.5	-2	-0.05	0.04	454	4	-2	-0.01	-0.01	-2	-5	-48	61	0.02	-4	-15	6.6
945005	27.9	2	75	-5	0.28	7.7	5	0.25	0.09	1042	25	13	0.01	0.01	-2	6	320	58	0.043	8	38	11
945006	40.07	-1	50	-5	0.01	2.7	-2	0.19	0.03	888	37	41	-0.01	-0.01	-2	-5	-50	96	0.002	6	-15	51
945007	0.52	3	60	-5	1.70	27	17	0.21	0.34	60	6	3	0.02	0.02	8	17	-28	7	0.015	11	95	2.1
945008	1.66	2	120	-5	1.68	23.2	19	0.27	0.27	96	8	5	0.02	0.02	5	20	170	64	0.068	12	110	9.5
945010	28.57	-1	235	-5	0.54	7.6	6	0.13	0.1	2074	-1	38	-0.01	0.01	-2	6	-41	109	0.232	152	21	3.7
945011	36.35	-1	20	-5	0.01	190	160	2.08	0.04	277	43	14	-0.01	-0.01	-2	144	1100	784	0.008	11	-15	2
945012	24.76	2	110	-5	0.82	27.6	18	0.19	0.21	94	120	29	0.03	0.04	-2	33	470	127	0.03	5	46	4.9
945013	1.67	-1	-5	-5	0.01	2.8	-2	0.18	0.21	2057	6	4	-0.01	-0.01	-2	-5	1500	1408	0.002	-4	-15	0.7
945014	47.81	-1	50	-5	0.01	130	112	3.39	0.04	142	130	97	-0.01	-0.01	-2	130	1500	2109	0.004	-4	34	7.5
945015	41.81	-1	10	-5	0.01	237	197	5.31	0.03	259	88	30	-0.01	-0.01	-2	228	980	1552	0.003	-4	-15	5.5
945017	36.06	-1	540	-5	0.21	3	-2	0.05	0.05	1815	17	7	-0.01	-0.01	-2	5	-52	68	0.022	10072	-15	1.6
945018	18.39	4	225	-5	1.44	17.1	7	0.27	0.22	626	21	9	0.03	0.03	4	13	230	62	0.088	297	120	5.9
945019	2.34	4	105	-5	2.21	29.2	11	0.34	0.53	65	14	4	0.2	0.22	11	28	-22	52	0.068	11	130	3.3
945020	46.12	-1	45	-5	0.01	-0.5	-2	-0.05	0.04	30	4	2	-0.01	-0.01	-2	-5	-30	9	0.059	4	-15	0.3
945022	0.23	-1	375	-5	0.50	4.1	3	0.07	0.07	9	8	6	-0.01	0.01	-2	-5	-20	3	0.003	16	32	3.1
945023	39.65	-1	205	-5	0.25	4.1	-2	0.05	0.08	19	4	-2	-0.01	0.01	-2	-5	-42	4	0.065	235	22	0.9
945024	11.37	4	2625	-5	1.45	23.7	13	0.25	0.26	16	12	12	0.03	0.03	4	-5	-38	14	0.038	1256	95	5.4
945026	48.28	1	1900	-5	-0.01	3.6	-2	0.5	0.04	124	70	43	-0.01	-0.01	-2	5	950	872	0.005	-4	-15	1.2
945027	46.84	-1	50	-5	-0.01	5.6	-2	0.93	0.04	310	68	80	-0.01	-0.01	-2	16	2200	1664	0.005	-4	-15	1.6
945029	49.64	-1	15	-5	-0.01	2.4	-2	0.07	0.05	376	50	19	-0.01	-0.01	-2	7	660	784	0.005	-4	-15	0.6
945030	49.34	-1	10	-5	-0.01	1.7	-2	-0.05	0.04	291	-1	5	-0.01	-0.01	-2	6	550	567	0.005	-4	-15	-0.1
945031	0.64	1	160	-5	1.16	20.6	14	0.23	0.22	46	35	24	0.01	0.01	4	22	150	46	0.161	47	61	4.9
945032	25.01	1	50	-5	0.91	16.3	9	0.26	0.22	2345	110	76	0.02	0.01	2	16	-52	179	0.145	457	79	13
945033	11.81	4	180	-5	1.55	27.1	16	0.39	0.4	75	120	66	0.07	0.07	2	30	240	144	0.195	180	110	14
945034	13.34	3	300	-5	1.68	23.1	14	0.44	0.43	226	79	59	0.06	0.05	3	21	400	296	0.163	201	110	15
945035	21.3	2	220	-5	1.06	16.1	9	0.3	0.31	1187	120	106	0.02	0.02	-2	16	270	222	0.177	325	77	15
945036	47.58	-1	65	-5	0.06	2.9	-2	-0.05	0.05	895	39	7	0.01	0.01	3	7	220	150	0.029	9	-15	1.7
945042	0.83	3	95	-5	2.11	28.8	21	0.25	0.3	33	9	5	0.03	0.03	8	26	-27	9	0.03	21	120	3.1
945043	0.56	2	60	5	1.14	19.6	11	0.22	0.13	22	9	10	0.08	0.1	5	17	-26	12	0.019	17	65	0.9
945044	0.19	-1	425	-5	0.07	4.5	4	-0.05	0.01	5	5	3	-0.01	0.01	-2	-5	-20	4	0.006	70	-15	1.8
945045	0.07	-1	2270	-5	0.02	3.1	-2	-0.05	0.01	7	-2	-2	-0.01	-0.01	-2	-5	-20	2	0.004	156	-15	0.5
945046	29.76	1	595	-5	0.36	8.3	4	0.22	0.08	7247	23	14	0.02	0.02	-2	11	-48	81	0.05	50	27	1.9
945047	19.18	-1	230	-5	0.66	11.3	10	0.15	0.08	26032	20	10	0.05	0.05	-2	11	-45	197	0.027	279	60	2.3
945048	28.81	-1	120	-5	0.61	9.2	4	0.11	0.12	752	11	11	0.04	0.04	-2	7	-43	26	0.021	188	60	1.8
945049	30.52	-1	135	-5	0.56	8.3	5	0.11	0.13	986	12	11	0.03	0.03	-2	8	-44	27	0.031	101	47	2.3
945050	46.32	-1	155	-5	0.02	8.6	5	0.5	0.04	4463	-1	19	-0.01	-0.01	2	17	220	542	0.009	-4	-15	10
945051	49.07	-1	95	-5	0.02	18	10	1.51	0.05	674	-1	41	-0.01	-0.01	2	48	280	189	0.003	-4	-15	8.7
945052	46.52	-1	60	-5	0.01	12	3	2.34	0.04	982	200	181	-0.01	-0.01	2	44	1400	1343	0.003	-4	-15	95
945053	46.53	-1	45	-5	0.04	3.1	3	0.68	0.05	1370	6	8	-0.01	-0.01	2	14	520	432	0.006	-4	-15	0.3
945054	1.79	3	80	-5	2.49	35.9	15	0.32	0.43	49	10	4	0.07	0.08	11	31	-32	16	0.047	20	120	2.3
945055	0.56	-1	720	-5	0.86	12.5	7	0.12	0.09	25	12	12	0.02	0.02	3	-5	-22	6	0.022	74	48	2.1
945056	0.58	-1	375	-5	0.53	7.1	2	0.17	0.02	44	-2	9	0.05	0.06	2	-5	-20	6	0.013	37	35	1.6
945057	0.95	-1	105	-5	0.68	9.4	4	0.08	0.03	23	12	12	0.02	0.02	2	7	-20	9	0.026	36	23	1.7
945058	0.38	-1	145	-5	1.50	14.4	12	0.15	0.25	15	8	2	0.02	0.02	3	10	-25	6	0.004	296	81	2.4
945060	0.69	2	975	-5	1.36	18.8	16	0.19	0.19	21	12	11	0.01	0.02	5	19	-26	18	0.014	233	85	45
945062	0.43	-1	640	-5	0.50	5.1	5	0.17	0.07	22	4	6	0.01	0.01	2	-5	-23	6	0.01	93	23	43
945063	0.39	-1	665	-5	1.19	13	10	0.14	0.19	17	18	15	0.02	0.02	3	11	-24	33	0.01	434	86	2.7
945064	0.71	3	100	-5	1.93	30.7	17	0.28	0.27	30	4	4	0.04	0.04	9	26	-30	9	0.019	14	110	2.9
945065	0.78	-1	50	-5	0.64	14.3	5	0.12	0.06	35	-2	4	0.02	0.02	3	-5	-21	15	0.025	7	53	1.5
945066	0.11	-1	30	-5	0.09	2.6	2	-0.05	0.01	12	13	2	0.04	0.05	-2	-5	-37	2	0.006	5	-15	0.2
945067	1.17	5	225	-5	1.56	37.3	19	0.31	0.27	32	11	11	0.27	0.29	10	27	-34	18	0.048	20	100	4
945068	1.56	3	140	-5	1.97	29.9	13	0.27	0.29	38	7	5	0.09	0.09	9	26	800	17	0.044	17	120	3.8
945069	33.97	2	70	-5	0.22	4.4	2	0.16	0.06	10565	4	5	-0.01	0.01	-2	-5	1100	885	0.013	-4	-15	0.6
945070	3.96	-1	190	-5	0.56	9.3	4	0.2	1.55	1007	6	2	0.03	0.03	-2	12	150	92	0.08	6	27	0.7
945071	1.9	3	85	-5	2.04	32.2	22	0.35	0.28	55	7	4	0.07	0.08	9	30	-31	31	0.048	18	110	3
945073	47.82	-1	95	-5	0.01	84	69	5.15	0.05	371	280	357	-0.01	0.01	2	110	1700	1565	0.007	-4	-15	67
945074	11.67	4	155	-5	1.61	30.2	23	0.44	0.84	324	130	103	0.29	0.3	5	29	640	565	0.077	13	75	13
945075	41.79	-1	105	-5	0.11	57	49	2.9	0.1	508	670	864	0.05	0.04	-2	62	2200	2263	0.044	4	54	25
945076	55.27	-1	150	-5	-0.01	58.1	54	2.53	0.05	147	250	342	0.01	0.01	3	57	1600	1757	-0.002	-4	-15	1.9
945077	55.16	-1	85	-5	-0.01	50.3	48	1.65	0.04	109	160	215	-0.01	-0.01	-2	37	2000	1722	-0.002	-4	-15	1

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Appendix C - Rock Geochemical data

ID	Fe ²	Hf ¹	Hg	Ir ¹	K ²	La ¹	La ²	Lu ¹	Mg ²	Mn ²	Mo ¹	Mo ²	Na ¹	Na ²	Nb ²	Nd ¹	Ni ¹	Ni ²	P ²	Pb ²	Rb ¹	Sb ¹
945078	54.74	-1	40	-6	-0.01	89	86	3.97	0.04	866	260	322	-0.01	-0.01	-2	91	3000	2666	-0.002	-4	-15	2
945079	54.16	-1	40	-5	-0.01	74.1	69	3.31	0.04	502	200	263	-0.01	-0.01	3	71	2100	1871	0.002	-4	-15	22
945080	53.19	-1	50	-5	-0.01	48.2	45	1.71	0.05	373	110	126	-0.01	-0.01	-2	58	1800	1904	0.002	-4	-15	16
945082	50.62	-1	30	-5	-0.01	120	117	4.02	0.04	192	180	221	-0.01	-0.01	-2	120	960	1378	0.004	-4	-15	37
945083	50.77	-1	35	-5	0.04	7.1	7	0.18	0.04	1688	44	33	-0.01	0.01	-2	8	600	636	0.011	-4	-15	2.7
945084	25.56	-1	55	-5	0.77	6.3	2	0.05	0.08	117	11	8	0.02	0.02	-2	6	190	87	0.128	7908	47	1.5
945085	5.64	4	15	-5	2.92	35.1	6	0.42	0.39	164	-1	2	0.78	0.78	7	28	-43	3	0.021	373	190	0.6

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Appendix C - Rock Geochemical data

ID	Sb ²	Sc ¹	Sc ²	Se ¹	Sm ¹	Sn ²	Sr ²	Ta ¹	Tb ¹	Th ¹	Th ²	Ti ²	U ¹	U ²	V ²	W ¹	W ²	Y ²	Yb ¹	Zn ¹	Zn ²	Zr ²
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
945002	-4	1.4	-1	-3	0.3	2	853	-0.5	-0.5	2.1	3	0.01	0.6	-10	195	-1	-2	2	-0.2	190	161	7
945003	-4	0.4	-1	-3	1.6	4	5	-0.5	-0.5	-0.2	-2	-0.01	53	75	-2	1	3	26	0.7	15000	10048	-2
945004	-4	0.9	-1	7	0.2	-2	2	-0.5	-0.5	0.6	-2	-0.01	0.6	-10	3	6	-2	3	-0.2	1700	1360	-2
945005	8	2.8	3	-3	3.7	4	212	-0.5	0.7	1.8	2	0.04	9.6	-10	323	12	2	19	1.4	2400	2050	15
945006	43	2.2	2	-3	1.3	-2	-2	-0.5	0.5	0.3	-2	-0.01	7.1	20	-2	5	-2	21	1.2	3600	2880	-2
945007	-4	7.5	8	-3	2.3	-2	92	-0.5	-0.5	7.2	6	0.24	3.4	-10	299	85	98	6	1.1	-50	29	48
945008	11	7.2	8	-3	3.5	-2	138	-0.5	-0.5	5.3	5	0.20	8	-10	856	30	33	8	1.5	690	622	46
945010	-4	0.5	3	-3	1.5	2	15	-0.5	-0.5	-0.2	3	0.05	-0.5	25	262	-1	-2	14	0.8	3200	4312	17
945011	-4	0.8	-1	-3	31	-2	158	-0.5	7.7	0.3	-2	-0.01	51	65	6	14	5	398	14.5	24000	16880	5
945012	-4	4.7	5	-3	5.8	-2	55	-0.5	-0.5	3.5	4	0.10	170	210	298	-1	-2	43	1.3	4300	3549	28
945013	-4	0.7	-1	-3	0.8	-2	347	-0.5	-0.5	-0.2	-2	-0.01	5.4	-10	-2	13	6	20	1.2	23000	16401	-2
945014	-4	4	3	-3	32	-2	5	-0.5	9.4	-0.2	-2	-0.01	96	115	12	17	5	394	24.3	36700	23173	10
945015	7	3.5	3	-3	50	-2	10	1.1	15	-0.2	-2	-0.01	99	140	13	19	3	659	37.7	29100	19408	11
945017	-4	0.9	-1	-3	0.8	-2	40	-0.5	-0.5	0.6	2	0.01	18	23	62	24	13	5	0.3	8000	5937	6
945018	-4	7.5	9	5	2.1	-2	74	-0.5	-0.5	5.9	6	0.13	3.6	-10	227	-1	-2	7	1.6	2200	1888	39
945019	-4	10	-12	-3	3.7	-2	39	-0.5	-0.5	8.5	7	0.27	3.6	-10	295	34	44	9	2.3	143	99	55
945020	-4	0.2	-1	-3	-0.1	-2	-2	-0.5	-0.5	-0.2	-2	-0.01	-0.5	-10	-2	4	2	2	-0.2	581	491	2
945022	4	1.9	2	-3	0.3	2	4	-0.5	-0.5	0.9	2	0.04	1.7	-10	61	520	632	2	0.5	-50	11	15
945023	-4	2.5	2	-3	0.8	2	12	-0.5	-0.5	1.3	2	0.02	1.8	-10	97	-1	-2	3	0.3	490	381	11
945024	-4	8.2	9	-3	3.2	2	85	-0.5	-0.5	5.7	5	0.18	4.9	-10	432	4	-2	7	1.2	370	325	50
945026	-4	0.2	-1	-3	2.8	2	3	-0.5	1.1	-0.2	-2	-0.01	91	120	-2	12	3	80	2.8	19900	13692	-2
945027	-4	0.4	-1	-3	3.2	-2	2	-0.5	2.3	-0.2	-2	-0.01	120	145	-2	5	-2	133	5.9	17100	12205	2
945029	-4	0.1	-1	-3	2.2	2	11	-0.5	-0.5	-0.2	-2	-0.01	76	100	-2	21	3	31	0.6	22100	16014	-2
945030	5	-0.1	-1	-3	0.6	-2	33	-0.5	-0.5	-0.2	-2	-0.01	72	95	-2	8	3	6	-0.2	16500	12480	-2
945031	6	4.9	6	11	4.7	-2	19	1.1	0.7	3.9	4	0.07	9.1	10	632	230	283	12	1.3	52	60	33
945032	7	4.9	5	24	2.8	-2	116	0.8	0.7	5.2	6	0.07	6.9	10	571	-1	-2	14	1.2	3700	2980	36
945033	12	9.9	11	14	5.8	-2	152	0.8	0.8	6.8	8	0.13	39	45	599	-1	-2	14	2.2	2400	2048	52
945034	17	10	11	6	5.3	-2	147	-0.5	0.8	6.7	7	0.13	23	19	639	4	-2	22	2.5	4700	4078	54
945035	16	8.1	9	19	3.7	-2	71	-0.5	-0.5	4.9	6	0.08	37	45	633	-1	-2	15	1.3	4000	3355	36
945036	-4	0.6	-1	4	1.5	-2	-2	-0.5	-0.5	0.5	2	0.01	51	65	14	11	8	30	0.5	6600	5046	7
945042	5	8	9	-3	3.7	-2	23	-0.5	-0.5	7	8	0.25	3.3	10	391	37	50	7	1.5	-50	25	54
945043	-4	6.6	7	-3	2.9	-2	45	-0.5	-0.5	4.9	5	0.17	3.7	10	273	67	91	7	1.4	95	11	44
945044	5	0.4	-1	-3	0.3	-2	124	-0.5	-0.5	0.5	-2	0.02	-0.5	10	62	450	557	-2	-0.2	78	3	5
945045	-4	0.3	-1	-3	0.2	-2	74	-0.5	-0.5	-0.2	-2	-0.02	-0.5	10	7	37	45	-2	-0.2	57	9	4
945046	-4	5.5	6	-3	4.1	5	26	-0.5	-0.5	2.1	3	0.04	19	15	93	33	35	11	1.2	3600	3048	21
945047	-4	4.6	5	3	2.3	3	130	0.6	-0.5	2.8	3	0.06	13	10	161	48	36	6	0.7	8900	7760	26
945048	-4	3.4	4	-3	1.1	3	97	-0.5	-0.5	2.2	4	0.05	2.9	10	141	22	14	4	0.5	5200	4507	20
945049	-4	3	3	-3	1	3	66	-0.5	-0.5	2.4	4	0.04	5.4	10	129	17	8	4	0.5	4900	3877	17
945050	9	0.4	-1	-3	4.5	-2	6	-0.5	3.3	-0.2	-2	-0.01	160	215	8	16	3	200	4	16300	12753	3
945051	14	0.8	-1	-3	15	-2	2	-0.5	6.3	-0.2	-2	-0.01	260	310	-2	20	7	316	11.3	13300	9302	4
945052	82	3.3	3	-3	9.9	-2	3	-0.6	5.5	0.3	-2	-0.01	230	300	2	12	4	340	14.7	24000	16397	4
945053	-4	1	-1	-3	6.4	-2	2	-0.5	2.2	-0.2	-2	-0.01	6.4	-10	4	7	-2	117	4.4	4300	3300	2
945054	-4	12	12	-3	4.2	-2	36	1.4	-0.5	8.7	7	0.29	2.8	-10	316	27	36	7	1.7	120	30	59
945055	-4	3.7	4	-3	1.2	-2	120	0.5	-0.5	2.8	2	0.12	3.2	-10	234	110	140	4	0.7	80	75	24
945056	-4	1.8	2	-5	0.4	2	94	-0.5	-0.5	1.8	2	0.06	-0.5	-10	105	43	41	2	0.5	158	128	11
945057	-4	2.6	3	-5	0.8	-2	165	-0.5	-0.5	2.4	2	0.09	-0.5	-10	173	73	87	4	0.5	69	72	17
945058	4	6.1	7	-3	1.7	-2	7	-0.5	-0.5	2.1	2	0.15	2.7	-10	506	59	81	4	0.8	-50	15	28
945060	59	4.9	6	-3	1.9	2	18	1	-0.5	4.7	5	0.16	2.1	-10	249	320	416	5	1.1	120	95	40
945062	55	2.4	3	-5	0.4	-2	9	2.2	-0.5	1.8	4	0.04	1.6	-10	185	1500	1390	2	1	73	55	12
945063	5	5.1	6	-3	1.4	-2	6	0.7	-0.5	2.7	3	0.13	3.4	-10	439	150	197	4	0.9	-50	11	30
945064	6	8.9	9	-3	3.4	-2	42	1.1	0.7	7.4	6	0.25	2.6	-10	353	44	55	6	1.6	-50	21	53
945065	-4	4.2	4	-3	0.9	-2	85	-0.5	-0.5	3.2	2	0.10	-0.5	-10	200	87	88	3	0.6	-50	19	20
945066	-4	0.7	-1	-3	0.2	-2	45	-0.5	-0.5	-0.3	-2	-0.01	-0.5	-10	62	41	37	2	-0.2	62	51	3
945067	-4	11	12	-3	4.7	-2	84	-0.5	-0.5	9.2	7	0.29	4.7	-10	708	110	128	7	2	-50	11	70
945068	-4	10	11	-3	3.8	-2	34	-0.5	-0.5	7.9	6	0.24	3.4	-10	351	94	117	6	1.7	110	81	53
945069	-4	1.5	-1	-3	1.5	3	58	0.9	-0.5	1.3	2	0.02	2.9	-10	52	24	17	25	1	3300	2455	8
945070	5	4.4	5	-3	4.5	-2	673	-0.5	1.2	2.2	4	0.05	1.4	-10	98	670	747	16	1.5	1400	1261	16
945071	5	10	12	-3	5.1	-2	46	-0.5	-0.5	8.2	8	0.25	2.7	-10	330	39	57	8	2	130	113	58
945073	65	5.1	4	-3	24	-2	10	-0.5	9.6	0.3	-2	-0.01	100	150	39	18	3	474	30.6	22000	15125	15
945074	15	10	11	-3	5.2	-2	75	-0.5	0.8	8.3	9	0.15	23	-10	397	3	-2	26	2.4	6400	5151	57
945075	11	3.2	2	-5	11	-2	28	-0.5	5.8	-0.2	-2	0.01	54	50	25	-1	7	429	19.1	23500	15139	8
945076	12	1.5	-1	-5	7.6	-2	11	-0.5	3.7	-0.2	2	-0.01	100	110	-2	18	-2	403	14.7	23000	17431	5
945077	8	1.1	-1	-5	4.9	-2	10	-0.5	3.3	-0.2	-2	-0.01	94	115	-2	13	-2	376	10	23300	17970	3

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Appendix C - Rock Geochemical data

ID	Sb ²	Sc ¹	Sc ²	Se ¹	Sm ¹	Sn ²	Sr ²	Ta ¹	Tb ¹	Th ¹	Th ²	Ti ²	U ¹	U ²	V ²	W ¹	W ²	Y ²	Yb ¹	Zn ¹	Zn ²	Zr ²
945078	-4	2.2	-1	-5	12	-2	11	-0.5	6.2	-0.3	-2	-0.01	130	155	-2	10	-2	628	24	19900	15514	6
945079	31	2.5	2	-3	11	-2	9	-0.5	6.2	-0.2	-2	-0.01	110	130	7	11	-2	485	20.1	22800	17176	6
945080	27	1.4	-1	-3	7.8	-2	10	-0.5	3.1	-0.2	-2	-0.01	100	120	30	47	3	266	10.5	24600	18745	4
945082	38	2.8	2	-3	23	-2	19	-0.5	9.1	-0.3	-2	-0.01	88	110	39	11	-2	516	25.8	25500	19029	8
945083	14	0.6	-1	-3	2.1	-2	9	-0.5	-0.5	0.7	2	-0.01	34	30	18	11	-2	46	1.2	9800	8349	3
945084	6	2.4	2	-3	0.4	-2	120	-0.5	0.6	1.7	4	0.02	0.7	-10	74	74	67	2	0.3	7600	6435	15
945085	4	15	15	-3	3.6	-2	69	-0.5	0.8	7.4	6	0.25	2.2	-10	169	42	47	4	2.4	780	683	60

APPENDIX D - STREAM AND MOSS MAT FIELD AND ANALYTICAL DATA

Reference Guide to Field Observations

MAP	1:50 000 NTS Map Sheet Number	BNK PPT	Bank Precipitate: N None (otherwise, = SED COL)
ID	Sample ID Number		
UTMZ	UTM Zone	CHL BD	Channel Bed: S Coarse sand - gravel B Boulders F Fine sand - clay O Organic matter
UTME	UTM East Coordinate (NAD 83)		
UTMN	UTM North Coordinate (NAD 83)	CHL PTN	Channel Pattern: S Shoots and pools M Meandering B Braided D Disturbed
LAT	Latitude (decimal degrees)		
LONG	Longitude (decimal degrees)	ELEV	Sample site elevation above sea level (metres).
STN	Replicate Sample Status : 0 - Routine Sample: 1 - 1st Field Duplicate: 2 - 2nd Field Duplicate	PHY	Physiography : Y Youthful Mts M Mature Mts. L Lowland Plain H Hilly Undulating
MED	Sample Medium : 1 Stream Sediment 7 Moss mat sediment	DRN	Drainage Pattern : D Dendritic T Herringbone
WAT COL	Water Colour : 0 Colourless 2 White Cloudy 1 Brown Clear 3 Brown Cloudy	TYP	Stream Type : P Permanent S Seasonal
FLW	Water Flow Rate : 1 Slow 3 Fast 2 Moderate 4 Torrent	ODR	Stream Order : 1 Primary 3 Tertiary 2 Secondary 4 Quaternary
SED COL	Sediment Colour : R Red W White-Buffer G Grey-Blue O Olive-Green T Tan-Brown B Black	SRC	Stream Source : M Melt Water G Groundwater
SED PPT	Sediment Precipitate: N None (otherwise = SED COL)	HGTH	Height of moss (m) above water level
CON	Site Contamination: N None D Domestic P Possible	COLR	Moss colour. L - Light D - Dark
COMP	Sediment Composition, Estimate of Sand - Fines - Organic Content : 0 Absent 1 Minor (<1/3 of total) 2 Moderate (1/3 to 2/3 of total) 3 Major (>2/3 of total)	HLTH	Moss health: A Alive D Dead
WDTH	Stream Width (metres)	HOST	Most growth host : 1 Rock - competent 3 Log - competent 2 Rock - incompetent 4 Log - incompetent
DPTH	Stream Depth (centimetres)	THCK	Moss mat thickness (cm)
BNK	Bank Composition : U Unknown C Colluvium A Alluvium R Rock G Glacial outwash O Organic T Till S Scree, talus	DATE	Sample Collection Date (day/month)
		METHOD CODE	¹ - INAA: ² - ICPES

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Appendix D - Stream and moss mat sediment geochemical data

MAP	ID	UTMZ	UTM E	UTM N	LAT	LONG	STN	MED	WAT COL	FLW	SED COL	SED PPT	CON	COMP	WIDTH	DPTH
94F/13	947002	10	334881	6428165	-125.79118	57.96447	0	7	0	3	T	N	M	022	2.0	20
94F/13	947003	10	334878	6428101	-125.79118	57.96389	0	7	0	2	T	N	N	013	1.0	10
94F/13	947004	10	335223	6428079	-125.78534	57.96382	0	7	0	3	T	N	P	220	2.0	50
94F/13	947005	10	335223	6428079	-125.78534	57.96382	0	1	0	3	T	N	P	130	2.0	50
94F/13	947006	10	335205	6428021	-125.78560	57.96330	0	7	0	2	T	R	M	220	1.0	25
94F/13	947007	10	335426	6427812	-125.78172	57.96150	0	7	0	3	T	N	M	220	2.0	50
94F/13	947008	10	335546	6427824	-125.77972	57.96166	0	7	0	3	T	N	N	220	3.0	50
94F/13	947009	10	335546	6427824	-125.77972	57.96166	0	1	0	3	T	N	N	310	3.0	50
94F/13	947010	10	335609	6427636	-125.77853	57.95999	0	7	0	4	T	N	N	130	1.5	50
94F/13	947011	10	335504	6427642	-125.78030	57.96001	0	7	0	3	T	N	M	220	5.0	75
94F/13	947012	10	335504	6427642	-125.78030	57.96001	0	7	0	3	T	N	M	220	5.0	75
94F/13	947013	10	335531	6427392	-125.77966	57.95777	0	1	0	3	T	N	M	220	5.0	75
94F/13	947014	10	335506	6427167	-125.77993	57.95574	0	7	0	2	T	N	M	220	5.0	75
94F/13	947015	10	335485	6426858	-125.78007	57.95297	0	7	0	2	T	N	M	220	5.0	75
94F/13	947016	10	335403	6426803	-125.78142	57.95244	0	7	0	2	T	N	M	220	3.0	50
94F/13	947017	10	335512	6426601	-125.77944	57.95067	0	7	0	3	T	N	M	220	3.0	75
94F/13	947018	10	335512	6426601	-125.77944	57.95067	0	1	0	3	T	N	M	220	3.0	75
94F/13	947019	10	335463	6426557	-125.78023	57.95026	1	7	0	2	T	N	M	220	3.0	50
94F/13	947020	10	335463	6426557	-125.78023	57.95026	2	7	0	2	T	N	M	220	3.0	50
94F/13	947022	10	335742	6426276	-125.77534	57.94784	0	7	0	2	T	N	P	120	6.0	100
94F/13	947023	10	334844	6427857	-125.79159	57.96169	0	7	0	1	T	R	P	220	0.5	10
94F/13	947024	10	334844	6427857	-125.79159	57.96169	0	1	0	1	T	R	D	310	0.5	10
94F/13	947025	10	334861	6427635	-125.79114	57.95970	0	7	0	3	T	N	P	220	5.0	100
94F/13	947026	10	334979	6427435	-125.78901	57.95795	0	1	0	3	T	N	P	220	6.0	100
94F/13	947027	10	334979	6427435	-125.78901	57.95795	0	1	0	3	T	N	P	310	6.0	100
94F/13	947028	10	334990	6427133	-125.78862	57.95525	0	7	0	2	T	N	P	220	4.0	50
94F/13	947029	10	334990	6427133	-125.78862	57.95525	0	1	0	2	T	N	P	220	4.0	50
94F/13	947031	10	334926	6427101	-125.78967	57.95494	0	7	0	3	B	N	N	130	1.0	25
94F/13	947032	10	335032	6426981	-125.78780	57.95390	0	7	0	3	T	N	N	130	2.0	40
94F/13	947033	10	323299	6446879	-126.00113	58.12788	0	7	2	3	T	N	N	220	2.0	50
94F/13	947034	10	323546	6446446	-125.99620	58.12410	0	7	2	3	T	N	N	130	3.0	50
94F/13	947035	10	323546	6446446	-125.99620	58.12410	0	1	2	3	T	N	N	130	3.0	50
94F/13	947036	10	323513	6446221	-125.99658	58.12207	0	7	0	3	B	N	N	130	1.0	50
94F/13	947037	10	323603	6446198	-125.99504	58.12190	0	7	0	2	T	N	N	130	2.0	50
94F/13	947038	10	323834	6446021	-125.99099	58.12048	0	7	0	2	T	N	N	220	2.0	50
94F/13	947039	10	323745	6445931	-125.99243	58.11956	1	7	0	2	T	N	N	220	1.5	50
94F/13	947040	10	323745	6445931	-125.99243	58.11956	2	7	0	2	T	N	N	220	1.5	50
94F/13	947042	10	323745	6445931	-125.99243	58.11956	0	1	0	2	T	N	N	130	1.5	50
94F/13	947043	10	328562	6440442	-125.90677	58.07221	0	7	0	2	T	N	N	130	1.0	30
94F/13	947044	10	328562	6440442	-125.90677	58.07221	0	1	0	2	T	N	N	220	1.0	30
94F/13	947045	10	328212	6440052	-125.91241	58.06858	0	1	0	2	T	N	N	130	1.0	50
94F/13	947046	10	333589	6430262	-125.81447	57.98280	0	7	0	2	T	N	N	130	2.0	50
94F/13	947047	10	333472	6431513	-125.81732	57.99398	0	7	0	2	T	N	N	130	2.0	50
94F/13	947048	10	333472	6431513	-125.81732	57.99398	0	1	0	2	T	N	N	220	2.0	50
94F/13	947049	10	333583	6430853	-125.81498	57.98810	0	7	0	2	T	N	N	220	2.0	30
94F/13	947050	10	333460	6430858	-125.81706	57.98810	0	7	0	2	T	N	N	130	3.0	30
94F/13	947051	10	327428	6439617	-125.92536	58.06437	0	7	0	3	B	N	N	030	2.5	50
94F/13	947053	10	327428	6439617	-125.92536	58.06437	0	1	0	3	B	N	N	030	2.5	50
94F/13	947054	10	326604	6439278	-125.93906	58.06101	0	7	0	2	B	N	N	130	1.0	50
94F/13	947055	10	326943	6439097	-125.93318	58.05952	0	7	2	3	B	N	N	130	1.0	50
94F/13	947056	10	327412	6439334	-125.92542	58.06183	0	7	0	2	B	N	N	030	1.0	50
94F/13	947057	10	327763	6439601	-125.91968	58.06436	0	7	0	2	B	N	N	030	1.0	50
94F/13	947058	10	327875	6439600	-125.91778	58.06439	0	7	0	3	B	N	N	130	1.0	50
94F/13	947059	10	333834	6430334	-125.81037	57.98354	0	7	0	3	G	N	N	130	2.0	50
94F/13	947060	10	333531	6431624	-125.81640	57.99500	0	7	0	2	R	R	N	121	1.0	30
94F/13	947062	10	333000	6431332	-125.82516	57.99218	0	7	0	3	T	N	N	130	1.5	50
94F/13	947063	10	333296	6431757	-125.82046	57.99610	0	7	0	2	B	N	N	130	3.0	60
94F/13	947065	10	333296	6431757	-125.82046	57.99610	0	7	0	2	B	N	N	030	3.0	60
94F/13	947066	10	332866	6432249	-125.82807	58.00036	0	7	0	2	B	N	N	030	6.0	50
94F/13	947067	10	332866	6432249	-125.82807	58.00036	0	1	0	2	B	N	N	310	6.0	50
94F/13	947068	10	332350	6432442	-125.83694	58.00189	0	7	2	2	T	N	N	030	1.0	75
94F/13	947069	10	332541	6432611	-125.83383	58.00348	0	7	0	2	B	N	N	130	7.0	50
94F/13	947070	10	332541	6432611	-125.83383	58.00348	0	1	0	2	B	N	N	220	7.0	50
94F/13	947071	10	332468	6438329	-125.83913	58.05475	0	7	2	2	B	N	N	130	8.0	50
94F/13	947072	10	332467	6438333	-125.83915	58.05478	0	1	2	2	B	N	N	130	8.0	50

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Appendix D - Stream and moss mat sediment geochemical data

MAP	ID	UTMZ	UTM E	UTM N	LAT	LONG	STN	MED	WAT COL	FLW	SED COL	SED PPT	CON	COMP	WIDTH	DPTH
94F/13	947073	10	332018	6438568	-125.84692	58.05672	0	7	0	2	T	N	N	130	3.0	75
94F/13	947074	10	331954	6438654	-125.84805	58.05747	0	7	0	2	T	N	N	130	1.0	50
94F/13	947075	10	330727	6438579	-125.86877	58.05633	0	7	0	2	T	N	N	130	2.0	50
94F/13	947076	10	330623	6438450	-125.87043	58.05513	0	7	0	2	T	N	N	130	1.0	50
94F/13	947077	10	330597	6438702	-125.87106	58.05738	0	7	0	2	T	N	N	130	1.0	50
94F/13	947078	10	331417	6438560	-125.85708	58.05642	1	7	0	2	T	N	N	220	3.0	60
94F/13	947079	10	331417	6438560	-125.85708	58.05642	2	7	0	2	T	N	N	220	3.0	60
94F/13	947080	10	331417	6438560	-125.85708	58.05642	0	1	0	2	B	R	N	130	3.0	60
94F/13	947082	10	330029	6438890	-125.88080	58.05885	0	7	0	2	T	N	N	130	3.0	50
94F/13	947083	10	330029	6438890	-125.88080	58.05885	0	1	0	2	B	N	N	130	3.0	50
94F/13	947084	10	329372	6438956	-125.89197	58.05919	0	7	0	2	T	N	N	130	3.0	50
94F/13	947085	10	328662	6439361	-125.90428	58.06255	0	7	0	3	B	N	P	130	2.5	75
94F/13	947086	10	328662	6439361	-125.90428	58.06255	0	1	0	3	B	N	P	130	2.5	75
94F/13	947087	10	329495	6437313	-125.88870	58.04450	0	7	0	2	T	N	N	130	1.0	50
94F/13	947088	10	329408	6437071	-125.89000	58.04230	0	7	0	2	T	N	N	130	2.0	50
94F/13	947089	10	329408	6437071	-125.89000	58.04230	0	1	0	2	B	N	N	130	2.0	50
94F/13	947091	10	329371	6437184	-125.89070	58.04330	0	7	0	2	T	N	N	130	1.0	50
94F/13	947092	10	329319	6438168	-125.89230	58.05210	0	7	0	2	B	N	N	130	2.0	50
94F/13	947093	10	329319	6438168	-125.89230	58.05210	0	1	0	2	B	N	N	310	2.0	50
94F/13	947094	10	326218	6438681	-125.94514	58.05550	0	7	0	2	T	N	N	130	1.0	50
94F/13	947095	10	325926	6438882	-125.95023	58.05719	0	7	0	2	T	N	N	130	1.0	75
94F/13	947096	10	328792	6439462	-125.90215	58.06351	0	7	2	3	T	N	N	130	5.0	100
94F/13	947097	10	328792	6439462	-125.90215	58.06351	0	1	2	3	T	N	N	130	5.0	100
94F/13	947098	10	328497	6439924	-125.90749	58.06754	0	7	2	3	T	N	P	130	5.0	100

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Appendix D - Stream and moss mat sediment geochemical data

ID	BNK	BNK PPT	CHL BD	CHL PTN	ELEV	PHY	DRN	TYP	ORD	SRC	HGHT	COLR	HLTH	HOST	THCK	DATE	Ag ¹ ppm	Ag ² ppm	Al ² %
947002	C	R	S	S	1680	M	D	P	1	G	0.1	D	A	1	5	22/06/94	150	164.4	0.26
947003	S	N	S	S	1670	M	D	P	1	G	0.2	D	A	2	5	22/06/94	-5	7.1	1.7
947004	S	N	S	S	1600	M	D	P	1	G	0.2	L	A	2	3	22/06/94	-5	1.1	0.48
947005	S	N	S	S	1600	M	D	P	1	G						22/06/94	-5	0.9	0.41
947006	S	N	S	S	1600	M	D	P	2	G	0.1	D	A	2	5	22/06/94	91	73.3	2.31
947007	S	N	B	S	1560	M	D	P	2	G	0.3	D	A	2	3	22/06/94	-5	1.8	0.49
947008	R	N	S	S	1490	M	D	P	2	G	0.3	D	A	2	3	22/06/94	-5	0.6	0.7
947009	R	N	S	S	1490	M	D	P	2	G						22/06/94	-5	0.6	0.71
947010	R	N	R	S	1480	M	D	P	1	G	0.2	D	A	2	2	22/06/94	-5	0.6	0.69
947011	S	N	S	S	1460	M	D	P	3	G	0.2	D	A	2	3	22/06/94	-5	0.8	0.61
947012	S	N	S	S	1430	M	D	P	3	G	0.2	D	A	2	3	22/06/94	-5	0.8	0.68
947013	S	N	S	S	1430	M	D	P	3	G						22/06/94	-5	0.7	0.73
947014	A	N	S	S	1410	M	D	P	3	G	0.2	D	A	1	3	22/06/94	-5	0.8	0.69
947015	A	N	S	S	1390	M	D	P	3	G	0.2	D	A	1	2	22/06/94	-5	0.7	0.66
947016	A	N	S	S	1390	M	D	P	3	G	0.3	D	A	2	3	22/06/94	-5	1.2	1.1
947017	A	N	S	S	1370	M	D	P	3	G	0.2	D	A	2	3	22/06/94	-5	0.7	0.71
947018	A	N	S	S	1370	M	D	P	3	G						22/06/94	-5	0.6	0.73
947019	A	N	S	S	1370	M	D	P	2	G	0.2	D	A	4	3	22/06/94	-5	1.7	1.99
947020	A	N	S	S	1370	M	D	P	2	G	0.2	D	A	4	3	22/06/94	-5	1.6	1.94
947022	A	N	S	S	1320	M	D	P	1	G	0.3	D	A	2	1	22/06/94	-5	0.6	0.71
947023	O	R	F	S	1660	M	D	P	1	G	0.1	L	A	2	3	22/06/94	-5	0.7	1.48
947024	O	R	F	S	1660	M	D	P	2	G						22/06/94	-5	0.4	1
947025	S	N	B	S	1550	M	D	P	2	G	0.1	D	A	2	3	22/06/94	-5	1.6	2.58
947026	S	N	B	S	1505	M	D	P	2	G						22/06/94	-5	1.5	1.54
947027	S	N	B	S	1505	M	D	P	2	G						22/06/94	-5	1.3	1.67
947028	A	R	S	S	1460	M	D	P	3	G	0.2	L	A	1	1	22/06/94	-5	1	0.8
947029	A	R	S	S	1460	M	D	P	3	G						22/06/94	-5	0.7	0.56
947031	R	N	B	S	1465	M	D	P	2	G	0.1	D	A	2	3	22/06/94	-5	1.1	0.59
947032	S	N	S	S	1420	M	D	P	2	G	0.1	D	A	1	2	22/06/94	-5	1	0.83
947033	A	N	S	S	1360	M	T	P	3	G	0.2	D	A	1	2	28/06/94	-5	0.5	0.28
947034	R	R	S	S	1410	M	T	P	3	G	0.1	D	A	1	1	28/06/94	-5	0.6	0.33
947035	R	R	S	S	1410	M	T	P	3	G						28/06/94	-5	0.6	0.26
947036	R	N	B	S	1420	M	T	P	1	G	0.1	D	A	1	5	28/06/94	-5	0.9	0.26
947037	A	N	S	S	1425	M	T	P	3	G	0.2	D	A	2	3	28/06/94	-5	0.5	0.32
947038	A	N	S	S	1450	M	T	P	2	G	0.2	D	A	2	2	28/06/94	-5	1	0.98
947039	R	N	S	S	1405	M	T	P	3	G	0.2	D	A	2	1	28/06/94	-5	0.5	0.27
947040	R	N	S	S	1405	M	T	P	3	G	0.2	D	A	2	1	28/06/94	-5	0.5	0.26
947042	R	N	S	S	1405	M	T	P	3	G						28/06/94	-5	0.4	0.24
947043	R	N	S	S	1350	M	T	P	2	G	0.0	D	A	1	1	29/06/94	-5	-0.1	0.49
947044	R	N	S	S	1350	M	T	P	2	G						29/06/94	-5	0.1	0.47
947045	R	N	S	S	1300	M	T	P	2	G						29/06/94	-5	0.3	0.47
947046	R	N	S	S	1590	M	D	P	2	G	0.1	D	A	1	4	04/07/94	-5	1.1	0.7
947047	A	N	S	S	1510	M	D	P	3	G	0.2	L	A	2	5	04/07/94	-5	0.6	1.04
947048	A	N	S	S	1510	M	D	P	3	G						04/07/94	-5	0.7	0.8
947049	R	N	S	S	1530	M	D	P	3	G	0.1	D	A	1	4	04/07/94	-5	0.8	0.75
947050	R	N	S	S	1520	M	T	P	1	G	0.2	L	A	2	3	04/07/94	-5	1	0.91
947051	A	N	S	S	1240	M	T	P	2	G	0.2	D	A	2	5	04/07/94	-5	1.1	0.49
947053	A	N	S	S	1240	M	T	P	2	G						04/07/94	-5	0.8	0.42
947054	A	N	S	S	1260	M	T	P	2	G	0.2	D	A	1	1	04/07/94	-5	0.4	0.42
947055	A	N	S	S	1230	M	T	P	3	G	0.1	D	A	2	3	04/07/94	-5	1.1	0.52
947056	A	N	B	S	1230	M	T	P	1	G	0.2	D	A	1	1	04/07/94	-5	0.6	0.4
947057	A	N	S	S	1265	M	T	P	1	G	0.2	D	A	2	3	04/07/94	-5	2.1	0.6
947058	R	N	S	S	1265	M	T	P	2	G	0.2	D	A	1	1	04/07/94	-5	2.3	0.6
947059	R	R	B	S	1510	M	T	P	1	G	0.1	L	A	1	5	04/07/94	-5	1.8	1.4
947060	A	R	S	S	1420	M	T	P	1	G	0.2	D	A	2	3	04/07/94	-5	0.3	1.64
947062	R	W	B	S	1450	M	T	P	1	G	0.3	D	A	1	1	04/07/94	-5	0.8	1.08
947063	R	N	S	S	1430	M	T	P	3	G	0.3	D	A	2	1	04/07/94	-5	0.5	0.8
947065	R	N	S	S	1430	M	T	P	3	G						04/07/94	-5	0.7	0.83
947066	C	N	S	S	1415	M	T	P	3	G	0.1	D	A	2	3	04/07/94	-5	0.6	0.96
947067	C	N	S	S	1415	M	T	P	3	G						04/07/94	-5	0.5	0.74
947068	A	N	S	S	1390	M	T	P	2	G	0.6	D	A	2	5	04/07/94	-5	0.8	0.74
947069	A	N	S	S	1480	M	T	P	3	G	0.3	D	A	2	5	04/07/94	-5	0.2	1.26
947070	A	N	S	S	1480	M	T	P	3	G						04/07/94	-5	0.3	0.57
947071	A	R	S	S	1420	M	T	P	3	G	0.2	D	A	2	2	05/07/94	-5	0.6	0.73
947072	A	R	S	S	1490	M	T	P	3	G						05/07/94	-5	0.6	0.58

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ID	BNK	BNK PPT	CHL BD	CHL PTN	ELEV	PHY	DRN	TYP	ORD	SRC	HGHT	COLR	HLTH	HOST	THCK	DATE	Ag ¹	Ag ²	Al ²
947073	A	N	S	S	1460	M	T	P	3	G	0.4	D	A	2	3	05/07/94	-5	0.6	1.37
947074	A	N	S	S	1465	M	T	P	3	G	0.3	D	A	2	2	05/07/94	-5	0.4	0.99
947075	A	N	S	S	1390	M	T	P	3	G	0.3	D	A	2	2	05/07/94	-5	0.4	1.03
947076	A	N	S	S	1400	M	T	P	3	G	0.3	D	A	2	3	05/07/94	-5	0.4	0.7
947077	R	W	S	S	1410	M	T	P	3	G	0.3	D	A	1	2	05/07/94	-5	0.6	2.52
947078	A	N	S	S	1420	M	T	P	3	G	0.2	L	A	2	4	05/07/94	-5	0.4	0.98
947079	A	N	S	S	1420	M	T	P	3	G	0.2	L	A	2	4	05/07/94	-5	0.4	0.96
947080	A	N	S	S	1420	M	T	P	3	G						05/07/94	-5	0.5	0.83
947082	A	N	S	S	1360	M	T	P	3	G	0.3	L	A	2	4	05/07/94	-5	0.3	1.21
947083	A	N	S	S	1360	M	T	P	3	G						05/07/94	-5	0.4	0.87
947084	A	N	S	S	1330	M	T	P	3	G	0.3	D	A	2	4	05/07/94	-5	0.5	0.95
947085	R	N	S	S	1310	M	T	P	3	G	0.4	D	A	1	2	05/07/94	-5	0.7	0.56
947086	R	N	S	S	1310	M	T	P	3	G						05/07/94	-5	0.7	0.54
947087	A	N	S	S	1440	M	T	P	3	G	0.3	D	A	2	3	05/07/94	-5	1.5	1.61
947088	A	N	S	S	1450	M	T	P	3	G	0.3	D	A	2	2	05/07/94	-5	0.8	0.73
947089	A	N	S	S	1450	M	T	P	3	G						05/07/94	-5	0.8	0.73
947091	A	N	S	S	1450	M	T	P	3	G	0.3	L	A	2	3	05/07/94	-5	0.6	0.47
947092	A	N	S	S	1410	M	T	P	3	G	0.3	D	A	1	3	05/07/94	-5	0.7	0.65
947093	A	N	S	S	1410	M	T	P	3	G						05/07/94	-5	0.7	0.58
947094	A	N	S	S	1260	M	T	P	3	G	0.3	D	A	2	5	05/07/94	-5	0.5	0.59
947095	A	N	S	S	1260	M	T	P	2	G	0.5	D	A	2	4	05/07/94	-5	0.7	0.45
947096	R	N	S	S	1320	M	T	P	3	G	0.5	D	A	1	2	05/07/94	-5	0.4	0.92
947097	R	N	S	S	1320	M	T	P	3	G						05/07/94	-5	0.3	0.72
947098	A	N	S	S	1280	M	T	P	3	G	0.6	D	A	1	3	05/07/94	-5	0.4	0.78

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Appendix D - Stream and moss mat sediment geochemical data

ID	As ¹	As ²	Au ¹	B ²	Ba ¹	Ba ²	Bi ²	Br ¹	Ca ¹	Ca ²	Cd ²	Ce ¹	Co ¹	Co ²	Cr ¹	Cr ²	Cs ¹	Cu ²	Eu ¹	Fe ¹	Fe ²	Hf ¹	Hg ²	K ²	La ¹
	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppb	%	ppm
947002	30	4	9	-2	15000	70	-2	33	-1	0.11	0.8	36	19	21	53	9	11	18	0.7	11.1	11.5	5	5770	0.47	19
947003	6.3	8	4	-2	1900	250	-2	66	-1	0.16	13.4	34	210	215	32	15	7	111	3.6	14.2	13.4	2	305	0.21	13
947004	22	23	5	5	8600	733	-2	4.2	-1	0.09	0.5	57	4	5	87	10	9	27	1.2	2.04	2.15	5	195	0.14	32
947005	24	23	4	5	11000	602	-2	3.1	-1	0.03	0.3	52	3	4	85	8	9	27	1	2.29	2.2	6	155	0.12	31
947006	15	2	15	4	11000	408	-2	56	-1	0.06	0.8	42	11	10	63	6	13	54	1.3	5.57	5.32	4	885	0.14	22
947007	18	19	6	4	9000	697	-2	3.1	-1	0.17	2.1	59	6	7	82	9	9	31	1.2	2.21	2.3	5	185	0.14	31
947008	17	20	-2	5	3800	480	-2	4.9	-1	0.24	1.8	70	14	16	89	12	11	71	1.4	3.4	3.45	4	100	0.14	36
947009	21	24	5	2	4800	477	-2	3.2	-1	0.14	1.5	78	14	15	100	9	12	75	1.6	4.15	3.93	5	65	0.11	41
947010	34	32	5	3	7600	762	2	17	-1	0.32	6.4	71	21	22	97	9	17	77	1.6	4.97	4.78	5	100	0.15	39
947011	23	23	-2	2	6600	677	-2	3	-1	0.11	1.7	71	12	14	92	9	11	59	1.6	3.49	3.34	5	115	0.12	38
947012	22	27	-2	3	9500	661	-2	4.3	-1	0.21	3.1	69	13	15	87	10	11	65	1.5	3.56	3.81	5	115	0.14	38
947013	25	27	-2	3	8700	618	-2	3.7	-1	0.15	3.3	70	18	22	88	10	12	77	1.7	4.2	4.29	4	95	0.12	37
947014	22	25	3	3	11000	682	-2	4.8	-1	0.19	3.3	65	14	17	87	10	11	68	1.6	3.5	3.82	5	105	0.14	36
947015	20	23	2	3	12000	672	-2	4.1	-1	0.13	2.1	64	12	14	77	9	10	63	1.4	3.18	3.6	5	100	0.13	35
947016	25	29	-2	2	8800	726	-2	6.6	-1	0.28	6.9	57	16	18	92	8	8	54	1.5	4.03	4.3	5	235	0.15	34
947017	22	23	-2	3	14000	733	-2	3.9	-1	0.16	2.7	66	12	14	90	9	10	63	1.5	3.61	3.73	6	120	0.13	38
947018	22	24	-2	3	9800	740	-2	3.9	-1	0.15	3.2	63	13	16	82	9	10	64	1.4	3.49	3.67	5	105	0.11	34
947019	20	21	3	2	7800	967	-2	10	-1	0.43	11.4	52	130	150	64	13	7	123	2.8	6.69	7.22	4	130	0.08	26
947020	21	22	-2	-2	7800	1031	2	11	-1	0.42	11.7	54	180	172	76	13	8	124	3.2	7.24	7.01	4	130	0.09	29
947022	21	21	5	3	11000	775	-2	3.8	-1	0.15	2.9	61	20	24	82	10	9	62	1.5	3.44	3.61	5	100	0.12	35
947023	22	23	-2	-2	8900	582	2	21	-1	0.05	0.2	51	7	10	75	7	8	35	1.1	6.95	7.06	5	175	0.13	28
947024	21	19	7	-2	13000	614	3	11	-1	0.05	0.2	49	16	17	76	8	8	33	0.9	8.92	9.07	6	135	0.06	28
947025	22	22	5	3	9200	682	-2	17	-1	0.05	0.5	51	21	22	79	11	8	98	1.2	3.82	3.98	5	195	0.25	29
947026	23	27	-2	3	13000	766	2	8.9	-1	0.2	3.1	51	20	28	81	11	8	76	1.3	3.55	4.25	5	610	0.16	30
947027	27	25	7	3	12000	820	-2	9	-1	0.13	2.6	52	37	37	83	10	8	87	1.3	4.26	4.42	5	530	0.12	30
947028	28	27	-2	2	12000	738	-2	6.3	-1	0.24	2.1	61	12	12	100	6	7	47	1.4	3.77	3.82	6	250	0.14	36
947029	28	30	-2	3	13000	720	-2	3.3	-1	0.09	1.6	55	11	12	92	6	7	44	1.4	4.06	4.17	5	170	0.11	34
947031	20	20	-2	3	12000	850	2	8.7	-1	0.4	13.5	67	16	16	90	7	8	48	1.2	3.18	3.1	5	120	0.12	39
947032	26	27	5	2	20000	658	-2	5	-1	0.17	4.3	56	12	13	86	5	8	47	1.4	4.14	4.09	6	185	0.11	33
947033	19	16	3	2	4500	528	2	3.1	4	3.34	6.3	90	13	12	74	6	4	38	1.5	2.26	2.14	23	135	0.09	51
947034	20	19	5	4	3300	728	-2	3.1	2	2.5	5.1	74	16	16	75	6	5	39	1.3	2.4	2.24	12	120	0.09	43
947035	18	17	-2	5	1700	299	-2	2	4	3.22	8.3	68	12	11	75	7	5	38	1.3	1.97	1.77	9	120	0.08	39
947036	14	12	3	5	1800	352	-2	2.6	5	4.15	4.4	70	6	6	91	8	4	40	1.1	1.82	1.54	13	125	0.1	41
947037	20	18	3	5	1900	371	-2	3.2	3	2.58	11.5	75	14	15	69	7	5	42	1.3	2.21	2.01	12	155	0.09	43
947038	31	28	6	6	14000	213	-2	3.9	-1	0.17	23.7	55	77	86	88	10	10	102	1.6	5.15	5.35	6	120	0.15	36
947039	21	18	-2	5	1400	169	-2	3.2	3	2.88	8.8	87	10	10	72	8	5	38	1.5	2.09	1.82	16	145	0.09	51
947040	19	19	5	5	1200	166	-2	2.8	2	2.7	7.4	76	9	9	63	7	4	37	1.3	1.88	1.79	13	130	0.09	45
947042	18	17	-2	5	1300	143	-2	1.8	2	2.56	5.9	76	8	7	68	7	5	33	1.3	1.87	1.63	12	100	0.08	45
947043	20	15	3	4	71000	553	-2	3.5	-1	0.18	6.8	48	10	10	64	5	22	31	0.9	4.36	4.23	5	90	0.09	30
947044	21	17	-2	5	60000	548	-2	2.3	-1	0.14	6.9	44	11	11	70	5	21	33	0.8	4.49	4.37	5	75	0.07	28
947045	20	17	-2	6	96000	428	-2	3.9	-1	0.24	4.1	44	5	4	69	6	21	32	0.8	4.17	4.29	5	100	0.1	30
947046	24	22	5	8	5700	644	-2	3.4	-1	0.69	9.9	62	18	19	100	21	4	73	1.6	2.7	2.59	9	135	0.17	39
947047	26	24	6	7	12000	578	-2	4	-1	0.48	11.2	57	36	39	82	13	6	105	2	2.86	2.84	7	145	0.13	35
947048	29	28	6	6	4800	563	-2	2.9	-1	0.41	8.4	54	32	34	85	13	7	92	1.7	2.95	2.75	5	160	0.11	32
947049	45	47	21	6	13000	605	-2	3.8	-1	0.04	1.2	55	10	12	82	8	10	82	1.6	3.55	3.69	4	265	0.09	33
947050	24	23	-2	9	5100	670	-2	4.2	-1	0.7	13.1	65	27	29	96	21	5	88	1.8	2.64	2.53	7	115	0.17	38
947051	29	30	7	7	45000	329	-2	2.2	1	1.16	14.6	63	15	16	80	10	11	67	1.2	3.75	3.78	8	245	0.16	42
947053	30	29	5	6	25000	487	-2	1.2	-1	1.21	11.6	55	14	14	83	10	10	62	1.1	3.6	3.38	6	175	0.14	36
947054	28	23	5	6	19000	914	-2	2.6	4	3.11	7.2	100	9	7	91	10	6	49	1.8	2.65	2.2	22	215	0.12	60
947055	16	15	6	8	2400	468	-2	2.5	3	2.87	5.9	82	10	9	100	12	5	58	1.4	2.72	2.37	13	180	0.18	48
947056	12	11	-2	9	2200	546	-2	5.2	4	3.51	10.9	63	5	5	77	11	5	41	1.1	1.75	1.64	9	235	0.13	37
947057	23	26	2	11	3000	675	-2	8.5	1	1.01	28.2	55	7	8	95	15	11	69	1.1	2.48	2.49	5	735	0.17	33
947058	28	28	4	9	3100	640	-2	4.4	-1	0.94	17.6	59	7	8	91	15	14	57	1.2	2.79	2.78	7	450	0.21	36
947059	21	21	5	6	9900	542	-2	8	-1	0.03	0.8	48	5	6	69	9	10	110	1.6	2.97	3.11	4	240	0.09	27
947060	14	2	5	3	12000	209	-2	8.6	-1	0.1	1.2	51	61	65	55	7	7	122	2.5	12.5	13.5	4	85	0.08	27
947062	19	21	3	5	14000	502	-2	6.5	-1	0.04	1	51	15	17	70	11	6	88	1.5	2.83	3.04	5	55	0.1	30
947063	24	23	9	6	7100	741	-2	3.7	-1	0.27	7	58	26	30	80	13	6	74	1.5	2.59	2.68	7	145	0.13	34
947065	26	26	8	6	4900	826	-2	2.7	-1	0.32	7.5	55	31	37	82	13	7	85	1.5	2.67	2.81	5	160	0.12	32
947066	28	29	9	6	5700	870	-2	4.2	-1	0.23	6.3	54	29	34	80	12	7	80	1.8	2.8	2.87	5	185	0.12	31
947067	22	22	4																						

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ID	As ¹	As ²	Au ¹	B ²	Ba ¹	Ba ²	Bi ²	Br ¹	Ca ¹	Ca ²	Cd ²	Ce ¹	Co ¹	Co ²	Cr ¹	Cr ²	Cs ¹	Cu ²	Eu ¹	Fe ¹	Fe ²	Hf ¹	Hg ²	K ²	La ¹
947073	28	30	-2	3	7700	600	-2	2.6	-1	0.41	34.6	100	56	73	61	9	5	123	2.2	6.14	6.4	4	85	0.1	54
947074	17	17	-2	6	7000	563	-2	2.8	1	1.49	10.4	120	17	21	63	15	3	53	1.6	3.24	3.28	11	70	0.14	59
947075	30	25	-2	3	11000	597	2	1.7	-1	0.66	24.4	130	43	47	68	10	5	91	2.4	5.75	5.3	6	70	0.1	70
947076	19	22	12	2	16000	593	-2	2.2	-1	0.12	4.3	100	20	25	78	8	8	60	1.6	2.99	2.82	5	85	0.11	52
947077	23	23	11	7	5300	508	2	3.1	-1	0.62	35.6	110	270	299	72	9	6	158	3.4	4.66	4.18	5	105	0.1	50
947078	28	29	3	7	13000	624	4	-0.5	-1	0.69	19.1	140	39	46	60	10	5	88	2.4	5.56	5.36	7	65	0.09	70
947079	29	25	-2	7	13000	641	-2	2.1	-1	0.71	19.1	130	38	45	58	10	4	89	2.4	5.77	5.57	6	65	0.09	70
947080	30	31	5	8	8200	593	4	1.8	-1	0.68	16.9	110	47	53	62	10	5	87	1.9	5.58	5.48	4	65	0.09	56
947082	23	24	2	3	8800	662	-2	2.8	-1	0.55	23.5	110	61	76	62	10	5	94	2.3	4.64	4.75	5	70	0.1	57
947083	21	26	-2	9	7900	687	-2	-0.5	-1	0.47	13.7	88	44	58	65	8	5	78	1.6	3.94	4.15	4	65	0.09	46
947084	23	23	5	6	11000	767	3	1.8	-1	0.56	12.4	110	40	52	57	9	5	76	1.8	4.02	4.21	6	75	0.1	57
947085	15	16	-2	10	17000	804	2	3.3	-1	1.15	10.2	82	14	17	66	13	5	46	1.4	2.35	2.4	12	160	0.13	41
947086	17	16	7	6	7500	900	2	2.8	1	1.18	10.2	63	16	18	82	13	6	50	1.1	2.46	2.28	6	170	0.11	32
947087	19	14	3	4	9500	365	-2	8.9	-1	0.04	1.9	91	20	23	66	6	15	62	2	7.96	7.73	4	255	0.1	41
947088	21	22	2	9	5500	922	-2	3.1	1	0.93	10.8	81	16	19	87	21	5	61	1.5	2.5	2.46	8	220	0.14	42
947089	23	26	4	11	4200	835	-2	2.7	1	1.46	11.3	62	16	17	98	22	6	67	1.3	2.88	2.75	5	240	0.15	35
947091	14	14	3	6	13000	849	4	3	1	1.51	10.9	63	11	13	84	11	4	44	1.1	1.71	1.51	11	145	0.13	31
947092	16	18	7	11	10000	864	-2	3.3	1	1.25	11.6	59	19	26	79	14	5	54	1.1	2.08	2.13	6	170	0.14	31
947093	18	18	-2	6	6800	828	-2	2.9	1	1.37	9.9	59	14	17	83	15	5	52	1.1	2.27	2.27	6	195	0.13	32
947094	30	33	4	8	3700	502	-2	1.8	-1	1.87	20.9	79	25	27	89	23	4	70	1.6	3.93	3.77	9	120	0.15	43
947095	26	29	6	8	9500	795	-2	3.8	1	1.85	14.5	76	10	11	83	17	5	57	1.3	2.68	2.65	9	175	0.12	42
947096	21	19	-2	6	20000	727	2	2.1	-1	0.59	12.7	160	34	39	62	10	5	67	2.3	3.85	3.74	11	85	0.09	82
947097	24	24	-2	7	15000	718	-2	-0.5	-1	0.44	11.2	140	23	27	67	9	6	74	2	4.01	3.76	7	75	0.09	71
947098	19	22	7	12	16000	619	2	1.7	1	0.72	11	120	28	33	65	10	6	60	1.8	3.38	3.31	9	90	0.1	63

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	ppm	ppm	g	%	ppm	ppm	%	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
947002	3	0.22	24.1	0.03	2385	41	0.05	0.01	11	34	0.097	5325	87	11	9	6.6	3	1.9	44
947003	3	0.66	14.81	0.03	8805	3	0.05	0.01	24	101	0.108	73	64	1.5	-2	11	-3	9.7	24
947004	15	0.38	31.18	0.02	171	16	0.05	-0.01	20	27	0.131	526	84	5.4	6	10	-3	4.3	57
947005	12	0.39	30.72	0.01	128	14	0.05	-0.01	24	19	0.113	460	100	6.3	7	10	-3	4.1	47
947006	6	0.35	19.14	0.02	858	11	0.05	0.01	21	30	0.098	4949	87	4.3	-2	8.4	-3	3.8	29
947007	13	0.34	34.26	0.04	316	12	0.07	-0.01	21	47	0.101	955	99	5.1	6	9.6	-3	4	68
947008	5	0.38	28.35	0.09	402	8	0.1	0.01	32	120	0.109	37	130	5.1	5	12	-3	5.6	97
947009	6	0.46	33.19	0.08	382	9	0.12	0.01	34	131	0.098	40	150	6.7	7	14	-3	6.4	91
947010	4	0.43	27.76	0.08	1268	14	0.08	0.01	27	310	0.14	31	140	7.2	6	13	3	6	125
947011	8	0.41	30.63	0.06	430	11	0.09	0.01	33	70	0.108	250	120	6.4	7	12	-3	5.9	85
947012	7	0.39	31.48	0.07	484	12	0.09	0.01	26	125	0.111	276	120	6	6	12	-3	5.7	107
947013	5	0.42	33.8	0.08	687	12	0.09	0.01	32	153	0.111	208	110	6.3	7	12	-3	5.9	103
947014	6	0.44	32.64	0.08	523	11	0.09	0.01	28	141	0.117	252	100	5.9	6	11	-3	5.5	106
947015	7	0.37	35.02	0.07	434	11	0.08	0.01	27	104	0.108	255	100	5.6	6	11	-3	5.2	89
947016	12	0.51	29.04	0.04	899	15	0.08	-0.01	24	188	0.144	223	120	6.3	4	11	-3	4.7	90
947017	7	0.46	32.82	0.07	498	14	0.08	0.01	33	123	0.106	222	110	5.9	6	11	-3	5.5	85
947018	7	0.4	31.99	0.07	589	11	0.08	0.01	24	137	0.099	205	110	5.6	6	11	-3	5	81
947019	11	0.77	25.25	0.05	3494	11	0.05	-0.01	34	527	0.125	20	64	4.2	2	8.2	-3	8.8	92
947020	11	0.86	24.39	0.05	4398	11	0.05	-0.01	35	538	0.121	20	70	4.6	-2	8.9	-3	9.7	91
947022	8	0.41	33.95	0.06	759	11	0.08	0.01	25	138	0.107	212	100	5.6	5	10	-3	5.3	77
947023	5	0.38	20.57	0.04	328	11	0.1	-0.01	17	21	0.134	45	82	3.3	3	10	-3	4	30
947024	5	0.31	30.66	0.04	584	12	0.09	-0.01	18	20	0.106	46	89	3.4	5	9.8	-3	3.5	33
947025	12	0.46	25.24	0.04	688	13	0.08	-0.01	22	47	0.203	69	85	6.1	6	11	-3	4.4	53
947026	13	0.46	26.64	0.05	679	18	0.08	-0.01	23	125	0.172	309	87	7	8	9.4	4	4.2	60
947027	13	0.51	29.77	0.04	896	17	0.07	-0.01	23	111	0.159	336	88	8	8	10	-3	4.5	56
947028	12	0.47	23.4	0.04	378	14	0.07	-0.01	29	82	0.153	159	97	6.1	7	11	-3	4.7	93
947029	12	0.47	30.61	0.02	337	14	0.05	-0.01	25	54	0.109	124	100	6.1	6	10	-3	4.3	86
947031	13	0.45	28.06	0.07	524	15	0.07	-0.01	27	298	0.132	43	100	7.2	5	11	-3	4.5	85
947032	11	0.43	33.6	0.03	521	14	0.05	-0.01	21	123	0.12	153	98	6.4	5	9.8	-3	4.2	78
947033	17	0.73	32.65	2.36	447	36	0.07	-0.01	33	153	0.105	134	75	7.6	7	7.2	-3	6	55
947034	17	0.58	31.11	1.66	568	27	0.08	-0.01	31	152	0.105	91	86	7.8	7	7.4	3	5.2	55
947035	19	0.47	30.03	1.97	438	22	0.07	0.01	31	122	0.1	74	93	7.2	11	7	-3	4.8	50
947036	19	0.58	32.57	2.85	161	13	0.07	-0.01	29	105	0.094	39	77	7.6	10	7.8	5	4.8	56
947037	19	0.54	29.66	1.58	599	29	0.09	-0.01	33	186	0.09	112	84	7.5	9	7	-3	5.3	45
947038	16	0.53	29.41	0.05	2485	81	0.08	0.02	21	337	0.114	207	83	13	15	9	7	5	133
947039	21	0.66	30.23	1.82	422	26	0.09	-0.01	37	136	0.096	122	87	7.8	11	7.5	-3	6.1	38
947040	21	0.55	32.39	1.76	392	25	0.08	-0.01	35	118	0.095	106	80	7.1	9	6.7	-3	5.3	36
947042	20	0.51	30.66	1.52	320	24	0.08	-0.01	36	95	0.096	92	82	6.9	8	6.7	-3	5.6	35
947043	10	0.3	31.26	0.03	2759	16	0.11	0.01	19	60	0.056	584	92	4.9	5	8.7	-3	2.8	46
947044	9	0.3	30.2	0.02	2198	17	0.11	0.01	18	54	0.057	545	110	4.9	6	9	-3	2.6	43
947045	11	0.27	32.9	0.04	488	18	0.13	0.01	-5	63	0.07	586	99	6.2	6	9.3	-3	2.4	56
947046	27	0.69	31.16	0.25	449	40	0.05	-0.01	26	215	0.163	233	89	12	12	9	-3	5.4	59
947047	21	0.74	30.4	0.14	829	34	0.06	-0.01	30	248	0.138	215	83	9.5	10	8.9	-3	6.6	54
947048	19	0.65	30.14	0.14	876	21	0.06	-0.01	31	189	0.112	137	93	11	10	9.4	-3	5.7	47
947049	8	0.51	32.1	0.02	316	21	0.07	-0.01	24	46	0.064	194	95	12	11	11	-3	5.3	40
947050	28	0.7	32.04	0.26	589	31	0.05	-0.01	29	309	0.165	171	93	11	10	8.8	-3	6.1	58
947051	21	0.47	30.69	0.6	665	45	0.07	0.01	27	160	0.111	251	96	11	14	9.2	-3	4.2	79
947053	17	0.44	33.07	0.6	562	39	0.06	0.01	21	124	0.114	195	99	11	15	9.2	-3	3.9	73
947054	21	0.67	31.31	1.92	236	44	0.08	0.01	44	171	0.125	95	89	11	9	8.7	-3	6.8	76
947055	25	0.63	29.98	1.66	250	27	0.11	0.01	37	115	0.187	54	110	9	11	9.9	6	5.5	70
947056	19	0.43	27.99	1.87	194	28	0.06	0.01	29	134	0.088	67	81	7.2	8	7.5	-3	4.5	49
947057	21	0.49	21.66	0.26	485	47	0.08	0.01	25	396	0.111	193	92	13	13	9.7	3	4.3	66
947058	20	0.5	28.09	0.34	639	46	0.06	0.01	27	171	0.133	1021	86	9.3	8	8.7	-3	4.6	60
947059	11	0.44	31.08	0.03	180	15	0.04	-0.01	23	49	0.089	375	83	5	7	9.1	-3	5.4	34
947060	6	0.5	27.48	0.05	1050	8	0.05	-0.01	26	143	0.057	14	81	3.7	7	7.6	-3	7.6	51
947062	15	0.49	30.53	0.04	496	14	0.04	-0.01	25	62	0.095	41	68	5.3	9	8.4	-3	4.8	45
947063	21	0.6	32.21	0.07	778	21	0.06	-0.01	27	172	0.112	120	86	8.1	9	8.3	-3	5.4	49
947065	18	0.52	34.86	0.1	971	19	0.07	-0.01	26	182	0.11	130	94	8.9	10	9	-3	5.4	49
947066	16	0.53	31.5	0.07	844	18	0.06	-0.01	28	182	0.103	116	89	9.2	9	9.2	-3	5.6	46
947067	16	0.56	31.62	0.09	1301	16	0.06	-0.01	31	189	0.094	97	90	7.3	10	9.4	-3	6.3	43
947068	17	0.65	33.1	0.59	540	14	0.06	-0.01	22	171	0.129	31	74	4.8	7	6.6	-3	6	60
947069	14	0.65	30.78	0.08	1128	14	0.06	-0.01	28	220	0.1	103	91	6.3	4	8.6	-3	7.6	45
947070	11	0.45	30.21	0.06	1274	13	0.06	-0.01	24	159	0.096	98	70	6.4	4	8.6	-3	5.2	38
947071	32	0.47	33.25	0.18	436	33	0.13	0.01	41	229	0.078	16	89	11	9	9.3	8	7.5	73
947072	30	0.47	33.93	0.12	218	35	0.13	-0.01	40	71	0.087	19	84	12	8	11	9	6.7	59

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947073	41	0.77	28.36	0.25	1189	30	0.14	0.01	47	376	0.084	12	78	9.9	5	9	4	9.1	79
947074	28	0.51	31.26	1.4	454	19	0.35	0.01	46	192	0.114	15	77	7	2	8	3	7.7	59
947075	35	0.63	31.2	0.43	881	27	0.19	0.01	54	298	0.095	17	85	10	5	9.4	5	10	80
947076	20	0.43	30.39	0.1	715	14	0.14	-0.01	34	116	0.069	28	110	5.6	5	11	-3	7.1	98
947077	14	1.02	24.32	0.29	4206	19	0.21	-0.01	49	880	0.077	15	72	6.9	2	11	-3	11	108
947078	35	0.6	32.45	0.46	795	26	0.2	0.01	57	243	0.095	17	95	9.9	6	8.9	5	10	83
947079	36	0.65	32.31	0.45	809	26	0.19	0.01	51	255	0.094	13	74	9.7	5	8.6	5	10	88
947080	30	0.56	30.86	0.44	934	28	0.2	0.01	46	203	0.099	15	86	11	7	9.2	4	8.1	78
947082	32	0.67	31.15	0.36	1470	22	0.18	0.01	45	366	0.08	19	81	8	2	9.5	4	9.1	91
947083	25	0.47	33.27	0.32	1086	20	0.16	0.01	32	243	0.082	14	73	7.2	4	9.2	-3	6.7	82
947084	30	0.53	30.36	0.37	1040	21	0.18	0.01	42	263	0.083	18	80	7.5	2	9.1	-3	8.2	94
947085	20	0.52	32.21	0.59	537	32	0.07	-0.01	36	205	0.115	133	83	7.3	6	7.4	-3	5.9	59
947086	16	0.41	30.99	0.62	567	26	0.07	-0.01	29	190	0.109	95	84	8	9	8.1	3	4.8	58
947087	11	0.45	27.96	0.04	617	20	0.08	-0.01	40	72	0.077	355	93	7	-2	10	3	8	43
947088	24	0.58	31.06	0.44	469	37	0.07	-0.01	38	223	0.142	50	81	10	9	8.4	4	6.2	59
947089	20	0.49	34.15	0.83	421	41	0.06	-0.01	28	224	0.143	51	82	12	11	8.5	5	5.2	68
947091	17	0.53	30.02	0.84	372	20	0.06	-0.01	27	185	0.095	33	88	6.9	5	8	-3	4.3	56
947092	18	0.45	31.33	0.64	789	28	0.05	-0.01	27	267	0.123	57	72	7.9	7	7.4	-3	4.6	61
947093	18	0.42	32.95	0.71	537	29	0.06	-0.01	27	200	0.135	60	76	8.4	8	7.6	3	4.7	61
947094	22	0.68	31.18	0.99	734	71	0.05	-0.01	37	421	0.089	26	66	17	11	8.6	10	6.2	90
947095	21	0.55	28.19	0.99	361	55	0.09	-0.01	36	299	0.113	59	78	14	11	8.5	6	5.7	75
947096	32	0.62	30.89	0.44	771	17	0.2	0.01	71	263	0.085	107	100	7.3	3	9.4	-3	11	73
947097	27	0.47	33.59	0.31	500	19	0.19	0.01	55	196	0.091	53	110	7.9	6	10	3	9.3	73
947098	26	0.55	33.1	0.44	705	21	0.16	-0.01	51	249	0.087	211	92	7.4	6	8.8	-3	8.6	67

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Appendix D - Stream and moss mat sediment geochemical data

ID	Ta ¹	Tb ¹	Th ¹	Th ²	Ti ²	U ¹	U ²	V ²	W ¹	W ²	Yb ¹	Zn ¹	Zn ²
	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
947002	-0.5	-0.5	6.6	2	-0.01	8.4	8	97	-1	-1	1.4	1100	912
947003	-0.5	2	2.3	7	-0.01	33	28	17	-1	-1	4.6	2580	1762
947004	-0.5	0.7	10	-2	-0.01	7.8	-5	70	-1	-1	2.5	287	253
947005	1.1	0.6	10	2	-0.01	8	-5	61	-1	-1	2.5	195	160
947006	-0.5	-0.5	7	-2	-0.01	8.6	-5	52	-1	-1	2.1	852	589
947007	-0.5	-0.5	9.6	-2	-0.01	6.1	-5	58	-1	-1	2.2	580	543
947008	0.9	-0.5	13	-2	-0.01	6.7	-5	35	-1	-1	2.2	711	620
947009	-0.5	0.9	14	3	-0.01	6.8	-5	38	-1	-1	2.9	955	764
947010	0.7	-0.5	13	2	-0.01	7.4	-5	43	-1	-1	2.9	1610	1195
947011	-0.5	0.9	12	2	-0.01	5.9	-5	45	-1	-1	2.9	718	540
947012	-0.5	-0.5	12	2	-0.01	6.4	-5	45	-1	-1	2.7	1100	991
947013	1.1	0.9	12	3	-0.01	6.6	-5	42	4	-1	2.6	1470	1207
947014	0.9	0.9	12	3	-0.01	6.6	-5	43	-1	-1	2.6	1250	1112
947015	0.8	0.8	11	3	-0.01	6.4	-5	44	3	-1	2.5	798	771
947016	-0.5	0.8	9.8	2	-0.01	12	-5	58	-1	-1	3.1	2480	2099
947017	1	1	12	3	-0.01	7.9	-5	43	-1	-1	2.5	1210	1015
947018	0.9	0.6	11	3	-0.01	7.4	-5	42	-1	-1	2.5	1380	1191
947019	-0.5	2.1	7.6	3	-0.01	9.8	-5	40	-1	-1	5.3	3040	2543
947020	-0.5	2.5	8.1	3	-0.01	12	-5	39	5	-1	5.9	3660	2562
947022	-0.5	0.8	11	2	-0.01	7	-5	43	-1	-1	2.6	1260	1023
947023	0.6	0.7	9	3	-0.01	5.4	-5	33	-1	-1	2.1	114	87
947024	-0.5	-0.5	8.7	3	-0.01	5.6	-5	36	-1	-1	2	131	104
947025	-0.5	0.8	9.3	2	-0.01	8.5	-5	56	-1	-1	3.1	404	301
947026	-0.5	0.8	9	2	-0.01	9.4	-5	83	4	-1	2.7	887	855
947027	0.6	0.9	8.7	2	-0.01	10	-5	88	-1	-1	3.2	1060	836
947028	0.6	0.9	11	-2	-0.01	9.3	-5	53	-1	-1	2.9	853	641
947029	-0.5	0.7	9.5	2	-0.01	9.8	-5	49	-1	-1	2.8	641	506
947031	-0.5	0.8	12	-2	-0.01	11	-5	49	5	-1	2.8	2810	2156
947032	-0.5	0.7	9.2	2	-0.01	10	-5	49	5	-1	2.7	1570	1246
947033	1.1	0.9	15	2	-0.01	12	-5	48	-1	-1	4.9	2520	1811
947034	0.8	0.8	12	-2	-0.01	11	5	49	-1	-1	3.6	2010	1493
947035	0.6	0.8	12	5	-0.01	9.9	-5	50	1	-1	3.2	1720	1287
947036	-0.5	0.7	13	4	-0.01	8.5	-5	49	-1	-1	3.8	1100	829
947037	1	0.9	12	3	-0.01	11	-5	46	1	-1	3.5	2790	2122
947038	-0.5	1.1	9.7	3	-0.01	18	10	84	-1	-1	3.6	4060	3309
947039	0.8	1	15	3	-0.01	12	-5	48	-1	-1	4	2010	1476
947040	-0.5	0.9	13	3	-0.01	11	-5	47	-1	-1	3.6	1590	1265
947042	1.1	0.9	13	4	-0.01	10	-5	43	-1	-1	3.7	1590	1180
947043	0.7	-0.5	7.9	-2	-0.01	8.6	5	32	7	-1	1.9	3280	2548
947044	-0.5	0.6	8.1	2	-0.01	9.1	-5	32	-1	-1	2	2780	2106
947045	0.8	-0.5	7.9	-2	-0.01	8.6	-5	35	-1	-1	1.7	1830	1520
947046	0.6	1.1	10	3	-0.01	12	10	311	-1	-1	4.4	1650	1312
947047	0.6	1.6	9.4	3	-0.01	14	5	167	-1	-1	4.7	2000	1627
947048	-0.5	1.4	9.2	3	-0.01	12	-5	171	-1	-1	4.1	1560	1272
947049	0.5	0.9	9.8	3	-0.01	10	6	47	4	-1	2.9	603	506
947050	0.9	1.3	9.9	3	-0.01	14	10	295	-1	-1	4.6	2100	1730
947051	-0.5	0.7	9.5	4	-0.01	13	7	83	7	-1	2.7	2490	2155
947053	-0.5	0.6	8.8	4	-0.01	12	-5	79	-1	-1	2.5	2180	1691
947054	0.9	1.1	14	3	-0.01	14	5	95	-1	-1	4.9	1590	1115
947055	0.5	0.9	14	5	-0.01	11	-5	91	-1	-1	4.2	1020	782
947056	1	0.7	11	2	-0.01	9.6	-5	97	-1	-1	3.1	1760	1371
947057	0.7	0.6	9.2	-2	-0.01	10	-5	133	-1	-1	2.9	8120	6862
947058	0.6	0.7	10	-2	-0.01	12	-5	135	-1	-1	2.9	3350	2901
947059	0.6	0.9	8	3	-0.01	11	7	41	-1	-1	2.8	534	447
947060	-0.5	1.5	7.8	3	-0.01	5.2	11	23	-1	-1	3.3	1040	780
947062	0.8	1	7.7	4	-0.01	12	14	58	-1	-1	3.5	337	290
947063	-0.5	1.2	9.5	2	-0.01	12	-5	148	-1	-1	3.8	1250	1089
947065	-0.5	1.1	9.1	3	-0.01	11	-5	160	2	-1	3.9	1240	1130
947066	0.5	1.1	8.8	2	-0.01	12	-5	136	-1	-1	3.7	1280	1049
947067	-0.5	1.2	7.5	2	-0.01	9.5	-5	133	-1	-1	3.6	1180	1111
947068	0.8	1.2	7.5	2	-0.01	11	-5	120	-1	-1	4.1	994	913
947069	-0.5	1.5	7	4	-0.01	11	-5	101	-1	-1	4.4	1470	1509
947070	-0.5	0.9	6.6	3	-0.01	7.6	-5	87	2	-1	2.8	982	992
947071	1.2	1.1	9.6	5	0.01	15	7	57	-1	-1	3.2	2070	2128
947072	0.9	0.9	9.7	6	-0.01	11	5	49	-1	-1	3	878	855

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Appendix D - Stream and moss mat sediment geochemical data

ID	Ta ¹	Tb ¹	Th ¹	Th ²	Ti ²	U ¹	U ²	V ²	W ¹	W ²	Yb ¹	Zn ¹	Zn ²
947073	0.6	1.4	8.7	5	0.01	20	13	59	-1	-1	4.6	4600	4790
947074	-0.5	0.9	11	5	0.02	7.7	-5	98	-1	-1	3.1	1780	1776
947075	-0.5	1.3	11	5	0.01	15	-5	62	3	-1	3.9	3780	3700
947076	1.1	0.8	11	5	-0.01	8.1	-5	40	5	-1	2.7	722	721
947077	1.2	2	8.9	5	-0.01	23	18	42	-1	-1	6.9	7230	6652
947078	1.1	1.4	10	6	0.01	15	7	65	-1	-1	4.1	3000	2827
947079	-0.5	1.1	10	6	0.01	16	7	65	-1	-1	4.2	2880	2744
947080	-0.5	-0.5	8.7	6	0.01	17	5	65	-1	-1	3.5	2420	2302
947082	-0.5	1.2	9.5	6	0.01	14	7	54	-1	-1	4.2	4050	4161
947083	-0.5	0.8	8.5	5	0.01	11	-5	53	-1	-1	3.1	2220	2331
947084	-0.5	0.9	9.1	5	0.01	10	-5	55	-1	-1	3.4	2940	3162
947085	-0.5	0.7	8.8	2	-0.01	9.1	-5	148	-1	-1	3.1	1690	1805
947086	0.7	0.6	8.1	2	-0.01	8.9	-5	146	-1	-1	2.5	1630	1611
947087	-0.5	1.1	8.4	5	-0.01	9.8	-5	38	-1	-1	2.6	784	704
947088	0.5	0.7	9.2	2	-0.01	13	-5	283	-1	-1	3.5	1570	1548
947089	0.7	0.6	8.5	2	-0.01	12	-5	308	-1	-1	3	1720	1587
947091	0.6	-0.5	8.6	-2	-0.01	8	-5	99	-1	-1	3	1360	1356
947092	-0.5	0.6	7.5	-2	-0.01	9.1	-5	171	-1	-1	2.7	1940	2025
947093	0.6	-0.5	7.4	2	-0.01	9.6	-5	180	-1	-1	2.6	1520	1516
947094	1.1	0.9	9.4	4	-0.01	13	-5	559	-1	-1	4.3	4200	4017
947095	-0.5	0.7	9.2	-2	-0.01	8.2	-5	328	-1	-1	3.3	2690	2568
947096	-0.5	1.1	12	6	0.01	10	-5	59	-1	-1	3.6	2430	2301
947097	1	1	11	6	0.01	12	-5	51	-1	-1	3.3	1850	1801
947098	0.7	0.8	10	4	-0.01	9.3	-5	78	-1	-1	3.1	2370	2290

APPENDIX E - SEQUENTIAL EXTRACTION ANALYTICAL DATA

Reference Guide to Data

ID	Sample ID Number
STN	Replicate Sample Status : 0 - Routine Sample: 1 - 1st Field Duplicate: 2 - 2nd Field Duplicate
M-1	Element extracted with 0.25 M hydroxylamine hydrochloride and analysed by ICPES
M-2	Element extracted with 1 M hydroxylamine hydrochloride and analysed by ICPES
M-3	Element extracted with concentrated hydrochloric-nitric-perchloric-hydrofluoric acid and analysed by ICPES

Open File 200107
Sequential Extraction Geochemical data

ID	STN	Ag-1	Ag-2	Ag-3	As-1	As-2	As-3	Ba-1	Ba-2	Ba-3	Cd-1	Cd-2	Cd-3	Co-1	Co-2	Co-3	Cu-1	Cu-2	Cu-3	Fe-1	Fe-2	Fe-3
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%
945002	0	-0.1	0.2	1.2	-3	-3	64	38	29	70	-1	-1	-1	-1	-1	-1	-0.5	3.3	19	0.33	7.77	35.1
945003	0	0.4	-0.1	0.3	-3	-3	165	40	2	27	17	8	1	58	21	51	-0.5	7.8	17.1	0.17	14.2	49
945004	0	-0.1	-0.1	0.7	-3	-3	-3	29	9	73	-1	-1	-1	20	5	5	0.7	85	238	0.4	19	43.8
945005	0	0.3	-0.1	0.1	-3	-3	-3	278	101	818	3	-1	-1	46	4	4	0.8	50.3	102	0.19	11.9	24.4
945006	0	0.2	0.5	0.1	-3	-3	51	9	2	20	1	-1	-1	85	3	4	3.5	145	140	0.7	24.1	28.9
945011	0	-0.1	-0.1	-0.1	-3	-3	61	108	16	27	206	83	3	34	1	1	-0.5	3.4	1.4	2.22	35.4	11
945012	0	-0.1	0.3	-0.1	-3	-3	-3	326	251	4680	3	-1	2	6	-1	9	-0.5	1.9	11.6	0.11	4.42	30.5
945013	0	-0.1	1.2	-0.1	-3	-3	-3	50	18	7	13	73	-1	74	45	-1	-0.5	1	-0.5	0.01	1.98	0.07
945015	0	-0.1	-0.1	-0.1	-3	-3	160	273	32	15	130	71	-1	30	4	2	-0.5	3.7	1.4	0.52	38.2	15.8
945017	0	2.6	59.3	1.1	-3	-3	34	675	89	2040	13	18	-1	29	3	2	0.7	10.2	6	2.15	37.5	11.2
945018	0	0.3	1.4	0.4	-3	-3	-3	212	169	3400	5	-1	-1	9	-1	2	0.6	19.6	54.9	0.2	6.01	19
945019	0	-0.1	-0.1	-0.1	-3	9	9	45	29	371	-1	-1	-1	2	5	8	-0.5	19.5	20.1	0.14	1.54	3.64
945020	0	-0.1	-0.1	0.5	-3	-3	-3	13	-1	34	-1	-1	-1	1	-1	2	-0.5	3.2	21.9	0.52	17.4	36.1
945023	0	-0.1	1	0.6	-3	-3	-3	93	59	1460	-1	-1	-1	-1	-1	2	-0.5	2.1	13	0.29	8.73	38.4
945024	0	0.4	3.3	0.5	-3	-3	-3	137	128	1120	-1	1	-1	-1	-1	-1	-0.5	5.9	15	0.13	2.48	12.1
945026	0	-0.1	0.4	0.3	-3	-3	57	11	2	17	17	115	8	15	8	38	-0.5	1.6	3.9	0.2	12.8	42.8
945027	1	-0.1	-0.1	0.3	-3	-3	106	31	-1	19	25	15	7	16	9	28	-0.5	1.3	4.5	0.06	9.55	53.2
945028	2	-0.1	-0.1	0.3	-3	-3	108	31	-1	21	25	14	7	16	9	28	-0.5	1.5	5.4	0.06	9.09	49.4
945029	0	-0.1	-0.1	0.5	-3	-3	27	16	2	28	18	12	9	24	10	28	-0.5	1.2	4	0.16	9.56	40.9
945030	0	-0.1	-0.1	0.5	-3	-3	-3	26	11	20	27	23	9	13	7	23	-0.5	1.5	3.4	0.49	17.7	34.8
945032	0	0.8	1	0.4	-3	-3	72	27	50	687	5	-1	-1	131	3	5	0.5	7	36.9	1.16	13.2	17.9
945033	0	0.6	1	-0.1	-3	-3	23	163	239	5220	2	4	-1	2	-1	5	1.5	27	90.8	0.07	2.31	12.3
945034	0	0.4	1.5	-0.1	-3	-3	9	870	522	4500	17	9	5	12	2	3	0.8	29.8	54.4	0.04	2.29	15.4
945036	0	0.3	-0.1	0.5	-3	-3	-3	47	2	126	9	4	5	65	3	8	-0.5	18.6	38.9	0.54	20.9	37
945046	0	1.2	1.4	0.2	-3	-3	-3	101	66	3400	7	-1	1	83	12	7	1.9	24.4	26.7	0.47	18.5	21.7
945047	0	1.3	1.2	-0.1	-3	-3	-3	2350	371	4550	48	3	-1	95	6	2	-0.5	12.5	8.4	0.26	19.5	5.79
945048	0	-0.1	-0.1	0.2	-3	-3	-3	738	168	2520	4	-1	-1	6	1	2	-0.5	5.8	8.3	0.35	14.2	23.5
945049	0	0.2	-0.1	0.2	-3	-3	-3	164	94	1330	2	-1	-1	8	2	1	-0.5	6.5	10	0.29	14.4	27.9
945050	0	-0.1	-0.1	-0.1	-3	-3	13	539	39	72	37	16	7	393	17	17	-0.5	2.9	4.7	0.31	19.7	32.4
945051	0	-0.1	-0.1	-0.1	-3	-3	42	86	9	50	12	6	5	39	2	4	-0.5	2.1	4.2	0.29	15.7	30.9
945052	0	-0.1	-0.1	-0.1	-3	-3	967	39	-1	25	21	12	3	50	6	20	-0.5	6.1	34.9	0.15	8	44.9
945053	0	-0.1	-0.1	0.3	-3	-3	-3	66	6	57	1	-1	-1	56	6	48	-0.5	2.3	3.9	0.46	23.9	29.9
945069	0	0.6	-0.1	0.1	-3	-3	-3	1350	719	4590	3	2	-1	639	11	3	-0.5	3.5	5.5	0.79	25.4	24
945073	0	-0.1	-0.1	-0.1	-3	-3	1140	22	2	41	15	13	2	7	6	29	-0.5	1.2	4.4	0.13	8.08	48.2
945074	0	0.5	-0.1	-0.1	-3	-3	87	214	129	1870	15	2	-1	5	19	26	6.2	53.3	18.1	0.06	4.64	10.4
945075	0	-0.1	-0.1	-0.1	-3	-3	639	36	7	131	44	16	1	12	11	73	-0.5	4.2	6.8	0.05	7.16	43.5
945076	0	-0.1	-0.1	-0.1	-3	-3	1200	8	1	32	9	16	1	12	6	35	-0.5	-0.5	4.7	0.08	4.77	53
945077	0	-0.1	-0.1	-0.1	-3	-3	945	5	-1	27	4	9	1	10	3	34	-0.5	-0.5	4.7	0.07	2.2	66.8
945078	0	-0.1	-0.1	-0.1	-3	-3	842	39	1	21	11	8	1	78	10	47	-0.5	-0.5	4.6	0.08	6.61	49.2
945079	0	-0.1	-0.1	-0.1	-3	-3	864	17	-1	25	8	5	1	60	5	30	-0.5	-0.5	4.4	0.13	6.19	48.2
945080	0	-0.1	-0.1	-0.1	-3	-3	406	32	2	33	10	4	1	30	11	39	-0.5	1.3	4.3	0.25	8.19	46.5
945082	1	-0.1	-0.1	-0.1	-3	-3	943	24	4	28	16	11	3	17	2	23	-0.5	-0.5	4.1	0.19	9.14	43.9
945083	0	-0.1	0.4	0.4	-3	-3	68	70	7	51	14	5	4	127	7	14	-0.5	3.5	12.4	0.45	17.5	35.5
945084	0	-0.1	0.4	0.4	-3	-3	12	219	29	250	9	2	-1	9	-1	-1	-0.5	4.8	9.3	0.17	8.3	29.1
945086	2	-0.1	-0.1	-0.1	-3	-3	970	24	4	20	16	11	3	18	3	24	-0.5	-0.5	4.1	0.19	10.9	42.5
941003	0	0.2	-0.1	-0.1	-3	-3	-3	45	144	3340	-1	-1	-1	2	-1	2	-0.5	11.8	11.9	0.11	0.99	0.86
941004	0	-0.1	-0.1	-0.1	-3	-3	56	59	13	11	7	43	-1	36	3	1	-0.5	4.4	0.7	3.76	46.2	4.35
941005	0	0.3	-0.1	-0.1	-3	-3	17	197	112	2010	3	-1	-1	137	10	2	-0.5	2	9.8	1.45	15	1.15
941006	0	0.3	1.3	-0.1	-3	-3	80	411	172	2590	8	-1	-1	152	25	9	-0.5	8.3	11.6	0.42	17.5	12.8
941007	0	0.1	2.3	-0.1	-3	-3	9	296	179	2760	5	-1	-1	40	16	3	-0.5	5.4	8.9	0.21	4.28	1.84
941008	0	0.2	1.5	-0.1	-3	-3	-3	4	-1	14	-1	27	-1	-1	-1	-1	0.7	5.3	1.4	4.65	48.1	2.46
941009	0	-0.1	1.7	0.3	-3	-3	51	67	43	2150	-1	-1	-1	-1	-1	1	-0.5	4.5	5.5	2.32	19.7	25.4
941010	0	0.2	2.2	0.3	-3	-3	12	67	23	2100	-1	-1	-1	-1	-1	1	0.5	7.9	8.7	1.77	22.3	28.4
941011	0	-0.1	-0.1	0.4	-3	-3	-3	26	7	846	-1	-1	-1	-1	-1	3	-0.5	5.1	36.8	0.82	16.7	26.2
941012	0	-0.1	-0.1	-0.1	-3	-3	-3	109	93	3720	-1	-1	-1	-1	2	3	-0.5	8.1	26	0.13	11.1	13.5
941013	1	-0.1	1	0.1	-3	-3	-3	58	38	2550	-1	-1	-1	-1	-1	2	1.1	32.2	39.1	0.51	14.1	15.7
941014	0	-0.1	-0.1	-0.1	-3	-3	17	16	21	2740	-1	-1	-1	-1	-1	1	-0.5	7	17.2	0.91	13.7	11.5
941015	2	-0.1	0.9	-0.1	-3	-3	-3	55	42	3590	-1	-1	-1	-1	-1	2	0.8	21.9	36.3	0.46	12.1	15.8
941016	0	-0.1	0.3	0.5	-3	-3	13	7	2	21	6	2	5	-1	-1	4	-0.5	1.8	6.5	0.61	14.9	35.7

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Sequential Extraction Geochemical data

ID	STN	Ag-1	Ag-2	Ag-3	As-1	As-2	As-3	Ba-1	Ba-2	Ba-3	Cd-1	Cd-2	Cd-3	Co-1	Co-2	Co-3	Cu-1	Cu-2	Cu-3	Fe-1	Fe-2	Fe-3
941017	0	0.5	1.4	-0.1	-3	-3	5	211	173	4880	9	-1	-1	-1	3	3	2.2	21.1	18.1	0.39	8.82	9.45
941018	0	-0.1	-0.1	0.4	-3	-3	13	7	2	20	6	1	5	-1	-1	4	-0.5	1.7	6.3	0.64	15.9	40.5
941019	0	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17
941023	0	-0.1	0.8	-0.1	-3	-3	-3	119	106	5690	-1	-1	-1	-1	-1	2	-0.5	9.5	25.3	0.6	11.8	9.01
941024	0	-0.1	0.2	-0.1	-3	-3	6	38	19	693	-1	2	-1	1	-1	-1	0.7	16.4	12.2	3.85	27.7	0.72
941025	0	-0.1	-0.1	0.2	-3	-3	-3	16	5	160	-1	-1	-1	47	9	26	-0.5	3.3	4.9	0.39	20.3	29.9
941026	0	-0.1	-0.1	0.1	-3	-3	-3	33	4	238	-1	-1	-1	68	10	39	-0.5	3.2	4.9	0.25	17.7	36.6
941027	0	-0.1	-0.1	-0.1	-3	-3	-3	25	5	105	-1	-1	-1	46	7	33	-0.5	3.2	4.4	0.31	19.1	30.5
941028	0	-0.1	-0.1	0.2	-3	-3	-3	26	5	120	1	-1	-1	35	13	57	-0.5	2.9	5.3	0.33	20.8	33.5
941029	0	0.2	-0.1	-0.1	-3	-3	27	152	10	41	-1	28	-1	575	20	1	-0.5	4	0.8	3.84	43.9	0.77
941030	0	0.4	1	-0.1	-3	-3	96	316	52	134	-1	19	-1	53	6	2	-0.5	4	1.4	4.8	40.8	3.35
941031	0	19.6	18.9	2.5	-3	4	356	134	201	262	1	-1	-1	2	2	4	375	513	243	0.68	8.72	20.3
941032	0	0.8	3.2	-0.1	-3	-3	-3	552	51	2850	6	-1	1	13	2	2	-0.5	5.3	6.2	0.36	11.9	14.5
941033	0	0.8	2.3	0.1	-3	-3	13	568	122	1790	45	8	-1	356	28	4	6.5	77.7	36.5	1.3	27.9	5.16
941034	0	-0.1	1.4	0.2	-3	62	993	105	27	878	19	7	-1	6	-1	3	1.2	42.7	37.5	3.57	26.9	11.8
941036	0	-0.1	1	0.1	-3	-3	8	2	-1	15	-1	24	-1	1	4	3	-0.5	3.5	1.3	2.53	43.2	13.5
941037	0	0.3	1.6	-0.1	-3	-3	-3	10	1	11	-1	5	-1	2	2	-1	34.9	110	9.1	1.78	32.2	1.66
941038	0	-0.1	0.8	-0.1	-3	6	-3	35	236	3190	-1	-1	-1	2	2	4	2.3	28.3	14.8	0.11	2.92	1.38
941039	0	0.2	3	-0.1	-3	-3	10	474	143	4320	3	10	-1	128	39	16	0.6	19.9	11	1.66	35.7	9.43
941040	0	1.5	1.8	0.1	-3	-3	-3	8	2	308	-1	-1	-1	55	3	2	4.8	63.8	49.6	0.7	16.6	7.83
941042	0	1	1.1	-0.1	-3	-3	55	499	67	114	3	19	-1	195	15	1	1.2	9.8	3.5	2.88	40.5	0.94
941043	0	-0.1	0.3	-0.1	-3	-3	78	10	4	3	-1	27	-1	2	-1	-1	-0.5	4.6	0.9	3.29	45.6	7.89
941044	0	-0.1	-0.1	0.1	-3	-3	75	9	4	4	-1	27	-1	2	-1	-1	-0.5	4.5	1.1	3.14	48.5	7.08
941046	0	-0.1	1.1	-0.1	-3	10	18	43	29	391	-1	-1	-1	2	5	8	-0.5	18.2	21.2	0.15	1.79	3.22
941047	1	0.7	1	0.1	-3	-3	144	270	48	266	-1	22	-1	105	5	2	-0.5	3.5	1.3	3.21	43.2	7.54
941048	2	0.2	1.1	-0.1	-3	-3	126	336	49	234	-1	21	-1	149	5	2	-0.5	3.7	0.9	3.45	43.2	5.79
941102	0	0.1	1.1	-0.1	-3	9	14	431	339	4270	-1	-1	-1	3	-1	1	-0.5	3.9	4.8	0.08	1.6	0.51
941103	0	0.3	1.4	-0.1	-3	7	15	532	256	4250	-1	-1	-1	-1	-1	1	-0.5	5.3	5.9	0.02	1.18	0.63
941104	0	0.4	0.7	-0.1	-3	4	16	449	386	4500	2	-1	-1	2	-1	-1	2.8	13.1	6.8	0.04	0.68	0.63
941105	0	-0.1	0.8	-0.1	-3	5	11	356	489	2210	-1	-1	-1	-1	-1	-1	-0.5	2.9	4.5	0.08	0.86	0.48
941106	0	0.6	2	-0.1	-3	-3	17	415	419	4370	-1	-1	-1	2	-1	-1	0.6	9	8.3	0.03	1.18	0.8
941107	0	1.3	1	-0.1	-3	-3	30	509	255	6230	14	2	-1	61	6	4	6.3	43.8	18.5	0.1	4.6	3.41
941108	0	1.4	2.2	0.3	-3	-3	39	56	56	3730	9	2	3	98	21	40	-0.5	11.1	13	0.41	16	25.2
941109	0	0.7	0.8	-0.1	-3	-3	68	48	82	4190	2	-1	-1	8	6	10	0.9	19.5	17.2	0.43	9.22	8.55
941110	0	0.5	0.6	-0.1	-3	-3	136	32	55	2710	2	-1	-1	10	9	14	1	21.3	27	0.51	11.6	12.1
941111	0	1.4	2.3	0.4	-3	-3	37	60	82	4460	10	1	4	103	16	42	-0.5	10.1	13.9	0.39	15.1	28.9
941112	1	-0.1	-0.1	0.4	-3	-3	649	134	36	72	23	8	4	40	20	79	-0.5	11.6	12.7	0.12	8.33	42.4
941113	0	1.4	1	-0.1	-3	-3	61	415	467	5360	9	-1	-1	28	7	6	3.8	30.2	9.9	0.08	3.82	2.89
941114	2	0.1	-0.1	0.4	-3	-3	625	219	28	64	32	8	4	48	36	101	-0.5	14.9	12.5	0.12	11.5	42.7
941115	0	2.1	9.4	-0.1	-3	-3	24	858	221	2760	-1	-1	-1	1	-1	-1	-0.5	18.6	26.9	0.07	29	2.04
941116	0	1.5	1.4	-0.1	-3	14	23	549	144	4470	-1	-1	-1	-1	-1	1	6.1	29.3	10.8	0.06	1.99	0.83
941117	0	0.2	0.7	0.4	-3	-3	-3	51	58	1770	-1	-1	-1	16	-1	3	0.5	56.2	149	0.42	15	35.6
941118	0	0.2	-0.1	-0.1	-3	-3	13	38	43	1560	-1	-1	-1	15	2	2	1.1	52.8	108	0.34	9.25	18.7
941119	0	0.7	5.4	0.6	-3	-3	316	1230	285	457	58	13	2	23	13	92	-0.5	3.5	7	0.09	6.29	45.5
941120	0	18.2	20.8	2.7	-3	-3	358	128	255	362	1	-1	21	2	1	4	311	533	254	0.55	7.21	20.4
941122	0	-0.1	-0.1	-0.1	-3	-3	92	241	79	2620	63	20	-1	2	1	2	1.9	17.5	9.1	1.53	31.8	6.97
941123	0	-0.1	-0.1	-0.1	-3	-3	32	958	208	2120	230	65	-1	235	7	1	1.9	14.1	8	2.58	31.9	1.3
941124	0	0.3	-0.1	-0.1	-3	-3	31	1100	185	1020	295	100	-1	774	25	1	1.1	9.3	4.5	2.01	35.9	1.32
941125	0	0.5	-0.1	-0.1	-3	-3	57	500	450	5460	34	7	2	46	5	5	1.3	19	12.4	0.6	5.17	15.8
941126	0	-0.1	2	-0.1	-3	-3	354	92	18	30	47	57	-1	261	19	4	-0.5	3.5	0.8	1.98	40.6	5.75
941127	0	0.5	-0.1	-0.1	-3	22	178	93	54	63	106	99	-1	411	93	2	-0.5	3.8	0.5	0.1	40.7	0.79
941128	0	-0.1	-0.1	-0.1	-3	48	68	15	46	38	19	133	-1	10	204	2	-0.5	-0.5	0.6	-0.01	19.3	0.37
941129	0	0.3	-0.1	-0.1	-3	73	110	50	70	58	84	147	-1	148	109	1	-0.5	3.3	-0.5	-0.01	36.4	0.45
941130	0	0.4	1.3	0.2	-3	-3	460	175	60	77	250	45	2	329	69	29	-0.5	7.1	10.3	0.52	-0.01	33.4
941131	0	1	2	-0.1	-3	-3	102	171	38	102	346	93	4	1390	100	35	20.3	213	90.4	2.15	38.8	6.28
941132	0	0.1	1.1	-0.1	-3	-3	548	60	16	8	88	62	-1	147	7	2	-0.5	5.1	1.3	2.12	46.7	6.8
941133	0	-0.1	-0.1	0.1	-3	26	1280	54	12	109	106	57	-1	74	4	3	-0.5	5	1	2.99	42.9	7.19
941134	0	-0.1	-0.1	-0.1	-3	3	1280	43	10	2	92	50	-1	63	5	3	1	9.1	1.9	2.98	44.1	7.09
941135	0	-0.1	-0.1	-0.1	-3	34	3400	74	11	11	66	35	6	266	11	9	-0.5	3.8	3.2	0.55	22.4	36.8
941136	0	-0.1	-0.1	-0.1	-3	11	3610	111	20	94	114	493	12	34	5	19	-0.5	5.4	0.6	0.05	6.55	49.3

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Sequential Extraction Geochemical data

ID	STN	Ag-1	Ag-2	Ag-3	As-1	As-2	As-3	Ba-1	Ba-2	Ba-3	Cd-1	Cd-2	Cd-3	Co-1	Co-2	Co-3	Cu-1	Cu-2	Cu-3	Fe-1	Fe-2	Fe-3
941137	0	-0.1	0.4	0.2	-3	-3	299	493	369	3070	39	9	3	9	2	6	-0.5	2.6	12.8	0.08	3.24	14.3
941138	0	-0.1	-0.1	-0.1	-3	8	3610	116	27	105	125	485	13	33	5	20	-0.5	5.4	8.9	0.06	5.83	45.2
941139	0	-0.1	0.6	0.1	-3	8	11	43	29	354	-1	-1	-1	2	4	9	-0.5	17.6	21.2	0.14	1.4	3.58
941201	0	18	20.7	2.4	-3	4	340	119	259	352	1	-1	17	2	2	4	333	513	243	0.63	7.47	21
941202	0	-0.1	-0.1	-0.1	-3	-3	179	157	17	43	86	75	-1	240	16	5	-0.5	4	1.2	1.28	40.3	6.4
941203	0	0.2	0.4	-0.1	-3	11	109	107	78	23	189	211	-1	188	95	1	-0.5	4.4	1.1	0.07	38.8	0.63
941204	0	-0.1	-0.1	0.2	-3	-3	221	27	8	4	29	108	2	30	5	5	-0.5	4.9	2.5	1.25	40.9	22.4
941205	0	-0.1	0.8	0.3	-3	-3	8	80	25	12	42	26	3	32	8	8	-0.5	2.8	3.1	1.09	32.6	26.9
941206	0	-0.1	-0.1	0.1	-3	-3	101	63	10	15	67	44	1	133	6	1	-0.5	4.6	1.3	2.98	-0.01	9.02
941207	0	-0.1	0.4	0.2	-3	-3	73	26	8	17	33	26	1	76	5	5	-0.5	3.2	2.2	1.8	35.2	18.6
941209	0	-0.1	2	0.1	-3	-3	11	247	126	744	9	5	-1	6	20	24	-0.5	8.1	9.8	0.7	22.9	20.7
941210	0	-0.1	-0.1	-0.1	-3	-3	104	21	6	2	26	33	-1	6	4	4	-0.5	3.7	0.8	3.17	44.5	7.78
941211	0	-0.1	-0.1	0.1	-3	-3	126	23	6	2	24	59	1	24	4	4	-0.5	3.5	1	3.2	41.3	8.93
941212	0	-0.1	-0.1	0.2	-3	-3	62	21	7	4	31	35	1	17	6	4	-0.5	3.1	1.5	1.76	38.1	16.4
941213	0	-0.1	-0.1	0.4	-3	-3	43	18	6	3	17	15	33	8	4	6	-0.5	2.5	2.3	1.08	30.9	25
941214	0	-0.1	-0.1	-0.1	-3	-3	95	32	9	3	22	34	-1	24	7	4	-0.5	3.2	1.3	1.88	41	13.4
941215	0	0.2	-0.1	-0.1	-3	-3	156	77	21	252	30	39	-1	281	95	9	-0.5	9.9	7.2	0.18	28.4	6.48
941216	0	0.3	-0.1	-0.1	-3	-3	-3	26	13	126	42	32	1	17	3	1	41.3	143	8.5	1.36	41.2	9.95
941217	0	0.9	1.2	-0.1	-3	-3	-3	160	39	1140	59	17	-1	778	51	6	3.1	29.8	14.1	2.39	35.2	1.74
941219	0	0.2	-0.1	-0.1	-3	-3	-3	53	15	16	127	77	-1	285	18	1	-0.5	5.4	1	1.26	49.7	6.55
941220	0	-0.1	-0.1	0.1	-3	-3	6	21	7	3	38	33	1	8	7	5	0.6	9.3	4	1.82	42.9	12.2
941221	0	-0.1	-0.1	0.2	-3	-3	46	18	7	3	17	19	1	8	5	5	-0.5	2.8	2.2	1.03	33.7	21.3
941402	0	-0.1	2.2	-0.1	-3	-3	16	573	412	2600	-1	-1	-1	1	-1	2	-0.5	6	23.4	0.16	2.93	3.54
941403	0	-0.1	0.7	-0.1	-3	-3	14	652	73	2400	2	-1	-1	2	-1	1	0.6	32.6	19.3	0.13	3.57	3.02
941404	0	1.8	1	-0.1	-3	-3	8	3810	720	6260	60	4	-1	91	20	3	1.2	8.3	12.4	0.15	11.9	3.53
941405	0	0.3	0.5	0.3	-3	-3	-3	699	187	2580	5	2	1	4	8	4	-0.5	6.2	12	0.56	22.2	29.8
941406	0	0.3	0.8	-0.1	-3	-3	5	750	318	5890	11	-1	-1	18	6	2	-0.5	9.3	15.2	0.25	13.7	17
941407	0	0.4	0.6	-0.1	-3	-3	13	437	238	4220	11	-1	-1	25	8	2	0.7	14	15.8	0.26	15.4	12.4
941408	0	1.3	0.7	0.2	-3	-3	-3	384	231	5320	34	3	1	69	9	3	0.9	8.7	9.1	0.27	20.1	20.2
941409	0	0.4	-0.1	0.4	-3	-3	-3	28	48	2190	4	-1	-1	26	3	3	-0.5	6.8	12.9	0.52	16.5	31.8
941410	0	-0.1	0.7	-0.1	-3	-3	16	24	132	5760	-1	-1	-1	3	1	3	-0.5	18.4	18.5	0.4	4.66	2.14
941411	0	0.4	-0.1	-0.1	-3	-3	19	21	36	4800	2	-1	-1	11	2	3	-0.5	9.2	11.6	0.45	9	6.11
941412	0	9.7	1.3	-0.1	-3	-3	-3	3990	629	5030	89	14	-1	133	47	6	1.9	12	9.9	0.04	23.6	10.6
941413	0	1	0.7	0.2	-3	-3	-3	1120	309	6430	22	3	1	58	8	4	-0.5	6.9	11.4	0.38	21.3	27.7
941414	0	0.5	0.3	0.3	-3	-3	-3	159	203	6670	11	-1	-1	29	4	3	-0.5	8.9	19.4	0.33	14.9	28.1
941415	0	1.2	0.7	0.3	-3	-3	-3	209	110	2980	14	-1	-1	109	12	3	-0.5	6.3	8.5	0.5	19.7	19.6
941416	0	0.3	0.3	0.3	-3	-3	-3	31	54	3140	1	-1	-1	8	2	2	-0.5	8	11.8	0.48	17.7	29.6
941417	1	0.1	-0.1	-0.1	-3	-3	13	44	108	4930	-1	-1	-1	4	-1	2	-0.5	14.5	8.8	0.3	8.72	5.69
941418	2	-0.1	-0.1	-0.1	-3	-3	11	44	95	4660	-1	-1	-1	6	1	2	-0.5	11.4	12	0.32	8.94	9.57
941419	0	2	1.6	-0.1	-3	-3	17	45	110	4500	25	-1	-1	151	10	2	1.5	21.5	12.1	0.21	8.15	4.77
941420	0	0.3	-0.1	0.3	-3	-3	-3	35	27	2190	-1	-1	-1	8	1	2	-0.5	7.3	12.3	0.48	17	29.8
941421	0	-0.1	-0.1	0.1	-3	11	-3	43	44	321	-1	-1	-1	-1	3	5	-0.5	6.1	27.5	-0.01	0.56	1.77
941422	0	0.5	0.5	-0.1	-3	-3	6	21	55	3050	1	-1	-1	19	-1	2	0.6	21.5	19.7	0.49	13.2	13.9
941423	0	0.3	1	-0.1	-3	13	-3	32	163	4510	-1	-1	-1	2	2	1	0.6	25.2	6	0.41	3.52	0.03
941424	0	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-1	-17	-17	-17	-17	-17	-17	-17	-17	-17
941425	0	16.9	23	2.5	-3	-3	355	123	264	375	1	-1	-1	2	1	4	301	543	245	0.57	7.37	20.7
941426	0	-0.1	0.5	0.2	-3	-3	43	30	4	21	11	17	-1	3	-1	2	-0.5	5	2	1.98	37.3	14.8
941427	0	-0.1	-0.1	0.1	-3	-3	288	163	38	102	5	20	-1	95	4	-1	-0.5	3.5	0.7	2.11	39.8	2.94
941428	0	0.3	-0.1	0.2	-3	23	697	77	221	39	-1	13	-1	156	392	16	-0.5	3.1	0.9	-0.01	35.3	2.43
941429	0	0.7	-0.1	-0.1	-3	-3	33	386	59	178	35	36	-1	625	25	1	-0.5	4.3	0.8	3.17	46.2	0.19
941430	0	-0.1	-0.1	-0.1	-3	-3	16	184	55	3170	-1	-1	-1	1	-1	-1	-0.5	14	8.2	0.18	7.53	4.78
941431	0	-0.1	-0.1	-0.1	-3	-3	4	197	62	1430	-1	-1	-1	-1	-1	-1	-0.5	7.7	3.8	0.12	6.44	2.73
941432	0	-0.1	0.5	-0.1	-3	-3	12	368	62	2550	-1	-1	-1	-1	-1	1	-0.5	13.1	16.8	0.09	5.86	9.86
941433	0	-0.1	0.3	-0.1	-3	-3	15	364	21	924	-1	-1	1	-1	-1	-1	-0.5	7.7	11.8	0.06	5.32	9.63
941434	0	-0.1	-0.1	-0.1	-3	-3	-3	141	9	463	-1	-1	-1	-1	-1	-1	-0.5	2.8	1.9	0.07	3.38	0.9
941435	0	0.5	-0.1	-0.1	-3	-3	20	374	65	138	33	35	-1	609	35	-1	-0.5	4.3	1	3.05	44.4	0.66
941022	0	-0.1	-0.1	0.3	-3	-3	-3	29	39	5460	-1	-1	36	-1	-1	3	-0.5	12.9	52.3	0.3	9.43	27.7

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ID	Mn-1	Mn-2	Mn-3	Mo-1	Mo-2	Mo-3	Ni-1	Ni-2	Ni-3	Pb-1	Pb-2	Pb-3	Sb-1	Sb-2	Sb-3	Ti-1	Ti-2	Ti-3	V-1	V-2	V-3	Zn-1	Zn-2	Zn-3
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
945002	2	2	10	-1	-1	6	2	-1	-1	213	1110	1880	-5	-5	-5	4.7	41.3	115	-2	47	221	5.3	35	184
945003	1190	169	197	-1	-1	7	67	188	410	-2	-2	11	-5	-5	10	0.7	0.2	0.4	-2	4	23	1370	3160	10300
945004	360	175	85	-1	-1	-1	4	13	24	-2	2	10	-5	-5	-5	0.9	-0.1	0.2	-2	9	27	18.3	598	1070
945005	1150	50	41	-1	-1	13	10	17	39	-2	7	4	-5	-5	10	0.3	-0.1	0.5	-2	12	398	94.1	1020	1320
945006	1110	41	19	-1	8	23	13	30	31	-2	-2	5	-5	8	51	1.6	-0.1	-0.1	-2	10	15	40.5	1520	2000
945011	353	15	7	-1	-1	11	364	201	192	-2	6	4	-5	-5	-5	3.9	1	-0.1	-2	21	11	16100	7580	3860
945012	99	8	38	-1	-1	29	11	9	93	-2	5	8	-5	-5	-5	0.2	-0.1	1.1	-2	4	367	181	415	3290
945013	1860	710	-2	-1	-1	-1	386	726	4	-2	-2	-2	-5	-5	-5	3.1	0.4	-0.1	-2	-2	-2	4410	23500	43.6
945015	289	28	12	-1	7	14	359	667	379	-2	5	2	-5	-5	-5	0.2	-0.1	-0.1	-2	30	17	14600	17000	3590
945017	2230	86	21	-1	-1	5	31	11	10	1080	12700	482	-5	-5	-5	7.8	2.4	5.3	-2	18	96	3520	3570	1070
945018	707	30	38	-1	-1	6	13	19	25	99	248	43	-5	-5	-5	3.3	4.2	4.2	-2	9	279	361	833	1130
945019	271	235	396	-1	5	5	2	13	27	-2	47	2	-5	-5	-5	-0.1	-0.1	0.5	2	10	69	11.2	62.1	135
945020	5	4	20	-1	-1	-1	-1	-1	-1	-2	4	9	-5	-5	-5	-0.1	-0.1	-0.1	-2	7	23	6.9	36.2	571
945023	12	4	15	-1	-1	-1	1	-1	-1	63	164	108	-5	-5	-5	-0.1	-0.1	0.8	-2	10	132	6.9	72.3	399
945024	11	2	21	-1	-1	10	5	2	3	266	728	527	-5	-5	5	0.8	1.1	5.8	-2	15	503	13.7	49.4	305
945026	63	25	113	-1	6	21	49	167	420	-2	3	10	-5	-5	-5	-0.1	-0.1	-0.1	-2	5	24	1780	3860	14800
945027	366	24	45	-1	5	53	97	420	805	-2	-2	10	-5	-5	-5	-0.1	-0.1	-0.1	-2	3	26	2260	3970	11600
945028	353	23	45	-1	4	53	96	405	796	-2	3	10	-5	-5	-5	-0.1	-0.1	-0.1	-2	3	26	2200	3780	12600
945029	332	60	95	-1	-1	11	46	139	356	-2	-2	10	-5	-5	-5	-0.1	-0.1	-0.1	-2	3	24	2010	4230	16800
945030	125	75	77	-1	-1	2	76	114	207	-2	4	8	-5	-5	-5	0.2	-0.1	-0.1	-2	7	20	3320	4100	9720
945032	2530	76	41	-1	3	64	37	19	83	3	96	430	-5	-5	11	0.7	-0.1	1.3	4	46	640	303	906	2130
945033	22	19	52	-1	7	59	23	42	64	-2	89	104	-5	-5	12	0.1	-0.1	2.2	3	20	689	429	730	1340
945034	211	22	27	-1	10	47	42	129	102	3	156	62	-5	-5	11	-0.1	0.1	2.4	2	20	713	904	1690	2090
945036	962	63	90	-1	-1	3	11	13	69	-2	10	12	-5	-5	-5	0.4	-0.1	0.2	-2	9	38	196	954	5960
945046	7460	623	111	-1	-1	9	10	8	26	-2	40	-2	-5	-5	-5	17.6	1.5	1.3	-2	12	119	293	980	2140
945047	37100	814	47	-1	2	6	169	15	9	6	271	55	-5	-5	-5	50.8	6.6	3	-2	11	192	7390	2530	730
945048	278	103	48	-1	-1	6	3	4	5	25	172	47	-5	-5	-5	0.9	0.1	2.3	-2	8	178	898	1860	2410
945049	606	76	37	-1	-1	6	-1	6	6	19	83	38	-5	-5	-5	1.9	-0.1	1.5	-2	9	159	367	1760	2310
945050	4830	143	58	-1	-1	9	126	98	179	-2	-2	-2	-5	-5	9	7.1	0.6	0.4	-2	9	31	2420	4660	11600
945051	350	25	18	-1	1	19	17	36	64	-2	-2	8	-5	-5	-5	0.2	-0.1	0.1	-2	6	25	891	2980	8010
945052	779	29	52	-1	5	113	88	241	644	-2	-2	8	-5	-5	93	0.4	-0.1	-0.1	-2	2	24	3010	4890	18400
945053	1170	59	133	-1	-1	2	58	53	207	-2	4	9	-5	-5	-5	0.1	-0.1	-0.1	-2	9	27	294	1090	2470
945069	12500	304	61	-1	-1	2	753	52	24	-2	5	4	-5	-5	-5	0.4	-0.1	0.2	-2	12	76	1630	957	590
945073	35	7	39	-1	32	203	104	343	698	-2	-2	11	-5	-5	53	-0.1	-0.1	-0.1	-2	16	55	2000	3350	19000
945074	18	47	107	-1	29	75	80	270	194	-2	12	-2	-5	-5	10	0.4	-0.1	1.3	5	20	449	1580	2460	2120
945075	45	16	126	-1	60	574	289	639	948	-2	-2	9	-5	-5	19	0.5	-0.1	0.1	-2	4	45	4480	4830	15500
945076	40	12	55	-1	20	191	60	222	869	-2	-2	10	-5	-5	-5	-0.1	-0.1	-0.1	-2	-2	26	1450	2840	20800
945077	34	8	51	-1	5	120	56	145	873	-2	-2	11	-5	-5	-5	-0.1	-0.1	-0.1	-2	-2	27	1380	2410	21900
945078	828	53	102	-1	13	184	156	377	1240	-2	-2	12	-5	-5	-5	0.6	-0.1	-0.1	-2	-2	25	2310	2860	15700
945079	428	26	62	-1	16	144	123	288	824	-2	-2	11	-5	-5	14	0.3	-0.1	-0.1	-2	3	31	2160	2960	18200
945080	261	39	89	-1	7	68	153	315	789	-2	-2	11	-5	-5	10	0.1	-0.1	-0.1	-2	18	45	2730	3990	19700
945082	156	10	42	-1	11	123	113	191	579	-2	-2	10	-5	-5	26	0.2	-0.1	-0.1	-2	12	55	2560	4110	19700
945083	1730	84	57	-1	-1	19	130	80	215	-2	3	9	-5	-5	-5	1.2	0.3	0.2	-2	7	40	1760	2210	6660
945084	78	15	25	-1	-1	5	19	37	14	2090	6650	1360	-5	-5	-5	4.1	15.7	14.8	-2	17	84	2760	2830	2100
945086	158	12	41	-1	17	123	112	223	572	-2	-2	10	-5	-5	26	0.2	-0.1	-0.1	-2	16	55	2560	4690	19400
941003	101	11	32	-1	7	7	4	6	12	-2	67	25	-5	-5	-5	-0.1	0.4	2	5	43	457	20.6	48.8	58.4
941004	1150	31	6	-1	10	17	70	12	4	-2	11	-2	-5	-5	-5	0.6	0.1	-0.1	2	20	4	2570	2390	522
941005	6450	231	30	-1	6	11	127	23	11	-2	51	60	-5	-5	-5	1.4	0.5	1.5	-2	19	380	1820	1150	125
941006	4710	558	86	-1	6	32	119	58	40	-2	24	5	-5	-5	-5	2.3	0.6	1.4	-2	12	240	1560	1620	1650
941007	3770	464	28	-1	5	15	51	59	13	-2	70	30	-5	-5	-5	0.7	0.2	1.6	-2	29	445	648	569	250
941008	14	7	3	-1	2	2	-1	-1	-1	-2	8	-2	-5	-5	-5	-0.1	-0.1	-0.1	3	20	3	11.7	263	17.6
941009	6	4	8	-1	13	26	3	-1	-1	-2	4	7	-5	-5	44	0.2	-0.1	0.2	2	16	52	33.5	20.8	29.3
941010	4	3	5	-1	9	20	3	-1	-1	-2	-2	6	-5	-5	25	-0.1	-0.1	-0.1	-2	14	26	24.9	17.9	31.9
941011	3	5	15	-1	3	10	3	2	9	-2	-2	6	-5	-5	-5	-0.1	-0.1	0.3	-2	8	61	31.9	156	829
941012	5	40	19	-1	3	7	4	12	30	-2	5	-2	-5	-5	-5	-0.1	-0.1	1.2	-2	8	204	41.3	236	469
941013	4	22	18	-1	3	12	2	2	33	-2	5	-2	-5	-5	-5	-0.1	-0.1	1.3	-2	13	320	9.7	101	423
941014	3	13	15	-1	12	23	3	2	47	-2	14	7	-5	-5	5	-0.1	-0.1	1.3	-2	20	434	14.4	67.4	229
941015	4	17	19	-1	-1	10	2	-1	30	-2	7	3	-5	-5	-5	-0.1	-0.1	1.4	-2	12	298	10.1	78.3	378
041016	10	7	45	-1	14	43	5	9	43	-2	-2	0	-5	-5	-5	0.4	-0.1	-0.1	-2	5	21	1080	1590	6520

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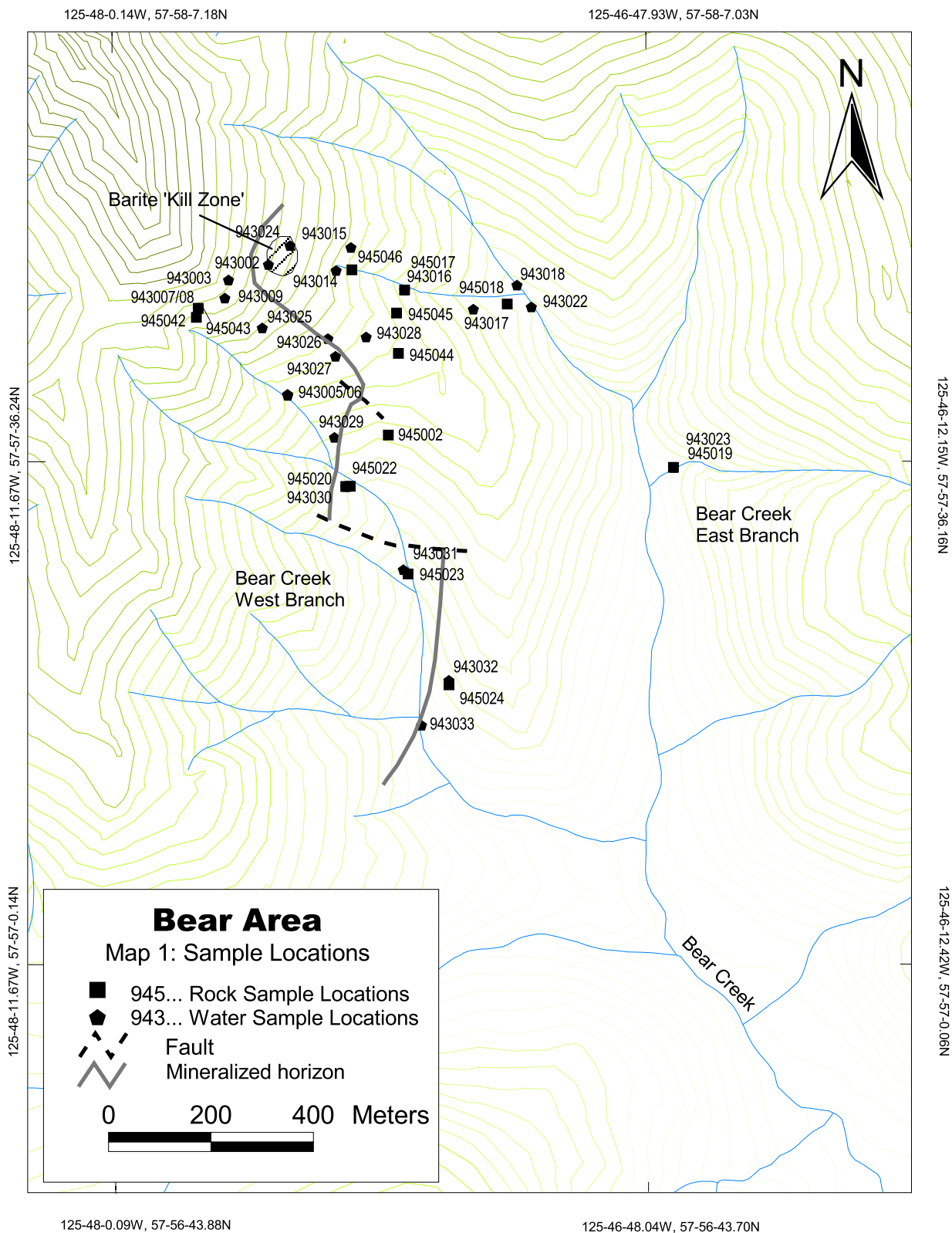
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941017	25	75	47	-1	3	8	12	20	23	6	142	114	-5	-5	-5	0.5	-0.1	2.3	-2	19	440	1000	1250	1320
941018	10	8	46	-1	14	43	6	9	43	-2	-2	9	-5	-5	-5	0.4	-0.1	-0.1	-2	5	21	1080	1620	6290
941019	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17
941023	10	9	27	-1	-1	5	10	3	15	-2	10	3	-5	-5	-5	-0.1	-0.1	1.9	-2	19	258	72.4	186	217
941024	39	12	8	-1	1	2	6	-1	3	-2	13	6	-5	-5	-5	-0.1	-0.1	0.2	3	20	42	58.6	25.8	14
941025	562	164	141	-1	-1	11	29	50	199	-2	5	7	-5	-5	-5	-0.1	-0.1	0.1	-2	8	39	187	819	2210
941026	1100	102	128	-1	-1	5	53	69	269	-2	4	8	-5	-5	-5	-0.1	-0.1	0.1	-2	8	48	205	862	3040
941027	777	99	90	-1	-1	9	42	68	295	-2	3	7	-5	-5	-5	-0.1	-0.1	-0.1	-2	8	34	264	968	2690
941028	414	117	152	-1	-1	3	28	84	297	-2	3	10	-5	-5	-5	-0.1	-0.1	-0.1	-2	9	36	265	1150	2650
941029	16200	341	8	-1	25	9	927	60	3	2	6	-2	-5	-5	5	0.3	-0.1	-0.1	-2	20	4	2320	1170	63.4
941030	4410	271	54	-1	-1	1	237	48	11	-2	7	-2	-5	-5	11	0.2	-0.1	-0.1	3	18	14	1010	649	102
941031	633	192	52	-1	2	10	2	8	16	15	443	257	-5	9	68	0.3	-0.1	-0.1	17	42	32	152	277	340
941032	450	70	34	-1	2	7	13	20	37	66	457	88	-5	-5	-5	0.3	-0.1	2.6	-2	10	296	225	1380	2250
941033	16100	403	19	-1	1	6	600	104	25	-2	76	37	-5	-5	-5	2.5	0.4	0.8	-2	18	155	3460	2080	634
941034	134	34	35	-1	21	21	62	13	20	80	3270	505	-5	39	205	0.6	-0.1	1.2	2	15	164	1840	934	799
941036	19	36	29	-1	-1	-1	18	13	4	-2	9	4	-5	-5	-5	-0.1	-0.1	-0.1	-2	19	8	128	888	515
941037	32	12	3	-1	-1	-1	10	41	2	-2	-2	-2	-5	-5	-5	-0.1	-0.1	-0.1	-2	14	2	350	700	117
941038	66	38	32	-1	4	3	1	16	23	-2	12	4	-5	-5	-5	-0.1	0.1	1.5	-2	17	315	4.3	94.2	119
941039	2640	379	68	-1	3	5	224	165	55	-2	9	2	-5	-5	-5	0.6	-0.1	0.3	-2	19	62	1390	1550	565
941040	1210	46	41	-1	-1	-1	16	15	3	-2	-2	-2	-5	-5	-5	-0.1	-0.1	-0.1	-2	7	29	92.4	271	338
941042	25400	892	24	-1	-1	2	986	139	9	3	7	-2	-5	-5	-5	0.4	-0.1	-0.1	-2	18	13	4720	1590	90.5
941043	36	11	4	-1	-1	4	23	4	-1	-2	6	3	-5	-5	-5	-0.1	-0.1	-0.1	2	20	5	288	486	148
941044	32	11	3	-1	-1	4	23	3	-1	-2	8	2	-5	-5	-5	-0.1	-0.1	-0.1	-2	20	5	280	490	138
941046	269	243	400	-1	5	5	3	15	27	-2	49	5	-5	-5	-5	-0.1	-0.1	0.5	2	11	70	10.9	69.1	136
941047	3860	90	17	-1	14	21	210	56	22	-2	8	2	-5	-5	-5	0.4	-0.1	-0.1	-2	20	25	2070	2250	875
941048	5560	98	18	-1	12	20	329	57	23	-2	9	-2	-5	-5	-5	0.5	-0.1	-0.1	-2	19	19	2910	2160	805
941102	44	11	8	-1	8	11	3	7	17	-2	4	-2	-5	-5	10	-0.1	0.2	1.3	2	48	528	19.1	102	179
941103	7	5	9	-1	8	12	2	30	18	-2	3	-2	-5	-5	11	-0.1	0.3	1.4	-2	30	605	36.3	169	296
941104	55	9	7	-1	8	14	5	11	16	-2	4	-2	-5	-5	11	-0.1	0.3	1.1	3	23	570	47.2	94.7	145
941105	7	3	14	-1	8	10	1	3	8	-2	5	-2	-5	-5	7	-0.1	-0.1	1.7	10	74	530	9	40.3	114
941106	51	16	13	-1	7	15	3	62	32	-2	3	-2	-5	-5	12	-0.1	0.1	1.9	-2	36	718	47.6	243	330
941107	1270	118	19	-1	17	29	65	56	55	-2	8	-2	-5	-5	24	0.8	0.7	2.1	-2	38	894	514	873	596
941108	1460	203	108	-1	-1	14	20	73	179	-2	5	7	-5	-5	12	1.3	0.3	0.5	-2	8	117	252	1700	5960
941109	124	107	51	-1	-1	14	4	35	59	-2	6	-2	-5	-5	13	0.2	-0.1	1	-2	9	457	78.2	828	1160
941110	130	199	62	-1	2	20	4	37	78	-2	9	4	-5	-5	25	0.2	-0.1	0.9	-2	14	406	86.3	931	1780
941111	1530	180	118	-1	-1	14	21	57	190	-2	6	6	-5	-5	11	1.3	0.2	0.5	-2	7	116	263	1370	6510
941112	501	97	216	-1	2	57	77	258	601	-2	-2	9	-5	-5	169	0.2	-0.1	0.2	-2	4	33	1590	3320	11200
941113	689	74	25	-1	8	13	62	86	55	-2	7	-2	-5	9	26	0.6	-0.1	1.4	-2	30	620	802	1100	605
941114	615	120	247	-1	3	45	100	278	589	-2	-2	9	-5	-5	111	0.3	-0.1	0.2	-2	4	30	1970	3670	10800
941115	13	8	13	-1	7	21	1	4	12	-2	3	-2	-5	-5	13	-0.1	0.4	2.2	-2	25	690	13.7	54	133
941116	14	6	10	-1	28	15	1	9	14	-2	8	-2	-5	7	25	-0.1	1.1	2	4	53	922	5.9	69.9	95.7
941117	206	73	144	-1	-1	6	3	-1	-1	-2	3	7	-5	-5	9	-0.1	0.3	1.5	-2	13	128	31.2	176	212
941118	256	76	46	-1	1	13	4	9	11	-2	5	6	-5	-5	15	0.6	-0.1	0.9	-2	18	317	28.7	352	606
941119	931	92	255	-1	-1	12	234	470	655	-2	3	7	-5	-5	7	0.6	-0.1	0.4	-2	3	74	3400	2860	9010
941120	611	200	61	-1	1	11	1	8	18	10	406	258	-5	-5	69	0.2	-0.1	-0.1	15	39	34	128	258	349
941122	19	10	12	-1	123	104	36	43	32	-2	7	-2	-5	-5	-5	0.6	-0.1	1.1	-2	26	182	1030	2050	846
941123	3510	65	13	-1	11	9	555	155	25	-2	9	-2	-5	-5	-5	6	1.5	1.1	-2	23	192	17100	5550	289
941124	9900	194	9	-1	15	11	986	222	17	-2	7	-2	-5	-5	-5	7.6	2.1	0.7	-2	21	124	24000	8240	224
941125	674	32	27	-1	11	76	261	371	140	-2	12	-2	-5	-5	6	2.2	0.5	3	2	21	488	4130	2870	2580
941126	3480	168	12	-1	76	86	464	256	106	-2	17	2	-5	-5	17	1.5	0.2	-0.1	-2	36	9	5980	4690	1340
941127	8400	617	8	-1	14	6	1060	857	40	-2	13	-2	-5	8	11	1.7	1.2	-0.1	-2	31	6	19400	29900	405
941128	2520	2550	5	-1	-1	2	32	1520	16	-2	6	150	-5	-5	-5	0.6	0.5	-0.1	-2	13	4	708	62100	180
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941130	5300	466	61	-1	28	226	327	349	326	-2	3	6	-5	-5	55	19.1	4	0.5	4	54	55	9920	5610	7110
941131	14800	538	32	-1	27	40	643	190	57	-2	7	2	-5	8	10	7	1.8	0.1	-2	25	27	11300	5580	1620
941132	1630	44	5	-1	4	9	172	86	20	-2	7	-2	-5	10	25	1.6	0.2	-0.1	-2	20	5	8690	6080	1120
941133	932	34	8	-1	8	13	160	82	45	-2	5	-2	-5	32	91	0.7	-0.1	-0.1	-2	19	5	5880	4640	1580
941134	691	31	11	-1	9	14	146	85	52	-2	7	-2	-5	40	90	0.6	-0.1	-0.1	-2	20	4	4940	4190	1640
941135	3190	75	16	-1	22	68	288	142	159	-2	3	7	-5	54	450	1.1	-0.1	-0.1	-2	9	18	6560	6360	9230
941136	446	13	35	-1	39	249	172	318	700	-2	-2	10	-5	20	523	0.4	-0.1	-0.1	-2	3	41	4050	5040	16500

Open File 200107
Sequential Extraction Geochemical data

ID	Mn-1	Mn-2	Mn-3	Mo-1	Mo-2	Mo-3	Ni-1	Ni-2	Ni-3	Pb-1	Pb-2	Pb-3	Sb-1	Sb-2	Sb-3	Ti-1	Ti-2	Ti-3	V-1	V-2	V-3	Zn-1	Zn-2	Zn-3
941137	70	4	28	-1	5	42	67	152	119	-2	4	4	-5	-5	34	1.2	0.2	1.3	-2	7	509	1290	1500	2630
941138	441	14	36	-1	34	253	192	293	714	-2	-2	11	-5	18	527	0.5	0.1	0.1	-2	3	42	4400	4660	17200
941139	265	236	397	-1	5	6	2	13	28	3	47	3	-5	-5	-5	-0.1	-0.1	0.5	2	9	69	12.5	57.9	145
941201	624	197	59	-1	2	9	1	8	16	10	422	250	-5	8	16	0.2	-0.1	-0.1	15	40	33	139	253	329
941202	5900	131	24	-1	24	37	320	193	106	-2	252	9	-5	13	36	0.5	-0.1	-0.1	-2	24	15	6870	5150	1950
941203	7550	862	8	-1	-1	2	598	1140	18	-2	125	3	-5	23	16	0.3	0.2	-0.1	-2	24	10	19900	66200	363
941204	544	51	14	-1	23	47	152	116	95	-2	46	9	-5	-5	6	0.4	-0.1	-0.1	-2	15	11	4010	4130	2900
941205	391	83	31	-1	-1	7	137	91	67	-2	6	8	-5	-5	-5	1.3	0.1	-0.1	-2	14	13	3750	4750	3170
941206	3300	112	13	-1	5	23	223	56	28	-2	28	10	-5	-5	-5	1.2	-0.1	-0.1	-2	18	8	3860	2670	1220
941207	721	35	17	-1	-1	23	144	90	72	-2	20	10	-5	-5	-5	0.4	-0.1	-0.1	-2	15	14	3190	3390	2930
941209	65	441	88	-1	-1	11	133	168	139	-2	75	35	-5	-5	-5	0.1	-0.1	0.5	-2	14	129	3000	3240	3060
941210	68	36	21	-1	7	16	130	86	44	-2	102	4	-5	-5	6	0.2	-0.1	-0.1	-2	21	5	2420	2530	1230
941211	536	57	20	-1	8	19	150	93	53	-2	113	6	-5	-5	8	0.2	-0.1	-0.1	-2	19	6	2700	2720	1390
941212	224	53	16	-1	6	18	129	103	47	-2	10	4	-5	-5	-5	0.3	-0.1	-0.1	-2	16	9	3550	4080	2140
941213	98	33	21	-1	-1	8	108	88	71	-2	6	7	-5	-5	-5	0.2	-0.1	-0.1	-2	13	13	2870	3420	3160
941214	560	133	30	-1	2	13	143	99	38	-2	13	4	-5	-5	-5	0.4	-0.1	-0.1	-2	17	7	3250	3860	1680
941215	6590	649	58	-1	85	90	346	603	157	-2	787	21	-5	13	24	0.6	0.2	0.6	-2	29	152	4540	15300	2280
941216	295	28	9	-1	-1	3	93	127	22	-2	9	19	-5	-5	-5	0.2	-0.1	0.2	-2	19	72	4130	5900	1290
941217	17900	440	10	-1	-1	2	754	153	12	-2	6	4	-5	-5	-5	1.2	0.1	0.4	-2	17	58	4410	2070	330
941219	6100	186	9	-1	3	6	316	149	12	-2	9	-2	-5	-5	-5	0.9	-0.1	-0.1	-2	21	5	13000	14200	1030
941220	79	43	18	-1	19	37	91	85	37	-2	10	3	-5	-5	-5	0.2	-0.1	-0.1	-2	18	7	3390	5090	2220
941221	101	36	19	-1	-1	8	108	98	65	-2	8	6	-5	-5	-5	0.2	-0.1	-0.1	-2	14	12	2880	3890	2850
941402	201	77	65	-1	3	22	-1	3	16	45	441	159	-5	-5	-5	-0.1	1.6	6.2	-2	28	414	18.6	94.6	257
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941406	3810	519	74	-1	-1	11	9	11	14	29	389	38	-5	-5	-5	4.8	0.7	3.3	-2	10	234	3260	2630	1830
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941408	27600	1060	144	-1	-1	6	99	12	11	14	474	55	-5	-5	-5	18.8	3	3.5	-2	15	134	4960	2900	2170
941409	5700	457	114	-1	-1	8	-1	4	11	56	226	65	-5	-5	-5	19	1.7	2.3	-2	9	106	424	1350	2790
941410	618	102	52	-1	5	11	-1	13	19	122	411	130	-5	-5	-5	2.5	0.7	5.3	-2	12	424	86.1	645	398
941411	5680	212	51	-1	2	12	-1	9	16	70	312	139	-5	-5	-5	11.5	1.3	3.1	-2	10	327	524	757	563
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941413	12500	775	170	-1	-1	10	20	8	11	11	435	74	-5	-5	-5	34.7	4	2.1	-2	10	102	4840	2790	2760
941414	4020	316	87	-1	2	22	-1	9	20	52	590	102	-5	-5	-5	10.1	1.1	2.6	-2	9	162	2590	2640	3080
941415	23600	1450	228	-1	1	9	17	-1	2	33	410	37	-5	-5	-5	60.8	6.7	6.4	-2	16	156	829	981	1390
941416	1540	317	123	-1	-1	3	-1	1	2	37	127	60	-5	-5	-5	11.4	0.8	2	-2	11	126	143	973	1590
941417	697	189	33	-1	1	9	-1	9	9	83	153	63	-5	-5	-5	2.5	0.3	4.2	-2	13	354	72.4	644	311
941418	1150	215	46	-1	-1	10	-1	7	10	83	171	76	-5	-5	-5	4.3	0.5	4.2	-2	12	343	89.4	574	496
941419	53600	984	84	-1	4	8	32	5	9	208	2050	230	-5	-5	-5	71.8	5.4	3.5	-2	12	298	1300	734	417
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941421	246	104	239	1	2	4	-1	5	7	-2	58	11	-5	-5	-5	-0.1	-0.1	0.3	2	5	34	7.9	61.7	206
941422	3700	171	104	-1	3	14	-1	4	5	32	73	36	-5	-5	-5	12	1.5	6.5	-2	17	243	133	755	565
941423	627	62	14	-1	9	2	-1	17	7	14	411	35	-5	-5	-5	2.8	2.1	3.8	-2	13	413	63.6	421	59.5
941424	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17	-17
941425	615	201	60	-1	1	10	1	8	18	11	424	254	-5	8	75	0.2	-0.1	0.1	14	40	33	129	261	339
941426	25	10	6	-1	4	18	81	40	22	-2	7	4	-5	-5	-5	0.2	-0.1	-0.1	-2	17	9	1550	1600	1270
941427	2750	69	4	-1	17	10	371	99	39	-2	9	-2	-5	20	39	0.4	-0.1	-0.1	-2	38	6	5560	2450	707
941428	8050	3840	71	-1	23	13	90	682	22	-2	4	-2	-5	18	24	0.2	0.5	-0.1	-2	16	5	168	4480	226
941429	18100	395	5	-1	25	8	603	70	3	2	7	-2	-5	-5	-5	1	0.2	-0.1	-2	19	15	7340	2480	59.2
941430	190	30	31	-1	6	15	-1	2	4	991	2840	690	-5	-5	-5	3.9	17.3	14	-2	26	437	24.9	246	252
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941432	24	18	35	-1	2	16	-1	3	7	425	1900	544	-5	-5	-5	0.6	8	15	-2	17	297	11	172	376
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941434	4	-2	8	-1	-1	4	-1	-1	-1	95	955	829	-5	-5	-5	1.9	101	40.6	-2	-2	118	6	51.7	53.2
941435	18000	634	7	-1	23	6	593	79	8	-2	8	-2	-5	-5	-5	1	0.5	-0.1	-2	19	12	6080	2600	62.3
941022	7	-2	15	-1	-1	-1	1	-1	3	-2	-2	-2	-5	-5	-5	-0.1	-0.1	0.9	-2	5	150	8.2	46.2	255

MAPS

Map 1	Sample Locations - Bear Area	Map 38	Arsenic in Sediment - N. Bear Area
Map 2	Sample Locations - Bear Area	Map 39	Silver in Sediment - N. Bear Area
Map 3	Sample Locations - Bear Area	Map 40	Sample Locations - Spa Area
Map 4	Barium in Soil - Bear Area	Map 41	Sample Locations - Spa Area
Map 5	Lead in Soil - Bear Area	Map 42	Barium in Soil - Spa Area
Map 6	Silver in Soil - Bear Area	Map 43	Lead in Soil - Spa Area
Map 7	Zinc in Soil - Bear Area	Map 44	Silver in Soil - Spa Area
Map 8	Barium in Rock - Bear Area	Map 45	Zinc in Soil - Spa Area
Map 9	Lead in Rock - Bear Area	Map 46	Barium in Rock - Spa Area
Map 10	Silver in Rock - Bear Area	Map 47	Lead in Rock - Spa Area
Map 11	Zinc in Rock - Bear Area	Map 48	Silver in Rock - Spa Area
Map 12	Barium in Sediment - Bear Area	Map 49	Zinc in Rock - Spa Area
Map 13	Lead in Sediment - Bear Area	Map 50	Lead in Water - Spa Area
Map 14	Silver in Sediment - Bear Area	Map 51	Zinc in Water - Spa Area
Map 15	Zinc in Sediment - Bear Area	Map 52	pH in Water - Spa Area
Map 16	Barium in Water - Bear Area	Map 53	Sample Locations - Driftpile Area
Map 17	Lead in Water - Bear Area	Map 54	Sample Locations - Driftpile Area
Map 18	Aluminum in Water - Bear Area	Map 55	Barium in Spring Deposit - Driftpile
Map 19	Zinc in Water - Bear Area	Map 56	Lead in Spring Deposit - Driftpile
Map 20	Thallium in Water - Bear Area	Map 57	Silver in Spring Deposit - Driftpile
Map 21	pH in Water - Bear Area	Map 58	Zinc in Spring Deposit - Driftpile
Map 22	Sample Locations - N. Bear Area	Map 59	pH in Water - Driftpile Area
Map 23	Sample Locations - N. Bear Area	Map 60	Zinc in Water - Driftpile Area
Map 24	Barium in Rock - N. Bear Area	Map 61	Aluminum in Water - Driftpile Area
Map 25	Lead in Rock - N. Bear Area	Map 62	Lead in Water - Driftpile Area
Map 26	Zinc in Rock - N. Bear Area	Map 63	Lead in Sediment - Driftpile Area
Map 27	Silver in Rock - N. Bear Area	Map 64	Silver in Sediment - Driftpile Area
Map 28	Barium in Spring Deposit - N. Bear	Map 65	Zinc in Sediment - Driftpile Area
Map 29	Lead in Spring Deposit - N. Bear	Map 66	Barium in Sediment - Driftpile Area
Map 30	Silver in Spring Deposit - N. Bear	Map 67	Sample Locations - Saint Area
Map 31	Zinc in Spring Deposit - N. Bear	Map 68	Sample Locations - Saint Area
Map 32	pH in Water - N. Bear Area	Map 69	Lead in Water - Saint Area
Map 33	Aluminum in Water - N. Bear	Map 70	Zinc in Water - Saint Area
Map 34	Lead in Water - N. Bear Area	Map 71	Barium in Sediment - Saint Area
Map 35	Zinc in Water - N. Bear Area	Map 72	Lead in Sediment - Saint Area
Map 36	Gold in Rock - N. Bear Area	Map 73	Silver in Sediment - Saint Area
Map 37	Lead in Sediment - N. Bear Area	Map 74	Zinc in Sediment - Saint Area



125-48-0.14W, 57-58-7.18N

125-46-47.93W, 57-58-7.03N



Barite 'Kill Zone'

947002

947003

947004/05

947006

947023/24

947025

947007

947008/09

947011

947010

Bear Creek
East Branch

Bear Creek
West Branch

947026/27

947012/13

947014

947028/29

947031

947032

947015

947016

947017/18

947019/20

Bear Creek

947022

Bear Area

Map 2: Sample Locations

- 947... Sediment Sample Locations
- - - Fault
- ~ Mineralized horizon

0 200 400 Meters



125-48-0.09W, 57-56-43.88N

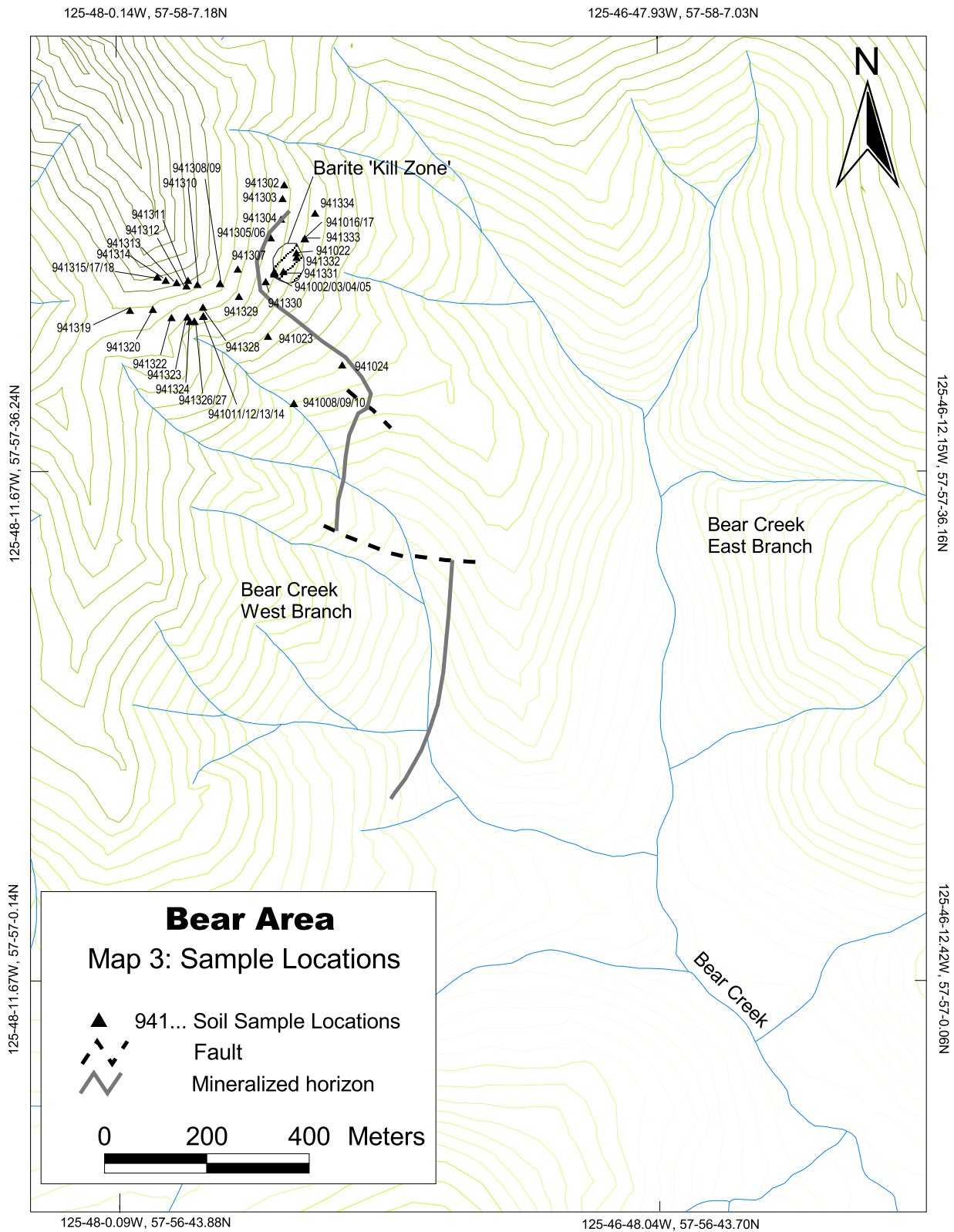
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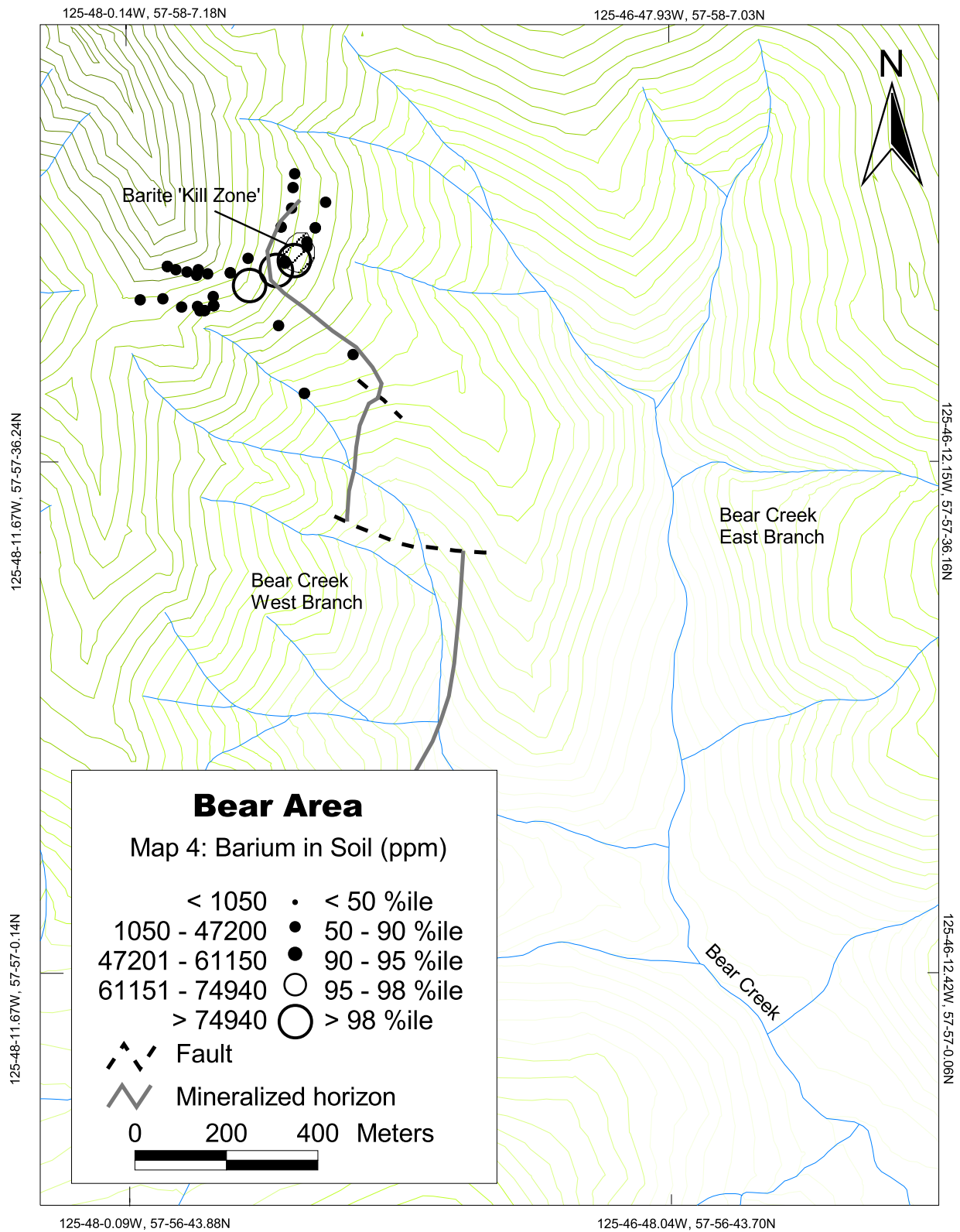
125-48-11.67W, 57-57-36.24N

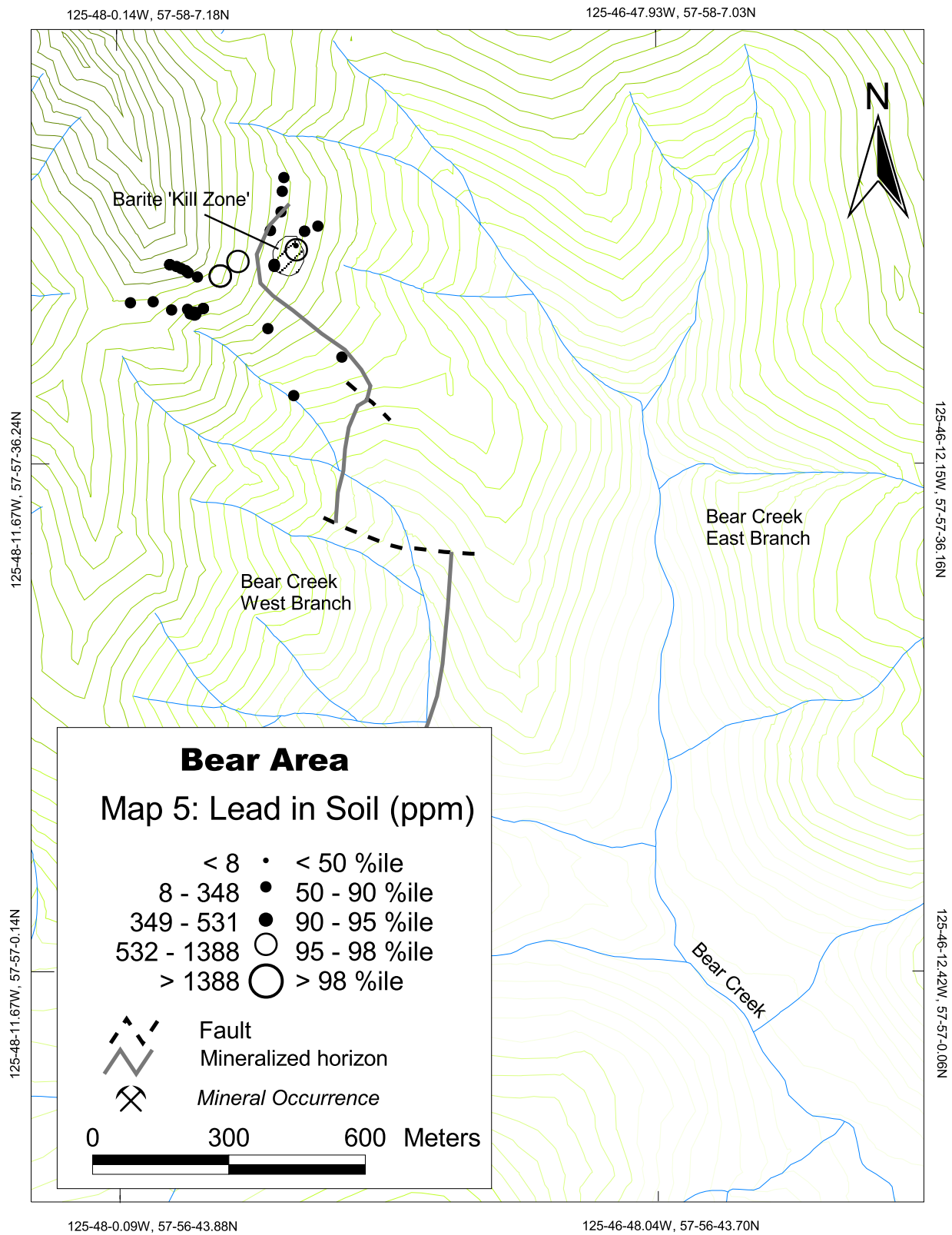
125-48-11.67W, 57-57-0.14N

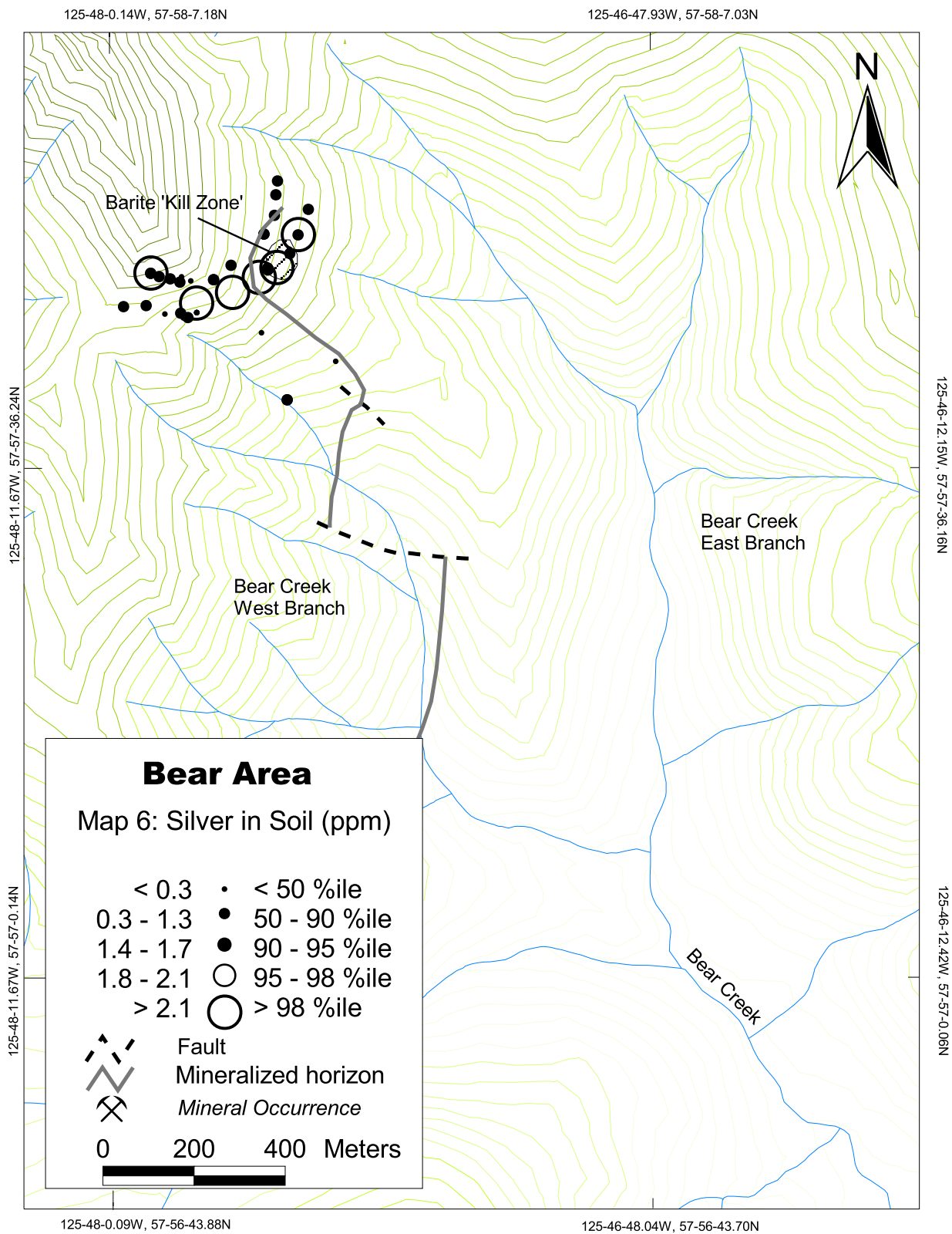
125-46-12.15W, 57-57-36.16N

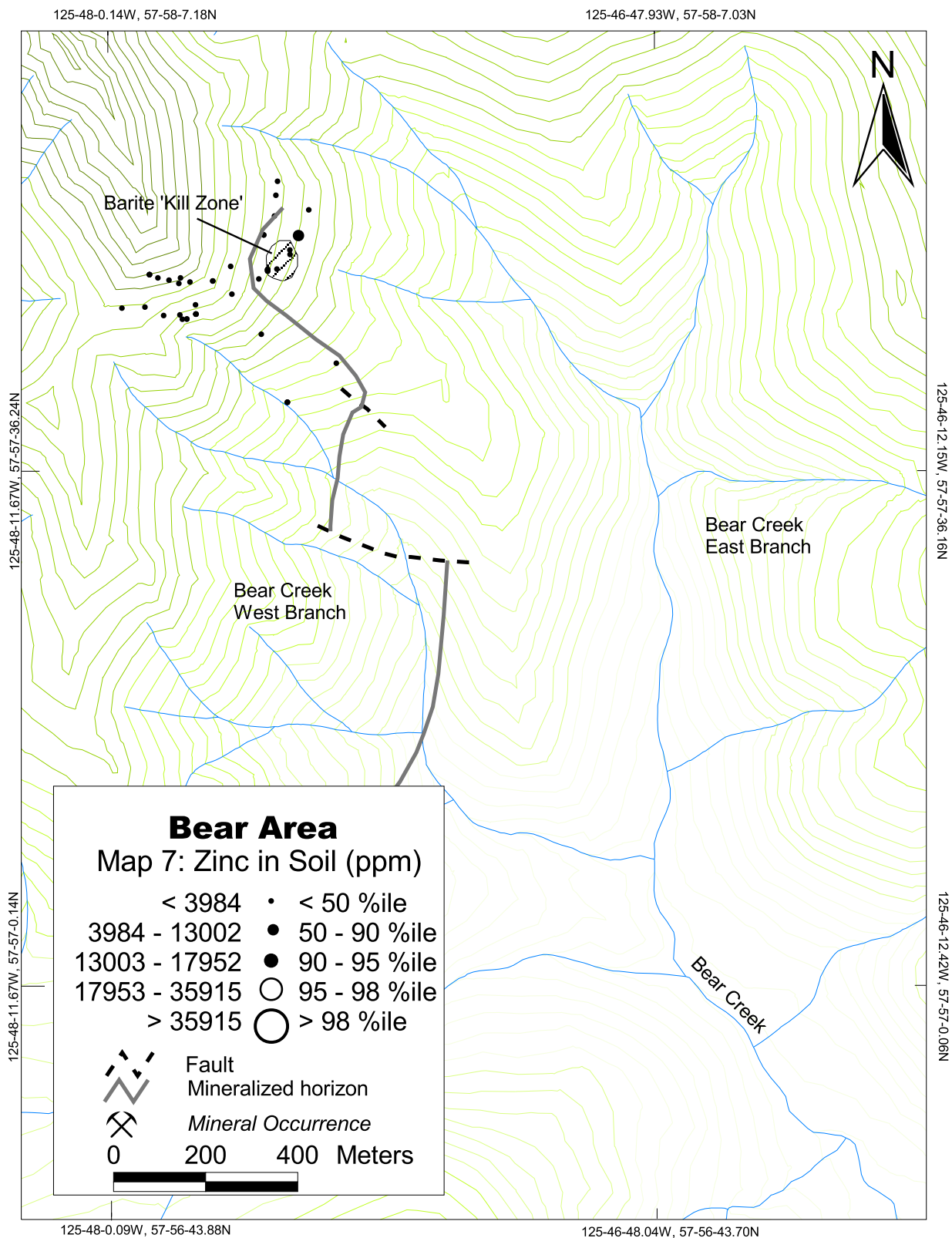
125-46-12.42W, 57-57-0.06N

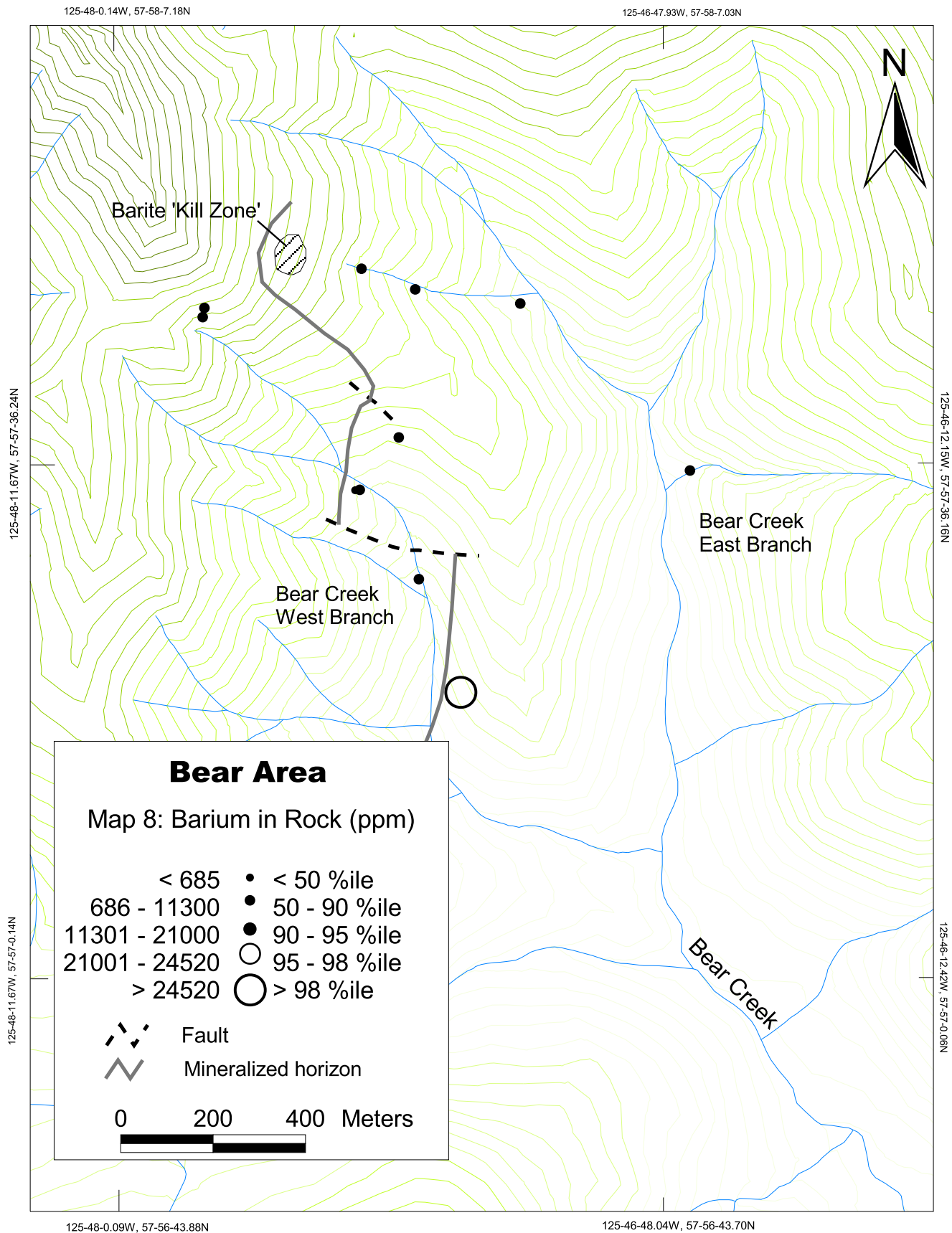


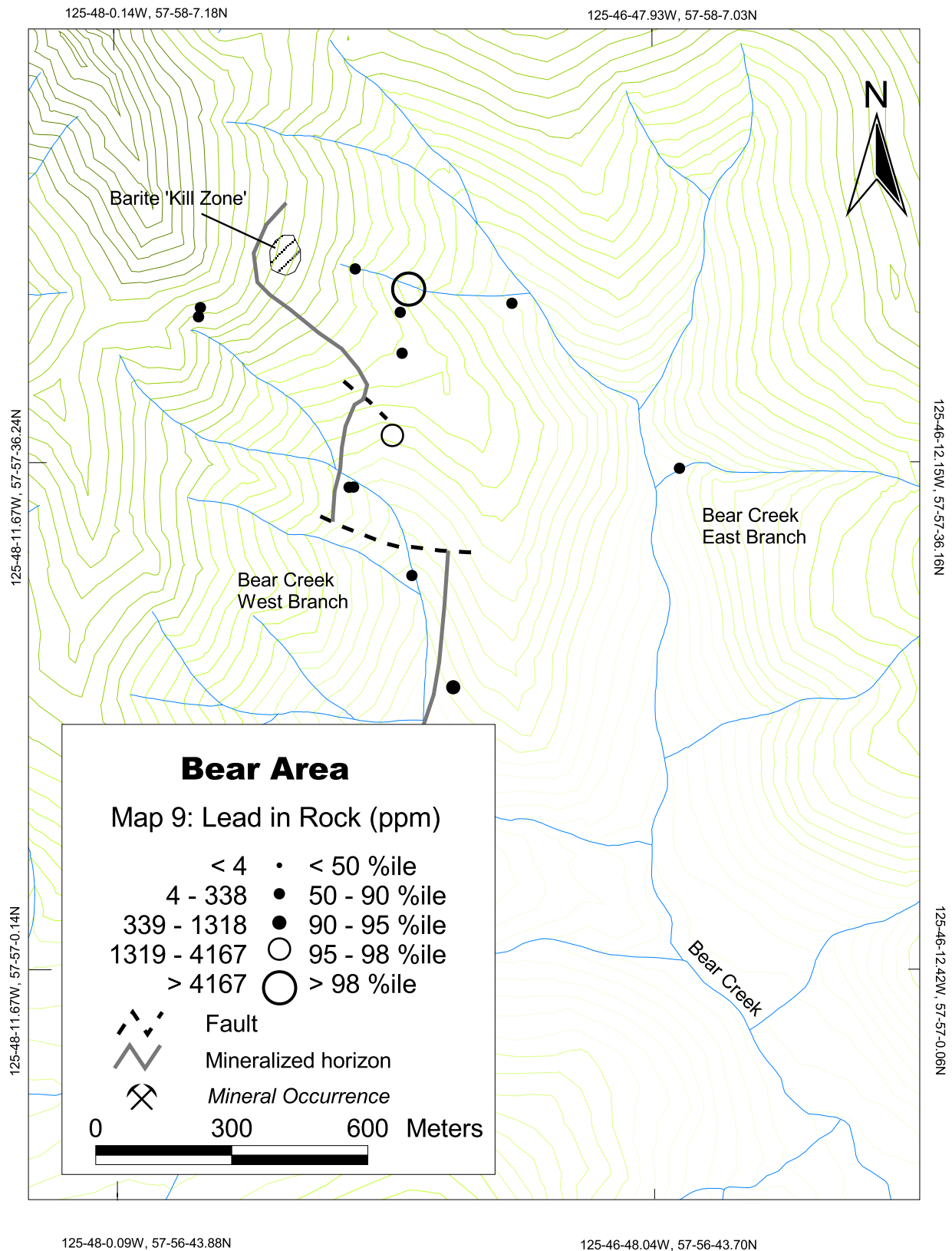


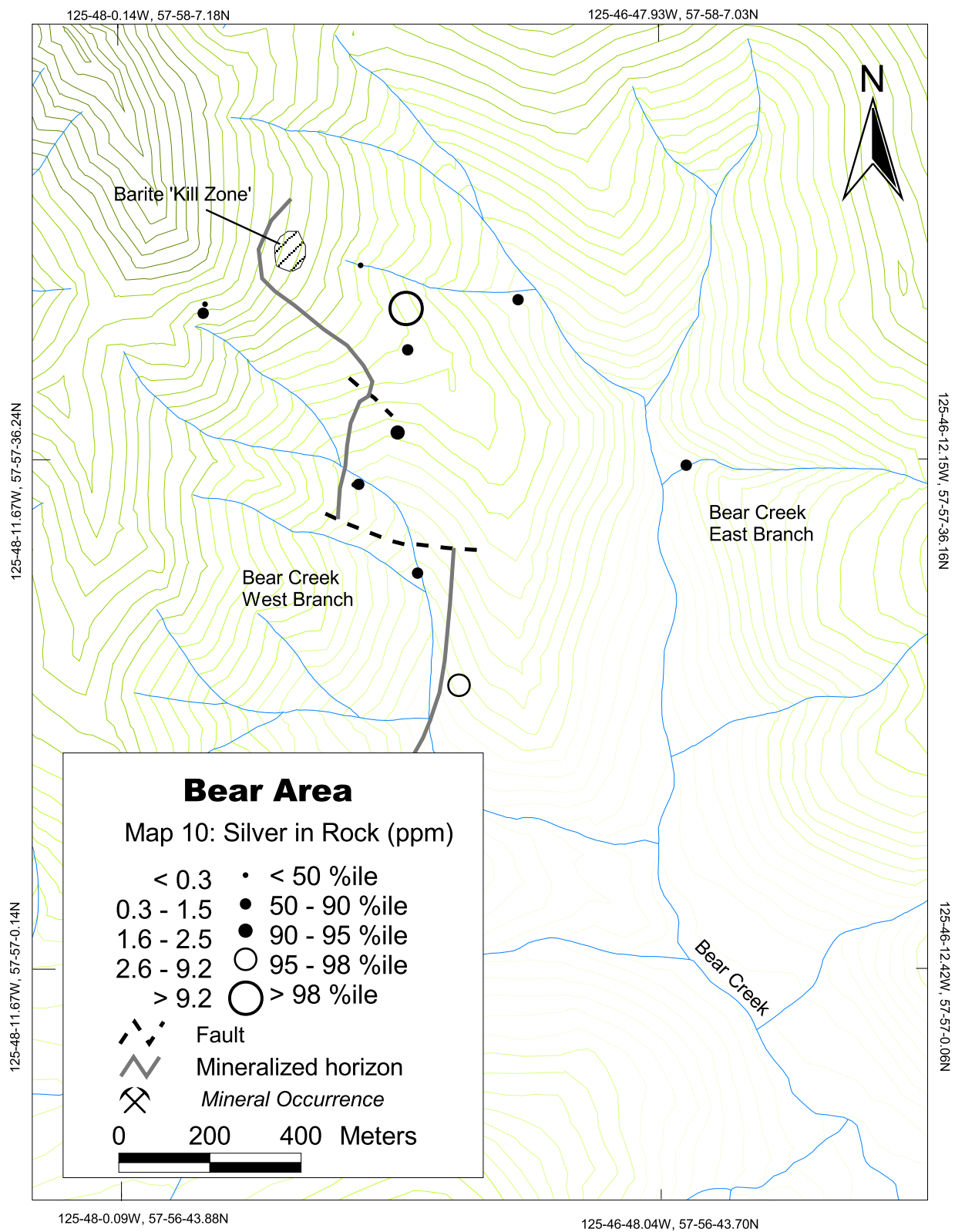


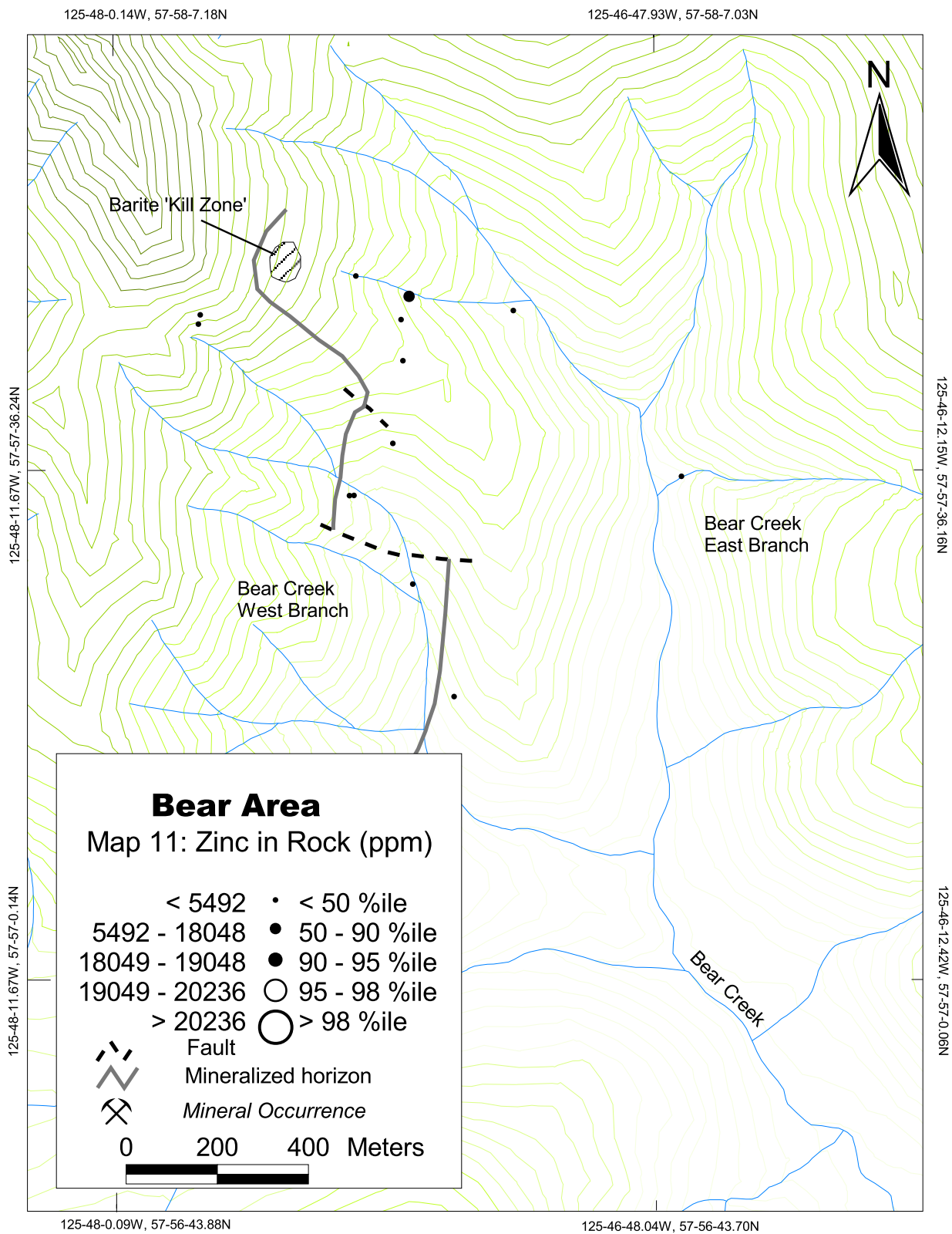


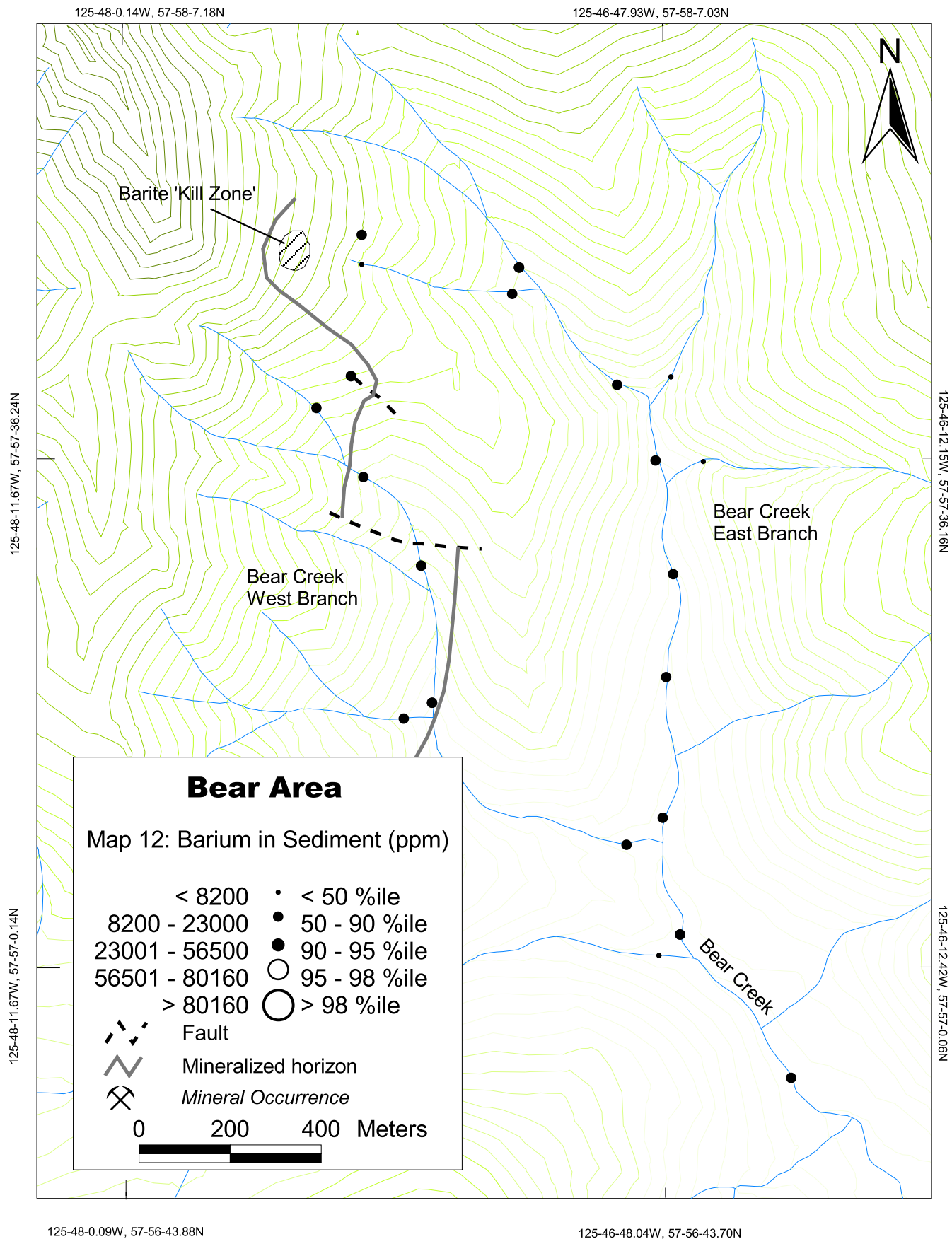


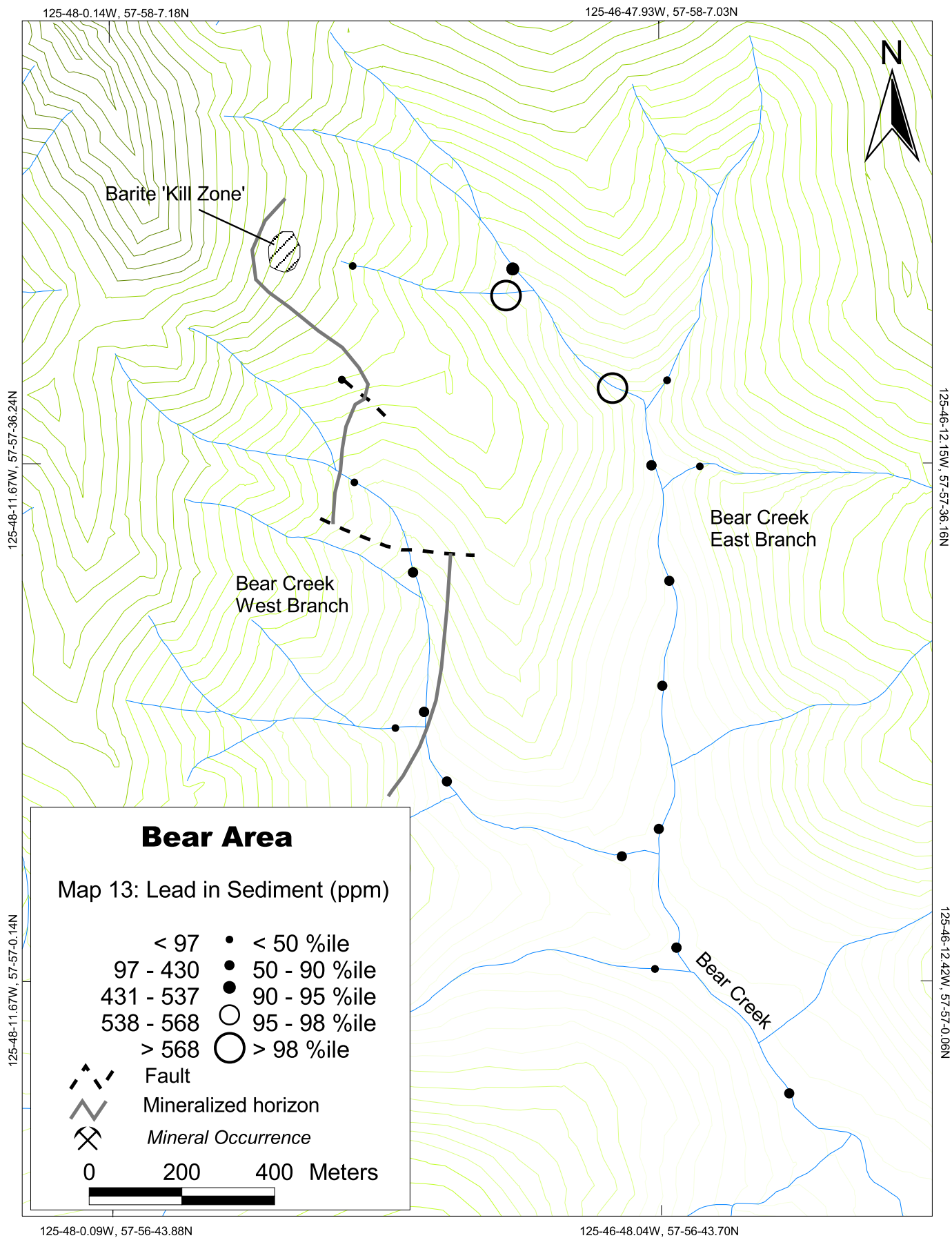


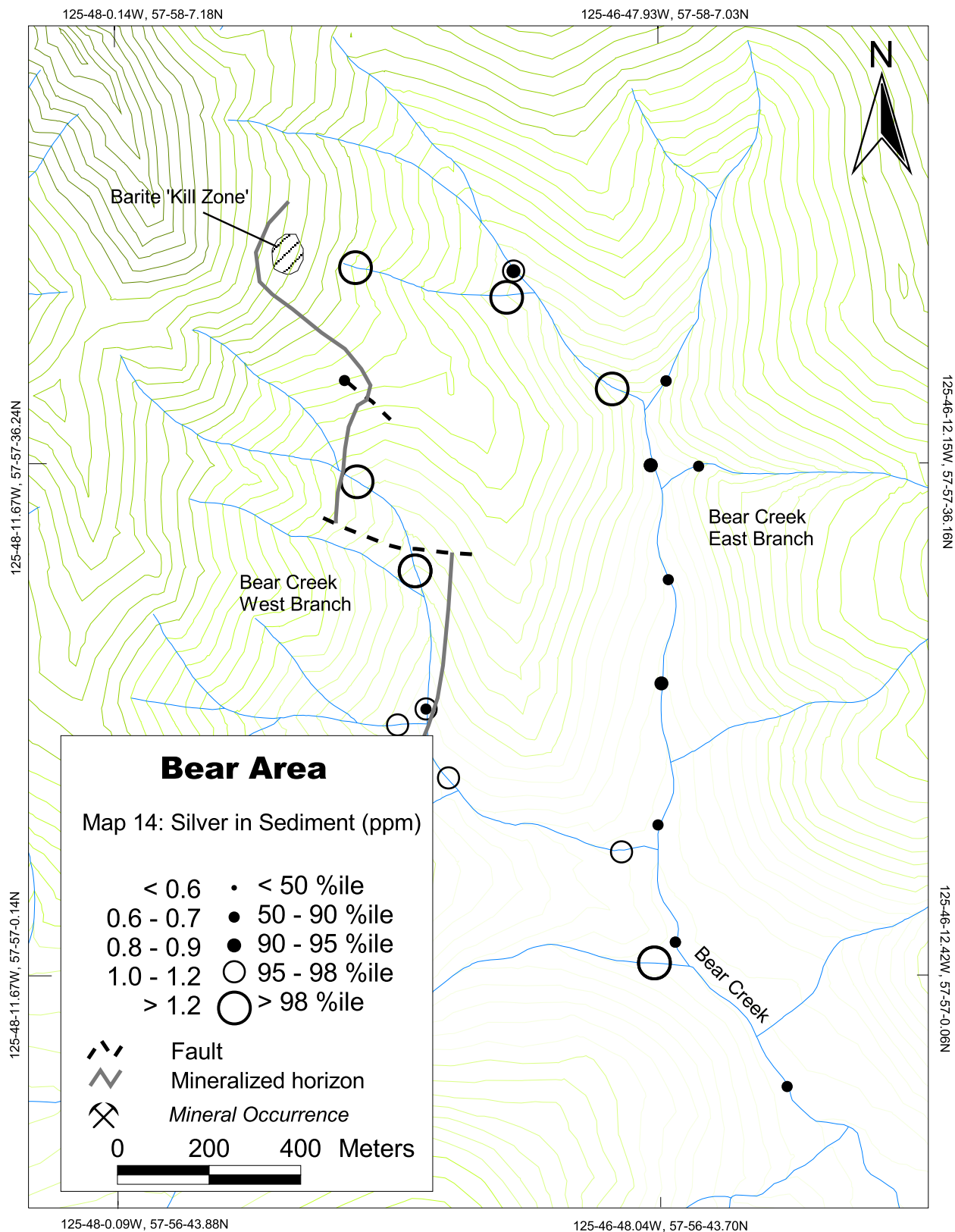


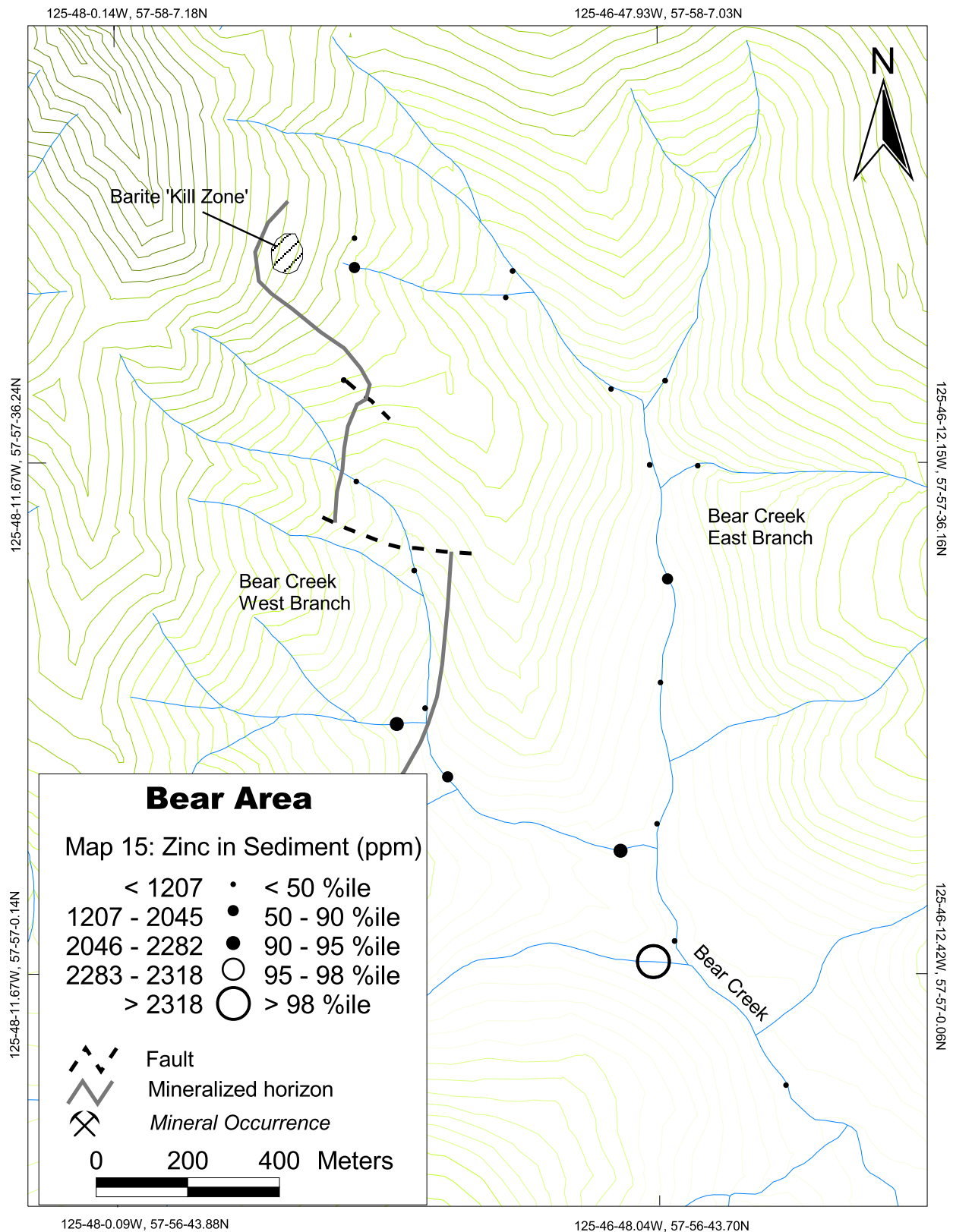












125-48-0.14W, 57-58-7.18N

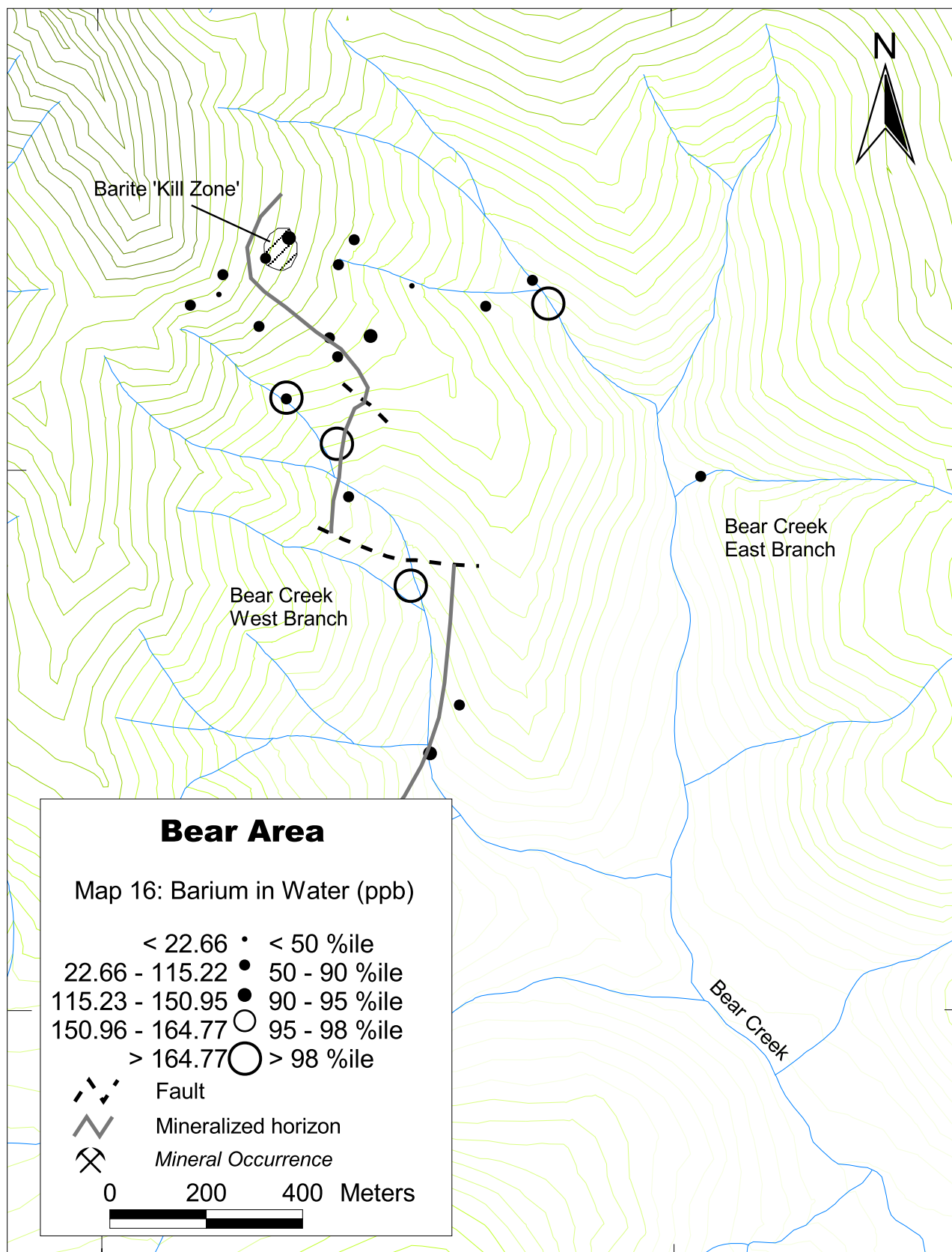
125-46-47.93W, 57-58-7.03N

125-48-11.67W, 57-57-36.24N

125-46-12.15W, 57-57-36.16N

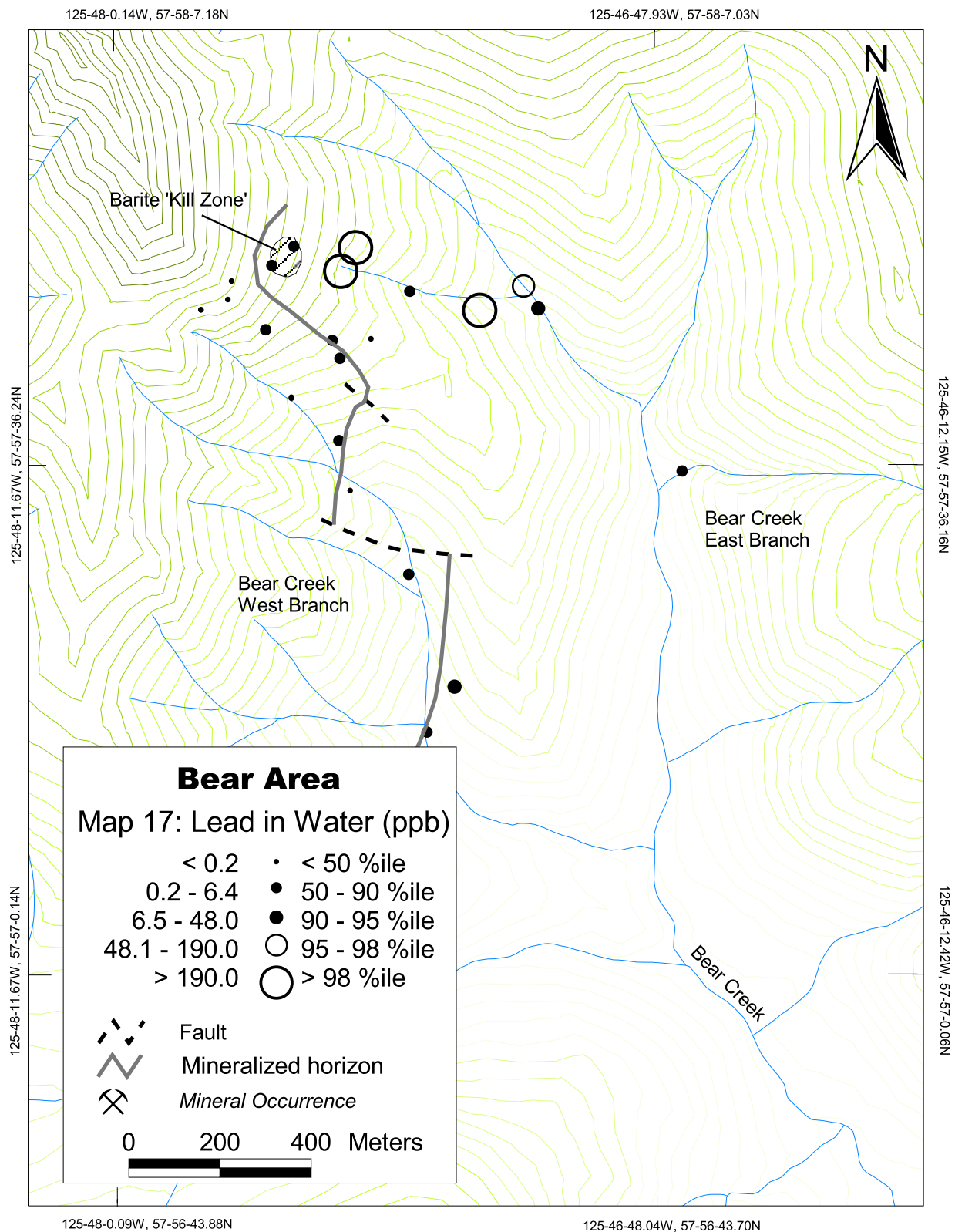
125-48-11.67W, 57-57-0.14N

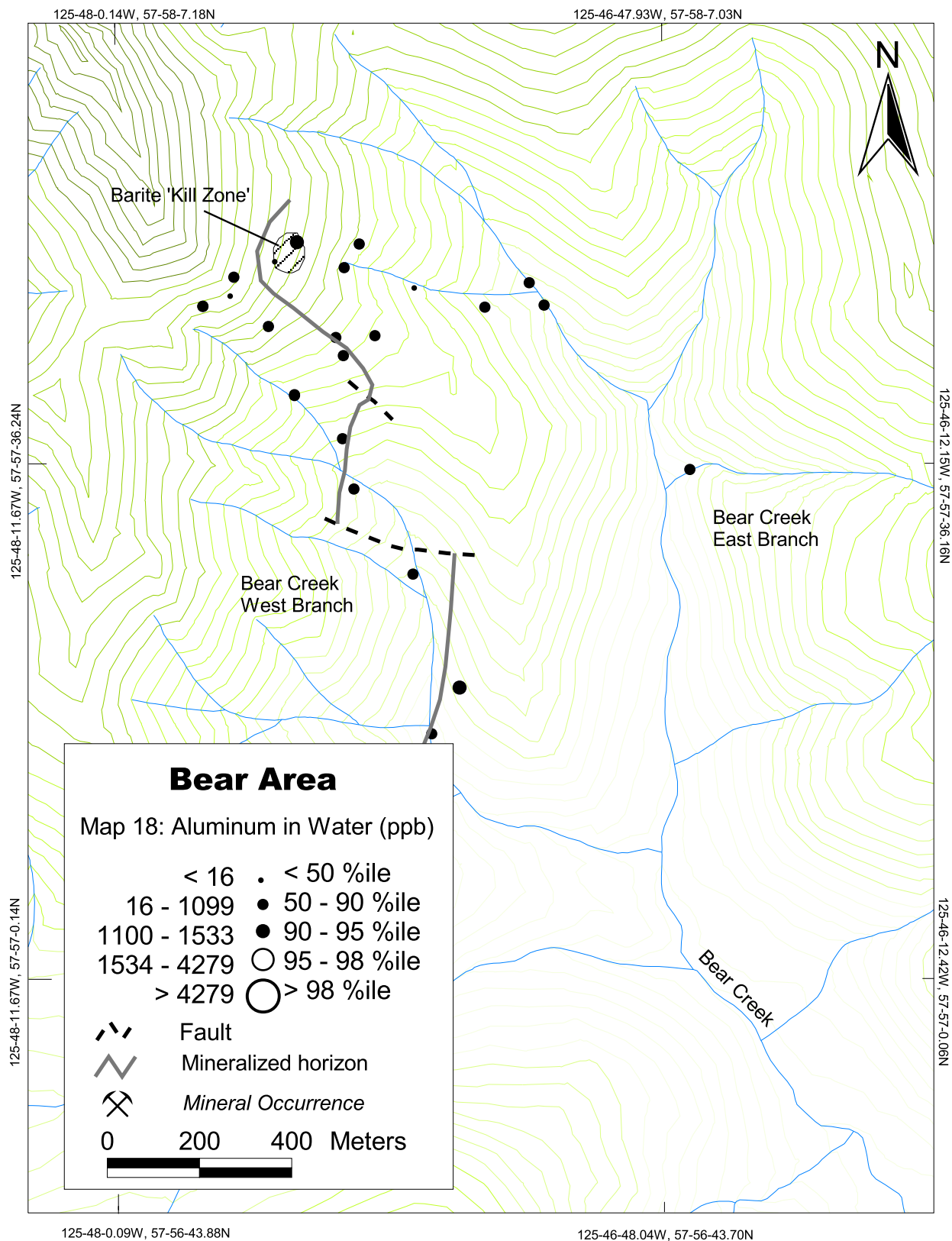
125-46-12.42W, 57-57-0.06N

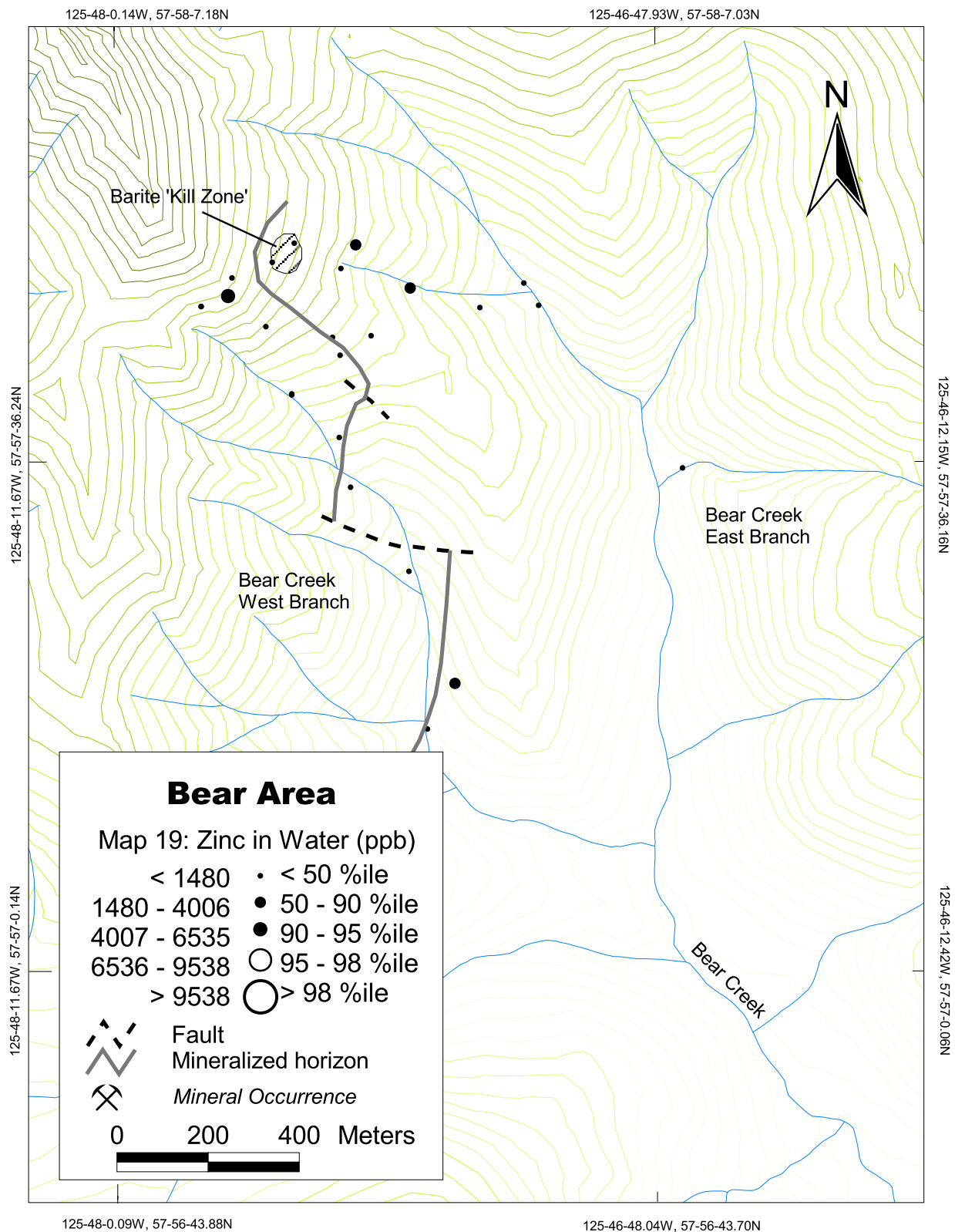


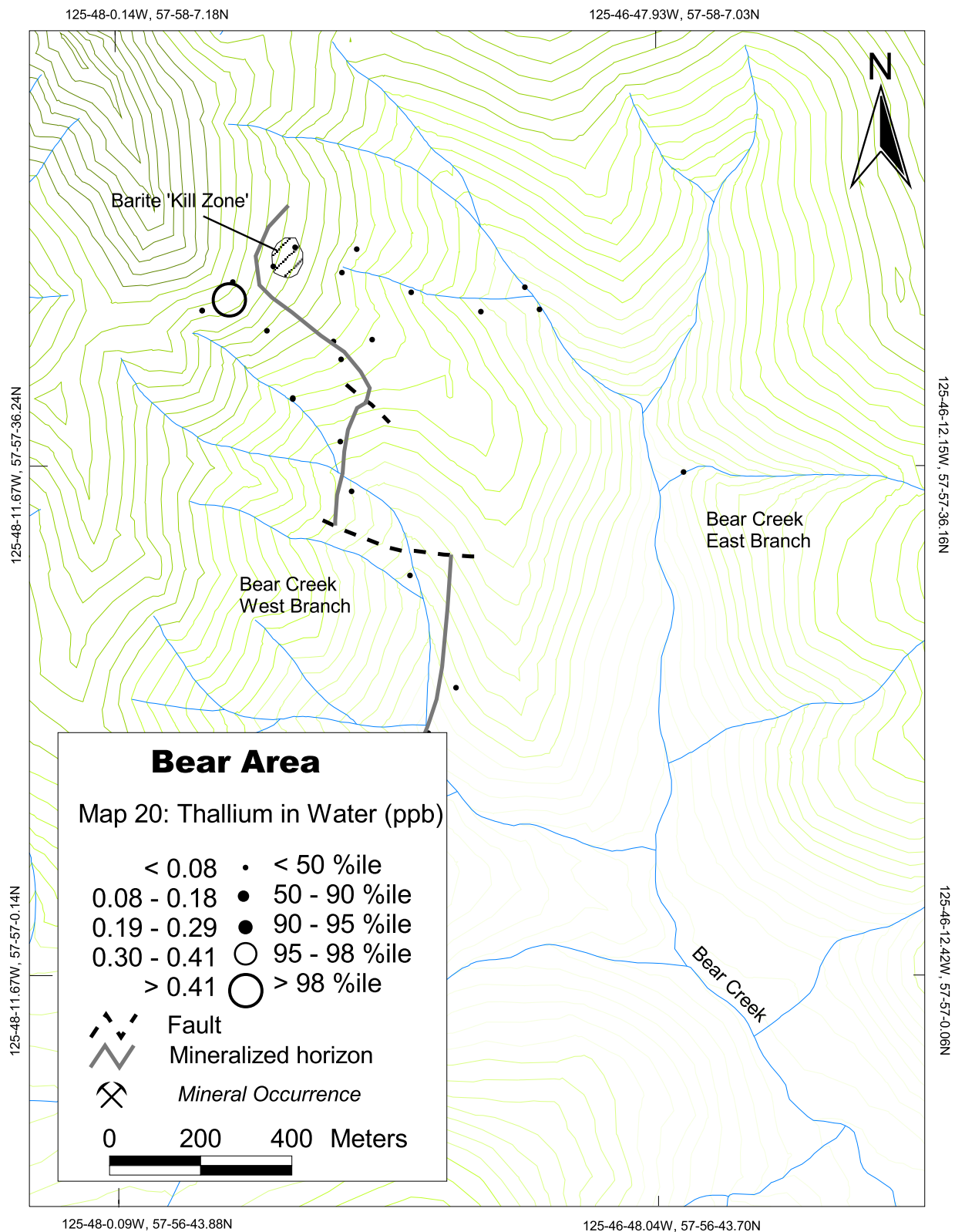
125-48-0.09W, 57-56-43.88N

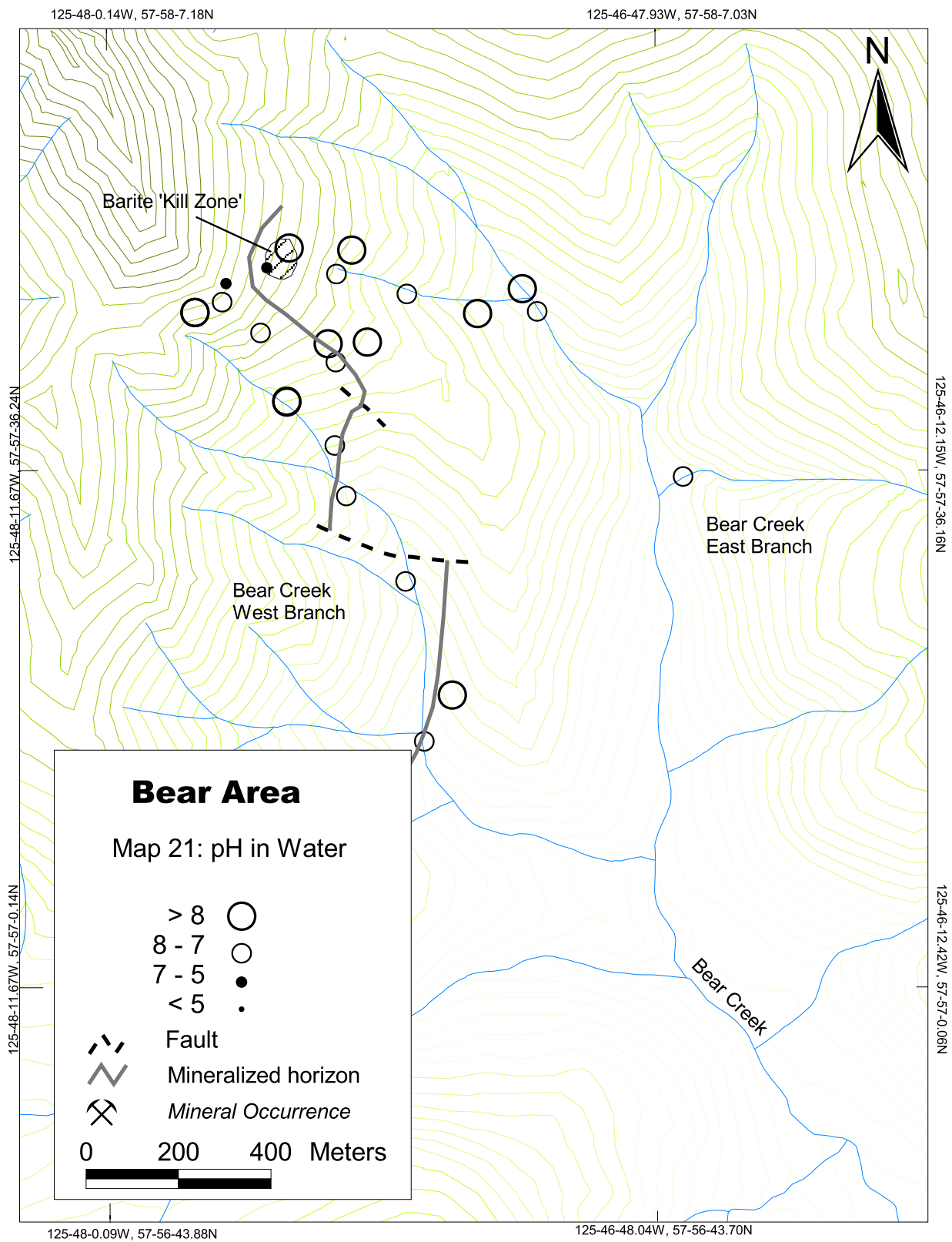
125-46-48.04W, 57-56-43.70N

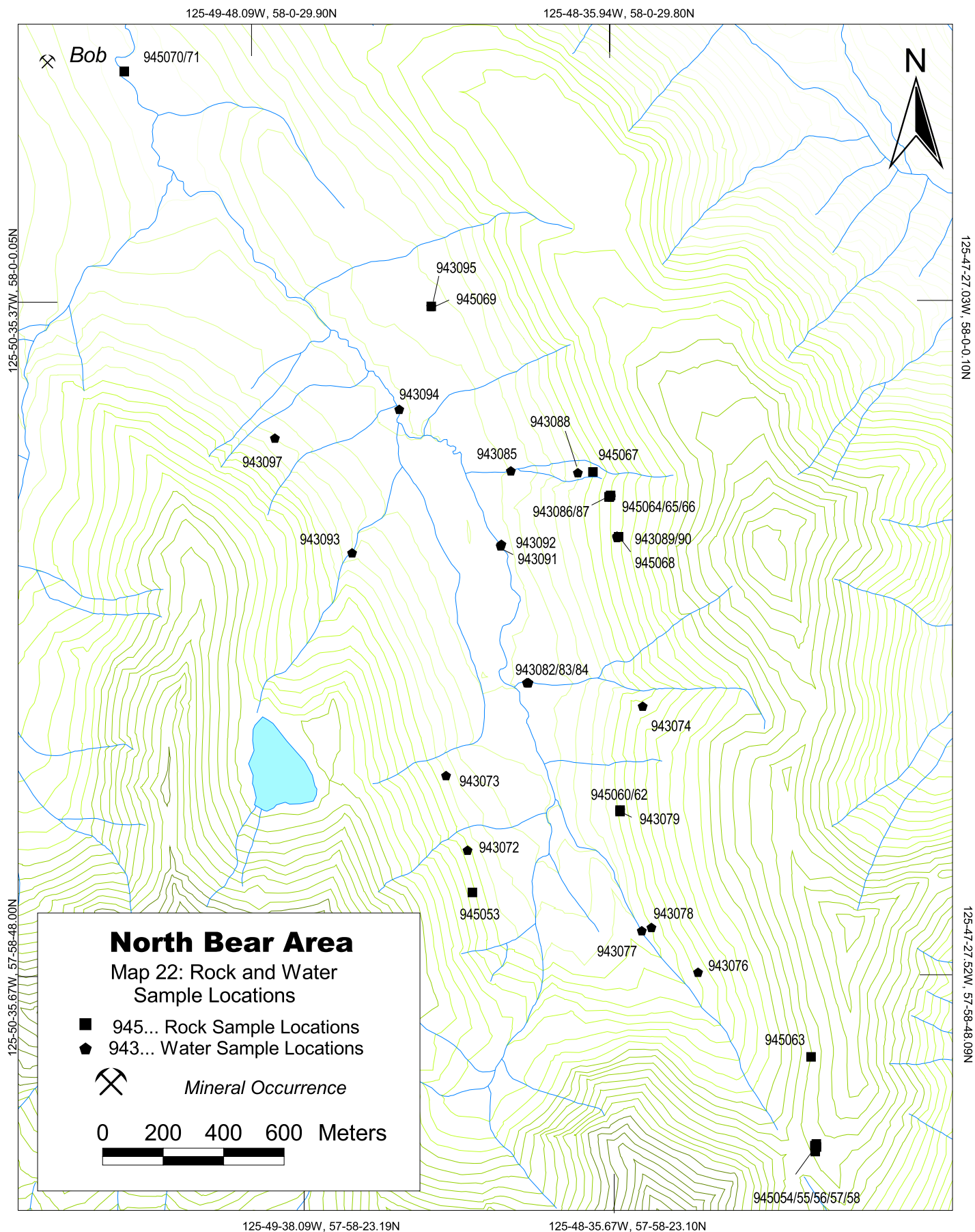


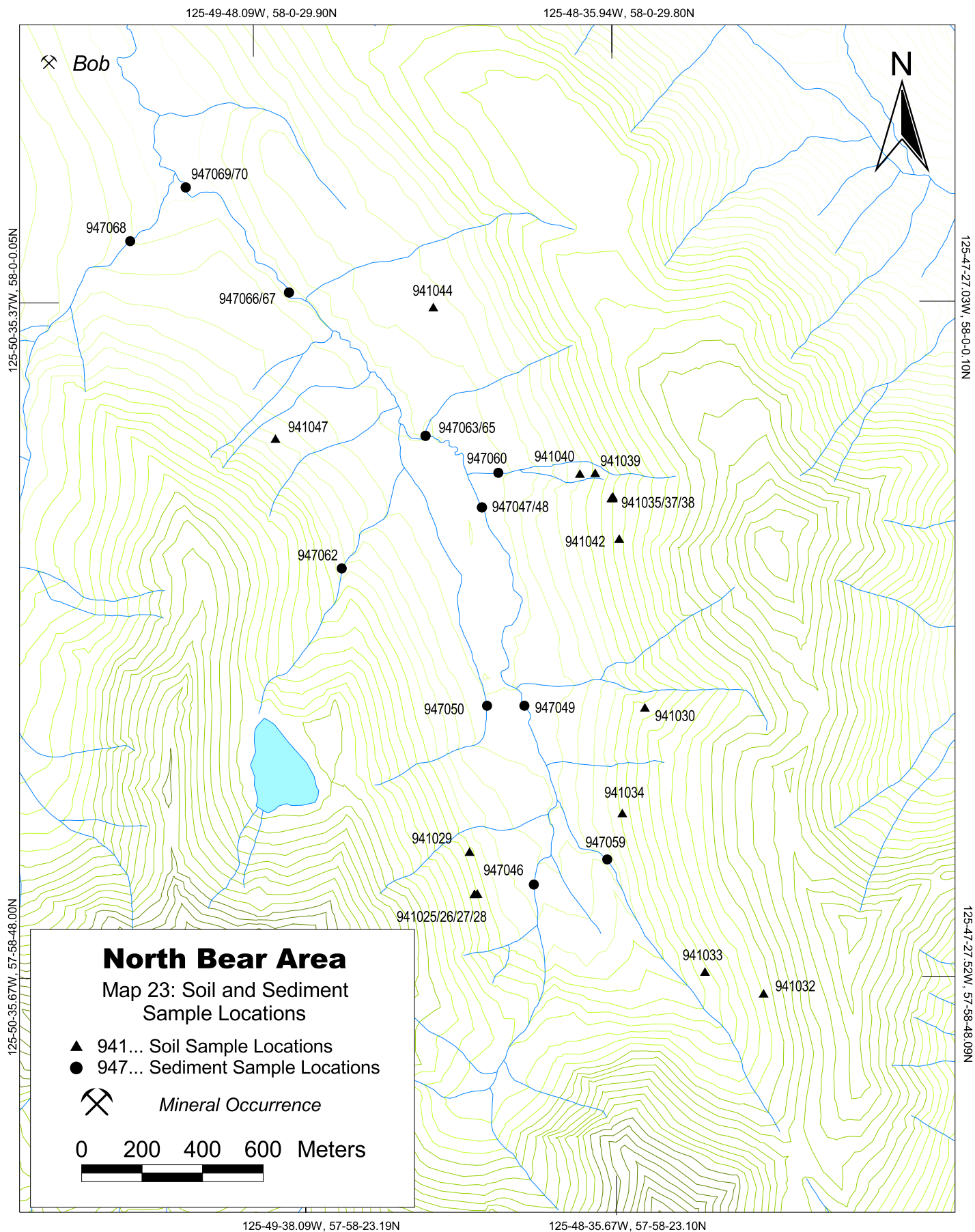


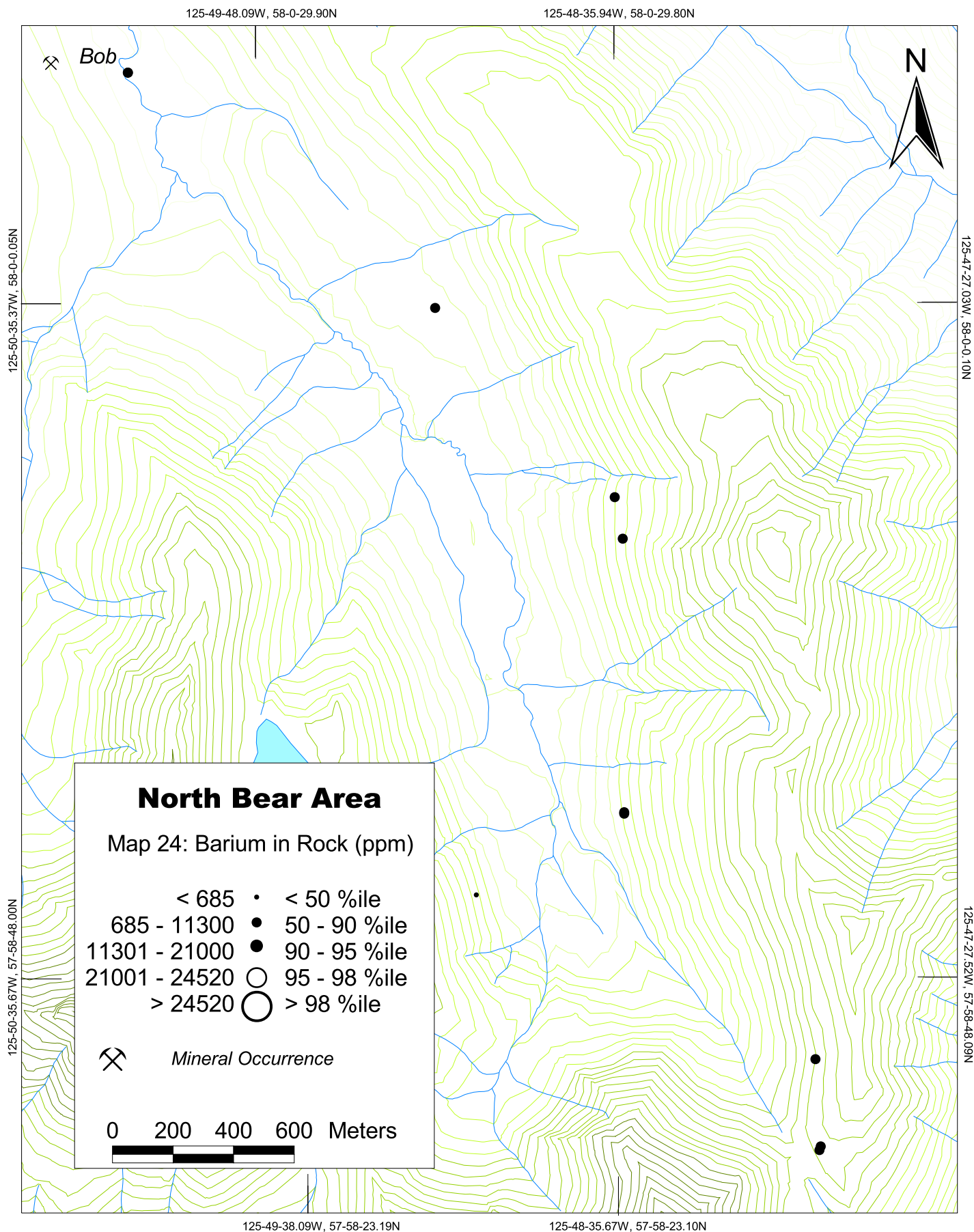


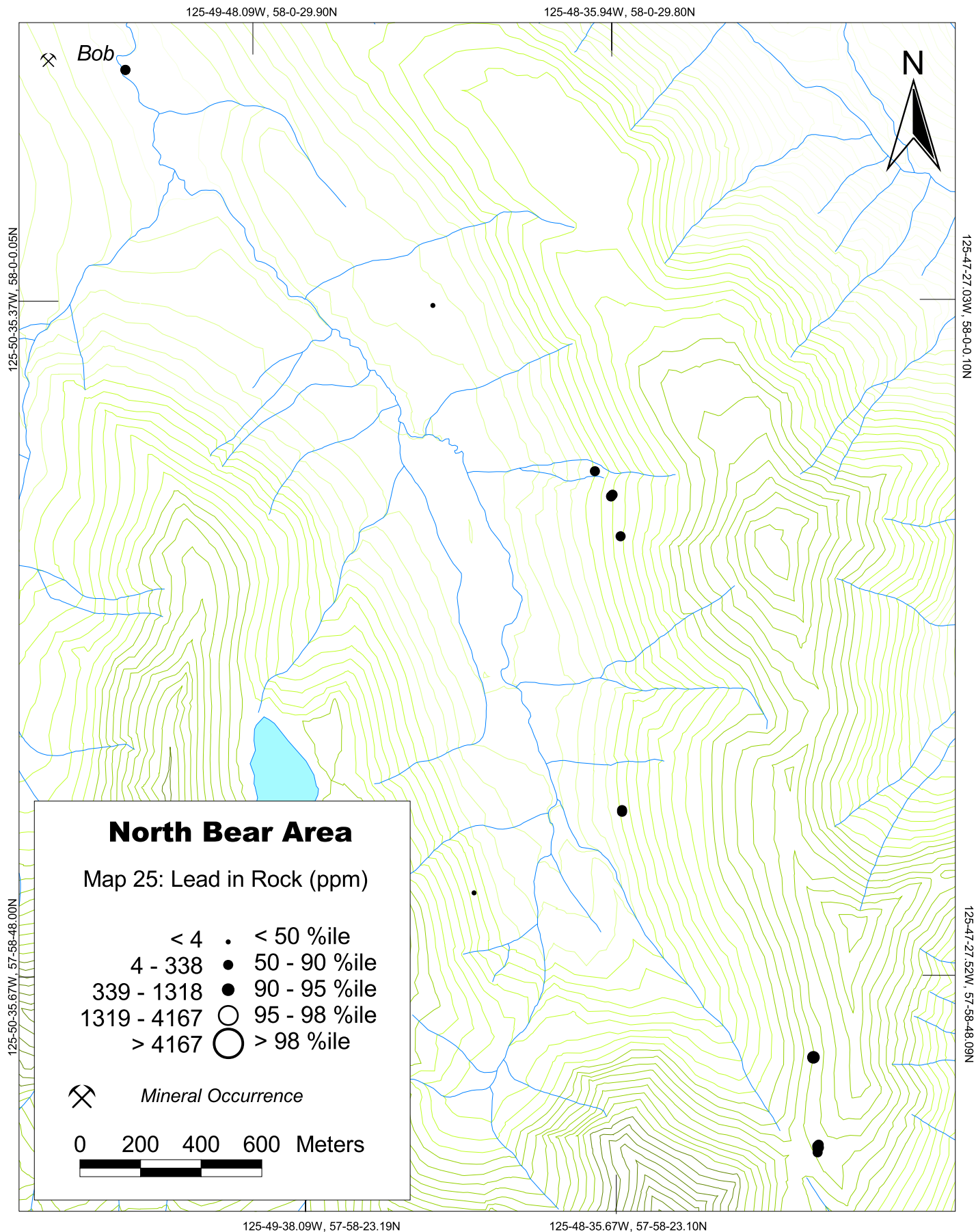


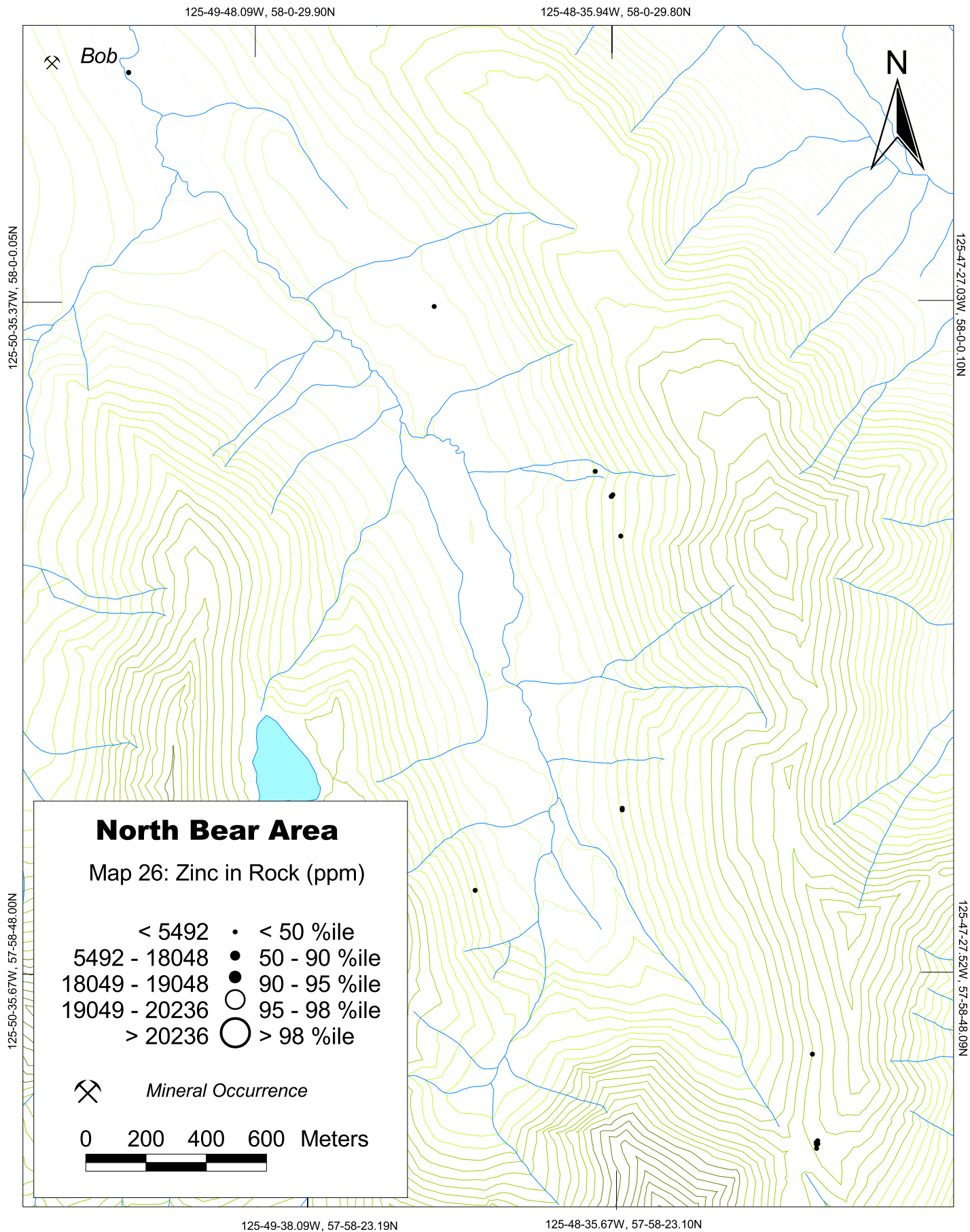


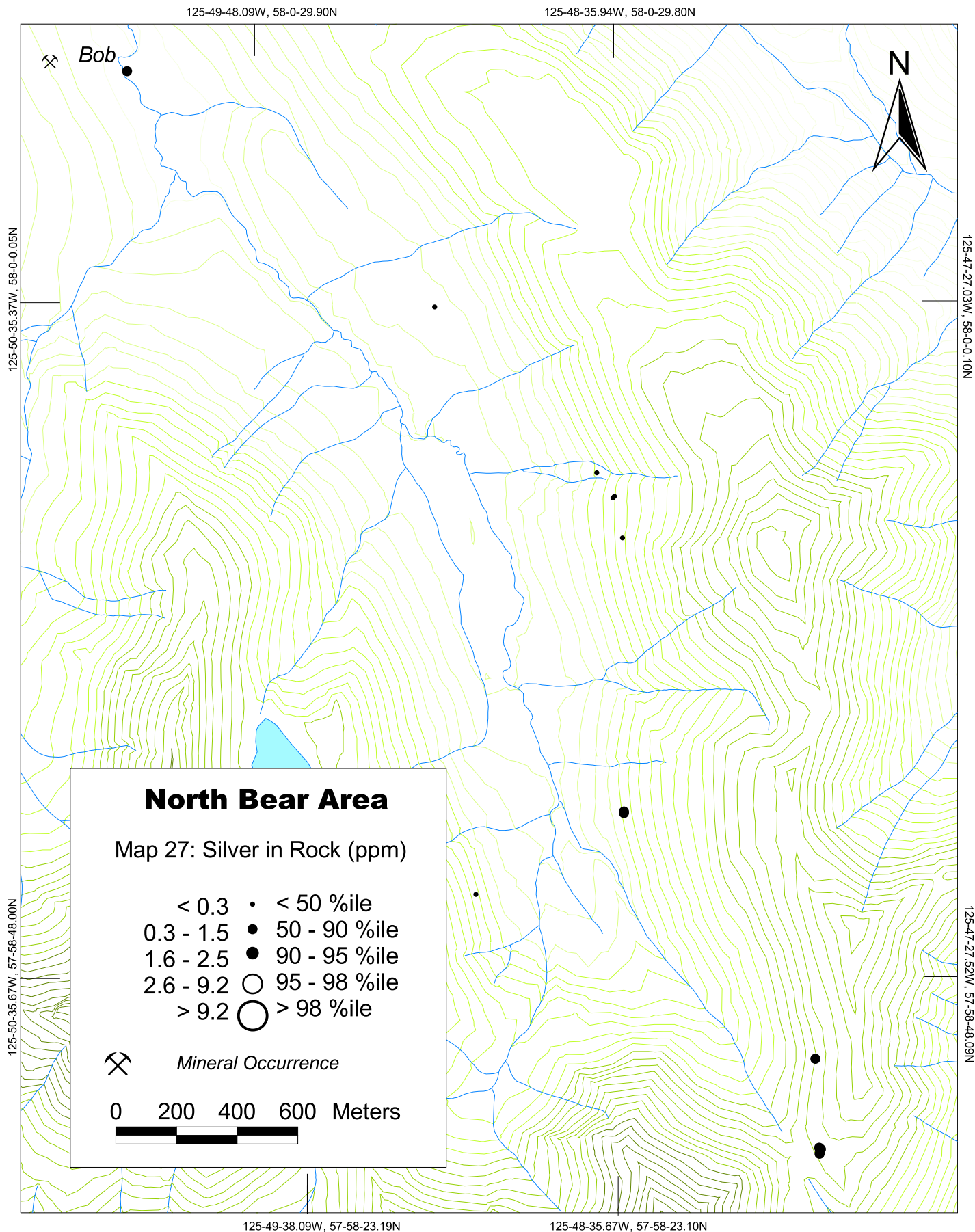


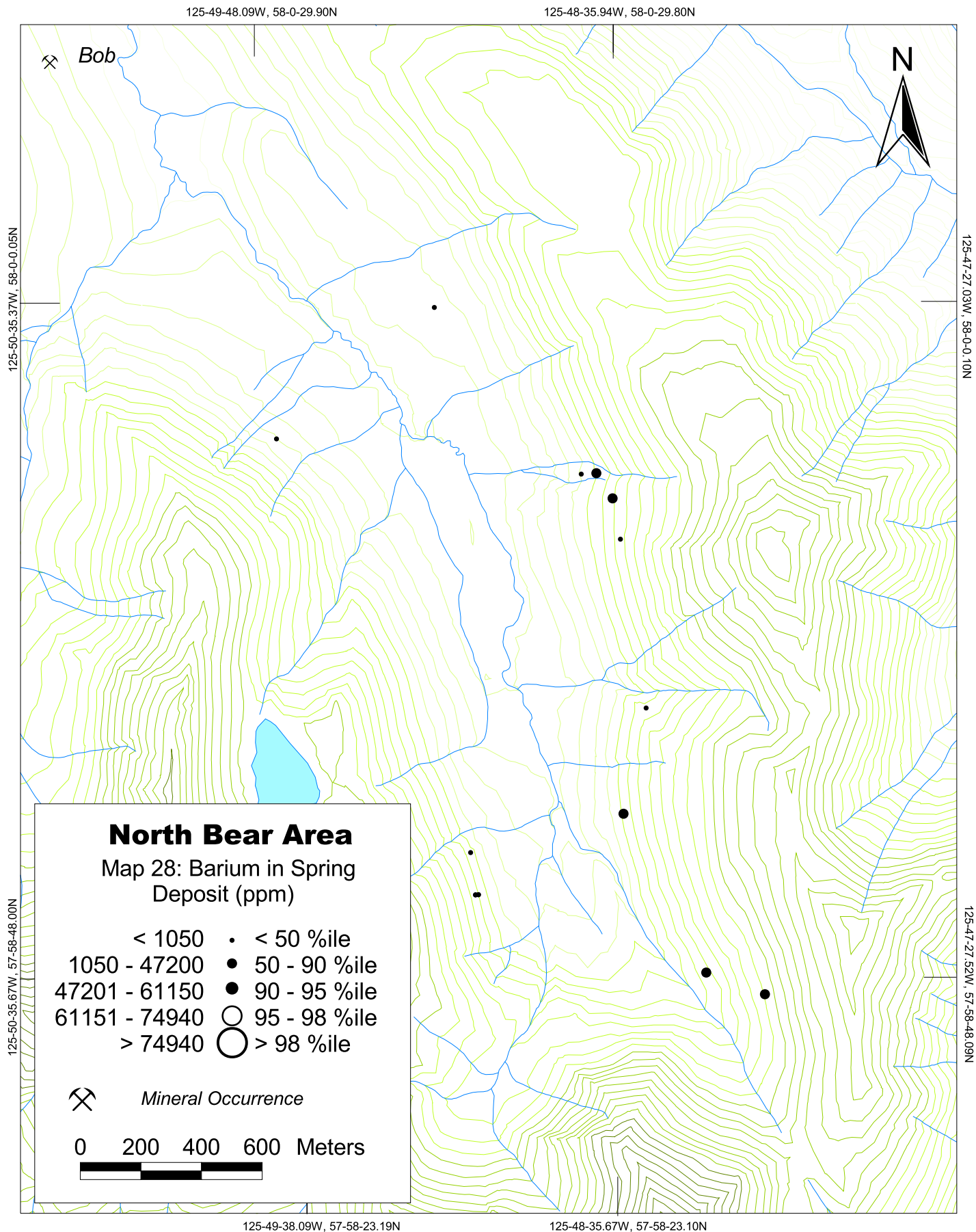


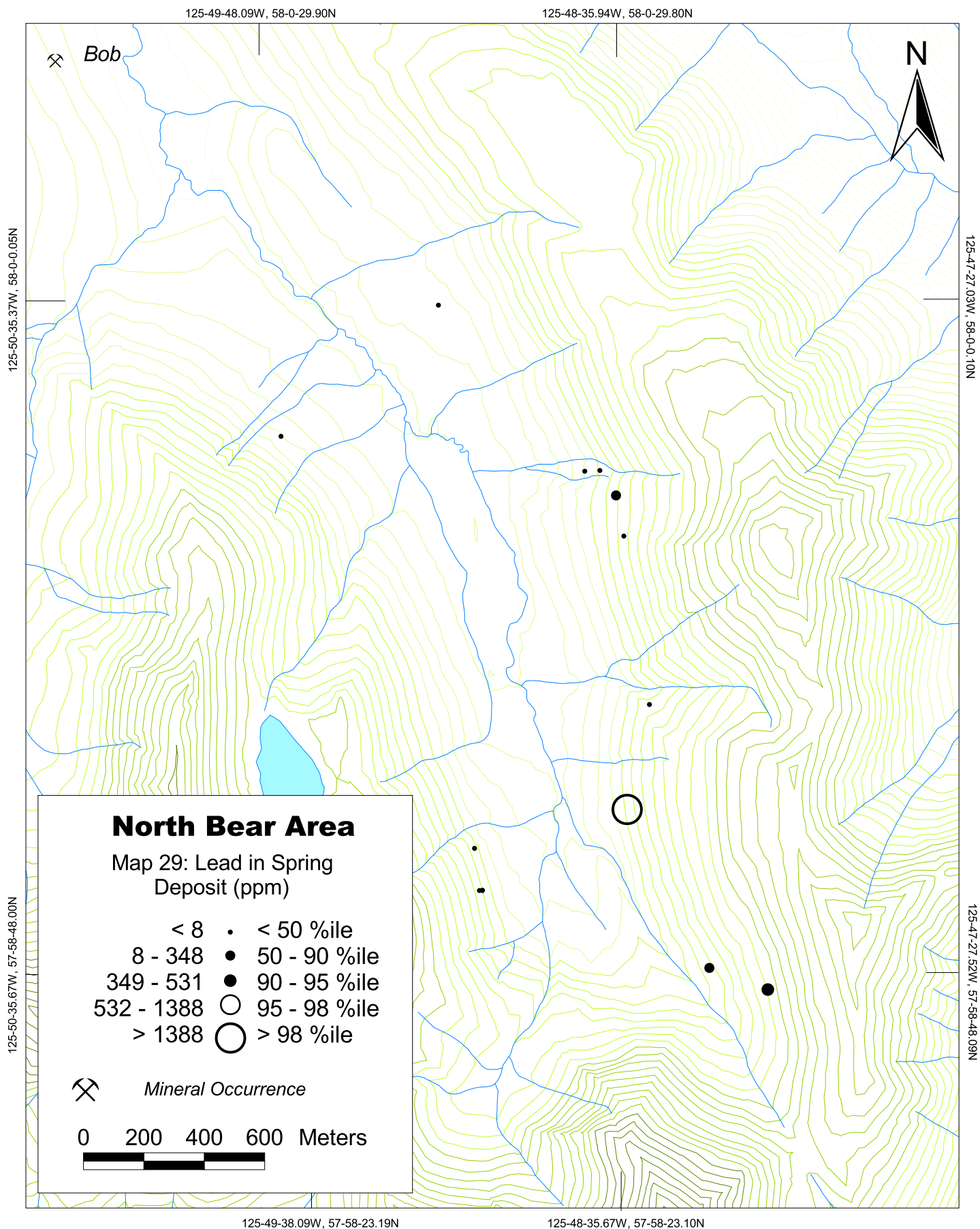


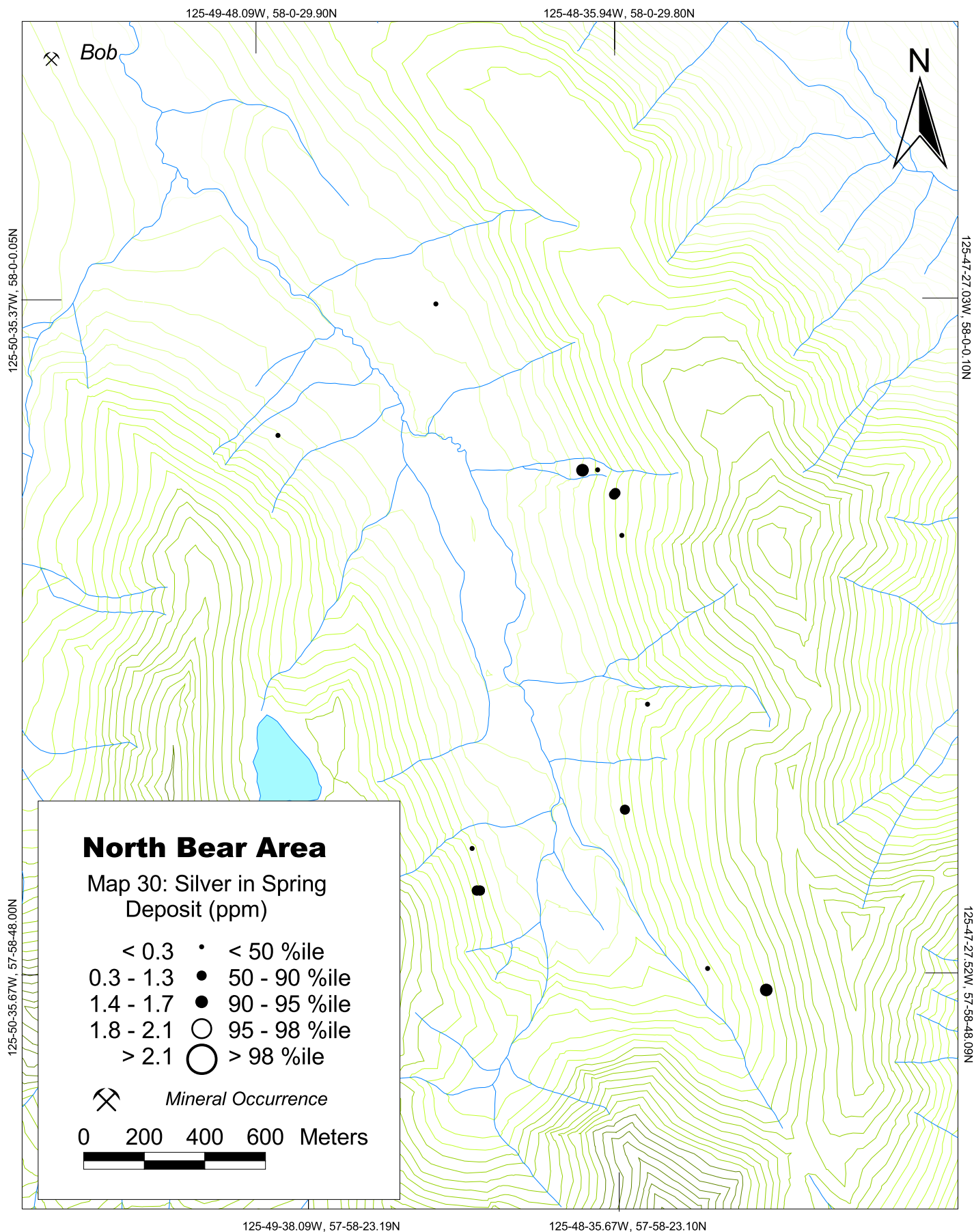


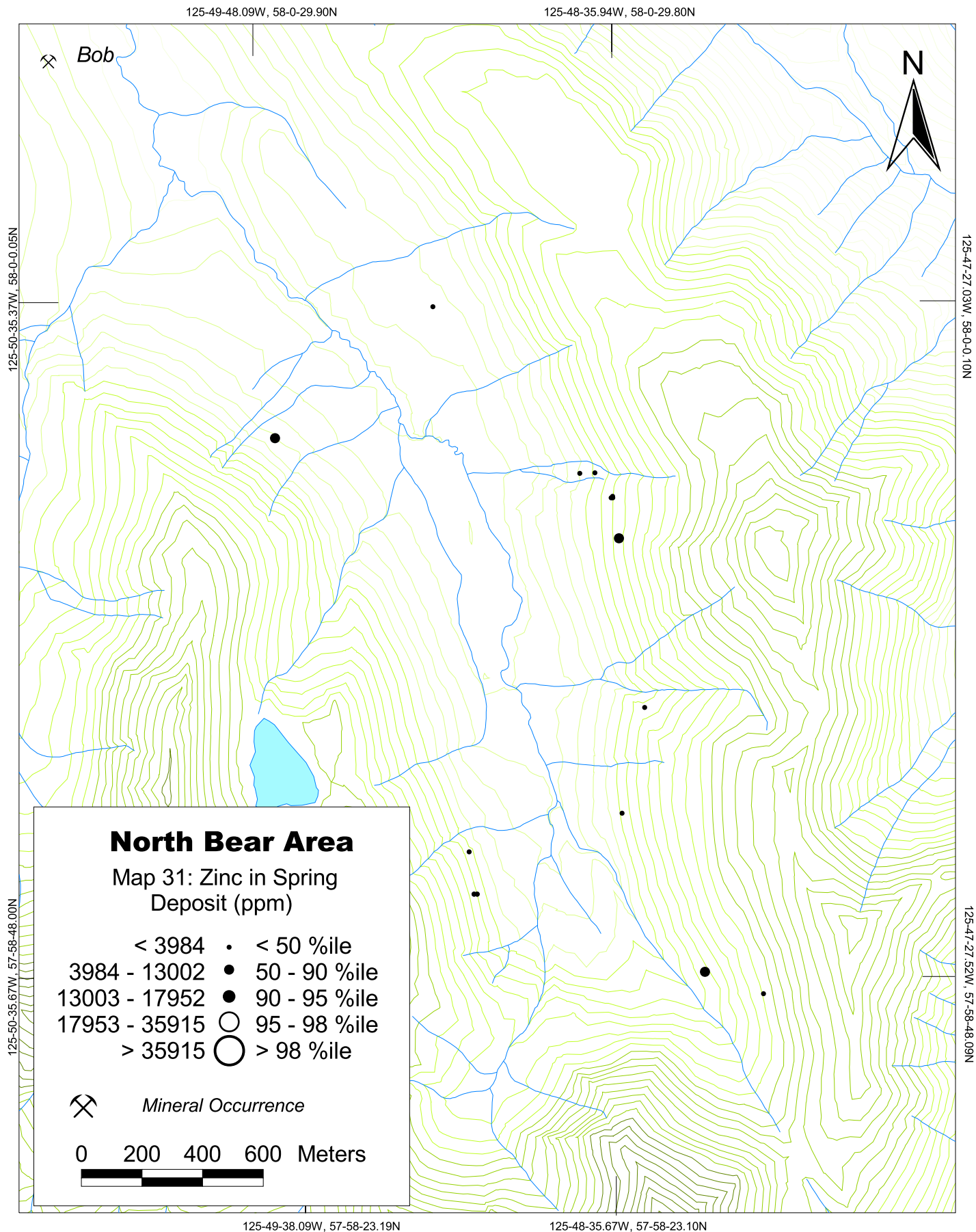


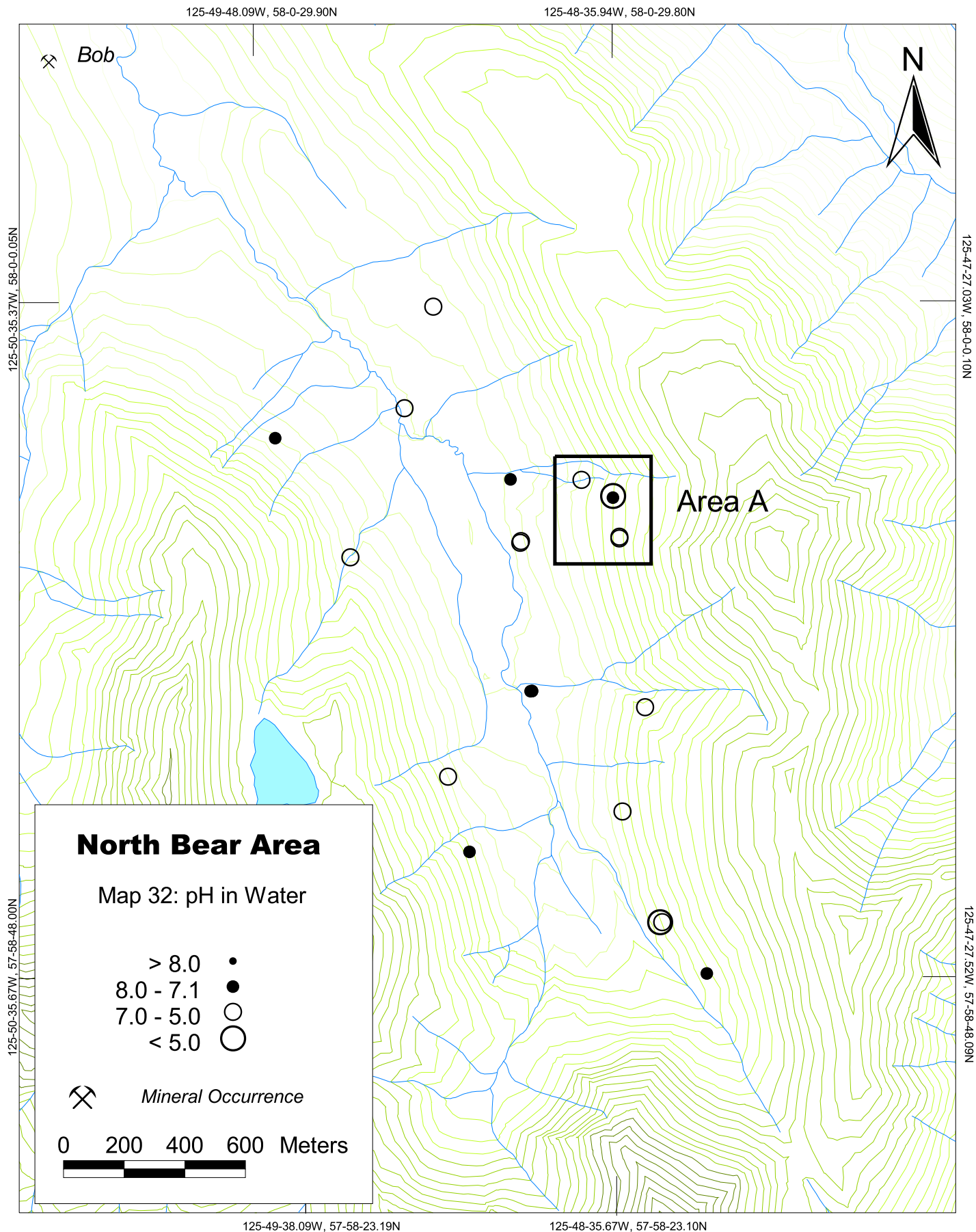


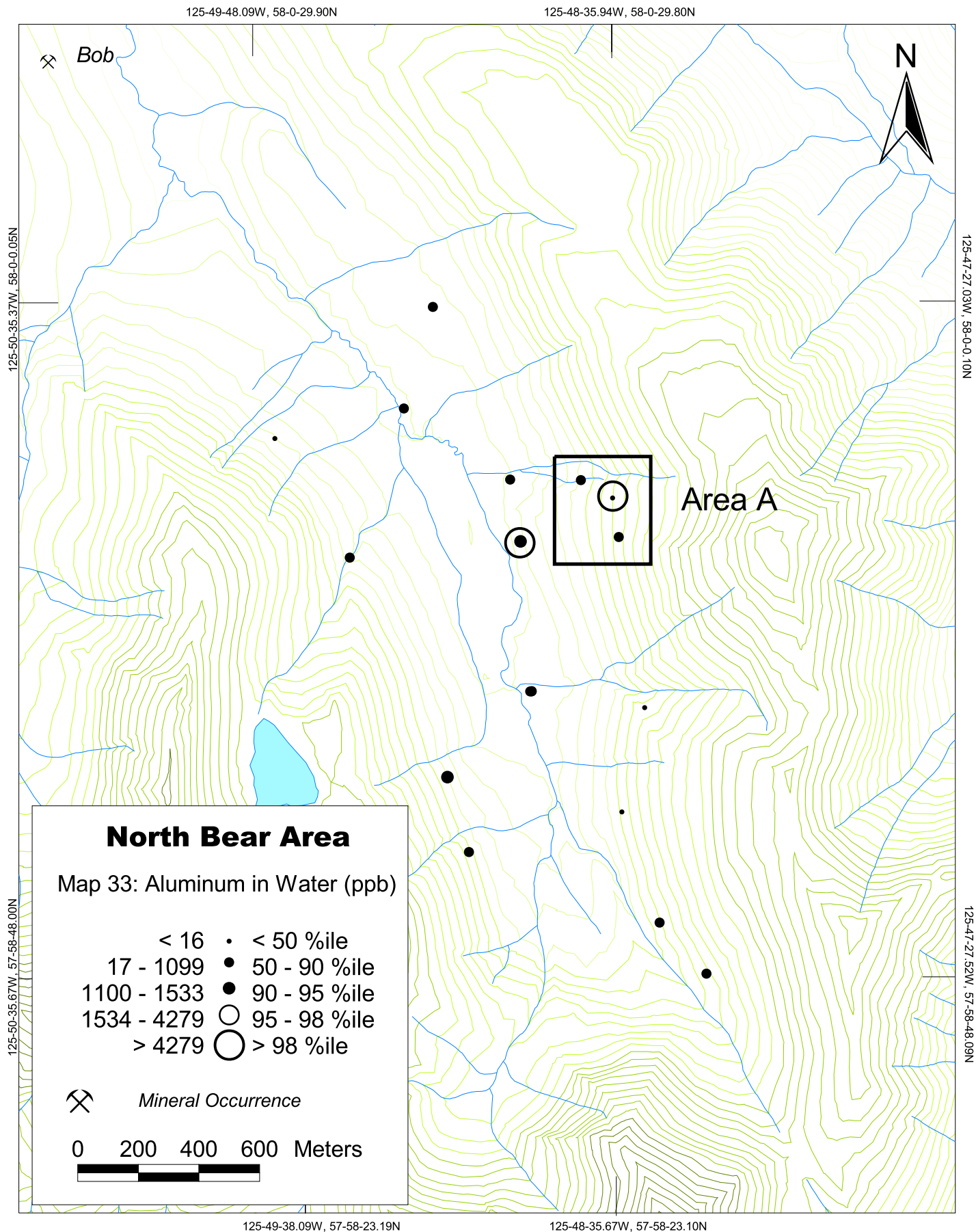


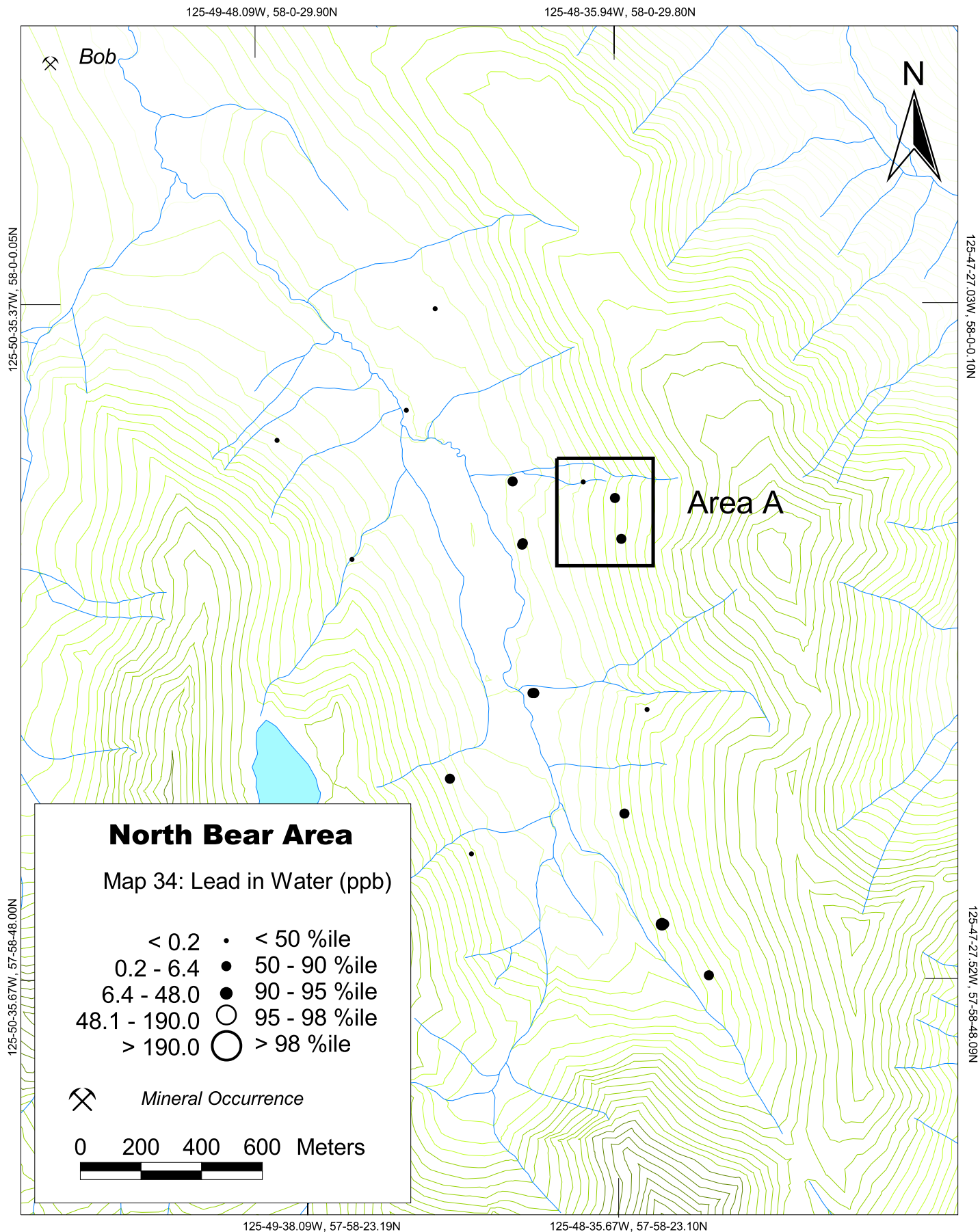


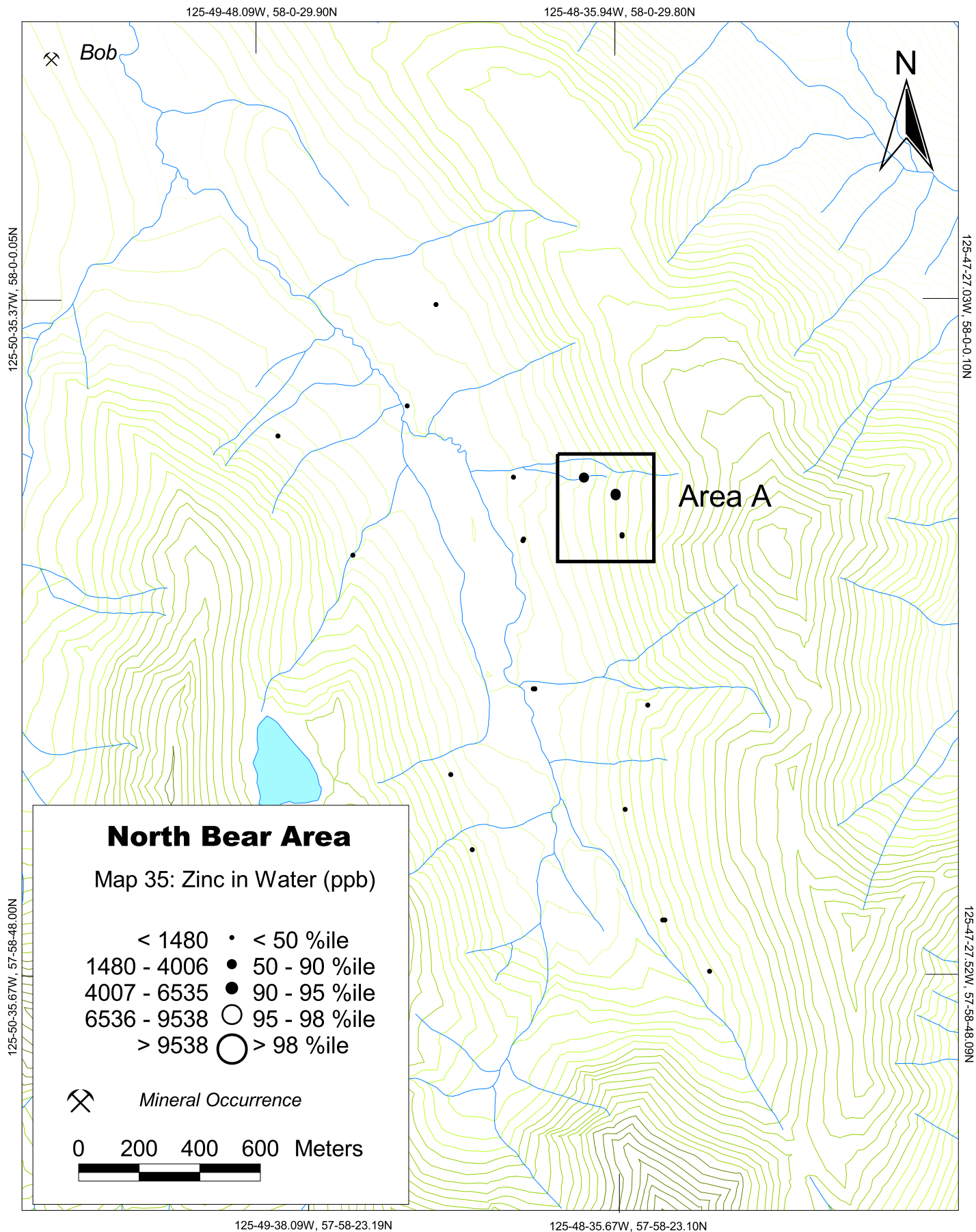


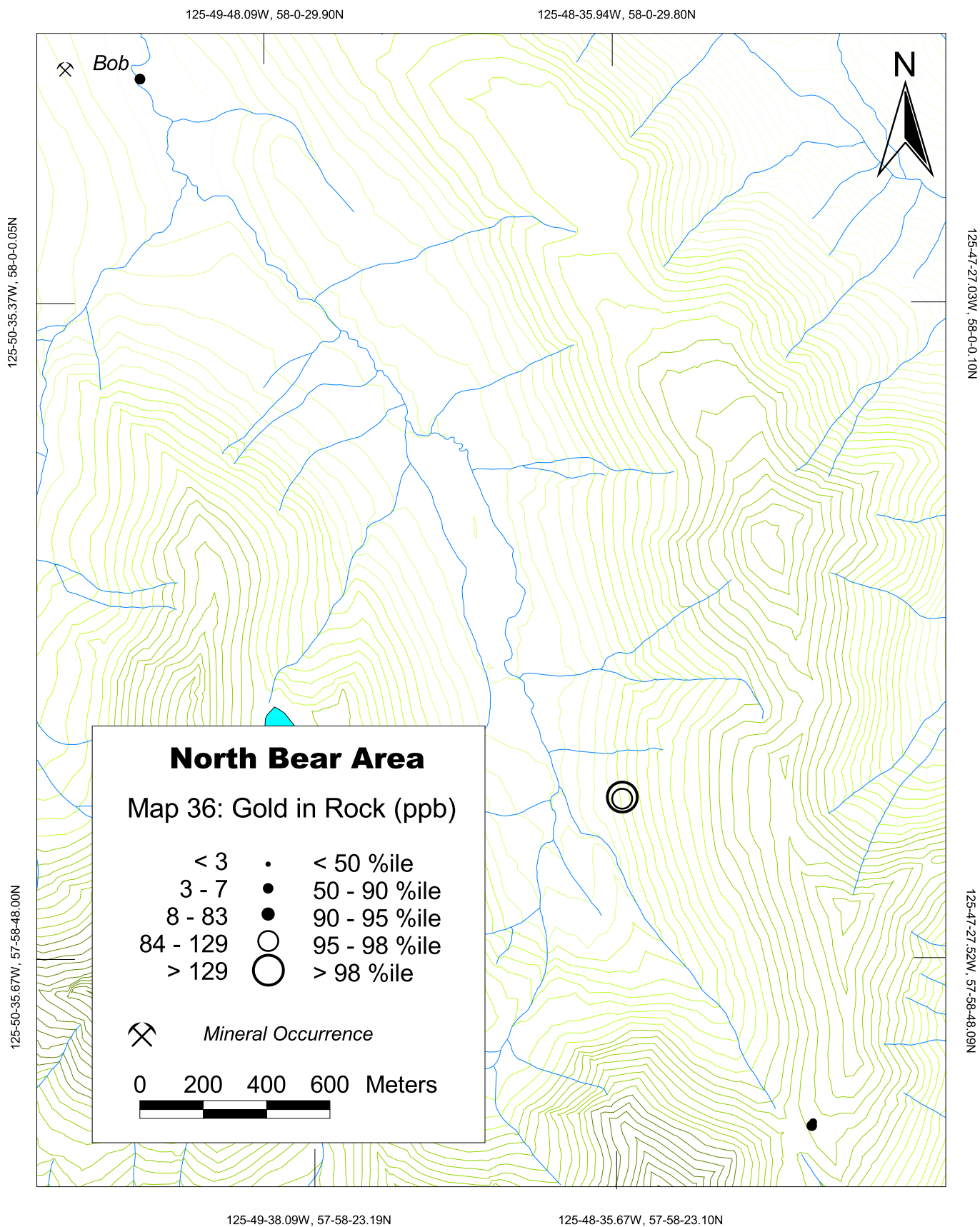


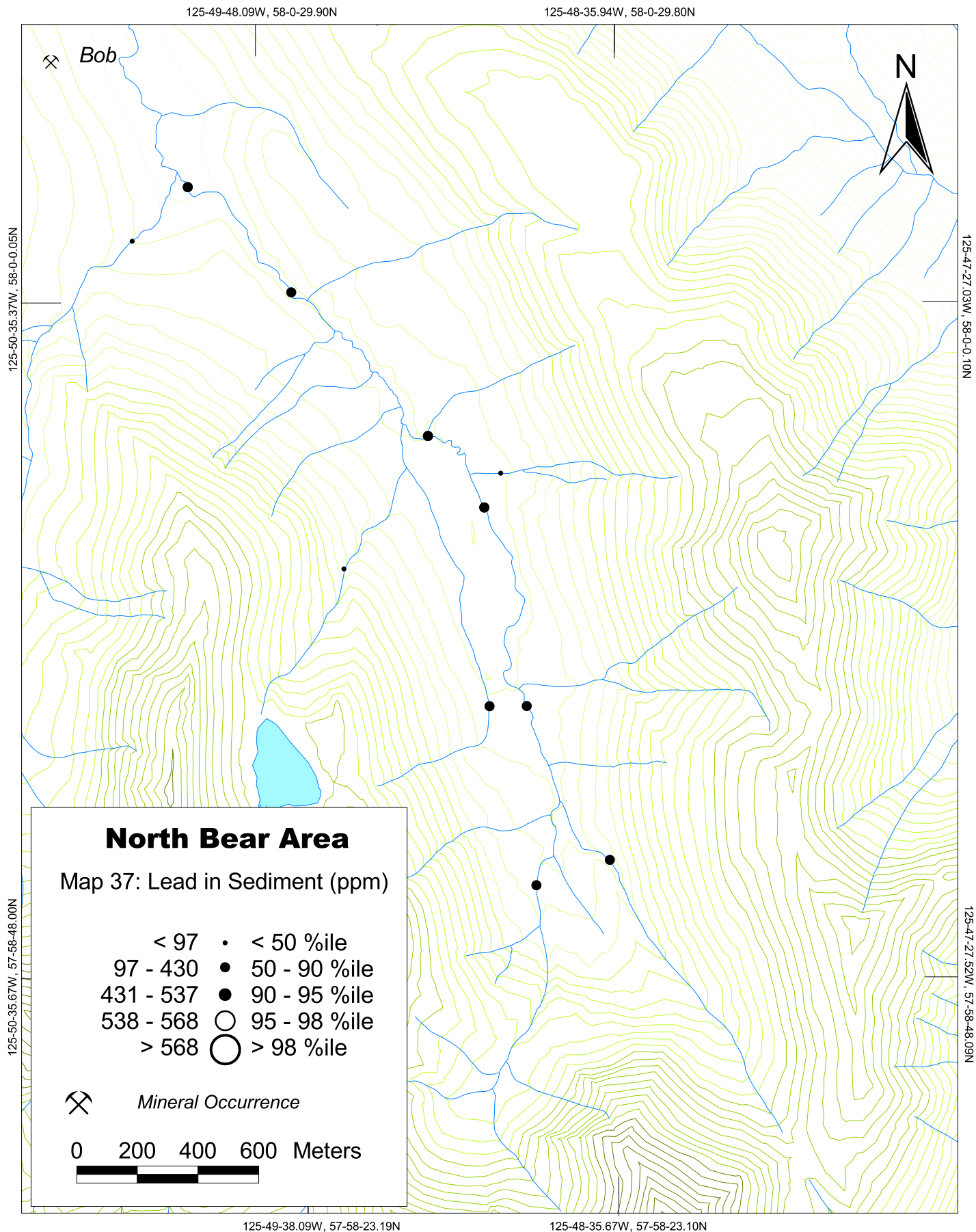


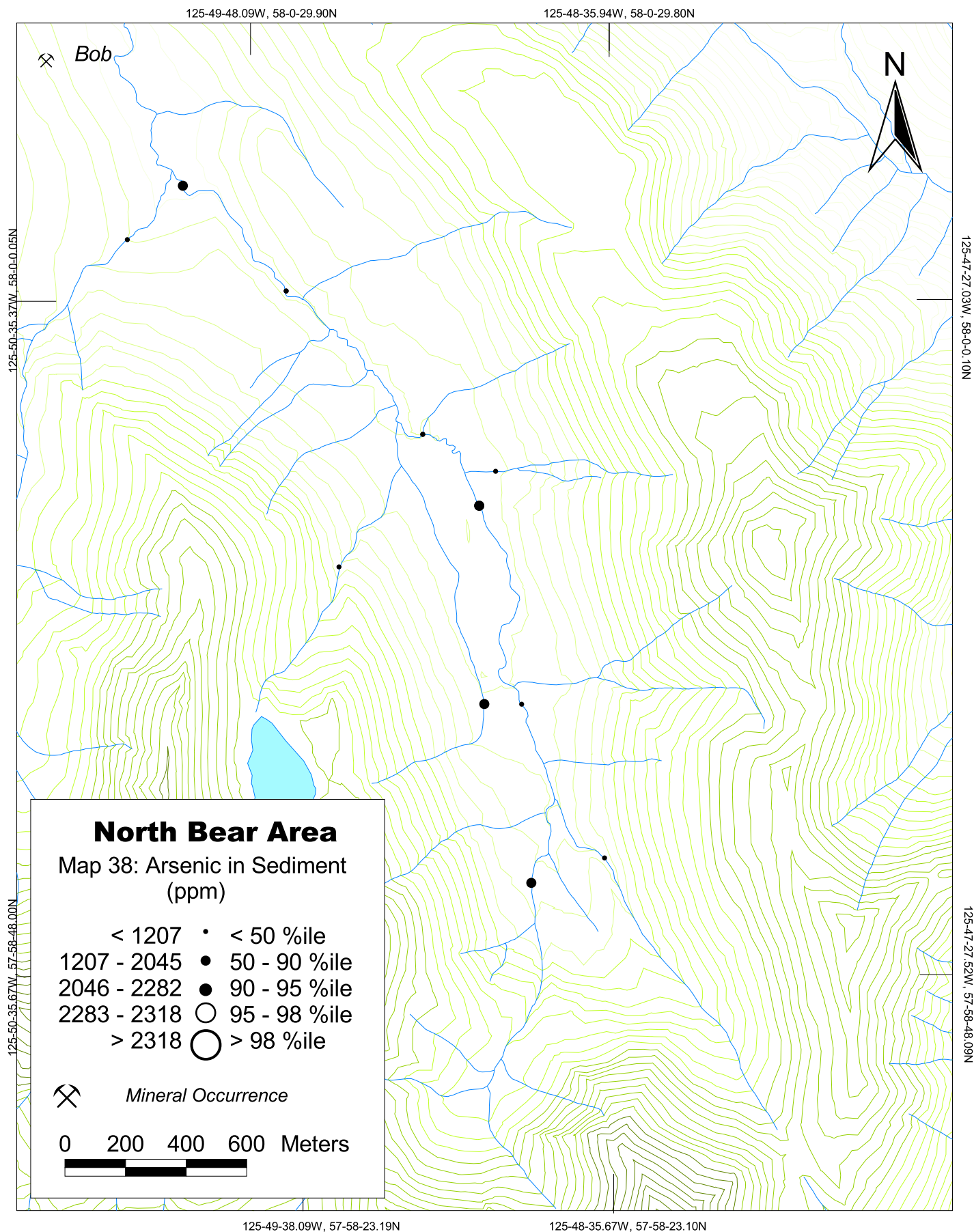


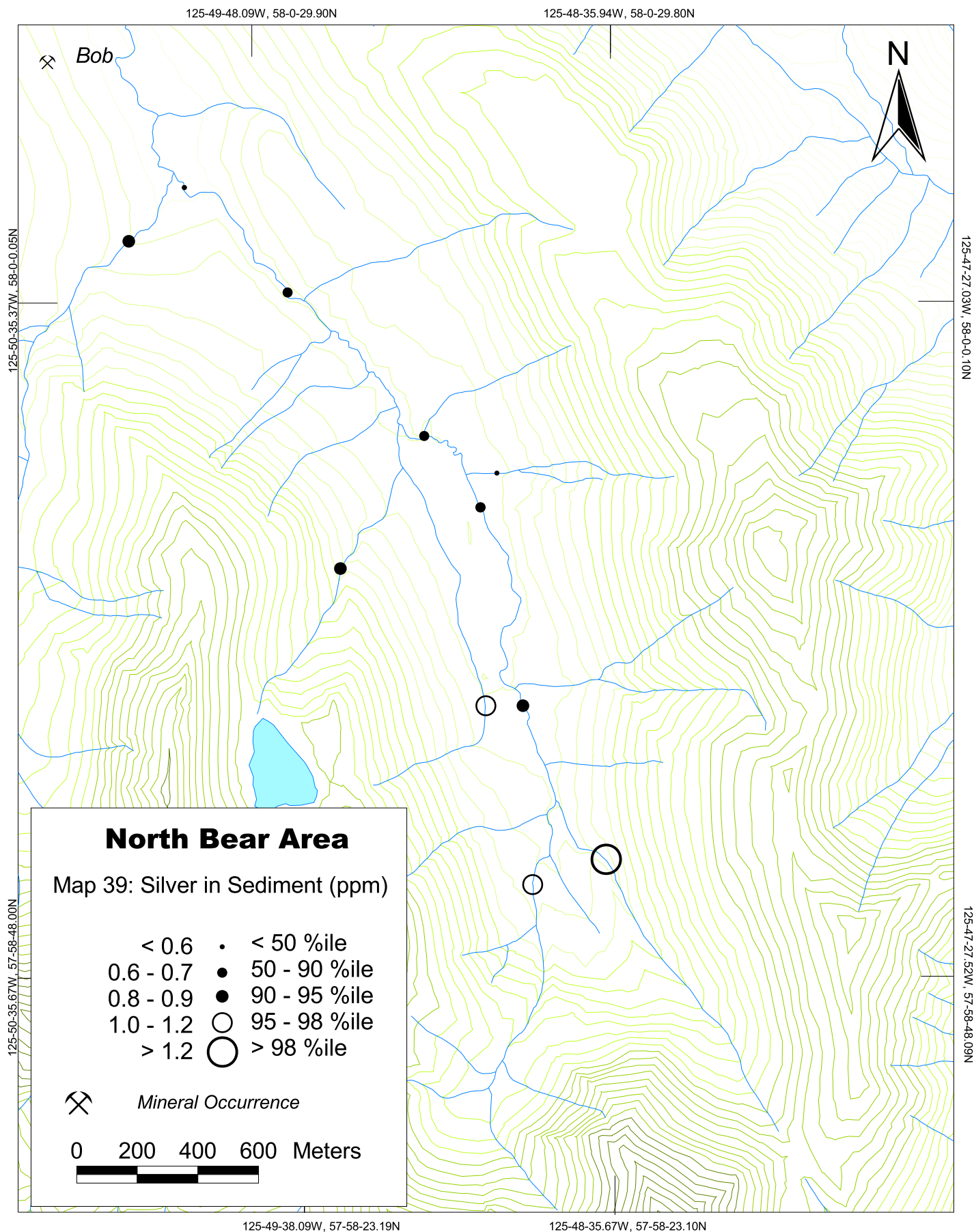


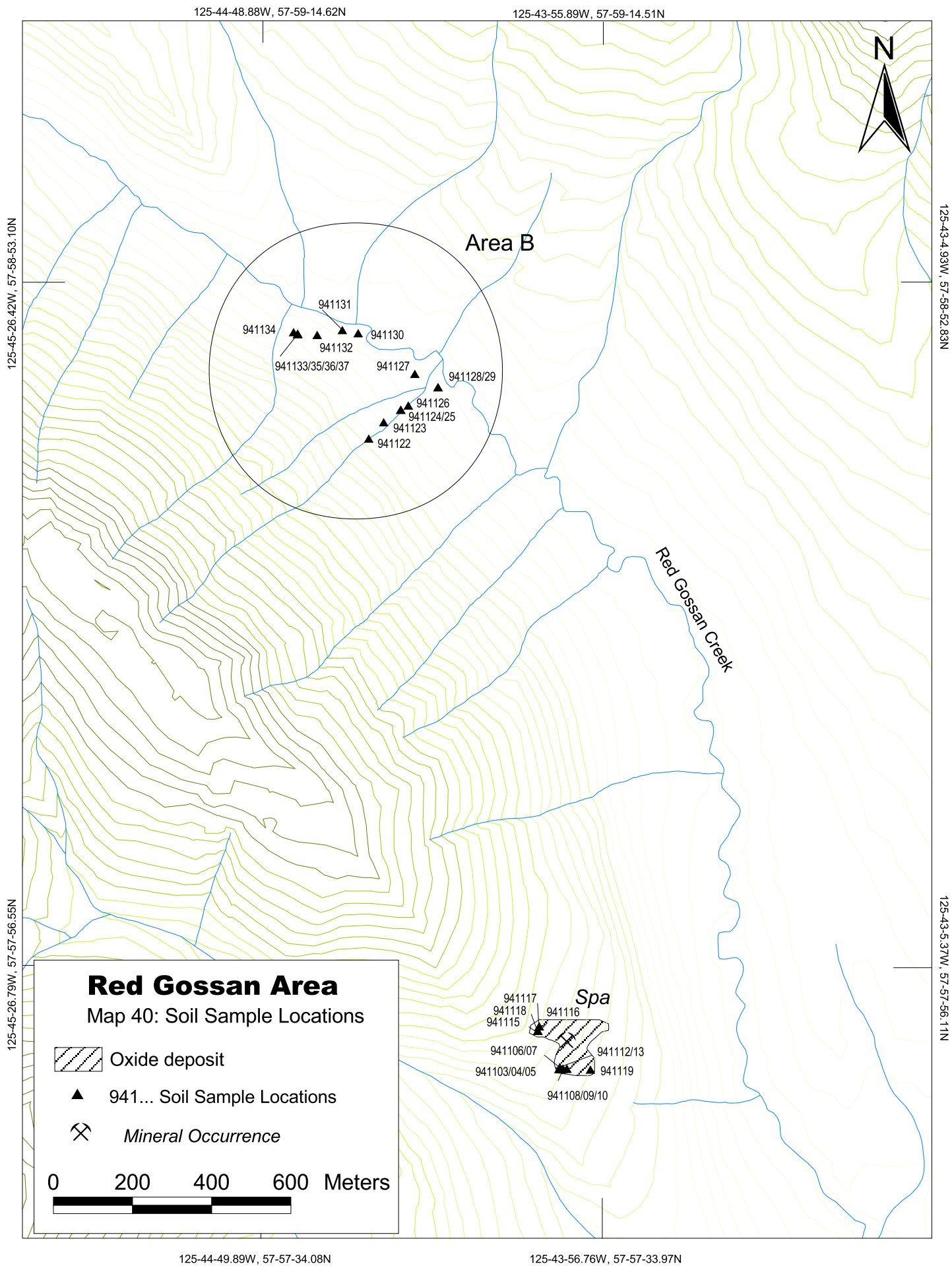


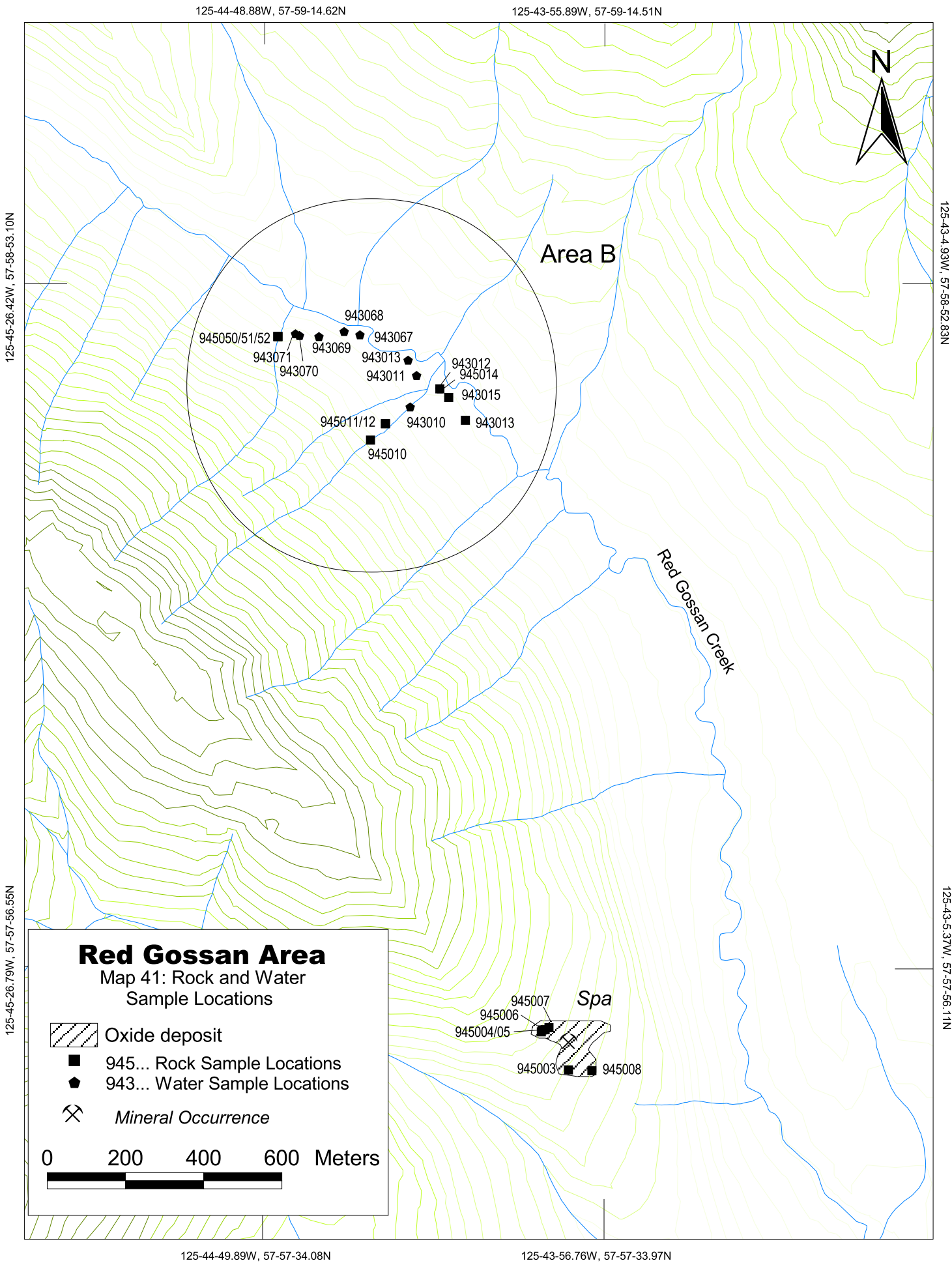


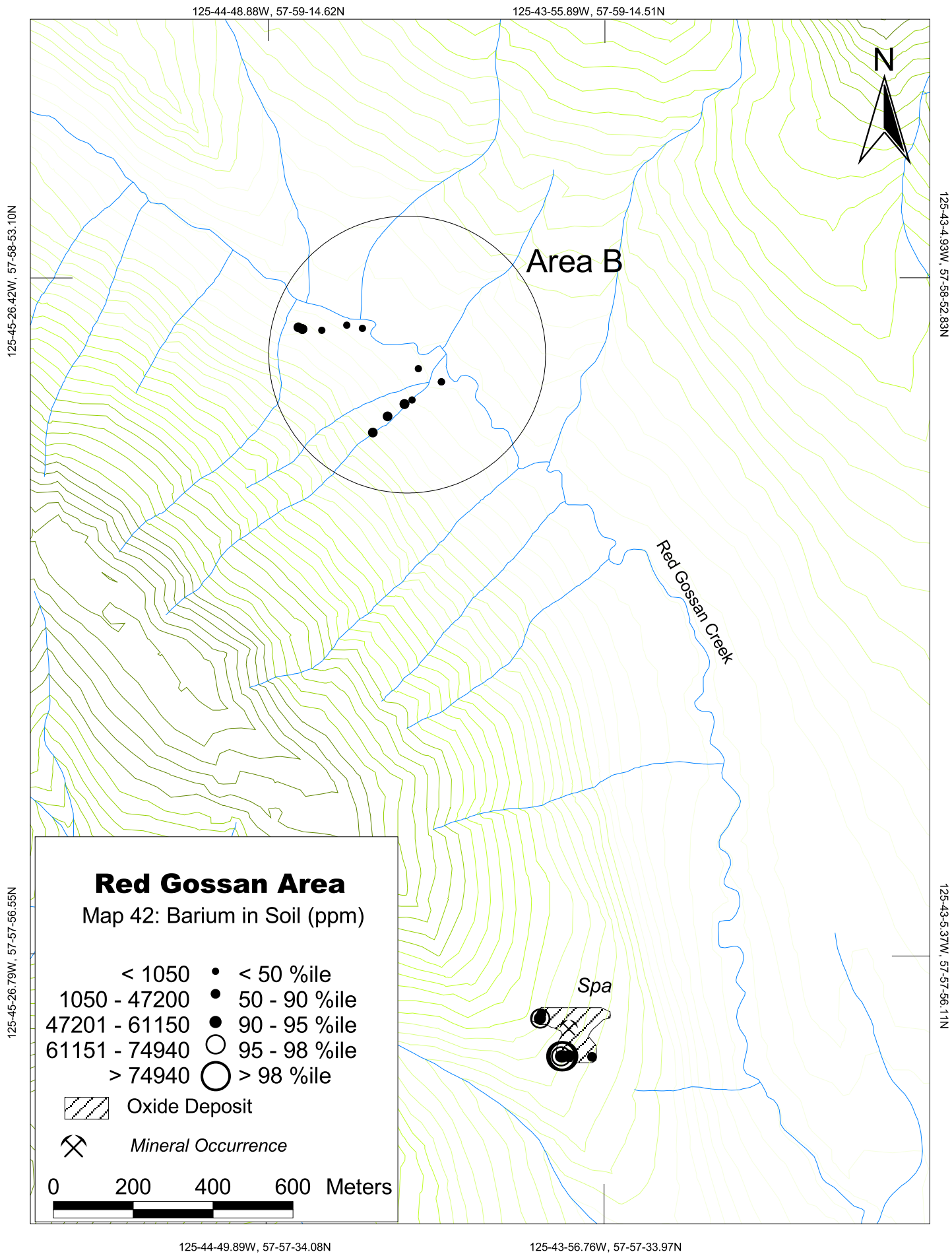


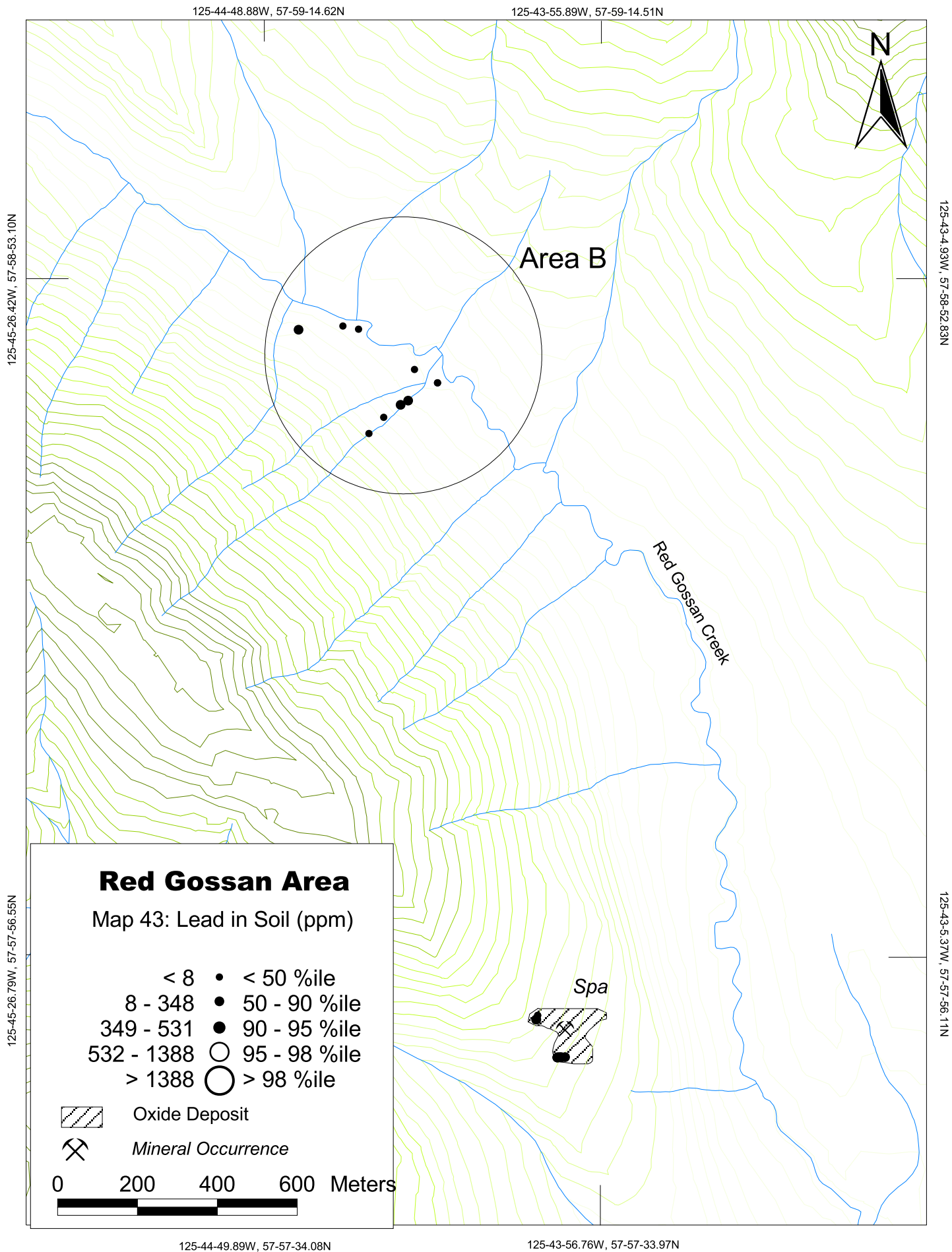












125-44-48.88W, 57-59-14.62N

125-43-55.89W, 57-59-14.51N

125-45-26.42W, 57-58-53.10N

125-43-4.93W, 57-58-52.83N

125-45-26.79W, 57-57-56.55N

125-43-5.37W, 57-57-56.11N



Area B

Red Gossan Creek

Spa

Red Gossan Area

Map 44: Silver in Soil (ppm)

< 0.3	•	< 50 %ile
0.3 - 1.3	•	50 - 90 %ile
1.4 - 1.7	•	90 - 95 %ile
1.8 - 2.1	○	95 - 98 %ile
> 2.1	○	> 98 %ile



Oxide Deposit



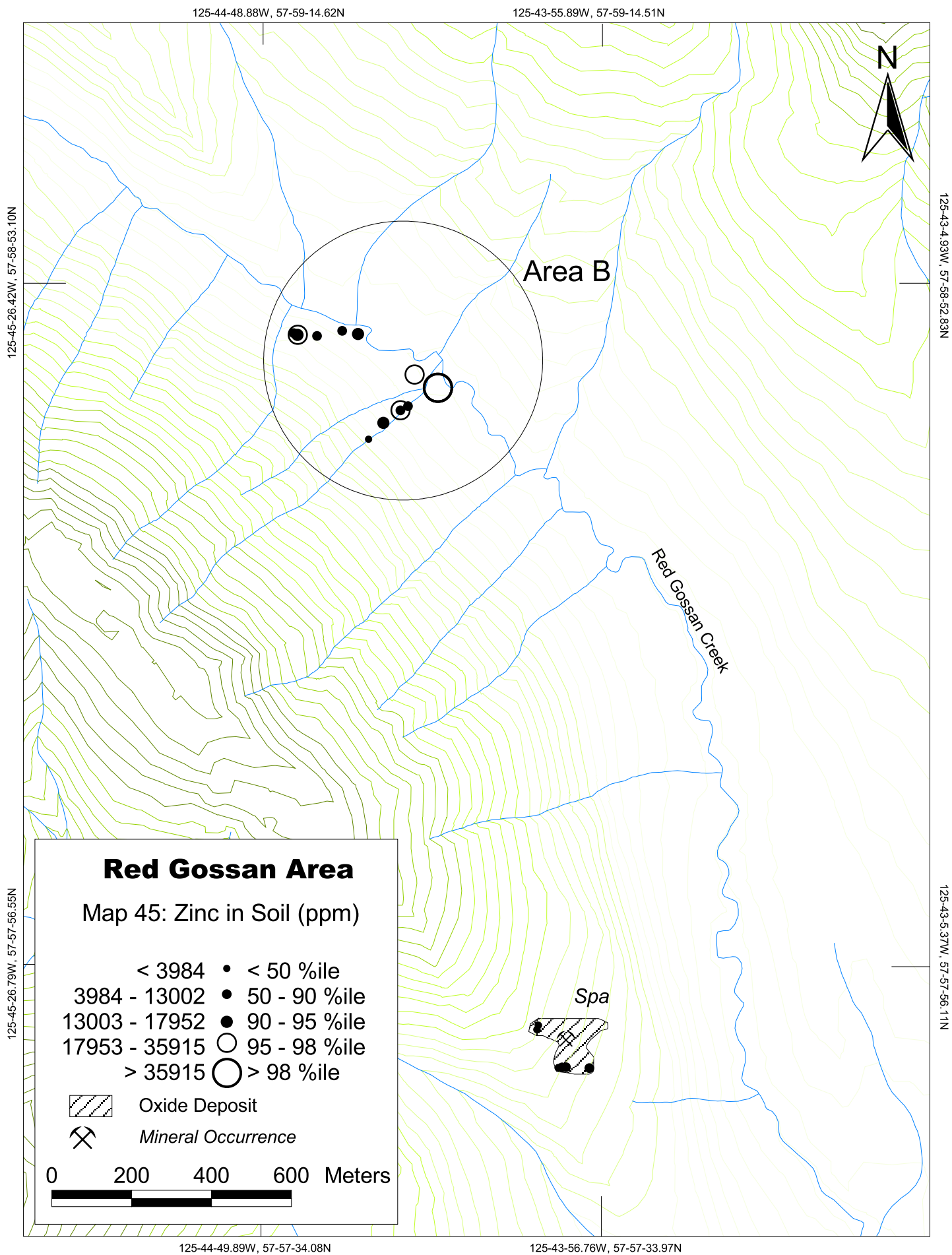
Mineral Occurrence

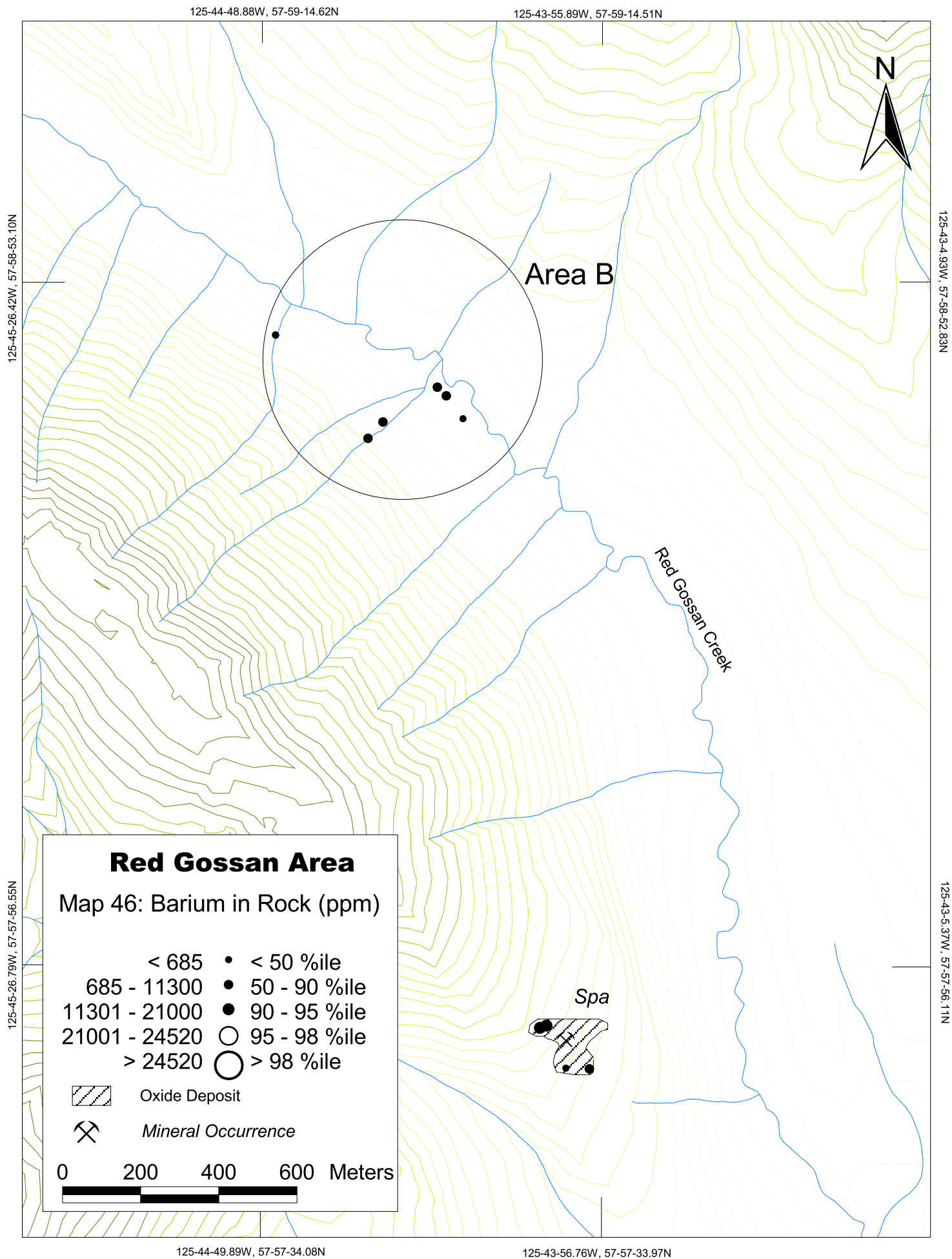
0 200 400 600 Meters

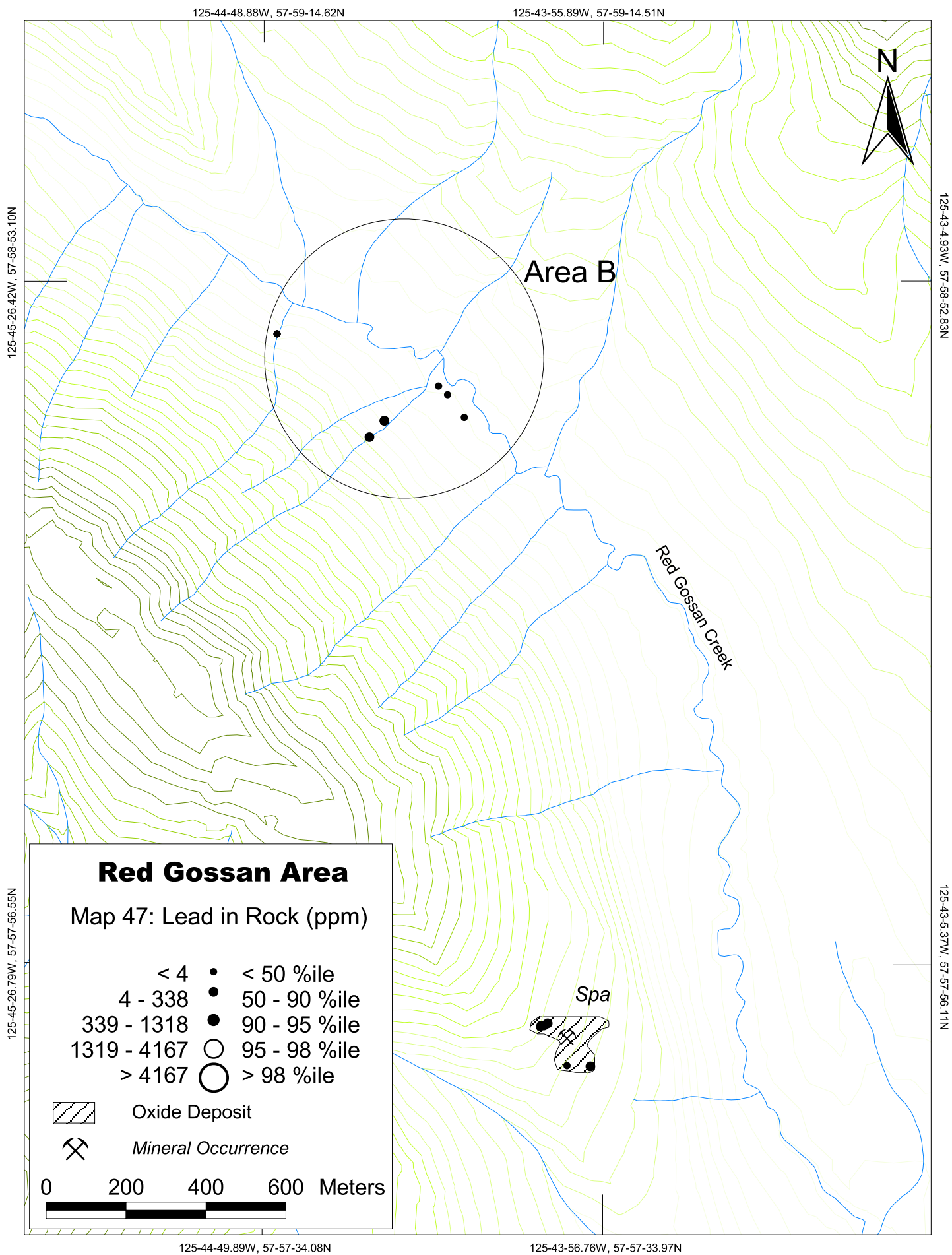


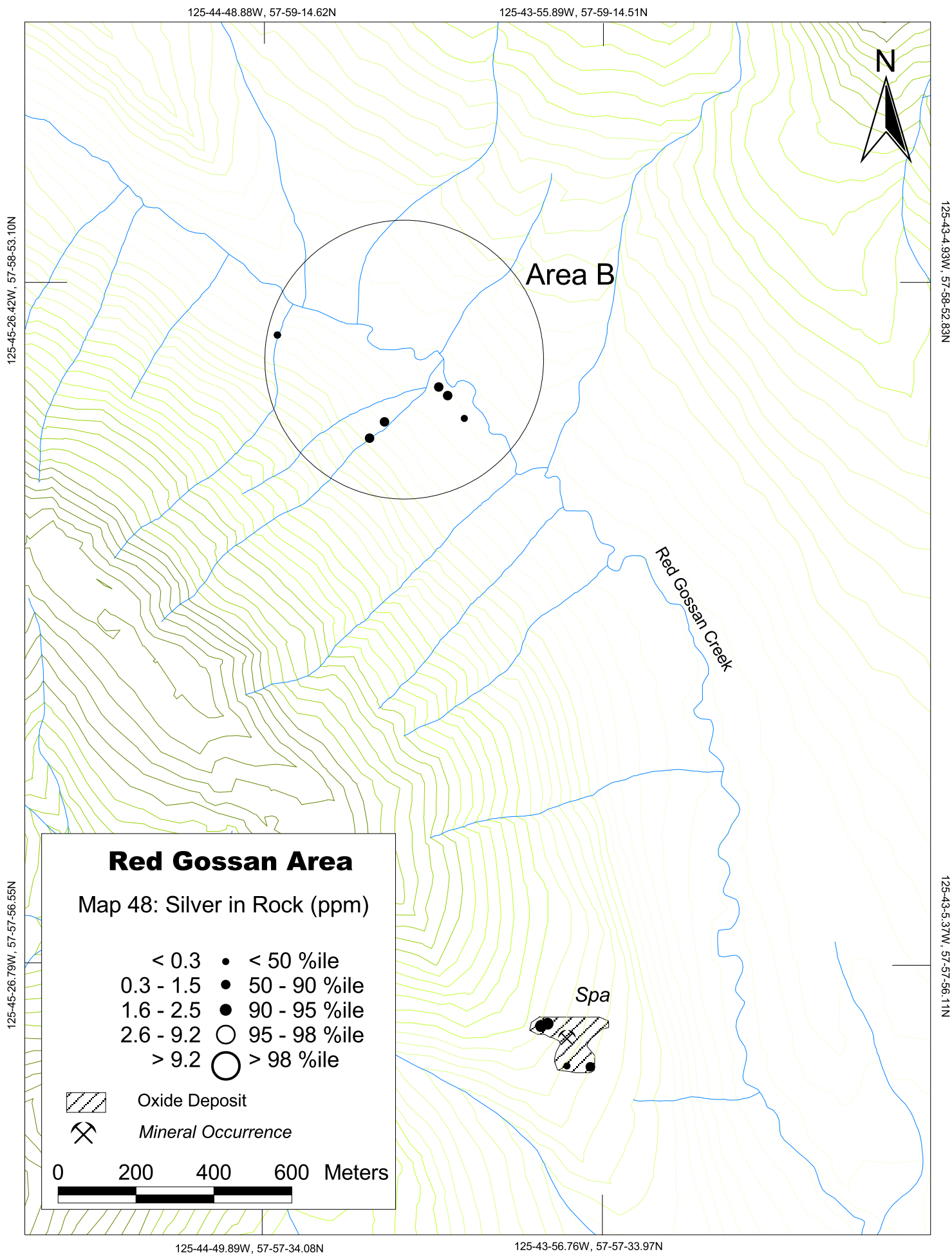
125-44-49.89W, 57-57-34.08N

125-43-56.76W, 57-57-33.97N









125-45-26.42W, 57-58-53.10N

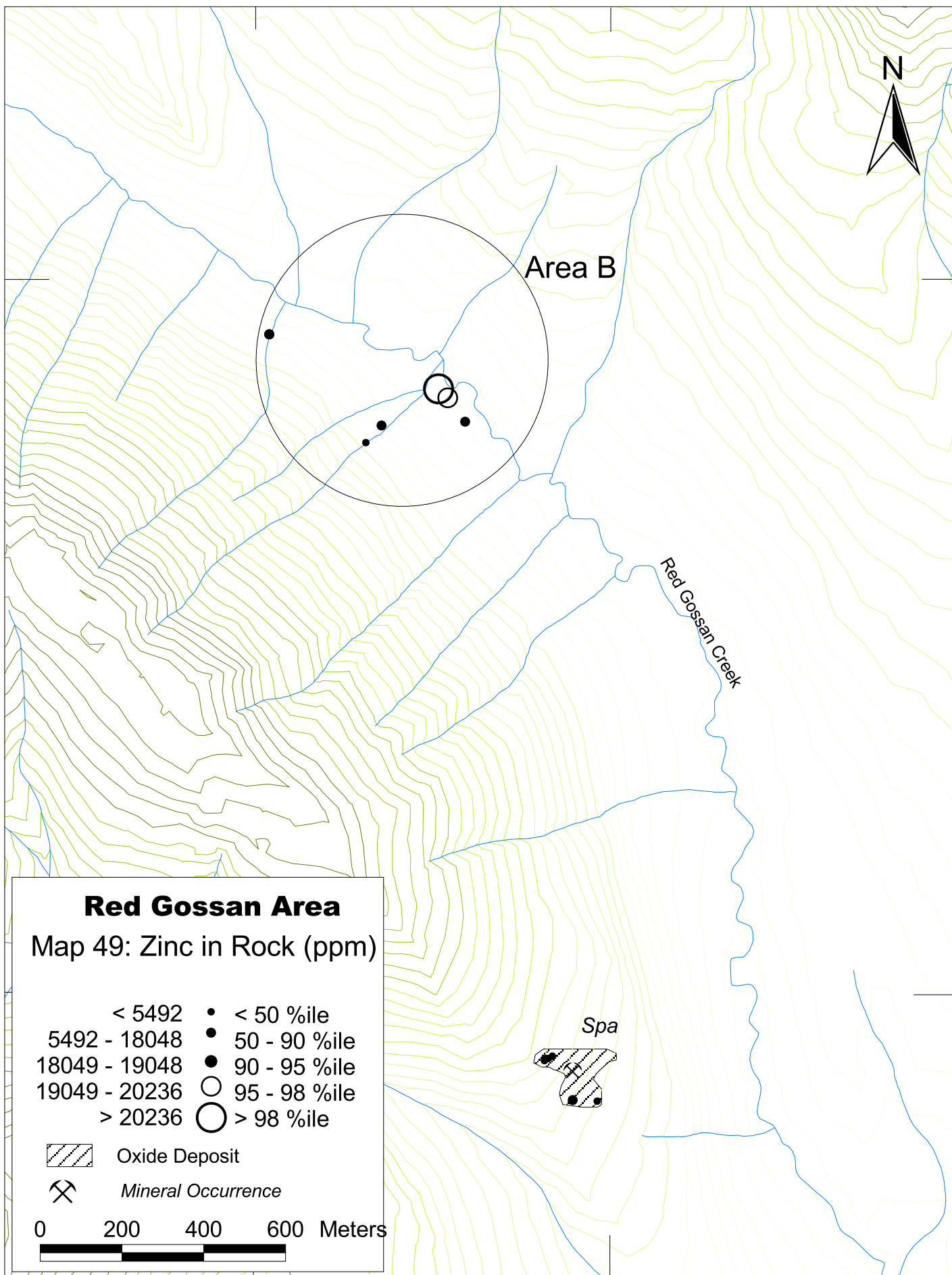
125-45-26.79W, 57-57-56.55N

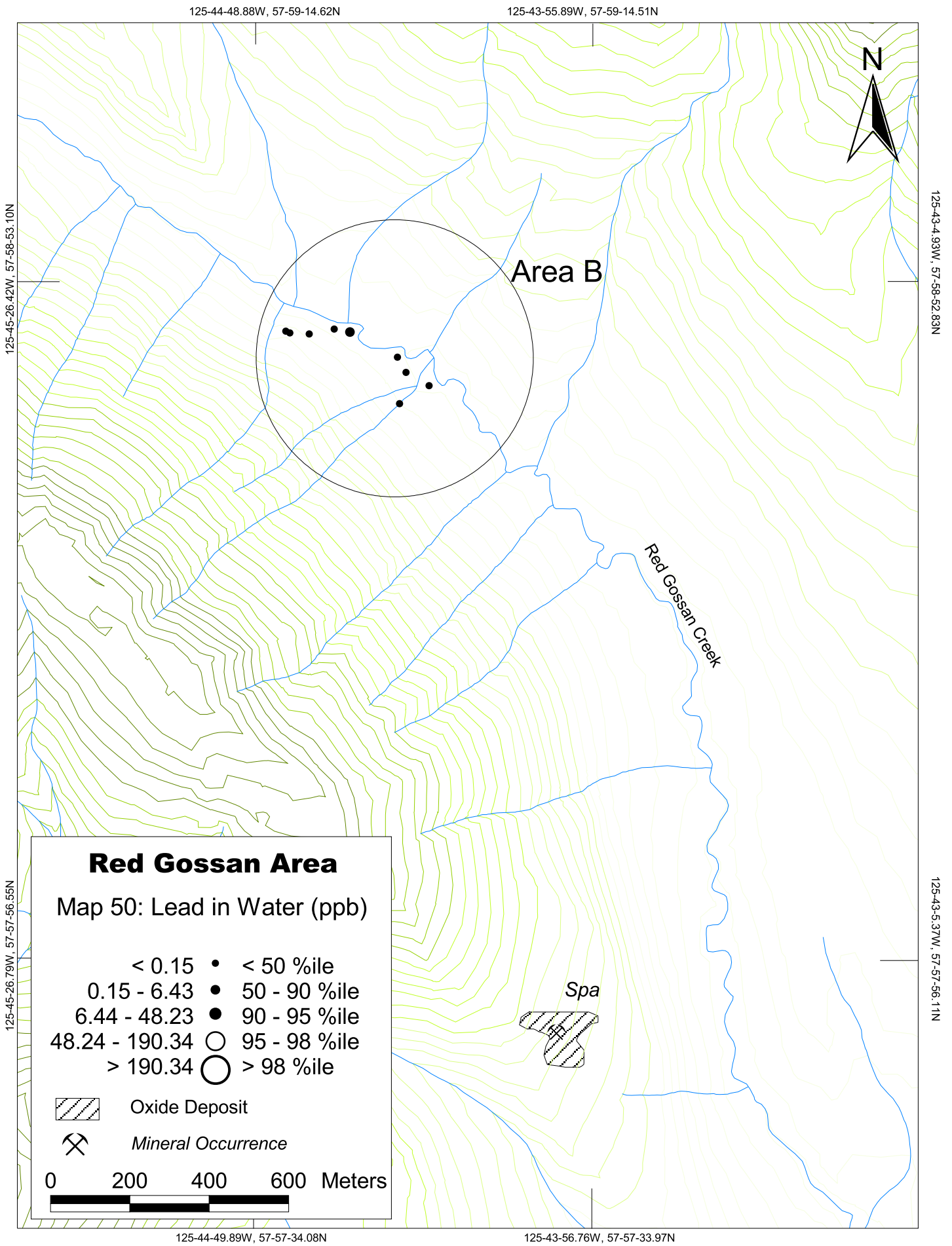
125-44-49.89W, 57-57-34.08N

125-43-56.76W, 57-57-33.97N

125-43-4.93W, 57-58-52.83N

125-43-5.37W, 57-57-56.11N





Red Gossan Area

Map 50: Lead in Water (ppb)

< 0.15	•	< 50 %ile
0.15 - 6.43	•	50 - 90 %ile
6.44 - 48.23	•	90 - 95 %ile
48.24 - 190.34	○	95 - 98 %ile
> 190.34	○	> 98 %ile



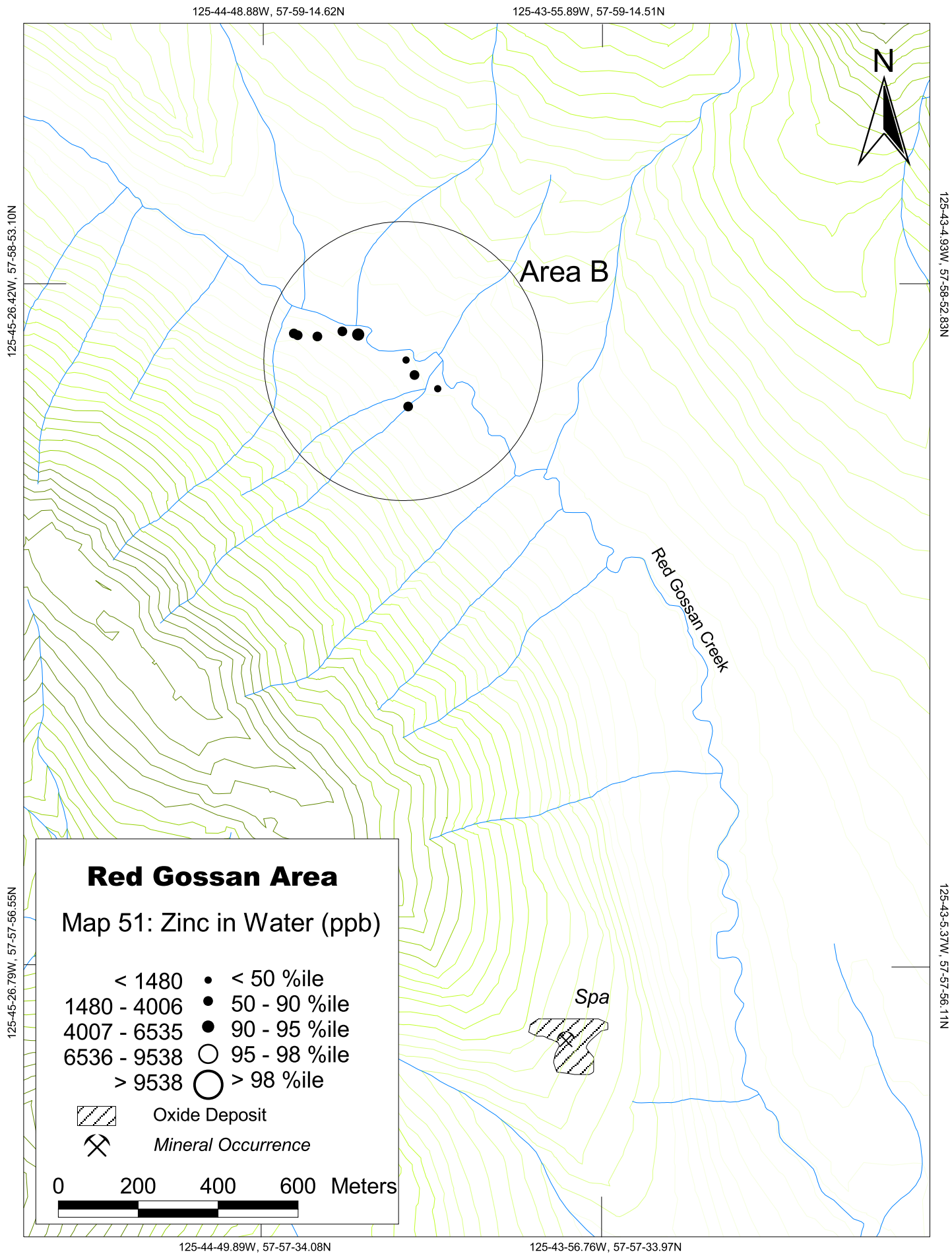
Oxide Deposit

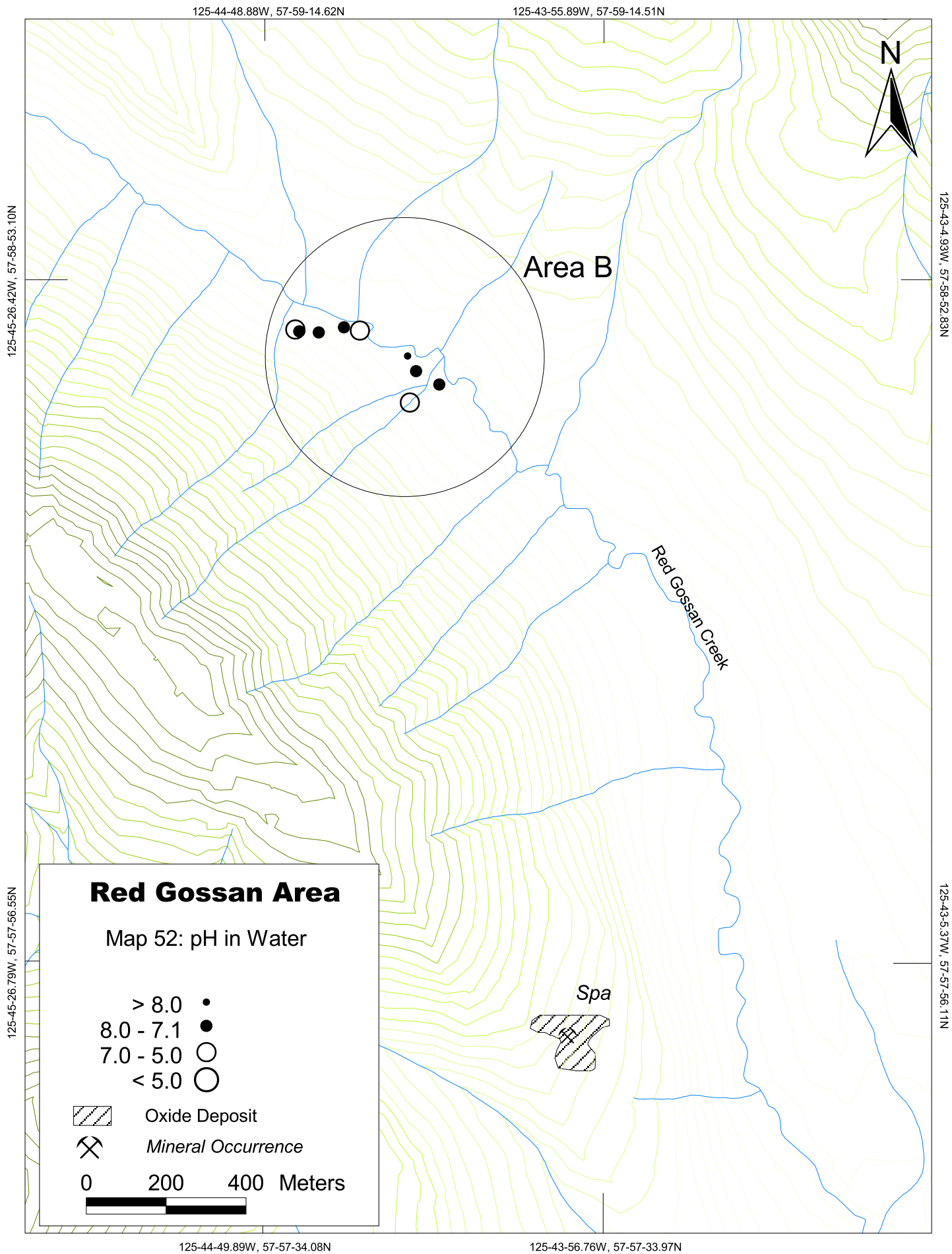


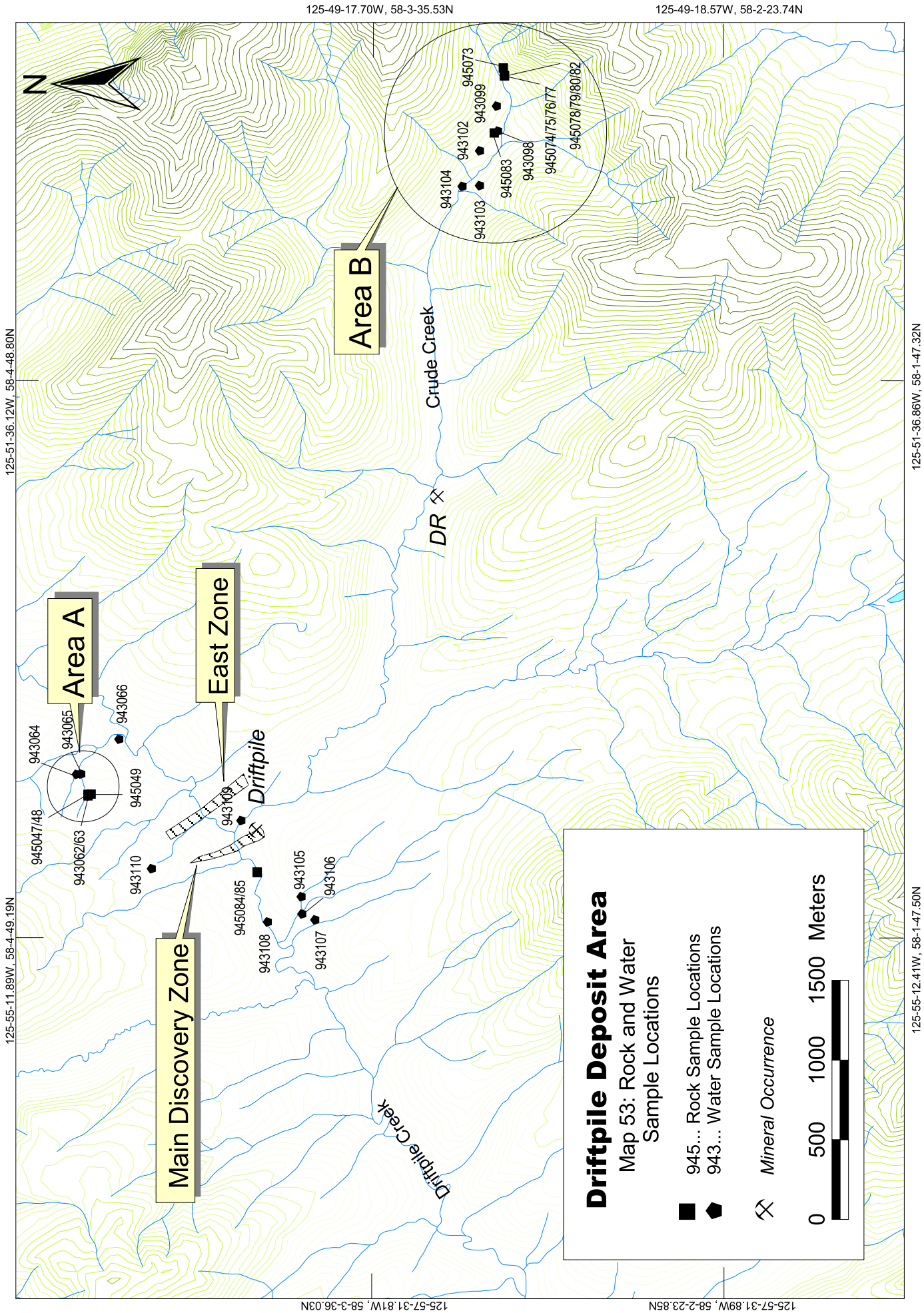
Mineral Occurrence

0 200 400 600 Meters









125-49-17.70W, 58-3-35.53N

125-49-18.57W, 58-2-23.74N

125-51-36.12W, 58-4-48.80N

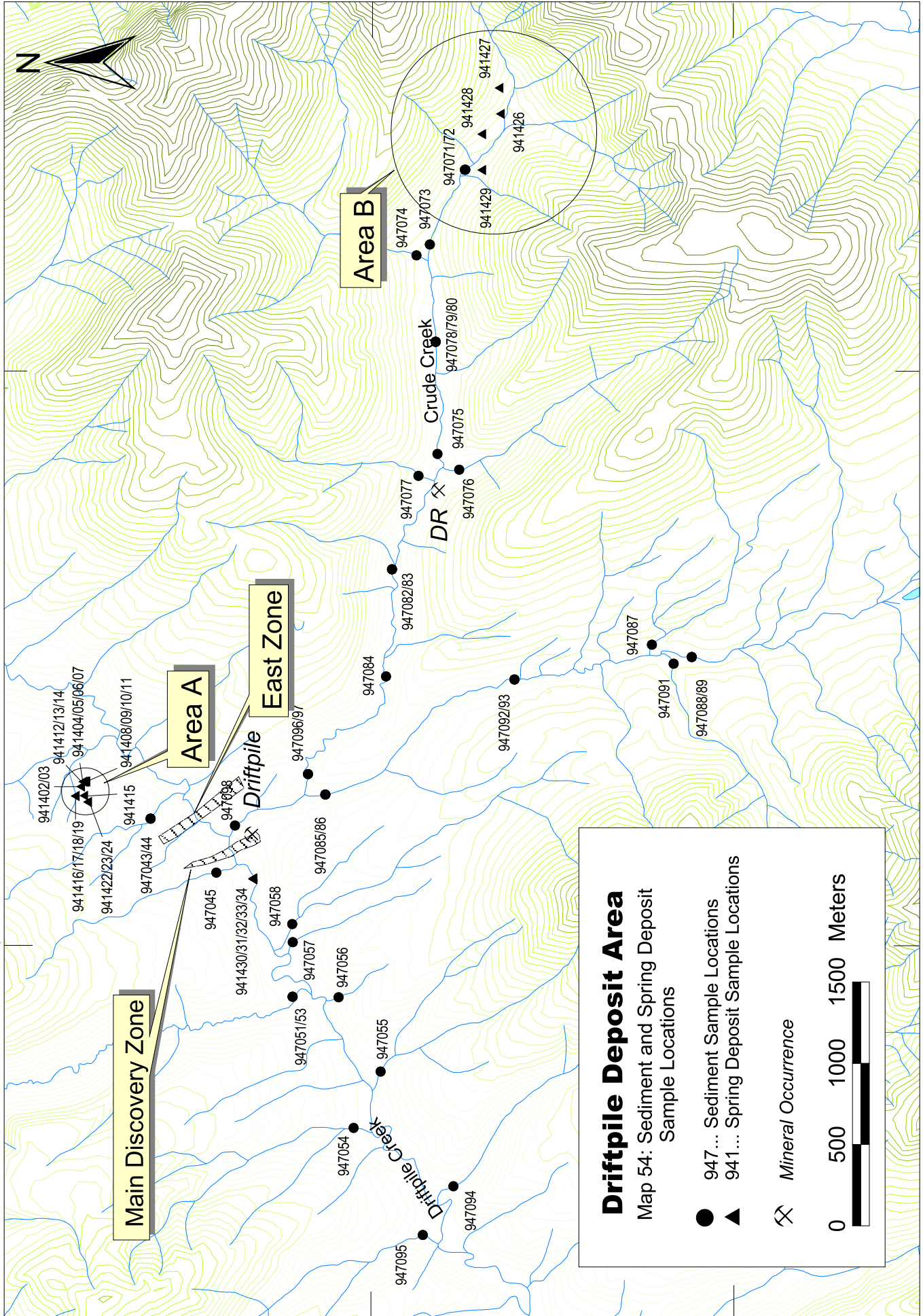
125-55-11.89W, 58-4-49.19N

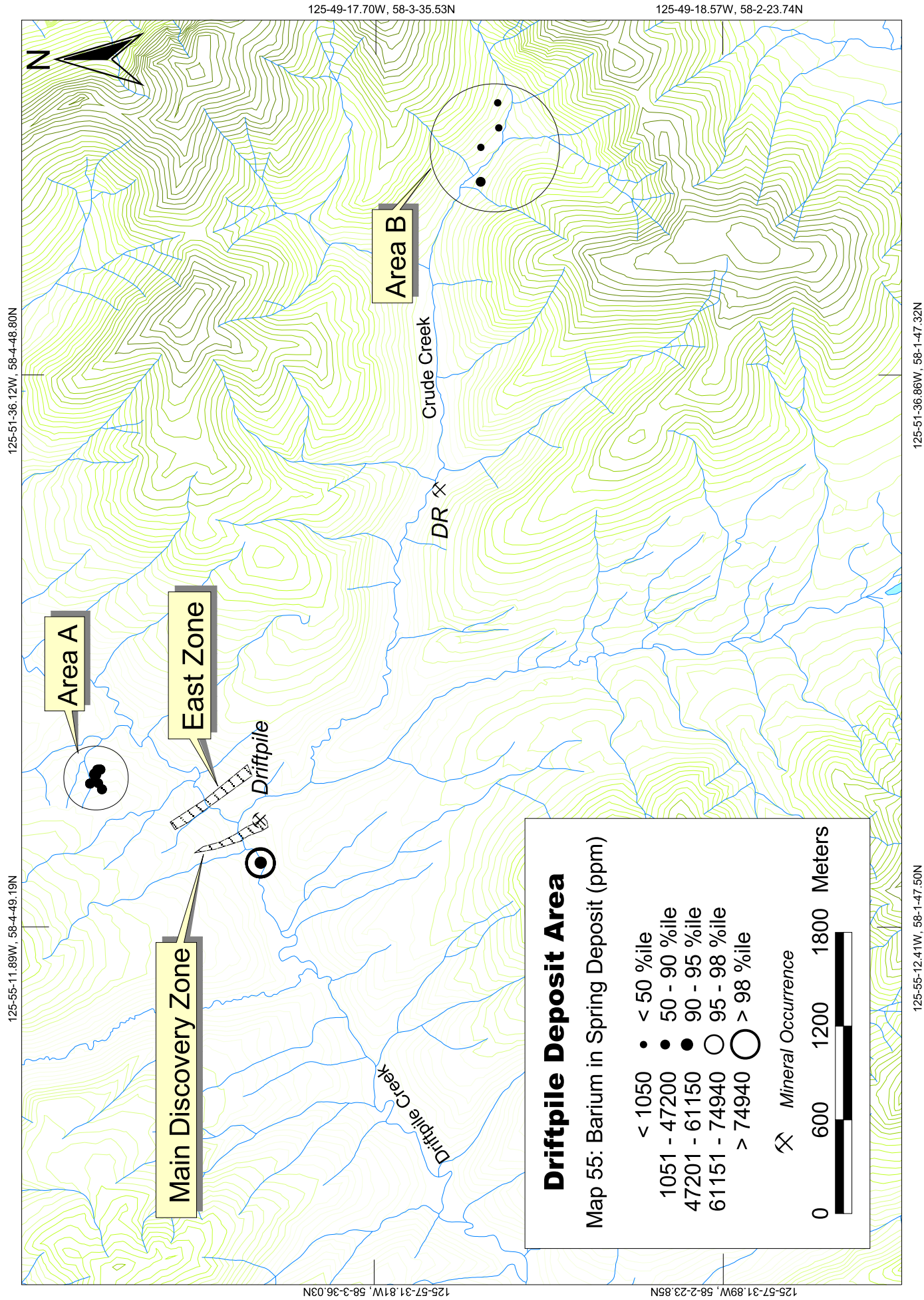
125-57-31.81W, 58-3-36.03N

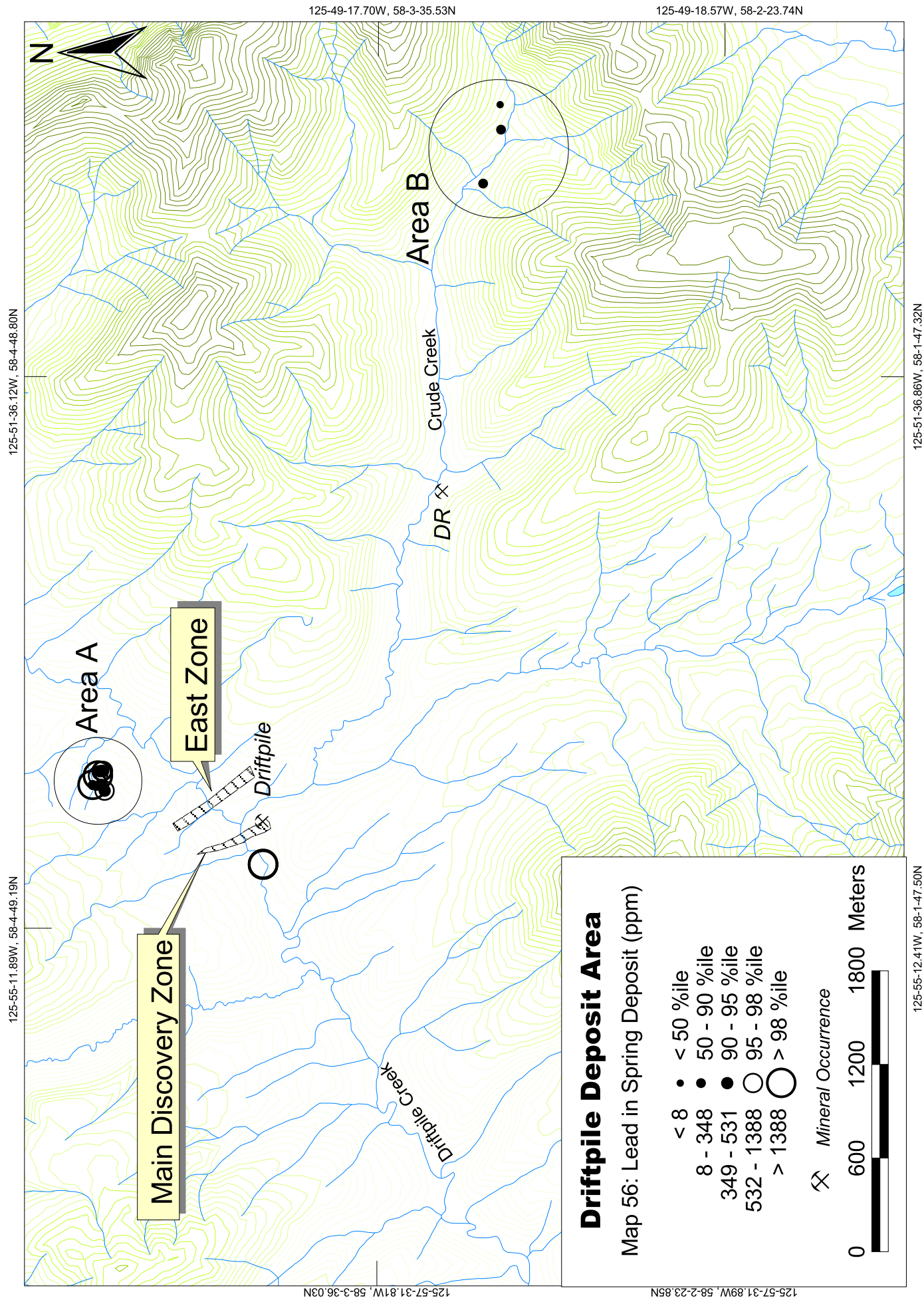
125-57-31.89W, 58-2-23.85N

125-51-36.86W, 58-1-47.32N

125-55-12.41W, 58-1-47.50N

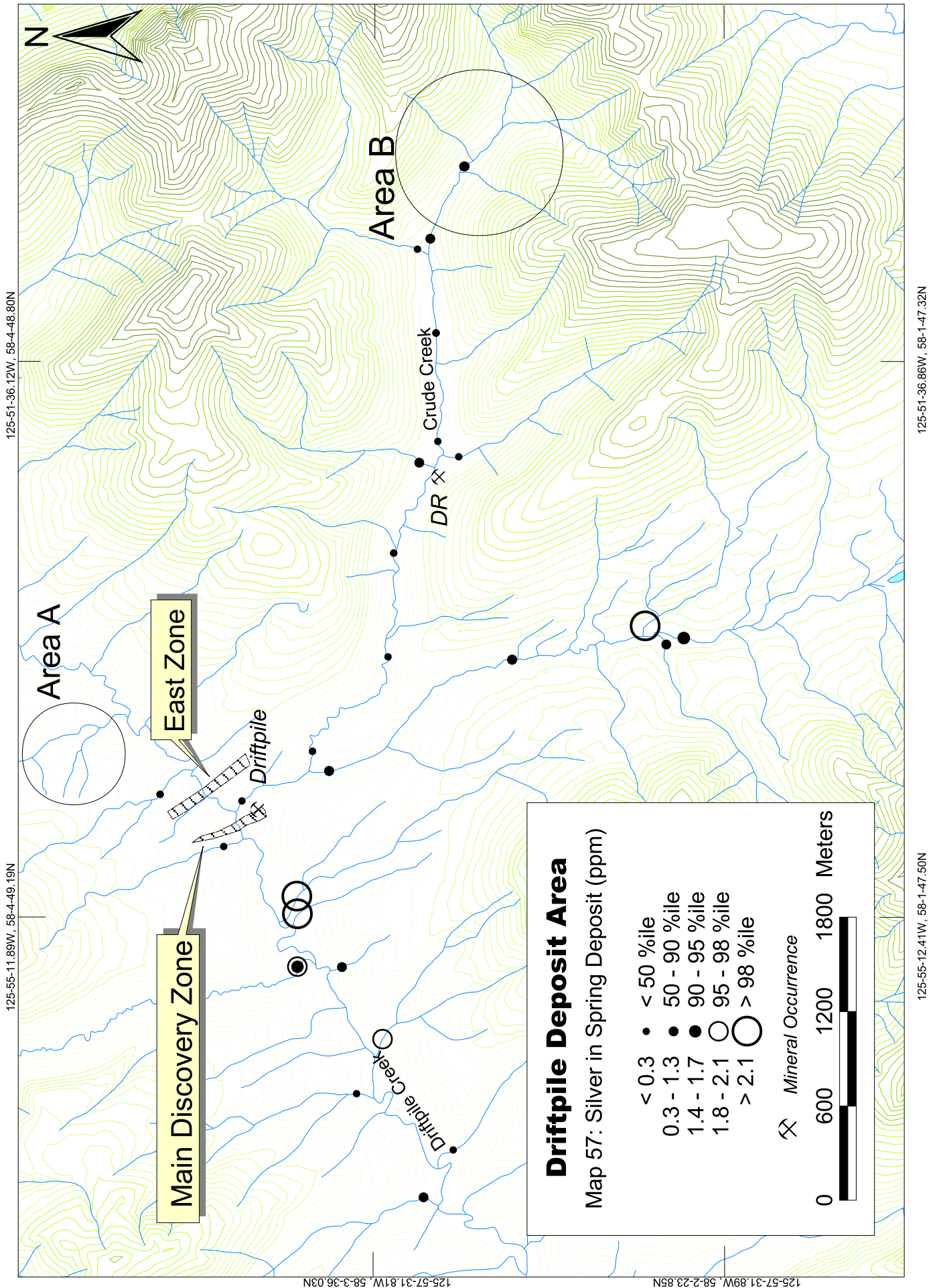






125-49-17.70W, 58-3-35.53N

125-49-18.57W, 58-2-23.74N



125-51-36.12W, 58-4-48.80N

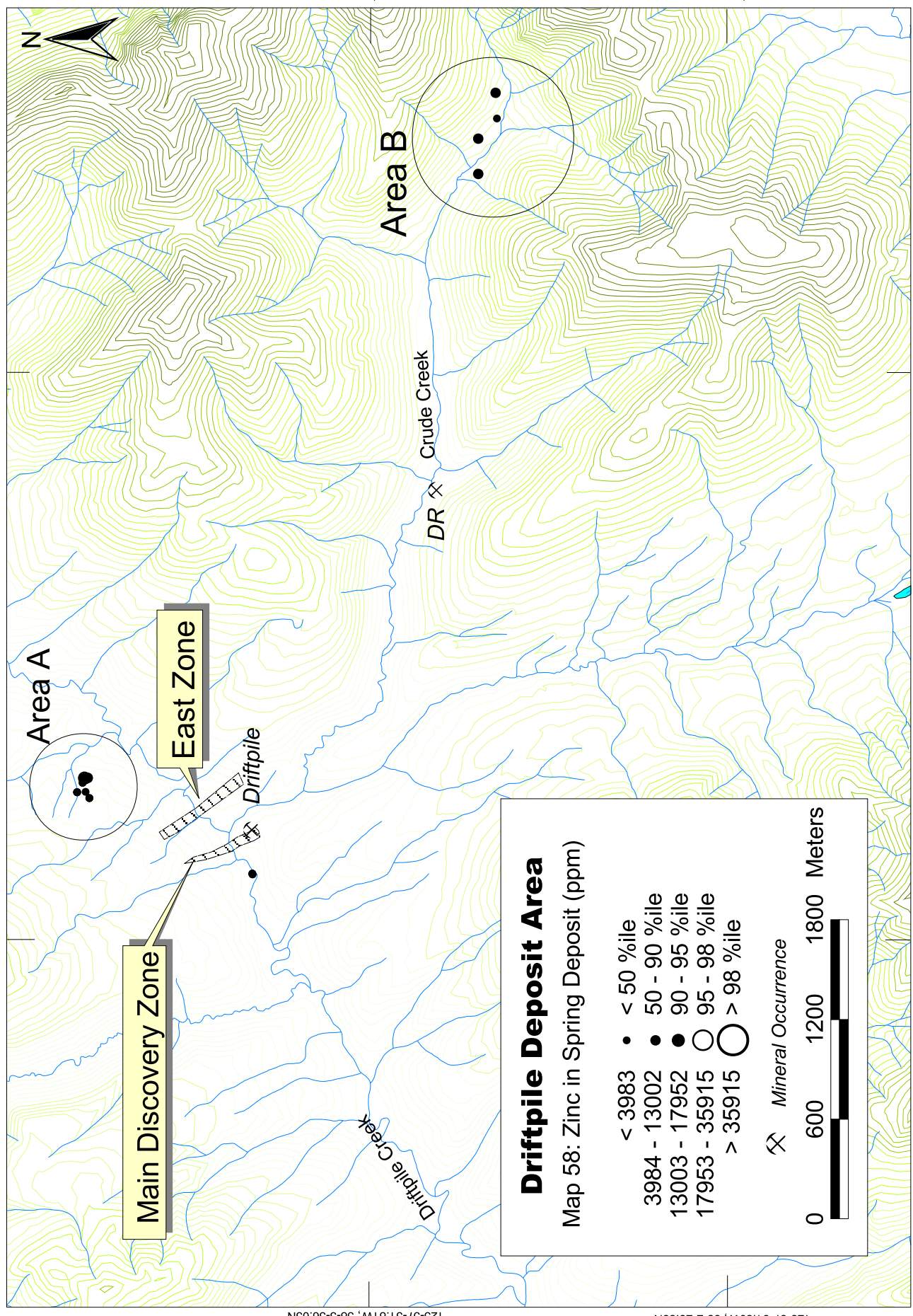
125-55-11.89W, 58-4-49.19N

125-49-17.70W, 58-3-35.53N

125-49-18.57W, 58-2-23.74N

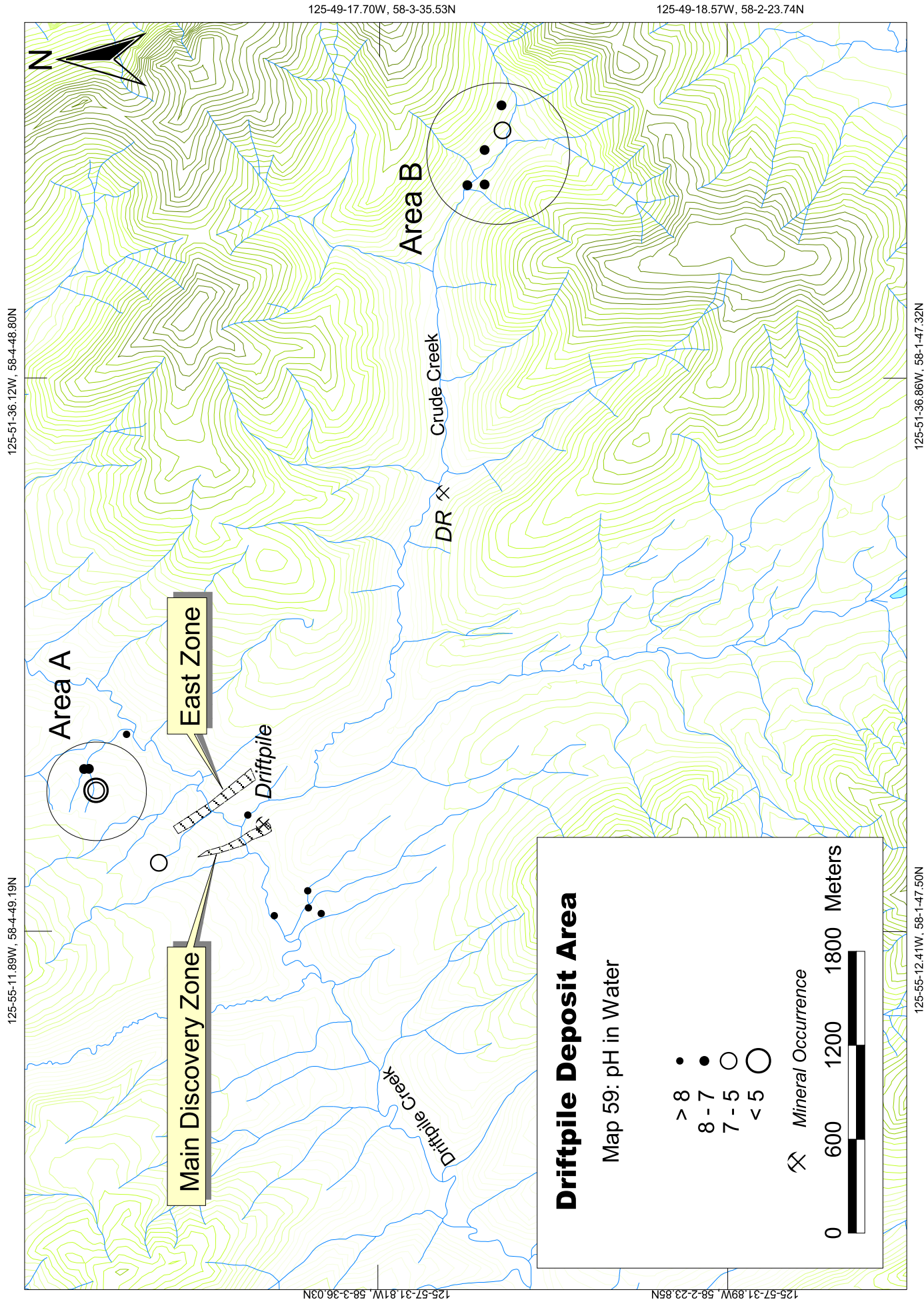
125-51-36.86W, 58-1-47.32N

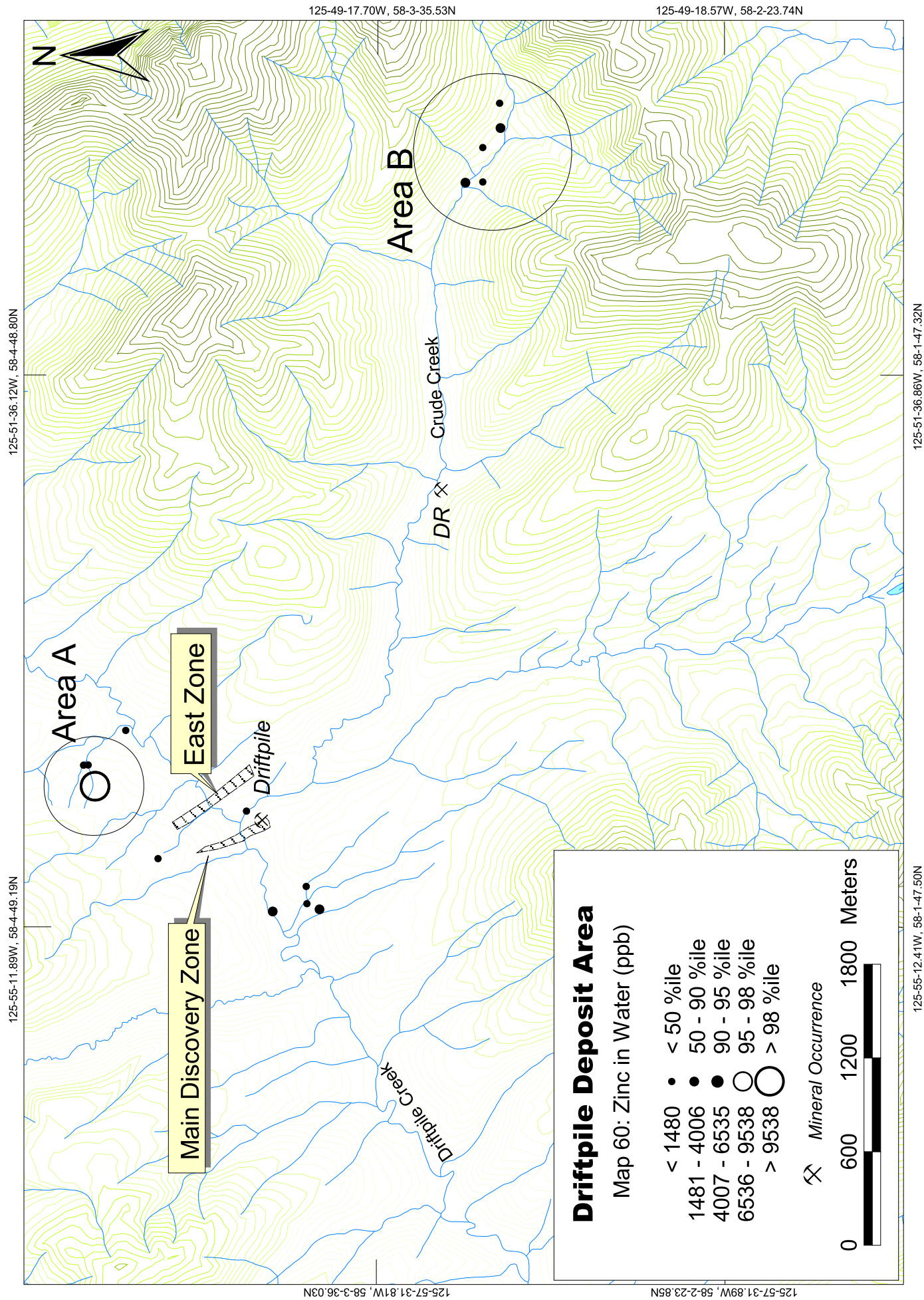
125-55-12.41W, 58-1-47.50N



125-57-31.81W, 58-3-36.03N

125-57-31.89W, 58-2-23.85N





125-49-17.70W, 58-3-35.53N

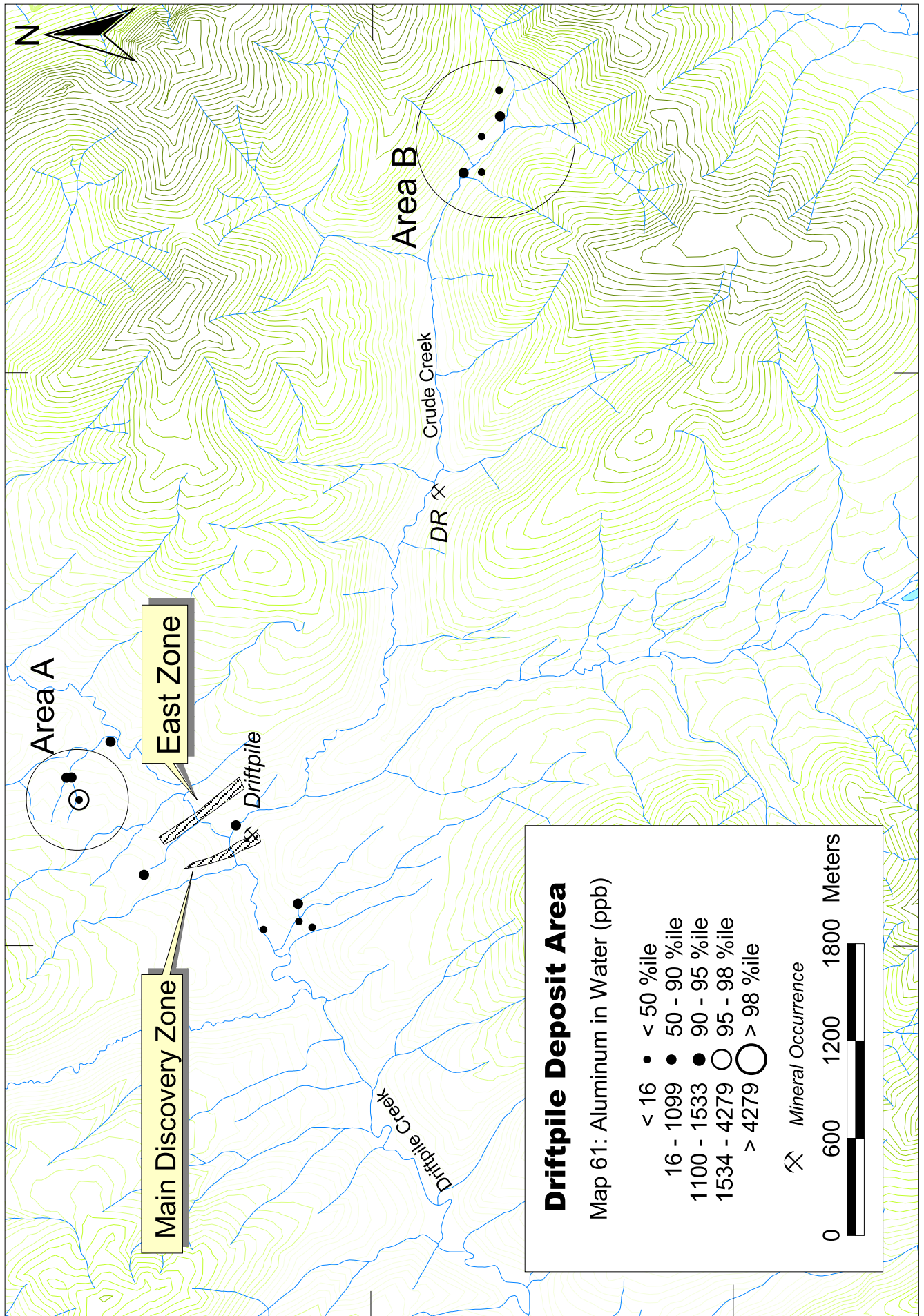
125-49-18.57W, 58-2-23.74N

125-51-36.12W, 58-4-48.80N

125-51-36.86W, 58-1-47.32N

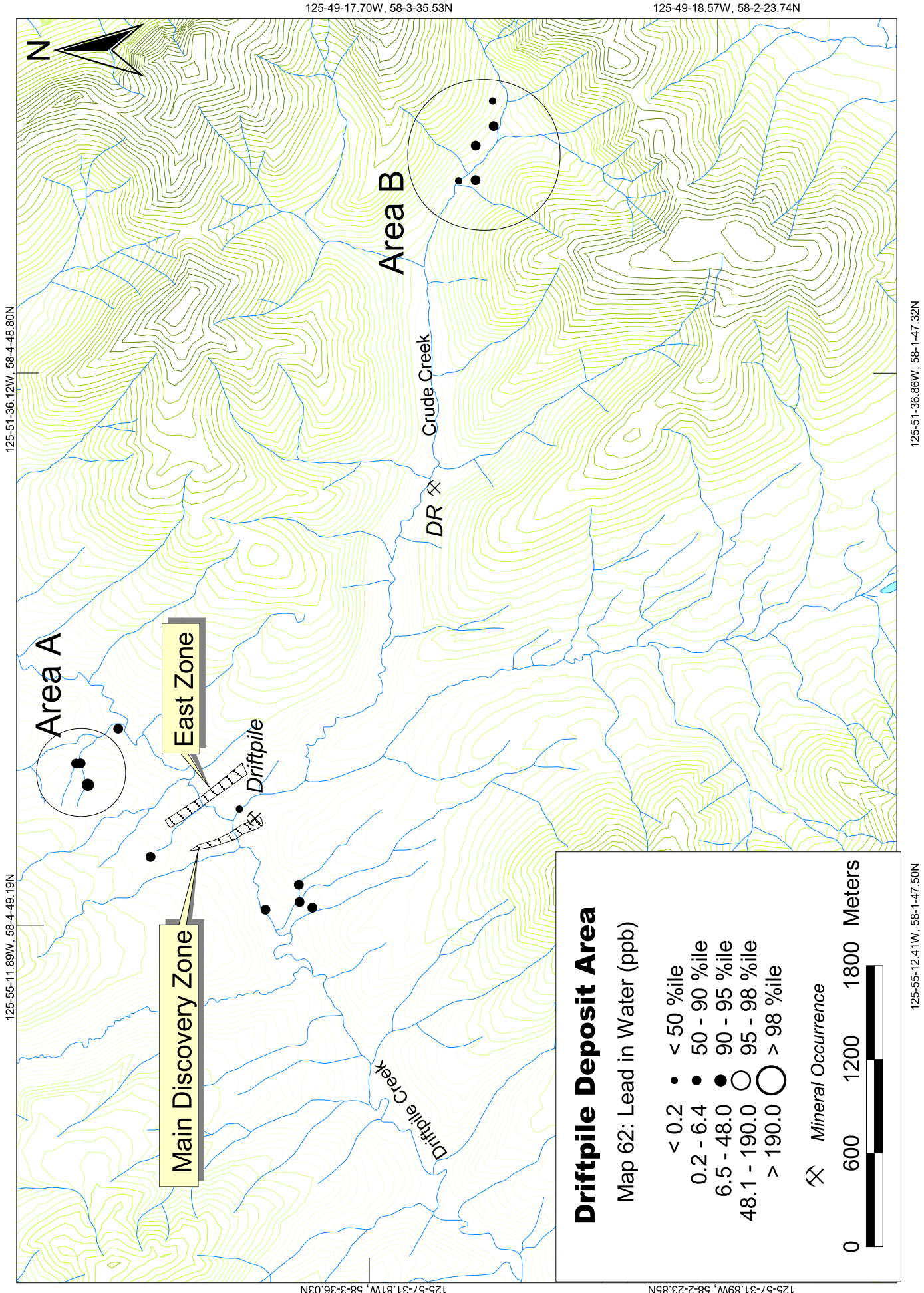
125-55-11.89W, 58-4-49.19N

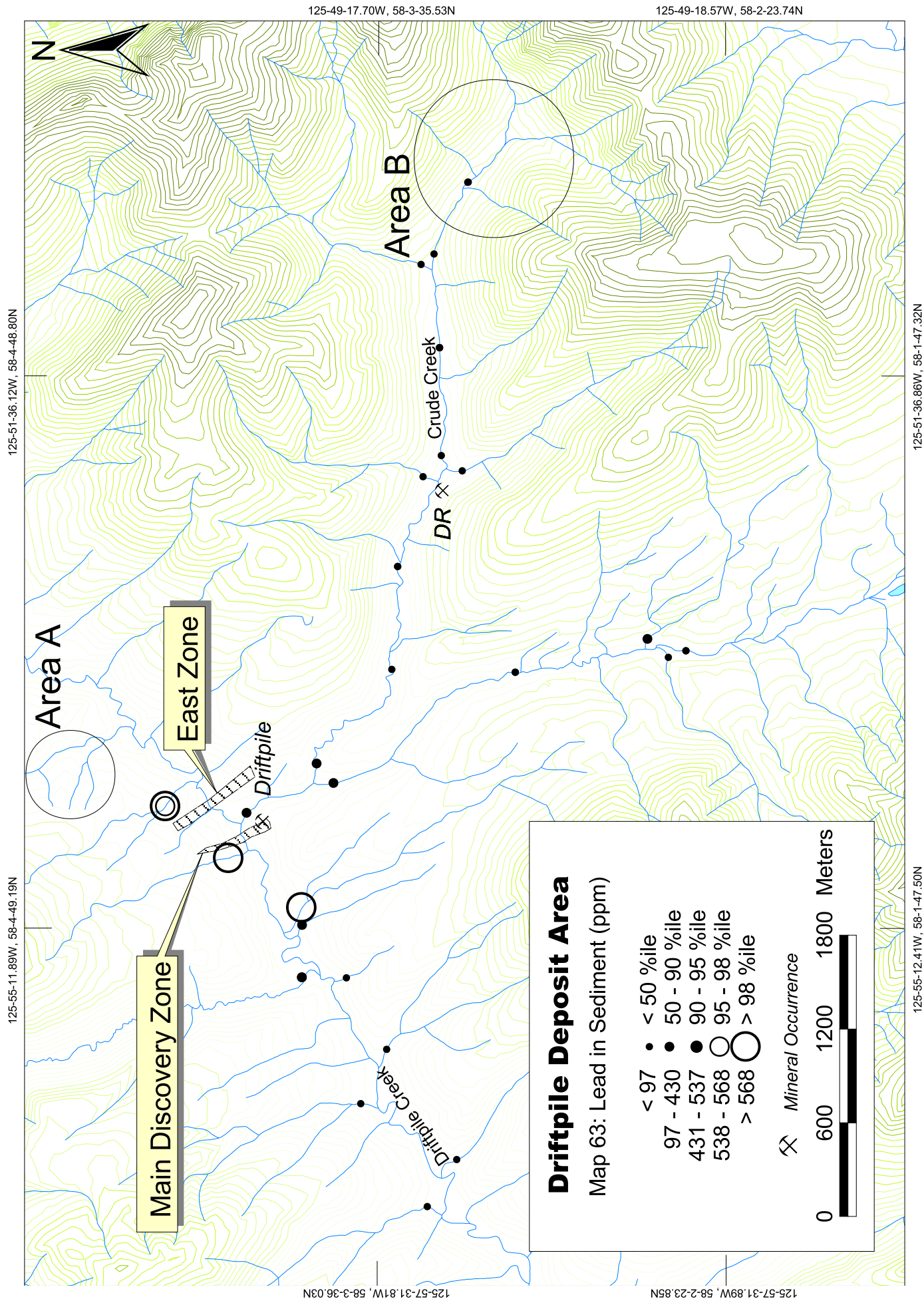
125-55-12.41W, 58-1-47.50N

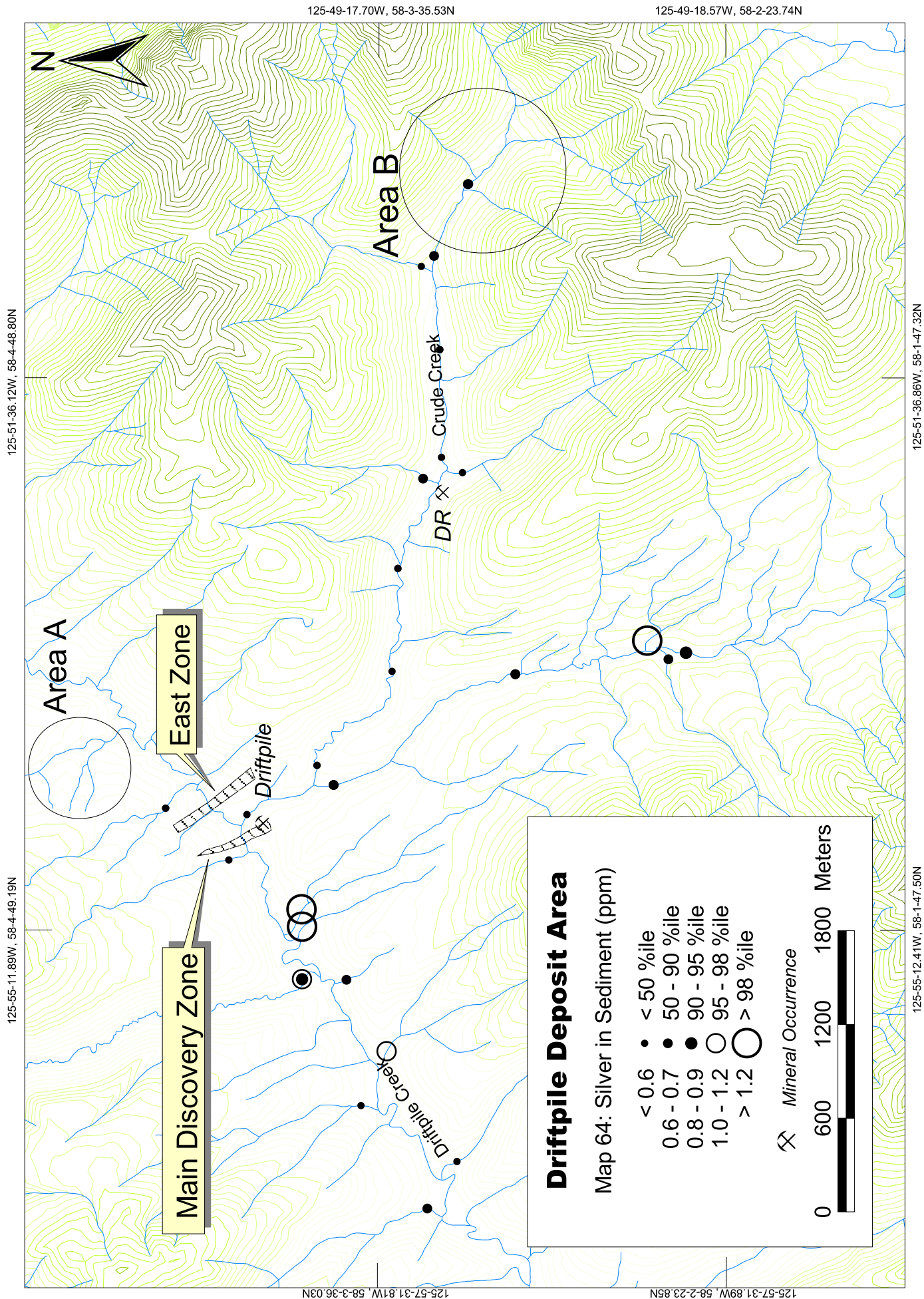


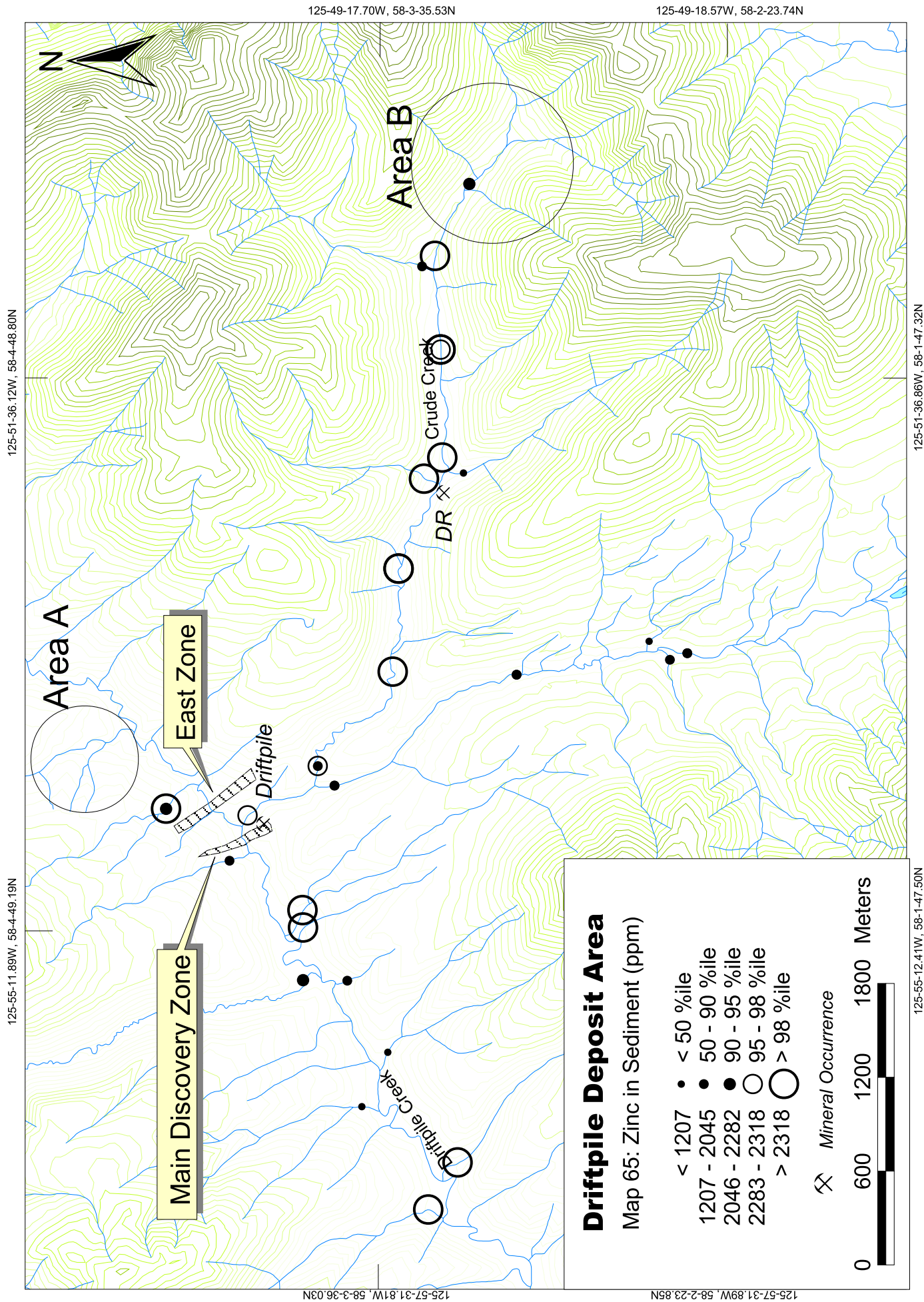
125-57-31.81W, 58-3-36.03N

125-57-31.89W, 58-2-23.85N









Driftpile Deposit Area

Map 65: Zinc in Sediment (ppm)

- < 1207
- 1207 - 2045
- 2046 - 2282
- 2283 - 2318
- > 2318
- < 50 %ile
- 50 - 90 %ile
- 90 - 95 %ile
- 95 - 98 %ile
- > 98 %ile

Mineral Occurrence



