

## **ROCK GEOCHEMICAL SURVEY**

### **Sample Collection, Preparation and Analysis**

Outcrop rock chip samples were collected from the Edmund Lake and Sharpe Lake greenstone belts after moss mats and soil were removed from the outcrop. A total of 77 samples were collected from the Edmund Lake belt and 49 from the Sharpe Lake belt. A representative sample consisted of 3-4 fist-sized chips. These chips were jaw crushed to maximum 5 mm fragments and powdered in a tungsten carbide swing mill. The powders were homogenized by rolling and then split and placed into vials each weighing approximately 55 grams. Vials were then submitted for INA and ICP-AES analyses at Activation Laboratories Ltd. The ICP-AES analyses are based upon a four acid total digestion. Hg was analyzed using a flow injection mercury system developed by Perkin-Elmer Ltd. Hydrogen ion ( $H^+$ ) and specific conductance were analysed in the Geological Services Branch laboratory. Descriptions of outcrop rock chip samples are given in Appendix 1. Geochemical data is presented in Appendices 2 (ICP-AES,  $H^+$ , K and Hg) and 5 (INAA); geochemical data for sites where more than one sample was collected is presented in Appendices 3 (ICP-AES,  $H^+$ , K and Hg) and 6 (INAA). Percentile bubble plots are in Appendices 4 (ICP-AES,  $H^+$ , K and Hg) and 7 (INAA). In Appendix I the user will notice there are occasionally two outcrop rock chip samples collected from a single site. In this case the sample with the highest analysis of a particular element was used for plotting purposes.

### **Format**

Results are presented as a descriptive narrative of geochemical flux in both the Edmund Lake and Sharpe Lake greenstone belts. This narrative takes the form of relating the variation in concentration of individual elements to geological features such as rock types or structures. In a subsequent section entitled "synthesis" a detailed discussion and summary of element variations integrating specific geophysical signatures, mineral deposits and geological characteristics, is presented.

Elements are grouped and discussed in turn according to their analytical technique. Accordingly, the descriptions proceed from Hg (FIMS) to INA to ICP-AES and finally  $H^+$  and specific conductance results.

### **Results**

#### **Flow Injection Mercury System (FIMS)**

**Hg:** The highest Hg values occur in two areas in the Edmund Lake belt. These are:

- (i) northwest of Little Stull Lake in association with an altered high level quartz-feldspar-porphyry, and;
- (ii) the highest value of the 1997 survey 531 ppb Hg was obtained near the Manitoba-Ontario provincial boundary in the Edmund Lake belt; a third site of elevated Hg occurs north of the west end of Sharpe lake where 99<sup>th</sup> and 100<sup>th</sup> percentiles of 54-83 ppb occur.

### **Instrumental Neutron Activation (INA)**

**Au:** The host rocks to the Little Stull Lake Au deposits are marked by 220 ppb Au and a cluster of 90-99<sup>th</sup> percentiles south and east to the Manitoba-Ontario boundary. Elevated 90-98<sup>th</sup> percentile Au values also occur on the west shore of Edmund Lake and on islands in the centre of the lake. These high values are associated with ultramafic sills and dykes deformed by the Wolf Bay Shear Zone (WBSZ). Multiple 90<sup>th</sup> and 95<sup>th</sup> percentiles occur in samples from the periphery of a felsic intrusion at Margaret Lake.

Au is less elevated in samples collected from the Sharpe Lake belt with 40 ppb Au representing the 100<sup>th</sup> percentile.

The highest Au contents occur near the southern margin of the belt south of Makataysip Lake (40 ppb) and Twin Lakes (22-27 ppb).

**As:** The variation in concentration of As essentially mimics that of Au in the Edmund Lake belt. The area of the Little Stull Lake gold deposits is marked by a 3800 ppm response (100<sup>th</sup> percentile); a “rim” of up to 27 ppm As (95<sup>th</sup> percentile) is developed around the Margaret Lake intrusion. A 200 ppm As anomaly (98<sup>th</sup> percentile) occurs at the Manitoba-Ontario border near the confluence of the Edmund Lake and Sharpe Lake belts.

In the Sharpe Lake belt the 100<sup>th</sup> percentile for As (2000 ppm) occurs southwest of Makataysip Lake near the southern margin of the belt. Additional anomalies occur at Monument Bay (99<sup>th</sup> percentile, 1500 ppm) and south of Twin Lakes near the southern margin of the belt (98<sup>th</sup> percentile, 200 ppm).

**Ba:** The highest Ba responses in the Edmund Lake belt occur (i) at the deflection point of the WBSZ (100<sup>th</sup> percentile, 2600 ppm) (ii) southeast of the Little Stull Lake gold deposits along the WBSZ (99<sup>th</sup> percentile, 1200 ppm), (iii) southeast of Ken Bay on Little Stull Lake near the Manitoba-Ontario border (95<sup>th</sup> percentile, 770 ppm) and (iv) at the southeast end of the Margaret Lake intrusion (95<sup>th</sup> to 98<sup>th</sup> percentiles, 770-1000 ppm).

Both the Monument Bay area (100<sup>th</sup> percentile, 930 ppm Ba) and the southern portion of the Twin Lakes area (99<sup>th</sup> percentile, 890 ppm Ba) exhibit elevated Ba contents in the Sharpe Lake belt. A 98<sup>th</sup> percentile response of 800 ppm Ba occurs south of Makataysip Lake.

**Br:** The area southeast of Little Stull Lake in the Edmund Lake belt is marked by a cluster of relatively low contrast Br responses (98<sup>th</sup>-100<sup>th</sup> percentiles, up to 6.7 ppm).

In the Sharpe Lake belt a single sample response of 19 ppm Br (100<sup>th</sup> percentile) occurs due south of Makataysip Lake near the southern margin of the belt. The northwest shore of Sharpe Lake and the north shore of the west end of Sharpe Lake are both marked by 2 sample Br responses of between 8.9 and 12 ppm.

**Ca:** Generally suppressed responses are observed throughout both greenstone belts. In the Edmund Lake belt the highest responses are associated with the Margaret Lake intrusion (up to 13%).

A range of 8-15% Ca is documented from samples collected along the north shore of Sharpe Lake and west towards Webber Lake.

**Co:** A cluster of 90<sup>th</sup>-99<sup>th</sup> percentile values are associated with the Margaret Lake intrusion in the Edmund Lake belt. Two samples east and south of the Little Stull Lake gold deposits are marked by the 98<sup>th</sup> percentile (75 ppm) for Co. The 100<sup>th</sup> percentile (98 ppm) occurs at the Manitoba-Ontario provincial border near the confluence of the two belts.

In the Sharpe Lake belt the highest Co responses are observed in the Twin Lakes area (100<sup>th</sup> percentile, 85 ppm), 62-66 ppm (90<sup>th</sup>-98<sup>th</sup> percentile) at Makataysip Lake and 98<sup>th</sup> percentile responses on the north shore of the east end of Sharpe Lake.

**Cr:** The range 780-1100 ppm Cr (99<sup>th</sup> and 100<sup>th</sup> percentiles) were obtained from samples collected in the central portion of the WBSZ at the deflection point of the trend of this structure. Two 95<sup>th</sup> percentile (360 ppm) responses are observed on the south shore of Kistigan Lake and near the Manitoba-Ontario border at the confluence of both belts. The highest response of 1200 ppm (100<sup>th</sup> percentile) occurs south of Makataysip Lake near the Southern margin of the belt in an area of no apparent anomalous geophysical response.

**Cs:** In the Edmund Lake belt the 100<sup>th</sup> percentile response of 10 ppm occurs west of Little Stull Lake. A cluster of 90<sup>th</sup>-98<sup>th</sup> percentiles (2-4 ppm) trend south from Little Stull Lake to the Manitoba-Ontario provincial border.

The Sharpe Lake belt is marked by 2 main areas of elevated Cs response. These occur south of Twin Lakes (22 ppm; 100<sup>th</sup> percentile) and west along the southern margin of the belt to Makataysip Lake (3-6 ppm).

**Fe:** In the Edmund Lake belt the highest Fe contents occur in 3 samples of near solid to solid magnetite layers collected from the west-end of a small lake just east of Margaret Lake. The 100<sup>th</sup> percentile for Fe (26.40%) is obtained from this site. Both 95<sup>th</sup> and 98<sup>th</sup> percentiles (12.5% and 21.2%, respectively) for Fe occur southeast of Little Stull Lake, near the Manitoba-Ontario border.

In the Sharpe Lake belt the Makataysip Lake area is marked by the 100<sup>th</sup> percentile Fe response (13.1%). The area of the chip sample is marked by a circular 6700 nT aeromagnetic anomaly. A 99<sup>th</sup> percentile response (12.6%) occurs west of Makataysip Lake, 98<sup>th</sup> (10.0%) and 95<sup>th</sup> (9.40%) percentiles occur west of Monument Bay and along the south margin of the belt south of Twin Lakes, respectively.

**Hf:** Moderate to low contrast Hf responses (5-7 ppm) occur in the area of the Little Stull Lake gold deposits as well as to the north and west of the mineralization.

The 100<sup>th</sup> percentile (12 ppm) Hf response in the Sharpe Lake belt occurs in the southern portion of the Twin Lakes area. A string of 3-5 ppm Hf responses occur west of Makataysip Lake to Sharpe Lake.

**Mo:** In the Edmund Lake belt elevated Mo responses are spatially associated with the WBSZ; the 100<sup>th</sup> percentile of 41 ppm Mo, however, occurs at or near the northeast portion of the Margaret Lake intrusion. Elsewhere along the WBSZ (including the WBSZ deflection), values of up to 11 ppm Mo (98<sup>th</sup> percentile) are obtained.

The Sharpe Lake belt is characterized by very low contrast Mo responses. The Monument Bay and Twin Lakes areas, as well as one-site in Sharpe Lake area marked by the 98<sup>th</sup> percentile Mo response (6 ppm).

**Na:** Areal extensive zones of significant Na depletion were not detected in either the Edmund Lake or Sharpe Lake belts. The 100<sup>th</sup> percentile of 5.29% Na occurs near the east side of Edmund Lake in a felsic (albitite?) dyke within the WBSZ.

The 100<sup>th</sup> percentile Na response (4.48%) in the Sharpe Lake belt occurs on the north central shore of Sharpe Lake.

**Ni:** In the Edmund Lake belt elevated Ni responses (99<sup>th</sup> percentile, 170 ppm) occur on an island in central Edmund Lake reflecting the presence of an ultramafic sill. The east end of the Margaret Lake intrusion is characterized by 90<sup>th</sup>-98<sup>th</sup> percentile responses (93-140 ppm). The 100<sup>th</sup> percentile (190 ppm) occurs at the WBSZ deflection.

The Sharpe Lake belt is characterized by higher Ni responses. The 100<sup>th</sup> percentile (360 ppm) occurs south of Makataysip Lake; a 98<sup>th</sup> percentile response (200 ppm) occurs east of the Makataysip Lake aeromagnetic anomaly. Both responses are situated near the southern margin of the belt. The north shore of the east end of Sharpe Lake is marked by a string of 90-95<sup>th</sup> percentile responses (140-180 ppm).

**Rb:** In the Edmund Lake belt a cluster of elevated Rb responses occur in the general area of the west end of Little Stull Lake which includes the 100<sup>th</sup> percentile of 89 ppm. Significant responses occur at the east end of the Margaret Lake intrusion (99<sup>th</sup> percentile, 69 ppm) and on the east side of Edmund Lake (95<sup>th</sup>-98<sup>th</sup> percentiles, 53 and 55 ppm, respectively).

The highest Rb contents in the Sharpe Lake belt occur on the north shore of the west end of Sharpe Lake (100<sup>th</sup> percentile, 170 ppm).

The 99<sup>th</sup> percentile (160 ppm) occurs at the south end of Twin Lakes. A string of 90<sup>th</sup>-98<sup>th</sup> percentile responses (100-120 ppm) occurs south and west of Makataysip Lake along the southern margin of the belt.

**Sb:** The distribution of elevated Sb in the Edmund Lake belt is observed to be spatially related to the WBSZ. This includes the 100<sup>th</sup> percentile (45 ppm) obtained from the host rocks to the Little Stull Lake Au deposits. A 98<sup>th</sup> percentile response (4.4 ppm) occurs northeast of the mineralization in association with an altered felsic intrusion. Two other separate clusters of 90<sup>th</sup>-95<sup>th</sup> percentile (0.9-1.5 ppm) responses are observed at the WBSZ deflection and further to the northwest near the east end of the Margaret Lake intrusion.

The highest Sb response of the survey was (63 ppm) was recorded in a sample collected on the north shore of the west end of Sharpe Lake. A 98<sup>th</sup> percentile response of 10 ppm occurs south of Makataysip Lake near the southern margin of the belt. A 95<sup>th</sup> percentile (7.40 ppm) occurs on the north shore of Monument Bay.

**Sc:** The highest Sc contents in the Edmund Lake belt are observed southeast of Little Stull Lake near the Manitoba-Ontario border. These are 99<sup>th</sup> and 100<sup>th</sup> percentiles (48 and 57 ppm, respectively). A 95<sup>th</sup> percentile (45 ppm) occurs west of Little Stull Lake along the WBSZ.

In the Sharpe Lake belt the 100<sup>th</sup> percentile response of 49 ppm occurs on the southwest shore of Makataysip Lake in association with a 6700 nT aeromagnetic response. Two areas of 98<sup>th</sup> percentile responses (41 ppm) occur near the central portion and west end of Sharpe Lake.

**Ta:** Low contrast Ta responses are apparent from both greenstone belts surveyed in 1997. Values of >2 ppm occur at and in the general area of the Little Stull Lake gold deposits as well as near the south shore of Margaret Lake (100<sup>th</sup> percentile, 2.5 ppm).

The 100<sup>th</sup> percentile of 2.3 ppm Ta in the Sharpe Lake belt occurs on the south end of Twin Lakes.

**Th:** Three sites of elevated Th are documented from the Edmund Lake belt. These are the Little Stull Lake area, including the gold mineralized zone (98<sup>th</sup> percentile, 16 ppm), the WBSZ deflection (98<sup>th</sup> and 99<sup>th</sup> percentiles, 16 and 17 ppm respectively) and the east end of Margaret Lake where the 100<sup>th</sup> percentile response (22 ppm) is recorded.

Significant Th responses from the Sharpe Lake belt include the north and south areas of Monument Bay (98<sup>th</sup> and 95<sup>th</sup> percentiles of 17 and 10 ppm respectively), the south end of Twin Lakes (100<sup>th</sup> percentile, 26 ppm) and the area southwest of Makataysip Lake (99<sup>th</sup> percentile, 22 ppm) along the south margin of the belt.

**U:** The U response is similar to that of Th. In the Edmund Lake belt the 100<sup>th</sup> percentile response (6.9 ppm) occurs near the east end of Margaret Lake and the Margaret Lake intrusion. The WBSZ deflection is marked by 95-99<sup>th</sup> percentile U responses (2.3-3.4 ppm) and the Little Stull Lake gold deposits are characterized by 90<sup>th</sup>-98<sup>th</sup> percentiles for U (1.8-3.0 ppm).

Four sites of elevated U are apparent from the Sharpe Lake belt survey. The 100<sup>th</sup> percentile of 6.7 ppm U occurs south of Makataysip Lake near the south margin of the belt. The Twin Lakes and Monument Bay areas are marked by 90<sup>th</sup>-98<sup>th</sup> percentile (2.6-5.4 ppm) and 90<sup>th</sup>-95<sup>th</sup> percentiles (2.6-4.3 ppm), respectively. A 99<sup>th</sup> percentile (5.6 ppm) was obtained from a sample on the north shore of the west end of Sharpe Lake.

**W:** In the Edmund Lake belt the 100<sup>th</sup> percentile (900 ppm) for W occurs at the east end of the Margaret Lake intrusion. A 99<sup>th</sup> percentile (800 ppm) occurs south of the intrusion. The area of the Little Stull lake gold deposits is marked by 98<sup>th</sup> (730 ppm) and 95<sup>th</sup> (600 ppm) percentile responses. An island in central Edmund Lake is marked by a 98<sup>th</sup> percentile response.

The southern end of Twin Lakes in the Sharpe Lake belt contains the 100<sup>th</sup> percentile W response (730 ppm) with other elevated W in the area southwest of Makataysip Lake (98<sup>th</sup> percentile, 730 ppm) and along the north shore of the east end of Sharpe Lake (90-98<sup>th</sup> percentiles, 360-730 ppm).

**Zn:** The 100<sup>th</sup> percentile response (391 ppm) for Zn in the Edmund Lake belt occurs southeast of Little Stull Lake. The host rocks to gold mineralization at Little Stull Lake have a 99<sup>th</sup> percentile response of 372 ppm. The west end of Margaret Lake and an island in central Edmund Lake are both characterized by 98<sup>th</sup> percentile (280 ppm) responses.

The Sharpe Lake belt contains elevated Zn concentrations at Makataysip Lake (98<sup>th</sup> percentile, 230 ppm) and 5 km west of Makataysip Lake (100<sup>th</sup> percentile, 276 ppm). South of Twin Lakes 90<sup>th</sup> to 95<sup>th</sup> percentile responses (193-209 ppm) were obtained from an area close to the southern margin of the belt. A 98<sup>th</sup> percentile of 230 ppm Zn occurs in central Sharpe Lake.

#### **REE:**

The rare earth element response is presented as the “total” or summation of individual REE for purposes of simplicity and brevity in this report. Individual REE analyses are presented in the Appendices. In the Edmund Lake belt the highest total REE are obtained from 2 sites (100<sup>th</sup> and 99<sup>th</sup> percentiles, 351.4 and 334.2 ppm, respectively) at the WBSZ deflection. Additional sites of elevated REE occur in a semi-circular arc extending from the south shore of Kistigan Lake (98<sup>th</sup> percentile, 300.7 ppm) to the north and west shores of Little Stull Lake (both 95<sup>th</sup> percentiles, 237 ppm) to the area east and southeast of Little Stull Lake (95<sup>th</sup> and 98<sup>th</sup> percentiles, 237 and 300.7 ppm, respectively). The host rocks to the Little Stull Lake Au deposits are characterized by 90<sup>th</sup> percentile responses (141 ppm).

In the Sharpe Lake belt most elevated responses occur east of Sharpe Lake to Monument Bay. The 100<sup>th</sup> percentile occurs in the southern portion of Twin Lakes (529.6 ppm) with 95<sup>th</sup> and 98<sup>th</sup> percentile responses (143.7 and 402.8 ppm, respectively) at Monument Bay and 98<sup>th</sup> percentiles southwest of Makataysip Lake near the southern margin of the belt.

#### **Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)**

**Mo:** Mo concentrations in the Edmund Lake belt are generally low with a single sample 100<sup>th</sup> percentile response of 54 ppm occurring on the east end of Margaret Lake and adjacent to the Margaret Lake intrusion. A 99<sup>th</sup> percentile (7 ppm) occurs at the WBSZ deflection. The area of the Little Stull Lake gold deposits is marked by 95<sup>th</sup> and 98<sup>th</sup> percentile responses (3 and 5 ppm, respectively). This same signature occurs southeast of Ken Bay, Little Stull Lake.

Four sites along the Sharpe Lake belt contain 2 ppm Mo.

These are the Monument Bay area, Makataysip Lake, east and west Sharpe Lake. These values are not considered to be significant.

**Cu:** Three main areas of elevated Cu contents are present along the Edmund Lake belt. The 100<sup>th</sup> percentile of 411 ppm occurs south of the east end of the Margaret Lake intrusion. West of the Little Stull Lake gold deposits is a single site 99<sup>th</sup> percentile response (288 ppm) and southeast of Ken Bay is a cluster of 6 sites of 95<sup>th</sup> and 98<sup>th</sup> percentiles (243 and 276 ppm, respectively).

The Cu responses in the Sharpe Lake belt are highest from a single site on the north shore of Sharpe Lake (100<sup>th</sup> percentile, 231 ppm) with lesser responses midway between Sharpe and Makataysip Lake (98<sup>th</sup> percentile, 276 ppm) and south of Twin Lakes near the southern margin of the belts (90<sup>th</sup> – 99<sup>th</sup> percentiles, 176-288 ppm).

**Zn:** The 100<sup>th</sup> percentile Zn response in the Edmund Lake belt (447 ppm) is from the site of the Little Stull Lake gold deposits. The 99<sup>th</sup> percentile response (429 ppm) occurs southeast of Ken Bay. A 98<sup>th</sup> percentile (294 ppm) response occurs in near solid to solid, magnetite-rich iron formation exposed in outcrop at the west end of Margaret Lake.

Zn response in the outcrop chip samples collected from the Sharpe Lake belt is relatively subdued. The 100<sup>th</sup> percentile of 145 ppm occurs midway between Sharpe and Makataysip Lakes. The 99<sup>th</sup> percentile (121 ppm) occurs on the southwest shore of Makataysip Lake in association with a 6000 nT aeromagnetic response.

**Ag:** Ag values in both the Edmund Lake and Sharpe Lake belts are low. In the Edmund Lake belt the maximum value of 1.9 ppm is obtained from the area of the WBSZ deflection. A cluster of values between 0.5-0.9 ppm occur in spatial association with the Margaret Lake intrusion. There appears to be a relatively strong association between detectable Ag in rock samples and proximity to the WBSZ. This is particularly well developed along the northwest portion of the WBSZ. The maximum value of 1.0 ppm Ag in the Sharpe Lake belt occurs on the north shore of the west end of Sharpe Lake.

**Pb:** The 100<sup>th</sup> (55 ppm), 99<sup>th</sup> (30 ppm) and 95<sup>th</sup> (15 ppm) percentile Pb responses at the Little Stull Lake gold deposit, including the areas on the west and north shores of the lake, represent the highest and probably most significant responses in the Edmund Lake belt. A 98<sup>th</sup> percentile response of 27 ppm occurs at the east end of the Margaret Lake intrusion.

Significant Pb signatures in outcrop chip samples from the Sharpe Lake belt are restricted to the central portion of Sharpe Lake (100<sup>th</sup> percentile, 64 ppm), the west end of Sharpe Lake (98<sup>th</sup> percentile, 41 ppm)



and the southern portion of the Twin Lakes area (99<sup>th</sup> percentile, 30 ppm). Lesser Pb responses occur at north and south Monument Bay and southwest of Makataysip Lake along the southern margin of the belt.

**Ni:** The 100<sup>th</sup> percentile (342 ppm) in the Edmund Lake belt occurs at the WBSZ deflection with a subsidiary cluster of 95<sup>th</sup> and 98<sup>th</sup> percentile responses (173 and 191 ppm, respectively) occurring near the east end of the Margaret Lake intrusion. A 99<sup>th</sup> percentile response (203 ppm) occurs on the north shore of Rorke Lake and a 98<sup>th</sup> percentile (191 ppm) response is situated at the confluence of the Edmund Lake and Sharpe Lake belts near the Manitoba-Ontario border.

In the Sharpe Lake belt the 100<sup>th</sup> percentile Ni response (386 ppm) occurs south of Makataysip Lake with a 99<sup>th</sup> percentile site (192 ppm) eastwards along the southern margin of the belt. Central Sharpe Lake is the site of a 98<sup>th</sup> percentile response (188 ppm).

**Mn:** Significant Mn responses are limited to the west end of Margaret Lake where the 100<sup>th</sup> percentile (19743 ppm) is associated with exposed near solid to solid, magnetic-rich iron formation. A cluster of 95<sup>th</sup> to 99<sup>th</sup> percentile responses (4155 to 9675 ppm) occur between the WBSZ east of Little Stull Lake and the southern margin of the belt near the Manitoba-Ontario border.

Mn response in the Sharpe Lake belt is somewhat subdued in comparison to the Edmund Lake belt. The 100<sup>th</sup> percentile (3476 ppm) occurs south of Twin Lakes near the southern margin of the belt. The 95<sup>th</sup> to 99<sup>th</sup> percentile responses occur at single sites between Makataysip Lake and eastern Sharpe Lake. The Mn contents along this portion of the belt vary from 2090 to 2929 ppm.

**Sr:** Significant Sr responses occur at the site of the Little Stull Lake gold deposits (100<sup>th</sup> percentile, 1386 ppm) and on the north shore (98<sup>th</sup> percentile, 1059 ppm) and west shore (95<sup>th</sup> percentile, 1014 ppm) of Little Stull Lake. A second zone of elevated Sr occurs at the deflection of the WBSZ (99<sup>th</sup> percentile, 1088 ppm). A 98<sup>th</sup> percentile response (1059 ppm) occurs on the north shore of Margaret Lake.

In the Edmund Lake belt both the 100<sup>th</sup> and 99<sup>th</sup> percentile responses are centered on the Monument Bay area (847 and 642 ppm, respectively). A 98<sup>th</sup> percentile site (608 ppm) occurs southwest of the south end of Twin Lake.

**Bi:** Bi responses in outcrop chip samples are of low contrast in both the Edmund Lake and Sharpe Lake belts. The 100<sup>th</sup> percentile in the Edmund Lake belt (8 ppm) occurs near the northeast corner of the Margaret Lake intrusion and the 99<sup>th</sup> percentile (7 ppm) is situated at the west end of Little Stull Lake in association with an altered felsic intrusion. A 98<sup>th</sup> percentile response is documented from an area south

of the Margaret Lake intrusion and also from the area of the confluence of both greenstone belts near the Manitoba-Ontario border.

The highest Bi response in the Sharpe Lake belt (8 ppm) is situated southwest of Makataysip Lake in association with a 98<sup>th</sup> percentile response of 6 ppm. A second value of 6 ppm is located northwest of Monument Bay.

**V:** Three zones of elevated V occur along the Edmund Lake belt. These are (i) north shore of Margaret Lake (100<sup>th</sup> percentile, 419 ppm), (ii) a cluster of 99<sup>th</sup> and 98<sup>th</sup> percentile responses centered on the deflection of the WBSZ, and (iii) 95<sup>th</sup> and 98<sup>th</sup> percentiles near the confluence of the belts at the Manitoba-Ontario border.

In the Sharpe Lake belt the 100<sup>th</sup> percentile of 527 ppm occurs on the southwest shore of Makataysip Lake in association with a 6700 nT aeromagnetic response. The north shore of the west end of Sharpe Lake is characterized by two adjacent 98<sup>th</sup> percentile (298 ppm) sites.

**Ca:** The 100<sup>th</sup> and 99<sup>th</sup> percentile responses on the Edmund Lake belt occur to the north (14.21%) and south (13.97%), respectively of the Margaret Lake intrusion. The area southeast of the deflection of the WBSZ is marked by a 98<sup>th</sup> percentile (13.34%) response.

In the Sharpe Lake belt the 100% percentile (16.55%) response occurs south of Webber Lake. A 98<sup>th</sup> percentile response (14.14%) is documented from the east end of Sharpe Lake.

**P:** Phosphorus responses in the Edmund Lake belt are somewhat scattered, however, two main areas of enrichment are present. The 100<sup>th</sup> percentile response (0.55%) occurs on the south shore of Kistigan Lake with the 99<sup>th</sup> (0.211%) and 98<sup>th</sup> (0.195%) percentile sites clustered at the deflection of the WBSZ. Scattered 95<sup>th</sup> (0.155%) and 98<sup>th</sup> percentile responses occur southeast from Little Stull Lake to the Manitoba-Ontario border.

The most significant P responses are associated with the Twin Lakes and Monument Bay areas in the Sharpe Lake belt. The 100<sup>th</sup> percentile (0.19%) occurs in the southern area of Twin Lakes, 95<sup>th</sup> and 98<sup>th</sup> percentile (0.105 and 0.165%, respectively) occur at Monument Bay.

**Mg:** A single area of Mg enrichment is recognized in the Edmund Lake belt. The 100<sup>th</sup>, 99<sup>th</sup> and 98<sup>th</sup> percentile (8.01, 6.13 and 5.47%, respectively) responses are all situated on or near the deflection of the WBSZ.

The 100<sup>th</sup> percentile Mg response (9.28%) in the Sharpe Lake belt occurs south of Makataysip Lake with two 98<sup>th</sup> percentile sites (5.62%) occurring along the northern shore of the western half of Sharpe Lake.

**Ti:** Ti enrichments are generally moderate to low contrast for both greenstone belts. In the Edmund Lake belt the 100<sup>th</sup> percentile (1.23%) occurs on the north side of Margaret Lake. The deflection of the WBSZ is marked by 99<sup>th</sup> (1.02%), 98<sup>th</sup> (0.89%) and 95<sup>th</sup> (0.76%) percentile responses. West of Little Stull Lake is a 98<sup>th</sup> percentile response of 0.89% Ti.

In the Sharpe Lake belt the 100% percentile response of 1.34% Ti occurs on the southwest shore of Makataysip Lake in association with a circular 6700 nT aeromagnetic anomaly. A 98<sup>th</sup> percentile response (1.12% Ti) occurs west of Makataysip Lake and south of Twin Lakes near the southern margin of the belt.

**Al:** Elevated Al in the Edmund Lake belt occurs at the confluence of the two greenstone belts near the Manitoba-Ontario border where 100<sup>th</sup> percentile (11.36%) and 98<sup>th</sup> percentile (9.48%) responses are documented. The area north and east of the Margaret Lake intrusion is characterized by 99<sup>th</sup> percentile (10.62%) and 98<sup>th</sup> percentile (9.48%) responses.

The Monument Bay (100<sup>th</sup> percentile, 10.16%) and Twin Lakes area (99<sup>th</sup> and 98<sup>th</sup> percentiles, 9.84 and 9.11% respectively) represent sites with elevated Al contents in the Sharpe Lake belt.

**K:** The site significant K enrichment in the Edmund Lake belt occurs in the area of the gold mineralization and associated altered felsic intrusion at Little Stull Lake. K contents range from 2.74% (100<sup>th</sup> percentile) to 1.42% (95<sup>th</sup> percentile). A second zone of elevated K occurs on the east shore of Edmund Lake where 98<sup>th</sup> percentile (2.26%) responses are documented. Both zones of K enrichment occur along the WBSZ.

Three sites of K enrichment occur in the Sharpe Lake belt and include the 100<sup>th</sup> percentile (4.97%) site south of Makataysip Lake, the southern end of Twin Lakes (98<sup>th</sup> percentile, 3.98%) and the northern area of Monument Bay (98<sup>th</sup> percentile, 3.98%).

**Y:** The main zone of Y enrichment in the Edmund Lake belt occurs along the “central” segment of the WBSZ extending from the west end of Little Stull Lake to the point of deflection of the WBSZ. Within this zone 100<sup>th</sup> (80 ppm), 99<sup>th</sup> (60 ppm) and 98<sup>th</sup> (50 ppm) percentile responses for Y are documented. A 95<sup>th</sup> percentile response (41 ppm) also occurs on the north shore of Margaret Lake.

In the Sharpe Lake belt, Y is elevated on the west shore of Makataysip Lake (99<sup>th</sup> percentile, 46 ppm) in association with a 6700 nT aeromagnetic signature and west of Makataysip Lake (100<sup>th</sup> percentile, 86 ppm).

### **Hydrogen Ion (H<sup>+</sup>)**

**H<sup>+</sup>:** Hydrogen ion, the corrected form of pH, is significantly elevated at two sites along the Edmund Lake belt. The 100% percentile (55.5 ppb) occurs at the west end of Margaret Lake where near solid to solid, magnetite-rich iron formation was sampled. The second site occurs near the confluence of both the greenstone belts at the Manitoba-Ontario border.

No significant H<sup>+</sup> responses are noted from the Sharpe Lake belt.

### **Specific Conductance (Water-Extractable Metal)**

**K:** The 100<sup>th</sup> and 99<sup>th</sup> percentile responses (154.57 and 86.66 mhos cm<sup>-1</sup>, respectively) for K are documented from the west end of Margaret Lake where magnetite-rich iron formations were sampled. The area of the Little Stull Lake gold deposits and the area of belt confluence near the Manitoba-Ontario border represent sites of 98<sup>th</sup> percentile (60.35 mhos m<sup>-1</sup>) responses. In the Sharpe Lake belt the 100<sup>th</sup> percentile (44.81 mhos cm<sup>-1</sup>) occurs south of Makataysip Lake near the southern margin of the belt. The areas south of Twin Lakes near the southern margin of the belt and the southern Monument Bay area are both characterized by 98<sup>th</sup> percentile responses (35.50 mhos cm<sup>-1</sup>).

## **Synthesis**

There is a significant rock geochemical and geophysical relief in the 1997 multimedia geochemical survey area that can be attributed to the presence of known mineral deposits and geological features. Each of these features is reviewed in relation to their individual rock geochemical responses.

### **Edmund Lake Belt**

The Little Stull Lake area is marked by the presence of the Little Stull Lake gold deposits that occur within a deformational zone called the Wolf Bay Shear Zone (WBSZ). Five gold mineralized zones occur within an 8 km section of the WBSZ, locally referred to as the Little Stull Lake break. Rocks in the area have been mylonitized, silicified and albitized as well as sulphidized and crosscut by quartz and carbonate veinlets. The area is contained in its entirety by a gravity high and is also marked by linear and circular shaped aeromagnetic anomalies with associated adjacent or coincident strong to medium airborne EM conductors.

Outcrop rock chip geochemical data reflects the presence of the gold mineralization on the west shore of Little Stull Lake. Host rocks to the mineralization are characterized by 100<sup>th</sup> percentile responses for Au (220 ppb), As (3800 ppm), Sb (45 ppm), Pb (55 ppm), K (2.74%), Sr (1386 ppm) and Y (80 ppm). Other significant responses include 99<sup>th</sup> percentiles for Cu (288 ppm), Hg (80 ppb), Bi (7 ppm) and Zn (447 ppm by ICP-AES, 372 ppm by INAA) as well as 98<sup>th</sup> percentiles for Co (75 ppm), Mo (5 ppm by ICP-AES, 11 ppm by INAA), Ba (1000 ppm), U (3 ppm), Th (16 ppm) and specific conductance (60.35 mhos cm<sup>-1</sup>).

These metal assemblages are typical of mineralization-related alteration in the immediate area of the deposit. Sample 97R-131 collected just west of the northwest end of Little Stull Lake signifies the style of mineralization observed in outcrop. It comprises disseminated and laminae of pyrite, pyrrhotite and minor chalcopyrite in an altered, sericitic fine to medium grained basalt or gabbro.

A persistent multi-element geochemical signature was observed southeast of Little Stull Lake to the Manitoba-Ontario provincial border. In this general area two east-west trending moderate strength airborne EM conductors coincide with a 1400 nT aeromagnetic response. Samples collected in this general area are characterized by 100<sup>th</sup> percentile responses for Zn (429 ppm by ICP-AES, 391 ppm by INAA), Co (98 ppm), Hg (531 ppb), Br (6.7 ppm), Sc (57 ppm) and Al (11.36%). Ninety-ninth percentiles for H<sup>+</sup> (31 ppb) and specific conductance (60.35 mhos cm<sup>-1</sup>) as well as 98<sup>th</sup> percentiles for Au (150 ppb), As (200 ppm), Sb (4.4 ppm), Cu (276 ppm), Bi (6 ppm), Ni (191 ppm), Fe (21.2%), V (357 ppm) and Cs (4 ppm). The highest responses from this area are obtained from two intensely silicified and cherty samples (97R-78 and -80) collected as angular float samples on the shores of two small, east-west trending lakes. These samples resembled laminated chert with 10-20% disseminated and veinlet/laminae of pyrite and are interpreted to be short distance floats on the basis of their angularity and generally fragile nature.

Northwest of the Little Stull Lake gold deposits along the WBSZ is a zone of multi-element high to moderate contrast rock geochemical anomalies centered on a small lake associated with a deflection in the trend of this regional deformational zone. This area is interpreted to represent a dilational zone produced during dextral-sense movement along the WBSZ. The area is geophysically characterized by a strong, long strike length, northwest trending aeromagnetic signature that extends along the WBSZ to the southeast end of Margaret Lake. The strongest portion of this aeromagnetic response (2800 nT) occurs at the deflection point. Geochemically the deflection area is marked by 100<sup>th</sup> percentile responses for Ni (342 ppm by ICP-AES, 190 ppm by INAA), Cr (1100 ppm), Mg (8.01%), Ba (2600 ppm), total REE (31.4 ppm) and a modest Ag value of 1.9 ppm. The 99<sup>th</sup> percentile responses are Mo (7 ppm), Ti (1.02% by ICP-AES), P (0.211%), V (361 ppm), Sr (1088 ppm), U (3.4 ppm) and Th (17 ppm) and a 98<sup>th</sup> percentile value for Mo of 11 ppm. A 95<sup>th</sup> percentile response for Hg (11 ppb) was also obtained. The element assemblages are strongly suggestive of a high-Mg source and rock chip samples 97R-23, -24 and -25 were described in the field as fine to medium grained, foliated, dark green high-Mg basalt or ultramafic rocks with quartz-carbonate veinlets and 1% disseminated

pyrite and/or chalcopyrite.

Further to the northwest, the Margaret Lake tonalite intrusion is the site of two distinctive geochemical responses. At the west end of Margaret Lake a strong, long strike length, northwest trending airborne EM conductor is coincident with a linear aeromagnetic response. The strongest portion of the aeromagnetic response is centered on the north shore of a river connecting Margaret Lake and Edmund Lake. At this site, near solid to solid magnetic-rich layers, interlayered with basaltic volcanic rocks, are exposed in outcrop chip samples of the magnetite layers and rusty-weathered interlayered basaltic rock are characterized by 100<sup>th</sup> percentiles for Fe (26.4%), Mn (19743 ppm), H<sup>+</sup> (55.6 ppb) and specific conductance (154.6 mhos cm<sup>-1</sup>), and 98<sup>th</sup> percentiles for Zn (280 ppm by INAA, 294 ppm by ICP-AES) and Ag (0.9 ppm). A 90<sup>th</sup> percentile response for Au (27 ppb) was also obtained.

An interesting distribution of geochemical responses is documented from the periphery of the Margaret Lake intrusion, particularly at its east and northeast portions. The intrusion contains apparently fracture controlled disseminated pyrite and chalcopyrite (sample 97R-27-2) and also has been overprinted by a north-trending laminated pyrite-quartz rich mylonite (sample 97R-2). Basaltic volcanic rocks in proximity to the intrusion are marked by 100<sup>th</sup> percentile responses for Mo (41 ppm by INAA, 54 ppm by ICP-AES), Cu (411 ppm), Bi (8 ppm), U (6.9 ppm), Th (22 ppm), V (419 ppm), W (900 ppm) and Ca (14.21%). Ninety-ninth percentile responses for Co (82 ppm), Al (10.62%) and Rb (69 ppm) as well as a 98<sup>th</sup> percentile value for Ba (1000 ppm) and Ni (140 ppm) were also observed. There are 90<sup>th</sup> to 95<sup>th</sup> percentile responses for Au (27-91 ppb) also documented in the rocks peripheral to this intrusion. An aegirine-augite syenite intrusion is documented from the are of the north shore of Margaret Lake.

Three geochemically anomalous zones are documented from the Edmund Lake area in association with the WBSZ on the east shore, where a sheared and rusty weathered felsic (albitite?) dyke with boudinaged blue, non-mineralized quartz veins is marked by the 100<sup>th</sup> percentile value for Na (5.29%) and the 98<sup>th</sup> percentile value for K (2.26%). Base and precious metal contents were low (97R-57). On an island in central Edmund Lake the 99<sup>th</sup> percentile response for Ni (170 ppm), 98<sup>th</sup> percentile for Zn (280 ppm) and 95<sup>th</sup> percentile for Mo (8 ppm by INAA; only 1 ppm by ICP-AES) are documented. The ninety-eight and 95<sup>th</sup> percentiles for Au (91 and 150 ppb, respectively) occur on the east shore of Edmund Lake.

### **Sharpe Lake Belt**

Multi-element, high contrast rock geochemical responses are present along the east-west trending Sharpe Lake belt and can be attributed to known gold deposits and anomalous geophysical features documented by Hosain (1997). The area between the northwest shore of Monument Bay west to the southern part of Twin Lakes is characterized by significant geochemical response from both the Twin Lakes and Seeber River gold

deposits as well as the altered host rocks which include iron formation. The Monument Bay area is marked by 100<sup>th</sup> percentile responses for Ba (930 ppm), Sr (847 ppm) and Al (10.16%), a 560 ppm As analyses (99<sup>th</sup> percentile) and 98<sup>th</sup> percentiles for Hg (31 ppb), Bi (5 ppm), Th (17 ppm), REE (402.8 ppm), K (3.98%), P (0.165%), Na (4.07%) and specific conductance 35.5 mhos cm<sup>-1</sup>. Pb (33 ppm), Sb (7.4 ppm) and U (4.3 ppm) 95<sup>th</sup> percentile responses were also documented.

Further west in the Twin Lakes area multiple geochemical responses are obtained. Co (85 ppm), Th (26 ppm), REE (529.6 ppm), W (730 ppm), Hf (12 ppm), P (0.193%) and a low contrast Ta value of 2.3 ppm represent 100<sup>th</sup> percentile responses in this area. The 99<sup>th</sup> percentiles of As (890 ppm), Rb (160 ppm), Pb (58 ppm) and Al (9.84%), the 98<sup>th</sup> percentiles of U (5.4 ppm) and K (3.9%) as well as the 2.6 ppm Sb (90<sup>th</sup> percentile) response are all indicative of mineralized and altered stratigraphy in the Twin Lakes area.

In the area south of Twin Lakes, near the southern margin of the belt significant base and precious metal responses are observed. The 100<sup>th</sup> percentile responses for Cs (22 ppm) and Mn (3476 ppm) occur in association with 99<sup>th</sup> percentile values for Cu (199 ppm) and Ni (192 ppm), 98<sup>th</sup> percentiles for As (820 ppm), Ti (1.12%) and specific conductance (35.5 mhos cm<sup>-1</sup>). A 27 ppb Au response (95<sup>th</sup> percentile) also occurs in this area. Notably, there are anomalous geophysical responses in the area of these geochemical anomalies, specifically east-west trending medium strength airborne EM conductors that are transected by a northwest-southeast trending fault (Hosain, 1997; cf. map OF97-4-21). The geochemical signatures observed in this area are likely related to these conductors and/or the fault. Alternatively, the signatures are developed in response to mineralized faults or shear zones that occur at or near the southern margin of the belt where significant rheologic differences exist between primarily mafic to intermediate volcanic rocks of the Sharpe Lake belt and the granitic intrusive terrane to the south.

Further west along the southern margin of the belt is a zone devoid of geophysical conductors or anomalous magnetic response but characterized by multiple high contrast geochemical anomalies. The area is south of Makataysip Lake and has what may be described as the most significant responses identified in the 1997 rock geochemical survey. The Au (40 ppb), As (2000 ppm), Zn (276 ppm by INAA and 146 ppm by ICP-AES), U (6.7 ppm), Ni (360 ppm), Cr (1200 ppm), K (4.97%), Br (19 ppm) and specific conductance (44.8 mhos cm<sup>-1</sup>) responses are 100<sup>th</sup> percentiles. Additionally, a 99<sup>th</sup> percentile Th (22 ppm) response and 98<sup>th</sup> percentiles for Sb (10 ppm), Co (66 ppm), Cs (6 ppm), Ba (800 ppm) and W (690 ppm) and a 95<sup>th</sup> percentile Rb (110 ppm) response were obtained. West of Makataysip Lake also along the southern margin of the belt, 100<sup>th</sup> percentile responses for Ni (386 ppm), Mg (9.28%), Bi (8 ppm) and a strong REE (98<sup>th</sup> percentile, 402.8 ppm) response identifies another altered and mineralized site where high-Mg basalts or ultramafic rocks are associated with sulphide mineralized and otherwise altered rocks. The zone south of Makataysip Lake is a precious metal target with similarities in terms of indicator elements to the Twin Lakes and Monument Bay areas. Two rock chip samples were collected at site 199 and comprise a rusty weathered rhyolite "dyke" (?)

without visible sulphide minerals and a grey, silicified basalt erratic with 25% pyrite. Both samples were collected at the edge of a shallow, linear lake and are interpreted as short transport erratics. Significant precious metal responses are attributed to blue, fine-grained quartz veins with pyrite laminae and blue, boudinaged quartz veins with disseminated blocky arsenopyrite at the vein-wallrock contact.

The west shore of Makataysip is marked by a 6700 nT circular aeromagnetic anomaly that is transected at its northeast side by a northwest-southeast trending fault. There are no EM conductors associated with this magnetic anomaly (Hosain, 1997; cf., Map OF97-4-20). Moderate geochemical responses were obtained from the area of this anomaly. The 100<sup>th</sup> percentile responses for Fe (13.1%), Ti (1.34%), V (527 ppm) and Sc (49 ppm), 99<sup>th</sup> percentile responses for Zn (230 ppm by INAA, 121 ppm by ICP-AES) and Y (46 ppm) and a 95<sup>th</sup> percentile response for Co.

The central portion and the east end of Sharpe Lake are characterized by long strike length medium to strong airborne EM conductors. These conductors define a fold nose at their eastern extremity and at this location are coincident with a folded, linear aeromagnetic anomaly that trends northwest from Sharpe Lake and passes to the east of Barclay Lake (Hosain, 1997; cf., Map OF97-4-19). Hosain (1997) reports no diamond drill testing of these electromagnetic and aeromagnetic anomalies. The central and east Sharpe Lake area contains good base and precious metal geochemical responses characterized by 100<sup>th</sup> percentiles for Cu (231 ppm) and Pb (64 ppm), a 99<sup>th</sup> percentile for Mn (2929 ppm) and 98<sup>th</sup> percentiles for Au (31 ppb), Co (66 ppm), Cr (370 ppm), Zn (230 ppm), W (690 ppm), Sc (41 ppm) and Hf (7 ppm). Significant 95<sup>th</sup> percentile responses include As (520 ppm), Sb (7.4 ppm), Ni (188 ppm), Mg (5.62%) and Br (8.9 ppm).

The north shore of the west end of Sharpe Lake is characterized by long and short airborne EM conductors coincident with a linear east-west trending aeromagnetic anomaly. Diamond drill testing of the EM conductors on the west end of these features intersected altered ultramafic rocks with magnetite (Hosain, 1997). Approximately 2-3 km north of these geophysical conductors are a second set of long strike length airborne EM conductors that extend to the west of the south end of Webber Lake. In this area the airborne EM conductors appear as moderate to short strike length conductors confirmed by subsequent ground EM follow-up. Diamond drill testing of these shorter strike length conductors intersected rhyolite, andesite and argillite with graphitic or "earthy" pyrite. A 0.6 m intersection assayed 0.29% Cu and 0.4% Zn (Hosain, 1997; of map OF97-4-19).

The conductive and magnetically anomalous zones are marked by 100<sup>th</sup> percentile responses for Hg (83 ppb; 99<sup>th</sup> percentile =54 ppb), Ca (16.55%), Rb (170 ppb), Ag (1 ppm) and the highest Sb analysis (63 ppm) in the 1997 rock geochemical survey. The area also contain a 99<sup>th</sup> percentile value for U (5.6 ppm) and 98<sup>th</sup> percentiles for Pb (41 ppm), V (298 ppm), Mg 5.62%, Sc (41 ppm) and Br (12 ppm).



The relatively high (99<sup>th</sup> percentile) U response in the western Sharpe Lake area is related to samples collected from sites 249 and 266. At these stations bleached, yellow stained (uranium oxide?) and fractured granites with approximately 20% disseminated and veinlet pyrite were observed. The 63 ppm Sb analysis also came from site 249.

A small area of greenstone belt is present north of western Sharpe Lake at Barclay Lake. The west shore of this lake is characterized by a small, circular aeromagnetic feature and moderate to strong airborne EM conductors on the north end of the lake. One of these conductors is coincident with the northwest arm of a linear aeromagnetic anomaly that is also present on the north-central shore of Sharpe Lake.

A single outcrop chip sample collected from outcrop at the edge of the western shoreline is marked by a 99<sup>th</sup> percentile response for Ca (14%) and 98<sup>th</sup> percentiles for Mn (2789 ppm) and Ag (0.7 ppm). The field description for the hand sample collected at this site identifies a strongly foliated diorite that is locally rusty weathered with epidote and carbonate alteration and 1% pyrite.

## **Conclusions and Recommendations**

The following conclusions are evident from a preliminary assessment of 1997 rock geochemical data:

1. The host rocks to the Little Stull Lake gold deposit in the Edmund Lake belt, and the Twin Lakes and Seeber River gold deposits in the Sharpe Lake belt are characterized by a diverse suite of “ore-related” elements. These elements (Au, As and Sb) are related to dispersion about the mineralized zones, whereas elements such as K and Al reflect styles of alteration of the host rocks. The association of indicator elements, such as the REE, with the gold zones provides a possible discriminator between “barren” and Au-mineralized alteration zones.
2. Unique geophysical and coincident geochemical anomalies have delineated prospective areas along the WBSZ in the Edmund Lake belt. At the “deflection” point along the WBSZ geochemical anomalies are coincident with significant airborne geophysical responses.
3. Unique lithologies such as high-Mg basalts or perhaps ultramafic rocks, in association with the WBSZ or along the southern margin of the Sharpe Lake belt have been identified (Mg, Ni, Cr, Co, Fe), some of which are associated with 100<sup>th</sup> percentile “ore-elements”.
4. The potential for the Margaret Lake intrusion to be a heat or metal source for mineralizing fluids can be assessed on the basis of the distribution of Cu and Mo in the intrusion and in basaltic volcanic rocks at the periphery of the intrusion. The altered quartz-feldspar porphyry intrusion on the northwest end of

Little Stull may be interpreted as a metal source for the Little Stull Lake gold deposits (or other mineralized zones) given its proximity to the gold mineralized zones as well as its anomalous geochemical signatures.

5. The central to west portions of Sharpe Lake are marked by very high Sb and Hg contents. That are coincident with anomalous geophysical conductors. These responses should be carefully assessed.
6. The southern area of the Sharpe Lake greenstone belt is marked by significant rock geochemical responses. The area south and west of Makataysip Lake should be carefully explored for structurally controlled gold mineralization. It is likely that the south contact between volcanic rocks and granitic intrusive rocks to the south is faulted.
7. The circular aeromagnetic response on the west shore of Makataysip Lake should be reconnoitered to determine the nature of the rocks in this area and their metallogenetic potential.
8. The geochemical responses on the east and west shores of Edmund Lake as well as islands in the central portion of the lake, coupled with deformation related to the WBSZ and the association of ultramafic rocks requires detailed assessment.
9. The contact between the Oxford Lake Group sedimentary and volcanic subgroups and the Hayes River basalts is an important metallogenetic feature in the Sharpe Lake belt. This contact localizes the Twin Lakes and Seeber River gold deposits and numerous base-and precious metal geochemical anomalies. It should be considered as highly prospective.

# Appendix 5

## Rock Geochemistry: Instrumental Neutron Activation Analyses (INAA).

Sample Site	UTM		Au	As	Ba	Br	Ca	Co	Cr	Cs	Fe	Hf	Mo	Na	Ni	Rb
Units	EAST	NORTH	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm
97R-1	517844	6046787	1	13.00	170	0.25	7.0	59	95.0	0.5	7.67	2.0	0.5	1.27	10	7.5
97R-2	520028	6046856	1	0.25	770	0.25	2.0	24	33.0	3.0	4.23	6.0	0.5	3.76	10	89.0
97R-4	523123	6047360	5	0.25	730	0.25	3.0	25	26.0	2.0	2.37	4.0	0.5	4.29	10	34.0
97R-6	518401	6043035	1	0.25	290	0.25	0.5	75	9.0	0.5	0.43	1.0	0.5	0.94	10	16.0
97R-7	517331	6040220	1	0.25	120	0.25	8.0	49	160.0	0.5	7.10	1.0	0.5	0.99	40	7.5
97R-11	522988	6055725	9	4.70	140	0.25	9.0	52	250.0	0.5	8.69	2.0	0.5	1.61	88	20.0
97R-18	502316	6058450	1	6.00	170	0.25	8.0	44	330.0	0.5	7.04	2.0	0.5	1.39	74	21.0
97R-19	503981	6058302	1	26.00	80	0.25	2.0	45	330.0	0.5	6.90	2.0	8.0	1.53	140	7.5
97R-20	504550	6057806	1	2.20	100	0.25	8.0	41	110.0	0.5	6.39	0.5	0.5	1.86	10	7.5
97R-22	509841	6054884	1	3.30	100	0.25	10.0	59	250.0	0.5	7.99	0.5	0.5	2.14	93	7.5
97R-23	509948	6053778	5	0.25	2600	0.25	8.0	36	780.0	0.5	5.20	4.0	0.5	1.87	110	21.0
97R-24	509040	6054136	1	0.25	60	0.25	7.0	52	75.0	0.5	8.89	2.0	0.5	2.16	10	7.5
97R-25	509160	6053238	1	0.90	520	0.25	9.0	46	1100.0	1.0	4.96	4.0	11.0	0.89	190	28.0
97R-27-1	503212	6061166	4	0.25	720	0.25	0.5	37	8.0	2.0	0.80	3.0	3.0	2.12	10	69.0
97R-27-2	503232	6061186	1	5.90	300	0.25	2.0	38	16.0	0.5	1.19	5.0	0.5	4.65	10	22.0
97R-28	500798	6058006	5	12.00	70	0.25	4.0	46	51.0	0.5	10.50	3.0	0.5	1.78	10	7.5
97R-30	498526	6059429	1	1.70	25	0.25	8.0	46	240.0	0.5	7.18	2.0	0.5	1.51	10	7.5
97R-31	494124	6062419	1	1.30	100	0.25	8.0	44	270.0	0.5	7.13	0.5	0.5	1.49	96	7.5
97R-32	495219	6061599	1	3.20	25	0.25	5.0	34	48.0	0.5	3.71	0.5	0.5	0.85	10	7.5
97R-37	512445	6053053	5	27.00	25	0.25	10.0	47	65.0	0.5	7.06	2.0	0.5	1.18	66	7.5
97R-38	511021	6053344	1	10.00	170	0.25	7.0	42	35.0	0.5	10.10	3.0	0.5	2.10	10	7.5
97R-43	504203	6061045	13	8.40	90	0.25	8.0	65	260.0	0.5	7.95	2.0	0.5	1.43	120	7.5
97R-44	503423	6060019	40	2.50	840	0.25	2.0	53	130.0	0.5	2.45	0.5	0.5	2.27	10	25.0
97R-46	499940	6063989	1	1.80	220	0.25	2.0	63	67.0	0.5	1.49	2.0	0.5	1.47	10	21.0
97R-48	505621	6063322	1	0.25	210	0.25	8.0	62	120.0	0.5	8.41	3.0	0.5	1.54	10	7.5
97R-50	505247	6059379	5	0.25	70	0.25	5.0	51	250.0	0.5	6.51	2.0	0.5	1.77	93	7.5
97R-51	504271	6063350	1	0.25	25	0.25	5.0	43	2.5	0.5	5.70	2.0	41.0	0.38	10	7.5
97R-52	504799	6056393	1	0.25	25	0.25	9.0	50	360.0	0.5	7.12	1.0	0.5	1.12	90	7.5
97R-55	485756	6066892	1	3.70	25	0.25	6.0	45	150.0	0.5	7.06	2.0	0.5	1.51	10	7.5
97R-56	485088	6068682	1	0.25	730	0.25	1.0	49	2.5	0.5	0.76	3.0	0.5	3.41	10	55.0
97R-57	485524	6066062	1	0.25	530	0.25	1.0	21	5.0	0.5	1.13	5.0	0.5	5.29	10	48.0
97R-60	499348	6060438	1	0.25	150	0.25	13.0	51	150.0	2.0	6.20	2.0	8.0	1.33	10	20.0
97R-62	496583	6059870	1	0.25	25	0.25	0.5	82	2.5	0.5	0.06	0.5	0.5	0.08	10	7.5
97R-64	495880	6064914	1	0.25	120	0.25	6.0	51	77.0	0.5	5.76	1.0	0.5	0.86	10	7.5
97R-65	498817	6064616	10	1.70	25	0.25	12.0	45	23.0	0.5	10.60	3.0	0.5	0.05	10	7.5
97R-66	491433	6062854	14	6.80	25	0.25	7.0	47	98.0	0.5	7.08	2.0	0.5	0.54	10	7.5
97R-67	491159	6063714	1	16.00	520	0.25	2.0	49	53.0	0.5	3.90	0.5	0.5	0.54	10	7.5
97R-71-1	518287	6046419	182	560.00	250	0.25	2.0	50	28.0	2.0	6.42	3.0	11.0	1.71	10	41.0
97R-71-2	518287	6046419	220	3800.00	270	0.25	3.0	47	25.0	2.0	6.12	6.0	0.5	2.68	77	37.0
97R-72	518901	6044811	1	3.60	25	0.25	0.5	72	7.0	0.5	0.40	0.5	0.5	0.04	10	7.5
97R-75	520867	6044001	1	3.60	1200	0.25	2.0	27	24.0	2.0	4.80	5.0	0.5	2.30	10	40.0
97R-76	522120	6041844	1	0.70	50	5.70	1.0	58	2.5	0.5	0.28	0.5	0.5	0.06	10	7.5
97R-78	522282	6036707	27	0.25	200	0.25	1.0	98	440.0	2.0	8.36	3.0	0.5	1.22	110	20.0
97R-79	523264	6036507	1	4.60	120	0.25	8.0	46	290.0	1.0	9.71	1.0	0.5	1.15	10	7.5
97R-80	522574	6036479	28	200.00	87	0.25	0.5	67	6.0	0.5	13.80	0.5	0.5	0.02	10	7.5
97R-82	521310	6040504	10	0.25	25	0.25	5.0	51	65.0	0.5	9.71	3.0	0.5	0.55	81	7.5
97R-83	521313	6039495	14	2.10	100	0.50	7.0	41	240.0	0.5	12.50	2.0	0.5	0.55	10	7.5
97R-85	521819	6038559	1	2.10	100	6.00	6.0	48	290.0	4.0	6.47	0.5	0.5	1.30	79	7.5
97R-87	520938	6037469	4	0.25	140	0.25	8.0	52	66.0	1.0	7.57	2.0	0.5	1.22	10	7.5
97R-88	520527	6041691	91	0.25	340	0.25	2.0	21	18.0	4.0	1.59	3.0	3.0	3.44	10	51.0
97R-89	523975	6039555	6	0.25	1000	6.70	4.0	35	27.0	2.0	6.10	5.0	0.5	2.96	10	39.0
97R-90	523174	6042220	13	0.25	110	0.25	3.0	41	160.0	0.5	8.41	2.0	0.5	1.27	59	7.5
97R-91	518535	6038263	1	1.50	25	0.25	8.0	46	65.0	0.5	10.60	1.0	0.5	0.82	10	7.5
97R-92	520156	6037478	1	0.25	110	0.25	9.0	45	140.0	0.5	6.38	2.0	0.5	1.89	10	7.5
97R-93	520504	6036253	1	0.25	25	0.25	11.0	40	170.0	0.5	5.97	2.0	0.5	0.14	53	7.5
97R-94	522084	6035823	5	0.25	130	0.25	8.0	44	74.0	0.5	5.10	2.0	0.5	1.84	10	7.5
97R-95	519219	6039836	150	0.25	200	4.10	10.0	38	56.0	0.5	5.93	1.0	0.5	0.27	10	7.5
97R-96	516558	6040903	1	0.25	370	0.25	2.0	19	2.5	0.5	7.92	4.0	0.5	1.19	10	7.5
97R-100	516705	6045308	1	0.25	93	0.25	5.0	48	210.0	0.5	6.78	1.0	0.5	1.43	62	7.5
97R-109	532452	6050373	1	0.25	130	0.25	7.0	45	80.0	0.5	8.55	2.0	0.5	1.18	10	53.0
97R-110	531121	6050631	6	2.70	260	0.25	12.0	45	120.0	0.5	10.20	4.0	0.5	0.53	10	24.0
97R-111	527183	6049725	4	0.25	90	0.25	9.0	48	440.0	0.5	6.47	1.0	0.5	1.03	110	7.5

Sample Site Units	UTM		Au	As	Ba	Br	Ca	Co	Cr	Cs	Fe	Hf	Mo	Na	Ni	Rb
	EAST	NORTH	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm
97R-115	476770	6068319	12	0.25	25	0.25	6.0	44	210.0	0.5	7.08	1.0	0.5	1.18	86	27.0
97R-116	476939	6067881	6	2.50	25	0.25	7.0	42	220.0	0.5	7.05	1.0	0.5	1.96	72	7.5
97R-119	477063	6066473	111	4.30	25	0.25	11.0	37	230.0	0.5	6.33	0.5	0.5	0.28	65	7.5
97R-123	480778	6065799	1	1.50	25	0.25	0.5	31	2.5	0.5	0.63	0.5	0.5	0.02	10	7.5
97R-124	481778	6066491	33	0.25	360	0.25	2.0	20	20.0	0.5	2.38	4.0	6.0	3.13	10	29.0
97R-125	480838	6068726	1	3.80	110	0.25	0.5	57	2.5	0.5	0.33	0.5	0.5	0.89	10	7.5
97R-126	480508	6066960	9	0.25	25	0.25	8.0	48	250.0	1.0	7.69	2.0	0.5	1.69	170	7.5
97R-131	515458	6047081	1	0.25	160	0.25	5.0	44	71.0	10.0	10.10	7.0	0.5	2.36	10	55.0
97R-132	513910	6049816	1	0.25	100	0.25	4.0	48	110.0	0.5	8.29	1.0	0.5	2.62	10	7.5
97R-135	513049	6050683	1	0.25	180	0.25	11.0	57	190.0	1.0	8.04	2.0	0.5	1.33	10	37.0
97R-140	510561	6051207	1	0.25	110	0.25	9.0	50	170.0	0.5	7.28	2.0	0.5	1.30	10	7.5
97R-144	505932	6054078	1	0.25	200	0.25	7.0	51	35.0	0.5	10.50	3.0	0.5	1.98	10	7.5
97R-154	516412	6032166	10	27.00	640	0.25	1.0	18	27.0	3.0	2.63	5.0	5.0	2.02	10	100.0
97R-157	514218	6029291	6	1500.00	930	0.25	4.0	35	130.0	0.5	4.29	3.0	0.5	2.72	10	42.0
97R-162	494356	6030881	22	250.00	150	0.25	6.0	50	1200.0	6.0	5.49	1.0	4.0	0.36	360	39.0
97R-169	501038	6027746	5	18.00	120	0.25	8.0	52	220.0	22.0	9.33	1.0	0.5	1.87	200	35.0
97R-172	513930	6032694	4	3.30	270	0.25	5.0	26	74.0	0.5	3.66	2.0	3.0	3.91	10	19.0
97R-173	511989	6032692	1	0.25	85	0.25	8.0	62	74.0	2.0	10.00	3.0	0.5	1.98	140	7.5
97R-183-1	502520	6029633	1	0.25	110	0.25	5.0	52	25.0	1.0	7.06	3.0	0.5	2.21	10	7.5
97R-183-2	502520	6029633	25	19.00	100	0.25	7.0	42	40.0	0.5	5.67	2.0	0.5	1.16	10	7.5
97R-192	485905	6033746	1	2.80	290	0.25	2.0	30	15.0	1.0	2.80	5.0	0.5	3.12	10	110.0
97R-194	491164	6032643	7	78.00	280	0.25	4.0	29	180.0	5.0	6.43	3.0	0.5	1.76	10	37.0
97R-199-1	495793	6029002	4	8.90	130	0.25	5.0	36	53.0	0.5	5.46	2.0	0.5	2.69	10	19.0
97R-199-2	495793	6029002	1	1.50	800	19.00	1.0	60	2.5	1.0	0.52	3.0	0.5	2.75	10	120.0
97R-200	491974	6031864	8	4.30	25	0.25	0.5	65	12.0	0.5	0.76	0.5	0.5	0.15	10	7.5
97R-203-1	504582	6032523	4	7.60	190	0.25	1.0	85	8.0	0.5	1.49	0.5	0.5	0.83	10	7.5
97R-203-2	504582	6032523	10	30.00	890	0.25	0.5	24	22.0	2.0	4.21	12.0	6.0	3.00	10	160.0
97R-204	493311	6034135	6	34.00	25	0.25	2.0	47	2.5	0.5	2.26	0.5	0.5	0.03	10	7.5
97R-205	492691	6034939	6	0.25	80	0.25	5.0	63	6.0	0.5	13.10	4.0	0.5	2.42	10	34.0
97R-206	492813	6032211	28	2000.00	490	0.25	2.0	50	24.0	2.0	1.35	2.0	0.5	0.72	10	58.0
97R-207	505903	6027507	12	520.00	500	0.25	4.0	45	140.0	4.0	6.13	4.0	0.5	2.26	10	40.0
97R-213	503971	6027895	27	820.00	25	0.25	8.0	44	230.0	5.0	9.45	1.0	0.5	0.86	10	7.5
97R-216	507873	6033627	2	8.00	790	0.25	2.0	25	22.0	2.0	2.05	4.0	0.5	3.55	10	45.0
97R-219	476476	6033291	31	300.00	220	0.25	2.0	28	12.0	0.5	1.11	3.0	0.5	3.56	10	37.0
97R-222	489734	6033070	40	2.20	220	0.25	2.0	32	13.0	2.0	2.72	6.0	0.5	3.47	10	83.0
97R-223	482129	6034706	7	5.40	670	0.25	3.0	26	21.0	1.0	1.72	4.0	0.5	4.07	10	33.0
97R-225	484355	6033976	2	2.10	65	0.25	4.0	41	2.5	0.5	12.60	7.0	0.5	1.92	10	7.5
97R-230	465126	6029280	1	2.80	150	0.25	6.0	50	160.0	0.5	6.58	2.0	0.5	1.28	180	7.5
97R-231	468014	6029211	1	13.00	170	0.25	5.0	42	77.0	0.5	8.47	1.0	0.5	1.86	10	7.5
97R-232	474714	6032147	5	0.25	25	0.25	10.0	57	210.0	1.0	8.86	0.5	0.5	0.46	92	7.5
97R-233	475878	6031424	1	5.60	140	0.25	2.0	63	12.0	0.5	1.65	3.0	0.5	1.19	10	21.0
97R-234	472653	6030759	7	3.30	160	0.25	6.0	40	140.0	0.5	3.48	0.5	0.5	2.68	79	7.5
97R-235	473647	6031180	1	0.25	94	2.60	3.0	59	81.0	0.5	2.77	0.5	0.5	0.51	61	7.5
97R-236	471481	6030684	1	0.25	160	0.25	0.5	66	2.5	0.5	0.55	2.0	0.5	1.59	10	23.0
97R-237	467781	6031932	10	2.40	340	5.40	0.5	58	7.0	0.5	0.71	4.0	0.5	4.48	10	24.0
97R-239	461733	6028498	1	4.30	150	0.25	2.0	62	25.0	0.5	1.07	2.0	0.5	2.30	10	7.5
97R-243	456102	6028120	1	1.80	25	0.25	7.0	48	340.0	0.5	7.80	2.0	0.5	1.61	100	7.5
97R-244	453747	6028681	1	0.25	25	2.00	13.0	48	310.0	0.5	6.20	2.0	0.5	0.37	140	7.5
97R-247	455132	6028325	1	2.70	25	0.25	8.0	42	290.0	0.5	6.40	0.5	0.5	1.55	10	7.5
97R-249-1	450994	6027808	6	3.50	740	0.25	0.5	25	2.5	2.0	0.85	2.0	0.5	2.21	10	100.0
97R-249-2	450994	6027808	22	5.70	580	0.25	0.5	23	6.0	3.0	0.67	2.0	0.5	0.10	10	170.0
97R-255	442843	6030013	1	7.10	140	0.25	15.0	41	270.0	0.5	6.02	1.0	0.5	1.17	180	17.0
97R-258	437900	6030559	1	0.25	140	0.25	5.0	39	320.0	0.5	6.54	1.0	0.5	1.64	10	7.5
97R-260	437640	6031393	16	5.50	270	0.25	5.0	37	110.0	2.0	6.41	1.0	0.5	1.51	10	39.0
97R-263	436445	6031287	9	2.70	180	0.25	2.0	23	8.0	0.5	2.26	4.0	0.5	3.88	10	7.5
97R-266-1	447639	6028463	4	5.2	25	12	0.5	45	10	0.5	0.47	0.5	0.5	0.04	10	7.5
97R-266-2	447639	6028463	7	4.00	740	0.25	2.0	22	5.0	2.0	0.76	3.0	0.5	3.52	10	93.0
97R-267	449222	6028541	4	5.20	25	12.00	0.5	45	10.0	0.5	0.47	0.5	0.5	0.04	10	7.5
97R-273	466096	6029651	10	5.60	25	0.25	7.0	44	370.0	0.5	7.81	1.0	0.5	1.63	160	7.5
97R-274	468869	6031353	1	0.25	610	8.90	1.0	26	2.5	0.5	1.37	7.0	6.0	3.43	10	7.5
97R-283	457995	6036193	1	0.25	25	0.25	14.0	41	270.0	0.5	8.10	1.0	0.5	0.99	100	7.5
97R-287-1	493331	6063322	6	9.40	71	0.25	3.0	19	12.0	0.5	21.40	0.5	0.5	0.11	10	7.5
97R-287-2	493331	6063322	10	8.40	25	0.25	5.0	16	21.0	0.5	26.40	0.5	0.5	0.08	10	7.5
97R-287-3	493331	6063322	5	5.20	25	0.25	7.0	29	240.0	0.5	21.20	1.0	0.5	0.23	10	7.5

Sample Site	Sb	Sc	Ta	Th	U	W	Zn	La	Ce	Nd	Sm	Eu	Tb	Yb	Lu	TREE
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
97R-1	1.20	43.0	0.25	0.9	0.25	44	25	6.2	12.0	7.0	1.5	0.6	0.25	2.2	0.380	30.1
97R-2	2.80	8.7	0.25	8.7	1.70	91	72	66.0	100.0	46.0	7.1	2.0	0.25	1.5	0.240	223.1
97R-4	0.30	6.6	1.00	4.3	1.30	140	66	42.0	68.0	32.0	5.1	1.5	0.25	0.5	0.110	149.5
97R-6	0.05	1.1	2.40	3.1	1.70	600	25	11.0	16.0	5.0	0.8	0.3	0.25	0.1	0.025	33.5
97R-7	0.05	39.0	0.60	0.6	0.25	58	25	3.4	7.0	6.0	1.3	0.5	0.25	2.0	0.380	20.8
97R-11	0.30	38.0	0.25	0.4	0.25	61	79	2.7	7.0	2.5	1.6	0.7	0.50	2.2	0.380	17.6
97R-18	0.60	35.0	0.25	0.6	0.25	46	66	3.0	7.0	2.5	1.5	0.6	0.25	1.8	0.320	17.0
97R-19	0.40	35.0	0.70	2.1	0.25	130	119	9.3	16.0	7.0	1.4	0.6	0.25	1.9	0.340	36.8
97R-20	0.50	42.0	0.70	0.1	0.25	43	57	2.0	5.0	2.5	1.2	0.5	0.25	1.6	0.290	13.3
97R-22	0.60	38.0	0.60	0.1	0.25	90	58	3.0	4.0	2.5	1.5	0.6	0.25	2.3	0.370	14.5
97R-23	1.10	30.0	0.90	17.0	3.40	28	71	99.0	160.0	74.0	13.0	3.7	0.25	1.2	0.270	351.4
97R-24	0.30	36.0	0.25	0.1	0.25	60	96	3.5	7.0	2.5	1.9	0.8	0.60	2.3	0.410	19.0
97R-25	0.05	23.0	0.90	14.0	2.90	38	86	99.0	150.0	69.0	11.0	3.0	0.90	1.1	0.210	334.2
97R-27-1	0.20	1.4	1.70	5.9	1.60	340	25	23.0	32.0	13.0	1.7	0.5	0.25	0.4	0.060	70.9
97R-27-2	0.05	2.1	1.40	22.0	6.90	270	25	47.0	68.0	27.0	4.3	1.3	0.25	0.9	0.140	148.9
97R-28	0.40	37.0	0.25	0.6	0.25	26	162	7.2	14.0	10.0	2.7	1.0	0.60	4.2	0.700	40.4
97R-30	0.05	40.0	0.25	0.1	0.25	64	73	4.4	10.0	8.0	1.9	0.7	0.70	2.7	0.470	28.9
97R-31	0.50	34.0	0.25	0.4	0.25	25	90	5.0	9.0	2.5	1.4	0.6	0.25	1.8	0.290	20.8
97R-32	0.30	19.0	0.80	0.1	0.25	150	53	4.6	8.0	2.5	1.0	0.4	0.25	1.0	0.190	17.9
97R-37	1.50	31.0	0.25	0.4	0.25	70	75	4.8	10.0	2.5	1.8	0.8	0.70	2.1	0.310	23.0
97R-38	1.40	33.0	0.25	0.6	0.25	33	105	7.0	14.0	13.0	3.4	1.2	0.80	3.8	0.640	43.8
97R-43	0.40	43.0	0.25	0.1	0.25	58	145	4.3	9.0	5.0	1.8	0.8	0.70	2.7	0.450	24.8
97R-44	0.60	15.0	1.40	0.4	0.25	900	25	2.9	4.0	5.0	1.0	0.5	0.70	1.0	0.160	15.3
97R-46	0.20	4.7	1.80	5.5	2.30	530	25	16.0	22.0	10.0	1.3	0.4	0.25	0.6	0.070	50.6
97R-48	0.05	41.0	0.80	0.5	0.25	160	122	7.5	13.0	9.0	2.6	1.2	0.25	3.4	0.560	37.5
97R-50	0.05	40.0	0.25	0.1	0.25	72	102	2.8	6.0	2.5	1.5	0.7	0.25	2.3	0.410	16.5
97R-51	0.05	24.0	1.10	0.4	0.25	270	25	3.9	7.0	6.0	1.2	0.5	0.25	2.3	0.360	21.5
97R-52	0.60	36.0	0.25	0.5	0.25	70	25	3.2	6.0	2.5	1.3	0.6	0.25	1.9	0.340	16.1
97R-55	0.40	35.0	0.25	0.7	0.25	56	83	4.8	8.0	2.5	1.7	0.6	0.25	2.2	0.360	20.4
97R-56	0.20	1.3	1.90	2.3	0.25	450	25	8.5	12.0	5.0	0.8	0.4	0.25	0.2	0.025	27.2
97R-57	0.05	3.1	1.20	5.2	1.30	170	25	21.0	29.0	11.0	2.0	0.7	0.25	0.4	0.060	64.4
97R-60	0.05	37.0	1.10	1.7	0.25	170	60	12.0	16.0	8.0	1.7	0.6	0.50	1.8	0.300	40.9
97R-62	0.10	0.2	2.50	0.1	0.25	800	25	0.3	1.5	2.5	0.1	0.1	0.25	0.1	0.025	4.8
97R-64	0.05	31.0	1.10	0.3	0.25	250	25	3.1	7.0	2.5	1.5	0.6	0.25	2.1	0.350	17.4
97R-65	0.20	45.0	0.25	0.8	0.25	46	102	8.1	17.0	9.0	3.2	1.4	0.80	5.4	0.780	45.7
97R-66	0.40	33.0	0.25	0.4	0.25	120	52	6.2	11.0	8.0	1.5	0.5	0.25	1.9	0.330	29.7
97R-67	0.40	18.0	0.70	0.6	0.25	310	55	2.9	6.0	2.5	0.8	0.4	0.25	1.0	0.160	14.0
97R-71-1	7.80	18.0	0.25	5.8	1.70	160	25	24.0	39.0	20.0	3.6	1.3	0.80	1.9	0.330	90.9
97R-71-2	45.00	17.0	0.25	16.0	3.00	58	372	43.0	66.0	23.0	4.6	1.2	0.80	2.0	0.360	141.0
97R-72	0.20	1.2	2.30	0.1	0.25	730	25	0.3	1.5	2.5	0.1	0.1	0.25	0.1	0.025	4.8
97R-75	0.20	9.0	0.70	7.8	2.10	120	72	67.0	110.0	48.0	7.7	2.3	0.60	1.2	0.230	237.0
97R-76	0.10	1.0	1.80	0.1	0.25	570	25	0.3	1.5	2.5	0.1	0.1	0.25	0.1	0.025	4.8
97R-78	0.90	57.0	0.25	0.5	1.70	250	72	3.8	9.0	2.5	1.9	0.7	0.25	2.6	0.420	21.2
97R-79	0.05	46.0	0.25	0.3	0.25	50	75	2.8	6.0	2.5	1.5	0.6	0.25	2.6	0.390	16.6
97R-80	4.40	0.8	0.90	0.1	0.25	240	25	3.1	4.0	2.5	0.5	0.5	0.25	0.7	0.140	11.7
97R-82	0.40	13.0	1.20	1.2	0.25	150	391	13.0	21.0	9.0	1.8	0.8	0.25	1.4	0.250	47.5
97R-83	0.05	48.0	0.25	0.3	0.25	39	67	2.7	5.0	2.5	1.6	0.6	0.25	2.2	0.470	15.3
97R-85	0.20	37.0	0.50	0.1	0.25	84	74	1.9	4.0	2.5	1.1	0.5	0.25	1.7	0.280	12.2
97R-87	0.05	39.0	0.25	0.3	0.25	88	78	4.0	7.0	2.5	1.5	0.7	0.25	2.4	0.390	18.7
97R-88	0.30	5.7	0.25	2.6	0.25	130	57	12.0	18.0	7.0	1.2	0.5	0.25	0.4	0.060	39.4
97R-89	0.20	21.0	0.25	2.3	1.50	65	105	75.0	130.0	66.0	11.0	3.7	1.00	2.5	0.440	289.6
97R-90	0.05	33.0	0.25	0.6	0.25	45	107	6.1	10.0	7.0	1.5	0.6	0.25	2.2	0.340	28.0
97R-91	0.05	43.0	0.50	0.6	0.80	49	60	4.9	11.0	2.5	1.4	0.5	0.25	2.9	0.380	23.8
97R-92	0.05	35.0	0.25	0.7	0.25	55	86	6.6	13.0	8.0	1.7	0.7	0.25	1.9	0.340	32.5
97R-93	0.20	37.0	0.60	0.1	0.25	54	63	15.0	17.0	6.0	1.4	0.6	0.25	1.8	0.310	42.4
97R-94	0.05	29.0	1.00	1.0	0.25	190	75	4.6	8.0	2.5	1.3	0.4	0.25	1.4	0.260	18.7
97R-95	0.40	29.0	0.60	0.6	0.25	110	68	6.9	11.0	2.5	1.1	0.5	0.25	1.5	0.240	24.0
97R-96	0.05	4.6	0.80	3.1	0.25	120	61	20.0	34.0	13.0	2.3	0.7	0.25	1.2	0.220	71.7
97R-100	0.30	34.0	0.50	0.3	0.25	65	90	1.8	4.0	2.5	1.3	0.5	0.25	1.9	0.340	12.6
97R-109	0.05	43.0	0.25	0.4	0.25	87	117	5.0	10.0	2.5	1.9	0.7	0.25	2.8	0.480	23.6
97R-110	0.05	41.0	0.25	7.2	1.80	35	117	74.0	130.0	73.0	15.0	4.6	1.30	2.4	0.400	300.7
97R-111	0.30	32.0	0.25	0.1	0.25	48	58	2.5	5.0	2.5	1.0	0.5	0.25	1.6	0.300	13.7

Sample Site	Sb	Sc	Ta	Th	U	W	Zn	La	Ce	Nd	Sm	Eu	Tb	Yb	Lu	TREE
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
97R-115	0.05	36.0	0.25	0.1	0.25	45	79	2.4	5.0	6.0	1.3	0.5	0.25	1.9	0.340	17.7
97R-116	0.40	38.0	0.25	0.1	0.25	33	78	1.9	5.0	2.5	1.4	0.6	0.25	2.1	0.380	14.1
97R-119	0.05	30.0	0.50	0.1	0.25	65	55	2.9	4.0	2.5	1.1	0.5	0.60	1.5	0.270	13.4
97R-123	0.10	1.5	1.40	0.1	0.25	360	25	0.3	1.5	2.5	0.1	0.1	0.25	0.1	0.025	4.8
97R-124	0.05	5.7	0.90	4.1	0.25	160	69	21.0	32.0	14.0	1.9	0.8	0.25	0.4	0.080	70.4
97R-125	0.30	0.5	2.10	0.5	0.25	710	25	2.1	1.5	2.5	0.2	0.1	0.25	0.1	0.025	6.8
97R-126	0.05	39.0	0.25	0.1	2.20	76	208	2.2	6.0	2.5	1.3	0.6	0.25	2.4	0.330	15.6
97R-131	0.60	38.0	1.00	0.4	0.25	160	201	5.9	19.0	10.0	4.2	1.8	1.40	8.2	1.230	51.7
97R-132	0.60	46.0	0.25	1.2	0.25	27	185	3.0	9.0	2.5	1.4	0.7	0.25	2.5	0.430	19.8
97R-135	0.20	44.0	0.90	0.9	0.25	120	197	7.2	16.0	2.5	1.7	0.8	0.25	2.4	0.390	31.2
97R-140	0.20	38.0	0.25	1.1	1.90	140	25	6.6	16.0	7.0	1.5	0.7	0.25	2.3	0.370	34.7
97R-144	0.05	45.0	0.60	1.1	0.25	72	201	8.5	21.0	10.0	3.0	1.5	0.90	5.4	0.890	51.2
97R-154	7.30	5.5	0.90	17.0	4.30	87	88	110.0	190.0	88.0	10.0	2.9	0.25	1.4	0.260	402.8
97R-157	0.05	12.0	0.90	10.0	2.30	190	66	39.0	66.0	31.0	4.1	1.5	0.25	1.6	0.250	143.7
97R-162	0.90	26.0	0.25	0.6	0.25	53	121	4.6	11.0	2.5	1.1	0.5	0.25	0.8	0.180	20.9
97R-169	0.80	30.0	0.25	0.4	0.25	61	209	3.5	7.0	2.5	1.7	0.9	0.60	1.9	0.270	18.4
97R-172	0.60	9.8	0.90	2.3	0.25	88	73	16.0	31.0	16.0	2.4	1.0	0.25	1.1	0.160	67.9
97R-173	0.05	28.0	0.80	1.1	0.25	110	180	2.0	5.0	6.0	2.0	1.0	0.60	2.3	0.350	19.3
97R-183-1	1.20	29.0	0.25	2.5	0.25	160	137	9.4	18.0	8.0	1.8	0.7	0.25	2.3	0.360	40.8
97R-183-2	1.40	25.0	0.60	2.1	0.25	150	162	8.9	18.0	6.0	1.5	0.6	0.25	1.8	0.270	37.3
97R-192	0.50	4.5	1.20	9.3	2.60	250	68	15.0	25.0	10.0	1.7	0.7	0.25	0.9	0.170	53.7
97R-194	1.30	31.0	0.70	2.1	0.25	100	123	4.6	12.0	2.5	1.4	0.8	0.25	2.6	0.420	24.6
97R-199-1	10.00	23.0	0.50	0.6	0.25	110	25	13.0	17.0	6.0	1.7	0.7	0.60	2.1	0.370	41.5
97R-199-2	0.20	1.1	2.00	10.0	6.70	530	25	2.3	1.5	2.5	0.3	0.6	0.25	0.1	0.025	7.6
97R-200	0.30	2.4	1.90	0.1	0.25	680	25	1.4	1.5	2.5	0.3	0.1	0.25	0.3	0.050	6.4
97R-203-1	0.60	0.9	2.30	2.2	0.25	730	25	11.0	20.0	13.0	1.4	0.6	0.25	0.3	0.060	46.6
97R-203-2	1.40	6.8	1.00	26.0	5.40	54	121	150.0	250.0	110.0	13.0	4.2	0.25	1.8	0.300	529.6
97R-204	0.50	5.0	1.60	0.5	0.25	480	25	3.0	6.0	2.5	0.8	0.4	0.25	0.7	0.120	13.8
97R-205	0.40	49.0	0.25	0.8	0.25	110	217	6.8	17.0	17.0	3.1	1.4	1.00	4.2	0.560	51.1
97R-206	0.70	3.7	1.40	3.4	1.10	480	62	12.0	21.0	8.0	1.5	0.6	0.25	0.5	0.070	43.9
97R-207	0.10	24.0	1.10	3.2	0.25	160	200	12.0	19.0	10.0	1.8	0.8	0.25	1.6	0.300	45.8
97R-213	0.05	30.0	1.00	1.0	0.25	170	165	3.3	8.0	2.5	1.3	0.6	0.25	2.4	0.410	18.8
97R-216	2.10	4.5	1.10	5.3	2.00	190	82	29.0	49.0	20.0	3.6	1.3	0.25	0.7	0.150	104.0
97R-219	0.70	3.3	0.80	3.0	1.80	250	25	13.0	20.0	9.0	1.2	0.6	0.25	0.3	0.080	44.4
97R-222	0.05	5.8	0.70	22.0	2.10	240	66	58.0	90.0	34.0	4.0	1.0	0.25	1.6	0.280	189.1
97R-223	1.50	3.8	0.70	2.5	0.25	220	52	22.0	42.0	18.0	2.6	1.0	0.25	0.6	0.100	86.6
97R-225	0.80	37.0	1.20	1.5	3.00	79	276	15.0	40.0	19.0	5.7	2.4	1.60	7.9	1.140	92.7
97R-230	0.10	36.0	0.60	0.1	0.25	150	166	2.9	8.0	2.5	1.6	0.8	0.25	2.8	0.410	19.3
97R-231	2.60	39.0	0.25	1.1	0.25	41	25	6.8	16.0	6.0	2.0	0.8	0.60	2.7	0.440	35.3
97R-232	0.50	36.0	0.25	0.1	0.25	150	175	2.2	8.0	7.0	1.4	0.7	0.25	2.2	0.370	22.1
97R-233	7.40	3.5	1.70	5.9	0.25	670	56	26.0	43.0	16.0	2.3	0.5	0.25	1.5	0.250	89.8
97R-234	0.20	16.0	0.80	0.4	0.25	200	81	1.5	3.0	2.5	0.6	0.3	0.25	1.0	0.140	9.3
97R-235	0.05	14.0	1.40	0.1	0.25	540	56	1.0	4.0	2.5	0.6	0.3	0.25	0.9	0.140	9.7
97R-236	0.05	2.9	2.20	0.8	0.25	690	25	3.8	5.0	6.0	0.4	0.1	0.25	0.3	0.025	15.9
97R-237	0.10	3.1	2.20	3.1	1.70	560	25	5.8	12.0	2.5	1.1	0.4	0.25	0.4	0.070	22.5
97R-239	1.20	4.0	1.60	1.5	0.25	600	25	6.3	10.0	2.5	0.8	0.3	0.25	0.3	0.070	20.5
97R-243	0.20	41.0	0.25	0.1	0.25	58	170	1.6	6.0	2.5	1.2	0.7	0.25	2.3	0.350	14.9
97R-244	0.05	38.0	0.25	0.1	0.25	100	153	3.8	7.0	2.5	1.7	0.8	0.25	2.6	0.410	19.1
97R-247	0.05	38.0	0.25	0.1	0.25	53	193	3.9	7.0	7.0	1.6	0.7	0.25	2.7	0.450	23.6
97R-249-1	10.00	1.9	1.30	2.8	1.90	260	25	8.2	15.0	7.0	1.2	0.5	0.25	1.5	0.260	33.9
97R-249-2	63.00	1.7	1.20	2.3	5.60	300	25	8.0	12.0	2.5	1.0	0.4	0.25	1.7	0.250	26.1
97R-255	0.70	28.0	0.25	0.6	0.25	48	133	2.7	6.0	6.0	1.2	0.5	0.25	1.8	0.310	18.8
97R-258	0.05	30.0	0.25	1.7	0.25	57	25	9.0	16.0	6.0	1.6	0.6	0.60	1.9	0.340	36.0
97R-260	0.70	28.0	0.60	1.7	0.25	68	150	7.0	14.0	9.0	1.6	0.8	0.25	2.0	0.280	34.9
97R-263	0.05	6.2	0.60	2.1	0.25	210	25	14.0	24.0	10.0	1.6	0.7	0.25	0.9	0.130	51.6
97R-266-1	0.2	1.4	1.6	0.1	0.25	540	25	0.25	1.5	2.5	0.05	0.1	0.25	0.2	0.025	4.9
97R-266-2	2.40	1.7	0.90	4.3	2.50	240	25	12.0	19.0	9.0	1.4	0.5	0.25	1.3	0.190	43.6
97R-267	0.20	1.4	1.60	0.1	0.25	540	25	0.3	1.5	2.5	0.1	0.1	0.25	0.2	0.025	4.9
97R-273	0.10	41.0	0.25	0.1	0.25	38	230	2.3	7.0	2.5	1.4	0.7	0.25	2.1	0.380	16.6
97R-274	0.05	5.5	2.20	4.7	0.25	250	111	34.0	65.0	24.0	5.2	1.5	1.00	5.1	0.650	136.5
97R-283	0.05	29.0	0.25	0.1	0.25	61	92	2.5	6.0	2.5	1.0	0.4	0.25	1.8	0.260	14.7
97R-287-1	0.30	2.1	0.25	0.1	0.25	270	25	5.9	13.0	6.0	1.5	1.7	0.25	2.3	0.270	30.9
97R-287-2	0.60	8.7	0.25	0.8	0.25	68	189	5.1	9.0	2.5	0.7	0.6	0.25	1.0	0.090	19.2
97R-287-3	0.40	31.0	0.25	0.4	0.90	84	280	4.0	9.0	2.5	1.2	0.5	0.60	2.4	0.160	20.4

## Appendix 6

### Rock Geochemistry: INA Analyses, multiple samples.

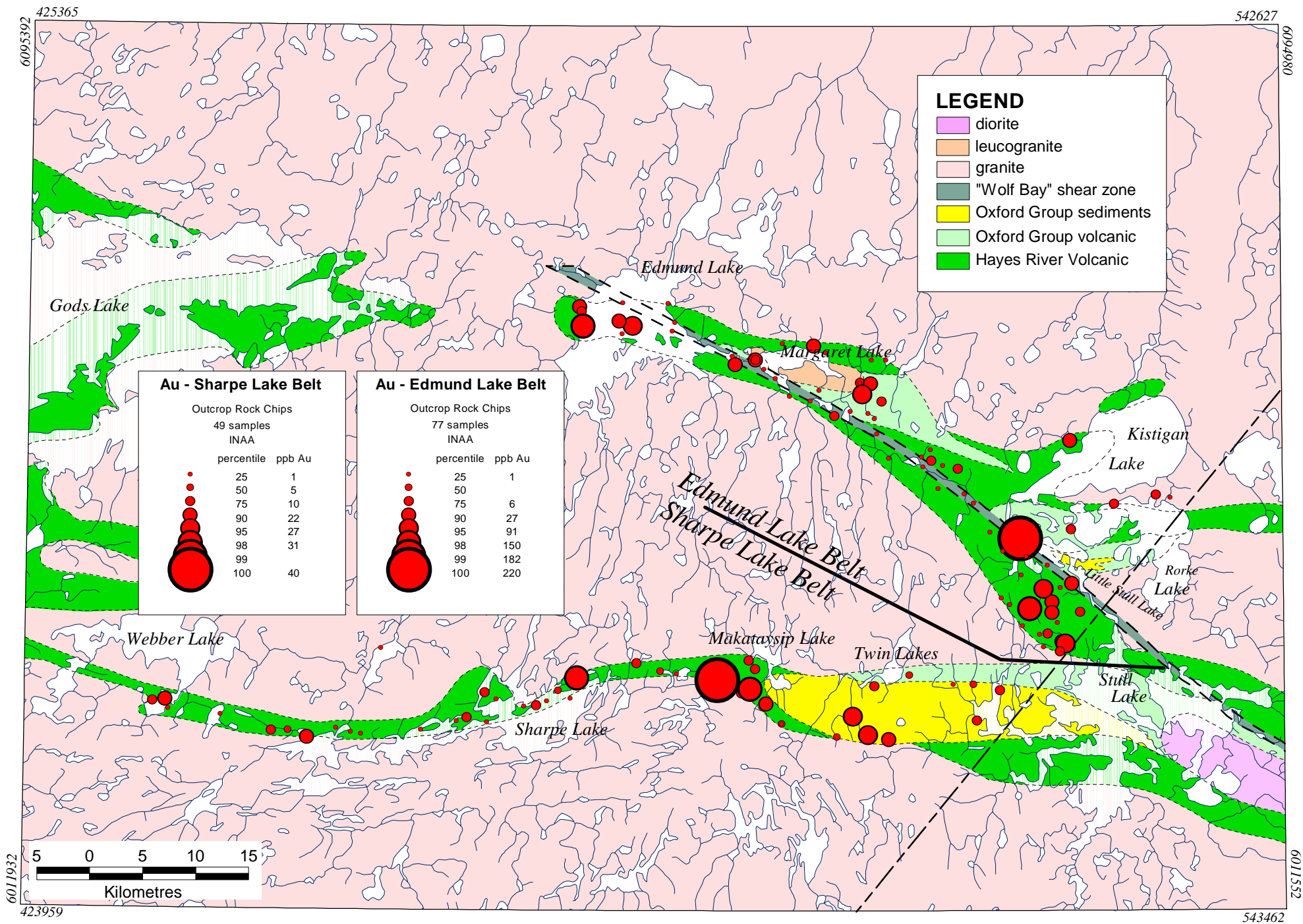
Sample Site	UTM		Au ppb	As ppm	Ba ppm	Br ppm	Ca %	Co ppm	Cr ppm	Cs ppm	Fe %	Hf ppm	Mo ppm	Na %	Ni ppm	Rb ppm
	EAST	NORTH														
97R-27-1	503212	6061166	4	0.25	720	0.25	0.5	37	8.0	2.0	0.80	3.0	3.0	2.12	10	69.0
97R-27-2	503212	6061166	1	5.90	300	0.25	2.0	38	16.0	0.5	1.19	5.0	0.5	4.65	10	22.0
97R-71-1	518287	6046419	182	560.00	250	0.25	2.0	50	28.0	2.0	6.42	3.0	11.0	1.71	10	41.0
97R-71-2	518287	6046419	220	3800.00	270	0.25	3.0	47	25.0	2.0	6.12	6.0	0.5	2.68	77	37.0
97R-183-1	502520	6029633	1	0.25	110	0.25	5.0	52	25.0	1.0	7.06	3.0	0.5	2.21	10	7.5
97R-183-2	502520	6029633	25	19.00	100	0.25	7.0	42	40.0	0.5	5.67	2.0	0.5	1.16	10	7.5
97R-199-1	495793	6029002	4	8.90	130	0.25	5.0	36	53.0	0.5	5.46	2.0	0.5	2.69	10	19.0
97R-199-2	495793	6029002	1	1.50	800	19.00	1.0	60	2.5	1.0	0.52	3.0	0.5	2.75	10	120.0
97R-203-1	504582	6032523	4	7.60	190	0.25	1.0	85	8.0	0.5	1.49	0.5	0.5	0.83	10	7.5
97R-203-2	504582	6032523	10	30.00	890	0.25	0.5	24	22.0	2.0	4.21	12.0	6.0	3.00	10	160.0
97R-249-1	450994	6027808	6	3.50	740	0.25	0.5	25	2.5	2.0	0.85	2.0	0.5	2.21	10	100.0
97R-249-2	450994	6027808	22	5.70	580	0.25	0.5	23	6.0	3.0	0.67	2.0	0.5	0.10	10	170.0
97R-266-1	447639	6028463	8	2.40	630	0.25	0.5	25	2.5	2.0	0.65	3.0	3.0	2.91	10	100.0
97R-266-2	447639	6028463	7	4.00	740	0.25	2.0	22	5.0	2.0	0.76	3.0	0.5	3.52	10	93.0
97R-287-1	493331	6063322	6	9.40	71	0.25	3.0	19	12.0	0.5	21.40	0.5	0.5	0.11	10	7.5
97R-287-2	493331	6063322	10	8.40	25	0.25	5.0	16	21.0	0.5	26.40	0.5	0.5	0.08	10	7.5
97R-287-3	493331	6063322	5	5.20	25	0.25	7.0	29	240.0	0.5	21.20	1.0	0.5	0.23	10	7.5

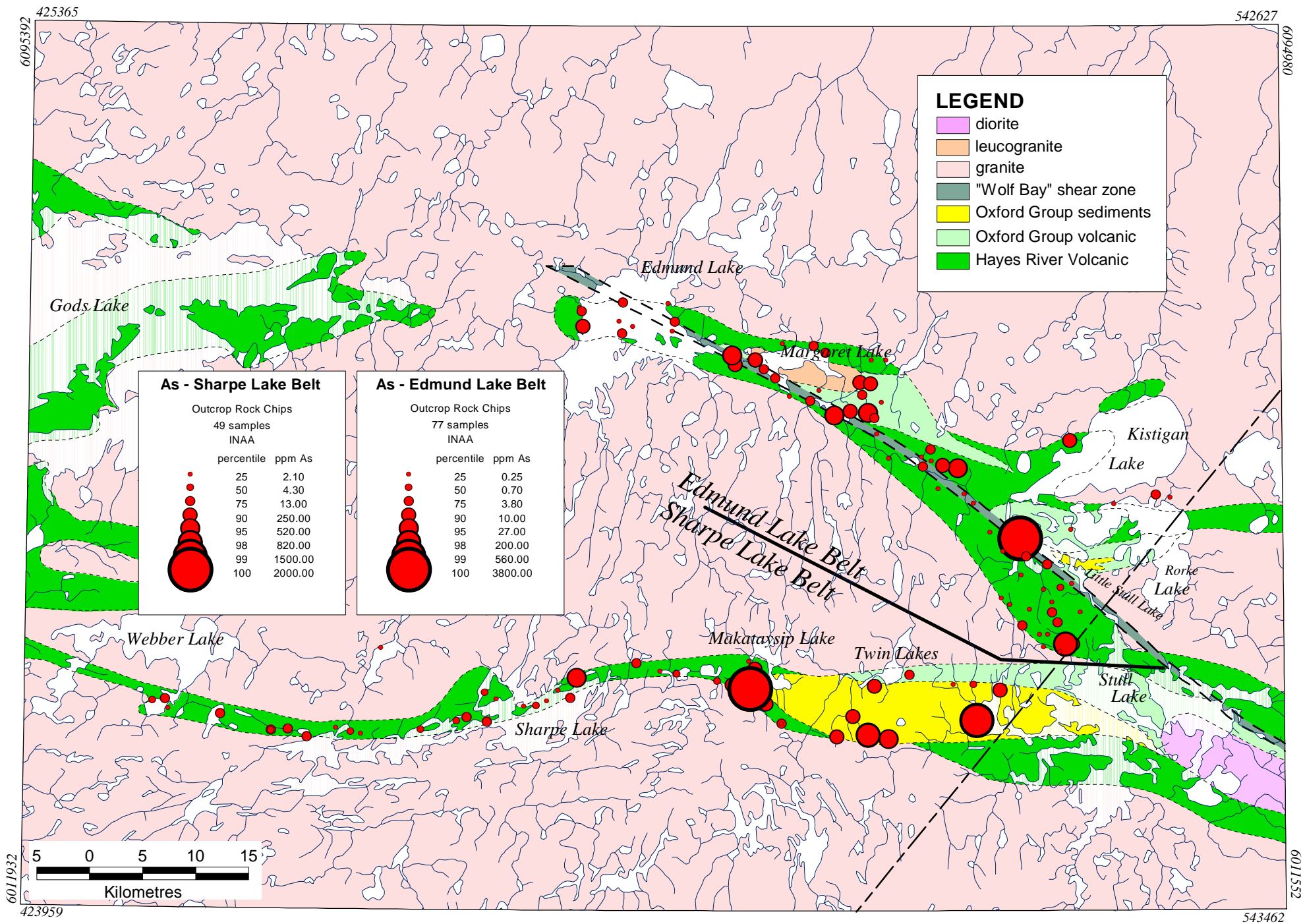
Sample Site	Sb ppm	Sc ppm	Ta ppm	Th ppm	U ppm	W ppm	Zn ppm	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	TREE ppm
97R-27-1	0.20	1.4	1.70	5.9	1.60	340	25	23.0	32.0	13.0	1.7	0.5	0.25	0.4	0.060	70.9
97R-27-2	0.05	2.1	1.40	22.0	6.90	270	25	47.0	68.0	27.0	4.3	1.3	0.25	0.9	0.140	148.9
97R-71-1	7.80	18.0	0.25	5.8	1.70	160	25	24.0	39.0	20.0	3.6	1.3	0.80	1.9	0.330	90.9
97R-71-2	45.00	17.0	0.25	16.0	3.00	58	372	43.0	66.0	23.0	4.6	1.2	0.80	2.0	0.360	141.0
97R-183-1	1.20	29.0	0.25	2.5	0.25	160	137	9.4	18.0	8.0	1.8	0.7	0.25	2.3	0.360	40.8
97R-183-2	1.40	25.0	0.60	2.1	0.25	150	162	8.9	18.0	6.0	1.5	0.6	0.25	1.8	0.270	37.3
97R-199-1	10.00	23.0	0.50	0.6	0.25	110	25	13.0	17.0	6.0	1.7	0.7	0.60	2.1	0.370	41.5
97R-199-2	0.20	1.1	2.00	10.0	6.70	530	25	2.3	1.5	2.5	0.3	0.6	0.25	0.1	0.025	7.6
97R-203-1	0.60	0.9	2.30	2.2	0.25	730	25	11.0	20.0	13.0	1.4	0.6	0.25	0.3	0.060	46.6
97R-203-2	1.40	6.8	1.00	26.0	5.40	54	121	150.0	250.0	110.0	13.0	4.2	0.25	1.8	0.300	529.6
97R-249-1	10.00	1.9	1.30	2.8	1.90	260	25	8.2	15.0	7.0	1.2	0.5	0.25	1.5	0.260	33.9
97R-249-2	63.00	1.7	1.20	2.3	5.60	300	25	8.0	12.0	2.5	1.0	0.4	0.25	1.7	0.250	26.1
97R-266-1	1.60	1.6	1.30	4.4	3.20	280	25	9.6	17.0	5.0	1.3	0.5	0.25	1.2	0.210	35.1
97R-266-2	2.40	1.7	0.90	4.3	2.50	240	25	12.0	19.0	9.0	1.4	0.5	0.25	1.3	0.190	43.6
97R-287-1	0.30	2.1	0.25	0.1	0.25	270	25	5.9	13.0	6.0	1.5	1.7	0.25	2.3	0.270	30.9
97R-287-2	0.60	8.7	0.25	0.8	0.25	68	189	5.1	9.0	2.5	0.7	0.6	0.25	1.0	0.090	19.2
97R-287-3	0.40	31.0	0.25	0.4	0.90	84	280	4.0	9.0	2.5	1.2	0.5	0.60	2.4	0.160	20.4

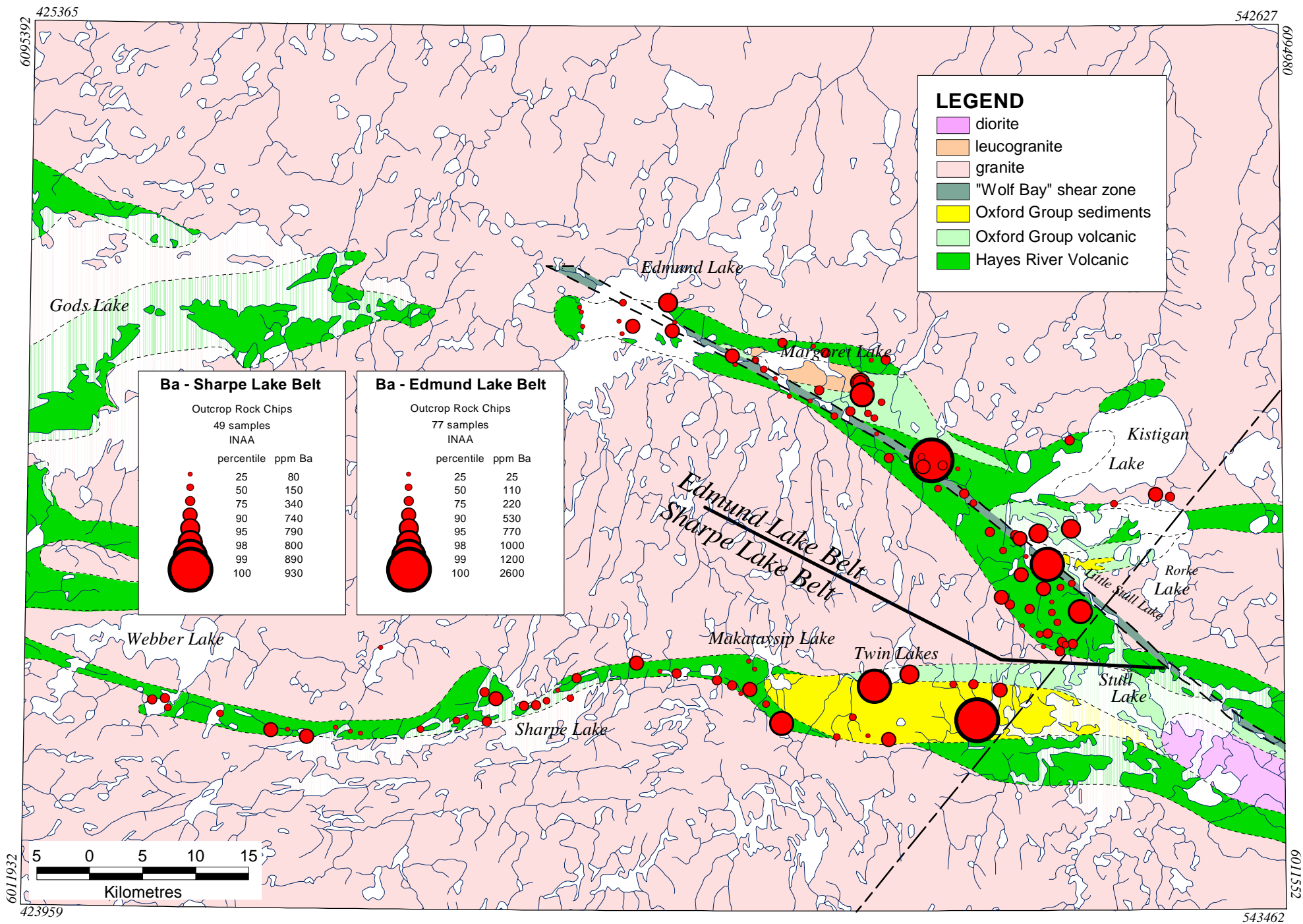


## Appendix 7

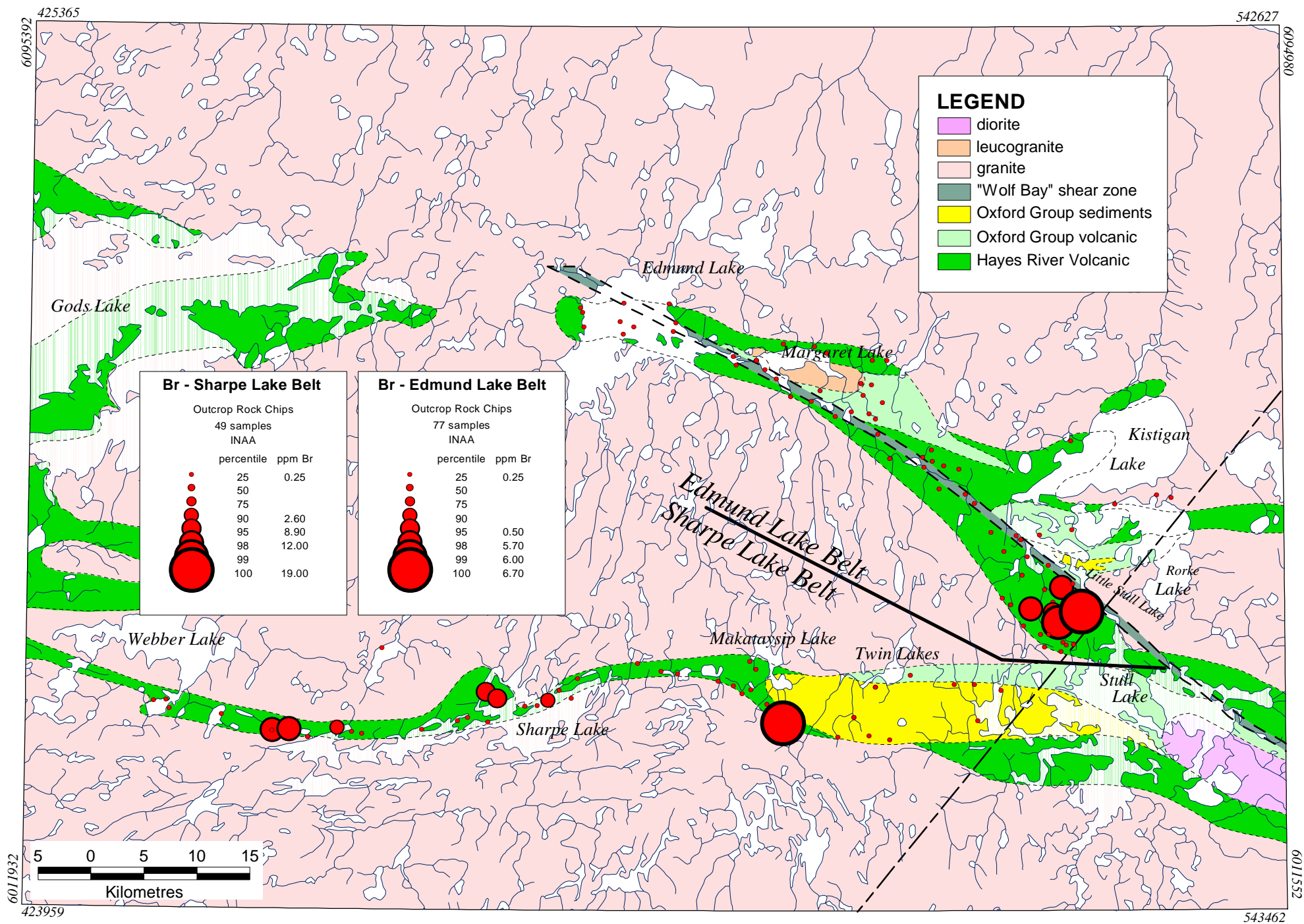
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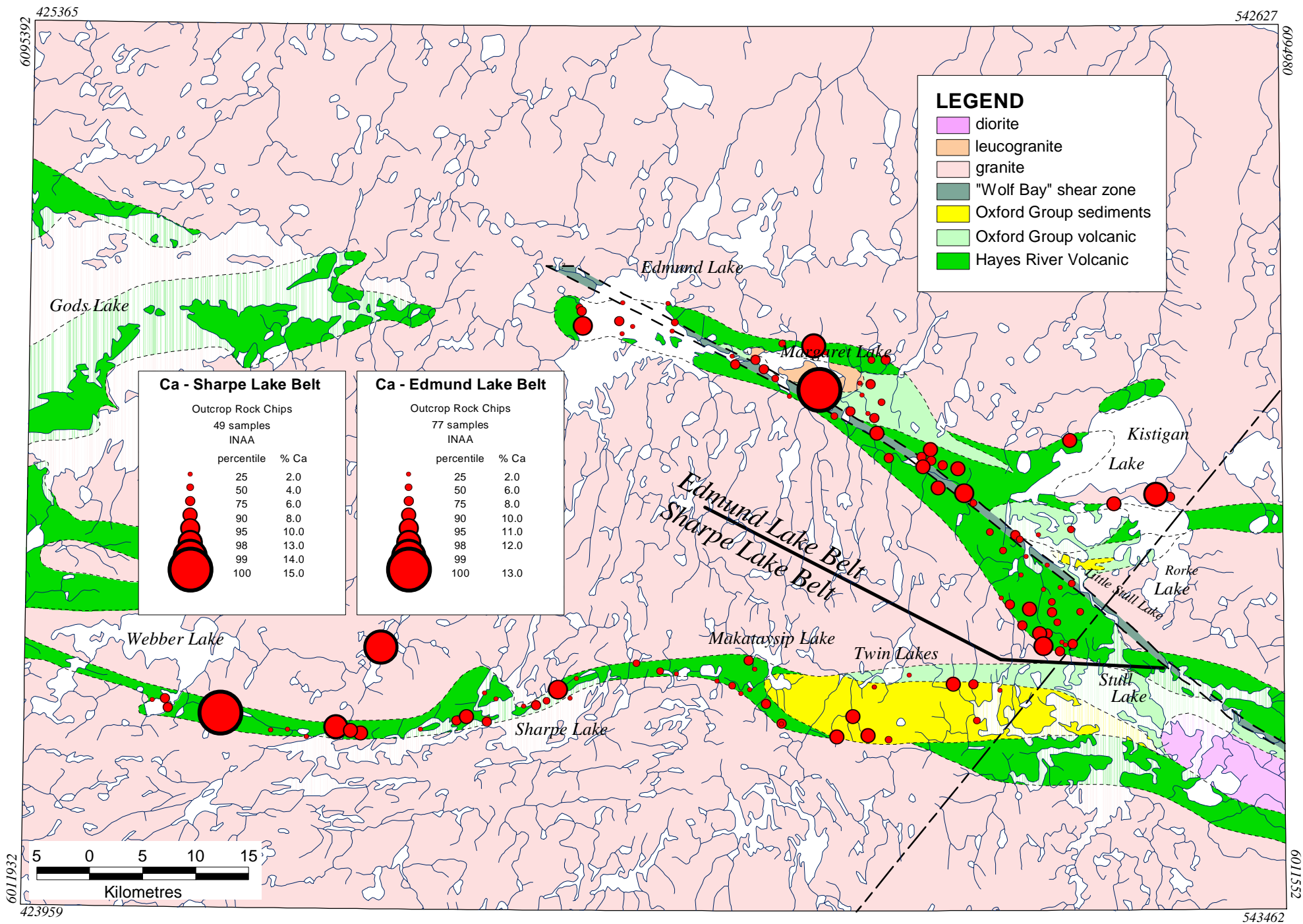


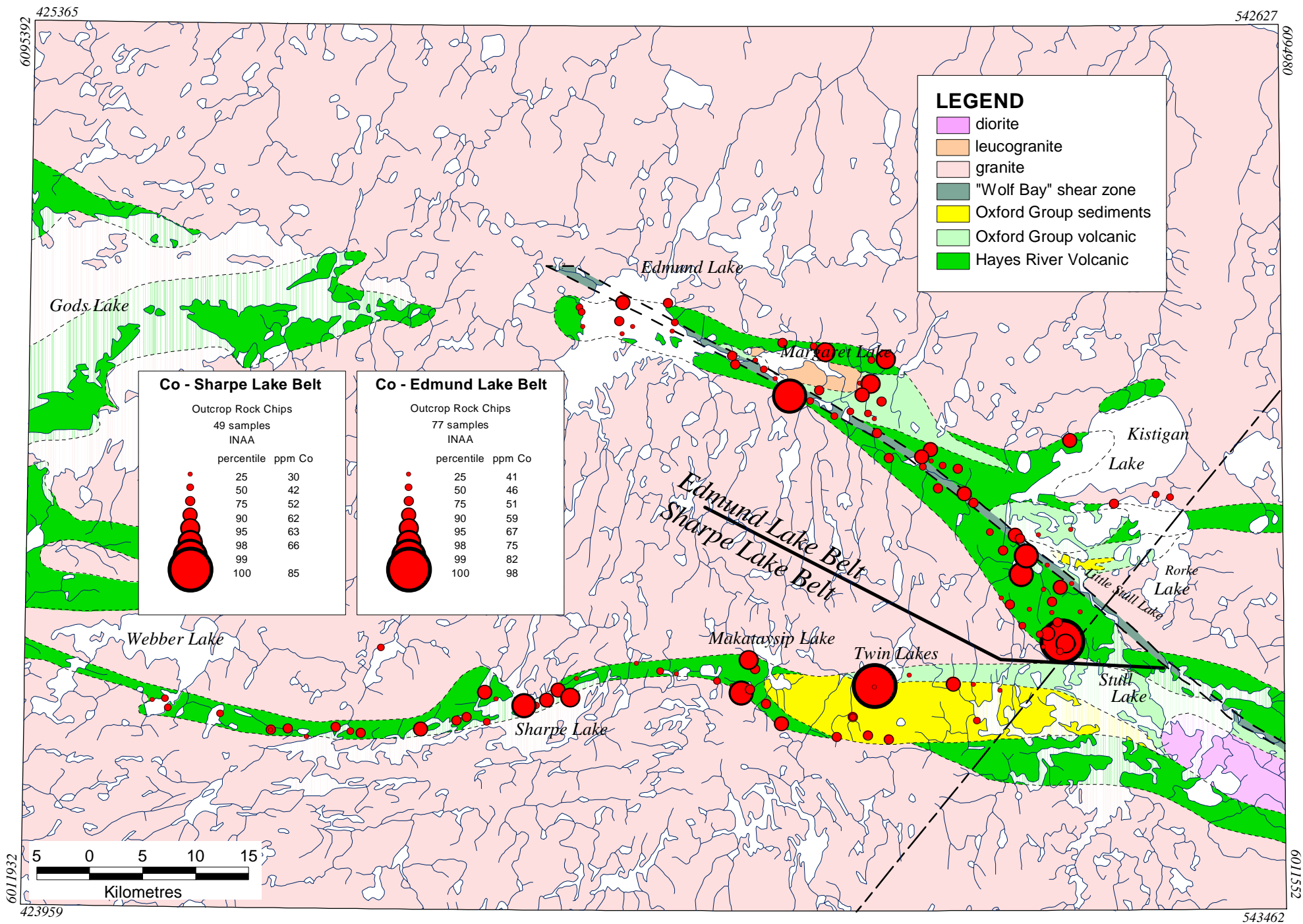




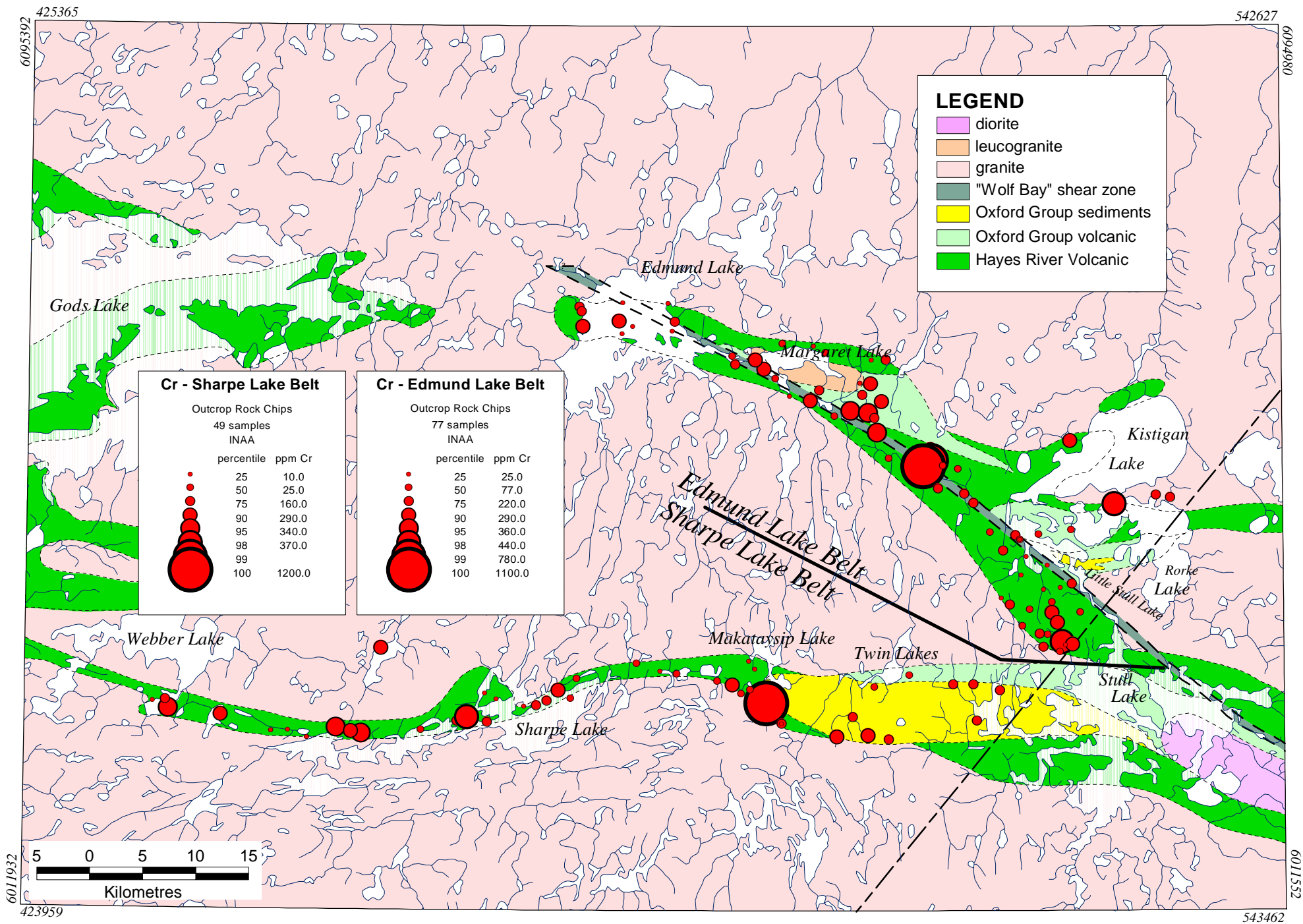




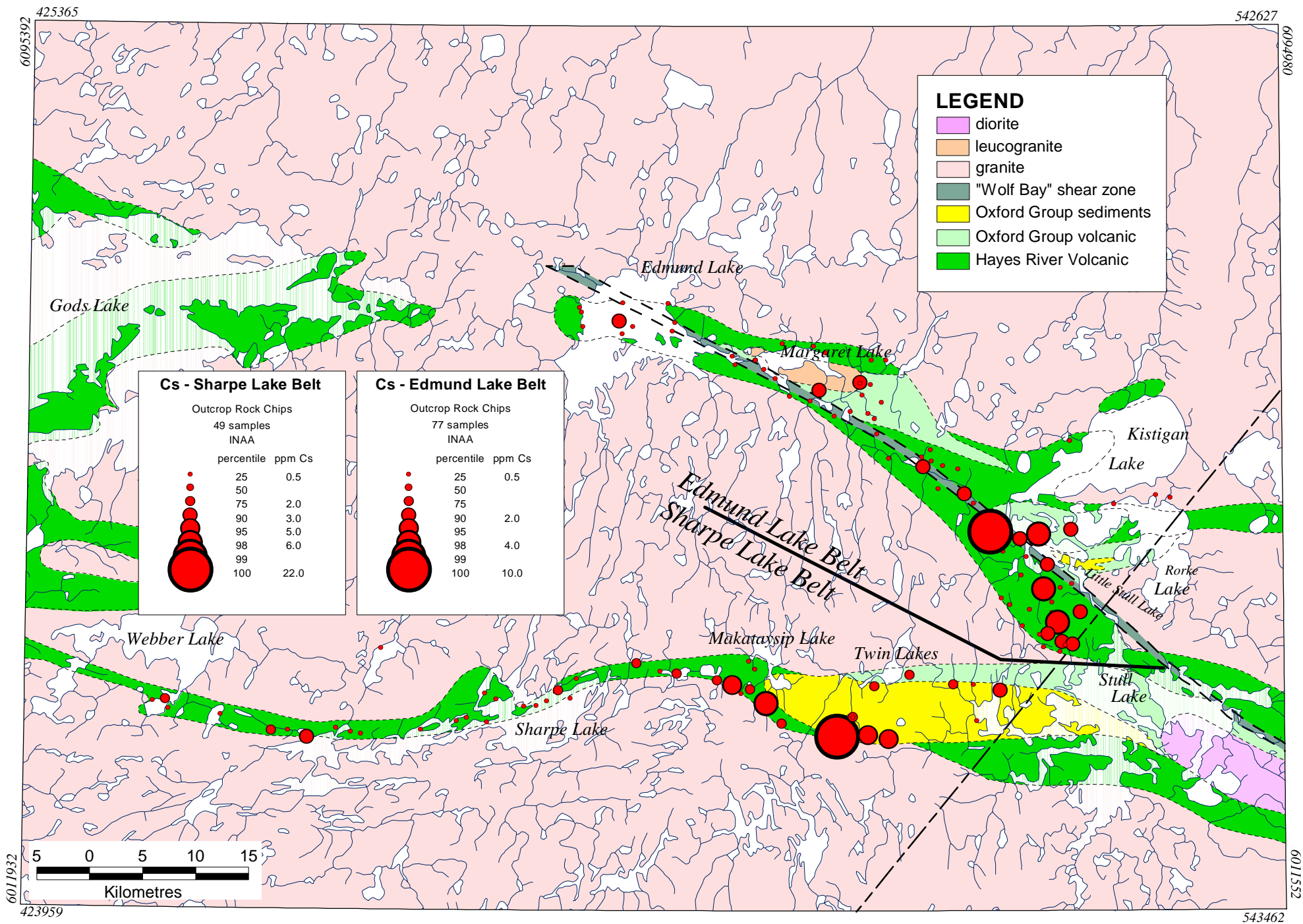


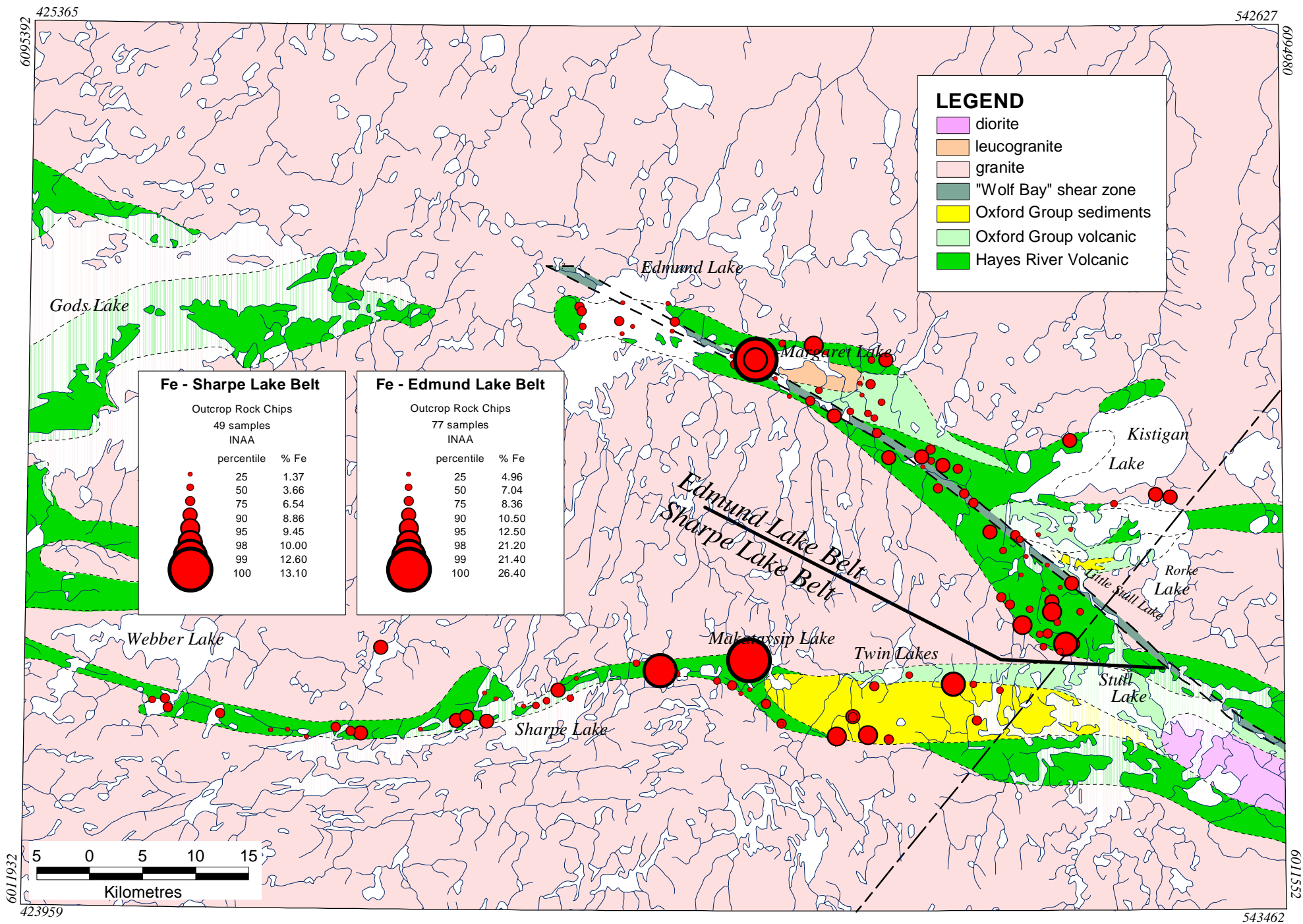


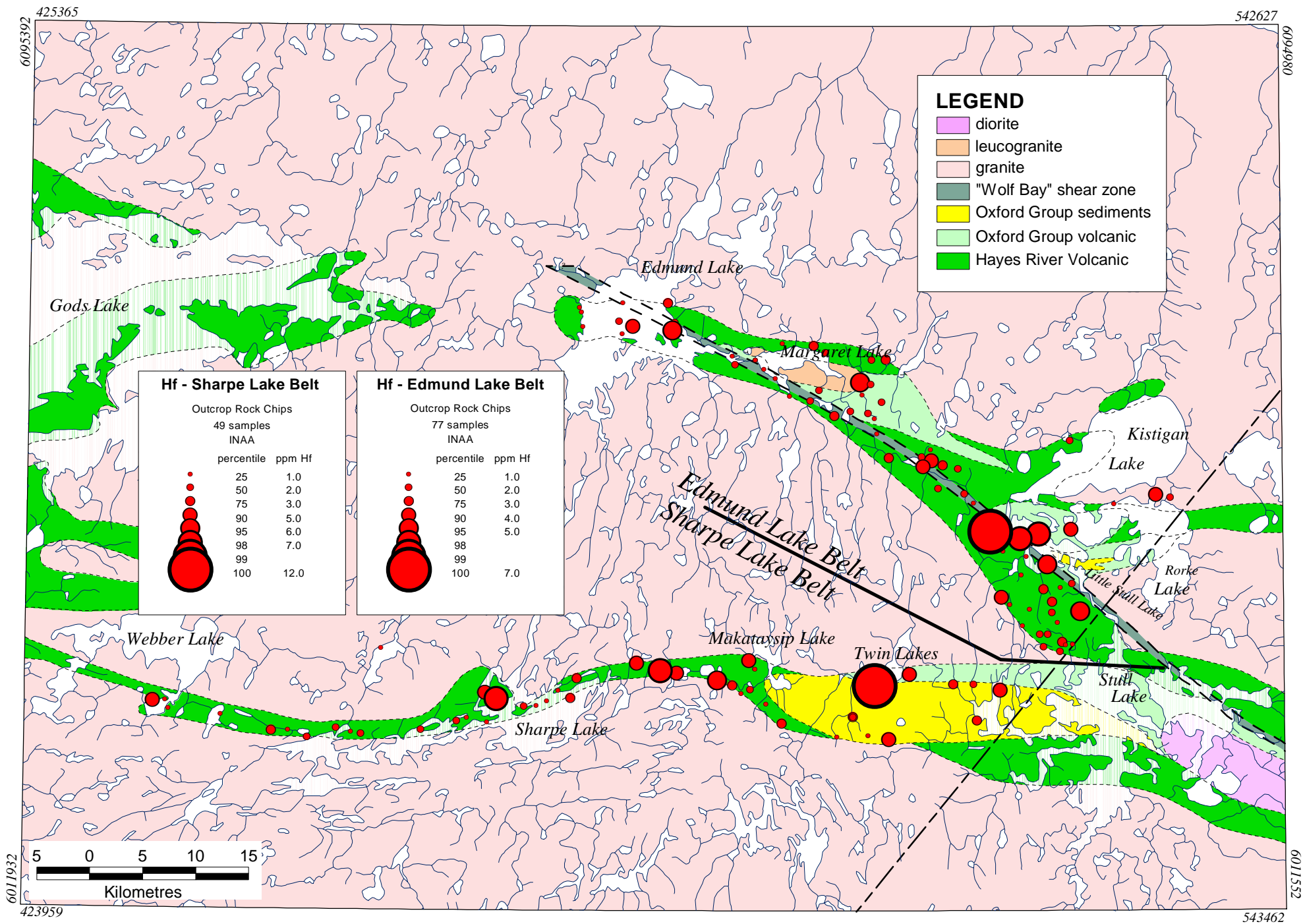




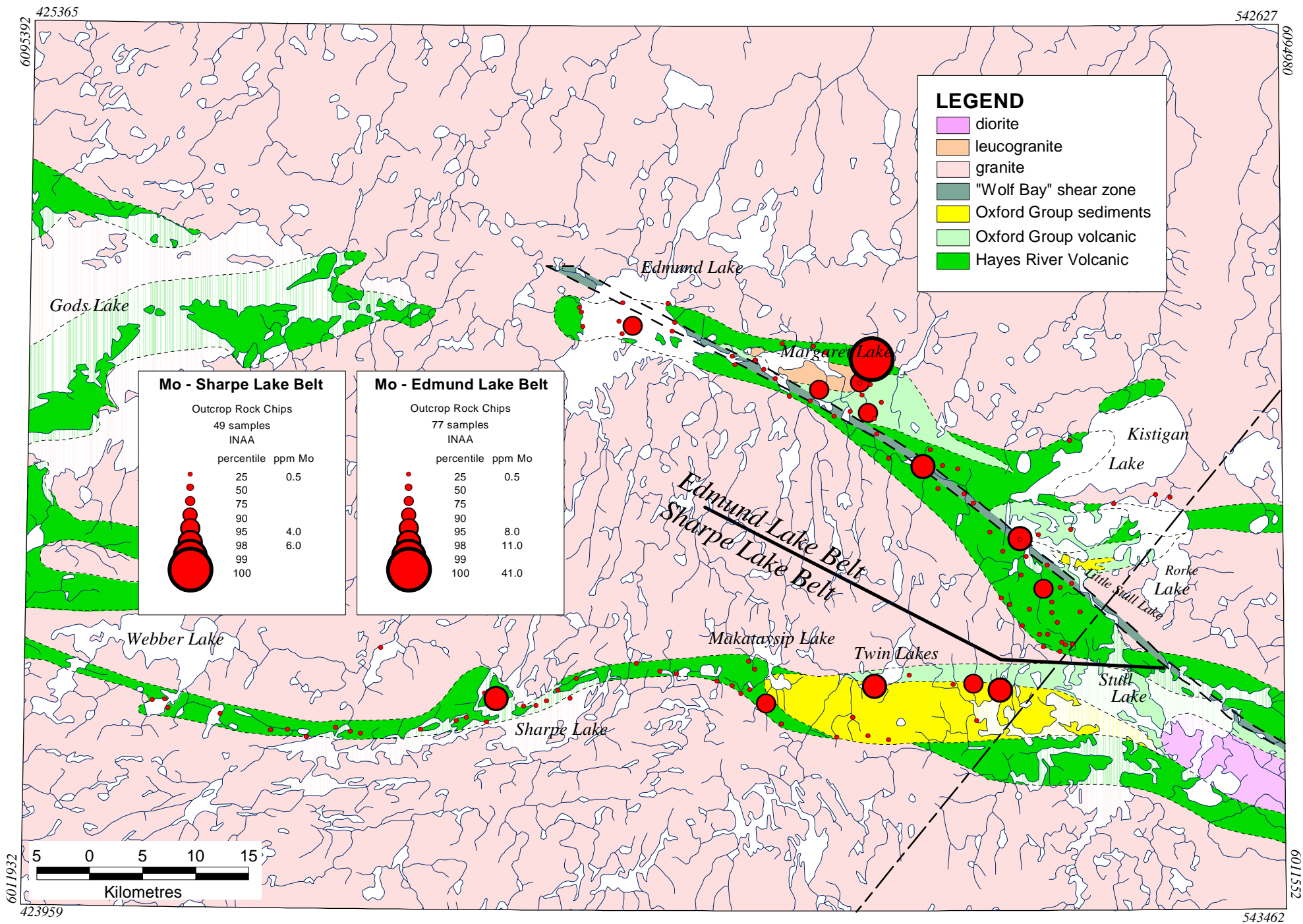


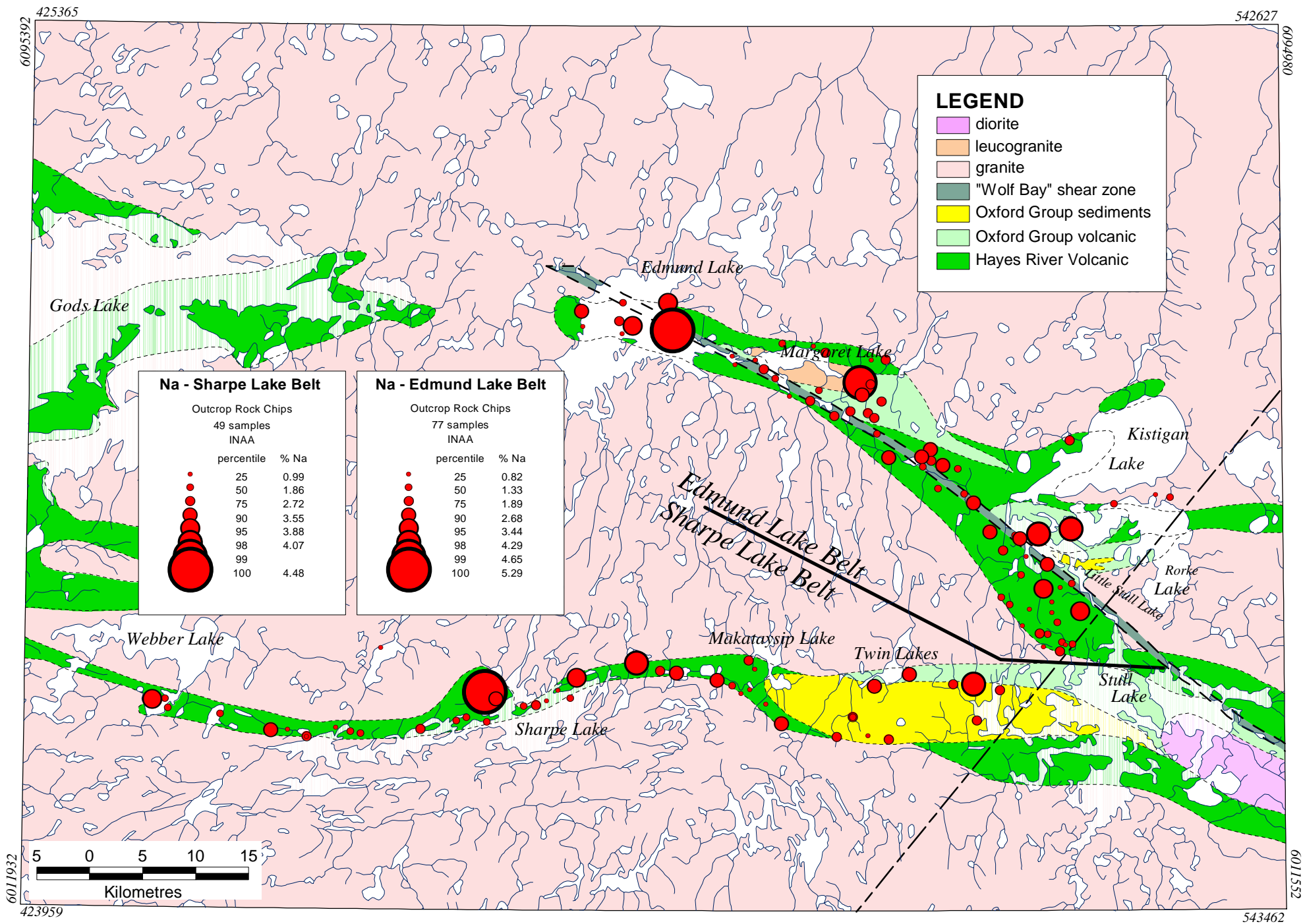


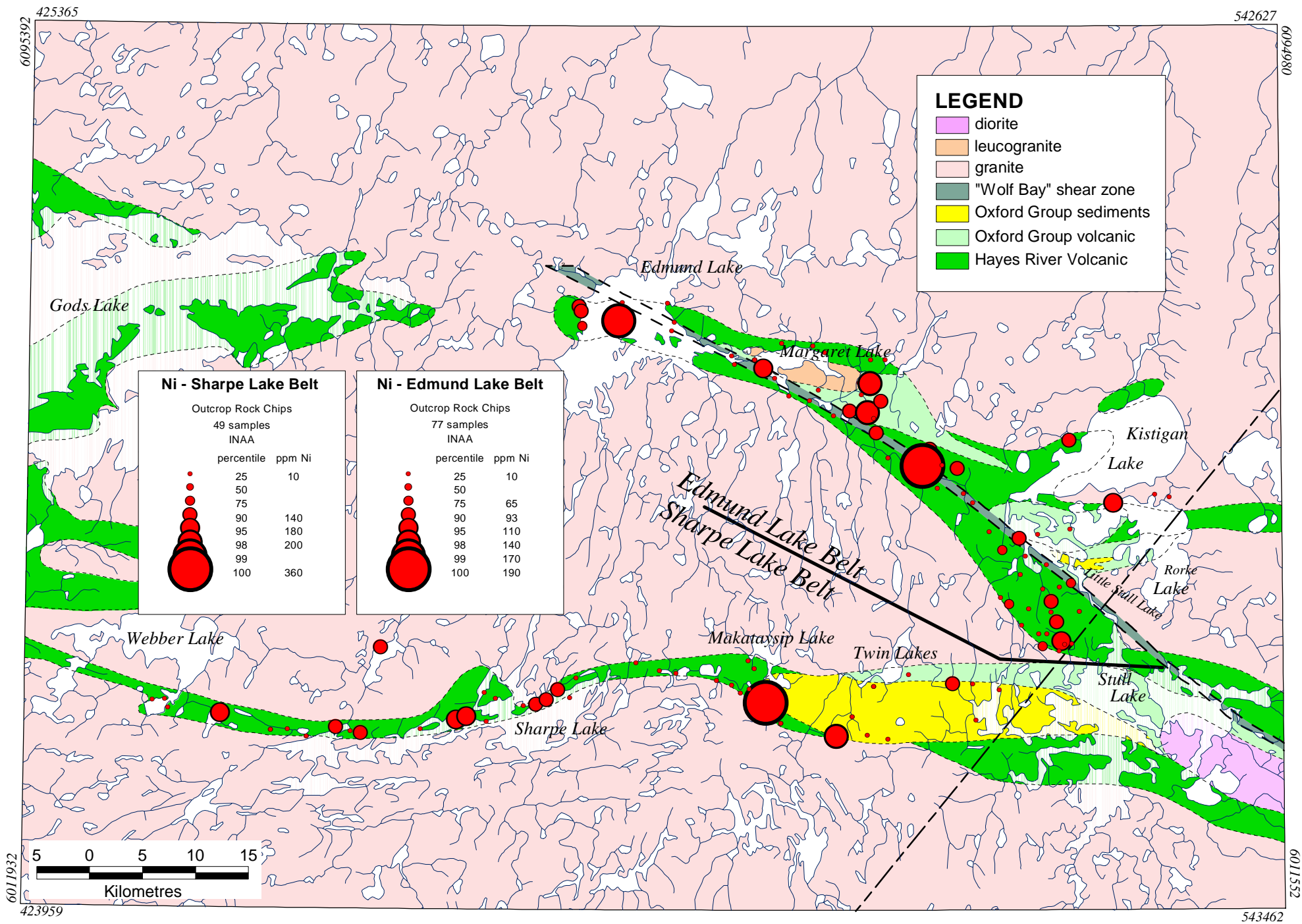




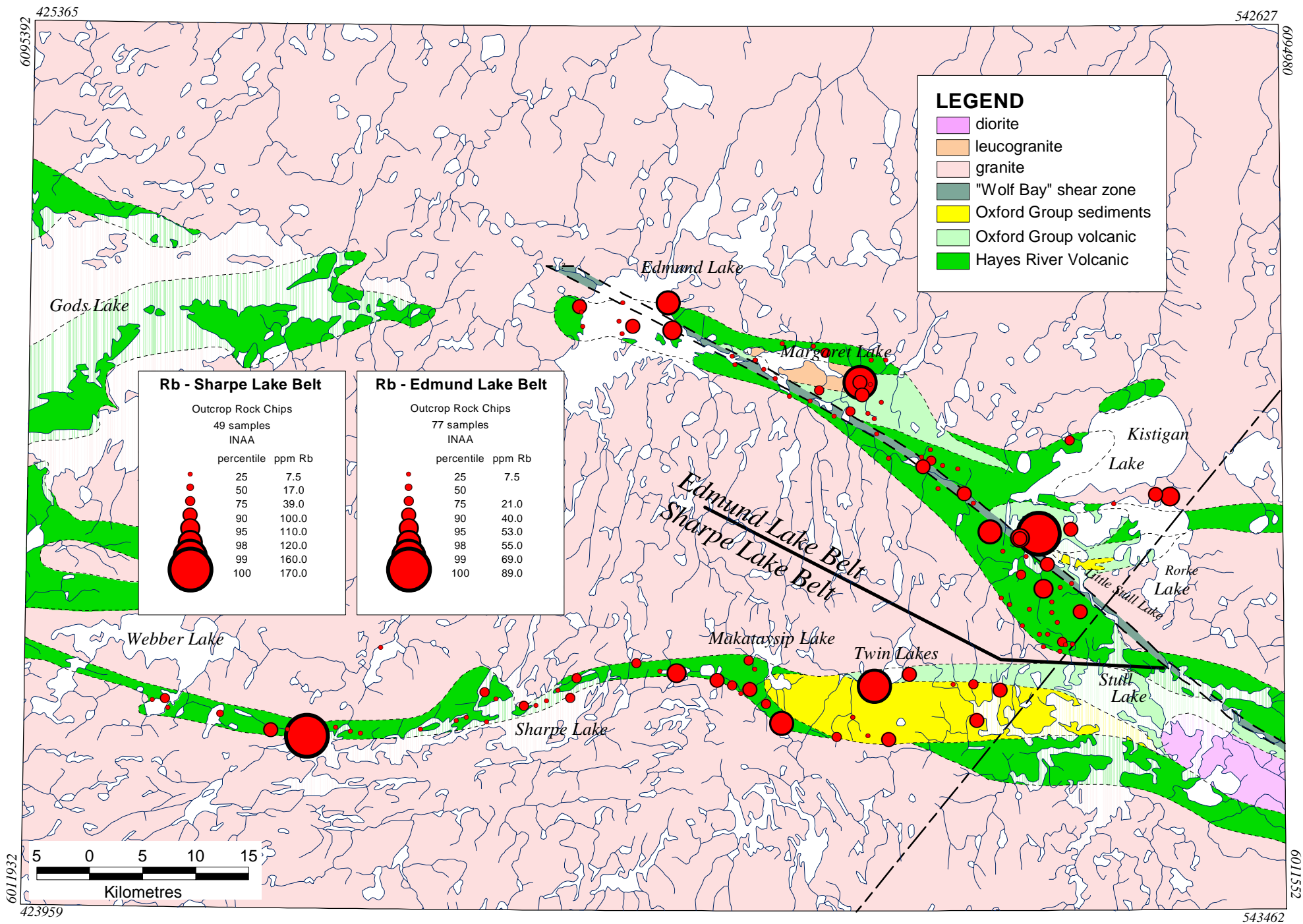


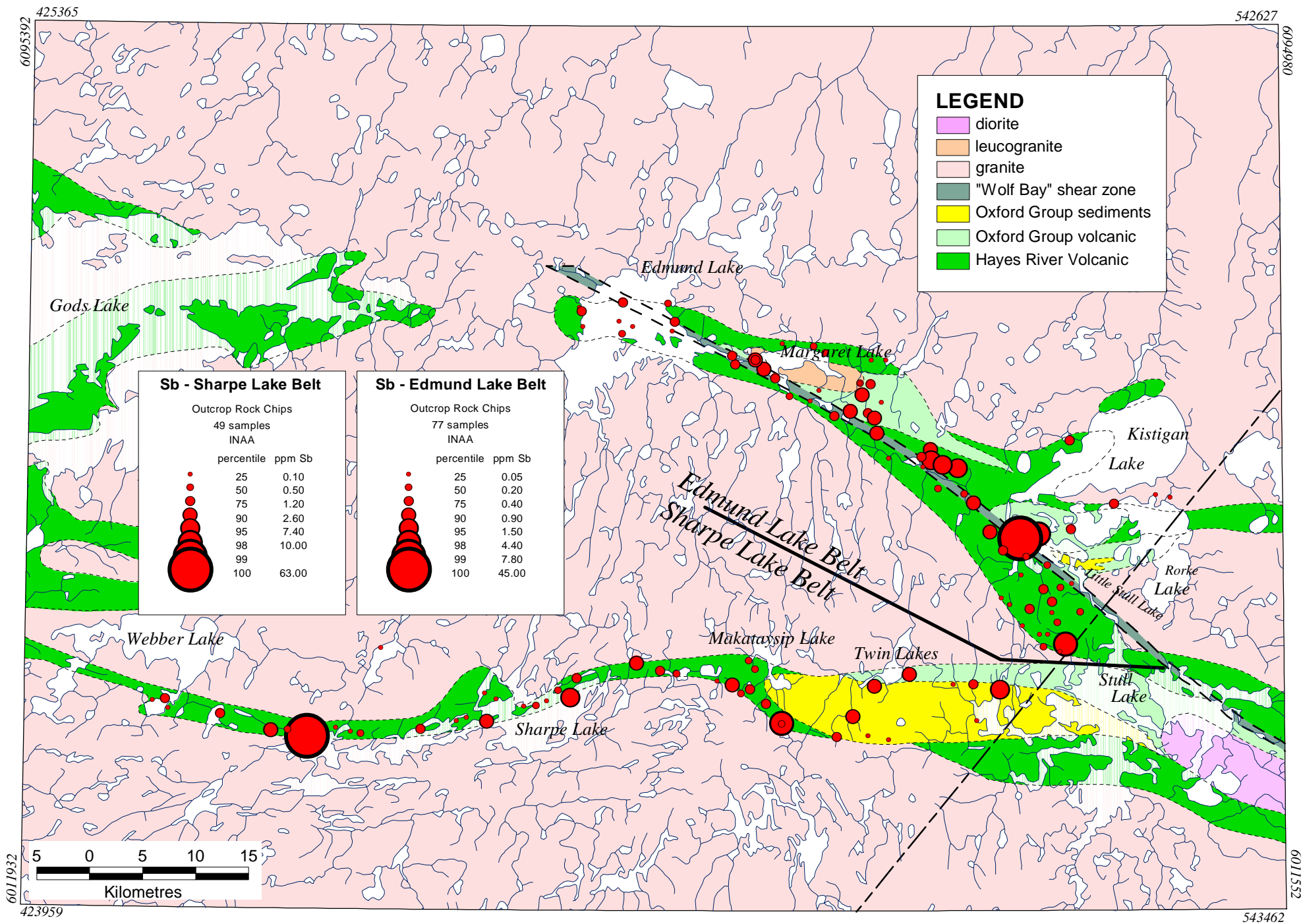




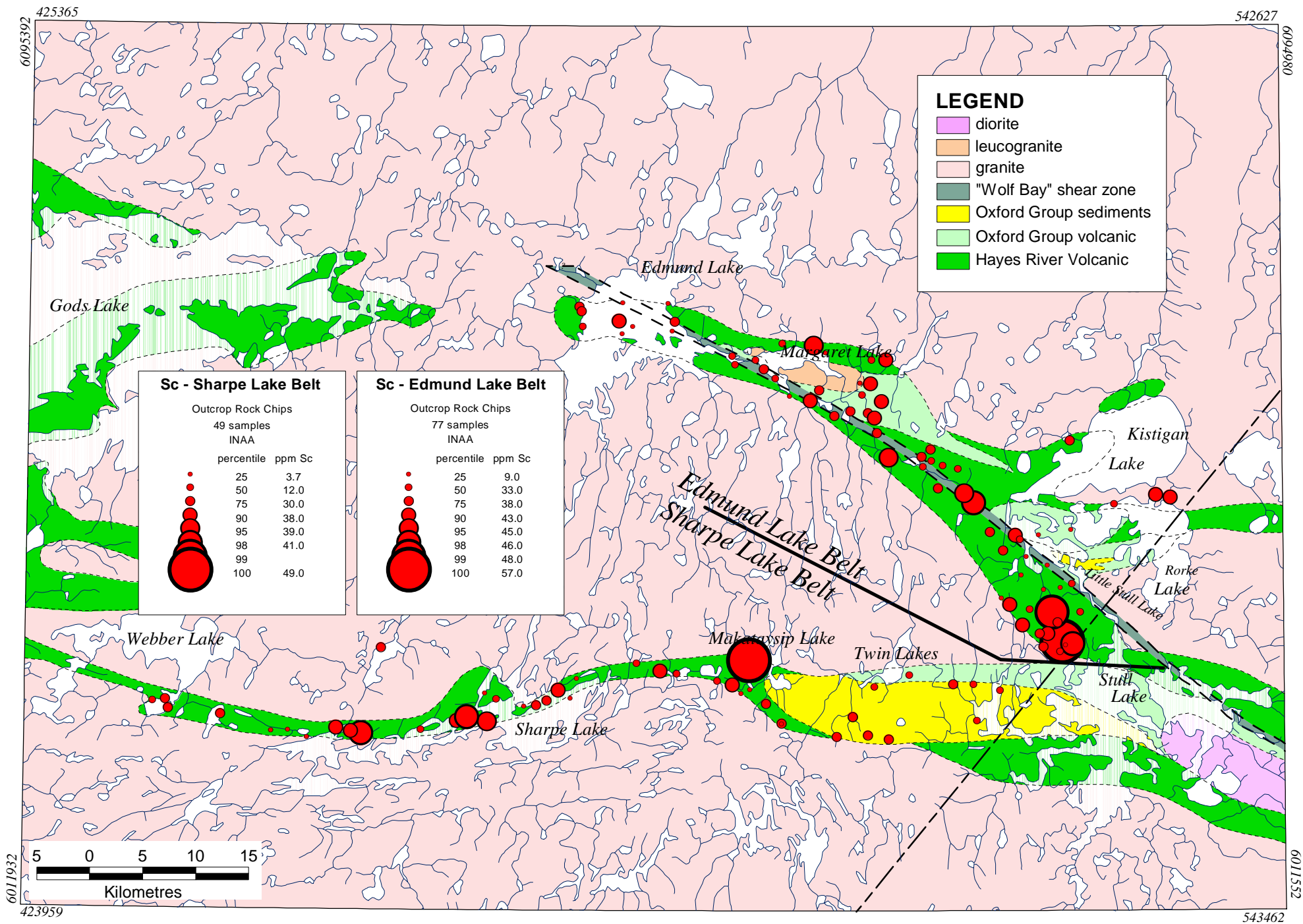


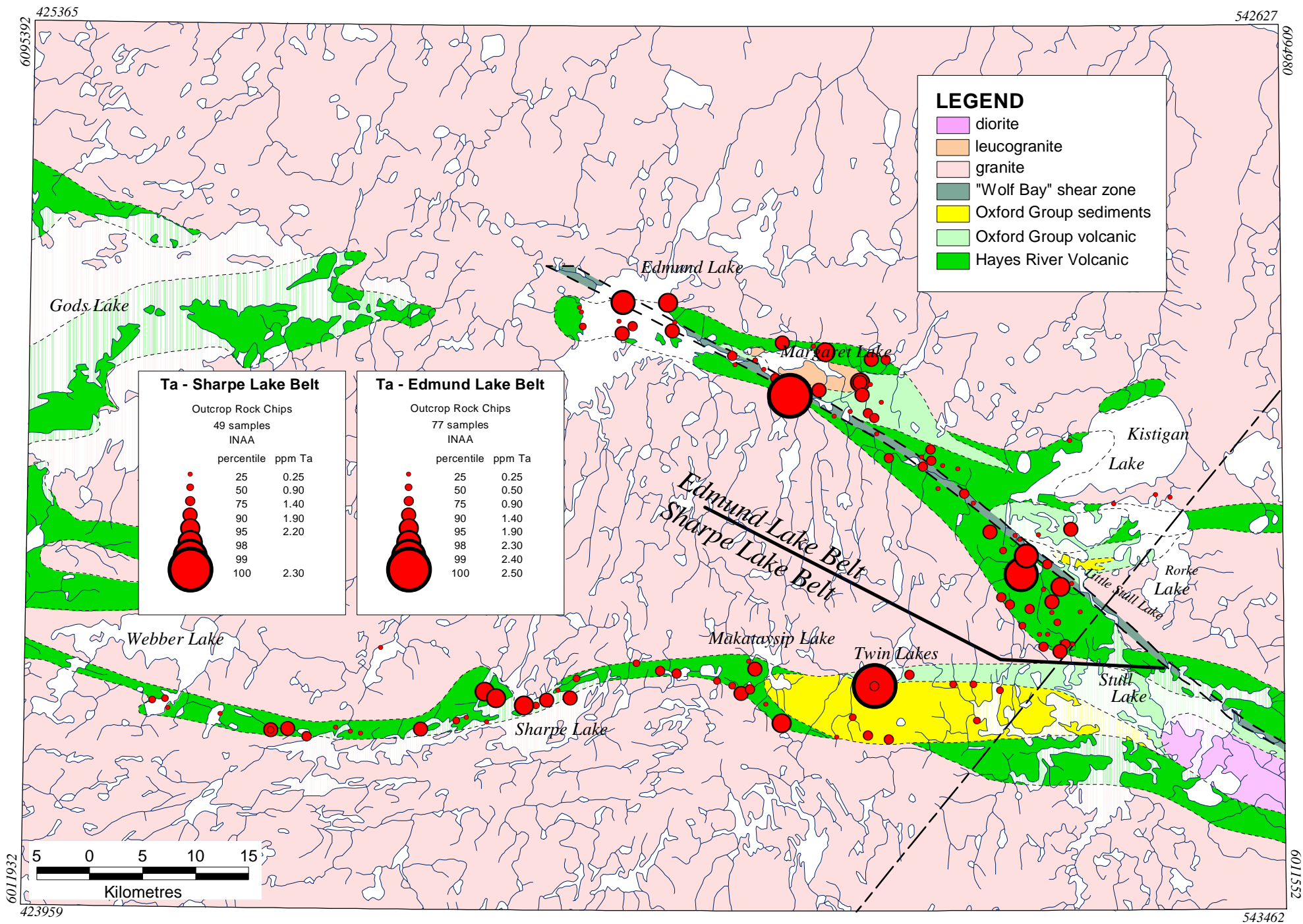


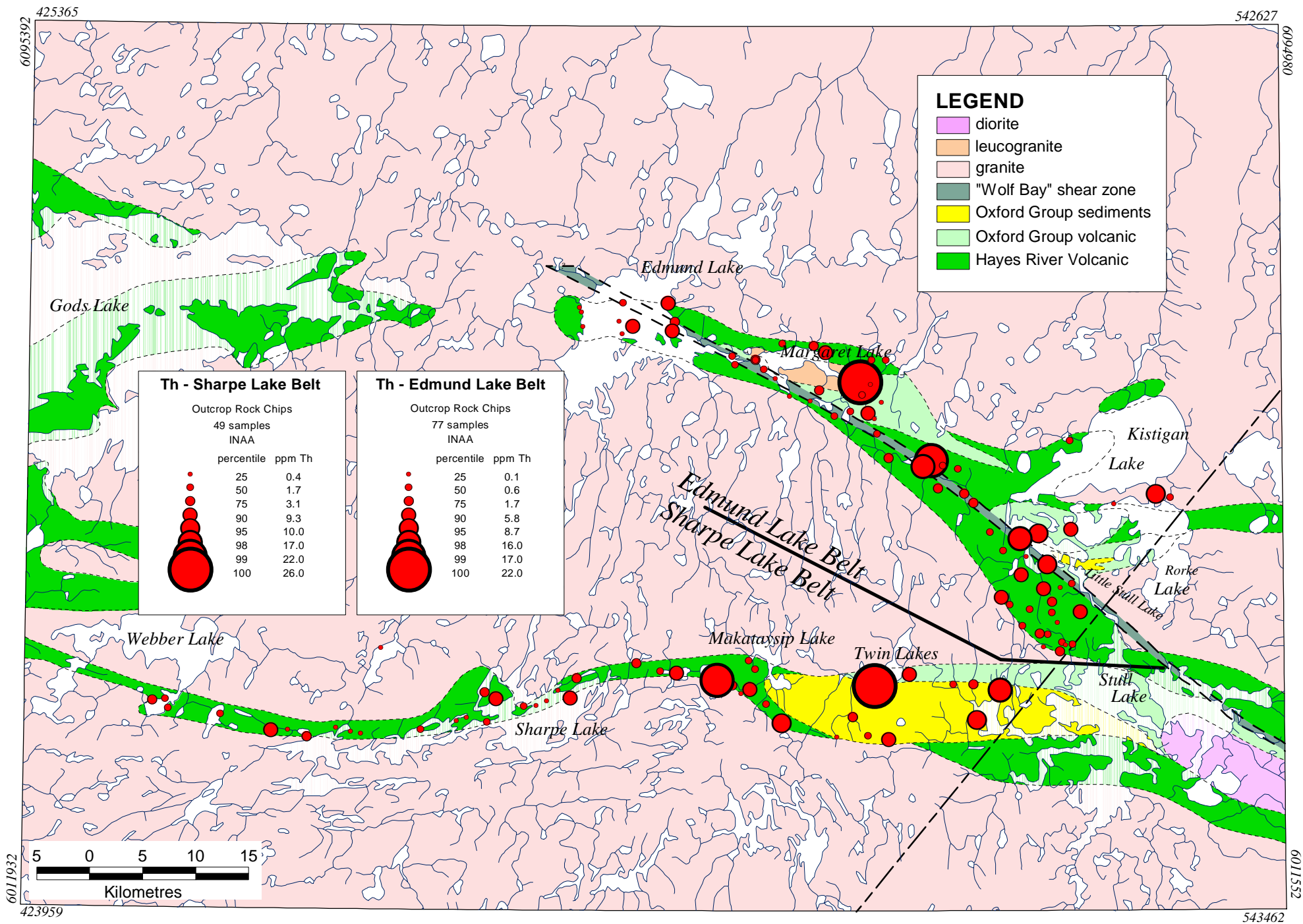




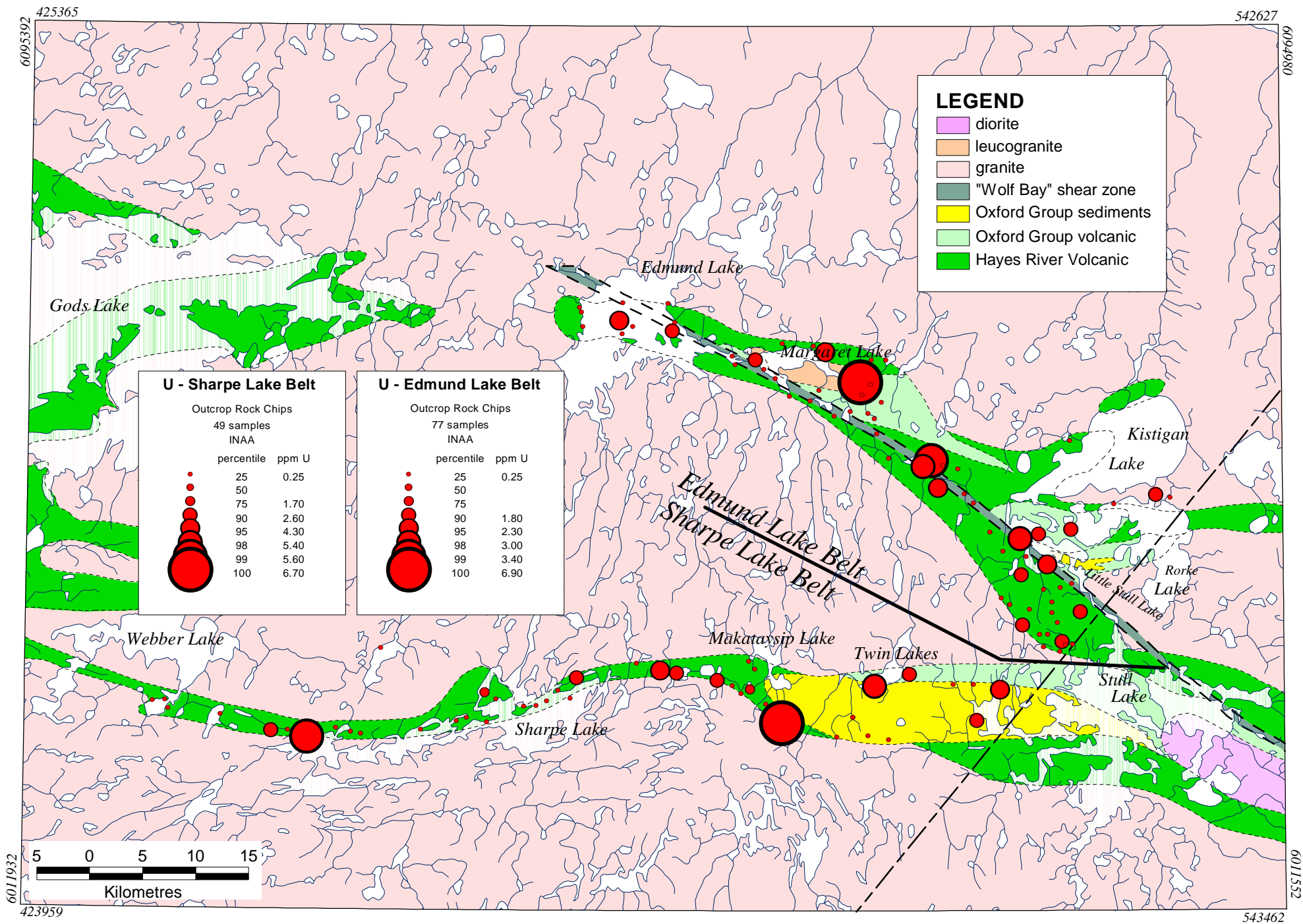


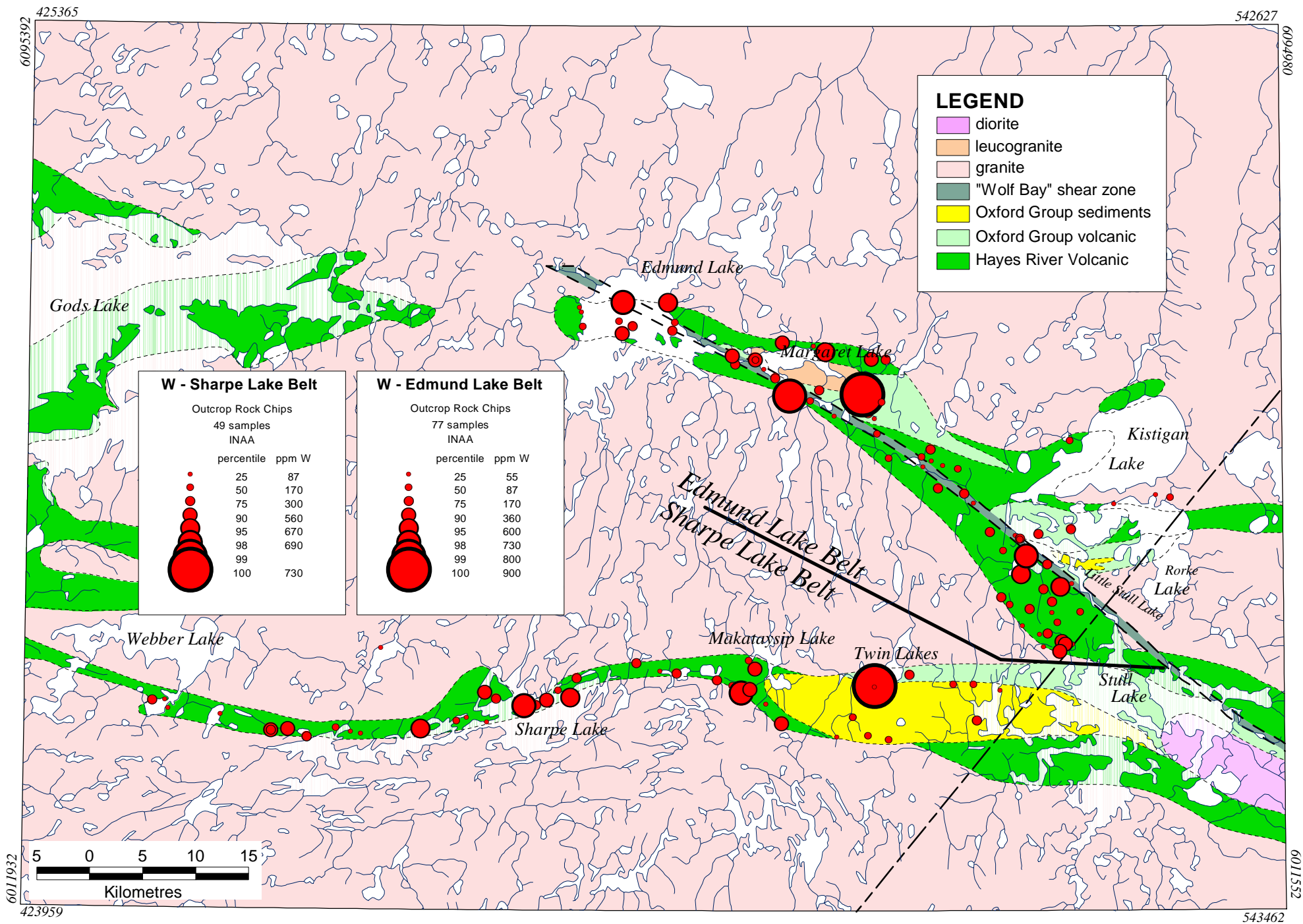


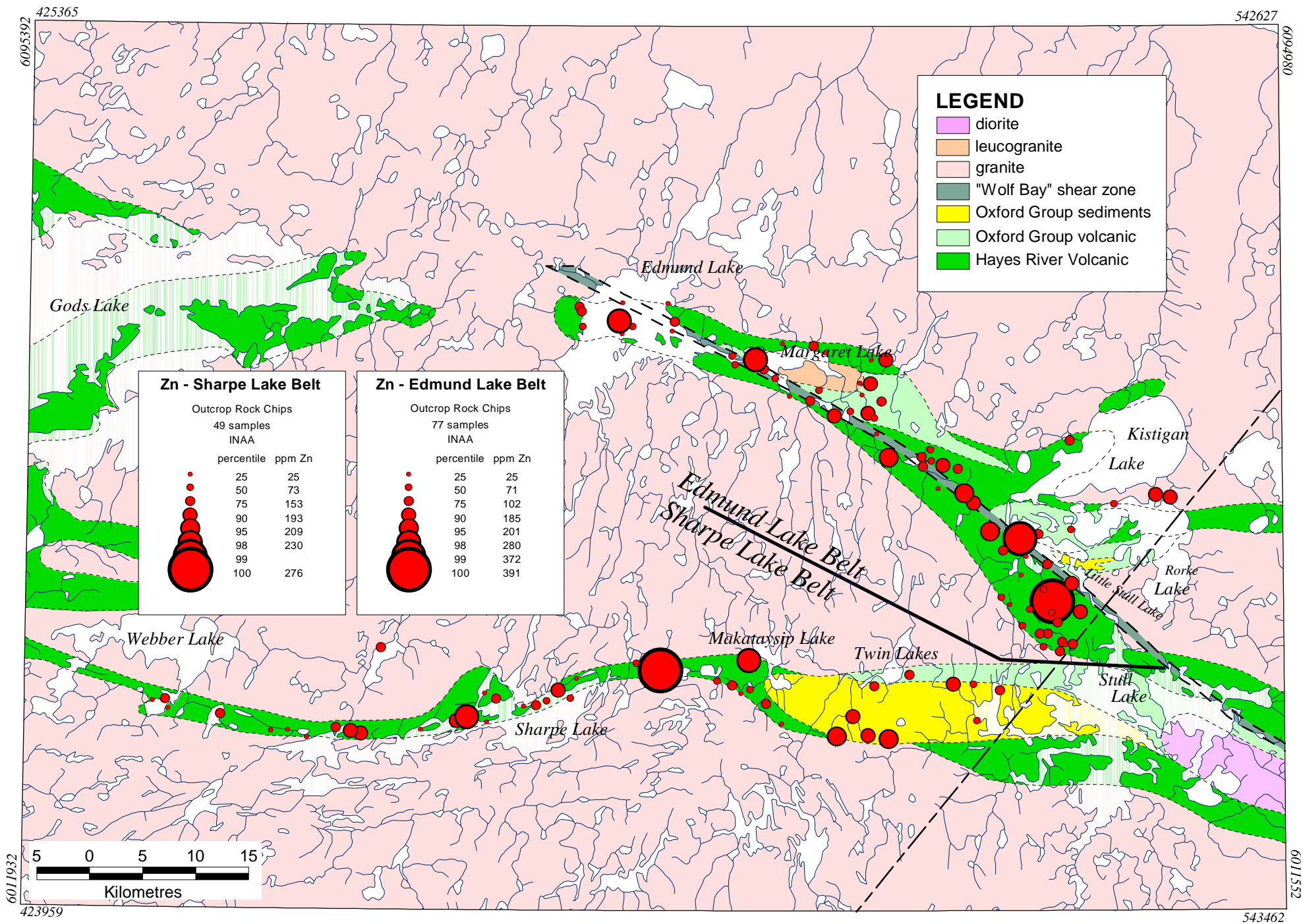




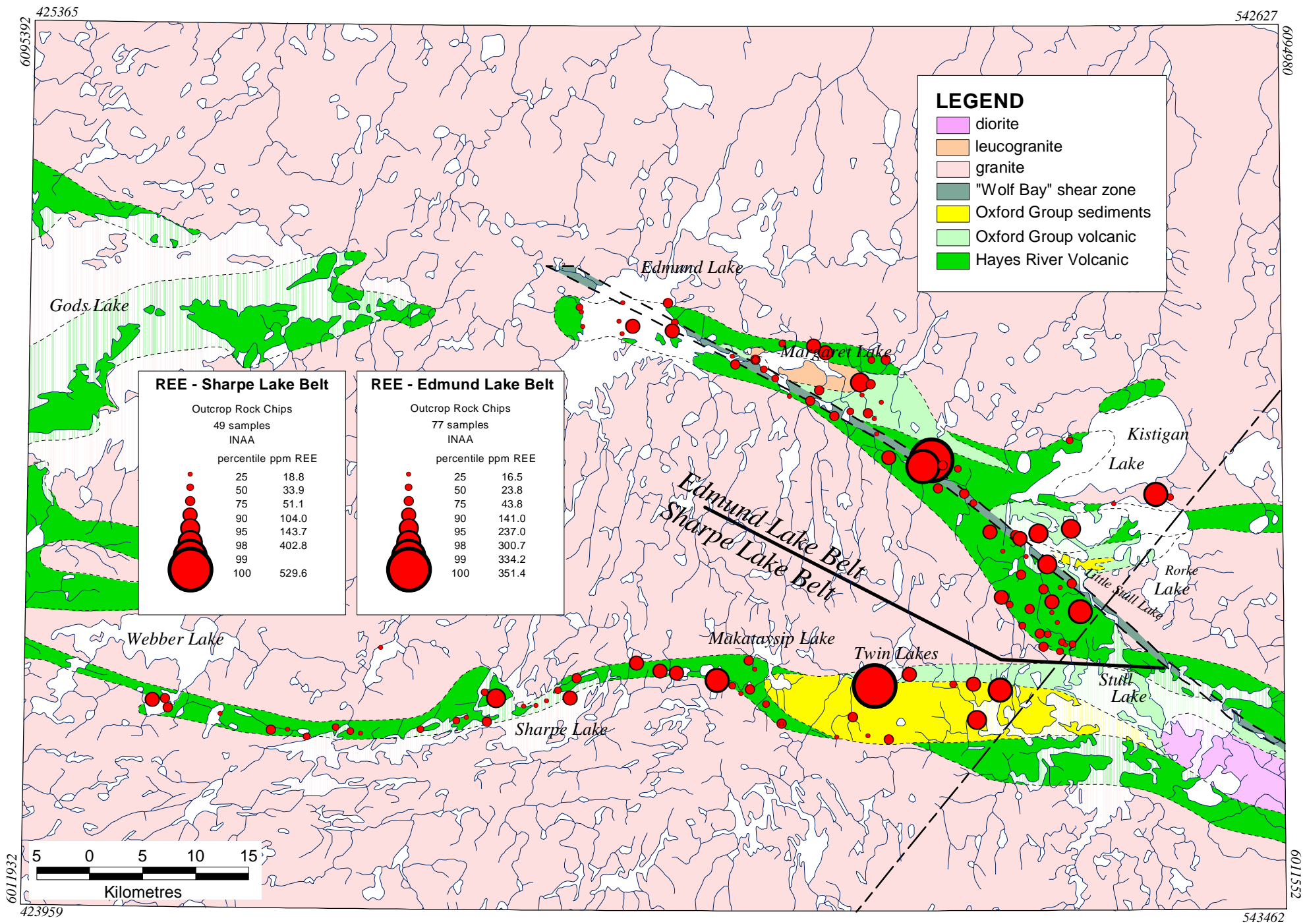


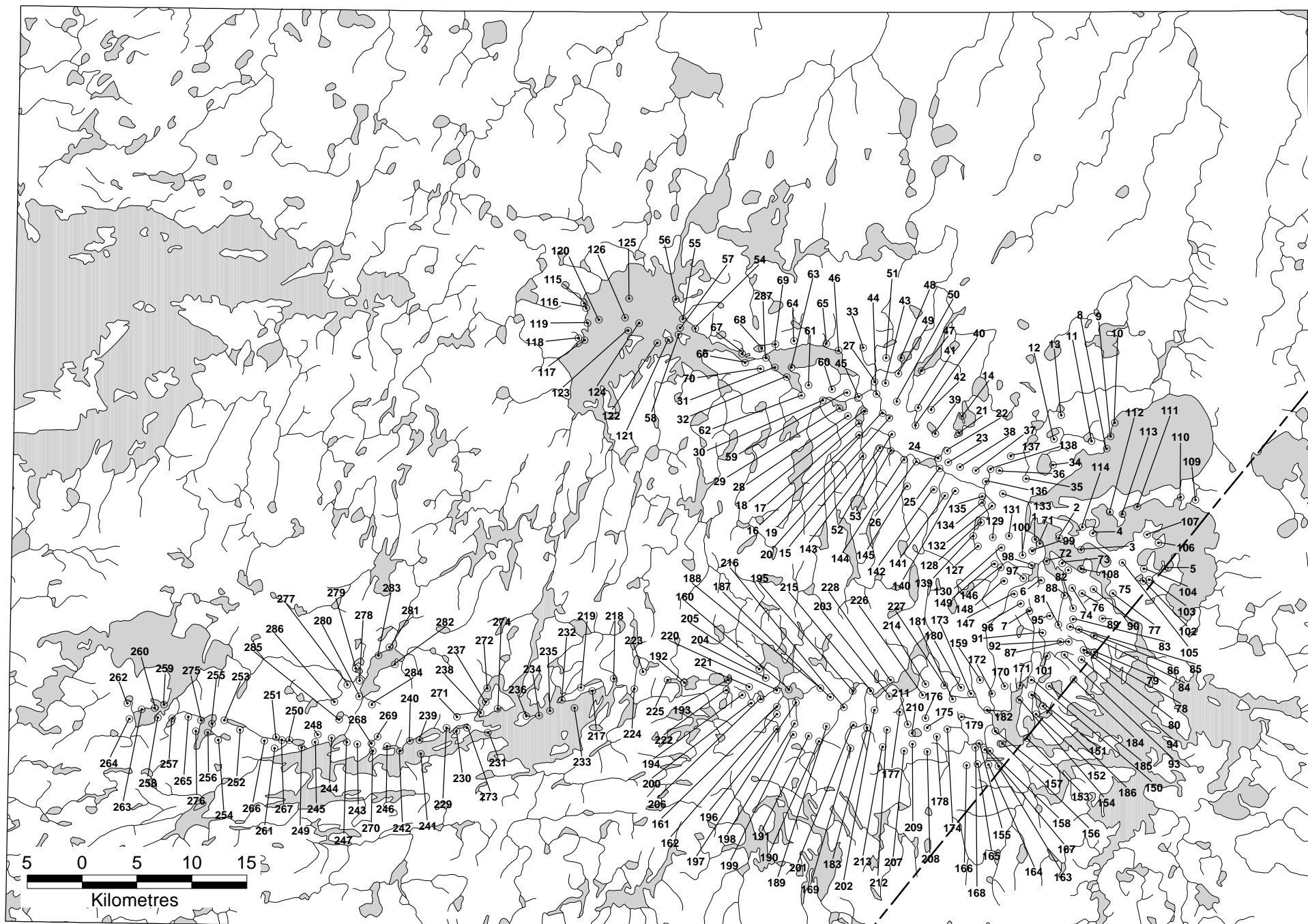














## **APPENDIX 1: Outcrop Rock Chip Sample Descriptions**

Sample 97R-1:	light chrome green, rusty weathered and carbonate-altered basalt; moderately fractured
Sample 97R-2:	rusty weathered, silicified, pyritic (1-5% disseminated) rhyolite; unaltered equivalent (not sampled) contains 1-2 mm feldspar phenocrysts
Sample 97R-4:	grey feldspar porphyry without visible sulphide mineralization
Sample 97R-6:	equigranular granite with white to light blue quartz veins; less than 1% disseminated subhedral pyrite (1-2 mm)
Sample 97R-7:	fine grained, foliated grey (altered?) basalt, slightly rusty weathered but no visible sulphide minerals
Sample 97R-11:	grey-green, rusty weathered, carbonate altered basalt with no visible sulphide minerals
Sample 97R-18:	green, faulted pyroxenite with 1-3% disseminated pyrite along fractures.
Sample 97R-19:	strongly silicified, sheared, pyritic felsic volcanic?; 1-10% disseminated pyrite $\pm$ sphalerite
Sample 97R-20:	relatively unaltered green-black gabbro with no visible sulphide minerals
Sample 97R-22:	probable altered basalt; silicification, epidote, chlorite, 1-2% disseminated pyrite; strong east-west fabric with interleaved quartz veins
Sample 97R-23:	green, altered basalt/ultramafic with 1% pyrite $\pm$ chalcopyrite
Sample 97R-24:	green fine grained basalt with quartz-carbonate veins and veinlets with 1% pyrite
Sample 97R-25:	green-black, strongly foliated fine grained basalt; basalt is intruded by granitic dykes; subsequently deformation has produced boundinaged dykes; no visible sulphide mineralization
Sample 97R-27:	sample is representative of a pyrite-quartz-rich, north-trending mylonite developed in granite; quartz is grey to black and contains 1-2% disseminated pyrite
Sample 97R-27-2:	granite with 1-2% disseminated pyrite $\pm$ chalcopyrite
Sample 97R-28:	fine grained, foliated ( $158^{\circ}\text{A}_3$ ) green basalt; quartz-carbonate veinlets contain 1-2% disseminated pyrite and are developed at an acute angle to the foliation
Sample 97R-30:	silicified, carbonate-altered rusty weathered green basalt; rusty-weathered streaks are fracture-controlled
Sample 97R-31:	massive, grey-green basalt with minor silicification; outcrop also contains quartz-carbonate veins without visible sulphide minerals
Sample 97R-32:	light chrome green strongly foliated, rusty-weathered basalt; 2-4 cm wide quartz-carbonate vein with 1-2% disseminated pyrite
Sample 97R-37:	grey-beige, silicified, rusty weathered basalt with quartz-carbonate veinlets

but no visible sulphide minerals

- Sample 97R-38: green, fine grained, locally rusty weathered basalt with quartz-carbonate veinlets and 1-2% disseminated pyrite; exposed after peeling moss from outcrop
- Sample 97R-43: grey, fine-medium grained, rusty weathered massive rock; localized epidote domains and 1% disseminated pyrite; altered basalt(?)
- Sample 97R-44: grey, strongly silicified, very fine grained rock with 1-5% disseminated pyrite; outcrop and rubble exposed beneath fallen tree
- Sample 97R-46: white and rusty weathered quartz vein without visible sulphide minerals in quartz or adjacent mafic wallrock
- Sample 97R-48: thinly bonded mafic tectonite with granitic "sills" and tightly folded quartz veins; local rusty weathered patches associated with 1% disseminated pyrite (1 mm)
- Sample 97R-50: rusty weathered sediments in contact with massive green basalt; sediments are strongly foliated with 1% disseminated pyrite; sample is representative of the sediments
- Sample 97R-51: massive foliated basalt with foliation-parallel rusty weathered aplite dykes; white quartz veins without visible sulphide minerals are also present
- Sample 97R-52: green, chloritic basalt without visible sulphide minerals
- Sample 97R-55: sample collected from low shoreline "table-top" outcrop at water's edge; finely layered mafic sedimentary rocks with quartz veinlets (<1 mm wide) and associated disseminated 1% pyrite
- Sample 97R-56: white-grey fractured granite with <1% disseminated pyrite as coatings on fracture surfaces; very finely disseminated pyrite possibly disseminated in the matrix
- Sample 97R-57: highly altered felsic dyke within a sheared zone; dyke has been altered to sericite in its entirety and contains disseminated pyrite and arsenopyrite associated with blue quartz veins
- Sample 97R-58: grey-white granite without visible sulphide minerals
- Sample 97R-60: fine grained, massive felsic volcanic/intrusion; white to green colour change accompanied by increase in chlorite; protolith could have been a basalt; no visible sulphide minerals
- Sample 97R-62: white quartz vein with highly altered (sericite) granite wallrock fragments; no visible sulphide minerals
- Sample 97R-64: green basalt with 1% fine grained pyrite stringers
- Sample 97R-65: epidotized green basalt with 1-2% disseminated pyrite and pyrite  $\pm$  chalcopyrite veinlets
- Sample 97R-66: massive and pillowed green basalt with localized quartz-carbonate veinlets; no visible sulphides

Sample 97R-67: light olive green, strongly foliated, fine grained aphyric basalt with rusty weathered blue and white quartz veins; no visible sulphide minerals

Sample 97R-71-1: Two samples collected from a washed and bulldozed pit; samples are both  
Sample 97R-71-2 strongly foliated, silicified, rusty weathered and biotite-altered basalt; 1-10% disseminated pyrite

Sample 97R-72: rusty weathered quartz vein in basalt outcrop at waters-edge; no visible sulphide minerals

Sample 97R-75: grey-green silicified basalt with 1% disseminated pyrite  $\pm$  chalcopyrite

Sample 97R-76: rusty-weathered blue and white quartz veins without visible sulphide minerals

Sample 97R-78: rusty weathered grey, silicified rock with 10-15% disseminated and veinlet pyrite; note that this is a float sample

Sample 97R-79: green, chloritic basalt with 1% disseminated pyrrhotite; also minor pyrrhotite laminae

Sample 97R-80: cherty, silicified, white-grey rock with 10-20% disseminated and veinlet pyrite; note that this is a shoreline float sample

Sample 97R-82: chloritic, rusty weathered and silicified basalt; 1-2% disseminated pyrite and chalcopyrite

Sample 97R-83: rusty weathered and silicified pillow basalt and pillow breccia; rusty zones appear confined to pillow selvages; no visible sulphide minerals

Sample 97R-85: light green, rusty weathered and silicified basalt; 1% disseminated pyrrhotite

Sample 97R-87: light green rusty weathered basalt with 1% disseminated pyrite in a white quartz vein

Sample 97R-88: strongly silicified white outcrop; protolith may have been basalt; no visible sulphide minerals

Sample 97R-89: green-black fresh equigranular gabbro with a few white quartz veinlets; finely disseminated 1% pyrite and chalcopyrite

Sample 97R-90: light green, chloritic and rusty weathered heterolithic mafic breccia; strongly foliated with rusty weathered quartz veins; no visible sulphide minerals

Sample 97R-93: black amphibolite with pyrite veinlets

Sample 97R-94: fine grained amphibolite with <1% disseminated pyrite

Sample 97R-95: basalt with <1% disseminated pyrite

Sample 97R-96: white-beige rhyolite with non-mineralized white quartz veins

Sample 97R-116: pillow basalt with 1% disseminated pyrite in white quartz veinlets

Sample 97R-119: quartz vein with 1% disseminated pyrite

Sample 97R-120: white quartz vein without visible sulphide minerals

Sample 97R-122: sheared pillow basalt with non-mineralized white quartz veins

Sample 97R-123: pillow basalt with white quartz veins and 1% disseminated pyrite

Sample 97R-124: grey-white silicified rhyolite dyke; minor pyrite

Sample 97R-126: white quartz vein with minor pyrite

Sample 97R-131: grey-green, strongly foliated rusty weathered, silicified basalt; disseminated and laminae of pyrite, pyrrhotite and chalcopyrite

Sample 97R-140: rusty weathered fine grained basalt; no visible sulphide minerals

Sample 97R-144: rusty weathered strongly foliated basalt; no visible sulphide minerals

Sample 97R-154: sericite schist with white, non-mineralized quartz veins

Sample 97R-157: grey-green tuff or flow with north-south trending quartz veins; 1-2% disseminated arsenopyrite and pyrite in quartz veins; lichen cover

Sample 97R-162: green-black, strongly foliated chloritic, basalt; no visible sulphide minerals

Sample 97R-163: green black basalt; minor rusty weathered patches and carbonate flecks; no visible sulphide minerals

Sample 97R-169: strongly foliated recrystallized basalt with rusty weathered foliation-parallel white quartz veins containing 1% disseminated pyrite  $\pm$  chalcopyrite

Sample 97R-172: light green, chloritic "mottled" rhyolite without visible sulphide minerals

Sample 97R-183-1: green, carbonate-altered basalt with 1% disseminated chalcopyrite

Sample 97R-183-2

Sample 97R-192: green-grey feldspar porphyritic granodiorite with 1% disseminated pyrite localized adjacent to fractures.

Sample 97R-194: grey, laminated, foliated fine grained rusty weathered sediment; 1 mm wide, foliation – parallel white quartz veins with 1-5% disseminated pyrite

Sample 97R-199-1: grey, silicified basalt boulder collected at Shoreline; 25% pyrite

Sample 97R-199-2: rusty weathered rhyolite dyke without visible sulphide minerals

Sample 97R-200: blue, fine grained quartz vein sampled at water's edge; vein contains fine grained pyrite laminae; host rock is a high strain basalt

- Sample 97R-203: white quartz vein with oxidized sulphide blebs
- Sample 97R-203-2: strongly foliated, flattened heterolithic breccia without visible sulphide minerals
- Sample 97R-204: rusty weathered white, non-mineralized quartz vein hosted by a rusty weathered basalt; no visible sulphide minerals in basalt
- Sample 97R-205: medium grained black-green, strongly magnetic amphibolite; abundance fine grained magnetite; no apparent layering
- Sample 97R-206: blue, boudined quartz vein with 1-2% arsenopyrite; sulphide occurs primarily at the quartz vein-wallrock contact with lesser arsenopyrite in the blue quartz veins; sample collected at waters edge, low lake level
- Sample 97R-207: rusty weathered and silicified grey basalt with 1-2% disseminated pyrite and pyrrhotite
- Sample 97R-213: rusty weathered green basalt with possible anthophyllite alteration, disseminated pyrite, pyrrhotite and blocky, subhedral arsenopyrite
- Sample 97R-216: grey-green, fine grained, feldspar-phyrlic felsic intrusion; no layering, small outcrop; no visible sulphide minerals
- Sample 97R-219: blue quartz vein with associated wallrock silicification; vein contains 1-3% disseminated arsenopyrite and pyrite; host rock is a grey-green weakly foliated intermediate dyke that intrudes a strongly foliated basalt
- Sample 97R-222: feldspar porphyritic granite, non-foliated, non-lineated, unaltered with no visible sulphide minerals
- Sample 97R-223: beige-green-grey sericitized and chloritized quartz-phyrlic felsic intrusion; no visible sulphide minerals
- Sample 97R-225: green rusty weathered, foliated gabbro; 1% disseminated pyrite
- Sample 97R-230: blue, slightly rusty weathered quartz vein with 1% disseminated pyrite
- Sample 97R-231: carbonate-altered chrome green basalt with white, non-mineralized quartz veins; basalt hosts 1% disseminated arsenopyrite and pyrite, possibly as a sulphide halo adjacent to quartz veins
- Sample 97R-232: green, rusty weathered and silicified basalt with 1% disseminated pyrrhotite and pyrite
- Sample 97R-233: white-green, locally silicified granodiorite with white quartz veins; veins contain 1% disseminated pyrite in wallrock fragments within the vein and adjacent to the vein
- Sample 97R-234: basalt with blue and white quartz veins; blue veins contain 1% disseminated pyrite and chalcopyrite; blue quartz veins were sampled for analysis
- Sample 97R-235: white, rusty weathered quartz veins with 1% disseminated pyrite; quartz veins occur within a splay of a shear zone; sample collected from a small island
- Sample 97R-236: grey granite with 1% disseminated pyrite in a white quartz vein

Sample 97R-237: white, silicified granite dyke intruding a fine grained lineated basalt; the dyke is altered in areas containing 1-2% disseminated pyrite and chalcopyrite

Sample 97R-239: strongly foliated green basalt with non-mineralized rusty weathered quartz rods, lenses and veinlets

Sample 97R-243: visibly unaltered massive, fine grained, green basalt

Sample 97R-244: intermediate light green volcanoclastic rock with localized epidote and calcite alteration; no visible sulphide minerals

Sample 97R-247: green, fine grained, locally silicified and rusty weathered basalt; no visible sulphide minerals

Sample 97R-249: rusty weathered, white (bleached?) granite with yellow coating (uranium oxide?) and pyrite veinlets

Sample 97R-249-2: abundant yellow "stained" white granite with anastomosing pyrite veinlets and disseminated pyrite

Sample 97R-255: grey-green, silicified and carbonate-altered basalt; 1% disseminated pyrite; this is a float sample

Sample 97R-258: fine grained grey-green, locally rusty weathered mafic tuff with rusty weathered quartz-carbonate veinlets; veinlets contain rare pyrite

Sample 97R-260: fine grained, green basalt with quartz-carbonate veinlets developed within a shear; veins contain 1% subhedral anhedral pyrite

Sample 97R-263: white, locally silicified granite with white non-mineralized quartz veins; 1-3% very fine grained pyrite occurs in the granite wallrock adjacent to the veins

Sample 97R-266: white(bleached?) granite with yellow (uranium oxide?) coating and 1-3% disseminated pyrite

Sample 97R-266-2: essentially a duplicate sample of 97R-266 with a slightly more intense yellow colour

Sample 97R-267: rusty weathered "smoky" and blue quartz veins within a granitic dyke that intrudes a fine grained basalt; quartz veins are also localized at the dyke-basalt contact

Sample 97R-273: green, fine grained, locally rusty weathered basalt; no visible sulphide minerals

Sample 97R-274: grey to white, pervasively silicified and quartz-veined granite; 1-5% disseminated pyrite and chalcopyrite occur in post-silicification fractures; outcrop and regular rubble at shoreline

Sample 97R-283: strongly foliated, green-black diorite; locally rusty weathered, epidote and carbonate alteration with 1% disseminated pyrite

Sample 97R-287-1: disseminated to near solid magnetite with rusty weathered basaltic interlayers

Sample 97R-287-2

Sample 97R-287-3

## Appendix 2

### Rock Geochemistry: Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES), Hydrogen Ion (H<sup>+</sup>), Specific Conductance (K) and Hg (FIMS) Analyses.

Sample Site	UTM		Mo	Cu	Pb	Zn	Ag	Ni	Mn	Sr	Bi	V	Ca	P	Mg
	EAST	NORTH	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%
97R-1	517844	6046787	1	154	6.0	57	0.4	34	2111	84	2.5	227	7.67	0.038	2.24
97R-2	520028	6046856	3	31	55.0	64	0.4	23	727	1014	7.0	66	2.66	0.120	1.20
97R-4	523123	6047360	1	15	14.0	60	0.2	17	354	1019	2.5	56	2.88	0.082	0.97
97R-6	518401	6043035	1	6	12.0	8	0.2	6	74	116	2.5	9	0.26	0.018	0.15
97R-7	517331	6040220	1	32	2.5	65	0.2	72	1916	111	2.5	206	9.06	0.022	3.62
97R-11	522988	6055725	1	109	2.5	75	0.9	138	1363	121	2.5	234	8.74	0.030	4.90
97R-18	502316	6058450	1	46	2.5	46	0.8	145	1129	141	2.5	205	8.78	0.018	4.23
97R-19	503981	6058302	5	411	8.0	95	0.2	191	837	649	2.5	132	2.45	0.030	1.78
97R-20	504550	6057806	1	108	2.5	46	0.6	65	1092	120	2.5	203	9.19	0.021	4.32
97R-22	509841	6054884	3	102	2.5	73	0.6	139	1371	163	2.5	218	10.19	0.024	2.96
97R-23	509948	6053778	1	57	13.0	70	0.2	149	1031	1088	2.5	150	8.53	0.211	6.13
97R-24	509040	6054136	1	90	2.5	98	0.6	74	1548	144	2.5	291	8.92	0.035	3.31
97R-25	509160	6053238	7	71	7.0	61	0.4	342	958	738	2.5	124	8.65	0.195	8.01
97R-27	503212	6061166	1	10	27.0	27	0.3	9	170	619	2.5	20	1.26	0.037	0.30
97R-28	500798	6058006	1	102	6.0	164	0.7	54	1457	134	6.0	322	5.30	0.058	2.66
97R-30	498526	6059429	1	58	2.5	64	0.2	93	1252	162	2.5	257	8.70	0.032	4.62
97R-31	494124	6062419	1	53	2.5	74	0.5	146	1378	120	2.5	213	9.60	0.032	4.93
97R-32	495219	6061599	1	24	2.5	41	0.5	18	799	64	2.5	122	5.92	0.029	1.88
97R-37	512445	6053053	1	111	2.5	73	0.4	59	1374	104	2.5	248	12.04	0.030	2.06
97R-38	511021	6053344	1	144	2.5	96	1.9	34	1464	162	2.5	340	8.28	0.071	2.32
97R-43	504203	6061045	1	149	2.5	120	0.2	173	2150	115	2.5	261	10.57	0.026	2.87
97R-44	503423	6060019	2	11	5.0	32	0.2	46	220	160	2.5	66	2.03	0.012	0.67
97R-46	499940	6063989	1	48	7.0	22	0.2	27	274	255	2.5	37	2.16	0.031	0.79
97R-48	505621	6063322	1	143	2.5	112	0.6	50	2477	139	8.0	307	9.59	0.053	2.03
97R-50	505247	6059379	1	126	2.5	110	0.4	166	2649	121	2.5	280	7.26	0.026	2.22
97R-51	504271	6063350	54	215	2.5	47	0.7	4	806	57	2.5	201	6.18	0.038	1.33
97R-52	504799	6056393	1	74	2.5	63	0.6	146	2137	119	2.5	225	10.19	0.028	2.44
97R-55	485756	6066892	1	176	2.5	76	0.7	74	1264	133	2.5	254	8.84	0.039	4.03
97R-56	485088	6068682	1	4	11.0	22	0.2	5	132	387	2.5	11	1.43	0.020	0.17
97R-57	485524	6066062	1	13	5.0	10	0.2	4	169	162	2.5	31	2.12	0.041	0.35
97R-60	499348	6060438	2	48	2.5	54	0.7	57	1287	189	2.5	189	13.97	0.032	3.67
97R-62	496583	6059870	1	3	2.5	2	0.2	4	5	6	2.5	2	0.02	0.002	0.01
97R-64	495880	6064914	2	36	2.5	61	0.4	39	1018	114	2.5	208	6.32	0.032	2.47
97R-65	498817	6064616	1	67	9.0	119	0.2	37	1754	1059	2.5	419	14.21	0.082	2.82
97R-66	491433	6062854	1	8	2.5	71	0.2	56	1325	100	2.5	201	8.26	0.030	3.61
97R-67	491159	6063714	1	35	2.5	50	0.2	36	1137	39	2.5	129	2.05	0.019	2.01
97R-71-1	518287	6046419	5	81	2.5	41	0.2	39	1045	112	2.5	161	3.64	0.063	1.74
97R-71-2	518287	6046419	2	116	30.0	447	0.2	50	943	174	2.5	153	4.40	0.046	2.06
97R-72	518901	6044811	1	4	2.5	5	0.2	8	117	5	2.5	7	0.85	0.006	0.13
97R-75	520867	6044001	1	31	11.0	81	0.2	21	754	1386	2.5	109	3.89	0.155	1.64
97R-76	522120	6041844	1	2	2.5	3	0.2	4	98	9	2.5	4	1.26	0.003	0.15
97R-78	522282	6036707	1	195	2.5	77	0.2	189	2704	121	2.5	357	2.11	0.022	0.94
97R-79	523264	6036507	1	200	2.5	86	0.2	92	2554	110	2.5	300	10.45	0.028	3.66
97R-80	522574	6036479	1	8	15.0	5	0.2	6	141	27	6.0	6	0.34	0.074	0.74
97R-82	521310	6040504	3	276	2.5	429	0.4	96	3222	218	2.5	111	6.66	0.065	3.84
97R-83	521313	6039495	1	269	2.5	99	0.6	70	4269	51	2.5	292	8.99	0.022	4.42
97R-85	521819	6038559	1	141	2.5	76	0.2	106	1452	166	2.5	258	7.97	0.022	3.43
97R-87	520938	6037469	1	243	2.5	104	0.2	58	1972	150	2.5	253	10.10	0.031	3.01
97R-88	520527	6041691	5	19	8.0	40	0.2	11	221	161	2.5	41	2.41	0.034	0.67
97R-89	523975	6039555	1	94	5.0	119	0.2	46	1326	869	2.5	157	6.72	0.176	2.73
97R-90	523174	6042220	1	111	2.5	92	0.2	97	3195	117	2.5	221	3.88	0.033	2.79
97R-91	518535	6038263	1	77	2.5	97	0.2	52	3045	109	2.5	284	10.45	0.033	4.11
97R-92	520156	6037478	1	82	2.5	73	0.2	68	1470	164	2.5	220	10.44	0.035	4.35
97R-93	520504	6036253	1	40	2.5	60	0.2	37	1304	70	2.5	218	12.50	0.034	3.24
97R-94	522084	6035823	1	32	6.0	82	0.2	31	1191	234	2.5	150	9.59	0.025	2.11
97R-95	519219	6039836	1	96	2.5	61	0.2	41	1477	107	2.5	179	10.62	0.028	2.81
97R-96	516558	6040903	1	99	2.5	60	0.2	21	4155	151	2.5	14	2.93	0.045	1.12
97R-100	516705	6045308	1	137	2.5	90	0.2	148	1401	88	2.5	273	7.45	0.023	3.53
97R-109	532452	6050373	1	97	2.5	98	0.4	33	1804	39	2.5	290	8.05	0.040	1.57
97R-110	531121	6050631	1	154	2.5	112	0.2	65	2207	415	2.5	287	13.34	0.551	3.76
97R-111	527183	6049725	1	33	2.5	55	0.2	203	1340	155	2.5	216	10.63	0.026	4.90

Sample Site	UTM		Mo	Cu	Pb	Zn	Ag	Ni	Mn	Sr	Bi	V	Ca	P	Mg
	EAST	NORTH	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%
97R-115	476770	6068319	1	150	2.5	78	0.2	154	1354	118	2.5	246	8.27	0.025	4.80
97R-116	476939	6067881	1	131	2.5	70	0.2	120	1377	97	2.5	244	8.81	0.024	4.47
97R-119	477063	6066473	1	141	2.5	56	0.2	84	1129	90	2.5	185	11.75	0.018	3.02
97R-123	480778	6065799	1	2	2.5	8	0.2	5	57	2	2.5	15	0.10	0.004	0.31
97R-124	481778	6066491	1	32	5.0	47	0.2	11	334	221	2.5	48	2.76	0.049	0.72
97R-125	480838	6068726	1	29	12.0	11	0.2	3	31	27	2.5	3	0.28	0.007	0.05
97R-126	480508	6066960	1	129	2.5	73	0.2	148	1219	78	2.5	241	9.16	0.026	4.93
97R-131	515458	6047081	1	288	2.5	95	0.2	21	1233	55	2.5	174	4.85	0.089	2.92
97R-132	513910	6049816	1	19	2.5	85	0.2	40	1588	81	2.5	246	6.22	0.033	5.47
97R-135	513049	6050683	1	79	5.0	76	0.2	54	2222	190	2.5	246	12.56	0.032	3.63
97R-140	510561	6051207	1	75	7.0	86	0.2	43	1681	190	2.5	245	10.46	0.037	4.41
97R-144	505932	6054078	1	79	2.5	157	0.2	44	1974	137	2.5	361	7.44	0.065	2.65
97R-154	516412	6032166	1	38	26.0	67	0.2	26	725	479	2.5	62	1.93	0.166	0.55
97R-157	514218	6029291	1	42	19.0	71	0.2	47	688	847	2.5	115	4.94	0.102	2.31
97R-162	494356	6030881	1	65	2.5	59	0.2	386	1255	340	8.0	136	7.74	0.069	9.28
97R-169	501038	6027746	1	115	2.5	112	0.4	192	1554	204	2.5	258	9.58	0.046	5.02
97R-172	513930	6032694	2	36	12.0	68	0.2	58	470	642	2.5	101	5.24	0.063	1.92
97R-173	511989	6032692	1	19	6.0	99	0.7	123	1476	171	5.0	260	8.75	0.035	3.91
97R-183	502520	6029633	1	133	2.5	77	0.2	48	1412	234	2.5	225	8.03	0.041	3.01
97R-192	485905	6033746	1	12	9.0	60	0.2	12	412	269	2.5	50	2.81	0.105	0.75
97R-194	491164	6032643	1	62	20.0	74	0.2	48	1636	89	2.5	289	3.88	0.042	2.61
97R-199-1	495793	6029002	1	42	13.0	35	0.2	43	1344	378	5.0	155	6.68	0.068	2.52
97R-199-2	495793	6029002	1	50	33.0	11	0.2	6	78	153	2.5	6	1.18	0.010	0.13
97R-200	491974	6031864	1	10	2.5	10	0.2	9	160	13	2.5	21	0.55	0.009	0.22
97R-203-1	504582	6032523	1	4	20.0	17	0.5	7	580	350	2.5	7	1.52	0.062	0.09
97R-203-2	504582	6032523	1	49	58.0	93	0.2	29	1167	349	2.5	81	0.58	0.193	0.36
97R-204	493311	6034135	1	93	2.5	19	0.2	7	240	121	2.5	32	2.10	0.025	0.20
97R-205	492691	6034939	1	4	2.5	121	0.2	13	1974	182	2.5	527	6.86	0.055	3.06
97R-206	492813	6032211	2	22	19.0	53	0.2	16	254	300	2.5	39	1.94	0.057	0.54
97R-207	505903	6027507	1	109	7.0	109	0.2	68	1241	328	2.5	175	5.69	0.061	2.27
97R-213	503971	6027895	1	199	2.5	89	0.2	93	3476	154	2.5	249	11.74	0.035	3.44
97R-216	500430	6031458	1	10	17.0	64	0.2	16	247	608	2.5	50	2.36	0.071	0.88
97R-219	476476	6033291	1	6	5.0	17	0.2	7	174	189	2.5	24	2.30	0.035	0.33
97R-222	489734	6033070	1	18	13.0	57	0.2	13	496	319	2.5	50	3.62	0.073	0.86
97R-223	482129	6034706	1	5	8.0	47	0.2	16	325	554	2.5	36	3.24	0.057	0.61
97R-225	484355	6033976	1	158	2.5	145	0.2	2	2090	139	2.5	125	5.26	0.136	1.58
97R-230	465126	6029280	1	114	2.5	78	0.2	112	1347	93	2.5	274	8.00	0.032	2.69
97R-231	468014	6029211	1	100	2.5	96	0.2	48	1520	114	2.5	275	6.36	0.051	3.84
97R-232	474714	6032147	1	231	2.5	91	0.5	131	2929	71	2.5	250	13.70	0.031	3.28
97R-233	475878	6031424	1	33	2.5	30	0.2	15	366	204	2.5	27	1.84	0.040	0.42
97R-234	472653	6030759	1	93	2.5	37	0.2	64	676	117	2.5	100	6.08	0.024	2.24
97R-235	473647	6031180	1	58	2.5	29	0.2	50	530	45	2.5	88	3.60	0.042	1.05
97R-236	471481	6030684	2	2	2.5	10	0.2	7	68	136	2.5	14	0.78	0.019	0.14
97R-237	467781	6031932	1	21	15.0	16	0.2	7	87	164	2.5	11	1.07	0.011	0.15
97R-239	461733	6028498	1	6	5.0	12	0.2	12	216	91	2.5	29	1.99	0.022	0.45
97R-243	456102	6028120	1	82	2.5	83	0.5	102	1426	115	2.5	270	8.62	0.026	5.62
97R-244	453747	6028681	1	63	2.5	69	0.2	135	1512	68	2.5	298	13.42	0.025	2.16
97R-247	455132	6028325	1	91	2.5	87	0.2	129	1582	94	2.5	295	10.38	0.035	3.15
97R-249-1	450994	6027808	1	6	19.0	37	0.2	3	165	176	2.5	10	0.50	0.021	0.23
97R-249-2	450994	6027808	2	48	41.0	20	1.0	2	112	43	2.5	10	0.02	0.018	0.20
97R-255	442843	6030013	1	107	6.0	67	0.2	176	1953	265	2.5	196	16.55	0.023	3.35
97R-258	437900	6030559	1	80	9.0	82	0.2	80	1377	182	2.5	222	7.90	0.037	4.74
97R-260	437640	6031393	1	73	2.5	76	0.2	66	1165	69	2.5	217	5.50	0.042	3.87
97R-263	436445	6031287	1	13	5.0	24	0.2	14	208	267	2.5	52	2.63	0.051	1.01
97R-266-1	447639	6028463	1	2	24.0	30	0.2	3	193	315	2.5	9	1.05	0.016	0.11
97R-266-2	447639	6028463	1	2	23.0	31	0.2	3	255	397	2.5	8	1.57	0.018	0.12
97R-267	449222	6028541	1	8	2.5	7	0.2	7	83	4	2.5	12	0.20	0.003	0.15
97R-273	466096	6029651	1	135	2.5	86	0.2	188	1339	80	2.5	288	8.81	0.027	5.12
97R-274	468869	6031353	1	62	64.0	82	0.2	11	256	168	2.5	5	1.52	0.018	0.21
97R-283	457995	6036193	1	5	2.5	63	0.6	107	2789	122	2.5	194	14.14	0.037	3.81
97R-287-1	493331	6063322	1	20	2.5	34	0.5	18	9675	44	2.5	12	3.40	0.016	2.12
97R-287-2	493331	6063322	1	75	2.5	178	0.9	47	19743	93	2.5	38	5.77	0.011	3.67
97R-287-3	493331	6063322	1	74	2.5	294	0.2	58	11426	73	2.5	186	7.22	0.024	3.65



Sample Site	Ti %	Al %	K %	Y ppm	H <sup>+</sup> ppb	K mhos cm <sup>-1</sup>	Hg ppb
97R-1	0.37	7.14	0.92	23	-2.0	29.7	15.0
97R-2	0.28	8.58	2.57	18	-1.9	32.3	40.0
97R-4	0.23	7.81	1.34	11	-2.0	26.3	5.0
97R-6	0.03	1.80	0.70	2	-2.0	11.4	2.5
97R-7	0.30	7.77	0.49	22	-2.0	14.7	2.5
97R-11	0.45	7.74	0.36	24	-2.0	5.9	2.5
97R-18	0.40	7.82	0.54	23	-2.0	25.0	2.5
97R-19	0.21	5.23	0.25	18	-2.0	49.2	2.5
97R-20	0.31	8.27	0.26	18	-2.0	21.4	2.5
97R-22	0.43	8.02	0.33	23	-2.0	18.8	2.5
97R-23	0.33	5.31	1.27	25	-2.0	29.1	2.5
97R-24	0.62	7.17	0.13	30	-2.0	23.3	11.0
97R-25	0.32	5.15	1.06	19	-2.0	15.8	2.5
97R-27	0.11	6.27	1.42	9	-2.0	18.6	2.5
97R-28	0.71	6.55	0.23	16	-2.0	30.1	2.5
97R-30	0.47	7.54	0.22	32	-2.0	15.8	2.5
97R-31	0.37	6.88	0.28	20	-2.0	27.0	2.5
97R-32	0.20	4.79	0.13	11	-2.0	15.8	2.5
97R-37	0.50	6.45	0.06	24	-2.0	33.9	2.5
97R-38	1.02	6.54	0.28	46	-2.0	28.5	2.5
97R-43	0.53	8.97	0.43	32	-2.0	20.4	2.5
97R-44	0.11	4.13	0.64	8	-2.0	28.2	2.5
97R-46	0.12	4.27	0.45	6	-2.0	4.0	2.5
97R-48	0.76	6.99	0.40	37	-2.0	21.3	2.5
97R-50	0.53	8.79	0.35	23	-2.0	12.0	2.5
97R-51	0.39	4.52	0.15	24	0.7	8.6	2.5
97R-52	0.39	7.32	0.17	22	-2.0	27.4	2.5
97R-55	0.50	6.60	0.09	25	-2.0	6.8	2.5
97R-56	0.08	7.02	2.26	4	-2.0	23.0	2.5
97R-57	0.14	8.07	1.74	4	-2.0	42.4	2.5
97R-60	0.37	6.61	0.41	22	-2.0	14.2	2.5
97R-62	0.01	0.19	0.11	2	-2.0	1.2	2.5
97R-64	0.44	4.91	0.23	24	-2.0	12.5	9.0
97R-65	1.23	10.62	0.03	50	-2.0	3.3	7.0
97R-66	0.38	7.52	0.07	19	-2.0	21.7	2.5
97R-67	0.19	4.56	0.46	10	-2.0	23.0	2.5
97R-71-1	0.37	5.98	0.81	20	-2.0	62.0	14.0
97R-71-2	0.31	7.95	0.79	28	-2.0	59.0	146.0
97R-72	0.01	0.34	0.04	2	-2.0	23.5	8.0
97R-75	0.38	8.58	2.74	19	-2.0	6.7	7.0
97R-76	0.01	0.29	0.01	2	-2.0	19.2	2.5
97R-78	0.44	11.36	0.59	17	31.1	56.1	8.0
97R-79	0.49	8.29	0.26	26	-2.0	29.9	2.5
97R-80	0.01	0.24	0.02	6	-2.0	8.9	531.0
97R-82	0.36	8.07	0.16	17	-1.9	31.8	11.0
97R-83	0.41	7.08	0.10	34	-2.0	21.3	5.0
97R-85	0.46	8.54	0.24	19	-2.0	16.1	2.5
97R-87	0.59	8.05	0.21	26	-2.0	24.8	2.5
97R-88	0.17	7.28	1.33	4	-2.0	18.5	2.5
97R-89	0.47	9.48	1.26	34	-2.0	26.2	8.0
97R-90	0.46	8.85	0.40	22	-2.0	26.7	6.0
97R-91	0.40	7.94	0.11	28	-2.0	21.1	8.0
97R-92	0.45	8.34	0.32	22	-2.0	7.2	2.5
97R-93	0.35	7.73	0.04	19	-2.0	13.9	2.5
97R-94	0.30	7.74	0.26	17	-2.0	16.4	2.5
97R-95	0.32	5.89	0.16	14	-2.0	30.3	2.5
97R-96	0.15	6.88	1.32	14	-2.0	18.9	2.5
97R-100	0.52	8.64	0.09	22	-2.0	21.4	11.0
97R-109	0.55	8.28	1.41	31	-2.0	9.5	6.0
97R-110	0.53	6.38	0.42	41	-2.0	25.3	2.5
97R-111	0.37	8.14	0.29	18	-2.0	20.1	5.0

Sample Site	Ti %	Al %	K %	Y ppm	H <sup>+</sup> ppb	K mhos cm <sup>-1</sup>	Hg ppb
97R-115	0.44	7.90	0.23	22	-2.0	19.9	2.5
97R-116	0.45	7.27	0.08	20	-2.0	25.9	2.5
97R-119	0.32	6.91	0.04	16	-2.0	33.4	2.5
97R-123	0.01	0.39	0.02	2	-2.0	5.5	2.5
97R-124	0.23	7.88	1.08	8	-2.0	29.9	2.5
97R-125	0.01	1.53	0.14	2	-2.0	7.2	2.5
97R-126	0.44	7.21	0.12	25	-2.0	11.2	2.5
97R-131	0.84	6.10	0.63	80	-2.0	23.0	2.5
97R-132	0.41	7.56	0.31	28	-2.0	4.3	2.5
97R-135	0.36	7.17	0.61	26	-2.0	13.7	2.5
97R-140	0.41	7.66	0.35	26	-2.0	11.0	2.5
97R-144	0.89	7.33	0.37	60	-2.0	23.4	2.5
97R-154	0.16	8.94	3.50	25	-2.0	24.3	2.5
97R-157	0.36	8.95	1.72	18	-2.0	35.5	2.5
97R-162	0.19	5.55	0.79	13	-2.0	8.4	2.5
97R-169	0.73	8.97	0.17	24	-2.0	13.2	2.5
97R-172	0.35	10.16	0.24	13	-2.0	14.8	11.0
97R-173	0.65	7.32	0.41	28	-2.0	4.9	31.0
97R-183	0.36	6.80	0.43	25	-1.9	21.2	2.5
97R-192	0.37	7.95	2.27	12	-1.9	4.6	2.5
97R-194	0.56	7.96	1.23	30	-1.9	24.3	2.5
97R-199-1	0.12	5.64	0.33	11	-1.9	44.8	2.5
97R-199-2	0.03	7.67	4.97	2	-1.9	6.7	2.5
97R-200	0.06	0.58	0.07	2	-1.9	10.3	2.5
97R-203-1	0.04	1.46	0.35	6	-1.9	24.2	12.0
97R-203-2	0.50	9.84	3.98	31	-1.9	5.2	12.0
97R-204	0.30	1.61	0.04	8	-1.9	6.2	2.5
97R-205	1.34	6.25	0.48	46	-1.9	13.8	2.5
97R-206	0.14	4.51	1.88	7	-1.9	29.4	2.5
97R-207	0.42	8.01	1.65	19	-1.9	17.6	2.5
97R-213	0.48	7.45	0.26	34	-1.9	34.6	2.5
97R-216	0.28	9.11	2.12	12	-1.9	25.0	2.5
97R-219	0.12	6.48	1.28	4	-1.9	28.7	12.0
97R-222	0.28	8.43	1.47	22	-1.9	15.4	2.5
97R-223	0.14	6.75	1.55	6	-1.9	31.2	2.5
97R-225	1.12	6.41	0.15	86	-1.9	5.9	2.5
97R-230	0.58	7.10	0.11	30	-1.9	27.4	2.5
97R-231	0.52	7.21	0.21	29	-2.0	27.2	8.0
97R-232	0.46	6.84	0.07	26	-2.0	30.6	2.5
97R-233	0.11	3.45	0.61	12	-2.0	16.8	2.5
97R-234	0.19	7.42	0.22	10	-2.0	23.6	2.5
97R-235	0.17	2.69	0.05	10	-2.0	30.7	2.5
97R-236	0.06	3.81	0.74	2	-2.0	4.6	14.0
97R-237	0.05	6.88	0.78	7	-2.0	5.6	2.5
97R-239	0.07	3.72	0.29	4	-2.0	27.4	25.0
97R-243	0.41	8.35	0.09	24	-2.0	3.9	2.5
97R-244	0.59	9.03	0.06	30	-2.0	17.1	2.5
97R-247	0.58	8.68	0.22	31	-2.0	4.9	54.0
97R-249-1	0.05	7.65	3.05	8	-2.0	15.8	83.0
97R-249-2	0.05	6.91	3.26	7	-2.0	5.3	2.5
97R-255	0.40	7.50	0.31	20	-2.0	28.1	2.5
97R-258	0.43	8.03	0.34	24	-2.0	24.4	2.5
97R-260	0.41	7.54	1.47	22	-2.0	25.4	2.5
97R-263	0.23	8.18	0.41	11	-2.0	13.6	2.5
97R-266-1	0.04	7.50	2.73	7	-2.0	16.7	18.0
97R-266-2	0.04	7.14	2.84	7	-2.0	25.8	34.0
97R-267	0.03	0.36	0.05	2	-2.0	9.9	30.0
97R-273	0.52	9.03	0.08	26	-2.0	15.9	2.5
97R-274	0.10	6.31	1.34	36	-2.0	30.4	16.0
97R-283	0.28	6.94	0.10	17	-2.0	10.6	2.5
97R-287-1	0.01	0.28	0.02	18	-1.9	20.4	2.5
97R-287-2	0.03	0.59	0.05	16	55.5	154.6	2.5
97R-287-3	0.32	6.69	0.09	25	-2.0	86.9	2.5

### Appendix 3

## Rock Geochemistry: ICP-AES and Hg (FIMS) Analyses, multiple samples.

Sample Site	UTM		Mo	Cu	Pb	Zn	Ag	Ni	Mn	Sr	Bi	V	Ca	P	Mg	Ti
	EAST	NORTH	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	%	%
97R-27-1	503212	6061166	1	8	24.0	30	0.4	6	167	519	2.5	17	0.79	0.024	0.22	0.09
97R-27-2	503212	6061166	1	11	29.0	24	0.2	11	173	718	2.5	23	1.73	0.050	0.37	0.13
97R-71-1	518287	6046419	5	81	2.5	41	0.2	39	1045	112	2.5	161	3.64	0.063	1.74	0.37
97R-71-2	518287	6046419	2	116	30.0	447	0.2	50	943	174	2.5	153	4.40	0.046	2.06	0.31
97R-183-1	502520	6029633	1	80	2.5	80	0.2	49	1498	229	2.5	203	6.91	0.041	2.99	0.39
97R-183-2	502520	6029633	1	186	2.5	74	0.2	47	1326	238	2.5	160	9.14	0.040	3.03	0.33
97R-199-1	495793	6029002	1	42	13.0	35	0.2	43	1344	378	5.0	155	6.68	0.068	2.52	0.12
97R-199-2	495793	6029002	1	50	33.0	11	0.2	6	78	153	2.5	6	1.18	0.010	0.13	0.03
97R-203-1	504582	6032523	1	4	20.0	17	0.5	7	580	350	2.5	7	1.52	0.062	0.09	0.04
97R-203-2	504582	6032523	1	49	58.0	93	0.2	29	1167	349	2.5	81	0.58	0.193	0.36	0.50
97R-249-1	450994	6027808	1	6	19.0	37	0.2	3	165	176	2.5	10	0.50	0.021	0.23	0.05
97R-249-2	450994	6027808	2	48	41.0	20	1.0	2	112	43	2.5	10	0.02	0.018	0.20	0.05
97R-266-1	447639	6028463	1	2	25.0	28	0.2	3	131	233	2.5	9	0.53	0.014	0.11	0.04
97R-266-2	447639	6028463	1	2	23.0	31	0.2	3	255	397	2.5	8	1.57	0.018	0.12	0.04
97R-287-1	493331	6063322	1	20	2.5	34	0.5	18	9675	44	2.5	12	3.40	0.016	2.12	0.01
97R-287-2	493331	6063322	1	75	2.5	178	0.9	47	19743	93	2.5	38	5.77	0.011	3.67	0.03
97R-287-3	493331	6063322	1	74	2.5	294	0.2	58	11426	73	2.5	186	7.22	0.024	3.65	0.32

Sample Site	Al %	K %	Y ppm	H <sup>+</sup> ppb	K mhos cm <sup>-1</sup>	Hg ppb
97R-27-1	5.21	2.26	5	-2.0	17.0	2.5
97R-27-2	7.33	0.57	13	-2.0	20.0	2.5
97R-71-1	5.98	0.81	20	-2.0	62.0	14.0
97R-71-2	7.95	0.79	28	-2.0	59.0	146.0
97R-183-1	7.29	0.54	28	-2.0	22.0	2.5
97R-183-2	6.30	0.32	22	-2.0	21.0	2.5
97R-199-1	5.64	0.33	11	-2.0	45.0	2.5
97R-199-2	7.67	4.97	2	-2.0	7.0	2.5
97R-203-1	1.46	0.35	6	-2.0	24.0	12.0
97R-203-2	9.84	3.98	31	-2.0	5.0	12.0
97R-249-1	7.65	3.05	8	-2.0	16.0	164.0
97R-249-2	6.91	3.26	7	-2.0	5.0	2.5
97R-266-1	7.05	2.61	7	-2.0	17.0	2.5
97R-266-2	7.14	2.84	7	-2.0	26.0	34.0
97R-287-1	0.28	0.02	18	-1.9	20.4	2.5
97R-287-2	0.59	0.05	16	55.5	154.6	2.5
97R-287-3	6.69	0.09	25	-2.0	86.9	2.5

#### Appendix 4

**Rock Geochemistry: Inductively Coupled Plasma - Atomic  
Emission Spectrometry (ICP-AES), H<sup>+</sup>, K and Hg Percentile  
Bubble Plots.**

