

**Rainy River Resources Ltd.**  
**Western Warrior Resources Inc.**



**Reverse Circulation Overburden Drilling and Heavy Mineral Geochemical Sampling for  
Gold in the Off Lake Felsic Dyke Complex**

**Off Lake JV Property**

UTM Zone 15 - NAD 83 Projection  
438300mE, 5419600mN

2-40284

by:  
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1.

### **EXECUTIVE SUMMARY**

*This report describes a program of reverse circulation drilling for gold that was conducted by Rainy River Resources Ltd. 30 km north of the town of Emo in the Archean-age Rainy River Greenstone Belt of northwestern Ontario near the Minnesota border. The report deals specifically with an RC overburden drill traverse of five holes and one test pit. The work was conducted on Western Warrior Resources mining claim #4201809 in Fleming Township for which Rainy River Resources holds a working option agreement. The larger drilling program of twenty-three holes targeted the Off Lake felsic dyke complex ~10 km northeast of the Richardson Township property which hosts the 17/ODM Zone and other caldera-related, dacite-hosted, gold-rich volcanogenic sulphide deposits. The dyke complex measures 4.5 x 9 km and is bounded to the northeast and southwest, respectively, by the Clearwater Lake and Pinewood Lake felsic volcanoclastic sequences. It is chiefly comprised of a crowded swarm of hundreds of thousands of <5 m wide quartz-feldspar porphyry dykes intruded into mafic metavolcanic flows and metagabbro sills. Dr. Lorne Ayres has proposed that the dyke complex is the magma chamber for all for the felsic rocks of the caldera and Clearwater Lake and Pinewood Lake sequences and has been displaced from the caldera by the (inferred) Potts Fault. He has identified spotty Au-Ag-Cu-Zn mineralization in individual dykes and mafic enclaves throughout the complex and determined that the most significant occurrences are in the east near the roof of the complex.*

*The overburden drilling was designed to test for more concentrated gold-rich volcanogenic sulphide mineralization in areas overlain by thick overburden. Five holes were completed successfully, sampling the glacial till, glaciofluvial sand and gravel and underlying bedrock. The average depth of these holes, including 1.5 m of bedrock, was 14.9 m. Nineteen overburden samples (13 till, 1 glaciofluvial/moraine sand and gravel and 5 glaciolacustrine sand mixed with bedrock cuttings) were collected and processed to extract the heavy mineral fraction and visually separate any gold grains. All of the heavy mineral concentrates and bedrock samples were geochemically analyzed. The drill traverse of five RC holes was completed at a total cost of \$27,964.41, or \$374.36 per metre and \$5,592.88 per hole.*

*Bedrock exposure on the Western Warrior Resources claims south of Off Lake is rare. Quartz Feldspar Porphyry was intersected in all five holes. No evidence of significant alteration or mineralization was obtained from any of the bedrock intersections.*

*Overburden depths in the drill holes range from 5.8 to 25.2 m. Northeasterly sourced, geochemically responsive Labradorean Till rests on bedrock in 4 of the 5 holes and is often overlain by exploration hindering, westerly sourced, clay-rich Keewatin Till. In all five holes, the heavy mineral fraction of the till contains only normal background levels of mostly reshaped, distally sourced gold grains. The heavy mineral Au analyses are similarly low.*

*The negative overall results, in combination with similar results from earlier surface till samples collected over areas of the dyke complex having thinner cover, reinforce Ayres' observations that: 1) pervasive, large-scale Au or base metal mineralization is not present within the dyke complex at the present erosional level; and 2) any Au-rich, volcanogenic sulphide zones of economic size would be restricted to the top of the dyke complex. Recent prospecting at the top of the complex east of Off Lake has resulted in the discovery of a mineralized boulder field and a compatible shear zone source in an area of thin till cover. A detailed follow-up till sampling program would complement the prospecting by assessing the scale of the discovery zone and determining whether any other mineralized zones are present nearby.*

2.

**INTRODUCTION**

**2.1 Property Location, Access, Ownership and Exploration History**

The Off Lake property of Rainy River Resources (RRR), on which the reverse circulation drilling described in this report was performed, is located in the westernmost part of Ontario ~10 km northeast of RRR's Richardson Township property (**Fig. 1**) which hosts six gold zones with five (17, ODM, Beaver Pond, 433 and Cap Zones) contributing to a NI43-101 gold resource of 1,436,000 indicated and 2,400,000 inferred ounces (Rainy River Resources, 2008). The Off Lake property is accessed from Emo, a small town 30 km to the south near the Minnesota border, via Provincial Road 615 (PR615) which leads directly into the property. Basic services are available in Emo and full services in the larger centre of Fort Frances, 30 km to the east.

Geologically, the Off Lake and Richardson Township properties lie centrally in the Archean-age (~2700 Ma) Rainy River Greenstone Belt which forms part of the Wabigoon Subprovince of the Superior Province of the Canadian Shield (**Fig. 2**). The Archean basement rocks were once overlain by poorly consolidated Mesozoic (Jurassic and Cretaceous) sandstone and shale which were deposited in association with deep lateritic weathering. These sediments only locally survived Pleistocene glaciation but the present erosional level is only slightly below the Mesozoic unconformity. Consequently, the Archean basement rocks are patchily saprolitized, especially in erosion-sheltered lowland areas. They are directly overlain by stony, southwest-transported (approximately 220°), basement-derived, geochemically-responsive Labradorian Till that contains useful indicator mineral grains including both hypogene gold and sulphides and supergene (saprolite-derived) marcasite, Mn-siderite and native copper. In lowland areas south and west of the Off Lake property, including Richardson Township (**Fig. 3**), the Labradorian Till is overlain by thick, conductive, exploration-hindering glaciolacustrine (Glacial Lake Agassiz) clay-silt and clayey, ESE- transported Keewatin Till. Most of the Off Lake property lies at a higher elevation on and north of the suture zone between the Labradorian and Keewatin ice sheets, leaving the Labradorian Till extensively exposed at surface (Bajc, 1991).

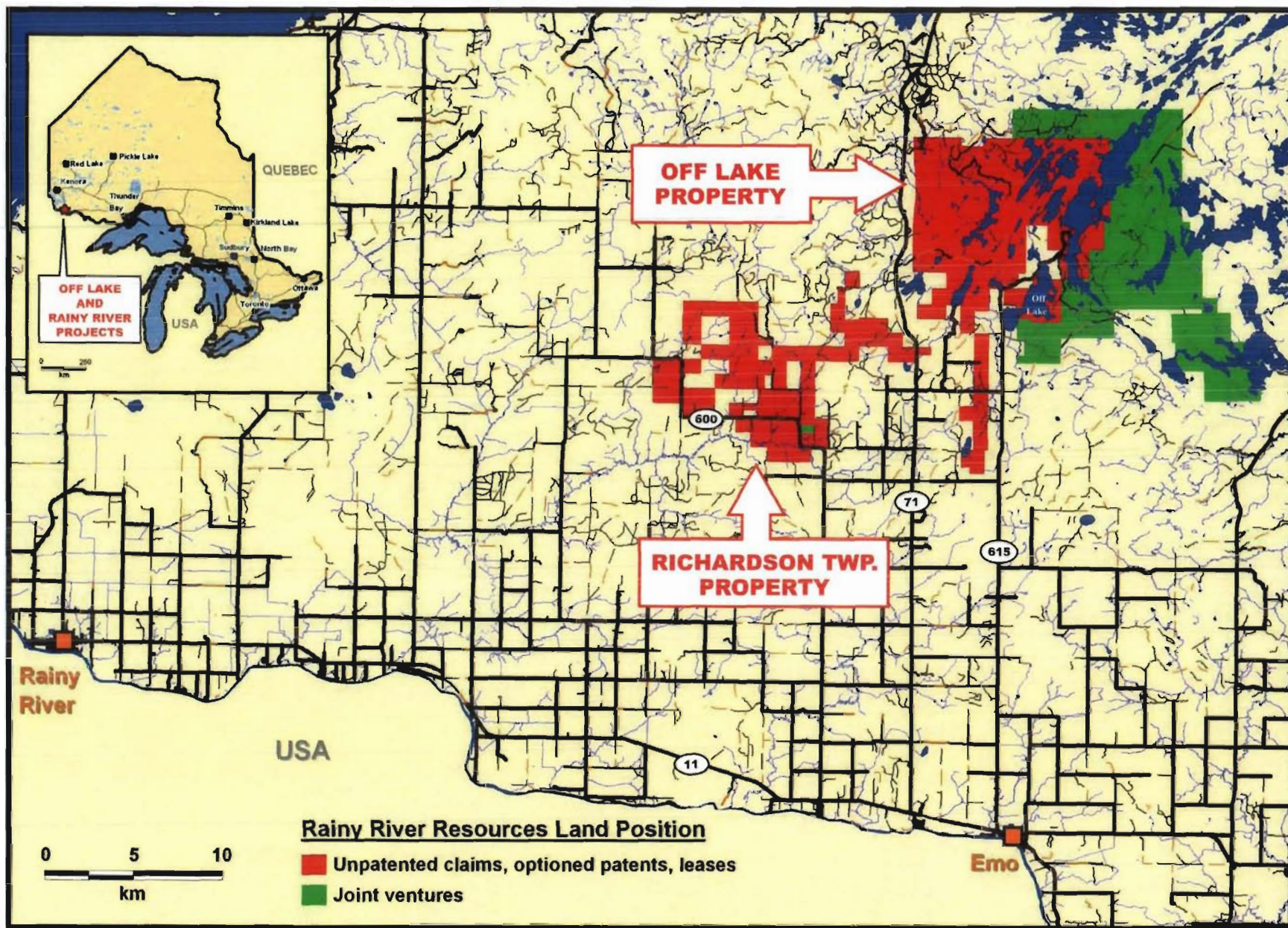


Figure 1 - Geographic location and extent of the Rainy River properties.



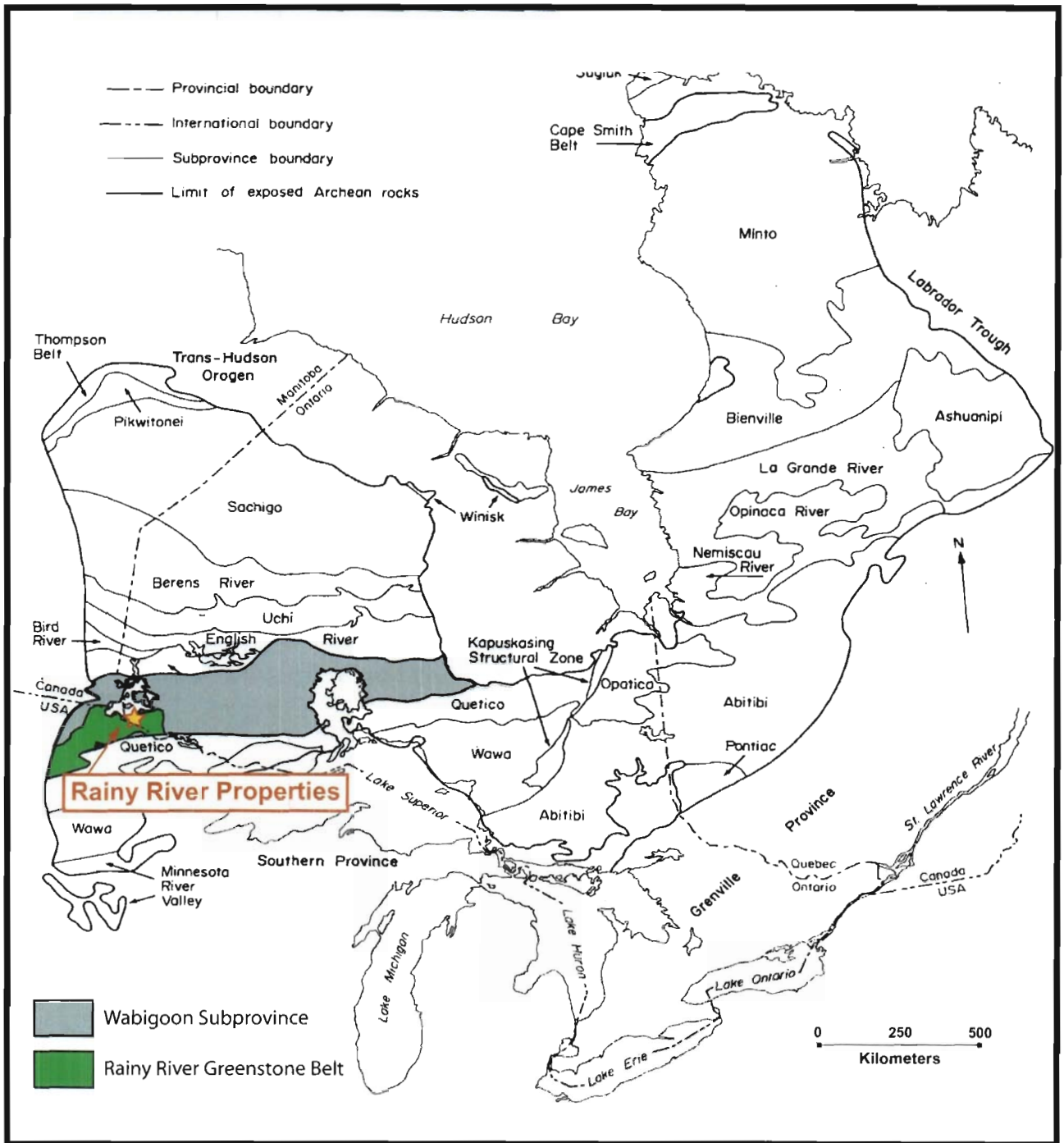


Figure 2 - Regional geological setting of the Rainy River properties. Source: Blackburn *et al.*, 1991.

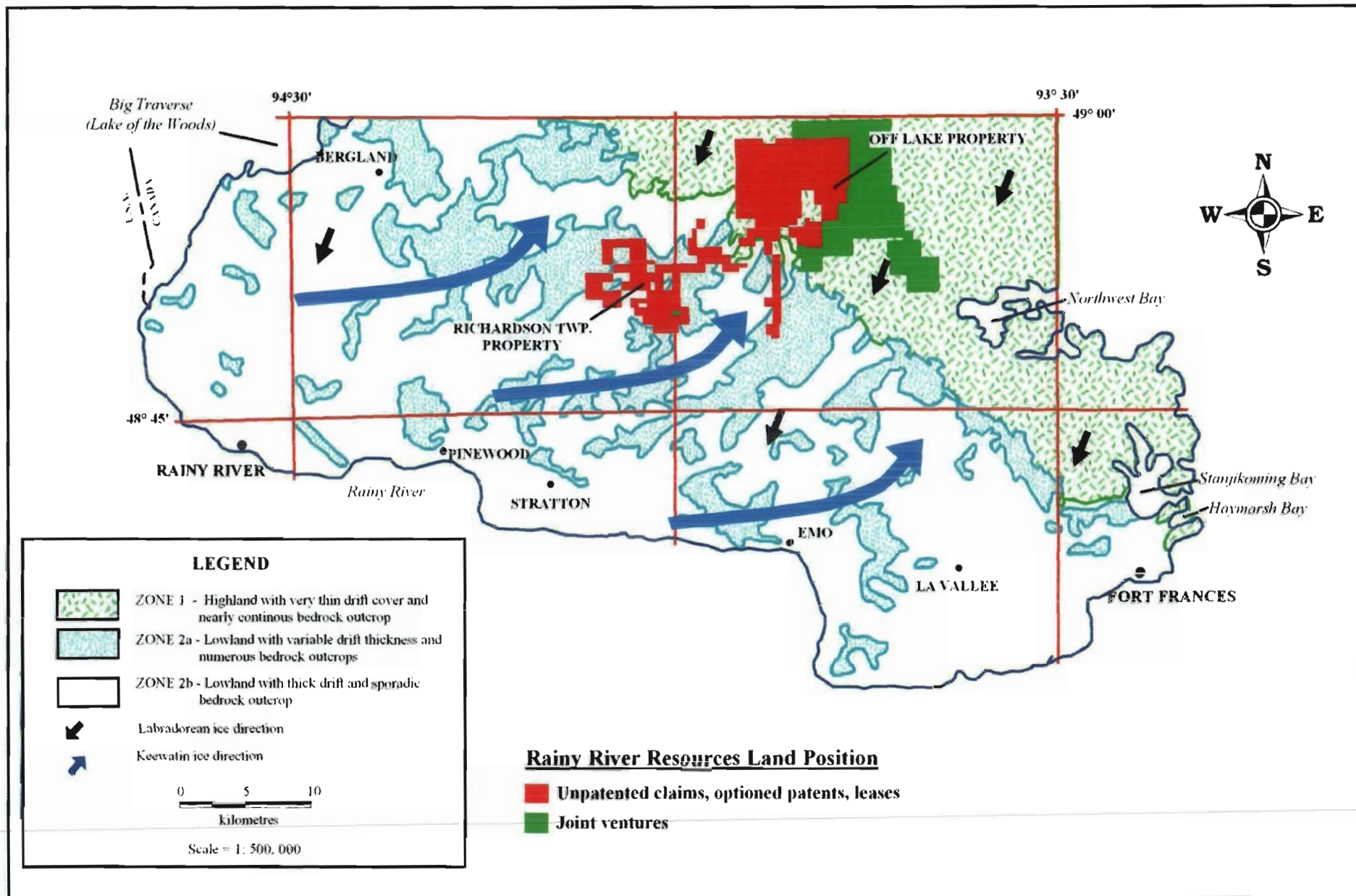


Figure 3 - Regional physiography and drift thickness map of the Rainy River area. Modified from Bajc, 1991.

The neighbouring Richardson Township property is at the head of a major, 15 km long, SW-trending gold grains + pyrite anomaly in till that was originally identified by the Ontario Geological Survey (OGS) in 1987-88 using widely spaced (~3 km) rotasonic drill holes to core the overburden and underlying bedrock (Bajc, 1991). The thick, conductive Lake Agassiz sediments and Keewatin Till in Richardson Township have hampered grassroots exploration. Also, the gold mineralization is of the volcanogenic type and is mostly disseminated, rendering geophysical techniques such as electromagnetics (EM) and induced polarization (IP) largely ineffective even where the overburden is thinner (Sharpe *et al.*, 2008). In thickly covered areas, heavy mineral geochemical sampling of the Labradorian Till at depth by rotasonic or reverse circulation drilling has been the only reliable exploration method. Between 1994 and 2008, fourteen campaigns of till sampling involving 804 reverse circulation drill holes were conducted under the direction of Overburden Drilling Management Limited (ODM), originally for Nuinsco Resources Limited (Nuinsco) and subsequently for current owner RRR, leading progressively to the discovery of the six gold zones (MacNeil and Averill, 2008). A caldera-hosted volcanogenic model was developed by Averill (1997) and Ayres (1997) in which the diffuse gold was deposited by a major hydrothermal system in a reservoir formed by permeable, fragmental dacites. These dacites were subsequently folded and metamorphosed to form a ~3 x 5 km, apparently fault-bounded, 60° southward-facing/dipping, broadly Na-depleted and gold-infused block now referred to as the Richardson Caldera (Fig. 4; MacNeil and Averill, 2008).

The Off Lake property covers parts of Menary, Senn, Fleming and Potts Townships and consists of 93 mostly unpatented claims totalling 19,372 ha including 9,276 ha optioned from Western Warrior Resources Inc. in December 2007 (Rainy River Resources, 2007) and ~300 ha encompassing most of the Cunningham farm (**Fig. 4**) and three adjoining quarter-sections to the north, herein collectively referred to as the Cunningham Block. Regional mapping by Blackburn (1976; Fig. 4) established that the Off Lake area is dominated by a northeast-trending, southeast-facing, mainly greenschist-facies metavolcanic assemblage that contains both mafic and felsic sequences and is ~4.6 km thick and 8 km in exposed width. The volcanics are bounded by the trondhjemitic Sabaskong Batholith to the northwest and the monzonitic to granodioritic Burditt Lake Stock and trondhjemitic Fleming-Kingsford Batholith to the east. To the southwest, they are intruded by the post-tectonic, quartz-monzonitic Black Hawk and Finland Stocks (Fig. 4).

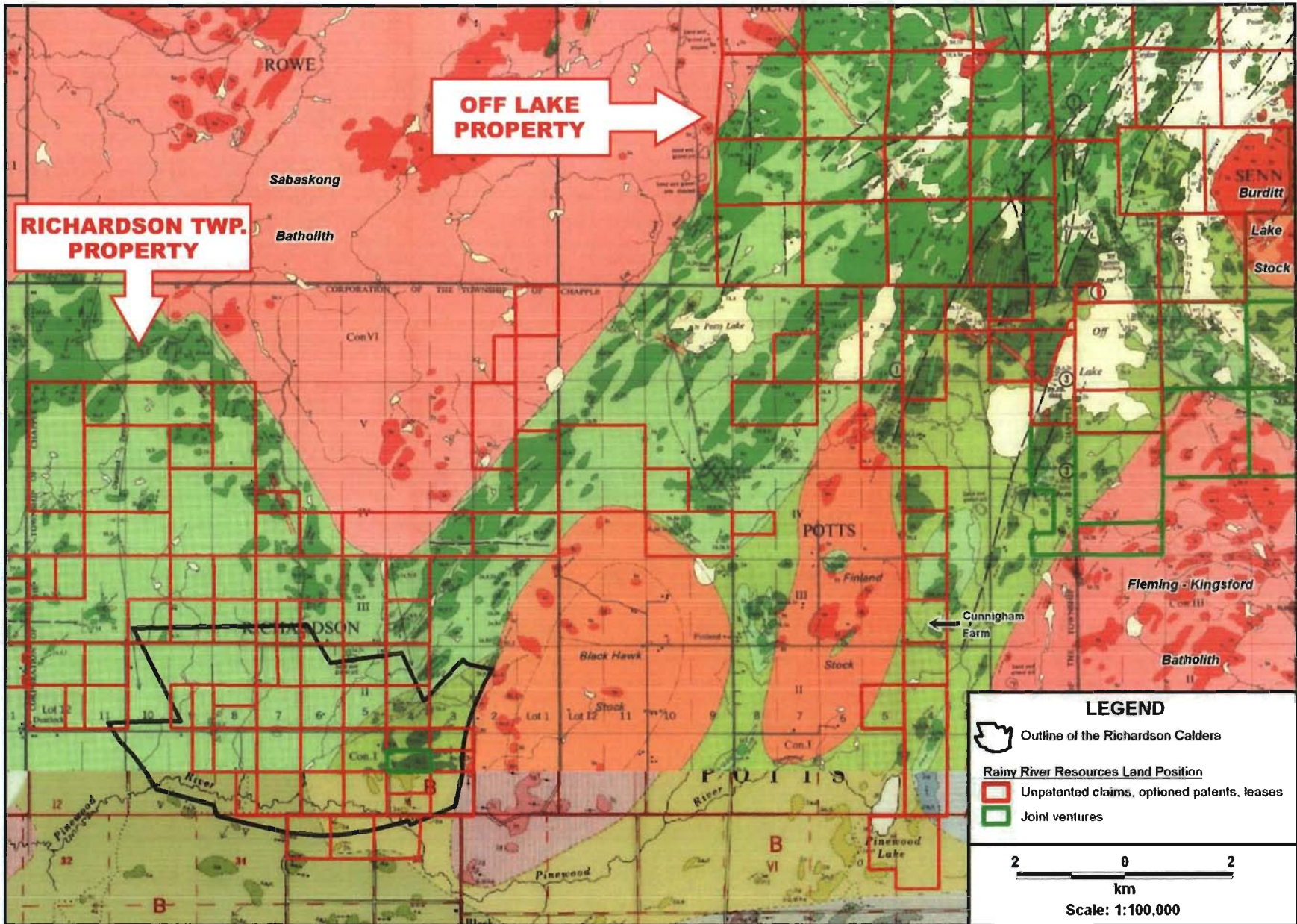


Figure 4 - Local geological setting of the Rainy River properties. Sources: Fletcher and Irvine, 1953 (southern geology) and Blackburn, 1976 (northern geology).

The lowermost unit of the assemblage, in the northwest, consists of mafic metavolcanic flows intruded by gabbro sills and scattered quartz- feldspar porphyry dykes. To the southeast, Blackburn (1976) mapped an extensive area of overlying felsic metavolcanics but remapping by Ayres (Ayres and Tims, 2007) determined that the felsic sequence actually comprises two distinct lithologies: 1) volcanoclastic extrusive rocks; and 2) subvolcanic intrusions. The felsic volcanoclastics in turn form two geographically separated sequences: 1) the Clearwater Lake sequence in the north; and 2) the Pinewood Lake sequence in the south (**Fig. 5**). Each sequence is dominantly comprised of polymictic, clast-supported, felsic volcanic-sourced, pebble to cobble conglomerate with lesser felsic volcanic-sourced, pebbly sandstone. The subvolcanic intrusions, referred to as the Off Lake felsic dyke complex (OLDC), are concentrated in the mafic volcanics between the Clearwater Lake and Pinewood Lake sequences in an area measuring 4.5 x 9 km. The OLDC is comprised chiefly (~85 percent) of a crowded swarm of hundreds of thousands of <5 m wide, cross-cutting, quartz feldspar-phyrlic dykes (**Plate 1**) intruded into mafic metavolcanic flows and metagabbro sills, enclaves of which comprise the remaining 15 percent of the complex. These remnant mafic blocks, megablocks and septa are primarily concentrated in the upper part of the complex east of Off Lake.

The Off Lake and Potts Faults (**Fig. 5**) have been identified as key structures in the OLDC and the Pinewood Lake sequence (Ayres and Tims, 2007). The Off Lake Fault extends NNE through the lake. In outcrop, it has also been traced 2 km southward from the lake and 1 km northward where it is terminated by a set of ENE-trending (060°) faults. Significant Cu and Au mineralization is spatially associated with the northern part of the fault. The Potts Fault is an inferred, E-W trending cross-fault in an outcrop-poor area at the contact between the southern margin of the OLDC and the Pinewood Lake sequence. Reconstructing movement along the Potts Fault (**Fig. 6**), Ayres proposed (Ayres and Tims, 2007) that: 1) the Richardson Caldera was originally much closer to the OLDC; 2) the Pinewood Lake sequence probably represents the upper part of the caldera sequence; 3) the OLDC was probably the magma chamber for all of the felsic rocks of the caldera, Clearwater Lake and Pinewood Lake sequences; and 4) the OLDC was intruded into the earlier, congealed mafic magma chamber, now represented by the remnant metagabbro blocks, that was responsible for the mafic volcanism.

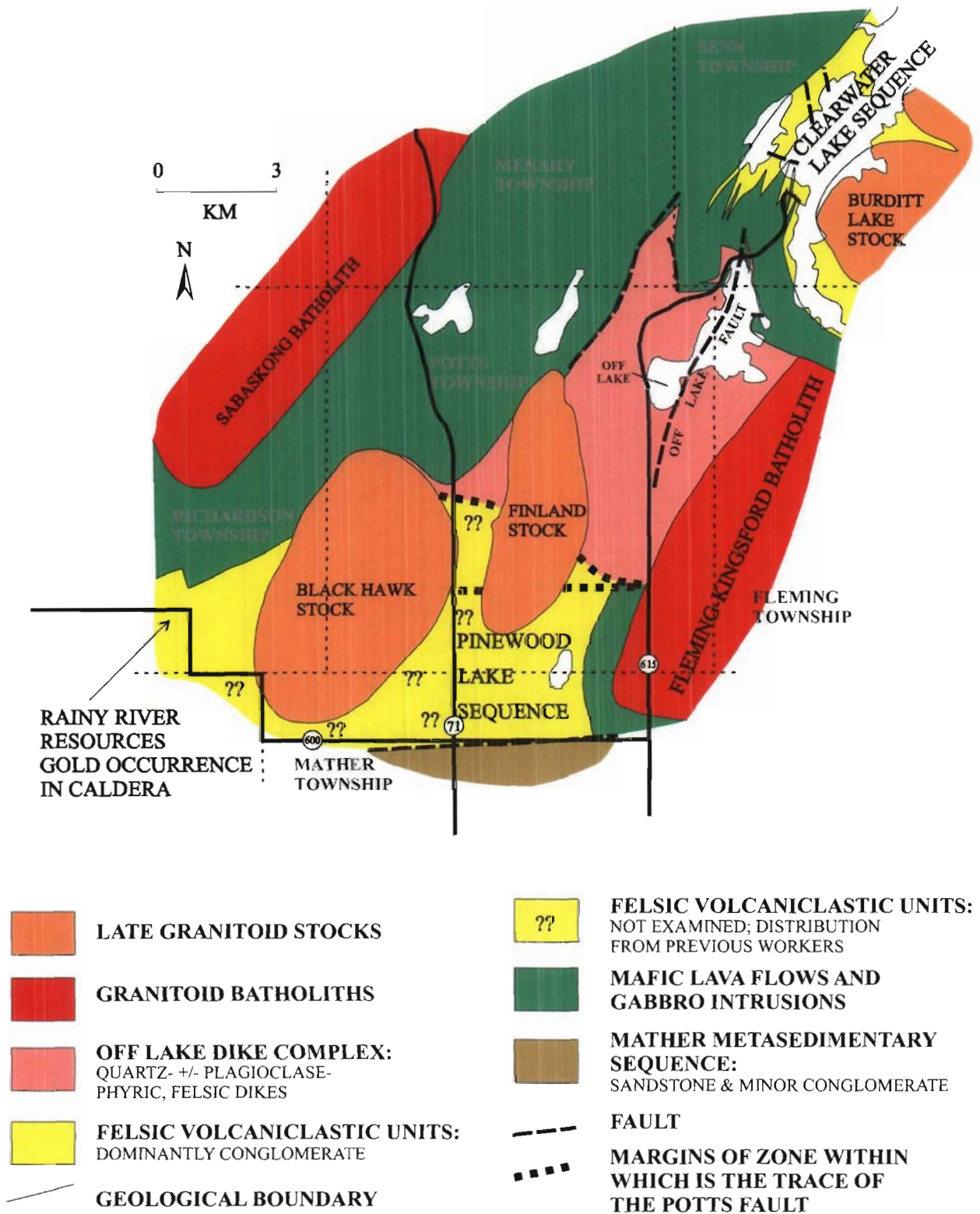
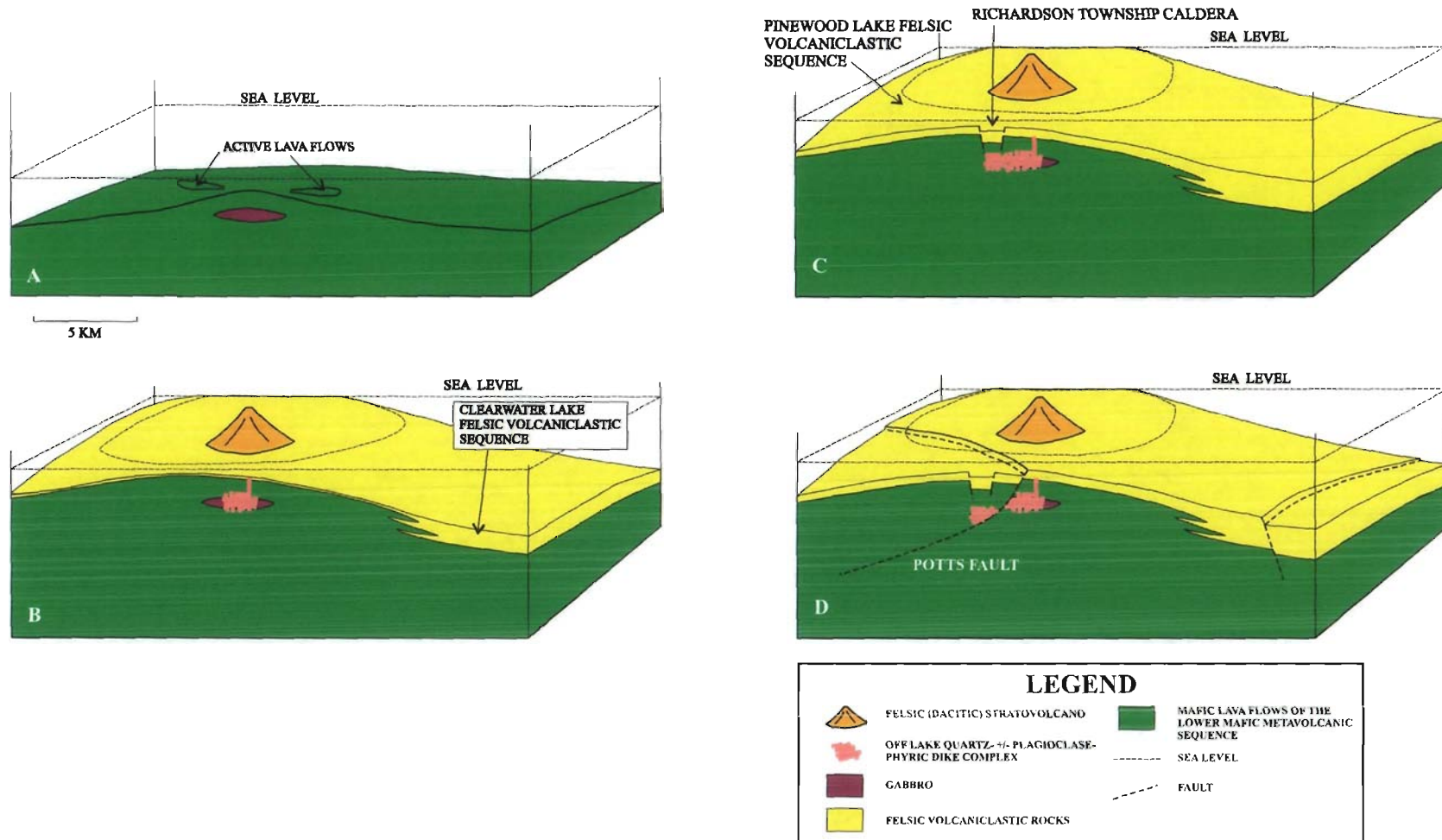


Figure 5 - Sketch map showing locations of core units defined during Ayres' 2006 and 2007 surveys and peripheral units mapped earlier by Fletcher and Irvine (1953) and Blackburn (1976). Source: Ayres and Tims, 2008.



**Plate 1 - A grey, ~1 m wide, quartz-plagioclase phyric dyke (under pencil) intruded into a pale grey to white, quartz-phyric phase of the Off Lake felsic dyke complex. Source: Ayres and Tims (2007).**



**Figure 6 - Four stages in the evolution of the Off Lake volcano.** The front face of the block diagram shows the stratigraphic relationship of sequences exposed in the Clearwater to Pinewood Lake area. (A) Eruption of basalt flows of the lower mafic metavolcanic sequence resulted in a submarine shield volcano. Upper level gabbro magma chamber fed these flows. (B) Early stage in eruption of felsic volcanoclastic sequences from subaerial dacitic stratovolcanoes. Fluctuating dacitic and basaltic volcanism resulted in interdigitation on flank of volcano. Off Lake dike complex was upper magma chamber feeding dacitic volcanism, but only the margin of the chamber is exposed in the section. (C) Submarine caldera forms on upper slope of volcano, possibly representing a flank vent. Off Lake dike complex is inferred to expand in size. (D) Normal faults develop on flanks of volcano because of gravitational instability. Potts fault on left side is in initial stage of development. Eventually caldera is moved 10 to 15 km away from the original location. Source: Ayres and Tims, 2007.



Baker (2006) provides a thorough description of historical exploration in the Off Lake area which dates back to the 1930s. The principal mineral occurrences are shown in **Figure 7** in relation to the Ayres' mapping (Ayres and Tims, 2007); added details of the upper part of the OLDC are shown in **Figure 8** and a legend for both maps is presented in **Figure 9**. Three distinct styles of mineralization have been discovered to date. They include: 1) high-grade but very small lode gold deposits associated with quartz veining in the lower mafic volcanics near the Sabaskong Batholith (*e.g.* Agassiz and Dillman Showings); 2) low-grade Cu and Zn-mineralized zones in the upper mafic volcanics (*e.g.* Noranda Showings); and 3) Au-bearing, volcanogenic sulphide mineralization in the northeastern (upper) part of the OLDC (*e.g.* Off Lake Highway, Stares and Tower Zones, Will and Teddy Bear Showings) which has a precious-base metal association similar to that of the disseminated, volcanogenic Au mineralization in the Richardson Caldera but with a higher Ag:Au ratio. Although Ayres identified and sampled spotty pyrite, Au, Cu and Zn mineralization hosted in individual porphyry dykes and metagabbro and mafic metavolcanic enclaves throughout the OLDC (**Fig. 7; Table 1**), he emphasized (Ayres and Tims, 2008) that the most concentrated mineralization and main economic potential is near the roof of the complex. Here, many showings and occurrences (**Fig. 8**), mainly in the form of small (<1 m wide), discontinuous pods, have been identified.

Follow-up prospecting by RRR in October, 2007 discovered a boulder field on the more northerly of the two peninsulas on the east side of Off Lake (**Figs. 7, 8**) comprised of approximately 15 mineralized, subangular blocks containing semi-massive sulphides with specimens assaying up to 10.45 g/t Au, 46.9 g/t Ag, 7.38 percent Pb, 7.52 percent Zn and 0.39 percent Cu (C.J. Baker, personal communication, 2008). More recent prospecting has uncovered additional mineralized boulders within the boulder field and demonstrated that the sulphides in some of these boulders, although volcanogenic and semi-massive, occur as a cement in brecciated metagabbro indicating that they were deposited in a brittle shear zone rather than in a stratiform volcanogenic massive sulphide (VMS) lens (C.J. Baker, personal communication, 2008). The unusual combination of volcanogenic mineralization and brittle shearing apparently reflects the dynamic environment of the top of the magma chamber during emplacement of the OLDC.

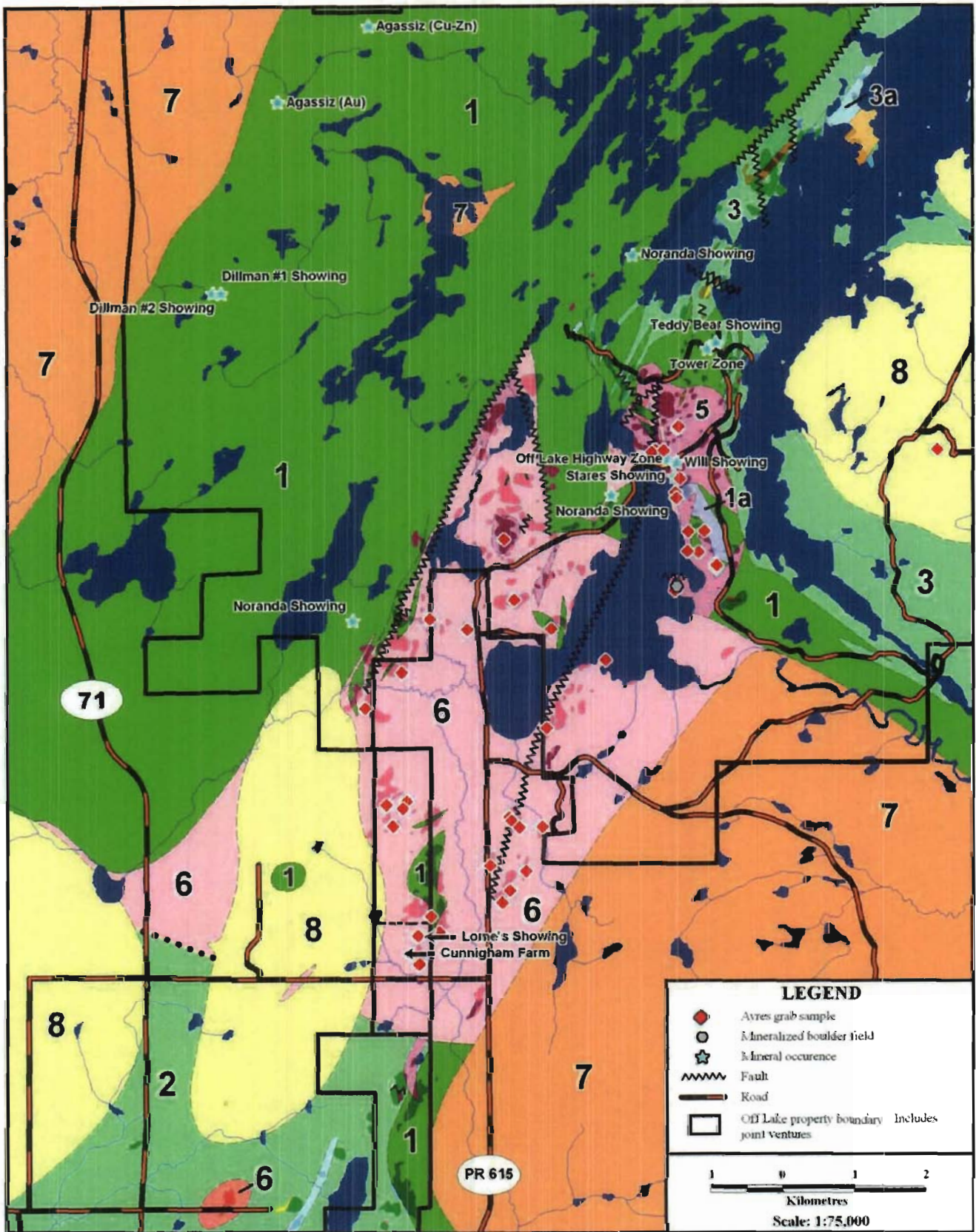


Figure 7 - Geology of the Off Lake area based on mapping by Blackburn (1976) and Ayres (Ayres and Tims, 2007, 2008). See Figure 9 for lithologic legend.

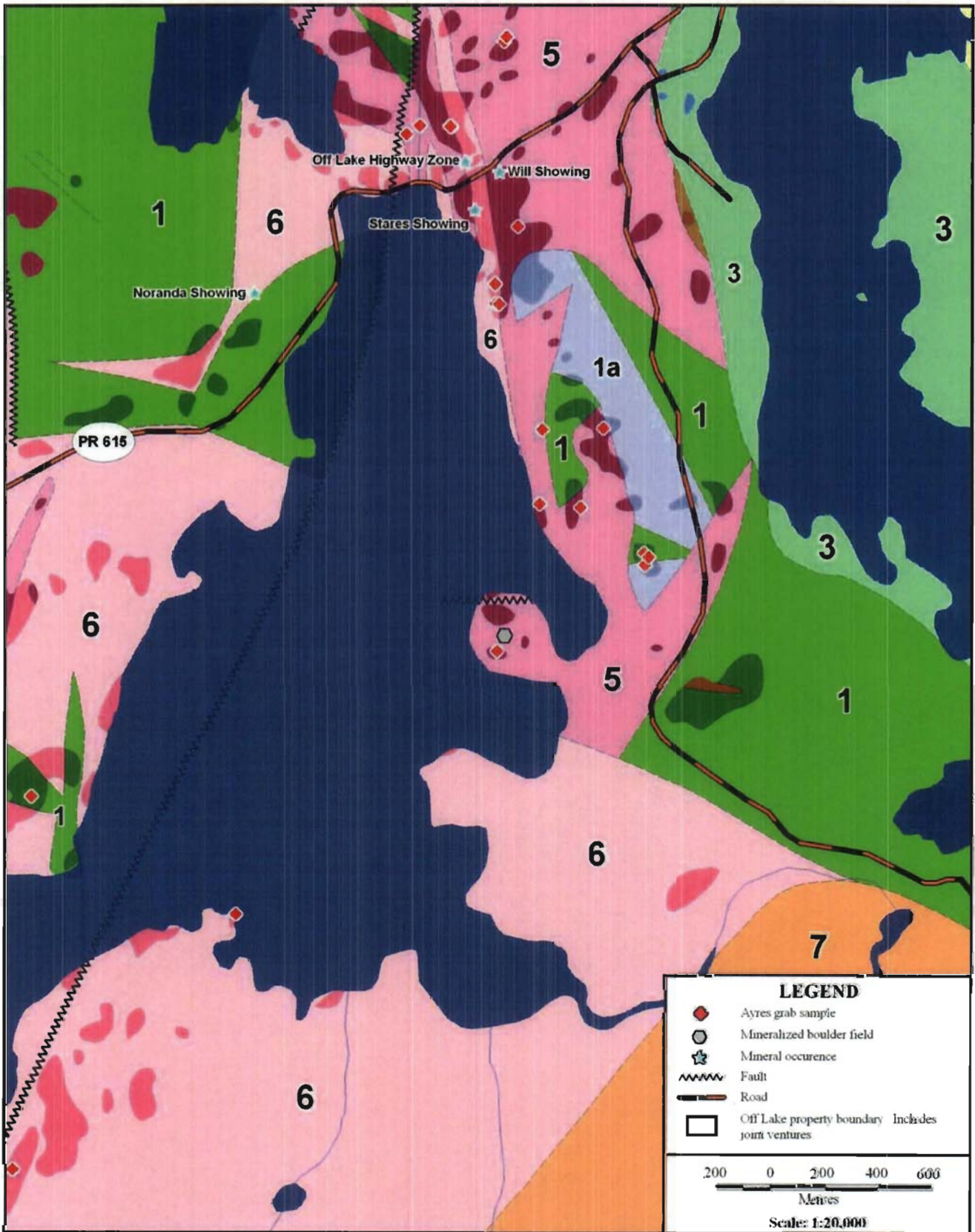


Figure 8 - Detailed map of the eastern and northeastern contacts of the Off Lake felsic dyke complex showing distribution of sulphide mineral occurrences observed by Ayres (Ayres and Tims, 2007, 2008). See Figure 9 for lithologic legend.

## BEDROCK LITHOLOGIES

8	LATE TECTONIC GRANITOID PLUTONS
7	SYNTECTONIC GRANITOID PLUTONS
6	SYNVOLCANIC, METAMOPHOSED, QUARTZ ± PLAGIOCLASE-PHYRIC, FELSIC INTRUSIONS (OFF LAKE FELSIC DYKE COMPLEX)
5	SYNVOLCANIC METAGABBRO
4	MATHER METASEDIMENTARY SEQUENCE
3 3a	CLEARWATER LAKE FELSIC VOLCANICLASTIC SEQUENCE <i>3a</i> - metasandstone
2	PINEWOOD LAKE FELSIC VOLCANICLASTIC SEQUENCE
1 1a	MAFIC TO INTERMEDIATE VOLCANIC SEQUENCE <i>1a</i> - pebble to boulder metaconglomerate

Figure 9 - Bedrock lithology legend for Figures 7 and 8.

Sample	Easting	Northing	Lithology	Au (ppb)	Ag (ppm)	Cu (ppm)	Zn (ppm)	Pb (ppm)	Ni (ppm)	Mo (ppm)
398058	437928	5417825	Metagabbro	46	<1	78	153	<1	11	30
398059	438067	5416967	Quartz- + plagioclase-phyric, felsic intrusion	48	<1	10	49	<1	7	6
398060	438583	5416550	50% quartz- + plagioclase-phyric, felsic intrusion + 50% mafic metavolcanic	110	8	673	33	<1	17	43
398069	437404	5416553	Quartz- + plagioclase-phyric, felsic dyke	25	<1	2	35	<1	32	8
398070	438501	5415153	Quartz-phyric, felsic dyke	2918	<1	64	12	<1	10	8
398071	436884	5416705	Quartz-phyric, felsic intrusion	40	<1	3	15	<1	15	5
398072	436481	5415959	Quartz-phyric, felsic intrusion	86	<1	54	12	<1	16	4
398073	439341	5416100	Quartz-phyric, felsic intrusion	1400	<1	20	11	<1	5	16
398077	440174	5419041	Metagabbro	25	11	783	570	44	50	34
398078	440421	5418666	Quartz-phyric, felsic dyke	20	<1	118	124	64	32	30
398080	435960	5415457	Quartz-phyric, felsic intrusion	9	<1	20	29	<1	34	8
398262	436528	5414143	Mafic metavolcanic in quartz-phyric, felsic intrusion	25	<1	88	42	13	22	17
398263	436476	5414050	Metagabbro in quartz-phyric, felsic intrusion	18	<1	69	106	14	47	27
398264	436249	5414095	Quartz-phyric, felsic intrusion	13	<1	18	65	4	21	13
398265	436330	5413794	Quartz-phyric, felsic intrusion	23	<1	52	74	6	19	245
398266	436855	5412520	Mafic metavolcanic	125	4	1337	111	26	64	42
398267	436967	5412299	Quartz-phyric, felsic dyke	88	<1	37	57	3	12	22
398268	436682	5411847	Quartz-phyric, felsic intrusion	185	2	1406	55	<1	10	6
398269	436667	5412250	Quartz-phyric, felsic intrusion	304	2	1494	81	9	16	17

**Table 1 - Assays of selected elements in grab samples collected from the Off Lake felsic dyke complex, including mafic blocks, magablocks and septa. Source: Ayres and Tims (2007).**

The OGS' regional 1987-88 heavy mineral geochemical sampling survey included approximately 30 samples collected in the Off Lake area from hand-dug pits, backhoe trenches and sonic bore holes (Bajc, 1991). The samples were undersized and the gold grain background was very low with only a few samples yielding more than one grain. Some elevated to weakly anomalous Au, Ag, Cu, Zn, Ni and Cr responses in the -0.063 mm raw till fraction were obtained around Off Lake, reflecting the high frequency of small, volcanogenic sulphide showings. As with the gold zones in the Richardson Caldera (MacNeil and Averill, 2008), sulphide mineralization in these showings is dominantly disseminated, nonconductive and electromagnetically unresponsive (Fig. 10; Baker, 2006), rendering geophysical surveys largely ineffective in guiding exploration. As a result, ODM conducted a surface till sampling survey in the most thinly till-covered areas of the property in 2006 (Hozjan and Averill, 2007). This survey was designed primarily to identify any subtle gold grain anomalies indicative of economically significant Au-bearing, volcanogenic sulphide mineralization in areas of suitable till exposure over the upper OLDC within 2 km of the western, northern and northeastern shorelines of Off Lake. Vein-type lode gold mineralization within the lower mafic units to the west was also targeted. A more reliable gold background of one to ten grains per sample was established. Five target areas (Fig. 11) suggestive of potentially significant Au mineralization were identified, with samples yielding between 20 and 53 gold grains. No follow-up work has been conducted in these target areas.

## **2.2 Scope and Objectives of the New Drilling Program**

The current heavy mineral geochemical sampling program by reverse circulation drilling described herein involved 23 drill holes (i.e. 18 on Rainy River Resources' Off Lake Property and 5 on Western Warrior Resources' mining claim #4201809) and was performed consecutively to a 47-hole Phase V campaign in the Richardson Caldera (MacNeil and Averill, 2008) and a 19-hole program on a stratiform magnetic low between the caldera and the granitoid Sabaskong

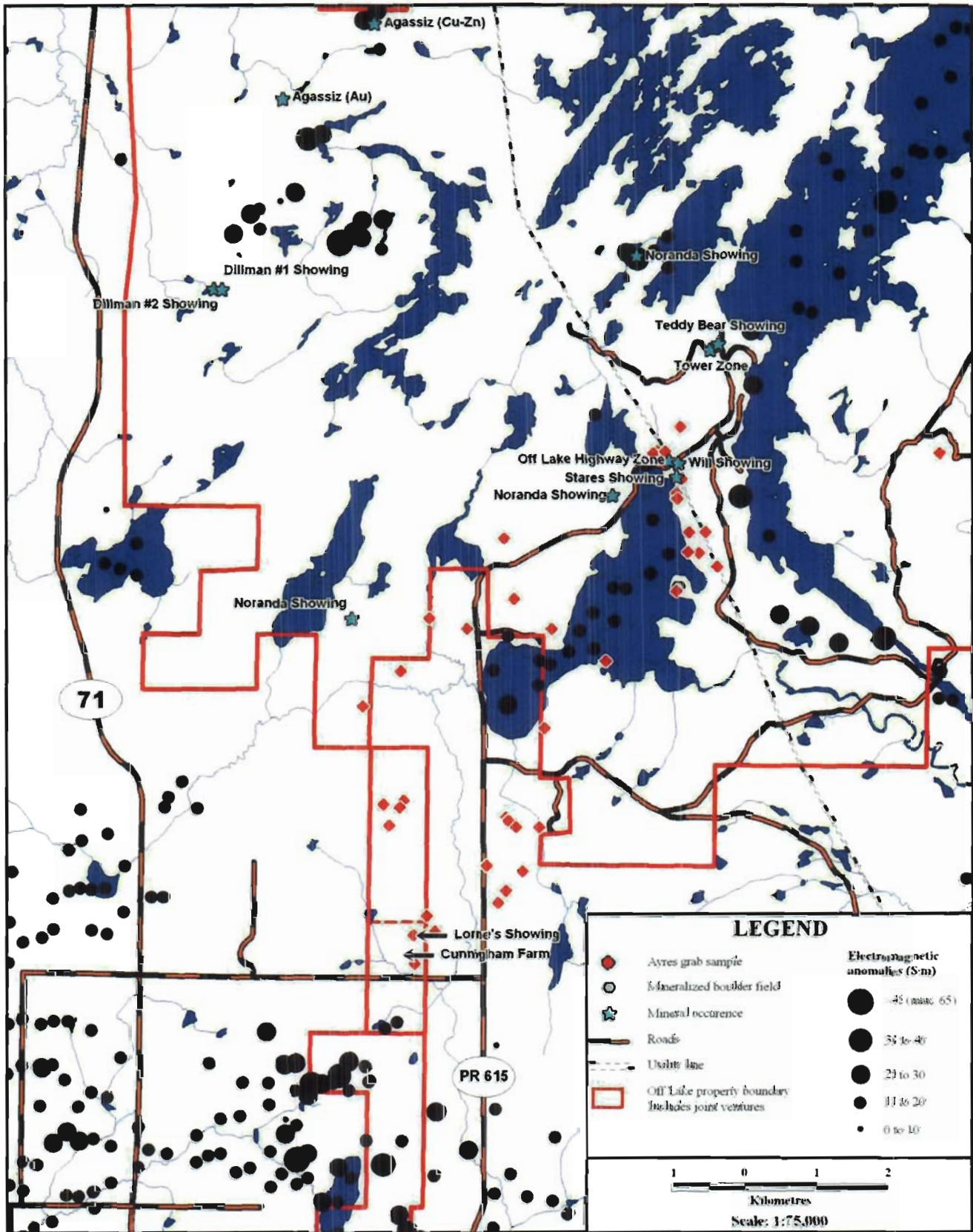


Figure 10 - Electromagnetic (EM) anomaly map of the Off Lake area. Note the absence of EM anomalies at the known volcanogenic sulphide showings and occurrences. Data provided by Paul Geddes, Rainy River Resources.

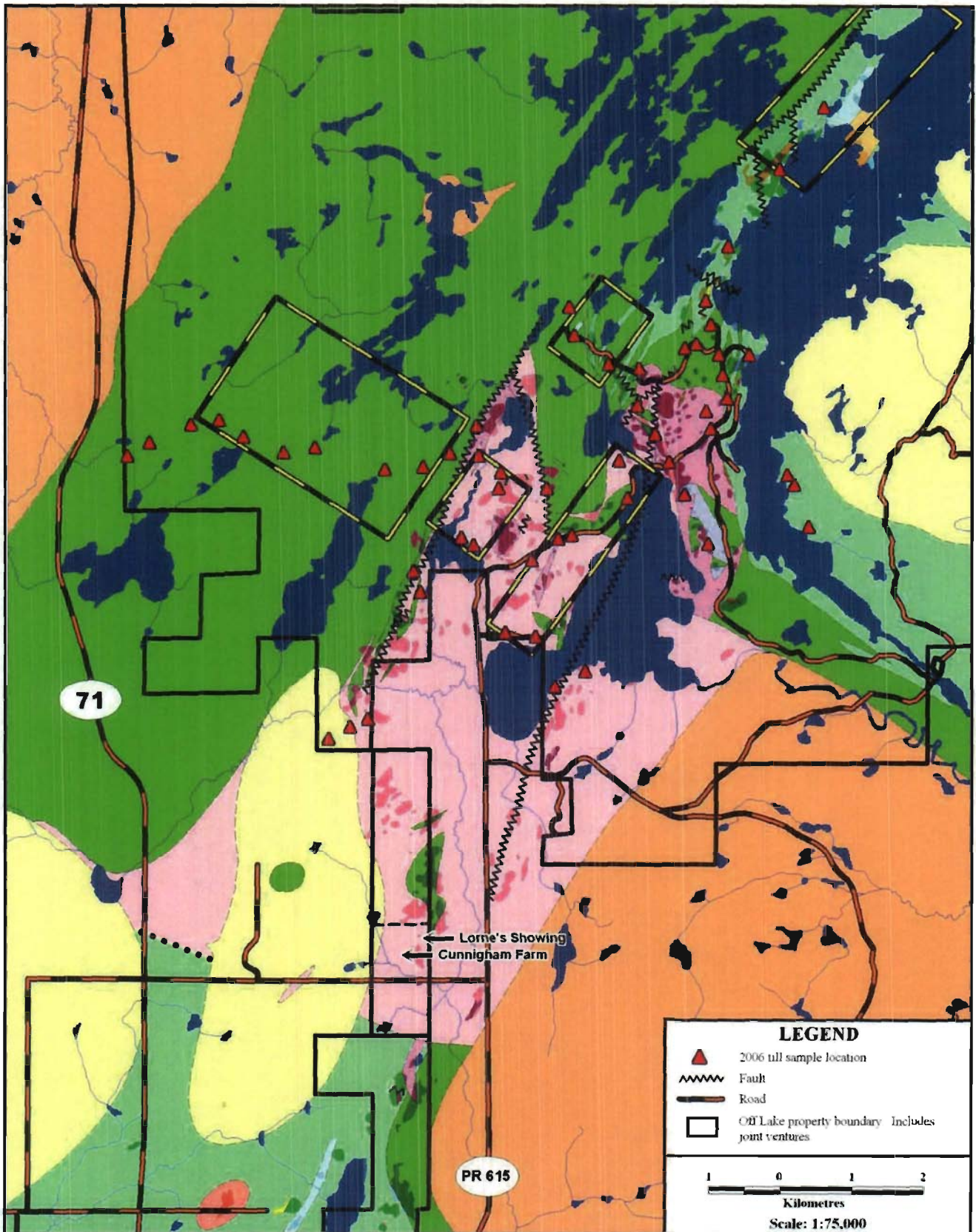


Figure 11 - Target areas for follow-up till sampling as outlined in ODM's 2006 heavy mineral sampling survey. Source: Hozjan and Averill (2007).



Batholith to the west (Sharpe and Averill, 2008). Although abundant outcrops and thinner overburden make most of the Off Lake property suitable for heavy mineral geochemical sampling by hand-dug pits, areas with significant overburden cover (>5-10 m) do exist and reverse circulation drilling is required to sample the till and bedrock in these areas. **Figure 12** shows where the five holes (and 1 test pit) were drilled near the southern shoreline of Off Lake in Fleming Township to test the top of the OLDC.

### 3. METHODS AND COSTS

#### 3.1 Contractors

ODM chose the locations of the drill holes and access routes, oversaw the drilling, logged the holes, collected the samples, further logged the bedrock samples in Ottawa, processed the till samples to extract both visible gold grains and small, assayable heavy mineral concentrates potentially containing sulphide-occluded gold and base metal-bearing minerals, and interpreted the data. Donald Holmes, P.Geo., located the drill sites and access routes. Harold McQuaker Enterprises Inc., a local contractor, cleared the drill roads and prepared the sites. ODM's drill geologists were Michael Michaud, P.Geo. and Brent Sharpe assisted by ODM sampler Bryan Landry and RRR employee Beven Burnell. Cabo Drilling (Ontario) Corp. of Kirkland Lake performed the drilling.

Rémy Huneault, P.Geo., supervised ODM's sample processing in Ottawa. Michael Michaud and Kenzie MacNeil, P.Geo., conducted the detailed laboratory logging of the bedrock samples. Michael Michaud, with assistance from Stuart Averill, P.Geo., interpreted the data and prepared the report. Dave Hozjan, P.Geo., prepared the illustrations. Actlabs Limited of Ancaster, Ontario, analyzed both the bedrock samples and ODM's heavy mineral concentrates from the overburden samples.

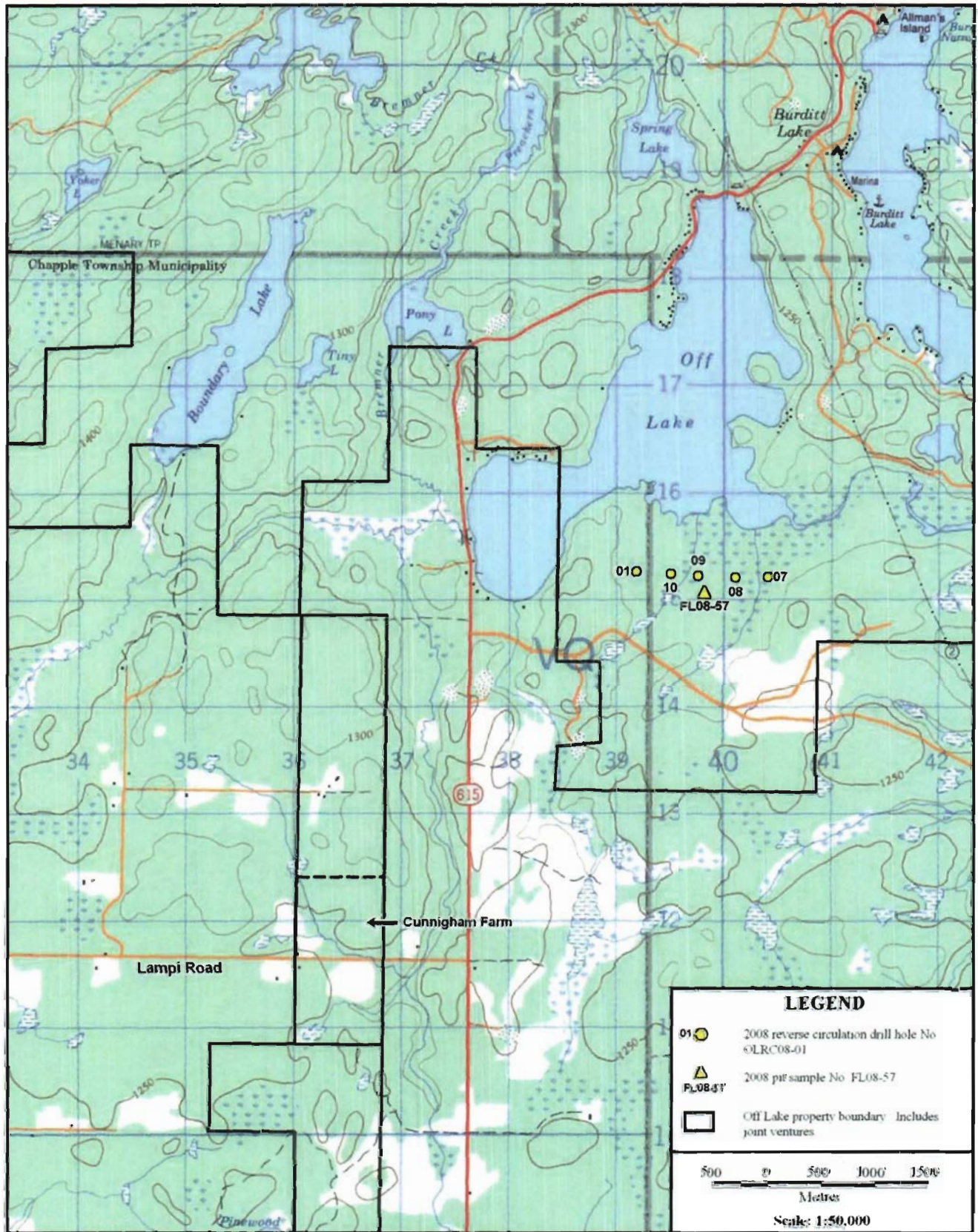


Figure 12 - Locations of the 5 reverse circulation drill holes and the sole pit sample.

### 3.2

#### Field Procedures

Cabo's drill rig was mounted and enclosed on a wide-tracked Nodwell carrier for all-terrain mobility and all-weather operation. Water for drilling was hauled on a smaller GT-1000 tractor. Access roads were required for holes located in bogs and/or forested areas. The geographic coordinates of the drill holes were precisely measured by GPS (**Table 2**). However, the hole elevations were estimated from stereo air photos and topographic maps because the measured GPS elevations were too erratic to be useful.

The reverse circulation drilling system used to sample overburden consists of specially designed coaxial piping and tricone bits (**Fig. 13**). Air and water are injected between the two pipes to the bit, and clay to pebble-sized sediment particles and cm-sized cuttings of boulders and bedrock are flushed instantly through the center pipe to surface where they are continuously monitored and described (**Appendix A**). The -2 mm fines and a split of the +2 mm cuttings are collected in paired settling buckets from which samples weighing approximately 10 kg are extracted. Fine silt and clay suspended in the bucket overflow are settled in a baffled tank and the water is recirculated down the drill hole.

The drill holes were prefixed OLRC-08 (for Off Lake property, reverse circulation, 2008) and were numbered consecutively in the sequence drilled starting with No. 01. The samples from each hole, whether of till or bedrock, were numbered consecutively (*e.g.* OLRC-08-07-01 to 07 for the seven samples from Hole 07). The holes were drilled an average of 1.5 m into bedrock. One hand-dug till sample was also collected; it was labelled FL08-57 following the sample numbering system and sequence used in ODM's 2006 survey (Hozjan and Averill, 2007).

### 3.3

#### Sample Processing and Gold Grain Observation Procedures

The bedrock samples were washed and sieved to separate coarse (+2.0 mm), clean cuttings suitable for binocular microscope logging (**Appendix B**) and geochemical analysis. The till

Hole Number	UTM Co-ordinates (NAD 83, Zone 15)		Elevation (masl)	Metres Drilled		Hole Depth (m)	Samples Collected		
	Easting	Northing		Overburden	Bedrock		Till	Sand & Gravel	Bedrock
OLRC-08-01	439185	5415289	361	6.0	1.5	7.5	0	1	1
OLRC-08-07	440410	5415239	356	25.2	1.3	26.5	7	0	1
OLRC-08-08	440109	5415235	356	13.5	1.7	15.2	2	0	1
OLRC-08-09	439760	5415247	356	16.8	1.2	18.0	2	0	1
OLRC-08-10	439505	5415268	358	5.8	1.7	7.5	2	0	1
Totals:				67.3	7.4	74.7	13	1	5
Averages:				13.5	1.5	14.9	2.6	0.2	1.0

**Table 2 - Drill hole statistics**

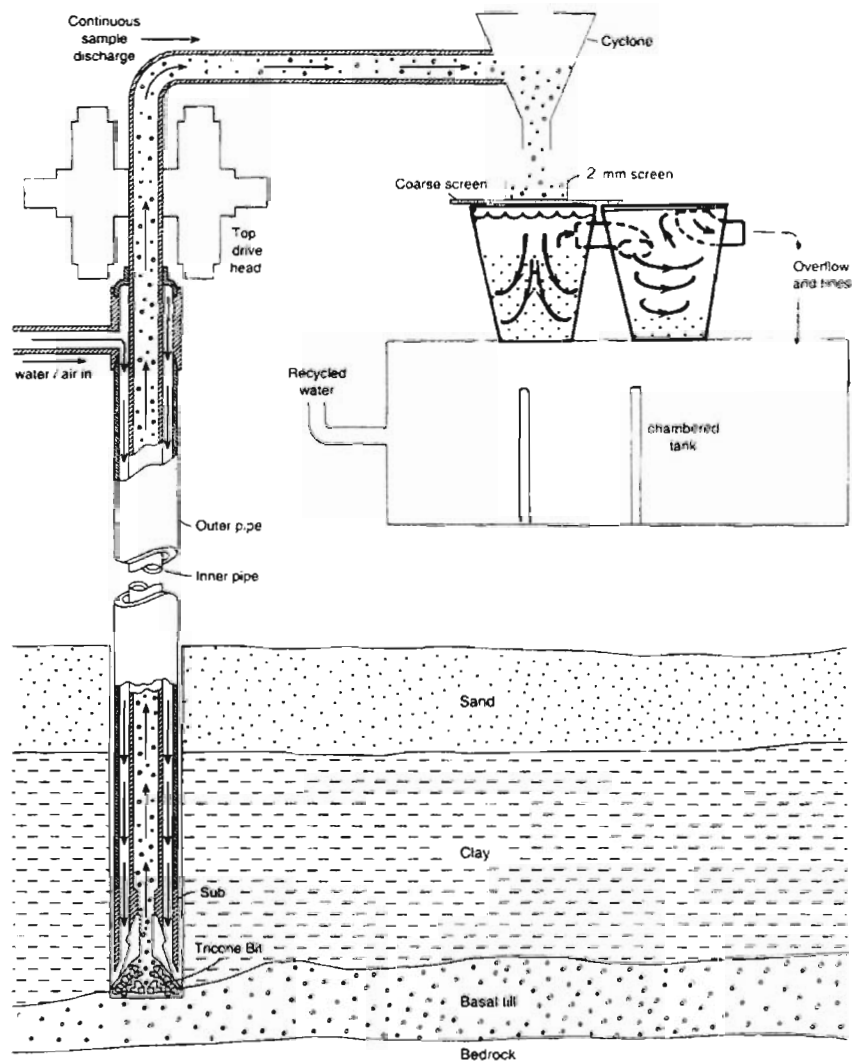


Figure 13 - Schematic diagram of a reverse circulation drilling system.

samples were processed using the procedures shown in **Figure 14** which are designed to progressively reduce the bulk sample, expose the gold grains, concentrate the heavy minerals and eliminate any drill steel that would interfere with geochemical analysis of the concentrates.

First, the sample is wet screened at 2.0 mm and a -2.0 mm table concentrate is prepared. Geological observations on the character of the sample are made during both the screening and tabling operations (**Table 3**). The table concentrate is purposely large (typically 300-400 g) and of low grade (10-25 percent heavy minerals) in order to achieve a high, 80 to 90 percent recovery rate for all desired heavy minerals irrespective of their grain size or relative specific gravity. The gold grains, which are mostly silt sized, are observed at this stage with the aid of micropanning and are individually counted (**Appendix C**), measured and classified as to degree of wear (*i.e.* distance of glacial transport; **Fig. 15**). Their gold assay value is also calculated (**Appendix C**).

To obtain a consistent heavy mineral fraction suitable for geochemical analysis, the -2.0 mm table concentrate is separated in methylene iodide at S.G. 3.32. Undesirable magnetite is then removed from the heavy liquid concentrate using a ferromagnetic separator.

### 3.4 Analytical Procedures

The heavy mineral concentrates (HMCs) of the till samples were analyzed for a package of 35 elements by the instrumental neutron activation (INA) method using up to a 60 g (as available) aliquot with no milling or acid digestion. Of these 35 elements, Au and As are quantitative but most of the others are either too qualitative to be useful or of limited exploration interest. Therefore a second, 5 g split of the concentrates was milled and analyzed quantitatively for the nine key indicator elements Ag, Cu, Pb, Zn, Ni, Cd, Mo, Mn and S by inductively coupled plasma/optical emission spectrometry using aqua regia acid digestion (AR-ICP/OES). The bedrock samples were milled and analyzed using essentially the same techniques except that anomalous Au analyses were verified by fire assay/atomic absorption (FA/AA). As well, a pressed pellet was analyzed by fusion inductively coupled plasma (FUS-ICP) for ten whole rock oxides, loss of volatiles on ignition and seven trace elements.

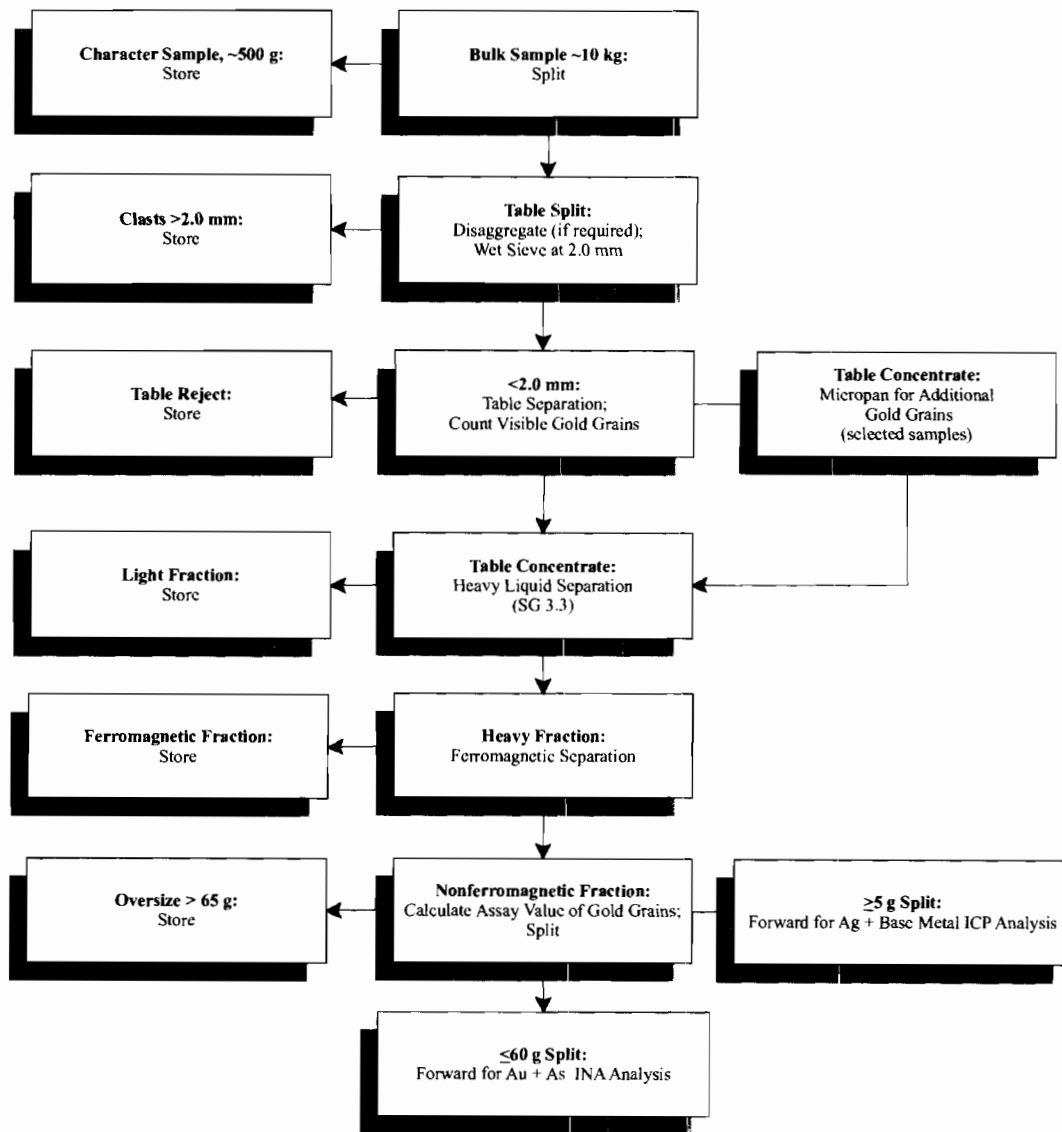
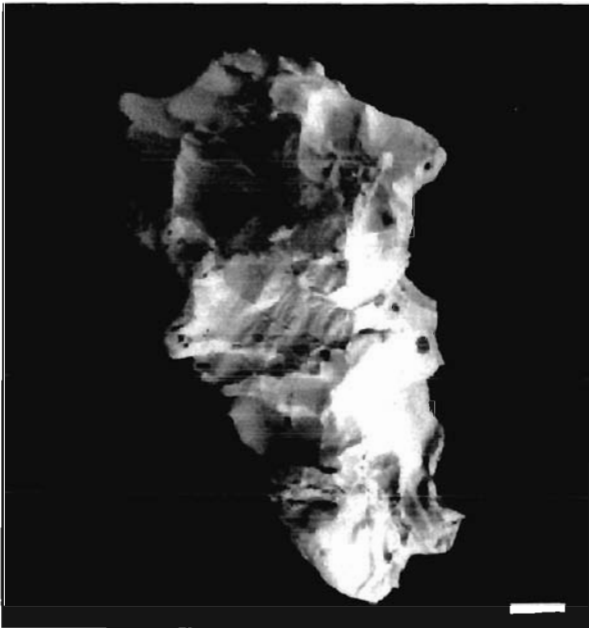


Figure 14 - Heavy mineral processing flowsheet for the overburden samples.

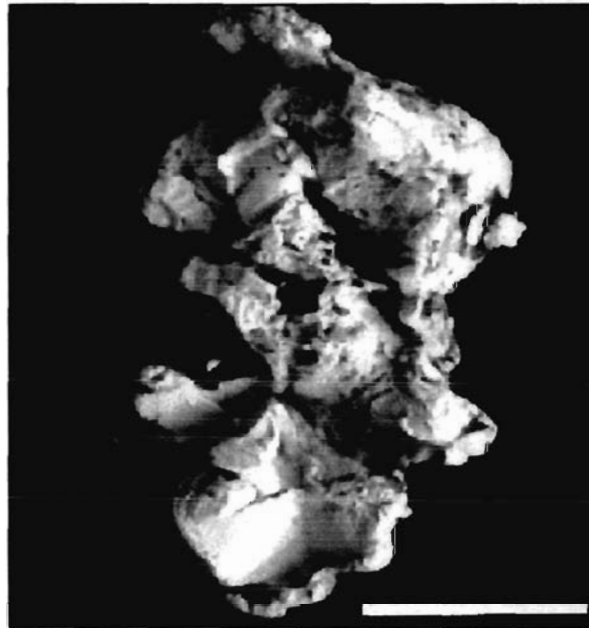
## Till Gold Grain Morphology

Pristine



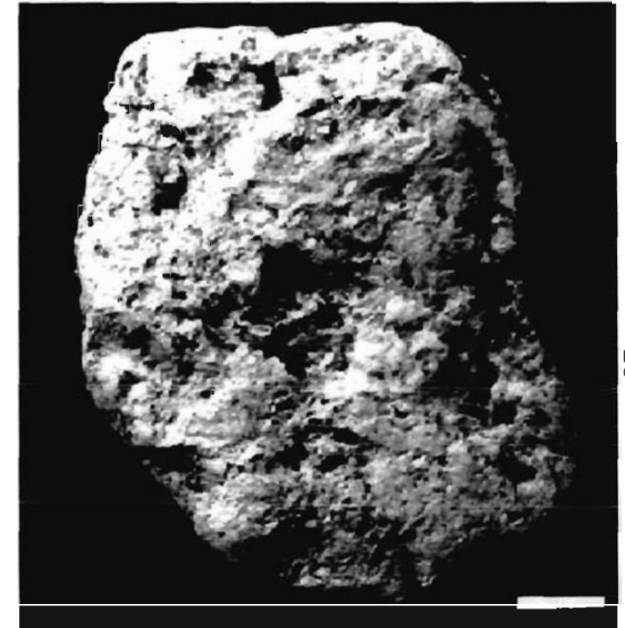
100 m

Modified



500 m

Reshaped



>1,000 to >10,000 m

Distance of Transport

**Figure 15 - Backscatter electron images of gold grains from till illustrating the relationship between grain wear and distance of transport.** The wear processes are compressional (infolding and compaction) and do not reduce the mass of the gold grain. Scale bars = 50  $\mu\text{m}$ . Source: Averill, 2001.



Sample Number	Weight (kg wet)				-2.0 mm Table Concentrate Weight (g dry)					Sample Description										CLASS		
	Bulk Recd	Table Split	+2.0 mm Clasts	Table Feed	Heavy Liquid Separation (S.G. 3.3)					Clasts (> 2.0 mm)					Matrix (<2.0 mm)							
					Total	Lghts	HMC			Size	Percentage				Distribution						Colour	
							Total	Non Mag	Mag		V/S	GR	LS	OT	S/U	SD	ST	CY	ORG		SD	CY
OL-RC-08-01-01	10.6	10.1	0.0	10.1	231.1	124.0	107.1	89.0	18.1		No clasts				S	FM	-	N	N	LOC	NA	SAND
OL-RC-08-07-01	9.4	8.9	1.4	7.5	258.1	193.8	64.3	54.7	9.6	C	80	20	0	0	U	+	Y	-	N	GY	GB	TILL
OL-RC-08-07-02	15.4	14.9	1.8	13.1	309.3	190.1	119.2	102.2	17.0	C	80	20	0	0	U	+	Y	-	N	GY	GB	TILL
OL-RC-08-07-03	13.7	13.2	1.6	11.6	423.2	294.4	128.8	112.9	15.9	C	80	20	0	0	U	+	Y	-	N	GY	GY	TILL
OL-RC-08-07-04	14.6	14.1	1.6	12.5	474.0	318.2	155.8	136.4	19.4	C	80	20	0	0	U	+	Y	-	N	GY	GY	TILL
OL-RC-08-07-05	13.9	13.4	2.2	11.2	328.8	200.4	128.4	111.5	16.9	C	80	20	0	0	U	+	Y	-	N	GY	GY	TILL
OL-RC-08-07-06	14.2	13.7	1.0	12.7	468.7	290.5	178.2	153.1	25.1	C	80	20	0	0	U	+	Y	-	N	GY	GY	TILL
OL-RC-08-07-07	13.5	13.0	0.6	12.4	335.3	198.8	136.5	120.5	16.0	C	90	10	0	0	U	+	Y	-	N	GY	GY	SANDY TILL
OL-RC-08-08-01	11.6	11.1	2.1	9.0	397.6	281.6	116.0	104.1	11.9	C	85	15	0	0	U	+	Y	-	N	GY	GY	TILL
OL-RC-08-08-02	13.8	13.1	1.5	11.6	414.5	328.3	86.2	77.2	9.0	C	95	5	0	0	U	+	Y	-	N	GY	GY	L + BEDROCK
OL-RC-08-09-01	12.9	12.4	2.3	10.1	662.9	577.4	85.5	67.2	18.3	C	90	10	0	0	U	+	Y	-	N	GY	GY	TILL
OL-RC-08-09-02	13.3	12.8	2.0	10.8	678.0	595.9	82.1	70.8	11.3	C	80	20	0	0	U	+	Y	-	N	GY	GY	TILL
OL-RC-08-10-01	12.8	12.3	1.0	11.3	305.9	215.7	90.2	82.8	7.4	C	85	15	0	0	U	+	Y	-	N	GY	GY	TILL
OL-RC-08-10-02	12.8	12.3	1.0	11.3	394.4	281.1	113.3	103.6	9.7	C	80	20	0	0	U	+	Y	-	N	GY	GY	TILL

Table 3 - Heavy mineral processing weights and physical characteristics of the overburden samples.

### 3.5 Drilling Performance and Project Costs

A budget was prepared only for the larger Phase V Richardson Caldera drilling program; the smaller magnetic low and Off Lake programs were planned later and separate budgets were not prepared. The budget for the larger Phase V program (**Table 4**) was based on 50 holes of an average 25 m depth, collection of three overburden samples and one bedrock sample per hole, a bit life of 150 m and a productivity rate of 8 m per operating hour or 72 m (~3 holes) per single-shift (10-hour) day with a 10 percent (1 hour/day) allowance for mechanical down time. The total estimated cost was \$192.13 per metre and \$4,803.37 per hole including drill mobilization and demobilization, drilling operations, geological supervision and logging, sample collection, processing and analytical costs and a comprehensive final report. The anticipated thinner overburden on the Off Lake property would be expected to result in shorter holes, fewer till samples per hole and lower drilling productivity as the proportion of time spent drilling hard bedrock and moving between holes would increase. The net effect would be to reduce the cost per hole but increase the cost per metre.

The drilling of the five RC holes was performed between the 6<sup>th</sup> and 15<sup>th</sup> of June, 2008 as shown in (**Figure 12**). Hole 01 and holes 7-10 targeting the top of the OLDC, were located in a cedar bog on the south side of Off Lake and the single pit sample was collected from a till ridge ~150 m south of this. Access to the area was via a north-trending logging road branching off Fleming Road.

All holes were completed successfully into bedrock but one, drill hole OLRC-08-01, did not encounter the key Labradorean Till horizon. The average hole depth, including 1.5 m of bedrock, was 14.9 m (**Table 2**), and the 5 holes totalled 74.7 m. Nineteen overburden samples were obtained and single bedrock samples were collected from all holes.

Mechanical down-time was excessive at 28 percent, primarily due to problems with the Nodwell's steering (brakes), broken cross-support bars on its tracks and insufficient spare parts. Average productivity was 3.9 m per drilling/moving hour. Final project costs (**Table 4**) totalled \$27,964.41 or \$374.36 per metre and \$5,592.88 per hole.

Service	Company	Richardson Township (50 holes)			Off Lake (Western Warrior - 5 holes)		
		\$Total	\$/Metre	\$/Hole	\$Total	\$/Metre	\$/Hole
1. Pre-drilling	ODM	3,000.00	2.40	60.00	465.45	6.23	93.09
2. Drilling operations and road clearing	Cabo	134,120.00	107.30	2,682.40	13,108.45	175.48	2,621.69
3. Field supervision, logging and sampling	ODM	39,510.00	31.61	790.20	5,252.82	70.32	1,050.56
4. Sample shipping	Various	3,000.00	2.40	60.00	312.45	4.18	62.49
5. Sample processing	ODM	19,788.50	15.83	395.77	1,741.63	23.31	348.33
6. Analytical	Actlabs	8,750.00	7.00	175.00	833.34	11.16	166.67
7. Report	ODM	32,000.00	25.60	640.00	4,667.38	62.48	933.48
<b>TOTALS</b>		<b>\$240,168.50</b>	<b>192.14</b>	<b>4,803.37</b>	<b>\$26,381.52</b>	<b>353.17</b>	<b>5,276.30</b>
<b>GST</b>		<b>\$12,008.43</b>			<b>\$1,582.89</b>		
<b>GRAND TOTALS</b>		<b>\$252,176.93</b>	<b>192.14</b>	<b>4,803.37</b>	<b>\$27,964.41</b>	<b>374.36</b>	<b>5,592.88</b>

**Table 4 - Comparison of budgeted and actual project costs**

4.

**RESULTS**

4.1

**Bedrock Geology and Geochemistry**

The five RC overburden holes intersected quartz-feldspar porphyry (**Appendix B**). Porphyry and felsite dykes of the OLDC are the dominant rock types. No mafic enclaves were intersected, illustrating the extreme crowding of the dykes. **Figure 16** shows the location of the five drill holes and the relevant Quaternary section and bedrock geology.

4.1.1 **Quartz-Feldspar Porphyry and Felsite**

The porphyry and felsite intersections are massive to strongly foliated and have colours ranging from grey to grey-green, grey-beige and beige. The porphyry consists of 0 to 10 percent quartz and 0 to 45 percent plagioclase phenocrysts (0.5-4 mm) in a fine-grained (0.05-0.4 mm), inequigranular, quartzofeldspathic groundmass including 0 to 15 percent biotite variably altered to chlorite, 0 to 7 percent epidote and trace titanite variably altered to leucoxene. The felsite is similar to the groundmass of the porphyry. Ayres noted (Ayres and Tims, 2007) that the wide variations in abundance and size of the quartz and feldspar phenocrysts in the porphyry mainly reflect varying degrees of secondary recrystallization between different dykes rather than significant variations in primary composition and texture (**Plate 2**). Plagioclase was more susceptible than quartz to recrystallization such that even those intersections now containing only quartz phenocrysts probably represent quartz-feldspar rather than quartz porphyry. Pyrite mineralization is present in all intersections but is very weak, ranging from trace to 4 percent. A trace of chalcopyrite is present in the two intersections from Holes 07, 08.

4.2

**Bedrock Geochemistry**

Bedrock gold, arsenic, silver, copper, zinc, lead, nickel, molybdenum, manganese and sulphur analyses are presented in **Table 5**. Gold, arsenic, silver, lead and molybdenum occur at or near their detection limits of 5 ppb, 2 ppm, 0.2 ppm, 2 ppm and 2 ppm, respectively. Fire assay/AA

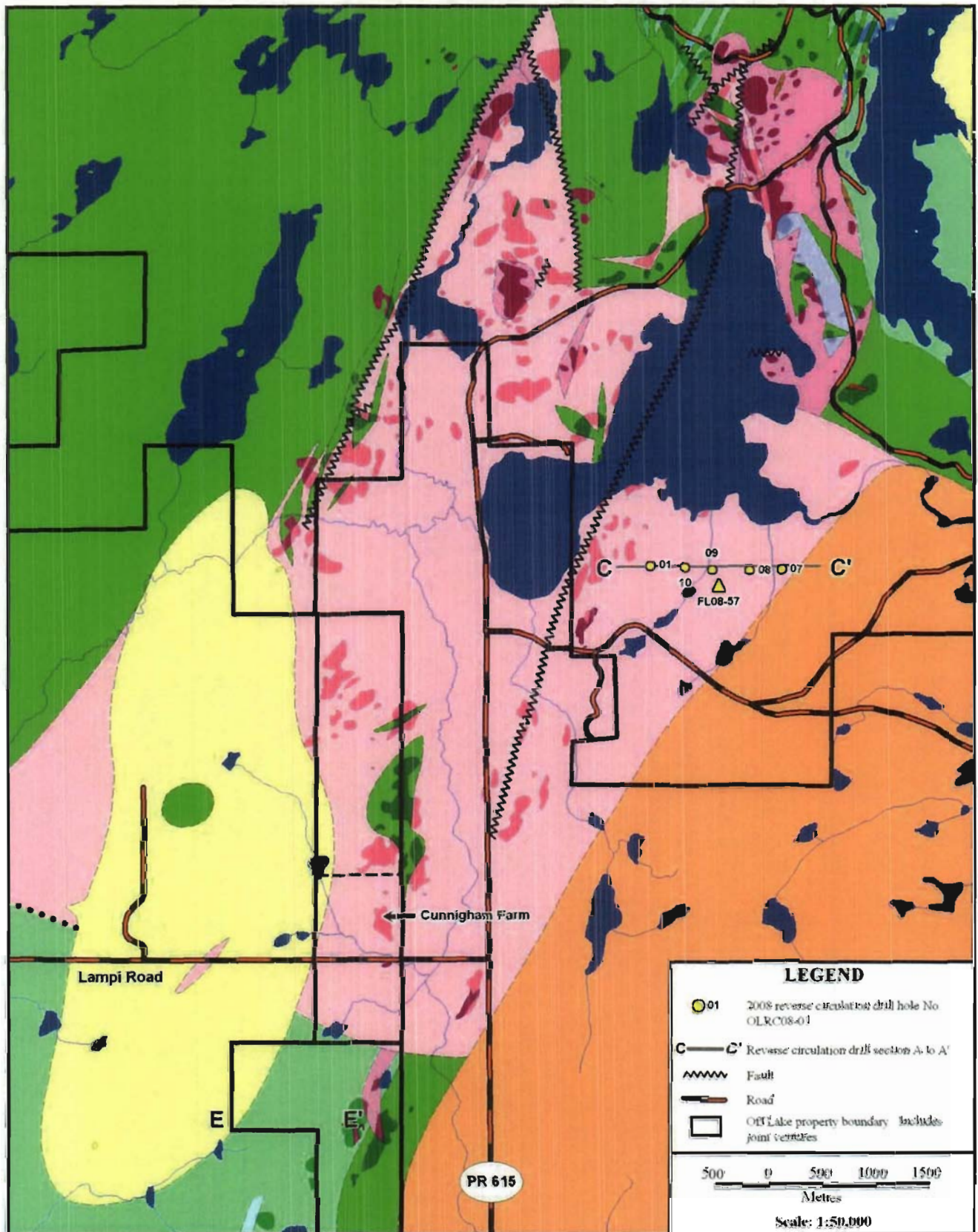


Figure 16 - Location of the drill holes and Quaternary sections. See Figure 9 for bedrock lithology legend.



**Plate 2 - An example of a chilled, weakly laminated contact of grey, quartz-plagioclase phyric dyke against an older, pale grey, quartz-plagioclase phyric phase within a composite felsic dyke. Source: Ayres and Tims (2007).**

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Activation Laboratories**

Element:	Au	Au	As	Ag	Cu	Zn	Pb	Ni	Mo	Mn	S
Units:	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit:	5	5	2	0.2	1	1	2	1	2	2	0.001
Analysis Method:	INAA	FA-AA	INAA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
Sample Number											
OLRC-08 01-02	< 5	NA	< 2	< 0.2	2	32	2	7	< 2	135	0.036
OLRC-08 07-08	< 5	NA	< 2	0.4	213	31	2	14	< 2	273	0.045
OLRC-08 08-03	< 5	NA	< 2	< 0.2	5	42	< 2	8	< 2	174	0.02
OLRC-08 09-03	< 5	NA	< 2	< 0.2	6	28	< 2	4	< 2	141	0.011
OLRC-08 10-03	< 5	NA	< 2	< 0.2	19	28	3	6	< 2	133	0.042

**Table 5- Bedrock geochem analysis**

check gold values were <5 ppb. Cu values in most other samples are >25 ppm. Zinc and nickel occur at very low levels with maximum values of 90 and 50 ppm, respectively. .

### **4.3 Overburden Geology and Stratigraphy**

The Quaternary stratigraphy of the drill holes is shown schematically on Section C-C' (**Fig. 17**). The intersected Quaternary sediments are comprised of till and Lake Agassiz sediments from both the Labradorean and Keewatin events and glaciofluvial sand and gravel moraine deposits related to the Labradorean event. Northeasterly sourced Labradorean Till (Unit 1) rests on bedrock in 4 of the 5 holes. It is the principal sampling horizon as it is derived mostly from the Precambrian basement rocks of western Ontario whereas the Keewatin Till (Unit 4) is derived mainly from Lake Agassiz clay and Paleozoic carbonates of the southern Manitoba lowlands. The thickness of the Labradorean Till varies from 0 to 7.0 m. The till typically has a grey silty sand matrix with 20 to 40 percent clasts ranging from pebble to boulder size. The clasts include both local greenstone and more distal granitoid lithologies; the greenstone:granite ratio in most sections appears to be uniform (~80:20). The overlying, clay-rich Keewatin Till, contains <5 percent clasts of mainly pebble size and carbonate lithology. Lenses of coarse-grained, sorted glaciofluvial sand and gravel (Subunit 2a) and/or fine-grained glaciolacustrine sand (Subunit 2b) and clay (Subunit 2c) are preserved between the two till horizons in areas where the thin, buoyant Keewatin ice lobe did not scour to a sufficient depth to completely remove these sediments. These sediments record the embryonic development of Lake Agassiz. Similar discontinuous layers of fine to pebbly glaciolacustrine and glaciofluvial sand (Subunits 3a and 3b) are locally preserved within the Keewatin Till, reflecting concomitant sedimentation from the ice and meltwater.

### **4.4 Gold Grain Counts**

The gold grain data for the overburden samples are summarized in **Table 6**. The average normalized gold grain content per sample for each hole is shown in **Figure 18** in relation to



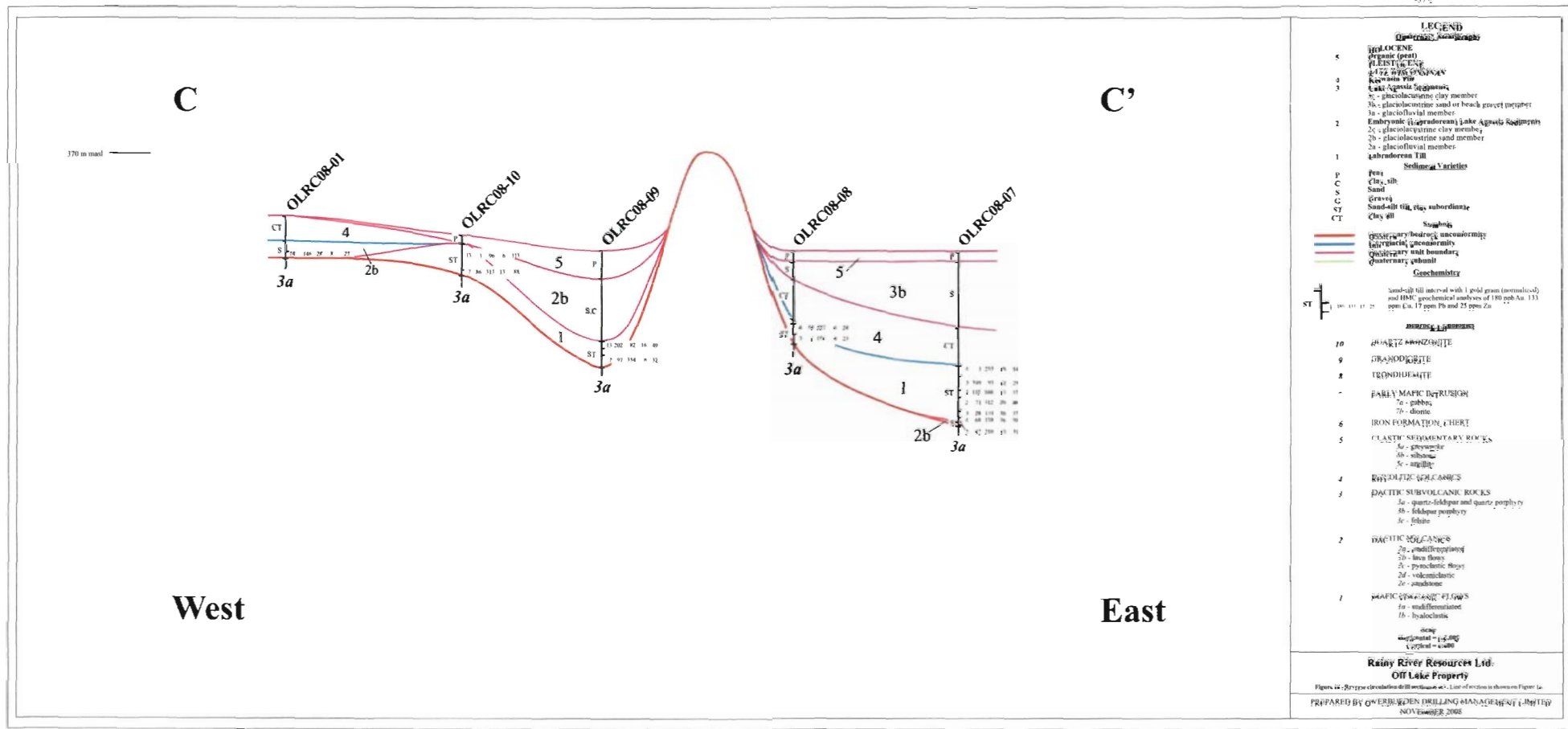


Fig 17 - Reverse circulation drill section C-C'

Sample Number	Number of Visible Gold Grains					Nonmag HMC Weight (g)	Calculated PPB Visible Gold in HMC			
	Total		Reshaped	Modified	Pristine		Total	Reshaped	Modified	Pristine
	Actual	Normalized								
OLRC-08-01-01	19	14	12	7	0	89	19	15	5	0
OLRC-08-07-01	4	4	2	2	0	54.7	2	1	1	0
OLRC-08-07-02	6	3	6	0	0	102.2	36	36	0	0
OLRC-08-07-03	5	3	5	0	0	112.9	5	5	0	0
OLRC-08-07-04	3	2	3	0	0	136.4	9	9	0	0
OLRC-08-07-05	4	3	4	0	0	111.5	6	6	0	0
OLRC-08-07-06	6	4	5	1	0	153.1	5	5	<1	0
OLRC-08-07-07	4	2	4	0	0	120.5	6	6	0	0
OLRC-08-08-01	7	6	4	3	0	104.1	17	15	2	0
OLRC-08-08-02	4	3	2	2	0	77.2	3	1	2	0
OLRC-08-09-01	17	13	11	5	1	67.2	19	16	2	<1
OLRC-08-09-02	10	7	5	1	4	70.8	8	3	<1	5
OLRC-08-10-01	19	13	13	6	0	82.8	13	11	2	0
OLRC-08-10-02	10	7	10	0	0	103.6	11	11	0	0
FL08-57	0	0	0	0	0	38	0	0	0	0

**Table 6 - Summary of gold grain abundances, morphologies and calculated assay values.**

Both the actual and normalized (to 7.5kg of -2mm sample) total grain counts are shown. The calculated assays are based on the weights of the nonferromagnetic heavy mineral concentrates.

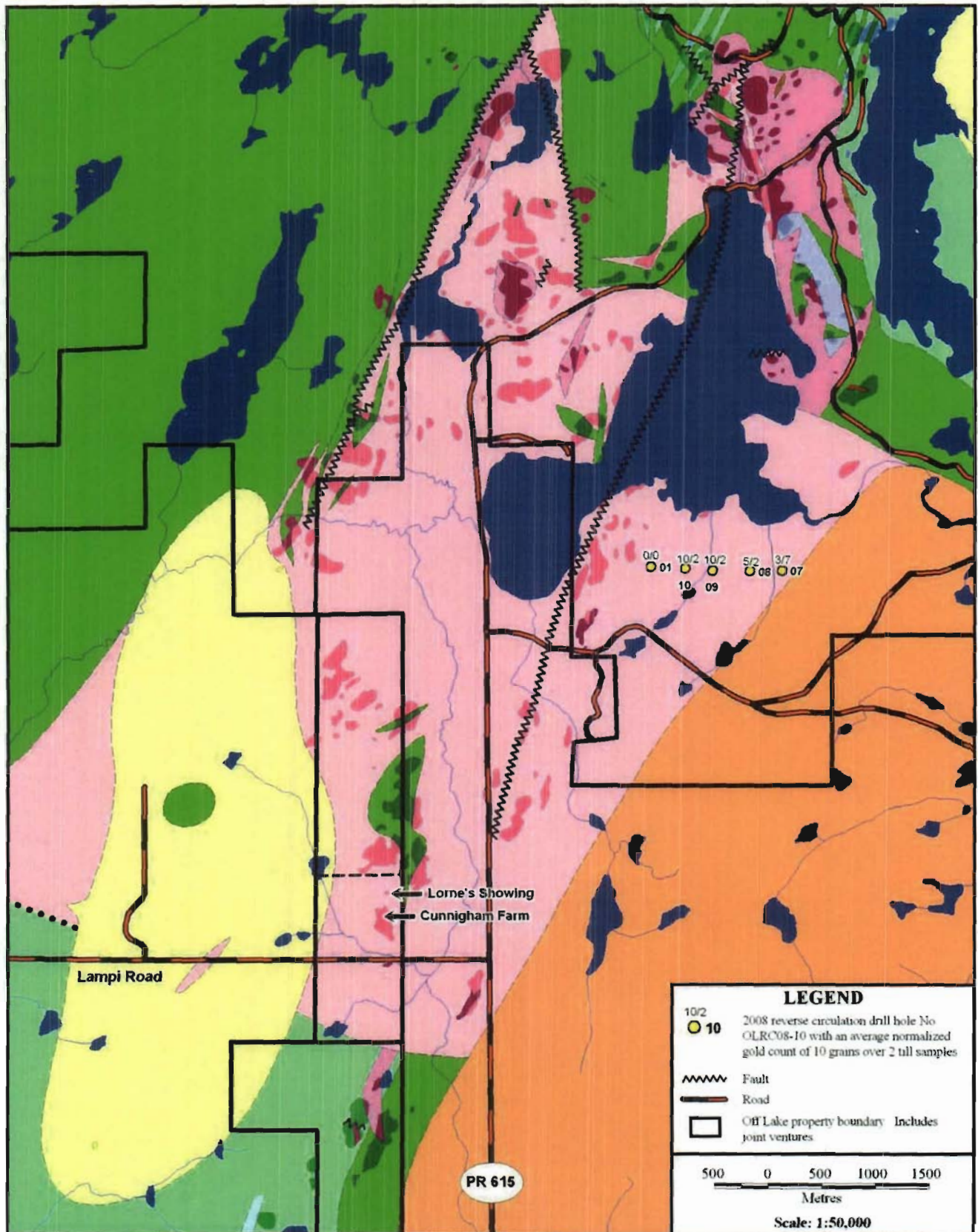


Figure 18 - Average normalized (to 7.5 kg of -2.0 mm sample) gold grain content per till sample in the reverse circulation drill holes. See Figure 9 for bedrock lithology legend.

bedrock geology. To obtain the normalized values, the gold grain counts for every sample from the entire Labradorian Till section in the hole, including three composite samples of till and bedrock, were normalized to a standard 7.5 kg weight of -2.0 mm shaking table feed (*i.e.* processed sediment) and then averaged (**Table 6**). The standard 7.5 kg weight is the average for all reverse circulation drilling programs in Canada. Normalizing to this standard permits direct comparison of the gold counts within and between projects irrespective of starting sample size, facilitating the recognition and ranking of significant gold grain anomalies. Using average gold grain values per sample in the hole rather than the number of grains per individual sample simplifies presentation of the data. It is a valid procedure provided the till thickness is not extreme because most till-hosted gold grain dispersal trains are sufficiently thick to be detected in at least two or three consecutive samples.

Gold grains were recovered from all of the samples taken in the five holes (**Table 6**). Most of the grains are silt sized (<0.063 mm wide) and most samples yielded <10 and generally <5 (normalized) grains. Such low values clearly represent background because the threshold level for a significant gold dispersal train is 10 grains per sample (Averill, 1988, 2001) and samples over the mineralized Richardson Caldera consistently yield >20 and often >100 gold grains (MacNeil and Averill, 2008). Moreover, approximately 70 percent of the gold grains in the Off Lake samples are completely reshaped (**Table 6**; Appendix C), indicating considerable transport (**Fig. 15**). All samples of the overlying, silt-depleted moraine sand and gravel also, predictably, yielded negligible gold. The single, hand-dug till sample (FL08-57) collected ~150 m south of the lake yielded no gold grains.

#### 4.5 Till Heavy Mineral Gold Analyses

To be considered anomalous in gold, a heavy mineral concentrate should assay >1000 ppb (1 g/t) Au because it has been established (Averill, 1988) that the average grade of till concentrates from a gold dispersal train is roughly the same as the grade of the bedrock source mineralization. Furthermore, the anomaly must be caused by ten or more small, pristine to modified (*i.e.* little-travelled; **Fig 15**) gold grains or by gold encased in sulphide minerals, not by the presence of one or two of the large reshaped gold grains (nuggets) that are a universal but erratic constituent of

till and tend to be concentrated in gravel at the expense of small, silt-sized grains. Gold assays reported for the heavy mineral concentrates are listed in **Table 7**. One sample from drill hole No. 07 yielded >500 ppb. All other gold values are well below the established 1000 ppb anomaly threshold level and clearly represent background noise. The low analytical values also effectively preclude the possibility of significant amounts of sulphide-occluded gold; therefore normalizing the assay values to account for variations in the weights of the bulk samples and HMCs was not done.

Several studies (*e.g.* McClenaghan, 1991, Thorleifson and Matile, 1993) have reported a close match between gold values calculated by ODM from the number and size of gold grains observed during the preparation of heavy mineral concentrates and the actual gold assays obtained when the concentrates are analyzed as shown in the **Figure 19** graph. This type of graph is very useful in assessing anomalies. If all of the gold in the sample is in the observed grains and no grains are removed from the concentrates prior to analysis, the sample will plot along a 45° slope (**Fig. 20**). If grains are removed or lost or if the largest grains fail to enter the analytical aliquot when the concentrate is split before analysis, the samples will plot above the 45° slope. When grains are overlooked while processing the sample or if most of the gold in the concentrate is encapsulated within another mineral, the samples will plot below the 45° slope, and this is the case for most of the Off Lake samples (**Fig. 20**). The main reason for this shift is not an abundance of sulphide-encased gold, as in the till over the Richardson Caldera (MacNeil *et al.*, 2007), but rather the low overall visible gold content of the Off Lake samples which resulted in only 16 percent being panned to obtain a precise gold grain count. In the McClenaghan and Thorleifson and Matile surveys, all samples were panned.

#### **4.6 Till Heavy Mineral Analyses for Other Elements**

All Cu and Zn values are <1000 ppm (**Table 7**). Only anomalies >5000 ppm (0.5 percent) are of interest in Cu-Zn exploration for the same reason that only gold values >1000 ppb (1 g/t) are potentially significant in gold exploration. The Ag, Ni, Pb and Mo analyses are very low and nonanomalous, often below detection (**Table 7**).

Element:	Au	As	Ag	Cu	Zn	Pb	Ni	Mo	Mn	S
Units:	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit:	5	2	0.2	1	1	2	1	2	2	0.01
Analysis Method	INAA	INAA	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP	AR-ICP
Sample Number										
OLRC-08-01-01	146	<2	<2	28	25	8	15	<2	204	0.03
OLRC-08-07-01	<5	140	0.4	237	54	19	69	<2	315	7.83
OLRC-08-07-02	749	170	0.3	93	29	12	48	<2	177	6.26
OLRC-08-07-03	112	150	0.6	160	37	13	50	<2	204	6.94
OLRC-08-07-04	71	130	0.7	312	46	20	66	<2	264	7.37
OLRC-08-07-05	28	130	0.2	131	37	10	50	<2	213	6.29
OLRC-08-07-06	68	110	0.3	138	30	16	50	2	224	6.17
OLRC-08-07-07	52	130	0.2	210	31	13	45	<2	211	5.93
OLRC-08-08-01	34	20	<0.2	221	24	6	21	<2	165	1.45
OLRC-08-08-02	<5	6	<0.2	173	23	4	16	<2	153	2.22
OLRC-08-09-01	202	110	<0.2	82	49	16	57	<2	274	5.01
OLRC-08-09-02	97	12	0.3	354	32	6	18	<2	200	0.53
OLRC-08-10-01	<5	31	<0.2	96	113	6	24	<2	135	2.94
OLRC-08-10-02	86	100	0.4	313	88	13	58	2	174	7.48

**Table 7 - Heavy mineral geochemical analysis**

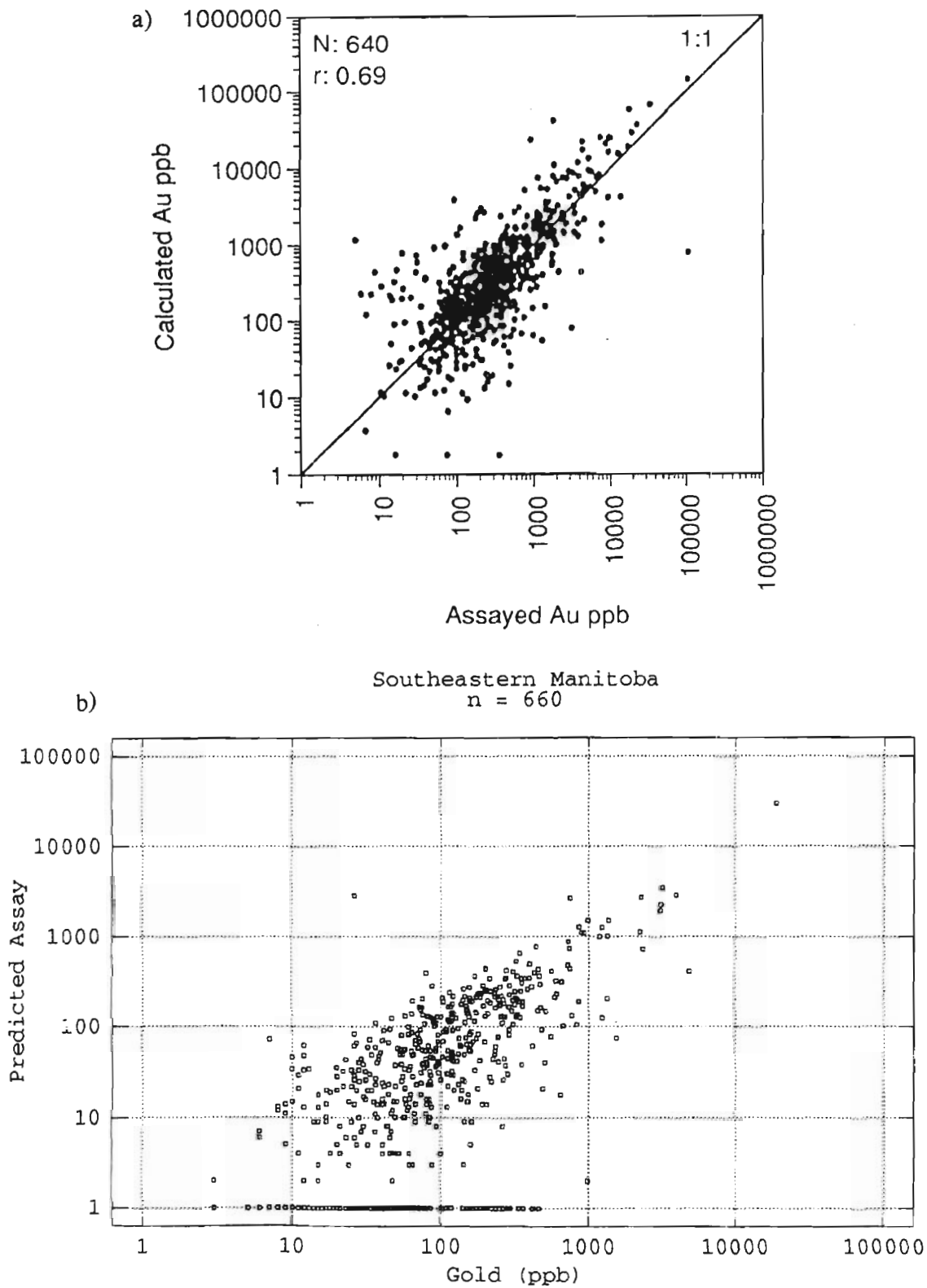
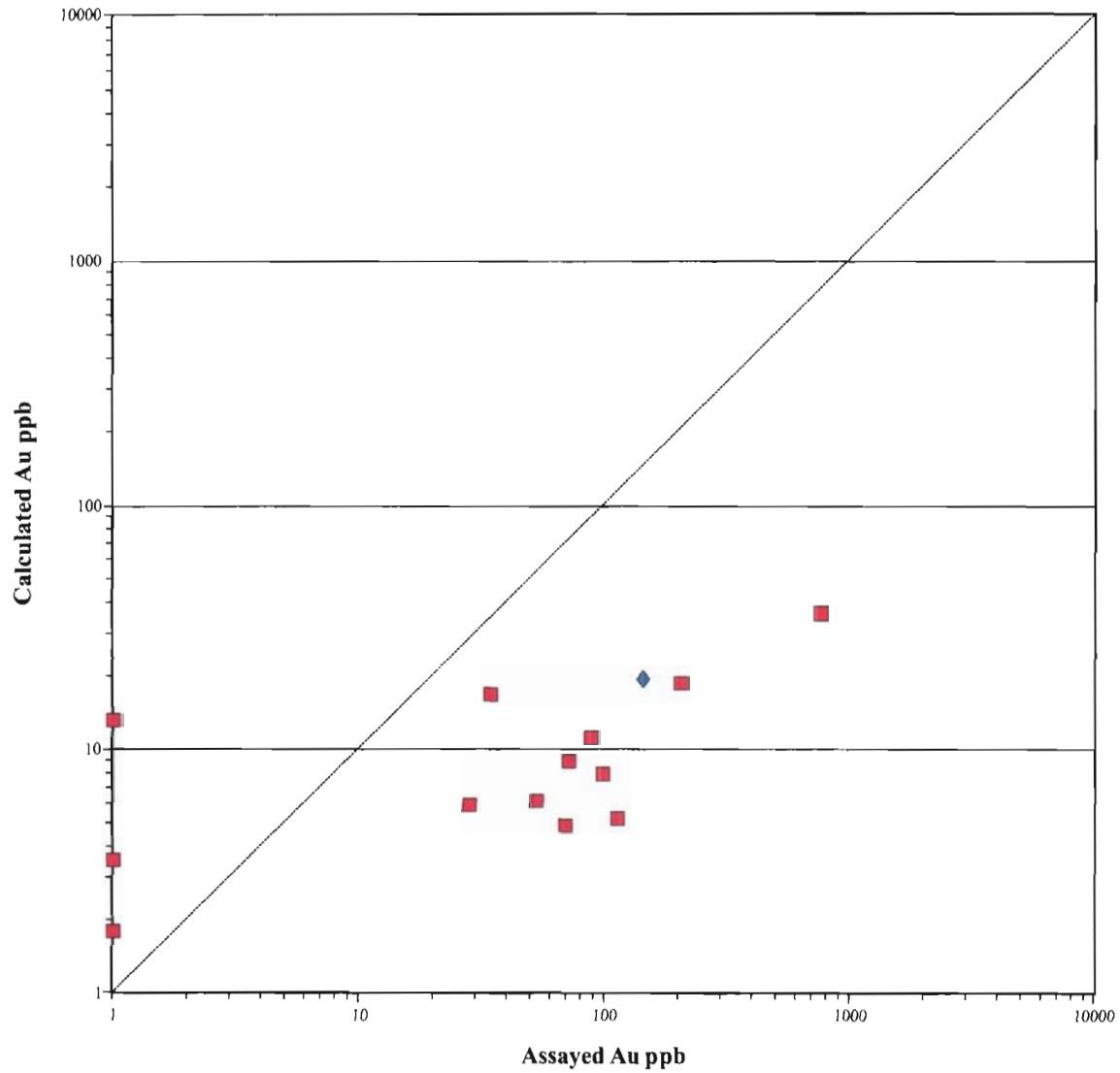


Figure 19 - Example of correspondence between ODM-calculated visible gold values and actual HMC gold assays for (a) weathered and (b) unweathered till. Sources: a) McClenaghan, 1991; b) Thorleifson and Matile, 1993).



**Figure 20 - Correspondence between the calculated visible gold values and actual HMC gold assays for the till and gravel samples from the reverse circulation drill holes. Gold assays of < 5 ppb were assigned a value of 1 ppb.**



Significant contamination consisting of ~10,000 needle-like Cu-splinters and ~1000 tungsten-carbide fragments was recovered from the bottom till sample in Hole 08 (**Appendix C**). The contamination had a negligible effect on the HMC Cu assay (173 ppm) because the Cu splinters were very small (0.01-0.015 mm wide x 0.1-0.2 mm long). The sample was contaminated when the bearings supporting the tungsten carbide-studded cones of the bit failed during drilling of this section of the hole (Appendix A).

## 5. **Conclusions and Recommendations**

The Off Lake reverse circulation drilling campaign targeted Au-rich, volcanogenic sulphide mineralization at the top of the OLDC immediately south and east of Off Lake. The area is overburden covered with little or no outcrop to guide mineral exploration. However, the drilling provided a very effective test of each area because all 5 holes intersected bedrock and 4 intersected the key, geochemically responsive Labradorian Till horizon.

The absence of mafic volcanic and gabbro intersection in holes drilled within the area of the OLDC attests to the extreme crowding of the quartz-feldspar porphyry and felsite dykes that constitute the dyke complex. The consistently low gold and base metal analyses for the bedrock samples indicate that any subcropping gold mineralization of a significant grade within the area tested is of the spotty, single-dyke type identified by Ayres (Ayres and Tims, 2007, 2008) in the better-exposed parts of the OLDC.

The till results mirror the bedrock results. Overall the reverse circulation drilling results reinforce the observations of Ayres (Ayres and Tims, 2008) that:

1. No pervasive, large-scale Au or base metal mineralization is present within the porphyry dykes of the OLDC at the present erosional level. Any mineralization is localized and probably restricted to individual dykes.
2. Any Au-rich, volcanogenic sulphide zones of economic size would be restricted to the top of the OLDC.

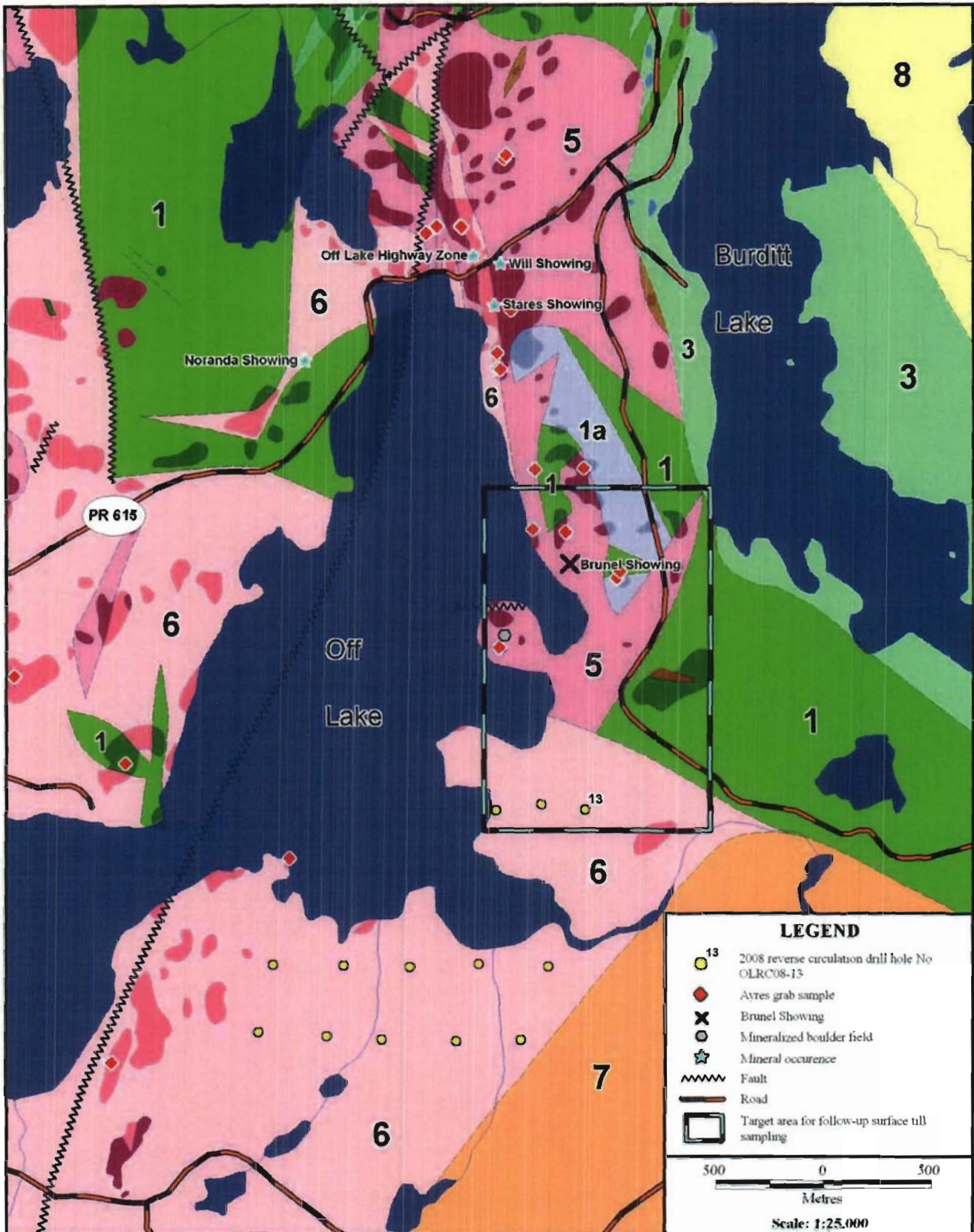


Figure 21 - Proposed target area for follow-up surface till sampling.

Future exploration should be focused at the top of the OLDC east and northeast of Off Lake. Recent prospecting here to follow up the mineralized boulder field on the peninsula has located a compatible shear zone source (The Burnell Showing; **Fig. 21**) ~500 m northeast of the boulders (C.J. Baker, personal communication, 2008). To complement and aid this prospecting, a detailed surface till sampling program is recommended in the area of thin till cover between Off Lake and Burditt Lake (**Fig. 21**). Twenty till samples would be sufficient to assess the scale of the discovery zone and determine whether any other mineralized zones are present nearby. The sample sites should be determined in the field, avoiding the sand and gravel moraine encountered in the drill holes. The estimated cost of this program is \$15,000.

\* \* \* \* \*

6.

**CERTIFICATE**

I, Michael D.J. Michaud, residing at 515 Pennycross Lane, Carp, Ontario, Canada hereby certify as follows:

That I graduated from the University of New Brunswick with a B.Sc. in Geology in 1994;

That I am a geologist employed for 13 years by Overburden Drilling Management Limited, 107-15 Capella Court, Nepean, Ontario, an independent geological consulting company;

That I am a Member of the Association of Professional Geoscientists of Ontario;

That this technical report is based on data gathered on the subject property by myself and Brent Sharpe, B.Sc. (Hons.);

That I personally interpreted the data with assistance from Stuart A. Averill, P.Ge.;

That I directly hold 10,350 common shares of Rainy River Resources.

---

Michael D.J. Michaud, B.Sc, P.Ge.

Dated at Ottawa, Ontario this 21<sup>st</sup> day of November, 2008

7.

## REFERENCES

- AVERILL, S.A. 1997. *Compilation and interpretation of reverse circulation drilling data, Rainy River project, Ontario*. Unpublished report prepared for Nuinsco Resources Limited.
- AVERILL, S.A. 1988. Regional variations in the gold content of till in Canada. *In: MACDONALD, D.R. & MILLS, K.A. (eds) Prospecting in Areas of Glaciated Terrain – 1988*. Canadian Institute for Mining and Metallurgy, Geological Division, Halifax, 271-284.
- AVERILL, S.A. 2001. The application of heavy indicator mineralogy in mineral exploration with emphasis on base metal indicators in glaciated metamorphic and plutonic terrains. *In: MCCLENAGHAN, M.B., BOBROWSKY, P.T., HALL, G.E.M. & COOK, S.J. (eds) Drift Exploration in Glaciated Terrains*. Geological Society, London, Special Publications, **185**, 69-81.
- AYRES, L.D. 1997. *A volcanological investigation of rock units, structures, and gold mineralization, Richardson property, Rainy River Project, Nuinsco Resources Ltd*. Unpublished report prepared for Nuinsco Resources Ltd.
- AYRES, L.D. & TIMS, A. 2007. *Geology and economic potential of felsic metavolcanic and subvolcanic intrusive rocks, Off Lake – Pinewood Lake area, northwestern Ontario*. Unpublished report prepared for Rainy River Resources Ltd.
- AYRES, L.D. & TIMS, A. 2008. *Refinement of the eastern contact of the Off Lake felsic dyke complex and the assessment and genesis of associated pyrite-pyrrhotite-sphalerite-chalcopyrite-gold-silver mineralization, northwestern Ontario*. Unpublished report prepared for Rainy River Resources Ltd.
- BAJC, A.F. 1991. *Till sampling survey, Fort Frances area: results and interpretation*; Ontario Geological Survey, Study **56**, 249 p.
- BAKER, C.J. 2006. *Compilation report and exploration recommendations for the Rainy River Resources Limited Off Lake property*. Unpublished report prepared for Rainy River Resources Ltd.
- BLACKBURN, C.E. 1976. *Geology of the Off Lake-Burditt Lake area, District of Rainy River*. Ontario Division of Mines, Geoscience Report **140**.
- BLACKBURN, C.E., JOHNS, G.W., AYER, J. & DAVIS, D.W. 1991. Wabigoon Subprovince; *In: Thurston, P.C., Williams, H.R., Sutcliffe, R.H. & G.M. Stott (eds), Geology of Ontario*. Ontario Geological Survey; Special Volume **4**, Part 1, 303-381.
- JONES, P. 1995. *1995 diamond drill program, Rainy River program, Senn Township, Rainy River District, Kenora Mining Division, N.T.S. 52C/13*. Unpublished report prepared for Nuinsco Resources Limited.

- Fletcher, G.L. & Irvine, T.N. 1954. *Emo area, District of Rainy River, Ontario*. Ontario Department of Mines, Map 1954-2.
- HOZJAN, D. & AVERILL, S.A. 2007. *Report on July, 2006 till sampling program, Off Lake property, Ontario*. Unpublished report prepared for Rainy River Resources Ltd.
- MACNEIL, K.A. & AVERILL, S.A. 2008. *Reverse circulation overburden drilling and heavy mineral geochemical sampling for gold in the Richardson caldera, Phase V*. Unpublished report prepared for Rainy River Resources Ltd.
- RAINY RIVER RESOURCES LTD. 2007. *Rainy River and Western Warrior enter into option agreement covering a 9,276 hectare claim block in Off Lake area adjacent to new gold-bearing base metal discovery*. Press Release, December 2007.
- RAINY RIVER RESOURCES LTD. 2008. *Rainy River announces initial resource estimate for the 17/ODM, 433 and CAP Zones in Richardson Township, northwestern Ontario*. Press Release, February 2008.
- SHARPE, B.L.D., AVERILL, S.A. & MACNEIL, K.A. 2008. *Reverse circulation overburden drilling and heavy mineral geochemical sampling for gold in a magnetic low west of the Richardson Township caldera*. Unpublished report prepared for Rainy River Resources Ltd.

**Appendix A**

**Reverse Circulation Drill Hole Logs**

Overburden Drilling Management Limited  
Reverse Circulation Drill Hole Log

Date: June 10<sup>th</sup> / 2008

Page: 1

Hole No.: DNR-08-01 Site No.: 15 Location: E 0439105 N 5415289 Elevation: 403

Geologist: B. Sturge Drilling Company: Cabo Driller: Floyd A. Gorman

Travel Time: 6:30 - 7:00 Move and Setup Time: 11:00 - 11:30 Drilling Time: 11:30 - 1:30

Moving Problems: - Flat drill to OFFICE - BT and Drill arrive at 11:00 am.

Drilling Problems: \_\_\_\_\_

Mechanical Problems: \_\_\_\_\_

Consumables: \_\_\_\_\_

Bit No.: AB708 Bit Footage: 51.8 - 59.3

Depth (m)	Graphic Log	Sample No.	Descriptive Log
1	1		<p>On <u>Keewatin Till and Lake Agassiz Sediments</u></p> <ul style="list-style-type: none"> <li>- clay - sorted, gritty, moderately compact; beige to light brown (oxidized)</li> <li>- sparse limestone, granoboid and mafic volcanic granules and pebbles</li> <li>- minor silt and fine sand component</li> </ul> <p>3.5m - <u>sand</u> - sorted, silt and fine sand; light brown</p> <p>4.8m - <u>sand</u> - fine sand to sand; sorted; trace granoboid and mafic volcanic granules and pebbles; light brown</p>
2	2		
3	3		
4	4		
5	5		
6	6	01	
7	7	02	
8			<p>6m <u>Bedrock</u></p> <ul style="list-style-type: none"> <li>- fine to medium grained; greenish grey in colour</li> <li>- large quartz crystals; high quartz percentage</li> <li>- minor epidote colouration</li> <li>- non-magnetic; waxy foliated to massive - very hard rock</li> </ul> <p>Felsic Volcanic?</p> <p>7.5m - E.O.H.</p>
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			



Date: June 13/2008

Overburden Drilling Management Limited  
Reverse Circulation Drill Hole Log

W.P. # 68

Page: 1 of 2

Hole No.: OLKL-08-07 Site No.: # 11 Location: E 0440410 N 5445239 Elevation: 370

Geologist: M. MICHAUD Drilling Company: CABO Driller: HENRY Durette

Travel Time: \_\_\_\_\_ Move and Setup Time: 16:00-17:00 Drilling Time: 8:30-12:00  
June 12/08

Moving Problems: \_\_\_\_\_

Drilling Problems: \_\_\_\_\_

Mechanical Problems: \_\_\_\_\_

Consumables: \_\_\_\_\_

Bit No: A5506

Bit Footage: 58.4 - 84.9m

Depth (m)	Graphic Log	Sample No.	Descriptive Log
0-1.4	∧		Organics
1.4-11.0	∧∧		Glaciolacustrine sediments
			- Very fine to fine sand w/ interbedded with minor silt.
			- grey
			- rare clay at 9.0m
11.0-13.5			clay and silt (interbedded)
13.5-14.2			granodiorite boulder.
			- massive & unmineralized
14.2-16.4			Keewatin till
			- grey clay with no visible pebbles.
			- clay contained minor medium to coarse sand.
16.4-24.6			Labradorian Till
			- grey Fine - medium sand matrix
			- matrix supported
			- cobbly
			- 70% Volcanics 30% granitics
			- at ~21m last composition changes to 50% Volcanics 40% granitics.
17	△	01	
18	△	02	
19	△	03	
20	△		

Date: June 13/08

Overburden Drilling Management Limited  
Reverse Circulation Drill Hole Log

Page: 2 of 2

Hole No.: OLRL-08-07 Site No.: 11 Location: E \_\_\_\_\_ N \_\_\_\_\_ Elevation: \_\_\_\_\_

Geologist: \_\_\_\_\_ Drilling Company: \_\_\_\_\_ Driller: \_\_\_\_\_

Travel Time: \_\_\_\_\_ Move and Setup Time: \_\_\_\_\_ Drilling Time: \_\_\_\_\_

Moving Problems: \_\_\_\_\_

Drilling Problems: \_\_\_\_\_

Mechanical Problems: \_\_\_\_\_

Consumables: \_\_\_\_\_

Bit No. \_\_\_\_\_ Bit Footage: \_\_\_\_\_

Depth (m)	Graphic Log	Sample No.	Descriptive Log
2.1		③	<p>24.6 - 25.2 m</p> <ul style="list-style-type: none"><li>- sand</li><li>- medium to coarse sand</li><li>- rare pebbles</li><li>- granule composition 50% volcanics</li><li>- slow drilling 50% granitic</li></ul>
2.2		④	
2.3		⑤	
2.4		⑥	
2.5		⑦	
2.6		⑧	
2.7			<p>25.2 - 26.5 m - Bedrock.</p> <ul style="list-style-type: none"><li>- pale green</li><li>- medium to coarse grained</li><li>- Quartz phenocrysts - 40-50% - up to 5 mm</li><li>- Feldspar phenos - 40-50% - up to 3 mm</li><li>- Mafica - 10%</li><li>- Epidote - 5-7%</li><li>- trace pyrite</li><li>- massive Quartz Feldspar Porphyry.</li></ul>
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Date: June 14/08 Overburden Drilling Management Limited  
 Reverse Circulation Drill Hole Log W.P. #89 Page: 1  
 Hole No.: OLAC-08-08 Site No.: 10 Location: E 0440110 N 5415235 Elevation: 360  
 Geologist: M. MICHAUD Drilling Company: CASO Driller: H. Durite  
 Travel Time: \_\_\_\_\_ Move and Setup Time: 8:00-11:15 Drilling Time: 11:15-14:15  
 Moving Problems: Long moves were due to breaking controls.  
 Drilling Problems: Faulty.  
 Mechanical Problems: \_\_\_\_\_  
 Consumables: \_\_\_\_\_  
 Bit No. A5508 Bit Footage: 84.9-100.1 m

Depth (m)	Graphic Log	Sample No.	Descriptive Log
0	Λ		0-1.5 m - Organics
1	Λ		
2	Λ		1.5-4.2 - Glaciolacustrine Sediments
3	Λ		- grey - unoxidized
4	Λ		- Very fine to fine sand.
5	Λ		4.2-10.4 - Keewatin Till
6	Λ		- grey clay with minor sand
7	Λ		& rare limestone pebbles.
8	Λ		10.4-13.5 - Labradorian Till.
9	Λ		- grey matrix supported
10	Λ		- Fine to medium sand matrix
11	Λ		- cobbly → bouldery.
12	Λ		- 80% volcanics 20% granitics.
13	Λ		Quartz-Feldspar Porphyry Boulders.
14	Λ		- 10.8-11.8 m
15	Λ		- 12.0-12.5
16	Λ		- 12.5-13.0
17	Λ		- 13.0-13.5
18	Λ		} unmineralog - not sampled.
19	Λ		13.5 - 15.2 m - Bedrock - Quartz-Feldspar Porphyry.
20	Λ		- pale olive green
	Λ		- medium to coarse grained
	Λ		- weakly foliated
	Λ		- Quartz 45% - 5-10% epidote
	Λ		- Feldspar 40% - 2% mafics
	Λ		- Quartz & Feldspar phenocrysts - 2 mm.
	Λ		- No visible sulphides.
	Λ		Note - Till sample #2 is chiefly composed of
	Λ		smilled boulder material but does contain
	Λ		minor clast supported till.

Date: June 14/08 Overburden Drilling Management Limited  
 Reverse Circulation Drill Hole Log WP# 70 Page: 1  
 Hole No.: OLAC-08-09 Site No.: 9 Location: E 0439760 N 5415247 Elevation: 352  
 Geologist: M. MICHAUD Drilling Company: CABO Driller: H. Porette  
 Travel Time: \_\_\_\_\_ Move and Setup Time: 14:15 - 16:45 Drilling Time: 16:45 - 18:45  
 Moving Problems: Long move due to faulty braking control.  
 Drilling Problems: \_\_\_\_\_  
 Mechanical Problems: \_\_\_\_\_  
 Consumables: changed bit to <sup>and sub</sup> functional used ones no change - bit footage unknown  
 Bit No: UNKNOWN Bit Footage: ? - 18.0m

Depth (m)	Graphic Log	Sample No.	Descriptive Log
0	^		0-4.0 - organics
2	^		4.0-13.0 - alaciolacustrine sediments - interbedded clay, silt, very fine, fine sand - grey - unoxidized
4	^		13.0-16.8 - Labradorian Till - sandy matrix - possible gravel? - very minor silt - cobble/bouldery - clasts range from 70-80% Volcanics 20-30% granites.
8			14.4-15.0 } Quartz feldspar porphyry boulders. 16.0-16.5 } - unmineralized - not sampled.
10			16.8-18.0 - Bedrock - Quartz Feldspar Porphyry. - grey - massive, slow drilling - medium to coarse grained. - 80% quartz & 20% feldspar phenocrysts - trace mafics - no visible sulphides.
14	○	01	
15	○	02	
16	○	02	
17	○	02	
18	▨	03	
19			
20			

Date: June 15/08

Overburden Drilling Management Limited  
Reverse Circulation Drill Hole Log W.P.#71

Page: 1

Hole No.: OLAL-08-10 Site No.: #8 Location: E 0439505 N 5415288 Elevation: 313

Geologist: M. MICHAUD Drilling Company: \_\_\_\_\_ Driller: M. Punette

Travel Time: \_\_\_\_\_ Move and Setup Time: 18:30-19:30 Drilling Time: 7:30-11:30

Moving Problems: Long moving time due to faulting <sup>June 14</sup> breaking central

Drilling Problems: \_\_\_\_\_

Mechanical Problems: \_\_\_\_\_

Consumables: New Bit - Used sub

Bit No. A5408 Bit Footage: 0-7.5m

Depth (m)	Graphic Log	Sample No	Descriptive Log
0	AO		Bouldery Labradorian Till on surface.
1	AO		
1.2	AO	01	0-1.2m - No Return.
2	AO	01	1.2-5.8m - Labradorian Till -
3	AO	01	- poor return until 3.6m
4	AO	01	- bouldery - matrix supported
5	AO	02	- grey, fine to medium sand matrix.
6	AO	02	- clasts - 70% <sup>Feldspar</sup> Quartz porphyry.
			- 20% Volcanics
			- 10% granites.
2.2-2.6			} Quartz Feldspar porphyry boulders
3.0-3.6			
5.8-7.5			Bedrock - Quartz feldspar porphyry.
			- grey
			- medium - coarse grained
			- Quartz - 70% } phenocrysts range from 2-4mm.
			- Feldspar - 30%
			- Mafics - 2%
			- massive, non-magnetic
			- trace pyrite.

**Appendix B**

**Binocular Microscope Descriptions of the Bedrock Cuttings**

OVERBURDEN DRILLING MANAGEMENT LIMITED  
BEDROCK CUTTINGS LOG

Sample No.	Colour	Structure	Primary Texture	Textural Components (%)								Mineral Components								Lithology	
				Grain Size (mm)			Crystals/ Sand Grains		Groundmass/ Matrix			Primary/Metamorphic/Alteration Minerals (%)									
				Xls/ Sand Grains	Visible Frag- ments	Ground- mass/ Matrix	Qtz	Plag	Visible Frag- ments	Primary/ Met.	Tec- tonic/ Alt.	Ratio Mafics/ Plag/Qtz	Silicates								
													Mafic	Ser	Other Silicates	Carbonates	FeTi- Oxides	Sulphides			
OLRC-08-01-02	Pale grey-green	Strongly-foliated, lineated	Weakly quartz and plagioclase-phyric with interlocking groundmass (obscured in part by strong fabric)	0.3-0.8	NA	0.1-0.2	2	Tr	0	94	5	0.5:60:35	0.5 biotite (SEM confirmed)	0	5 epidote (disseminated; SEM confirmed)	0.5 calcite (disseminated and lining foliation)	Tr titanite (disseminated; SEM confirmed)	Tr pyrite (disseminated)	QUARTZ-FELDSPAR PORPHYRY		
OLRC-08-07-08	Mottled white, green-black	Weakly foliated, 3% unmineralized quartz veinlets	Quartz and plagioclase-phyric with inequigranular, interlocking groundmass; granitoid appearance	0.5-2	NA	0.1-0.2	Tr	5	0	95	0	10:65:20	10 biotite (variably altered to chlorite)	0	3 epidote (disseminated)	1 calcite (disseminated)	0.5 titanite variably altered to leucoxene (disseminated)	Tr chalcopyrite (disseminated) 0.5 pyrite (disseminated)	QUARTZ-FELDSPAR PORPHYRY		
OLRC-08-08-03	Grey-green	Strongly-foliated, minor epidote stringers	Weakly quartz and plagioclase-phyric with inequigranular, interlocking groundmass	0.5-2	NA	0.05-0.2	1	3	0	85	10	3:65:25	3 biotite	Tr	5 epidote (disseminated) <1% epidote veinlets	3 calcite (disseminated)	Tr titanite variably altered to leucoxene (disseminated)	Tr pyrite (disseminated)	QUARTZ-FELDSPAR PORPHYRY		
OLRC-08-09-03	Grey	Weakly foliated	Weakly quartz and plagioclase-phyric with inequigranular, interlocking groundmass	0.5-1	NA	0.1-0.2	Tr	<1	0	99	0	0.5:60:40	0.5 biotite	0	1 epidote (disseminated)	1 calcite (disseminated)	0.5 titanite variably altered to leucoxene (disseminated)	Tr pyrite (disseminated)	QUARTZ-FELDSPAR PORPHYRY		
OLRC-08-10-03	Grey-white	Massive	Weakly quartz and plagioclase-phyric with inequigranular, interlocking groundmass	0.3-0.5	NA	0.1-0.2	Tr	1	0	99	0	0.5:60:35	0.5 biotite	0	2 epidote (disseminated)	2 calcite (disseminated)	1 titanite variably altered to leucoxene (disseminated)	Tr chalcopyrite (disseminated) 0.2 pyrite (disseminated)	QUARTZ-FELDSPAR PORPHYRY		

**Appendix C**

**Descriptions and Calculated Visible Gold Values  
for the Nonferromagnetic Heavy Mineral Fraction of the Overburden Samples**



Sample Number	Panned Yes/No	Dimensions (microns)			Number of Visible Gold Grains				Nonmag HMC Weight (g)	Calculated V.G. Assay in HMC (ppb)	Remarks
		Thickness	Width	Length	Reshaped	Modified	Pristine	Total			
OL-RC-08-01-01	No	3 C	15	15	2	2		4			
		5 C	25	25	4	2		6			
		8 C	25	50	3	2		5			
		10 C	25	75	1			1			
		10 C	50	50		1		1			
		13 C	50	75	2			2			
							19	89.0	19		
OL-RC-08-07-01	No	5 C	25	25	2	2		4			
							4	54.7	2		
OL-RC-08-07-02	No	8 C	25	50	1			1			
		15 C	50	100	2			2			
		15 C	75	75	2			2			
		18 C	75	100	1			1			
							6	102.2	36		
OL-RC-08-07-03	No	5 C	25	25	2			2			
		8 C	25	50	2			2			
		13 C	50	75	1			1			
							5	112.9	5		
OL-RC-08-07-04	No	10 C	50	50	1			1			
		13 C	50	75	1			1			
		15 C	75	75	1			1			
							3	136.4	9		
OL-RC-08-07-05	No	3 C	15	15	1			1			
		8 C	25	50	1			1			
		10 C	50	50	1			1			
		13 C	50	75	1			1			
							4	111.5	6		
OL-RC-08-07-06	No	5 C	25	25		1		1			
		8 C	25	50	2			2			
		10 C	50	50	3			3			
							6	153.1	5		
OL-RC-08-07-07	No	8 C	25	50	2			2			
		10 C	50	50	1			1			
		13 C	50	75	1			1			
							4	120.5	6		
OL-RC-08-08-01	No	5 C	25	25		1		1			
		8 C	25	50	1	2		3			
		10 C	50	50	1			1			
		15 C	75	75	2			2			
							7	104.1	17		
OL-RC-08-08-02	Yes	5 C	25	25	1			1			1% pyrite.
		8 C	25	50	1	2		3			~10,000 grains native copper (10-25μ; elongated, slender, pristine crystals; SEM confirmed).
							4	77.2	3	~1000 grains tungsten carbide (25-100; contamination). SEM checks: 4 of ~1000 tungsten carbide versus galena candidates = 4 tungsten carbide.	
OL-RC-08-09-01	Yes	3 C	15	15	1	2		3			0.5% pyrite.
		5 C	25	25	4	2	1	7			5 grains native copper (25-50μ).
		8 C	25	50	3	1		4			
		10 C	50	50	2			2			
		13 C	50	75	1			1			
							17	67.2	19		
OL-RC-08-09-02	No	3 C	15	15		1		1			5 grains native copper (25-50μ).
		5 C	25	25	3		2	5			
		8 C	25	50	2		1	3			
		10 C	25	75			1	1			
							10	70.8	8		

Sample Number	Panned Yes/No	Dimensions (microns)			Number of Visible Gold Grains				Nonmag HMC Weight (g)	Calculated V.G. Assay in HMC (ppb)	Remarks
		Thickness	Width	Length	Reshaped	Modified	Pristine	Total			
OL-RC-08-10-01	Yes	3 C	15	15	5	1		6	0.3% pyrite. 3 grains native copper (25-50 $\mu$ ).		
		5 C	25	25	6	4		10			
		8 C	25	50	1	1		2			
		15 C	50	100	1			1			
										19	82.8
OL-RC-08-10-02	No	5 C	25	25	3			3	1 grain native copper (25 $\mu$ ).		
		8 C	25	50	4			4			
		10 C	50	50	2			2			
		13 C	50	75	1			1			
										10	103.6
FL08-57	No	NO VISIBLE GOLD									

**Appendix D**

**Bedrock Geochemical, Whole Rock and Trace Element Analyses**

Analyte Symbol	Au	Ag	As	Be	Br	Ca	Co	Cr	Cs	Fe	Hf	Hg	Ir	Mo	Na	Ni	Rb	Sb	Sc	Se	Sn	Sr	Ta	Th	U	W	Zn	La	
Unit Symbol	ppb	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Detection Limit	5	5	2	100	1	1	5	10	2	0.02	1	1	5	5	0.05	50	30	0.2	0.1	5	0.05	0.1	1	0.5	0.5	4	50	1	
Analysis Method	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA	
OLRC-08-01-02	<5	<5	<2	800	<1	<1	6	10	<2	1.47	3	<1	<5	<5	3.63	<50	<30	3.3	3.4	<5	<0.05	<0.1	<1	<0.5	<0.5	<4	<50	10	
OLRC-08-07-08	<5	<5	<2	600	<1	<1	9	30	<2	2.08	4	<1	<5	<5	5.03	<50	<30	2.2	7.2	<5	<0.05	<0.1	<1	3.4	<0.5	<4	<50	18	
OLRC-08-08-03	<5	<5	<2	700	<1	3	6	10	<2	1.39	2	<1	<5	<5	3.47	<50	<30	1.9	3.4	<5	<0.05	<0.1	<1	<0.5	<0.5	<4	<50	12	
OLRC-08-09-03	<5	<5	<2	700	<1	<1	40	10	<2	1.48	<1	<1	<5	<5	3.54	<50	<30	2.1	3.2	<5	<0.05	<0.1	<1	2.1	<0.5	280	<50	6	
OLRC-08-10-03	<5	<5	<2	600	<1	<1	6	<10	<2	1.43	2	<1	<5	<5	4.03	<50	180	1.9	3.2	<5	<0.05	<0.1	<1	1.6	1.4	11	<50	12	

Analyte Symbol	Ce	Nd	Sm	Eu	Tb	Yb	Lu	Mass
Unit Symbol	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	3	5	0.1	0.2	0.5	0.2	0.05	
Analysis Method	INAA	INAA	INAA	INAA	INAA	INAA	INAA	INAA
OLRC-08-01-02	27	<5	2	<0.2	<0.5	<0.2	<0.05	30.1
OLRC-08-07-08	41	19	3.2	1.2	<0.5	1.2	<0.05	29.1
OLRC-08-08-03	25	<5	2.1	<0.2	<0.5	0.6	<0.05	31.1
OLRC-08-09-03	12	<5	1.4	<0.2	<0.5	<0.2	<0.05	30.6
OLRC-08-10-03	24	<5	1.6	<0.2	<0.5	<0.2	<0.05	30.7

Bedrock Geochemical, Whole Rock and Trace Element Analysis

Element:	SiO2	Al2O3	Fe2O3(T)	MnO	MgO	CaO	Na2O	K2O	TiO2	P2O5	LOI	Total	Ba	Sr	Y	Sc	Zr	Be	V	
Units:	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
Detection Limit:	0.01	0.01	0.01	0.001	0.01	0.01	0.01	0.01	0.001	0.01		0.01	2	2	1	1	2	1	5	
Analysis Method:	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	FUS-ICP	
Sample Number	Lithology																			
OLRC-08 01-02	Quartz-felspar porphyry	68.3	15.48	2.28	0.026	0.83	3.09	5.6	1.43	0.282	0.1	1.08	98.48	652	950	2	4	102	1	35
OLRC-08 07-08	Quartz-felspar porphyry	63.35	17.68	3.46	0.052	1.5	3.96	7.05	1.17	0.402	0.12	1.23	99.97	382	893	7	8	123	1	62
OLRC-08 08-03	Quartz-felspar porphyry	68.42	15.35	2.35	0.032	0.94	2.75	5.45	2.39	0.263	0.1	1.35	99.4	852	773	3	3	91	< 1	33
OLRC-08 09-03	Quartz-felspar porphyry	70.47	15.57	2.35	0.024	0.67	2.68	5.08	2.1	0.237	0.07	0.97	100.2	583	670	1	3	87	< 1	28
OLRC-08 10-03	Quartz-felspar porphyry	68.78	15.95	2.72	0.024	0.74	2.75	5.54	1.68	0.25	0.07	1.16	99.67	580	809	2	4	97	1	36

**Appendix E**

**Normalized Gold Data for the Overburden Samples**

Rainy River

Sample Number	-2.0 mm Table Concentrate Weight (g dry)									Sample Description										CLASS		
	Weight (kg wet)				Total	Heavy Liquid Separation (S.G. 3.3)				Clasts (> 2.0 mm)				Matrix (<2.0 mm)								
	Bulk Rec'd	Table Split	+2.0 mm Clasts	Table Feed		Lights	HMC			Size	Percentage				Distribution				Colour			
							Total	Non Mag	Meg		V/S	GR	LS	OT	S/U	SD	ST	CY	ORG		SD	CY
OLRC-08-01-01	10.6	10.1	0.0	10.1	231.1	124.0	107.1	89.0	18.1		No clasts				S	FM	-	N	N	LOC	NA	SAND
OLRC-08-07-01	9.4	8.9	1.4	7.5	258.1	193.8	64.3	54.7	9.6	C	80	20	0	0	U	+	Y	-	N	GY	GB	TILL
OLRC-08-07-02	15.4	14.9	1.8	13.1	309.3	190.1	119.2	102.2	17.0	C	80	20	0	0	U	+	Y	-	N	GY	GB	TILL
OLRC-08-07-03	13.7	13.2	1.6	11.6	423.2	294.4	128.8	112.9	15.9	C	80	20	0	0	U	+	Y	-	N	GY	GY	TILL
OLRC-08-07-04	14.6	14.1	1.6	12.5	474.0	318.2	155.8	136.4	19.4	C	80	20	0	0	U	+	Y	-	N	GY	GY	TILL
OLRC-08-07-05	13.9	13.4	2.2	11.2	328.8	200.4	128.4	111.5	16.9	C	80	20	0	0	U	+	Y	-	N	GY	GY	TILL
OLRC-08-07-06	14.2	13.7	1.0	12.7	468.7	290.5	178.2	153.1	25.1	C	80	20	0	0	U	+	Y	-	N	GY	GY	TILL
OLRC-08-07-07	13.5	13.0	0.6	12.4	335.3	198.8	136.5	120.5	16.0	C	90	10	0	0	U	+	Y	-	N	GY	GY	SANDY TILL
OLRC-08-08-01	11.6	11.1	2.1	9.0	397.6	281.6	116.0	104.1	11.9	C	85	15	0	0	U	+	Y	-	N	GY	GY	TILL
OLRC-08-08-02	13.6	13.1	1.5	11.6	414.5	328.3	86.2	77.2	9.0	C	95	5	0	0	U	+	Y	-	N	GY	GY	TILL + BEDROCK
OLRC-08-09-01	12.9	12.4	2.3	10.1	662.9	577.4	85.5	67.2	18.3	C	90	10	0	0	U	+	Y	-	N	GY	GY	TILL
OLRC-08-09-02	13.3	12.8	2.0	10.8	678.0	595.9	82.1	70.8	11.3	C	80	20	0	0	U	+	Y	-	N	GY	GY	TILL
OLRC-08-10-01	12.8	12.3	1.0	11.3	305.9	215.7	90.2	82.8	7.4	C	85	15	0	0	U	+	Y	-	N	GY	GY	TILL
OLRC-08-10-02	12.8	12.3	1.0	11.3	394.4	281.1	113.3	103.6	9.7	C	80	20	0	0	U	+	Y	-	N	GY	GY	TILL
FL08-57	11.1	10.6	1.1	9.5	NA	NA	NA	NA	NA	P	10	90	0	0	U	Y	Y	Y	N	BE	BE	TILL

\*Most clast cutting removed in the field.