

Precambrian Shield of Alberta Rock Sample Collection

Canada-Alberta MDA Project M92-04-009

Alberta Research Council Open File Report 1993-20

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Alberta Geological Survey

Acknowledgments

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The rock sample collection is housed at the Mineral Core Research Facility (MCRF) of the Alberta Geological Survey. The MCRF is supported by Alberta Energy and the Alberta Research Council.

Rock samples are accessible by appointment only by contacting the Alberta Geological Survey.

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Executive Summary

A collection of 11, 610 rock samples from the Precambrian Shield of northeastern Alberta is housed at the Mineral Core Research Facility of the Alberta Geological Survey. Sample locations for 2630 samples were determined from the original field maps for the Andrew Lake North, Andrew Lake South, Ashton Lake and Bayonet Lake areas and recorded digitally. Maps showing the site locations and sample numbers for Andrew Lake North, Andrew Lake South and Ashton Lake areas were published on June 1, 1993.

Five samples from these sheets were retrieved for geochronological analysis for a Federal project under the Canada-Alberta Partnership Agreement on Mineral Development Program and sixty-seven samples were retrieved for multi-element analysis for a Provincial project.

Introduction

From 1956 to 1985 the Alberta Research Council (ARC) conducted geological mapping of the exposed Precambrian Shield of northeastern Alberta. This massive effort was conducted because the Alberta Geological Survey (a department of ARC) believes that there is significant potential for the eventual commercial development of metallic and industrial mineral resources in the region. The products of the mapping were 11 detailed geological reports and 32 maps (Figure 1) and a collection of 11,610 rock samples (Figure 2).

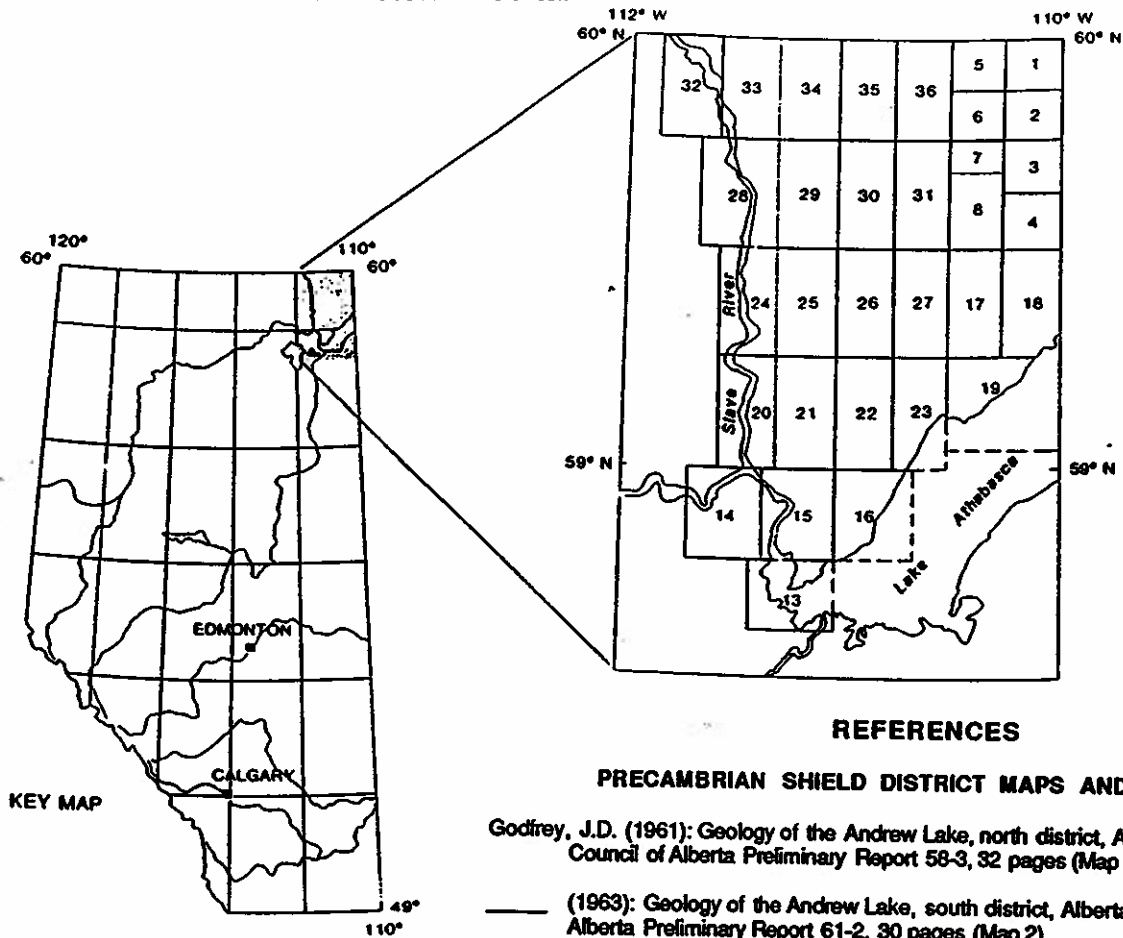
The reports contain modal analyses (Quartz, Potash Feldspar, Plagioclase, Biotite, Chlorite, Hornblende, Epidote, Muscovite, Spinel, Garnet, Calcite, Pyroxene, Cordierite, Andalusite, Sillimanite and Accessories) and chemical analyses (SiO_2 , TiO_2 , Al_2O_3 , Fe_2O_3 , MgO , CaO , Na_2O , K_2O , MnO , P_2O_5 , L.O.I., H_2O) for 1135 samples. The rock collection sample numbers are listed in Appendix A for the 1135 samples for which analytical results have been published. The remaining 10,475 samples collected are identified only on the original field maps in the archives of the ARC. The sample collection was not properly sorted or catalogued prior to this project and samples have not been readily accessible for further analysis.

Project Objectives and Operations

A proposal to organize the sample collection and record the sample locations was submitted to the Canada-Alberta Partnership Agreement on Mineral Development Program in March, 1992. The proposal was accepted for fiscal year 1992/93.

The project objectives were: to organize the rock samples; to record in a data base, the location of the samples from the original field maps; to publish maps of the sample locations and to make the project a living exercise by accepting additional samples and facilitating further analysis of specimens.

Figure 1. Geological maps and reports of the Precambrian Shield of northeastern Alberta.

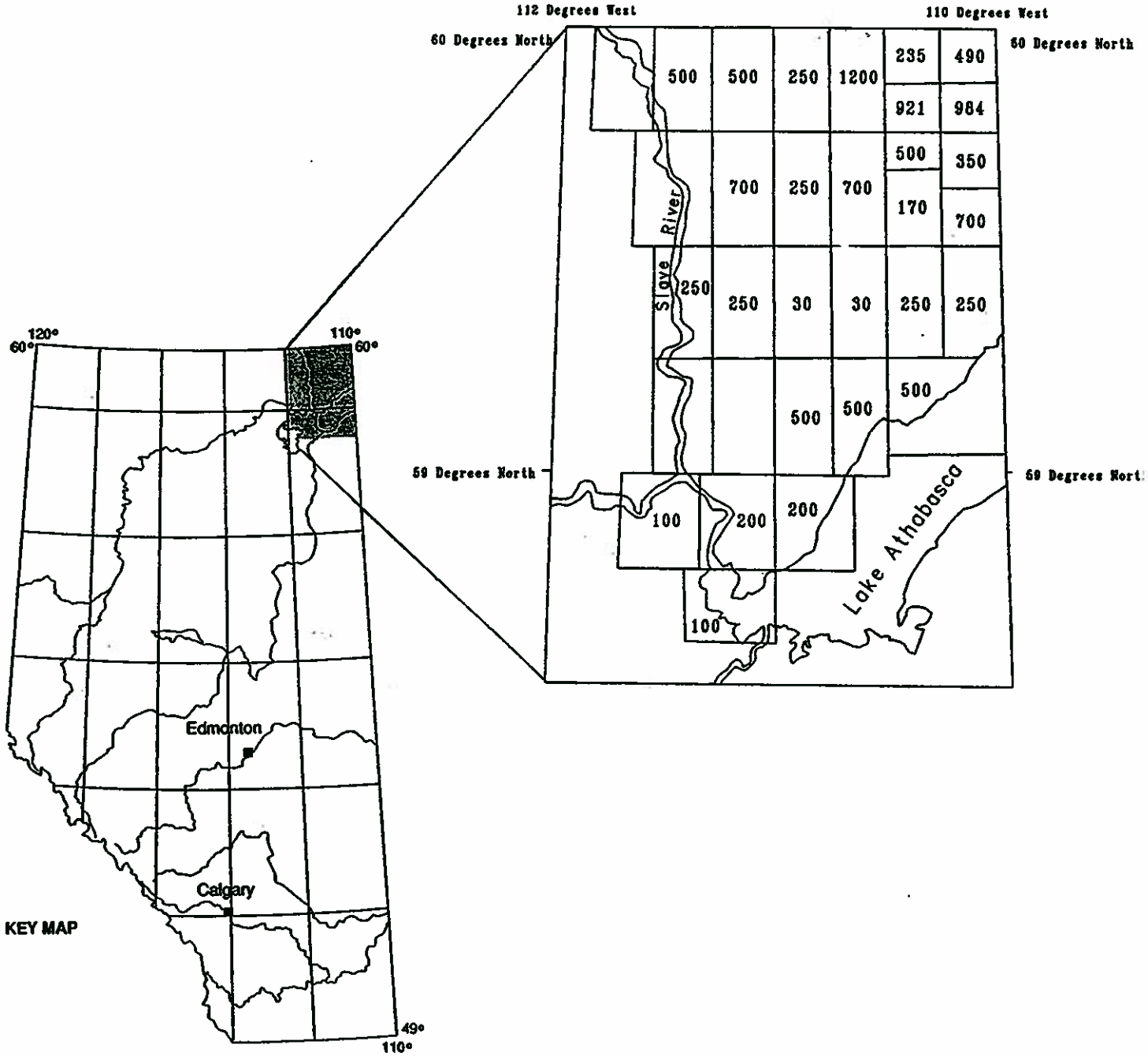


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PRECAMBRIAN SHIELD DISTRICT MAPS AND REPORTS

- Godfrey, J.D. (1961): Geology of the Andrew Lake, north district, Alberta; Research Council of Alberta Preliminary Report 58-3, 32 pages (Map 1).
- (1963): Geology of the Andrew Lake, south district, Alberta; Research Council of Alberta Preliminary Report 61-2, 30 pages (Map 2).
- (1966): Geology of the Bayonet, Ashton, Potts and Charles Lake districts, Alberta; Research Council of Alberta Preliminary Report 65-6, 45 pages (Maps 5, 6, 7).
- (1980a): Geology of the Alexander-Wylie Lakes district, Alberta; Alberta Research Council Earth Sciences Report 78-1, 26 pages (Maps 8, 17, 18, 19).
- (1980b): Geology of the Fort Chipewyan district, Alberta; Alberta Research Council Earth Sciences Report 78-3, 20 pages (Maps 13, 14, 15, 16).
- (1984): Geology of the Ryan-Fletcher Lakes district, Alberta; Alberta Research Council Earth Sciences Report 84-2, 28 pages (Maps 20, 21, 22, 23).
- (1987): Geology of the Bocquene-Turtle Lakes district, Alberta; Alberta Research Council Earth Sciences Report 84-5, 27 pages (Maps 24, 25, 26, 27).
- Godfrey, J.D. and E.W. Peikert (1963): Geology of the St. Agnes Lake district, Alberta; Research Council of Alberta Preliminary Report 62-1, 31 pages (Map 3).
- (1964): Geology of the Colin Lake district, Alberta; Research Council of Alberta Preliminary Report 62-2, 28 pages (Map 4).
- Godfrey, J.D. and C.W. Langenberg (1987): Geology of the Myers-Daly Lakes district, Alberta; Alberta Research Council Earth Sciences Report 84-6, 30 pages (Maps 28, 29, 30, 31).
- (1986): Geology of the Fitzgerald, Tulip-Mercredi-Charles Lakes district, Alberta; Alberta Research Council Earth Sciences Report 84-7, 32 pages (Maps 32, 33, 34, 35, 36).

Figure 2. Estimated number of rock samples for each published map area.



The original linen-backed field maps which contain the accurate locations of the rock samples collected during mapping were recovered from the ARC archives. The Andrew Lake South sheet was chosen to develop a procedure for organizing the specimens collected from the area of the map sheet and for digitizing the sample locations from the field map.

The most effective and accurate procedure for recovering location data was : plotting a hydrology base map from digital data for the field map area at the scale of the original map (varies from 1:15 000 to 1:31 680); transferring locations to the digital base map and then digitizing the sample locations from the base. Digitizing took place on a Calcomp 9100 digitizing board using ARC/INFO mounted on a Compaq 386; data was transferred to a VAX system for plotting of the final map on a Calcomp 1044 plotter. The sample map with hydrology base can be plotted at any scale and in colour.

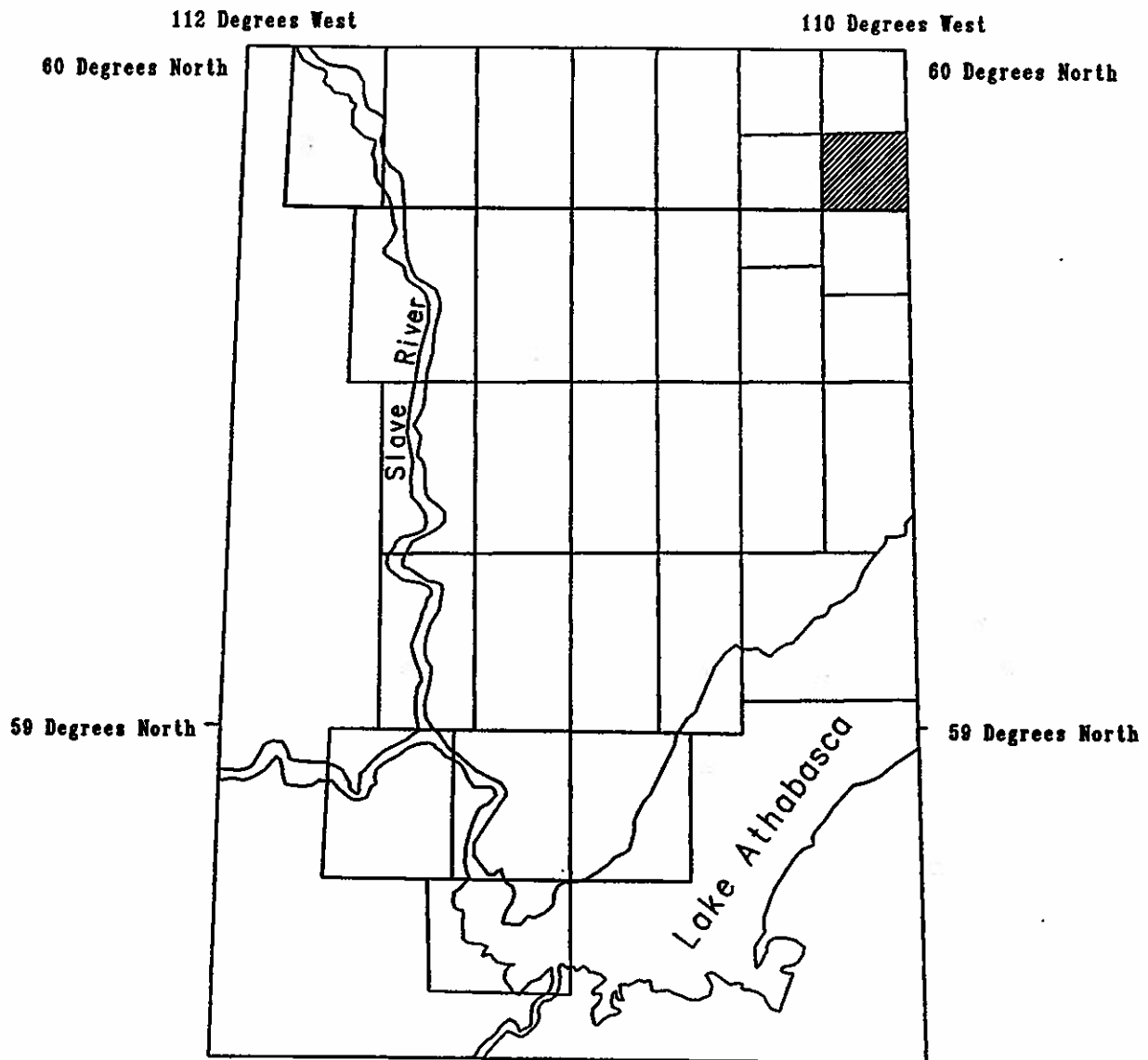
Results have been published for three map areas: Edwards, Boisvert, Miller and Chao, 1993 (Andrew Lake South); Edwards, Boisvert and Miller, 1993a (Andrew Lake North); and Edwards, Boisvert and Miller, 1993b (Ashton Lake). Preliminary results are also reported here for the Bayonet Lake area.

Andrew Lake South

The Andrew Lake South map sheet is latitude 59°45' to 59°52'12" and longitude 110°00' to 110°15', in the northeast quadrant of the exposed Shield north of Lake Athabasca (Figure 3).

A total of 984 collecting sites are recorded on the field map for the area and are shown on ARC Map 218 (Edwards, Boisvert, Miller and Chao, 1993). Twenty-four sample sites are shown on the published geology map (Godfrey, 1963). Modal and chemical analyses were done on 64 samples (Table 1) for the following minerals and elements: Quartz, Potash Feldspar, Plagioclase, Biotite, Chlorite, Hornblende, Epidote, Muscovite, Spinel, Garnet, Calcite, Pyroxene, Cordierite, Andalusite, Sillimanite and

Figure 3. Location of Andrew Lake South map sheet.



Accessories and SiO₂, TiO₂, Al₂O₃, Fe₂O₃, MgO, CaO, Na₂O, K₂O, MnO, P₂O₅, L.O.I. and H₂O. Results for analyses on twenty-four samples are reported in Godfrey, 1963.

The distribution of rock sample types from this sheet is about a third metasedimentary, a quarter each granite and gneiss and the remainder basic rocks, amphibolite and granite pegmatite (Figure 4).

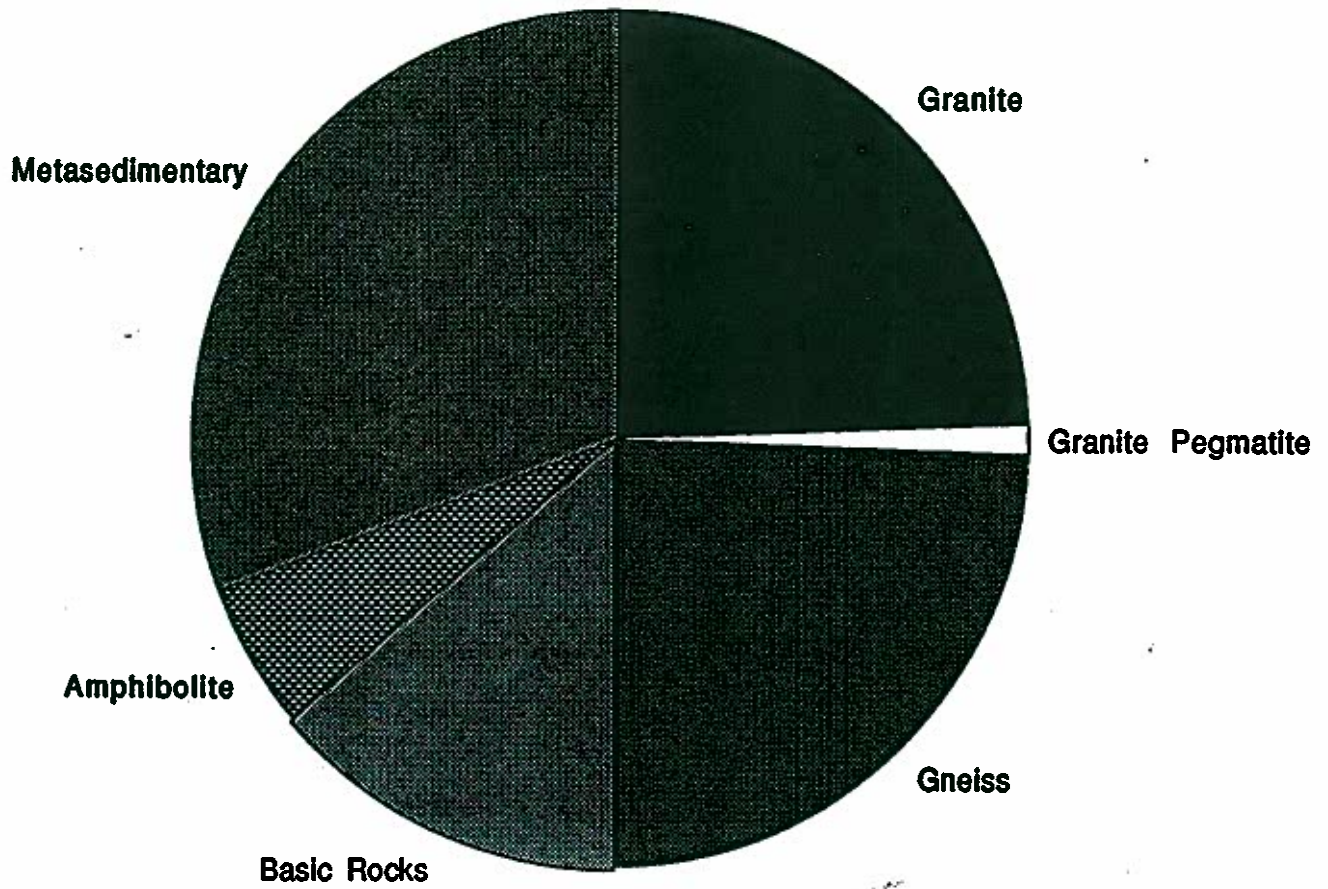
Table 1: Samples from the Andrew Lake South map area which were analyzed.

| | | | |
|--------------|-------------|-------------|--------------|
| JG-57-145-1 | JG-57-497-1 | JG-58-56-1B | JG-58-1010-2 |
| JG-57-145-2A | JG-57-521-1 | JG-58-56-2 | JG-58-1015-2 |
| JG-57-145-2B | JG-58-3-2 | JG-58-61-4 | JG-58-1031-2 |
| JG-57-145-3 | JG-58-4-3A | JG-58-61-6 | JG-58-1072-1 |
| JG-57-145-3A | JG-58-4-3B | JG-58-61-8 | JG-58-1079-2 |
| JG-57-145-3B | JG-58-4-4 | JG-58-62-2 | JG-58-1100-2 |
| JG-57-197-4A | JG-58-4-6 | JG-58-83-1 | JG-60-132-1 |
| JG-57-201-4 | JG-58-5-1A | JG-58-85-2 | JG-60-146-1 |
| JG-57-214-2A | JG-58-23-3 | JG-58-85-3 | JG-60-147-2 |
| JG-57-214-2B | JG-58-33-2 | JG-58-511-1 | JG-60-707-3 |
| JG-57-214-2C | JG-58-33-3 | JG-58-517-4 | JG-60-709-2 |
| JG-57-429-1 | JG-58-54-1A | JG-58-520-2 | JG-60-711-5 |
| JG-57-462-1 | JG-58-54-1B | JG-58-547-2 | JG-60-716-3 |
| JG-57-464-2 | JG-58-54-1C | JG-58-553-1 | JG-60-717-4 |
| JG-57-488-1 | JG-58-54-2 | JG-58-590-1 | JG-60-723-8 |
| JG-57-488-3 | JG-58-56-1A | JG-58-611-1 | JG-63-603-2 |

Andrew Lake North

The Andrew Lake North map sheet is latitude 59°52'12" to 60°00' and longitude 110°00' to 110°15', in the northeast quadrant of the exposed Shield north of Lake

Figure 4. Rock sample distribution, Andrew Lake South.



Athabasca (Figure 5).

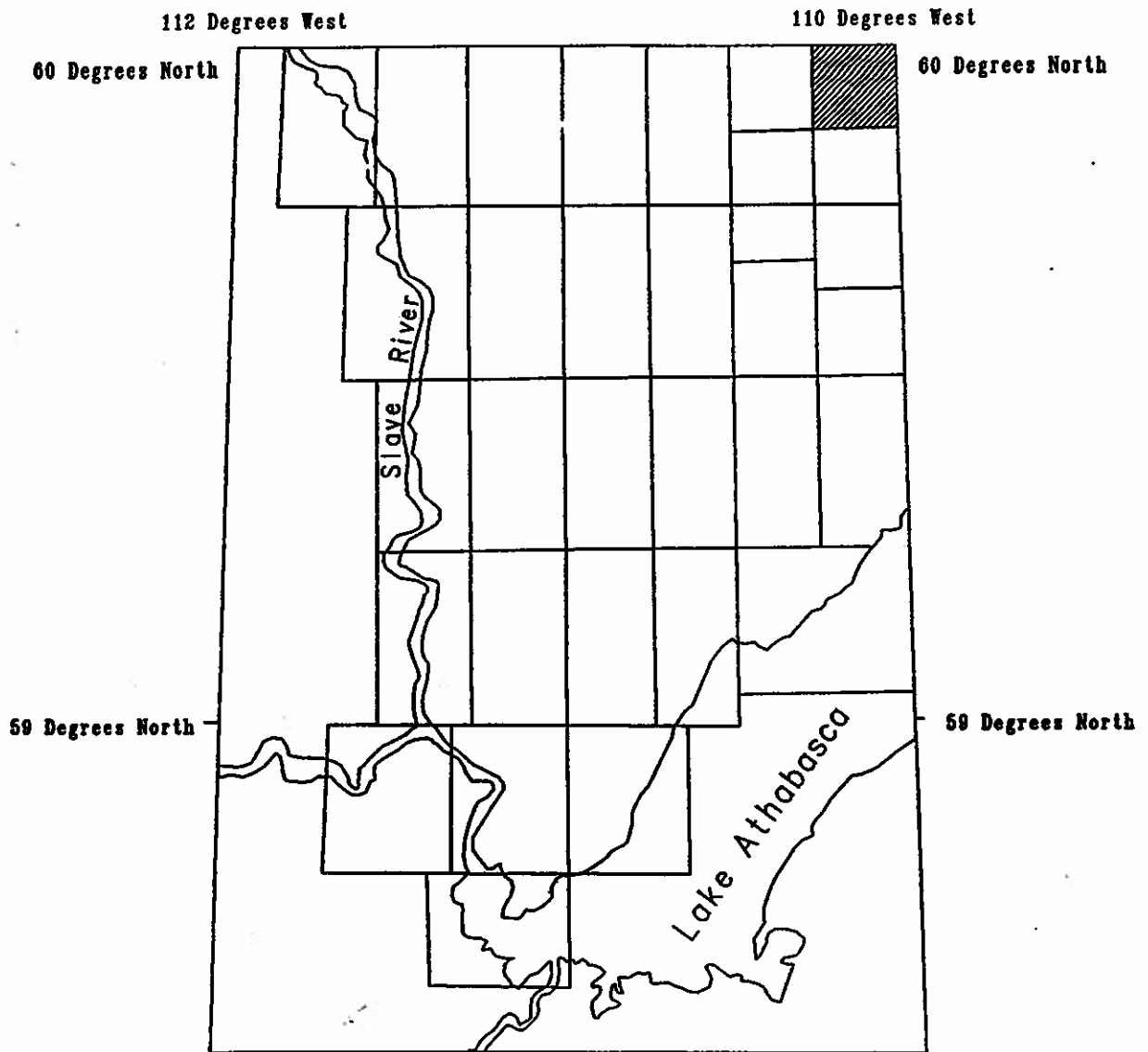
A total of 490 collecting sites are recorded on the field map for the area and are shown on ARC Map 219 (Edwards, Boisvert and Miller, 1993a). Twenty sample sites are shown on the published geology map (Godfrey, 1961). Modal and chemical analyses were done on 58 samples (Table 2) for the following minerals and elements: Quartz, Potash Feldspar, Plagioclase, Biotite, Chlorite, Hornblende, Epidote, Muscovite, Spinel, Garnet, Calcite, Pyroxene, Cordierite, Andalusite, Sillimanite and Accessories and SiO₂, TiO₂, Al₂O₃, Fe₂O₃, MgO, CaO, Na₂O, K₂O, MnO, P₂O₅, L.O.I. and H₂O. Results for analyses on twenty samples are reported in Godfrey, 1961.

Table 2: Samples from the Andrew Lake North map area which were analyzed.

| | | | |
|-------------|--------------|--------------|--------------|
| JG-57-65-2 | JG-57-108-2 | JG-57-158-5C | JG-57-434-3 |
| JG-57-67-2 | JG-57-112-1 | JG-57-164-2 | JG-57-435-5 |
| JG-57-70-6 | JG-57-122-4 | JG-57-218-1 | JG-57-436-3 |
| JG-57-75-1 | JG-57-137-1 | JG-57-313-4 | JG-57-447-1 |
| JG-57-79-2 | JG-57-137-2 | JG-57-315-3 | JG-57-451-1 |
| JG-57-79-3 | JG-57-147-3 | JG-57-366-1 | JG-57-452-1 |
| JG-57-98-1 | JG-57-149-1 | JG-57-400-2 | JG-57-453-1 |
| JG-57-100-1 | JG-57-158-1 | JG-57-403-2 | JG-57-454-1 |
| JG-57-100-2 | JG-57-158-2A | JG-57-404-1 | JG-57-455-1 |
| JG-57-100-3 | JG-57-158-2B | JG-57-433-1 | JG-57-479-1 |
| JG-57-100-4 | JG-57-158-3 | JG-57-433-2 | JG-60-149-9 |
| JG-57-100-5 | JG-57-158-4A | JG-57-433-3 | JG-60-149-14 |
| JG-57-100-6 | JG-57-158-4B | JG-57-433-4 | JG-60-553-10 |
| JG-57-101-1 | JG-57-158-5A | JG-57-434-1 | |
| JG-57-105-1 | JG-57-158-5B | JG-57-434-2 | |

The distribution of rock sample types from this sheet is about a third each gneiss and granite, a quarter metasedimentary and a small percentage amphibolite and granite

Figure 5. Location of Andrew Lake North map sheet.



pegmatite (Figure 6).

Ashton Lake

The Ashton Lake map sheet is latitude 59°45' to 59°52'30" and longitude 110°15' to 110°30', in the northeast quadrant of the exposed Shield north of Lake Athabasca (Figure 7).

A total of 921 collecting sites are recorded on the field map for the area and are shown on ARC Map 220 (Edwards, Boisvert and Miller, 1993b). Seventeen sample sites are shown on the published geology map (Godfrey, 1966). Modal and chemical analyses were done on 41 samples (Table 3) for the following minerals and elements: Quartz, Potash Feldspar, Plagioclase, Biotite, Chlorite, Hornblende, Epidote, Muscovite, Spinel, Garnet, Calcite, Pyroxene, Cordierite, Andalusite, Sillimanite and Accessories and SiO₂, TiO₂, Al₂O₃, Fe₂O₃, MgO, CaO, Na₂O, K₂O, MnO, P₂O₅, L.O.I. and H₂O.

Results for analyses on seventeen samples are reported in Godfrey, 1966.

Table 3: Samples from the Ashton Lake map area which were analyzed.

| | | | |
|--------------|-------------|--------------|-------------|
| JG-58-42-3 | JG-60-114-2 | JG-60-623-3 | JG-61-529-5 |
| JG-58-1049-1 | JG-60-114-5 | JG-60-624-2 | JG-61-534-1 |
| JG-60-68-4 | JG-60-114-8 | JG-60-639-1 | JG-61-534-3 |
| JG-60-77-3 | JG-60-114-9 | JG-60-667-1 | JG-61-537-2 |
| JG-60-78-1 | JG-60-120-1 | JG-60-678-2 | JG-63-13-1 |
| JG-60-78-3 | JG-60-121-3 | JG-60-1029-4 | JG-63-505-2 |
| JG-60-78-4 | JG-60-598-1 | JG-61-187-9 | JG-63-514-2 |
| JG-60-83-4 | JG-60-598-2 | JG-61-481-1 | JG-63-527-7 |
| JG-60-113-3 | JG-60-598-3 | JG-61-481-2 | |
| JG-60-113-4 | JG-60-611-3 | JG-61-483-2 | |
| JG-60-113-6 | JG-60-617-2 | JG-61-484-1 | |

The distribution of rock sample types from this sheet is about two thirds gneiss, a fifth metasedimentary and a small percentage amphibolite and granite (Figure 8).

Figure 6. Rock sample distribution, Andrew Lake North.

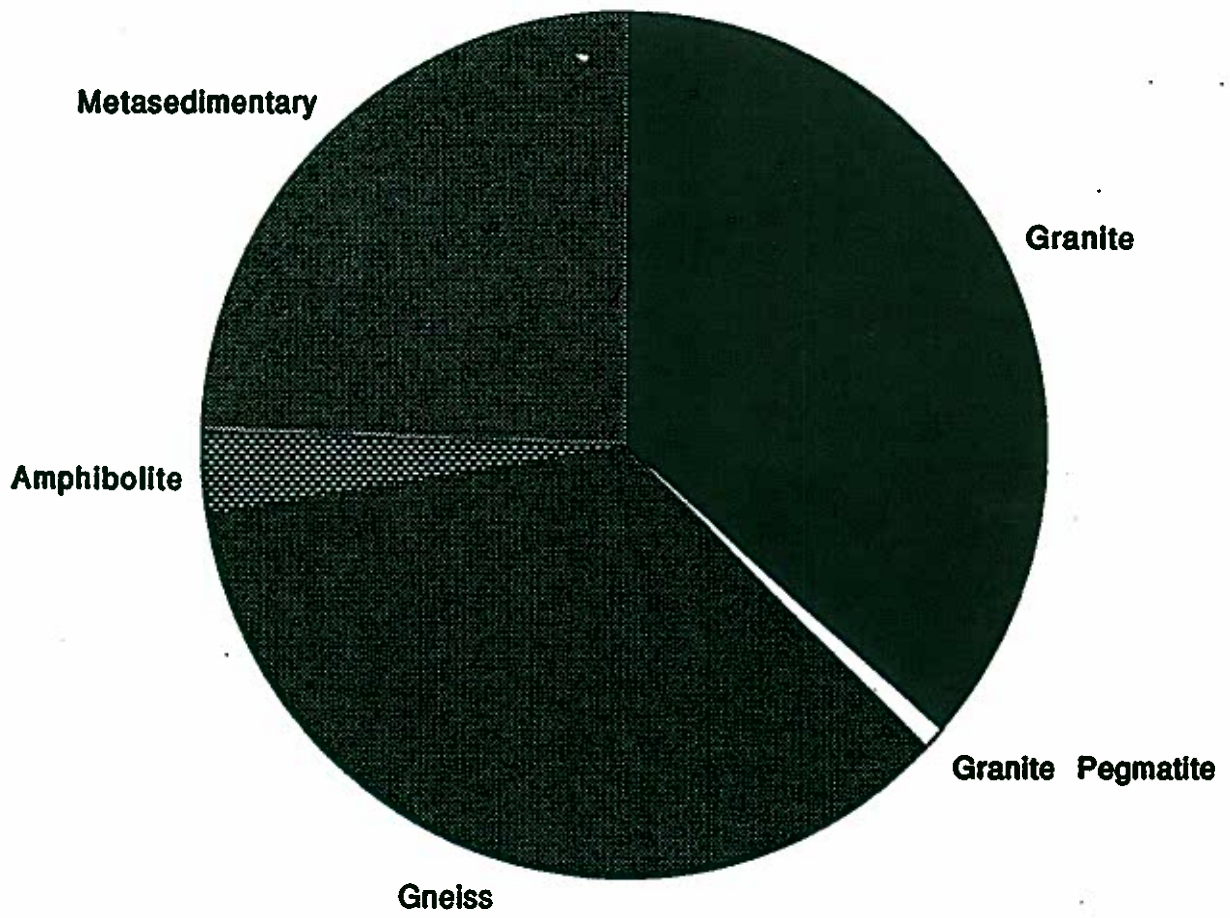


Figure 7. Location of Ashton Lake map sheet.

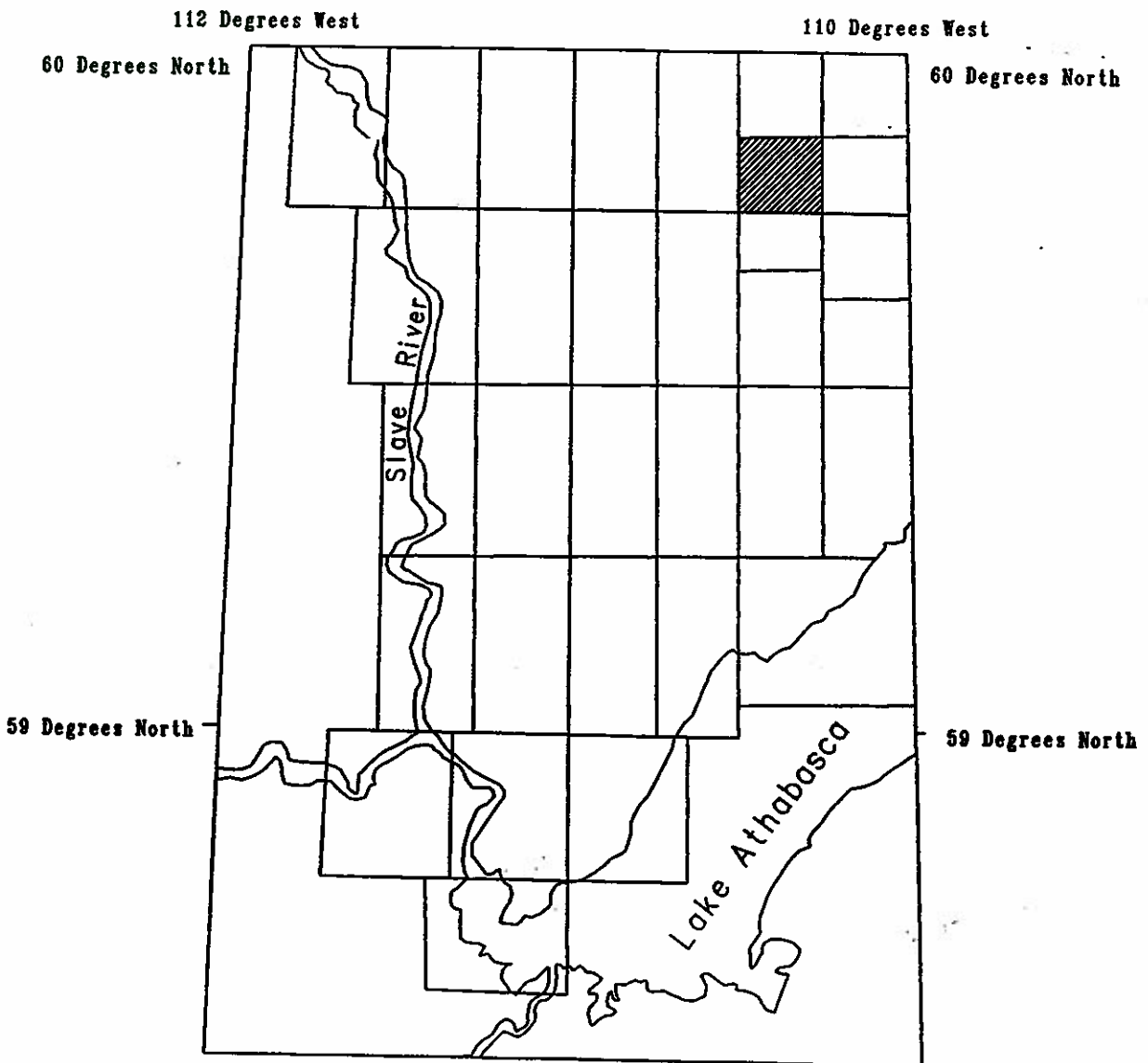
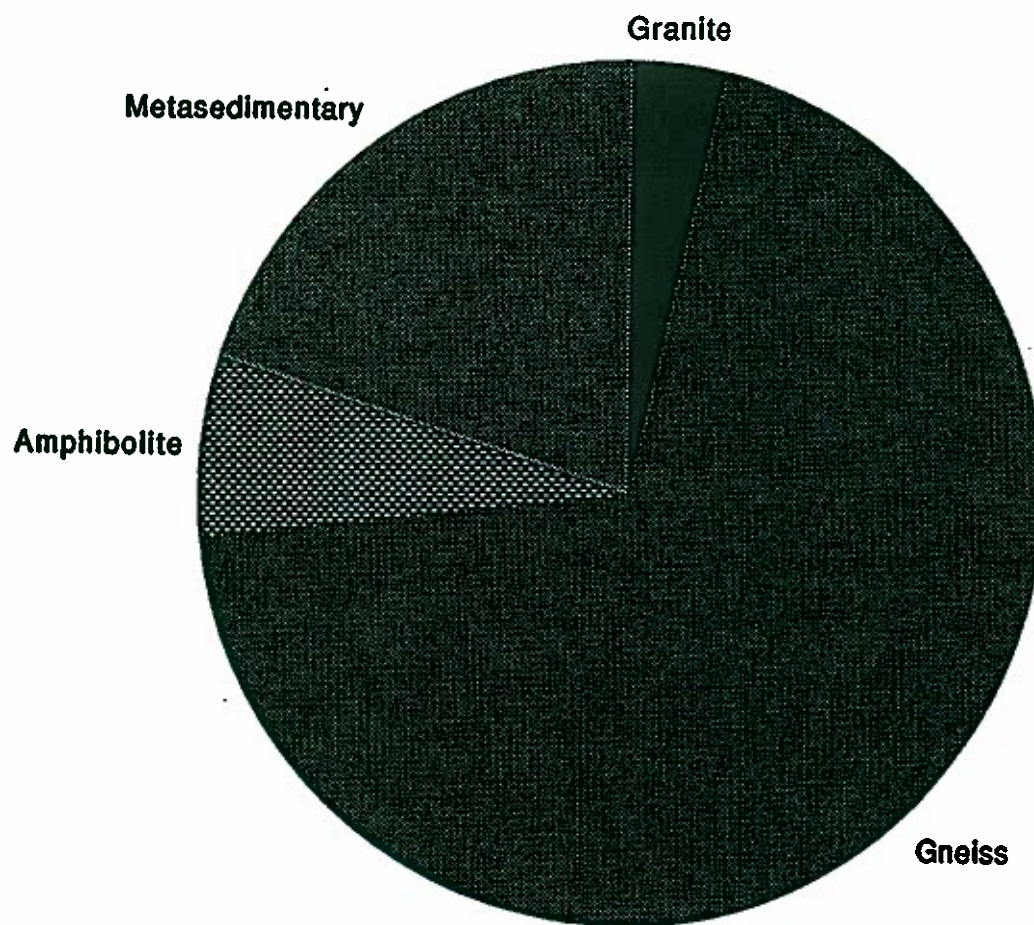


Figure 8. Rock sample distribution, Ashton Lake.



Bayonet Lake

The Bayonet Lake map sheet is latitude 59°52'30" to 60°00' and longitude 110°15' to 110°30', in the northeast quadrant of the exposed Shield north of Lake Athabasca. A rock sample site map for this area has not been published but some preliminary data about the sample collection has been gathered and is presented here.

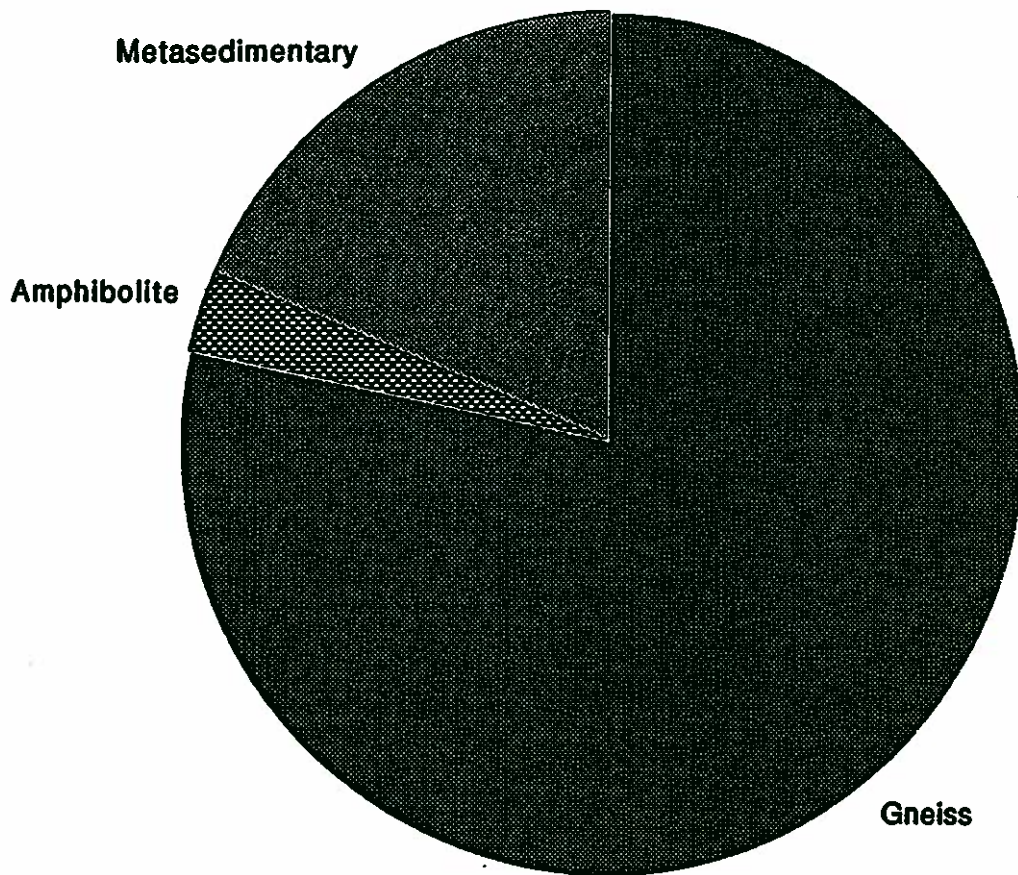
A total of 235 collecting sites are recorded on the field map for the area. Nineteen sample sites are shown on the published geology map (Godfrey, 1966). Analytical results, for modal and chemical analyses for the following minerals and elements: Quartz, Potash Feldspar, Plagioclase, Biotite, Chlorite, Hornblende, Epidote, Muscovite, Spinel, Garnet, Calcite, Pyroxene, Cordierite, Andalusite, Sillimanite and Accessories and SiO₂, TiO₂, Al₂O₃, Fe₂O₃, MgO, CaO, Na₂O, K₂O, MnO, P₂O₅, L.O.I. and H₂O, for eighteen samples from the Bayonet Lake sheet are reported in Godfrey, 1966.

About three-quarters of the rock samples in the collection from the Bayonet Lake are gneiss, a fifth are metasedimentary and the remainder are amphibolite (Figure 9).

Summary

An effective procedure was developed for locating samples in the collection and for accurately recording the sample site locations. The project team recovered data for four map sheets (Andrew Lake North, Andrew Lake South, Ashton Lake and Bayonet Lake). Results were presented at the Mineral Exploration Group conference in Calgary March 2, 1993; at the Canadian Institute of Mining and Metallurgy Annual General Meeting in Calgary on May 11, 1993; and at the Geological Association of Canada Annual General Meeting in Edmonton on May 18, 1993. Results for three map areas (referenced in text) were published on June 1, 1993.

Figure 9. Rock sample distribution, Bayonet Lake.



Samples from the collection are assigned to one of six major rock groups (Table 4). The major rock unit present was gneiss (Figure 10). Over half of all samples were of this type. Metasedimentary rocks accounted for about a quarter of all samples, granitic rocks accounted for about an eighth and amphibolite, basic rocks and granite pegmatites together represented about a tenth of all samples present. In total 2630 sample sites are recorded on the four map sheets. Table 5 shows the number of samples of each rock group discovered for each map sheet.

Table 4. Major rock groups identified in rock sample collection for four map sheets

- Granite Pegmatite**
- Granite:** Biotite Granite A
 - Biotite Granite B
 - Biotite Granite C
 - Biotite Granite D
 - Biotite Granite F
 - Sheared Leucocratic Granite
 - Biotite Microgranite
 - Biotite Granite
- Gneiss:** Hornblende Granite Gneiss
 - Biotite Granite Gneiss
 - Recrystallized Mylonite
- Metasedimentary:** Sericitic, Porphyroclastic Phyllonite
 - Quartzite
 - Biotite Schist
- Basic rocks**
- Amphibolite**
- Unidentified**

The rationale for proposing the project was that if the sample collection was organized and sample locations determined then researchers and explorationists could use the samples. In fact this has already happened for the three published areas. Splits from five samples were provided for geochronological analyses by researchers from the Geological Survey of Canada (GSC) and the University of Calgary (UC). Results can

Figure 10. Rock sample distribution for four map sheets.

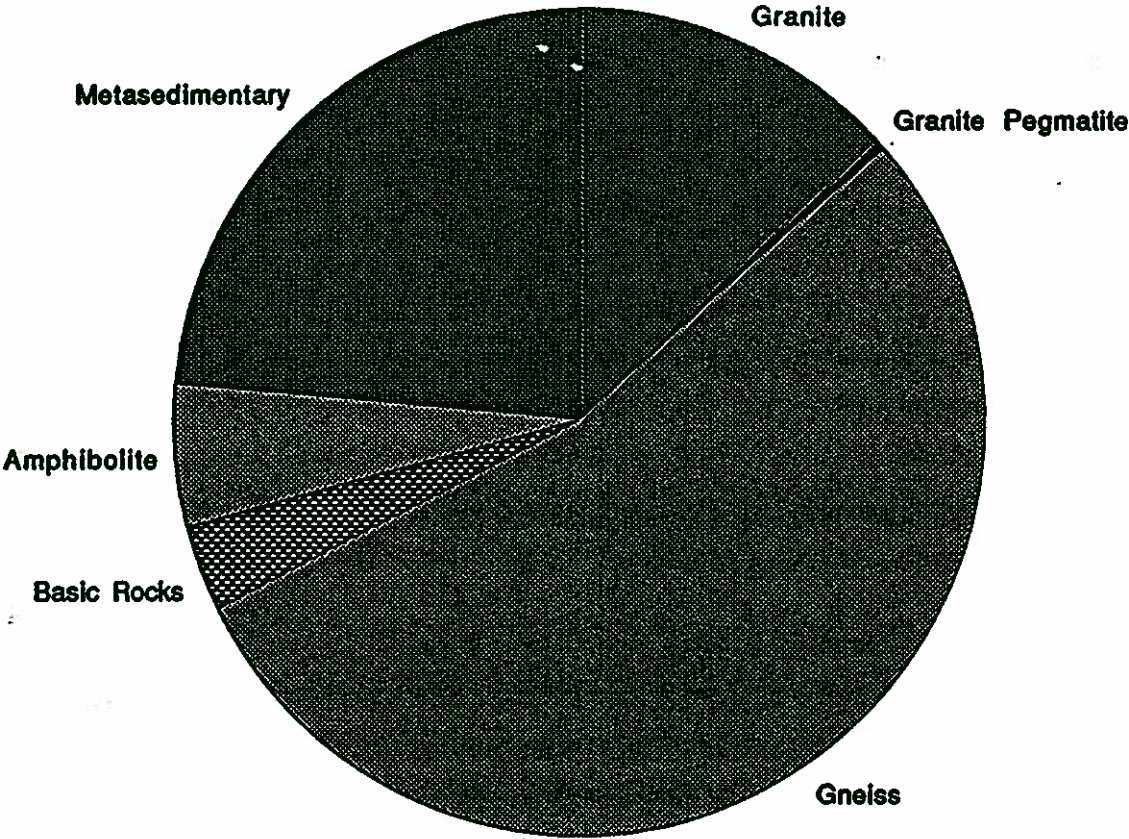


Table 5. Numbers of rock samples by rock group for each map sheet.

| <u>Rock Type</u> | <u>Ashton Lake</u> | <u>Bayonet Lake</u> | <u>Andrew Lake N.</u> | <u>Andrew Lake S.</u> |
|---------------------|--------------------|---------------------|-----------------------|-----------------------|
| Granite Pegmatite | - | - | 3 | 7 |
| Granite | 35 | - | 146 | 163 |
| Gneiss | 629 | 179 | 141 | 162 |
| Metasedimentary | 179 | 42 | 97 | 203 |
| Basic | - | - | - | 91 |
| Amphibolite | 62 | 7 | 13 | 37 |
| <u>Unidentified</u> | <u>16</u> | <u>7</u> | <u>90</u> | <u>321</u> |
| TOTAL | 921 | 235 | 490 | 984 |

be requested from M. McDonough (GSC) or T. Grover (UC). Sixty-seven samples were selected by AGS researchers, split, and analyzed for various elements, including gold. Results from six samples are reported in Langenberg (1993) as in Table 6. The complete analyses for the sixty-seven samples are listed in Appendix B.

Table 6. Results of new analysis on six samples (Langenberg, 1993)

| Sample No. | Description | Au (ppb) | As (ppm) | W (ppm) | Bi (ppm) | Ba (ppm) | Zn (ppm) |
|--------------|-----------------------------|-------------|-------------|------------|-------------|-------------|-------------|
| JG-61-495-1a | Qtzite+5% aspy | 85 | 28,461 | 5749 | 26 | - | 103 |
| JG-61-495-1b | Qtz vein +10-15% aspy | 770 | >10% | 5948 | 205 | - | - |
| JG-61-495-1c | Qtzite+qtz vein +5% aspy | 62 | 41,772 | 6236 | 38 | - | 132 |
| JG-61-495-2 | Sheared qtzite | 17 | 262 | 49 | - | 492 | - |
| JG-61-495-3 | Sheared qtzite | - | 386 | 59 | - | 118 | 101 |
| JG-61-495-4 | Sheared qtzite | - | 63 | 10 | - | 166 | - |

References

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- Langenberg, C.W., Salat, H., Turner, A. and Eccles, D.R. (1993):Evaluation of the Economic Mineral Potential in the Andrew Lake-Charles Lake area of Northeast Alberta; Alberta Research Council Open File Report 1993-08, Canada-Alberta Partnership Agreement on Mineral Development Project M92-04-07.**

Appendix A

Appendix A. List of samples for which analyses were done.

| | | | | | |
|--------------|--------------|--------------|--------------|---------------|-------------|
| JG-57-65-2 | JG-57-158-3C | JG-57-453-1B | JG-58-75-1 | JG-58-1123-1 | JG-59-140-5 |
| JG-57-67-2 | JG-57-158-4A | JG-57-454-1 | JG-58-78-1 | JG-58-1130-1 | JG-59-143-3 |
| JG-57-70-6 | JG-57-158-4B | JG-57-455-1 | JG-58-82-10 | JG-58-1137-1 | JG-59-501-3 |
| JG-57-75-1 | JG-57-158-5 | JG-57-456-3 | JG-58-83-1 | JG-58-1148-4 | JG-59-518-1 |
| JG-57-79-2 | JG-57-164-2 | JG-57-457-2 | JG-58-85-2 | JG-58-1152-1A | JG-59-527-3 |
| JG-57-79-3 | JG-57-172-6 | JG-57-458-1 | JG-58-85-3 | JG-58-1152-1B | JG-59-539-2 |
| JG-57-79-4 | JG-57-178-3 | JG-57-459-1 | JG-58-87-5A | JG-58-1158-2 | JG-59-554-3 |
| JG-57-98-1 | JG-57-197-4C | JG-57-462-1 | JG-58-87-5B | JG-58-1160-1 | JG-59-566-2 |
| JG-57-100-1A | JG-57-201-4 | JG-57-464-2 | JG-58-87-6 | JG-58-1160-2 | JG-59-568-1 |
| JG-57-100-1B | JG-57-214-2A | JG-57-479-1 | JG-58-87-7 | JG-58-1169-1 | JG-59-569-3 |
| JG-57-100-1C | JG-57-214-2B | JG-57-484-1 | JG-58-87-8 | JG-58-1175-1 | JG-59-571-4 |
| JG-57-100-2 | JG-57-214-2C | JG-57-487-6 | JG-58-88-1 | JG-58-1175-4 | JG-59-611-2 |
| JG-57-100-3 | JG-57-218-1 | JG-57-487-7 | JG-58-89-2 | JG-58-1176-3 | JG-59-643-3 |
| JG-57-100-4 | JG-57-313-4 | JG-57-488-1 | JG-58-90-5 | JG-58-1200-2 | JG-59-646-3 |
| JG-57-100-5B | JG-57-315-3 | JG-57-488-3 | JG-58-92-1 | JG-58-1235-2A | JG-59-649-5 |
| JG-57-100-6 | JG-57-316-1 | JG-57-492-3 | JG-58-94-3 | JG-58-1235-2B | JG-59-651-3 |
| JG-57-101-1 | JG-57-316-2 | JG-57-492-4 | JG-58-101-2 | JG-59-1-3 | JG-59-652-2 |
| JG-57-105-1 | JG-57-318-3 | JG-57-492-5 | JG-58-104-1 | JG-59-7-5 | JG-60-4-6 |
| JG-57-108-2A | JG-57-341-1 | JG-57-497-1 | JG-58-511-1 | JG-59-19-3 | JG-60-4-7 |
| JG-57-108-2B | JG-57-366-1 | JG-57-521-1 | JG-58-517-4 | JG-59-42-9 | JG-60-8-2 |
| JG-57-112-1 | JG-57-394-1 | JG-58-3-2 | JG-58-520-2 | JG-59-69-2A | JG-60-8-3 |
| JG-57-122-4A | JG-57-395-1 | JG-58-4-3A | JG-58-547-2 | JG-59-69-2B | JG-60-17-1 |
| JG-57-122-4B | JG-57-400-2 | JG-58-4-3B | JG-58-553-1 | JG-59-69-2C | JG-60-17-3 |
| JG-57-126-1 | JG-57-402-2 | JG-58-4-4 | JG-58-590-1 | JG-59-69-2D | JG-60-17-5 |
| JG-57-126-2A | JG-57-403-2A | JG-58-4-6 | JG-58-611-1 | JG-59-69-3 | JG-60-17-8 |
| JG-57-126-2B | JG-57-403-2B | JG-58-5-1 | JG-58-618-1 | JG-59-69-4 | JG-60-22-4 |
| JG-57-126-4 | JG-57-404-1 | JG-58-23-3 | JG-58-618-2 | JG-59-69-5A | JG-60-26-2 |
| JG-57-137-1 | JG-57-429-1 | JG-58-33-2 | JG-58-625-1 | JG-59-69-5B | JG-60-30-2 |
| JG-57-137-2 | JG-57-432-1 | JG-58-33-3 | JG-58-666-2A | JG-59-69-6 | JG-60-50-1 |
| JG-57-145-1 | JG-57-433-1 | JG-58-42-3 | JG-58-666-2B | JG-59-69-7 | JG-60-53-4 |
| JG-57-145-2A | JG-57-433-2 | JG-58-54-1A | JG-58-670-2 | JG-59-69-8 | JG-60-55-1 |
| JG-57-145-2B | JG-57-433-4 | JG-58-54-1B | JG-58-679-1 | JG-59-78-1 | JG-60-55-2 |
| JG-57-145-3 | JG-57-434-1 | JG-58-54-1C | JG-58-717-1 | JG-59-85-1 | JG-60-62-1 |
| JG-57-145-3A | JG-57-434-2A | JG-58-54-2 | JG-58-1010-2 | JG-59-85-3 | JG-60-64-2 |
| JG-57-145-3B | JG-57-434-2B | JG-58-56-1A | JG-58-1015-2 | JG-59-85-4 | JG-60-64-4 |
| JG-57-147-2A | JG-57-434-3 | JG-58-56-1B | JG-58-1031-2 | JG-59-88-1 | JG-60-64-5 |
| JG-57-147-2B | JG-57-435-5 | JG-58-56-2 | JG-58-1049-1 | JG-59-88-2 | JG-60-66-1 |
| JG-57-149-1 | JG-57-436-3 | JG-58-61-4 | JG-58-1072-1 | JG-59-88-3 | JG-60-66-2 |
| JG-57-158-1 | JG-57-447-1 | JG-58-61-6 | JG-58-1079-2 | JG-59-106-2 | JG-60-67-2 |
| JG-57-158-2A | JG-57-451-1 | JG-58-61-8 | JG-58-1085-1 | JG-59-110-3 | JG-60-67-4 |
| JG-57-158-2B | JG-57-452-1 | JG-58-62-2 | JG-58-1100-2 | JG-59-112-3 | JG-60-68-4 |
| JG-57-158-3B | JG-57-453-1A | JG-58-72-2 | JG-58-1104-1 | JG-59-128-9 | JG-60-77-3A |

Appendix A. Continued.

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| JG-60-77-3B | JG-60-617-2 | JG-61-72-6 | JG-61-432-2 | JG-63-41-3A | JG-69-31-2 |
| JG-60-78-1 | JG-60-623-3 | JG-61-85-7 | JG-61-437-2 | JG-63-42-1 | JG-69-32-1 |
| JG-60-78-3 | JG-60-624-2 | JG-61-94-3 | JG-61-438-2 | JG-63-50-2 | JG-69-32-4 |
| JG-60-78-4 | JG-60-627-1 | JG-61-104-5 | JG-61-442-1 | JG-63-53-1A | JG-69-37-2 |
| JG-60-83-4 | JG-60-631-2 | JG-61-105-4 | JG-61-450-2 | JG-63-53-1B | JG-69-41-1 |
| JG-60-113-3 | JG-60-632-1 | JG-61-112-4 | JG-61-457-3 | JG-63-59-2 | JG-69-42-3 |
| JG-60-113-4 | JG-60-639-1 | JG-61-124-4 | JG-61-459-1 | JG-63-82-5 | JG-69-45-1 |
| JG-60-113-6 | JG-60-656-1 | JG-61-128-5 | JG-61-464-14 | JG-63-500-4B | JG-69-46-8 |
| JG-60-114-2 | JG-60-667-1 | JG-61-137-3 | JG-61-465-3 | JG-63-505-2 | JG-69-49-2 |
| JG-60-114-5 | JG-60-671-3 | JG-61-140-3 | JG-61-481-1 | JG-63-514-2 | JG-69-50-3 |
| JG-60-114-8 | JG-60-673-1 | JG-61-140-4 | JG-61-481-2 | JG-63-527-7 | JG-69-50-5B |
| JG-60-114-9 | JG-60-678-2 | JG-61-141-1 | JG-61-483-2 | JG-63-529-3 | JG-69-50-6 |
| JG-60-120-1 | JG-60-693-1 | JG-61-151-2 | JG-61-484-1 | JG-63-533-3A | JG-69-52-7 |
| JG-60-121-3 | JG-60-693-2 | JG-61-151-6 | JG-61-486-1 | JG-63-533-5A | JG-69-52-8 |
| JG-60-128-5 | JG-60-695-1 | JG-61-155-3 | JG-61-486-5 | JG-63-533-5B | JG-70-13-2 |
| JG-60-132-1 | JG-60-707-3 | JG-61-161-1 | JG-61-486-6 | JG-63-535-2 | JG-70-15-7 |
| JG-60-146-1 | JG-60-709-2 | JG-61-161-2 | JG-61-487-3 | JG-63-540-3 | JG-70-17-3B |
| JG-60-147-2 | JG-60-711-5 | JG-61-161-3 | JG-61-508-2 | JG-63-541-2 | JG-70-19-2 |
| JG-60-149-2 | JG-60-716-3 | JG-61-166-4 | JG-61-508-3 | JG-63-547-2 | JG-70-23-6 |
| JG-60-149-3 | JG-60-717-4 | JG-61-170-1 | JG-61-512-2 | JG-63-548-2 | JG-70-27-7C |
| JG-60-149-4 | JG-60-723-8 | JG-61-173-1 | JG-61-513-2 | JG-63-551-2 | JG-70-29-2 |
| JG-60-149-9 | JG-60-726-1 | JG-61-175-1 | JG-61-513-3 | JG-63-551-3B | JG-70-30-3 |
| JG-60-149-11 | JG-60-726-2 | JG-61-187-9 | JG-61-513-4 | JG-63-567-2A | JG-70-30-5B |
| JG-60-149-14 | JG-60-726-3 | JG-61-303-3 | JG-61-514-1 | JG-63-577-15A | JG-70-30-6B |
| JG-60-150-2 | JG-60-728-1 | JG-61-309-2 | JG-61-516-2 | JG-63-584-7 | JG-70-31-4 |
| JG-60-515-1 | JG-60-1010-1 | JG-61-319-2 | JG-61-529-5 | JG-63-585-2 | JG-70-32-4 |
| JG-60-519-2 | JG-60-1029-4 | JG-61-323-3 | JG-61-531-1 | JG-63-586-12 | JG-70-32-5 |
| JG-60-530-1 | JG-60-1034-2 | JG-61-324-3 | JG-61-531-6 | JG-63-588-3B | JG-70-32-6 |
| JG-60-534-2 | JG-60-1041-1 | JG-61-330-4 | JG-61-534-1 | JG-63-589-7 | JG-70-33-0 |
| JG-60-553-10 | JG-60-1045-2 | JG-61-336-3 | JG-61-534-3 | JG-63-603-2 | JG-70-33-1 |
| JG-60-554-5 | JG-60-1053-2 | JG-61-350-2 | JG-61-534-4 | JG-63-629-2 | JG-70-35-7A |
| JG-60-556-1 | JG-60-1056-3 | JG-61-366-1 | JG-61-537-2 | JG-63-629-3 | JG-70-37-6A |
| JG-60-556-2 | JG-60-1069-2 | JG-61-397-2 | JG-61-1011-2 | JG-63-631-1 | JG-70-38-1 |
| JG-60-566-2 | JG-61-12-5 | JG-61-402-1 | JG-61-1013-2 | JG-63-633-2 | JG-70-42-6D |
| JG-60-568-1 | JG-61-20-1 | JG-61-402-2 | JG-63-13-1 | JG-63-633-3 | JG-70-52-11 |
| JG-60-568-2 | JG-61-25-6 | JG-61-411-3 | JG-63-18-4 | JG-69-8-1 | JG-70-53-7 |
| JG-60-574-1 | JG-61-27-3 | JG-61-415-3 | JG-63-21-2 | JG-69-9-2 | JG-70-53-13 |
| JG-60-575-1 | JG-61-40-4 | JG-61-420-3 | JG-63-32-1 | JG-69-13-2A | JG-70-55-3 |
| JG-60-598-1 | JG-61-47-1 | JG-61-424-2 | JG-63-33-4 | JG-69-14-3 | JG-70-57-6 |
| JG-60-598-2 | JG-61-47-4 | JG-61-424-3 | JG-63-33-5 | JG-69-23-2 | JG-70-57-9 |
| JG-60-598-3 | JG-61-49-7 | JG-61-426-8 | JG-63-35-4 | JG-69-23-4 | JG-70-59-4 |
| JG-60-611-3 | JG-61-65-5 | JG-61-427-7 | JG-63-36-2 | JG-69-24-2A | JG-70-61-3 |

Appendix A. Continued.

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| JG-70-62-7 | JG-70-571-2A | MD-71-20-5 | PK-71-81-5 | JG-72-22-4 | JG-72-525-3 |
| JG-70-63-1B | JG-70-572-1 | MD-71-46-2 | PK-71-96-2 | JG-72-24-3 | JG-72-527-6A |
| JG-70-63-6B | JG-70-576-6 | MD-71-59-1 | PK-71-97-1 | JG-72-26-4A | JG-72-527-6B |
| JG-70-64-2 | JG-70-583-3 | MD-71-64-5 | PK-71-97-2 | JG-72-28-5B | JG-72-527-7 |
| JG-70-64-6 | JG-70-583-7A | MD-71-70-2 | PK-71-97-3 | JG-72-28-6 | JG-72-532-9 |
| JG-70-65-2 | JG-70-586-6 | MD-71-75-4 | PK-71-97-4B | JG-72-29-2 | JG-72-534-6 |
| JG-70-70-5 | JG-70-587-3A | MD-71-78-1 | PK-71-98-2 | JG-72-34-5 | JG-72-536-6 |
| JG-70-74-1A | JG-70-587-6 | MD-71-80-3A | PK-71-98-3 | JG-72-34-6 | JG-72-538-4 |
| JG-70-77-7 | JG-70-592-3 | MD-71-80-3B | PK-71-98-4 | JG-72-34-7 | JG-72-544-3 |
| JG-70-82-1 | JG-70-597-6 | MD-71-82-2 | PK-71-99-5 | JG-72-41-5 | JG-72-545-4A |
| JG-70-83-1 | JG-70-603-6 | MD-71-83-5A | PK-71-101-2B | JG-72-55-3 | JG-72-552-2 |
| JG-70-92-9B | JG-70-610-1 | MD-71-86-1 | PK-71-105-1 | JG-72-58-2 | JG-72-555-7 |
| JG-70-93-4 | JG-70-616-8 | MD-71-87-6 | PK-71-105-3 | JG-72-65-7 | JG-72-557-3 |
| JG-70-93-10 | JG-70-630-5A | MD-71-92-6 | PK-71-105-4B | JG-72-75-3 | JG-72-567-4B |
| JG-70-95-3B | JG-70-630-5B | MD-71-110-4 | PK-71-106-3 | JG-72-75-4 | JG-72-570-6 |
| JG-70-96-1 | JG-70-633-2 | MD-71-111-2 | PK-71-107-1 | JG-72-76-1B | JG-72-571-1A |
| JG-70-96-2B | JG-71-8-4 | MD-71-122-1 | PK-71-107-2 | JG-72-76-2B | JG-72-571-3 |
| JG-70-96-5B | JG-71-14-4 | MD-71-122-4 | PK-71-112-5 | JG-72-76-3 | JG-72-572-2 |
| JG-70-96-6 | JG-71-16-6 | MD-71-125-3B | PK-71-113-2A | JG-72-77-3 | JG-72-575-2 |
| JG-70-100-7B | JG-71-23-6 | MD-71-126-1 | PK-71-122-3 | JG-72-87-1A | JG-72-577-1 |
| JG-70-100-9B | JG-71-33-5 | MD-71-132-2 | PK-71-124-5 | JG-72-87-1B | JG-72-579-1 |
| JG-70-103-6 | JG-71-52-3 | MD-71-142-1A | PK-71-127-1 | JG-72-92-1 | JG-72-579-2 |
| JG-70-104-2 | JG-71-57-1 | MD-71-142-1B | PK-71-131-1 | JG-72-94-4 | JG-72-579-3A |
| JG-70-501-3 | JG-71-60-5 | MD-71-145-5B | PK-71-132-4 | JG-72-96-2 | JG-72-579-4 |
| JG-70-502-1A | JG-71-62-2 | MD-71-146-1B | PK-71-134-1 | JG-72-98-3A | JG-72-579-5 |
| JG-70-503-1 | JG-71-65-3 | MD-71-147-3 | PK-71-134-3A | JG-72-98-6 | JG-72-580-2B |
| JG-70-503-2 | JG-71-73-1 | MD-71-149-1B | PK-71-134-7 | JG-72-103-1 | JG-72-580-3 |
| JG-70-503-3 | JG-71-73-4 | MD-71-150-3 | PK-71-136-2 | JG-72-105-2 | JG-72-584-2 |
| JG-70-508-7 | JG-71-75-1A | MD-71-155-2 | PK-71-137-5 | JG-72-106-4 | JG-72-589-5 |
| JG-70-508-8B | JG-71-75-2 | MD-71-156-3 | PK-71-138-1B | JG-72-505-5 | JG-72-591-6 |
| JG-70-510-3B | JG-71-75-4 | MD-71-157-1B | PK-71-139-2 | JG-72-509-1 | JG-72-592-1 |
| JG-70-525-1 | JG-71-82-2 | MD-71-168-1 | PK-71-141-1B | JG-72-510-1A | JG-72-592-4 |
| JG-70-527-3 | JG-71-87-6 | MD-71-168-3A | PK-71-141-2C | JG-72-510-2 | JG-72-592-5 |
| JG-70-528-1 | JG-71-89-4 | PK-71-5-2A | PK-71-141-3 | JG-72-510-3A | JG-72-593-2 |
| JG-70-528-2 | JG-71-91-5 | PK-71-9-3B | PK-71-141-4B | JG-72-510-3B | JG-72-594-5A |
| JG-70-531-1 | JG-71-108-7 | PK-71-10-3A | PK-71-148-4 | JG-72-513-4 | JG-72-601-4 |
| JG-70-532-5 | JG-71-120-4 | PK-71-28-4B | PK-71-152-4 | JG-72-514-1 | JG-72-605-2 |
| JG-70-534-5 | JG-71-123-3 | PK-71-30-5B | PK-71-153-6 | JG-72-523-7 | JG-72-605-3 |
| JG-70-535-3 | MD-71-6-2 | PK-71-37-3 | JG-72-21-2 | JG-72-523-8A | JG-72-608-3 |
| JG-70-540-2 | MD-71-10-3 | PK-71-42-2 | JG-72-21-4 | JG-72-524-1 | JG-72-608-6 |
| JG-70-549-3B | MD-71-11-1 | PK-71-73-2 | JG-72-22-1 | JG-72-524-2 | JG-72-613-2 |
| JG-70-557-5 | MD-71-15-3 | PK-71-81-2 | JG-72-22-3 | JG-72-524-3 | JG-72-616-4 |

Appendix A. Continued.

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| JG-72-616-5 | JG-73-74-5A | JG-73-317-11 | JG-73-706-2 | JG-74-64-13A | JG-74-331-6 |
| JG-72-617-1 | JG-73-74-12 | JG-73-326-5 | JG-73-706-3 | JG-74-65-10 | JG-74-418-3 |
| JG-72-617-2 | JG-73-77-4 | JG-73-330-5 | JG-73-712-3 | JG-74-68-4 | JG-74-432-2 |
| JG-72-617-5 | JG-73-77-8A | JG-73-345-1 | JG-73-713-6 | JG-74-77-2 | JG-74-441-4 |
| JG-72-625-5B | JG-73-79-1 | JG-73-357-4 | JG-73-714-5 | JG-74-78-2 | JG-74-449-2 |
| JG-72-628-2 | JG-73-82-2A | JG-73-361-5 | JG-73-717-12 | JG-74-79-2 | JG-74-449-3 |
| JG-72-630-1 | JG-73-82-6 | JG-73-365-2 | JG-73-728-5 | JG-74-80-1 | JG-74-451-1 |
| JG-72-630-2 | JG-73-82-10 | JG-73-365-4 | JG-74-6-5 | JG-74-80-11 | JG-74-460-5 |
| JG-72-630-3 | JG-73-84-2A | JG-73-365-6A | JG-74-10-1 | JG-74-82-3 | JG-74-462-4 |
| JG-73-1-2 | JG-73-84-2B | JG-73-365-6B | JG-74-11-3 | JG-74-83-6 | JG-74-471-3A |
| JG-73-1-48 | JG-73-84-6 | JG-73-365-7 | JG-74-12-5 | JG-74-92-6 | JG-74-471-4 |
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| JG-73-7-3 | JG-73-86-7 | JG-73-365-8B | JG-74-16-2 | JG-74-97-3 | JG-74-483-4 |
| JG-73-9-7 | JG-73-87-4 | JG-73-365-11 | JG-74-16-7 | JG-74-214-2 | JG-74-486-1 |
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| JG-73-26-3 | JG-73-92-3 | JG-73-376-5 | JG-74-21-4 | JG-74-237-5 | JG-74-494-1 |
| JG-73-27-10 | JG-73-96-4 | JG-73-379-3 | JG-74-22-7 | JG-74-245-4 | JG-74-495-9 |
| JG-73-28-8 | JG-73-97-1 | JG-73-383-3 | JG-74-24-9 | JG-74-253-4 | JG-74-496-3 |
| JG-73-30-4 | JG-73-98-3 | JG-73-395-7 | JG-74-28-1 | JG-74-260-2 | JG-74-499-2 |
| JG-73-33-7 | JG-73-100-2 | JG-73-399-2 | JG-74-28-2 | JG-74-265-4 | JG-74-503-3 |
| JG-73-44-3 | JG-73-100-4 | JG-73-403-1 | JG-74-30-3 | JG-74-267-10B | JG-74-505-2 |
| JG-73-46-9 | JG-73-100-5 | JG-73-410-6 | JG-74-31-9 | JG-74-268-3 | JG-74-507-9 |
| JG-73-47-5 | JG-73-100-8A | JG-73-414-4 | JG-74-33-1 | JG-74-275-1 | JG-74-509-5 |
| JG-73-47-6A | JG-73-100-10 | JG-73-418-3 | JG-74-41-6 | JG-74-283-9 | JG-74-510-3 |
| JG-73-47-6B | JG-73-100-13 | JG-73-429-1 | JG-74-45-5 | JG-74-288-4 | JG-74-511-1 |
| JG-73-47-7 | JG-73-101-4 | JG-73-451-10 | JG-74-46-7 | JG-74-291-1 | JG-74-513-1 |
| JG-73-47-8A | JG-73-102-5 | JG-73-604-3B | JG-74-49-8 | JG-74-292-6 | JG-74-513-8 |
| JG-73-48-2 | JG-73-103-7 | JG-73-611-4 | JG-74-50-4 | JG-74-295-5 | JG-74-516-9 |
| JG-73-57-6 | JG-73-104-1 | JG-73-615-3 | JG-74-55-3 | JG-74-296-3 | JG-74-518-1 |
| JG-73-61-8 | JG-73-104-7 | JG-73-622-6 | JG-74-58-1 | JG-74-297-1 | JG-74-521-9 |
| JG-73-66-6 | JG-73-107-3A | JG-73-650-3 | JG-74-60-14 | JG-74-299-3 | JG-74-522-1 |
| JG-73-69-1 | JG-73-108-2 | JG-73-654-3 | JG-74-63-1 | JG-74-300-8 | JG-74-522-12 |
| JG-73-69-3 | JG-73-109-4 | JG-73-658-7 | JG-74-64-3 | JG-74-306-4 | JG-74-526-4 |
| JG-73-69-4 | JG-73-111-9 | JG-73-658-8 | JG-74-64-5A | JG-74-309-11 | JG-74-531-1 |
| JG-73-69-5 | JG-73-112-10B | JG-73-659-1 | JG-74-64-6A | JG-74-310-3 | JG-74-532-4 |
| JG-73-69-6 | JG-73-113-3 | JG-73-660-7 | JG-74-64-7 | JG-74-317-7 | JG-75-1-1A |
| JG-73-70-7 | JG-73-114-2 | JG-73-689-2 | JG-74-64-8A | JG-74-320-9 | JG-75-1-1B |
| JG-73-71-1 | JG-73-114-6 | JG-73-705-8 | JG-74-64-10A | JG-74-325-5 | JG-75-4-2 |
| JG-73-72-3A | JG-73-117-5B | JG-73-706-1A | JG-74-64-11 | JG-74-327-2 | JG-75-6-3 |
| JG-73-74-1 | JG-73-315-1 | JG-73-706-1B | JG-74-64-12B | JG-74-330-1 | JG-75-7-5 |

Appendix A. Continued.

| | | | | | |
|-------------|-------------|--------------|--------------|--------------|--------------|
| JG-75-8-1 | JG-75-29-1 | JG-75-37-11B | JG-75-214-6A | JG-75-246-2 | JG-75-419-8 |
| JG-75-13-2 | JG-75-29-5 | JG-75-37-12 | JG-75-214-6B | JG-75-247-1 | JG-75-421-1 |
| JG-75-13-5 | JG-75-29-7 | JG-75-38-2 | JG-75-217-7 | JG-75-248-2 | JG-75-423-6 |
| JG-75-16-3 | JG-75-29-8A | JG-75-41-10 | JG-75-218-4B | JG-75-255-1 | JG-75-425-7 |
| JG-75-16-8 | JG-75-30-4 | JG-75-44-11 | JG-75-218-5 | JG-75-257-7 | JG-75-427-7B |
| JG-75-17-4 | JG-75-31-2 | JG-75-45-1 | JG-75-220-6 | JG-75-258-6 | JG-75-435-1 |
| JG-75-17-8A | JG-75-31-9 | JG-75-45-7 | JG-75-221-4 | JG-75-259-7 | JG-75-439-4 |
| JG-75-18-1 | JG-75-32-2 | JG-75-53-5 | JG-75-225-5 | JG-75-263-7 | JG-75-440-4 |
| JG-75-19-3 | JG-75-32-6 | JG-75-57-7 | JG-75-225-7 | JG-75-267-6 | JG-75-441-8 |
| JG-75-19-6 | JG-75-32-7 | JG-75-58-9 | JG-75-227-9 | JG-75-268-5 | JG-75-442-3 |
| JG-75-19-7A | JG-75-32-8 | JG-75-59-10 | JG-75-227-10 | JG-75-269-3 | JG-75-444-1 |
| JG-75-19-7B | JG-75-32-9 | JG-75-62-2 | JG-75-228-1 | JG-75-270-3 | JG-75-464-5B |
| JG-75-20-1 | JG-75-33-2 | JG-75-65-5 | JG-75-228-2A | JG-75-406-2 | JG-75-464-5C |
| JG-75-20-3 | JG-75-34-2 | JG-75-66-4 | JG-75-228-2B | JG-75-406-7B | JG-75-465-1 |
| JG-75-21-5 | JG-75-34-3 | JG-75-202-1 | JG-75-228-2D | JG-75-408-4 | JG-75-465-2 |
| JG-75-22-1 | JG-75-34-4A | JG-75-206-5 | JG-75-234-5 | JG-75-414-1 | JG-75-466-7 |
| JG-75-23-5 | JG-75-34-4B | JG-75-207-5 | JG-75-234-9 | JG-75-415-1 | JG-75-467-3 |
| JG-75-25-6 | JG-75-34-5 | JG-75-209-2 | JG-75-237-8 | JG-75-416-10 | |
| JG-75-25-12 | JG-75-34-8 | JG-75-210-1 | JG-75-239-5 | JG-75-417-1 | |
| JG-75-26-1 | JG-75-35-5 | JG-75-214-2 | JG-75-240-3 | JG-75-417-3 | |
| JG-75-26-4 | JG-75-35-7 | JG-75-214-3 | JG-75-242-4 | JG-75-419-3 | |
| JG-75-27-2 | JG-75-37-1B | JG-75-214-4 | JG-75-244-2 | JG-75-419-7 | |

Appendix B

LORING LABORATORIES LTD.

629 BEAVERDAM RD., N.E.,

CALGARY, ALBERTA.

TEL: (403) 274-2777 FAX: (403) 275-0541

C E R T I F I C A T E O F A S S A Y

TO :
ALBERTA RESEARCH COUNCIL
P.O. Box 8330
Postal Station "F"
Edmonton, Alberta
T6H 5X2
Attn: W. Langenberg

FILE #: 35599
DATE : Jan 13, 1993
SAMPLES : Rock Chips

"GEOCHEMICAL ANALYSES"

| SAMPLE # | GOLD ppb |
|--------------|-------------|
| JG-57-160-1 | <5 |
| JG-57-162-1 | <5 |
| JG-57-162-2 | <5 |
| JG-57-162-5 | <5 |
| JG-57-190-2 | <5 |
| JG-57-190-5 | <5 |
| JG-57-196-5 | <5 |
| JG-57-196-9 | <5 |
| JG-57-196-10 | <5 |
| JG-57-196-11 | <5 |
| JG-57-197-1 | <5 |
| JG-57-197-2 | <5 |
| JG-57-197-3 | <5 |
| JG-57-515-2 | <5 |
| JG-58-18-1 | <5 |
| JG-58-18-3 | <5 |
| JG-58-19-2 | <5 |
| JG-58-19-5 | <5 |
| JG-58-19-8 | <5 |
| JG-58-19-9 | <5 |
| JG-58-20-6 | <5 |
| JG-58-21-1 | <5 |
| JG-58-23-1 | <5 |
| JG-58-23-2 | 7 |
| JG-58-42-5 | <5 |

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples....

Rejects retained one month
Pulps retained one month
unless specific arrangements
are made in advance.



Assayer

LORING LABORATORIES LTD.

629 BEAVERDAM RD., N.E.,

CALGARY, ALBERTA.

TEL: (403) 274-2777 FAX: (403) 275-0541

C E R T I F I C A T E O F A S S A Y

TO :
ALBERTA RESEARCH COUNCIL
P.O. Box 8330
Postal Station "F"
Edmonton, Alberta
T6H 5X2
Attn: W. Langenberg

FILE #: 35599
DATE : Jan 13, 1993
SAMPLES : Rock Chips

PAGE 2

"GEOCHEMICAL ANALYSES"

| SAMPLE # | GOLD ppb |
|--------------|-------------|
| JG-58-43-5 | 6 |
| JG-58-74-9 | <5 |
| JG-58-527-1 | <5 |
| JG-58-548-1 | <5 |
| JG-58-591-1 | <5 |
| JG-58-1001-1 | 6 |
| JG-58-1025-2 | <5 |
| JG-58-1027-1 | <5 |
| JG-58-1027-2 | <5 |
| JG-58-1027-3 | <5 |
| JG-58-1082-2 | 12 |
| JG-60-47-4 | <5 |
| JG-60-136-6 | 9 |
| JG-60-136-7 | <5 |
| JG-60-138-8 | <5 |
| JG-60-139-7 | 11 |
| JG-60-139-9 | 133 |
| JG-60-140-2 | 22 |
| JG-60-140-4 | 17 |
| JG-60-140-6 | <5 |
| JG-60-147-1 | <5 |
| JG-60-147-7 | 205 |
| JG-60-519-1 | <5 |
| JG-60-715-1 | 14 |
| JG-60-715-4 | <5 |

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples....

Rejects retained one month
Pulps retained one month
unless specific arrangements
are made in advance.


Assayer

LORING LABORATORIES LTD.

629 BEAVERDAM RD., N.E.,

CALGARY, ALBERTA.

TEL: (403) 274-2777 FAX: (403) 275-0541

C E R T I F I C A T E O F A S S A Y

TO :
ALBERTA RESEARCH COUNCIL
P.O. Box 8330
Postal Station "F"
Edmonton, Alberta
T6H 5X2
Attn: W. Langenberg

FILE #: 35599
DATE : Jan 13, 1993
SAMPLES : Rock Chips

PAGE 3


"GEOCHEMICAL ANALYSES"

| SAMPLE # | GOLD ppb |
|--------------|-------------|
| JG-60-715-6 | <5 |
| JG-60-715-7 | <5 |
| JG-61-194-6a | <5 |
| JG-61-194-6b | <5 |
| JG-61-466-6 | <5 |
| JG-61-495-1a | 85 ? |
| JG-61-495-1b | 770 |
| JG-61-495-1c | 62 ? |
| JG-61-495-2 | 17 |
| JG-61-495-3 | <5 |
| JG-61-495-4 | <5 |
| JG-61-503-1 | 8 |
| JG-63-505-1 | <5 |
| JG-63-556-1 | <5 |
| JG-74-25a | <5 |
| JG-74-25b | <5 |
| JG-74-25c | <5 |

67 samples

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples....

Rejects retained one month
Pulps retained one month
unless specific arrangements
are made in advance.


Assayer

GEOCHEMICAL ANALYSIS CERTIFICATE

Loring Laboratories Ltd. PROJECT 35599 File # 92-4435 Page 1

629 Beaverdam Road N.E., Calgary AB T2K 4W7

| SAMPLE# | Mo | Cu | Pb | Zn | Ag | Ni | Co | Mn | Fe | As | U | Au | Th | Sr | Cd | Sb | Bi | V | Ca | P | La | Cr | Mg | Ba | Ti | B | Al | Na | K | W |
|--------------|-----|-----|-----|-----|-----|-----|-----|------|------|-----|-----|------------------|-----|-----|------|-----|-----|-----|------|------|-----|-----|------|------|-----|-----|------|-----|------|-----|
| | ppm | ppm | ppm | ppm | ppm | ppm | ppm | ppm | % | ppm | ppm | ppm | ppm | ppm | ppm | ppm | ppm | ppm | % | % | ppm | ppm | % | ppm | % | ppm | % | % | % | ppm |
| JG-57-160-1 | 6 | 13 | 35 | 55 | .1 | 7 | 3 | 199 | 1.33 | 3 | 5 | ND ²⁴ | 14 | 39 | .3 | 2 | 2 | 15 | .61 | .026 | 73 | 199 | .53 | 113 | .09 | 9 | 1.00 | .21 | .58 | 1 |
| JG-57-162-1 | 1 | 17 | 17 | 95 | .3 | 41 | 11 | 285 | 2.49 | 3 | 5 | ND | 87 | 19 | .2 | 2 | 2 | 24 | .35 | .015 | 72 | 110 | 1.67 | 88 | .21 | 3 | 1.58 | .06 | .14 | 1 |
| JG-57-162-2 | 2 | 9 | 27 | 70 | .1 | 30 | 6 | 169 | 1.85 | 2 | 5 | ND | 206 | 13 | .3 | 2 | 3 | 19 | .19 | .037 | 260 | 112 | 1.10 | 220 | .07 | 3 | 1.44 | .16 | .30 | 1 |
| JG-57-162-5 | 1 | 11 | 11 | 172 | .5 | 62 | 24 | 573 | 4.68 | 4 | 5 | ND | 74 | 59 | .5 | 4 | 2 | 51 | .85 | .013 | 125 | 170 | 2.54 | 61 | .40 | 6 | 2.61 | .06 | .13 | 1 |
| JG-57-190-2 | 3 | 9 | 21 | 95 | .1 | 21 | 9 | 442 | 3.21 | 2 | 5 | ND | 9 | 91 | .3 | 2 | 2 | 70 | 1.30 | .047 | 21 | 220 | 2.18 | 128 | .32 | 2 | 2.46 | .09 | .29 | 1 |
| JG-57-190-5 | 1 | 10 | 24 | 97 | .5 | 8 | 12 | 507 | 3.34 | 2 | 5 | ND | 12 | 63 | .3 | 2 | 2 | 73 | .82 | .042 | 30 | 114 | 1.61 | 180 | .36 | 5 | 2.57 | .29 | 1.68 | 1 |
| JG-57-196-5 | 4 | 77 | 28 | 103 | .5 | 23 | 14 | 634 | 4.07 | 7 | 6 | ND | 20 | 47 | .2 | 2 | 2 | 60 | .70 | .060 | 48 | 226 | 1.68 | 175 | .34 | 5 | 2.23 | .18 | 1.32 | 1 |
| JG-57-196-9 | 2 | 11 | 44 | 84 | .1 | 8 | 6 | 411 | 1.11 | 2 | 5 | ND | 15 | 41 | .2 | 2 | 2 | 24 | 2.69 | .021 | 30 | 227 | .79 | 47 | .10 | 5 | 1.24 | .05 | .32 | 1 |
| JG-57-196-10 | 4 | 44 | 22 | 86 | .2 | 37 | 15 | 369 | 2.86 | 2 | 5 | ND | 10 | 36 | .2 | 2 | 2 | 56 | .59 | .036 | 25 | 213 | 1.55 | 200 | .28 | 2 | 2.01 | .14 | 1.50 | 1 |
| JG-57-196-11 | 1 | 12 | 24 | 95 | .3 | 20 | 24 | 572 | 3.99 | 2 | 5 | ND | 9 | 97 | .2 | 2 | 2 | 97 | 1.16 | .099 | 20 | 318 | 3.02 | 743 | .36 | 2 | 3.09 | .10 | 2.25 | 1 |
| JG-57-197-1 | 1 | 7 | 18 | 102 | .2 | 15 | 21 | 648 | 3.93 | 2 | 5 | ND | 12 | 117 | .2 | 2 | 2 | 92 | 1.92 | .123 | 22 | 231 | 2.97 | 256 | .36 | 2 | 2.99 | .08 | 2.26 | 1 |
| JG-57-197-2 | 2 | 8 | 33 | 98 | .1 | 12 | 10 | 396 | 2.92 | 2 | 5 | ND | 15 | 50 | .2 | 2 | 2 | 52 | .61 | .062 | 36 | 215 | 1.07 | 164 | .25 | 16 | 1.63 | .15 | .73 | 167 |
| JG-57-197-3 | 3 | 8 | 13 | 197 | .2 | 170 | 42 | 1811 | 6.98 | 2 | 5 | ND | 7 | 12 | .4 | 2 | 2 | 111 | .34 | .077 | 4 | 774 | 5.76 | 26 | .07 | 2 | 5.08 | .04 | .11 | 1 |
| JG-57-515-2 | 2 | 8 | 29 | 51 | .1 | 14 | 5 | 192 | 1.61 | 2 | 5 | ND | 17 | 7 | .2 | 2 | 2 | 15 | .18 | .050 | 11 | 305 | .35 | 52 | .06 | 5 | .94 | .06 | .52 | 3 |
| JG-58-18-1 | 1 | 44 | 22 | 63 | .1 | 32 | 9 | 413 | 4.55 | 4 | 5 | ND | 19 | 4 | .3 | 2 | 2 | 29 | .14 | .028 | 16 | 78 | 1.28 | 91 | .02 | 4 | 2.39 | .03 | .48 | 1 |
| JG-58-18-3 | 1 | 12 | 19 | 111 | .4 | 37 | 9 | 262 | 2.74 | 2 | 5 | ND | 14 | 6 | .2 | 2 | 2 | 25 | .14 | .023 | 5 | 110 | 1.21 | 49 | .05 | 34 | 1.71 | .05 | .27 | 1 |
| JG-58-19-2 | 1 | 12 | 41 | 59 | .5 | 12 | 4 | 226 | 1.00 | 4 | 5 | ND | 12 | 77 | .3 | 3 | 2 | 24 | 2.51 | .038 | 24 | 112 | .58 | 38 | .18 | 4 | 1.21 | .09 | .38 | 1 |
| JG-58-19-5 | 1 | 8 | 26 | 90 | .1 | 13 | 11 | 419 | 3.12 | 2 | 5 | ND | 18 | 59 | .2 | 2 | 2 | 55 | .72 | .038 | 26 | 86 | 1.33 | 229 | .28 | 7 | 1.97 | .13 | 1.27 | 1 |
| JG-58-19-8 | 1 | 28 | 30 | 98 | .1 | 18 | 23 | 502 | 3.54 | 2 | 5 | ND | 8 | 62 | .2 | 2 | 2 | 77 | 2.01 | .042 | 21 | 136 | 2.22 | 644 | .38 | 5 | 2.39 | .18 | 1.29 | 1 |
| JG-58-19-9 | 1 | 7 | 15 | 156 | .4 | 61 | 26 | 615 | 4.87 | 2 | 5 | ND | 15 | 86 | .5 | 2 | 2 | 78 | 1.10 | .071 | 46 | 204 | 3.26 | 1413 | .48 | 5 | 3.95 | .17 | 2.74 | 1 |
| JG-58-20-6 | 1 | 40 | 14 | 87 | .3 | 14 | 19 | 534 | 3.69 | 2 | 5 | ND | 12 | 51 | .2 | 2 | 2 | 86 | .93 | .116 | 32 | 157 | 2.39 | 704 | .36 | 5 | 2.59 | .17 | 1.84 | 1 |
| JG-58-21-1 | 1 | 71 | 16 | 80 | .7 | 101 | 26 | 556 | 3.71 | 2 | 5 | ND | 15 | 105 | .4 | 4 | 2 | 81 | 1.19 | .218 | 32 | 402 | 3.68 | 1268 | .35 | 6 | 3.32 | .07 | 2.67 | 2 |
| JG-58-23-1 | 1 | 16 | 45 | 71 | .4 | 15 | 6 | 284 | 1.42 | 2 | 5 | ND | 10 | 116 | .3 | 3 | 2 | 42 | 1.97 | .100 | 22 | 147 | .66 | 44 | .11 | 6 | 1.42 | .07 | .38 | 6 |
| JG-58-23-2 | 2 | 8 | 27 | 40 | .1 | 6 | 2 | 171 | .83 | 2 | 5 | ND | 27 | 17 | .2 | 2 | 2 | 10 | .17 | .030 | 21 | 109 | .29 | 90 | .06 | 12 | .63 | .10 | .42 | 2 |
| JG-58-42-5 | 1 | 60 | 22 | 97 | .3 | 31 | 13 | 310 | 4.15 | 2 | 5 | ND | 21 | 10 | .2 | 2 | 2 | 49 | .27 | .015 | 36 | 79 | 1.25 | 94 | .21 | 2 | 1.92 | .03 | .59 | 1 |
| JG-58-43-5 | 3 | 14 | 36 | 84 | .2 | 22 | 8 | 249 | 2.89 | 2 | 5 | ND | 9 | 14 | .2 | 2 | 2 | 71 | .25 | .011 | 22 | 181 | 1.25 | 181 | .25 | 5 | 1.98 | .11 | .87 | 1 |
| JG-58-74-9 | 1 | 3 | 16 | 55 | .1 | 8 | 8 | 154 | 1.25 | 2 | 5 | ND | 17 | 13 | .2 | 2 | 2 | 20 | .14 | .024 | 23 | 175 | .62 | 55 | .01 | 8 | 1.06 | .05 | .31 | 1 |
| JG-58-527-1 | 5 | 100 | 21 | 100 | .4 | 16 | 16 | 621 | 3.65 | 2 | 5 | ND | 26 | 48 | .2 | 2 | 2 | 75 | .64 | .111 | 64 | 115 | 2.19 | 241 | .28 | 3 | 2.17 | .14 | 1.79 | 73 |
| JG-58-548-1 | 1 | 7 | 19 | 62 | .1 | 15 | 11 | 244 | 3.22 | 2 | 5 | ND | 12 | 44 | .2 | 2 | 2 | 72 | .59 | .046 | 32 | 176 | 1.82 | 372 | .21 | 6 | 1.93 | .26 | .95 | 1 |
| JG-58-594-1 | 10 | 23 | 38 | 40 | .1 | 7 | 2 | 224 | 2.27 | 2 | 5 | ND | 17 | 13 | .2 | 2 | 2 | 39 | .08 | .008 | 32 | 223 | .37 | 83 | .10 | 7 | 1.15 | .17 | .71 | 1 |
| JG-58-1001-1 | 2 | 21 | 48 | 34 | .6 | 7 | 2 | 84 | .70 | 3 | 5 | ND | 2 | 5 | .2 | 2 | 5 | 8 | .22 | .060 | 3 | 281 | .17 | 48 | .01 | 4 | .69 | .04 | .38 | 1 |
| JG-58-1025-2 | 3 | 6 | 27 | 56 | .3 | 7 | 5 | 349 | 1.61 | 2 | 5 | ND | 17 | 58 | .2 | 2 | 2 | 29 | .73 | .027 | 37 | 151 | .62 | 106 | .20 | 8 | 1.49 | .23 | .72 | 1 |
| JG-58-1027-1 | 1 | 6 | 21 | 84 | .3 | 27 | 17 | 450 | 3.28 | 2 | 5 | ND | 8 | 101 | .2 | 2 | 2 | 77 | 1.23 | .046 | 22 | 166 | 2.07 | 531 | .34 | 4 | 2.83 | .32 | 1.26 | 1 |
| JG-58-1027-2 | 2 | 12 | 9 | 74 | .9 | 84 | 22 | 452 | 3.44 | 4 | 5 | ND | 15 | 68 | .2 | 2 | 2 | 84 | 1.01 | .224 | 46 | 495 | 2.95 | 775 | .32 | 4 | 2.07 | .07 | 2.02 | 1 |
| JG-58-1027-3 | 2 | 13 | 16 | 66 | .1 | 14 | 7 | 336 | 1.99 | 2 | 5 | ND | 14 | 45 | .2 | 2 | 2 | 21 | .39 | .027 | 27 | 121 | .83 | 279 | .16 | 8 | 1.57 | .10 | .97 | 1 |
| JG-58-1082-2 | 1 | 7 | 14 | 80 | .2 | 8 | 10 | 478 | 3.03 | 3 | 5 | ND | 28 | 79 | .2 | 3 | 2 | 31 | .73 | .098 | 189 | 63 | 1.31 | 41 | .02 | 3 | 1.61 | .08 | .09 | 1 |
| STANDARD C | 19 | 60 | 38 | 132 | 7.6 | 69 | 31 | 1064 | 3.96 | 41 | 16 | 7 | 37 | 52 | 18.9 | 15 | 21 | 58 | .50 | .086 | 40 | 60 | .91 | 190 | .09 | 34 | 1.88 | .08 | .16 | 11 |

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER. THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL, AU DETECTION LIMIT BY ICP IS 3 PPM.
 - SAMPLE TYPE: PULP Samples beginning 'RE' are duplicate samples.

| SAMPLE# | Mo ppm | Cu ppm | Pb ppm | Zn ppm | Ag ppm | Ni ppm | Co ppm | Mn ppm | Fe % | As ppm | U ppm | Au ppm | Th ppm | Sr ppm | Cd ppm | Sb ppm | Bi ppm | V ppm | Ca % | P % | La ppm | Cr ppm | Mg % | Ba ppm | Ti % | B ppm | Al % | Na % | K % | W ppm |
|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------|-----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|---------|--------|-----------|-----------|---------|-----------|---------|----------|---------|---------|--------|----------|
| JG-60-47-4 | 2 | 21 | 14 | 30 | 1 | 4 | 6 | 63 | 1.62 | 2 | 5 | ND | 13 | 5 | .2 | 2 | 2 | 7 | .08 | .023 | 19 | 71 | .28 | 51 | .02 | 2 | .64 | .02 | .09 | 1 |
| JG-60-136-6 | 1 | 20 | 21 | 89 | 1 | 9 | 11 | 416 | 2.46 | 9 | 5 | ND | 15 | 25 | .2 | 2 | 2 | 33 | .63 | .056 | 56 | 158 | .92 | 255 | .21 | 7 | 1.41 | .10 | .87 | 1 |
| JG-60-136-7 | 7 | 14 | 38 | 69 | 1 | 9 | 4 | 192 | 2.41 | 29 | 5 | ND | 14 | 9 | .2 | 2 | 2 | 17 | .05 | .011 | 22 | 368 | .54 | 62 | .07 | 3 | .97 | .06 | .36 | 2 |
| JG-60-138-8 | 2 | 11 | 26 | 75 | 1 | 14 | 9 | 239 | 2.58 | 16 | 5 | ND | 20 | 7 | .2 | 2 | 2 | 17 | .09 | .017 | 47 | 250 | .65 | 68 | .10 | 10 | 1.47 | .05 | .53 | 2 |
| JG-60-139-7 | 6 | 4 | 30 | 8 | 1 | 1 | 3 | 43 | .57 | 2 | 5 | ND | 39 | 6 | .2 | 3 | 4 | 3 | .03 | .015 | 40 | 325 | .03 | 81 | .01 | 7 | .38 | .01 | .27 | 348 |
| JG-60-139-9 | 1 | 16 | 8 | 20 | 1 | 7 | 4 | 271 | .80 | 4 | 5 | ND | 6 | 47 | .2 | 4 | 11 | 11 | 2.60 | .027 | 17 | 137 | .54 | 29 | .13 | 2 | .59 | .02 | .03 | 1155 |
| JG-60-140-2 | 2 | 6 | 13 | 102 | 1 | 12 | 24 | 622 | 4.87 | 8 | 5 | ND | 13 | 58 | .3 | 3 | 5 | 97 | .90 | .048 | 31 | 185 | 2.62 | 490 | .37 | 3 | 3.46 | .10 | 1.97 | 8 |
| JG-60-140-4 | 1 | 17 | 21 | 55 | 1 | 8 | 16 | 330 | 3.10 | 9 | 5 | ND | 11 | 71 | .2 | 2 | 6 | 84 | 1.15 | .056 | 30 | 224 | 1.90 | 234 | .28 | 13 | 2.69 | .23 | 1.03 | 12 |
| JG-60-140-6 | 3 | 18 | 22 | 44 | 1 | 2 | 6 | 241 | 1.65 | 7 | 5 | ND | 1 | 122 | .2 | 2 | 2 | 41 | 1.32 | .026 | 11 | 220 | .69 | 78 | .11 | 4 | 1.35 | .03 | .19 | 4 |
| JG-60-147-1 | 2 | 14 | 36 | 68 | 1 | 9 | 6 | 271 | 2.09 | 5 | 5 | ND | 17 | 17 | .2 | 2 | 2 | 27 | .17 | .028 | 17 | 222 | .80 | 130 | .12 | 4 | 1.24 | .08 | .67 | 4 |
| JG-60-147-7 | 392 | 18 | 18 | 15 | 1 | 1 | 4 | 47 | 1.23 | 800 | 5 | ND | 15 | 6 | .2 | 2 | 13 | 5 | .04 | .026 | 10 | 129 | .10 | 38 | .01 | 20 | .33 | .01 | .14 | 3 |
| JG-60-519-1 | 5 | 9 | 13 | 70 | 1 | 7 | 7 | 318 | 2.79 | 29 | 5 | ND | 102 | 22 | .2 | 2 | 6 | 25 | .40 | .069 | 395 | 140 | .56 | 189 | .19 | 9 | 1.08 | .05 | .67 | 2 |
| JG-60-715-1 | 5 | 2 | 14 | 66 | 1 | 5 | 11 | 506 | 2.69 | 16 | 5 | ND | 14 | 32 | .2 | 2 | 2 | 61 | .52 | .035 | 33 | 157 | .72 | 101 | .23 | 7 | 1.43 | .07 | .73 | 6 |
| JG-60-715-4 | 3 | 12 | 46 | 24 | 1 | 10 | 3 | 77 | 1.05 | 4 | 10 | ND | 28 | 6 | .2 | 2 | 2 | 7 | .03 | .015 | 15 | 198 | .14 | 28 | .02 | 6 | .45 | .02 | .24 | 1 |
| JG-60-715-6 | 4 | 2 | 23 | 50 | 1 | 4 | 6 | 437 | 1.11 | 4 | 5 | ND | 16 | 64 | .2 | 2 | 2 | 25 | .92 | .031 | 28 | 180 | .86 | 42 | .09 | 22 | 1.48 | .04 | .32 | 65 |
| JG-60-715-7 | 2 | 12 | 43 | 48 | 1 | 10 | 4 | 488 | .74 | 9 | 5 | ND | 12 | 134 | .3 | 2 | 2 | 24 | 5.35 | .060 | 31 | 197 | .23 | 17 | .19 | 6 | 1.55 | .04 | .04 | 9 |
| JG-61-194-6a | 70 | 15 | 17 | 40 | 1 | 11 | 6 | 105 | 1.39 | 10 | 5 | ND | 50 | 12 | .5 | 2 | 2 | 20 | .17 | .008 | 70 | 157 | .46 | 61 | .13 | 10 | .88 | .10 | .46 | 3 |
| JG-61-194-6b | 2 | 8 | 22 | 66 | 1 | 22 | 11 | 285 | 2.91 | 15 | 5 | ND | 28 | 17 | .3 | 2 | 2 | 71 | .20 | .025 | 64 | 235 | 1.21 | 225 | .31 | 6 | 1.95 | .10 | 1.01 | 2 |
| JG-61-466-6 | 3 | 2 | 10 | 57 | 1 | 37 | 10 | 153 | 3.00 | 8 | 5 | ND | 19 | 7 | .2 | 2 | 2 | 25 | .06 | .006 | 42 | 87 | .53 | 52 | .01 | 2 | 1.66 | .01 | .27 | 2 |
| JG-61-495-1a | 1 | 51 | 28 | 103 | 1 | 19 | 22 | 435 | 5.15 | 28461 | 5 | ND | 9 | 43 | .2 | 2 | 26 | 62 | .87 | .066 | 28 | 106 | 2.16 | 84 | .13 | 2 | 2.54 | .16 | .36 | 5749 |
| JG-61-495-1b | 4 | 6 | 20 | 54 | 1 | 86 | 55 | 222 | 8.78 | 99999 | 5 | ND | 7 | 36 | .2 | 2 | 205 | 19 | .68 | .077 | 21 | 154 | 1.13 | 41 | .04 | 2 | 1.49 | .12 | .17 | 5948 |
| JG-61-495-1c | 2 | 87 | 70 | 132 | 1 | 27 | 43 | 367 | 6.22 | 41772 | 5 | ND | 17 | 51 | .2 | 3 | 38 | 71 | 1.22 | .090 | 39 | 167 | 1.80 | 69 | .14 | 2 | 2.23 | .07 | .22 | 6236 |
| JG-61-495-2 | 2 | 5 | 4 | 51 | 1 | 5 | 12 | 403 | 3.13 | 284 | 5 | ND | 2 | 22 | .2 | 2 | 3 | 66 | .38 | .056 | 33 | 149 | 1.37 | 492 | .21 | 2 | 1.79 | .09 | 1.00 | 46 |
| JG-61-495-3 | 15 | 26 | 41 | 101 | 1 | 11 | 24 | 473 | 4.41 | 386 | 5 | ND | 4 | 56 | .4 | 2 | 2 | 84 | 1.71 | .096 | 27 | 111 | 1.65 | 118 | .18 | 2 | 2.81 | .18 | .31 | 59 |
| JG-61-495-4 | 4 | 11 | 16 | 70 | 1 | 31 | 13 | 465 | 3.43 | 63 | 5 | ND | 1 | 62 | .2 | 2 | 4 | 78 | 1.96 | .028 | 11 | 272 | .82 | 166 | .15 | 13 | 2.21 | .08 | .36 | 10 |
| JG-61-503-1 | 3 | 36 | 13 | 41 | 1 | 115 | 23 | 149 | 3.19 | 37 | 5 | ND | 13 | 6 | .2 | 2 | 2 | 26 | .08 | .003 | 24 | 335 | .69 | 50 | .04 | 6 | 1.31 | .04 | .18 | 10 |
| JG-63-505-1 | 6 | 35 | 17 | 49 | 1 | 10 | 7 | 161 | 2.27 | 15 | 5 | ND | 11 | 6 | .2 | 2 | 5 | 22 | .07 | .009 | 26 | 352 | .57 | 29 | .04 | 2 | .95 | .04 | .20 | 4 |
| JG-63-556-1 | 5 | 59 | 16 | 116 | 1 | 24 | 22 | 774 | 5.12 | 15 | 5 | ND | 6 | 26 | .3 | 2 | 5 | 53 | .34 | .011 | 18 | 144 | 1.95 | 557 | .29 | 2 | 2.75 | .06 | 1.29 | 3 |
| JG-74-25a | 3 | 28 | 22 | 43 | 1 | 12 | 6 | 181 | 2.41 | 6 | 5 | ND | 13 | 5 | .2 | 2 | 2 | 12 | .08 | .025 | 16 | 104 | .79 | 61 | .01 | 2 | 1.32 | .01 | .24 | 2 |
| JG-74-25b | 3 | 23 | 17 | 41 | 1 | 15 | 6 | 182 | 2.52 | 9 | 5 | ND | 17 | 7 | .2 | 2 | 2 | 11 | .11 | .031 | 15 | 159 | .77 | 84 | .01 | 6 | 1.48 | .04 | .30 | 3 |
| JG-74-25c | 4 | 37 | 17 | 60 | 1 | 20 | 12 | 221 | 3.72 | 18 | 5 | ND | 21 | 9 | .2 | 2 | 5 | 43 | .06 | .010 | 44 | 217 | .97 | 124 | .14 | 6 | 1.99 | .04 | .85 | 2 |
| STANDARD C | 19 | 59 | 41 | 134 | 1 | 71 | 32 | 1086 | 3.96 | 42 | 19 | 7 | 39 | 52 | 18.9 | 16 | 21 | 60 | .50 | .085 | 39 | 62 | .92 | 183 | .09 | 34 | 1.89 | .06 | .14 | 11 |

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Sample type: PULP. Samples beginning 'RE' are duplicate samples.