

# MAR 20120014: BOTHA RIVER

Botha River - A report on ironstone exploration in the Botha river area, west-central Alberta.

Received date: Sep 18, 2012

Public release date: Sep 18, 2013

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September 16, 2012

Coal and Mineral Development  
Resource Revenue and Operations | Alberta Energy  
North Petroleum Plaza, 11th Floor, 9945 - 108 Street  
Edmonton, Alberta, T5K 2G6

To Whom it May Concern,

Re: Metallic and Industrial Mineral Permit Nos. 9310091036, 9310091037, 9310091038, 9310110407,  
9310110408, 9310110409, 9310110409, 9310110410, 9310110411, 9310110412.

Attached are the required copies of the assessment work report titled “Botha River Project” prepared by Ironstone Resources Ltd.

We will be canceling some of the land associated with the above permits, and have expended a sufficient amount to extend the remaining permits for a further 2 year period.

If you require further information, please contact the undersigned at (403)640-7977 or by email at [andrew@ironstonerесources.com](mailto:andrew@ironstonerесources.com)

Respectfully,

A large black rectangular box used to redact a signature.

Andrew Reader, B.Sc.  
Geologist, Exploration and Development

# ASSESSMENT WORK

## PART B TECHNICAL REPORT

### METALLIC AND INDUSTRIAL MINERALS PERMIT NUMBERS

9310091036	9310091037	9310091038
9310110407	9310110408	9310110409
9310110410	9310110411	9310110412

### BOTHA RIVER PROJECT NTS: 084E

**IRONSTONE RESOURCES LTD.**

**COVERING THE PERIOD**

**SEPTEMBER 17, 2010 to SEPTEMBER 16, 2012**

**SUBMITTED BY**

**ANDREW READER, B.Sc.  
GEOLOGIST, EXPLORATION & DEVELOPMENT**

**LIAM MURPHY, B.Sc.  
GEOLOGIST, EXPLORATION & DEVELOPMENT**

**SEPTEMBER 16, 2012**

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## **Executive Summary**

Ironstone Resources Ltd. (Ironstone) acquired three Metallic & Industrial Mineral Permits in the Chinchaga River area of northwestern Alberta in September of 2010. The Botha River property was permitted due to historic assessment reports claiming to have located a gold-bearing sandstone formation with assays up to 47 grams per tonne ("g/t") Au. A second contiguous group of six Metallic & Industrial Mineral Permits were subsequently acquired in November of 2010.

Two field excursions were completed by Ironstone geologists. One was completed in 2010 for initial reconnaissance of the iron and gold-bearing Kaskapau formation which crops within the permit area. Assays from samples collected returned approximately 2.3 g/T Au. A second field excursion was completed in October 2011, which focused on the stratigraphic and bulk sampling, and reconnaissance of the Botha River permits.

Following review of the data collected in October, a drilling program was conducted in April and May 2012 over 8 days in the Botha River area. Samples collected were assayed for precious metals and underwent multi-element analyses.

## **Introduction**

The Botha River permits were originally acquired by Ironstone Resources Ltd. (Ironstone) on the basis that work completed by Marum Resources indicated the presence of a gold-bearing iron-bearing formation along the banks of the Botha River (Balzer & Besserer, 2000). Assays up to 47.2 g/t Au were observed from float samples of the iron-bearing unit during Marum's exploration of the area.

In the summer of 2010, Ironstone acquired three exploration permits around the location of the noted outcrops and completed a field excursion to sample them. Samples collected from the Botha River outcrop returned assays of approximately 2.3 g/T Au. Upon the receipt of these assays, Ironstone acquired an additional 6 permits around the existing three.

In October 2011, Ironstone geologists returned to the Botha River property, and spent several days sampling outcrop and exploring for additional outcrop. Details of this work are summarized below.

Following the results obtained from the October 2011 work, a heli-drilling program was planned and completed in April and May 2012. Four holes were drilled over eight days, and the results are summarized below.

### ***Expenditure Statement***

Description	Expenditure
Salaries & Wages	\$63,007.5
Travel Expenses and Equipment Rental	\$12,151.54
Subcontracting Services (Drilling, Helicopter, etc.)	\$272,218.93
Geology	\$864.38
Geochemistry	\$5,122.75
Administrative	\$10,712.29

### ***Location and Access***

The Botha River property is located in northwestern Alberta from Township 97 to Township 100, and Range 1 W6M to Range 5 W6M (Figure 2). The main iron-bearing outcrops present on this property are located approximately 80 kilometers northwest of Manning, AB.

Access to the southern third of the property is possible from the Chinchaga Forestry Road, north along various oil and gas lease roads. In the north, an unmaintained road accesses the Keg River fire tower (Figure 4). The majority of the property is densely vegetated, and is not accessible by road. Because of this, helicopter is the best choice for accessing the property.

### ***Mineralogy & Stratigraphy***

The iron rich unit present in the Botha River property has not been the subject of any in-depth mineralogical studies to date. It appears as though this unit bears some similarity to ooidal ironstones, which are well known in the Clear Hills area, however the unit also displays some major differences from the Clear Hills ironstones.

The unit has a very high proportion of mud and silt in comparison to the Clear Hills ironstones. In addition, ooid mineralogy is drastically different, with most ooids observed in the Botha River area being made up of carbonate material rather than iron-bearing minerals. All iron-bearing units observed in the Botha



Figure 1: Botha River outcrop ("BR1")

River area show reactivity to HCl. While the ooids are primarily carbonate ooids, the unit itself still contains a significant amount of iron, as can be seen in outcrop (Figure 1).

Work by the AGS was completed on the Botha River outcrops, and dating was attempted using palynology. Analysis showed that these units are part of the Lower Kaskapau formation, significantly older than the Bad Heart formation Clear Hills ironstone deposits (Kafle, 2009).

## Metallic and Industrial Mineral Permits

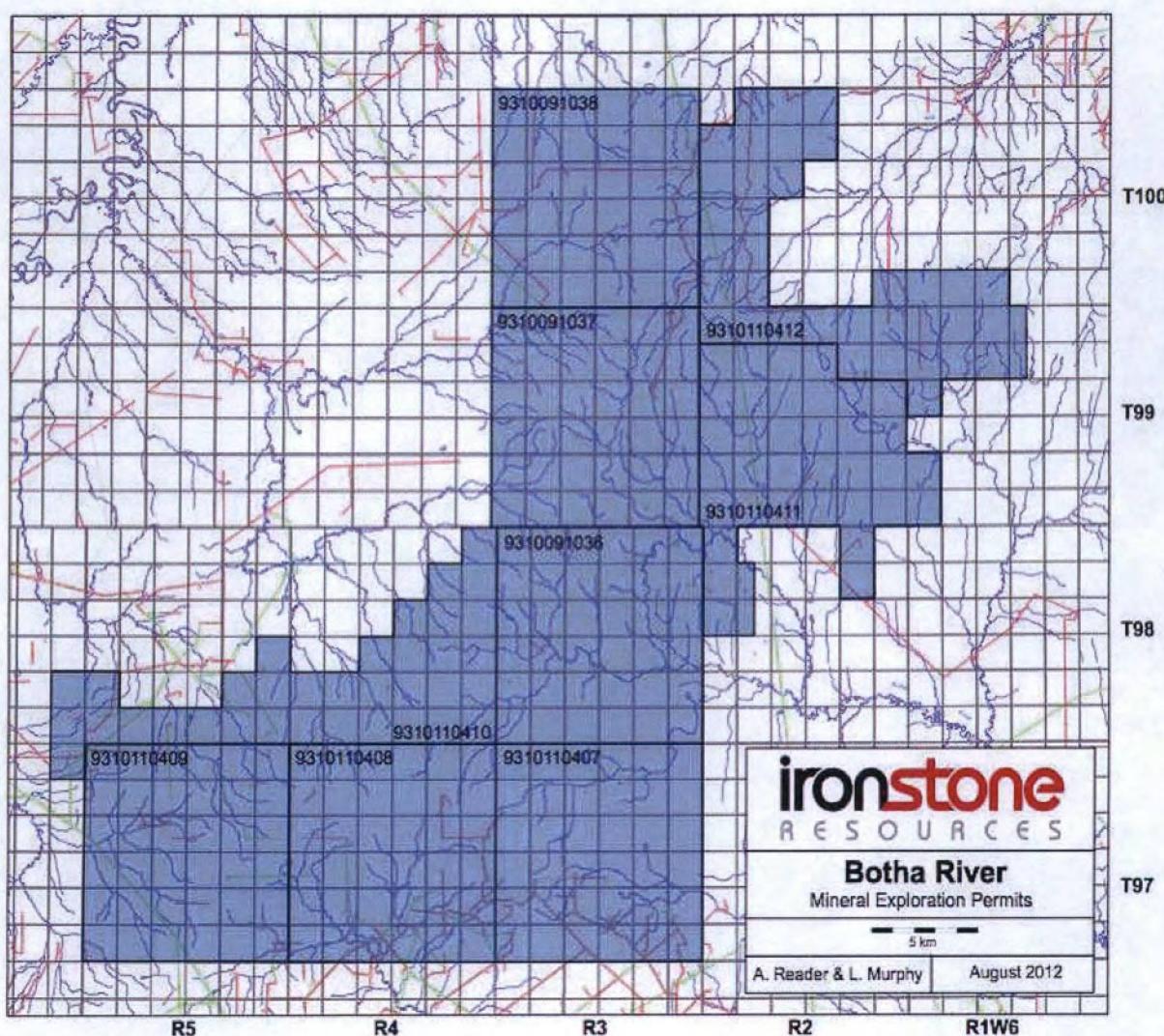


Figure 2: Botha River Metallic and Industrial Mineral Permits

## **Work Performed**

### ***Initial Field Reconnaissance***

During the summer of 2010, a short field reconnaissance trip was completed to the Botha River property by helicopter. Ironstone staff flew over the southern two-thirds of the property looking for outcrop and infrastructure in the area.

A previously sampled outcrop (“BR1”) was visited, described, and sampled along the width exposed.

### ***Sampling Program***

During October 2011, several days were spent exploring the Botha River property by helicopter. The main objective was to complete a thorough sampling program of outcrops on the property as well as to evaluate the infrastructure present in and around the property. Three separate outcrops were hand trenched and sampled stratigraphically. Bulk samples were collected from one outcrop with prior gold assays. Road access around the property was observed and plotted for future use in drilling and additional sampling.

### ***Drilling Program***

In April and May of 2012, a four-hole helicopter-portable drill program was completed. The program was designed to test the extent of the iron formation, and acquire unaltered samples for chemical analysis. Radius Drilling (Prince George, BC) was contracted to drill all four holes in the drill program, and Northern Air Support (Rocky Mountain House, AB) was contracted to provide helicopter support. An AS350 B2 helicopter was used to transport crew and drilling equipment for the entirety of the drill program. All crew on the program stayed at the Battle River Oilfield Construction (Manning, AB) Kilometer 80 Chinchaga Forestry Road Open Camp.

The drill used was a heli-portable diamond drill rig (Figure 3). All core drilled was HQ3 in size and drilled in 5 foot runs. All core was described run-by-run



Figure 3: Drill Rig (April 30, 2012)

during drilling by Ironstone geologists. Boxes were sealed in the field and transported back to a locked trailer at camp. The drilling locations in relation to known outcrop are shown in Figure 4.

#### ***Core Sampling and Analytical***

The core collected during the Spring 2012 Botha River drilling program was taken to Clayhurst, BC, where it was cut in half, described, and sampled according to the sampling protocol used in previous Ironstone drilling programs (Reader, 2012. Caplan, 2008). All samples were shipped to Inspectorate Laboratories (Vancouver, BC) for analysis. Analysis included fire assay for gold, multi-element ICP, and specific gravity measurements.



Figure 4: Locations of 2012 drillholes, outcrops, and infrastructure

## Results Obtained

### *Initial Field Reconnaissance*

An outcrop previously sampled by the Alberta Geological Survey (AGS), and Marum Resources was located by Ironstone geologists during the summer of 2010. Samples were taken of the iron-rich sediment for assays and chemical analysis.

Two fire assays were completed on the outcrop samples from this trip – 2.29 g/T Au, and 2.34 g/T Au. These analyses were completed at the Saskatchewan Research Council (SRC, Saskatoon). The positive results from these assays led to Ironstone acquiring six additional permits around the original three Botha River permits.

### *Sampling Program*

The October 2011 sampling program was planned to acquire a more thorough set of samples from known outcrops, find new outcrops, and acquire bulk samples to be used in gold deportment tests.

The bedrock present within the Botha River property is not resistive, and thus, does not lend itself to forming steep slopes with high occurrences of bedrock exposure. As this is the case, only three outcrops of bedrock were located on the Botha River property – two of which were previously sampled by the AGS, and Marum Resources.

Outcrops were sampled stratigraphically over the zone of interest with sample intervals chosen according to the variations in lithology. Figure 5 shows one sample log showing general lithology and approximate sample location.

Two mud-rich iron-bearing units were sampled along or near the Botha River in the central area of the property, while an intensely iron-stained quartz rich sandstone at approximately the same elevation as the other outcrops was sampled towards the southwest of the property.

## Section: BR1

UTM: 0413279 E  
6374091 N

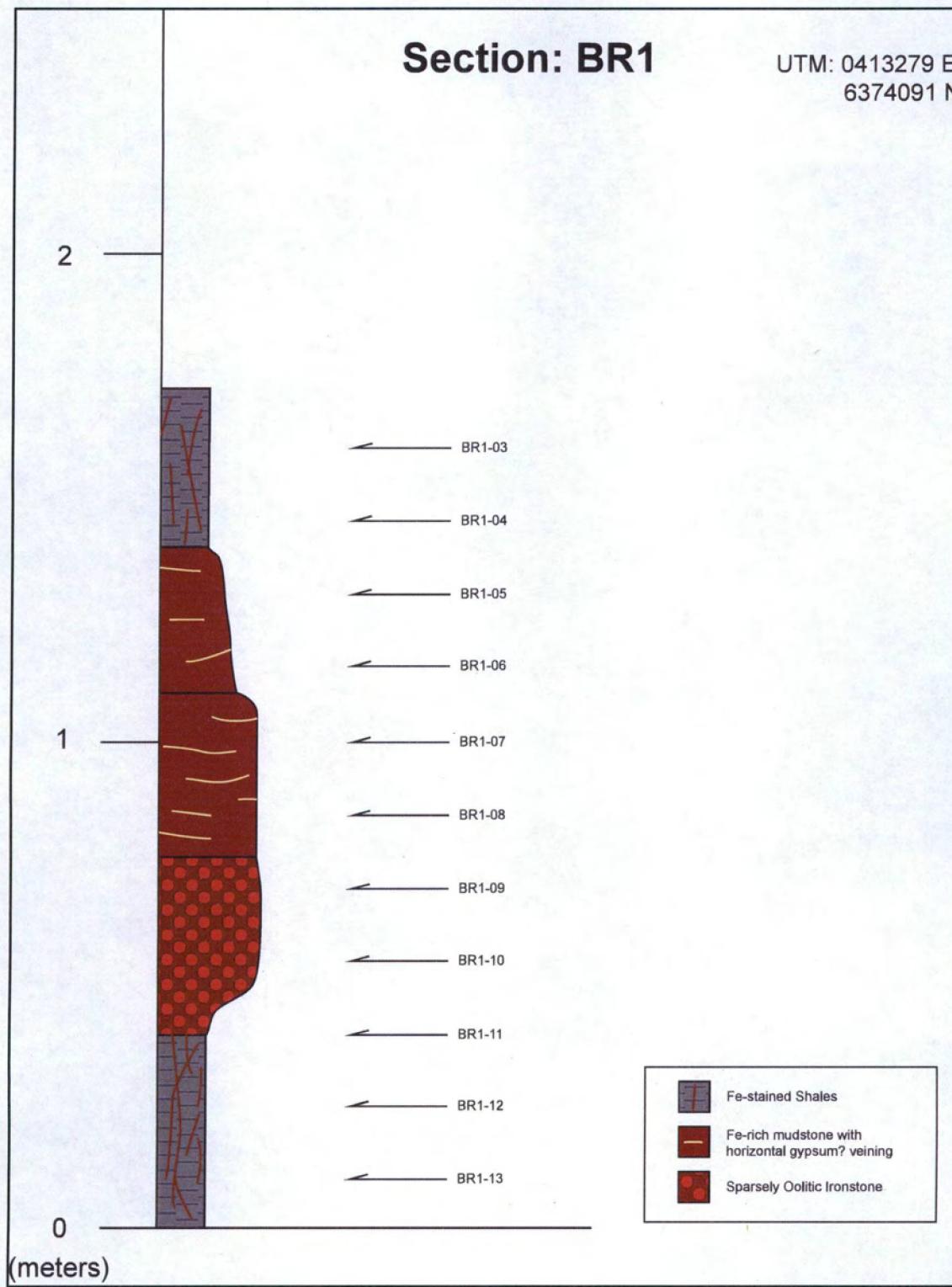


Figure 5: Botha River "BR1" Strat Section

Analyses were carried out on these samples at Loring Laboratories (Calgary, AB). Samples were analyzed for gold by fire assay, 30-element ICP analysis, major element whole rock analysis, or a combination of all three. Gold values from assays came back ranging from 0.06 g/T Au, up to 0.20 g/T Au. All analyses can be found in the attached technical appendix.

### ***Drilling Program***

A total of four holes were drilled on the Botha River permits. Drilling depths in the holes ranged from 113 to 203 feet, and were chosen to intersect the zone of interest. All four holes intersected and recovered the zone of interest during this drill program. The unit intersected is an oolitic sandstone with a high mud content throughout. The zone displays small (millimeter scale), sub-horizontal carbonate veining throughout. In addition to the carbonate veining, some parts of the zone displayed pyrite veining/networks, as well as pyrite replacement of ooids (Figure 6).

All core was sealed at the drillsite and transported back to camp where it was placed in a locked trailer. Following the completion of drilling, the core was transported to Clayhurst, BC for detailed description and sampling.

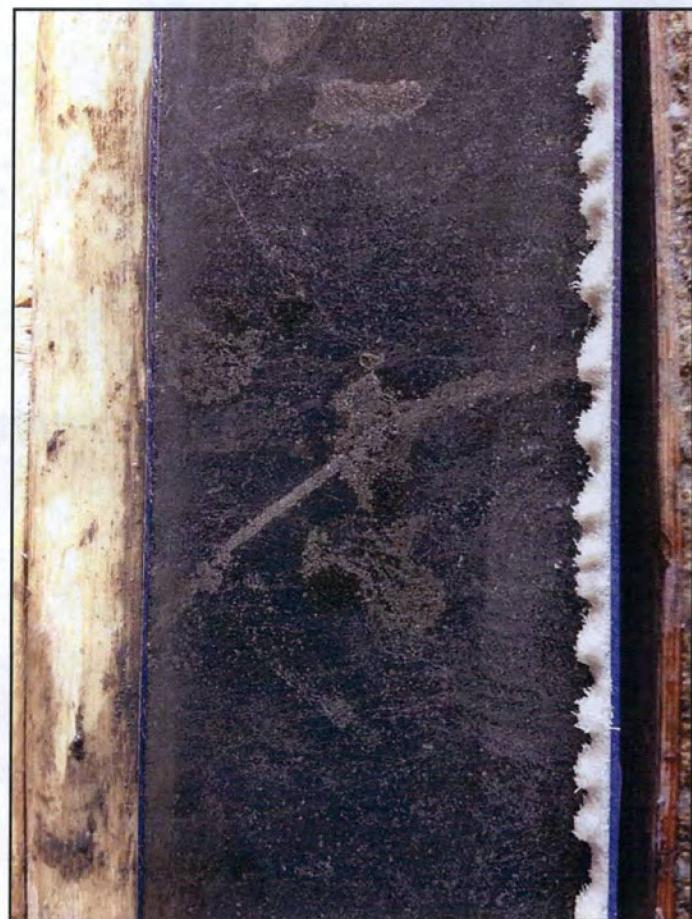


Figure 6: Drill core from Botha River 2012 Drill program displaying pyrite veining

### ***Core Sampling and Analytical***

Core from the 2012 drilling program was sampled using similar protocol to previous Ironstone drilling programs. All core was halved, and washed for description and photography. Following the description of the core, the core was further quartered and samples were taken of each quarter for geochemical and metallurgical analysis. Sample intervals were commonly at 30 centimeter intervals, but occasionally varied due to lithology changes.

Core logs, core descriptions, and sample logs are attached in the technical appendix.

Fire assay results from the core recovered during the 2012 drilling program came back with essentially trace amounts of gold. ICP analysis shows that several metals are elevated in the zone of interest, particularly iron and zinc. Analytical results are attached in the technical appendix.

## **Conclusion**

The description of a gold-bearing zone in the Botha River area by Marum Resources in the 1990s led to Ironstone acquiring nine Metallic and Industrial Mineral permits around the region during the summer and fall of 2010.

Initial field work by Ironstone suggested that a gold-bearing zone does exist in the Botha River area. Gold assays were completed on outcrop samples and ranged from 0.06 g/T Au up to 2.3 g/T Au.

Follow-up drilling showed that the zone of interest continues throughout the property, and displays some interesting lithological features. Unfortunately at this time, no samples from drill core returned gold values of interest. More work is required to determine if the assay results are reliable, or if the gold grades in the Botha River area may be inconsistent.

## **Author**

Andrew Reader, B.Sc., Geologist, Exploration and Development, of Ironstone Resources, is the author of this report.

Mr. Reader graduated from the University of Calgary in April 2011 with a Bachelor of Science degree in Geology. He has worked for Ironstone Resources since May 2010, and has been involved in the mapping, and sampling of the Smoky River property since it was acquired. Mr. Reader completed his undergraduate thesis on the Clear Hills Bad Heart formation iron deposits in 2011. Mr. Reader is currently a member in training with the Association of Professional Engineers and Geoscientists of Alberta (APEGA).

## References

Balzer, S.A. and D.J., Besserer, 2000, Assessment Report: Chinchaga Property, Northwest Alberta, APEX Geoscience Ltd. – Alberta Department of Energy: Mineral Assessment Report

Caplan, B.R. (2010) “Clear Hills Project” – Alberta Department of Energy: Mineral Assessment Report 20100014

Kafle, B. (2009) “Geochemistry and Preliminary Stratigraphy of Ooidal Ironstone of the Bad Heart Formation, Clear Hills and Smoky River Regions, Northwestern Alberta”, ERCB/AGS Open File Report 2009-001

Reader, A. (2012) “Clear Hills Project” – Alberta Department of Energy: Mineral Assessment Report 20120011

Reader, A., Murphy, L. (2011) “2011 Alberta Field Reconnaissance Report”, Ironstone Resources Internal Document

# ASSESSMENT WORK

## PART C TECHNICAL APPENDICES

### METALLIC AND INDUSTRIAL MINERALS PERMIT NUMBERS

9310091036	9310091037	9310091038
9310110407	9310110408	9310110409
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**LIAM MURPHY, B.Sc.  
GEOLOGIST, EXPLORATION & DEVELOPMENT**

**SEPTEMBER 16, 2012**

## **APPENDIX**

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**Botha River 2011  
Sample Descriptions**

**Botha River 2011 Sample Descriptions**

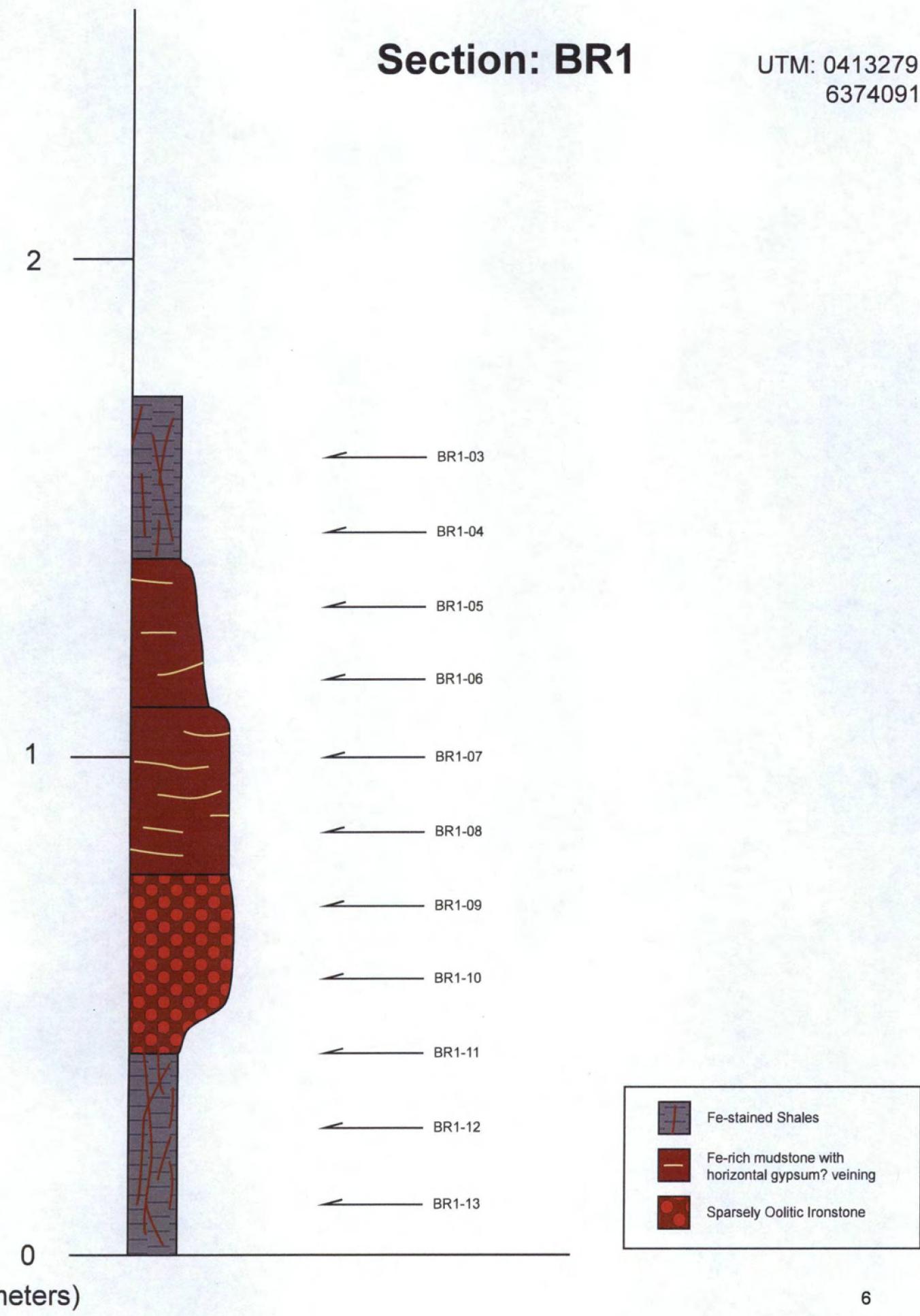
Sample ID	Easting	Northing	Zone	Elevation	Description	Date
BR1 Bulk Sample	413279	6374091	11	786	Bulk Sample of iron outcrop for Gold analysis.	October 20 2011
BR1-01	413279	6374091	11	786	Sandy shaly sample with white stain/weathering. Taken near BR1-05/06 in strat sampling.	October 20 2011
BR1-02	413279	6374091	11	782	Green mud with light coloured ooids. Possible sulphides observed in this sample.	October 20 2011
BR1-03	413279	6374091	11	786	First Sample of strat sampling. Interbedded shale and sand with iron staining.	October 20 2011
BR1-04	413279	6374091	11	786	Sample 15 cm below BR1-03. Iron stained shales	October 20 2011
BR1-05	413279	6374091	11	786	Sample 15 cm below BR1-04. Slightly more resistive iron-stained muds	October 20 2011
BR1-06	413279	6374091	11	786	Sample 15 cm below BR1-05. Iron stained shales with horizontal to sub-horizontal 'veins'	October 20 2011
BR1-07	413279	6374091	11	786	Sample 15 cm below BR1-06. Heavy iron stained dense mud. White stain on expose/weathered surface.	October 20 2011
BR1-08	413279	6374091	11	786	Sample 15 cm below BR1-07. Heavy iron stained mud. White stain on exposed/weathered surface.	October 20 2011
BR1-09	413279	6374091	11	786	Sample 15 cm below BR1-08. Sparsely to moderately oolitic.	October 20 2011
BR1-10	413279	6374091	11	786	Sample 15 cm below BR1-09. Sparsely to moderately oolitic.	October 20 2011
BR1-11	413279	6374091	11	786	Sample 15 cm below BR1-10. more mud than above. Abundant iron staining.	October 20 2011
BR1-12	413279	6374091	11	786	Sample 15 cm below BR1-11. More shale than above intesne iron staining present in vertical fractures (ferruginization)	October 20 2011
BR1-13	413279	6374091	11	786	Sample 15 cm below BR1-12. Shale. Some iron staining.	October 20 2011
BR2-01	417547	6380691	11	790	First Sample of strat sampling. Shale with iron staining.	October 21 2011
BR2-02	417547	6380691	11	790	Sample 15 cm below BR2-01. shale with iron staining.	October 21 2011
BR2-03	417547	6380691	11	790	Sample 15 cm below BR2-02. Shale with iron staining.	October 21 2011
BR2-04	417547	6380691	11	790	Sample 15 cm below BR2-03. Higher resistivity than BR2-03. Intense iron staining. High clay content.	October 21 2011
BR2-05	417547	6380691	11	790	Sample 15 cm below BR2-04. Intense iron staining, high clay content. More fissile than above.	October 21 2011
BR2-06	417547	6380691	11	790	Sample 15 cm below BR2-05. High clay content. Sparsely oolitic.	October 21 2011
BR2-07	417547	6380691	11	790	Sample 15 cm below BR2-06. High clay content. Sparsely oolitic.	October 21 2011
BR2-08	417547	6380691	11	790	Sample 15 cm below BR2-07. High Clay content. No ooids.	October 21 2011
BR2-09	417547	6380691	11	790	Sample 15 cm below BR2-08. High Clay content. Lower iron staining	October 21 2011
BF-1	404590	6361747	11	790	Botha Float. Iron Concretions present as float on either side of river	October 21 2011
BRS-1	404519	6361729	11	785	Sediment sample from Stapleton Sample site.	October 21 2011
BR3-01	385359	6361282	11	780	Top of section. Shaley concretion. Iron staining.	October 22 2011
BR3-02	385359	6361282	11	780	More resistive. More sandy. Heavy Iron staining	October 22 2011
BR3-03	385359	6361282	11	780	More resistive. More sandy. Heavy Iron staining	October 22 2011
BR3-04	385359	6361282	11	780	Less resistive sand. Heavy Iron staining.	October 22 2011
BM1	418210	6341174	11	688	Iron rich muck seeping from Hotchkiss river bank	October 23 2011
BRF2	392663	6373367	11	na	Iron nodule float found in borrow pit by side of road.	October 23 2011



**Botha River 2011  
Stratigraphic Sections**

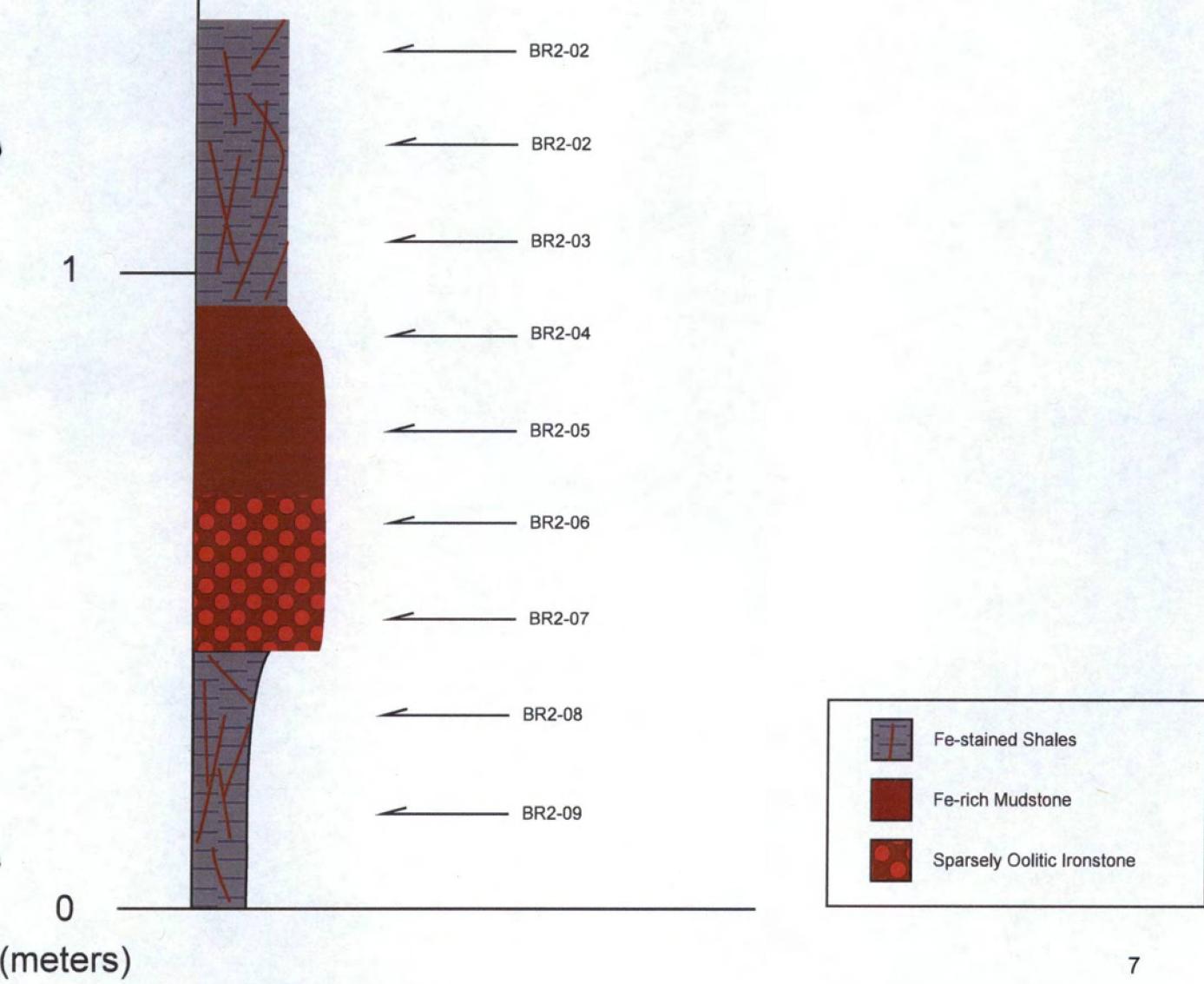
# Section: BR1

UTM: 0413279 E  
6374091 N



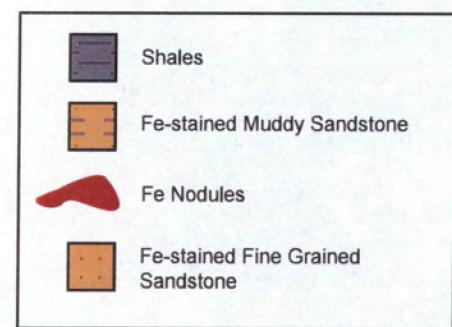
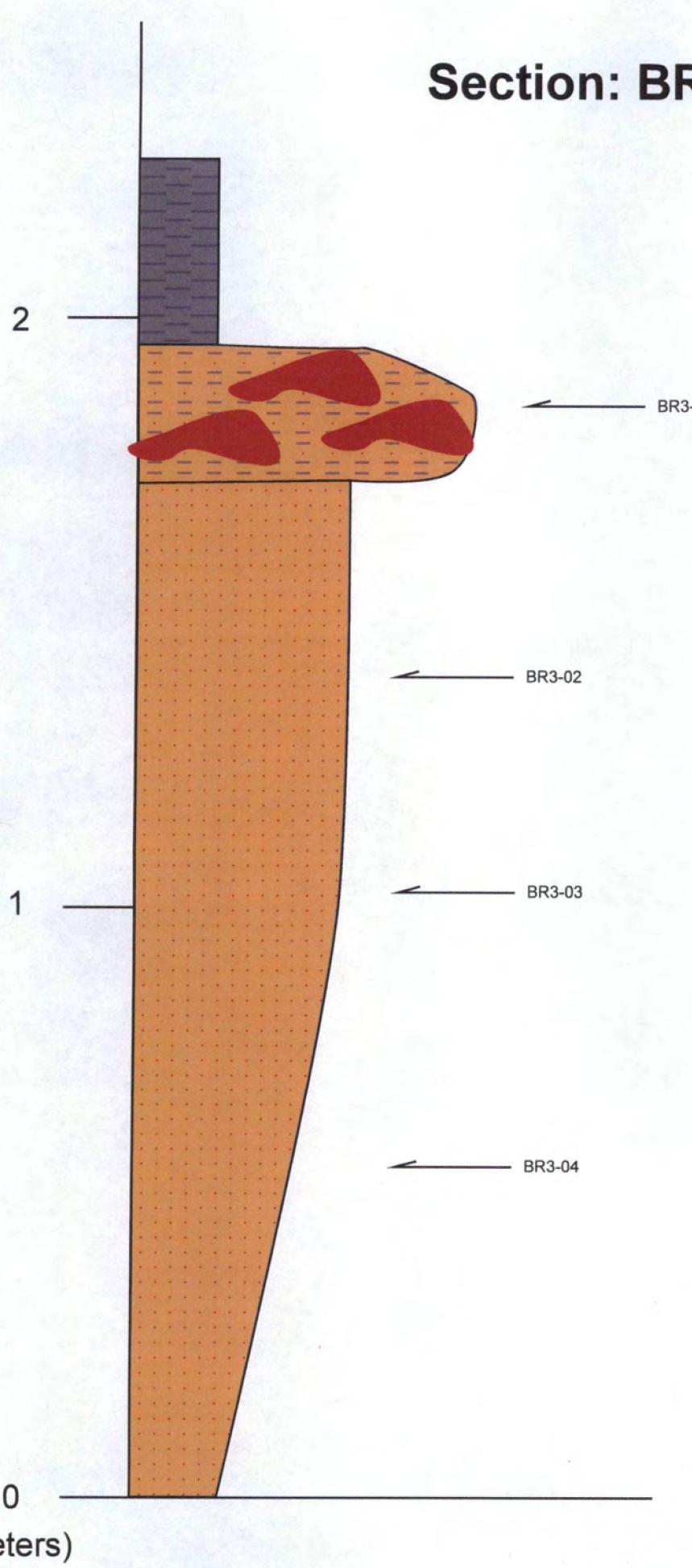
# Section: BR2

UTM: 0417547 E  
6380691 N



# Section: BR3

UTM: 0385359 E  
6361282 N





**Botha River 2011  
Analytical  
(Fire Assay, ICP, WRA)**



ISO9001:2008 Certified

## Loring Laboratories (Alberta) Ltd.

629 Beaverdam Road N.E.,  
Calgary Alberta T2K 4W7  
Tel: 274-2777 Fax: 275-0541  
[loringlabs@telus.net](mailto:loringlabs@telus.net)

TO: Ironstone Resources Ltd.  
# 200 6125-11 St SE  
Calgary AB  
T2H 2L6

File No : 55068  
Date : Feb. 09/2012

Sample Type: Rocks

Attn: Andrew Reader

### Certificate of Assay

Sample ID	Au ppb	Pd ppb	Pt ppb
SR-03	19	<5	<5
BR1-06	124	<5	<5
BR1-09	55	<5	<5
BR2-06	202	<5	<5
IL-02	6	<5	<5
IL-03	31	9	7
IL-05	8	<5	5
IL-07	54	11	10
IL-12	6	<5	<5
IL-14	9	<5	<5
Dupl. SR-03	22	<5	<5
STD-PGM1	52	223	186
Standard Value	54	215	162
Blk	<5	<5	<5

Sample received on January 6, 2012

Certified by:



## Loring Laboratories (Alberta) Ltd.

629 Beaverdam Road N.E.,  
Calgary Alberta T2K 4W7  
Tel: 403-274-2777 Fax: 403-275-0541  
loringlabs@telus.net

TO: Ironstone Resources Ltd.  
# 200 6125-11 St SE  
Calgary AB  
T2H 2L6

File No : 5 5 0 6 8

Date : January 26, 2011

Attn: Andrew Reader

### 30 ELEMENT ICP ANALYSIS

Sample No.	Ag ppm	Al %	As ppm	Au ppm	B ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	Sb ppm	Sr ppm	Th ppm	Ti %	U ppm	V ppm	W ppm	Zn ppm
~SR3-03	3.5	0.46	7	<1	35	98	46	3.59	23	15	14	4	11.08	0.09	<1	1.52	4970	1	0.10	41	0.88	23	8	336	117	<0.01	2	75	2	100
~SR3-04	1.0	1.05	50	<1	42	109	11	0.21	4	17	45	8	4.22	0.11	7	0.32	95	6	0.06	24	0.04	19	2	26	34	<0.01	<1	247	2	112
~SR3-05	2.0	1.19	39	<1	63	247	28	1.28	12	19	58	6	8.82	0.13	10	0.46	587	5	0.07	30	0.42	30	5	117	79	0.01	<1	404	2	135
~SR3-06	<0.5	1.02	54	<1	43	108	10	0.15	4	6	37	7	3.77	0.11	5	0.26	31	2	0.08	11	0.03	13	2	21	29	<0.01	<1	140	1	52
~SR3-07	<0.5	1.17	55	<1	42	110	11	0.13	4	7	35	7	4.16	0.13	4	0.31	24	1	0.14	11	0.04	13	2	20	32	<0.01	<1	146	1	48
~SR3-08	2.0	0.89	44	<1	56	216	42	1.51	19	37	46	5	10.93	0.11	1	0.91	813	1	0.24	65	0.10	26	7	56	110	0.01	4	244	1	101
~SR3-09	3.5	2.10	202	<1	99	223	73	1.21	37	44	193	6	13.06	0.46	11	0.67	1114	7	0.34	91	0.44	61	14	101	196	0.05	<1	1295	12	480
Dupl. SR1-01	<0.5	1.53	77	<1	39	121	13	0.16	5	7	52	9	4.81	0.15	7	0.23	32	3	0.01	15	0.04	19	3	15	36	0.01	<1	142	1	76
STD	3.0	0.44	194	<1	32	73	12	3.08	4	30	87	364	3.46	0.14	<1	1.79	768	3	0.08	39	0.08	26	4	261	23	<0.01	<1	35	4	186
BLK	<0.5	<0.01	<1	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<0.01	<0.01	<1	<0.01	<1	<1	<0.01	<1	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1
~SR3-10	4.0	2.58	122	<1	86	213	69	1.29	34	55	228	5	13.00	0.05	14	0.68	675	5	0.42	103	0.37	68	13	107	184	0.04	<1	1619	10	614
~SR3-11	4.0	2.20	35	<1	49	189	51	1.85	25	39	128	9	11.86	0.10	4	1.68	1352	4	0.21	71	0.30	49	10	91	137	0.02	<1	922	5	366
~SR3-12	2.5	3.25	96	<1	55	146	40	1.17	19	44	138	11	10.66	0.15	8	1.38	448	4	0.33	83	0.22	52	8	90	110	0.02	<1	1003	5	443
~SR-01	8.5	1.34	33	<1	142	332	2	7.23	2	8	26	2	1.52	0.43	48	0.23	272	<1	0.48	18	3.49	11	1	1248	13	0.01	<1	91	2	68
~SR-02	4.5	1.13	207	<1	70	861	22	5.01	11	53	28	4	7.69	0.19	8	0.46	489	440	0.16	44	2.28	17	33	697	59	0.01	1	141	1	93
~SR-03	1.0	0.92	34	<1	53	132	26	1.00	12	13	38	5	8.56	0.11	1	0.49	458	5	0.09	22	0.05	21	5	69	69	<0.01	<1	243	1	75
~SR-04	2.0	0.90	41	<1	32	42	10	3.11	7	23	18	65	4.00	0.18	<1	0.45	132	29	0.05	85	0.07	18	4	86	29	<0.01	6	80	3	230
~BR1-01	8.5	1.13	58	<1	29	58	18	6.53	9	16	20	7	6.63	0.14	<1	0.46	479	1	0.04	31	0.46	32	5	164	47	0.01	<1	133	2	161
~BR1-02	5.5	1.33	95	<1	35	99	39	5.89	22	35	39	10	10.56	0.13	7	0.55	599	1	0.06	74	0.62	85	10	207	101	0.01	<1	432	6	482
~BR1-03	<0.5	1.37	33	<1	27	138	23	0.63	10	8	31	18	7.92	0.15	2	0.24	35	1	0.02	17	0.07	36	5	32	62	<0.01	3	122	2	143
~BR1-04	1.5	1.41	83	<1	25	74	28	1.11	14	9	30	24	9.21	0.17	<1	0.23	28	2	0.02	17	0.07	43	6	32	76	<0.01	7	148	2	177
~BR1-05	5.0	2.39	62	<1	26	40	22	4.80	11	37	24	12	7.48	0.14	<1	0.42	471	1	0.02	90	0.20	40	5	63	55	0.01	<1	159	3	284
~BR1-06	6.0	1.01	34	<1	27	37	17	6.30	9	21	13	6	6.27	0.11	<1	0.43	472	1	0.02	43	0.07	21	4	97	42	<0.01	4	80	1	117
~BR1-07	4.0	0.82	44	<1	31	61	44	4.40	25	21	17	6	11.48	0.09	<1	0.43	1001	1	0.04	41	0.24	31	10	67	110	<0.01	26	85	1	93
~BR1-08	6.0	1.07	103	<1	29	75	38	5.78	21	34	26	7	10.51	0.11	<1	0.34	1040	2	0.04	63	0.46	69	10	144	94	0.01	<1	249	4	389
~BR1-09	5.5	1.35	102	<1	36	91	44	5.73	26	35	39	10	11.21	0.11	<1	0.47	814	2	0.06	84	0.54	94	11	201	110	0.01	<1	456	6	514
~BR1-10	4.5	1.37	227	<1	37	81	64	2.89	38	44	48	11	13.02	0.09	<1	0.44	1165	3	0.05	99	0.54	109	17	81	161	0.01	<1	523	6	533
~BR1-11	4.0	1.51	29	<1	42	159	62	2.91	36	58	61	13	12.96	0.11	16	0.26	1322	8	0.09	133	0.96	137	15	214	159	0.01	<1	659	8	781
~BR1-12	3.0	1.62	12	<1	42	493	43	2.18	24	40	43	12	11.69	0.19	15	0.35	1082	1	0.06	79	0.73	83	10	180	113	0.01	<1	416	5	515
~BR1-13	1.5	2.01	22	<1	33	243	13	0.72	6	27	34	15	5.33	0.23	10	0.33	170	1	0.01	43	0.10	38	3	48	39	0.01	<1	173	3	240

\* 0.500 Gram sample is digested with Aqua Regia at 95 C for one hour and bulked to 10 ml with distilled water.

Partial dissolution for Al, B, Ba, Ca, Cr, Fe, K, La, Mg, Mn, Na, P, Sr, Ti, and W.

\* Sample received on January 6, 2012

Certified by:



## Loring Laboratories (Alberta) Ltd.

629 Beaverdam Road N.E.  
Calgary Alberta T2K 4W7  
Tel: 403-274-2777 Fax: 403-275-0541  
loringlabs@telus.net

TO: Ironstone Resources Ltd.  
# 200 6125-11 St SE  
Calgary AB  
T2H 2L6

File No : 55068

Date : January 26, 2012

Attn: Andrew Reader

### 30 ELEMENT ICP ANALYSIS

Sample No.	Ag ppm	Al %	As ppm	Au ppm	B ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	Sb ppm	Sr ppm	Th ppm	Ti %	U ppm	V ppm	W ppm	Zn ppm
-BR2-01	1.5	1.00	58	<1	28	269	30	0.35	15	19	21	19	9.67	0.12	8	0.19	311	3	0.02	56	0.08	21	6	21	77	<0.01	12	42	2	162
-BR2-02	1.0	1.09	77	<1	27	115	17	0.37	8	7	26	18	6.49	0.14	1	0.29	41	1	0.01	20	0.06	19	4	29	47	<0.01	6	46	1	99
-BR2-03	1.5	1.92	49	<1	23	171	22	0.52	11	38	26	17	7.86	0.14	2	0.48	517	1	0.02	51	0.10	26	5	26	58	<0.01	2	83	2	184
-BR2-04	6.5	0.85	216	<1	28	58	47	4.97	28	22	27	7	11.65	0.09	<1	0.35	892	6	0.07	54	0.60	61	14	151	116	0.01	5	274	3	282
-BR2-05	4.0	2.13	158	<1	29	511	45	2.76	26	71	59	16	11.85	0.18	34	0.26	727	4	0.09	159	1.07	131	13	200	120	0.01	<1	658	8	789
-BR2-06	4.0	1.90	166	<1	30	834	45	2.96	26	80	57	14	11.80	0.16	35	0.21	750	6	0.10	246	1.29	125	11	255	119	0.01	<1	640	7	654
-BR2-07	3.0	1.37	19	<1	33	631	45	1.89	26	21	42	13	12.01	0.14	25	0.25	1133	1	0.06	65	0.72	85	10	144	118	0.01	<1	406	5	424
-BR2-08	3.0	1.17	11	<1	32	735	49	2.24	28	22	33	10	12.35	0.13	18	0.22	1238	1	0.07	53	0.91	61	11	173	126	0.01	<1	297	3	292
-BR2-09	1.0	1.84	42	<1	29	234	15	0.68	7	28	40	15	5.83	0.15	13	0.25	148	1	0.02	39	0.14	51	4	47	42	<0.01	<1	188	3	245
-BR3-01	4.5	0.69	37	<1	37	126	35	5.77	21	16	18	11	10.14	0.08	<1	0.84	1611	<1	0.05	30	0.40	21	8	169	84	<0.01	12	94	1	111
-BR3-02	1.0	0.73	68	<1	35	96	24	1.25	12	10	54	17	8.38	0.03	<1	0.09	52	<1	0.02	32	0.15	42	5	39	59	0.01	<1	353	4	303
-BR3-03	<0.5	0.52	47	<1	35	161	17	0.32	8	7	52	11	6.66	0.03	5	0.10	87	<1	0.03	22	0.11	37	4	47	45	0.01	<1	243	2	165
-BR3-04	<0.5	0.23	13	<1	36	68	4	0.13	2	3	21	3	2.12	0.02	9	0.04	5	<1	0.01	4	0.03	12	1	12	15	0.01	<1	60	<1	28
'IL-01	1.0	0.81	<1	<1	27	6	5	2.36	2	12	25	83	2.04	0.01	<1	0.32	602	<1	0.04	30	0.02	2	1	21	11	0.02	<1	22	<1	14
'IL-02	<0.5	0.04	<1	<1	31	3	<1	0.06	<1	1	114	3	0.31	<0.01	<1	0.01	26	<1	0.01	3	0.00	2	1	1	2	<0.01	<1	3	<1	3
'IL-03	2.5	4.68	<1	<1	27	10	3	3.57	1	7	46	32	1.18	0.02	<1	0.40	441	1	0.26	19	0.03	<1	1	61	6	0.02	<1	31	<1	17
'IL-04	<0.5	1.35	<1	<1	29	5	3	0.72	1	11	31	87	1.35	0.01	<1	0.73	191	1	0.03	9	0.02	2	1	14	7	0.07	<1	43	<1	22
Dupl. SR3-10	4.0	2.94	191	<1	83	223	65	1.35	41	57	216	6	13.23	0.06	14	0.72	740	5	0.48	105	0.40	76	16	99	174	0.05	<1	1720	10	655
STD	3.0	0.51	196	<1	29	81	11	3.25	5	31	80	372	3.59	0.14	<1	1.80	786	3	0.09	40	0.08	27	5	240	20	<0.01	<1	38	4	189
BLK	<0.5	<0.01	<1	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<0.01	<0.01	<1	<0.01	<1	<1	<0.01	<1	<0.01	<1	<1	<1	<1	<1	<1	<1	<1	
'IL-05	1.5	1.98	<1	<1	27	21	11	1.33	6	24	23	196	4.89	0.10	<1	0.54	412	1	0.15	12	0.06	7	2	15	29	0.15	<1	251	1	72
'IL-06	1.0	2.11	<1	<1	27	31	4	1.89	2	18	70	97	1.73	0.15	<1	0.69	331	1	0.11	52	0.02	2	1	12	9	0.04	<1	29	<1	27
'IL-07	1.0	1.41	<1	<1	27	6	4	1.86	2	11	38	128	1.46	0.01	<1	0.55	315	<1	0.05	21	0.02	3	1	9	7	0.05	<1	31	<1	20
'IL-08	<0.5	1.48	<1	<1	27	5	6	0.51	3	7	27	156	2.52	0.02	<1	0.82	154	1	0.02	9	0.07	3	1	2	14	0.03	<1	19	<1	21
'IL-09	<0.5	1.45	1	<1	32	381	3	0.26	2	9	24	20	1.99	0.52	24	0.83	296	<1	0.02	2	0.08	4	1	13	13	0.11	<1	42	1	77
'IL-10	<0.5	1.08	<1	<1	29	10	3	0.61	1	14	31	162	1.21	0.02	<1	0.54	166	<1	0.05	36	0.02	2	1	6	6	0.04	<1	30	<1	18
'IL-12	<0.5	1.24	227	<1	29	86	3	0.25	2	7	73	1	1.58	0.37	1	0.32	86	<1	0.03	13	0.01	3	1	18	9	0.06	<1	21	<1	21
'IL-13	1.5	2.94	21	<1	26	145	10	0.07	5	12	53	18	4.28	1.34	12	1.34	350	2	0.02	9	0.04	7	2	8	28	0.18	<1	56	1	75
'IL-14	4.0	0.24	<1	<1	26	30	24	0.44	12	1	19	8	8.59	0.05	1	0.04	32	1	0.03	2	0.10	12	5	53	60	0.02	13	25	<1	1
'IL-15	<0.5	0.17	<1	<1	29	33	6	0.42	3	<1	45	12	2.46	0.03	<1	0.04	96	<1	0.02	2	0.04	7	1	44	14	0.01	2	4	<1	5

\* 0.500 Gram sample is digested with Aqua Regia at 95 C for one hour and bulked to 10 ml with distilled water.  
Partial dissolution for Al, B, Ba, Ca, Cr, Fe, K, La, Mg, Mn, Na, P, Sr, Ti, and W.

\* Sample received on January 6, 2012

Certified by:



ISO9001:2008 Certified

# Loring Laboratories(Alberta) Ltd.

629 Beaverdam Road N.E.,

Calgary Alberta T2K 4W7

Tel:403- 274-2777 Fax:403- 275-0541

**TO:** Ironstone Resources Ltd.  
# 200 6125-11 St SE  
Calgary AB  
T2H 2L6

FILE: 55068

DATE: January 26, 2012

Attn: Andrew Reader

## WHOLEROCK ICP ANALYSIS

Sample I.D.	Al <sub>2</sub> O <sub>3</sub> %	Ba ppm	CaO%	Cr ppm	Fe <sub>2</sub> O <sub>3</sub> %	K <sub>2</sub> O%	MgO%	MnO%	Na <sub>2</sub> O%	Ni ppm	P <sub>2</sub> O <sub>5</sub> %	SO <sub>3</sub> %	SiO <sub>2</sub> %	Sr ppm	TiO <sub>2</sub> %	V ppm	LOI@1000%	SUM%
SR1-02	5.08	1372	10.14	50	5.54	0.80	0.57	0.02	0.40	9	6.66	0.93	62.23	699	0.14	143	4.68	97.18
SR1-05	5.33	573	5.12	140	33.00	0.43	1.53	0.16	0.27	124	3.31	1.12	33.21	262	0.14	1056	13.72	97.35
SR1-08	7.09	664	3.13	159	29.55	0.58	2.19	0.12	0.28	58	1.45	0.26	38.22	160	0.17	1133	14.06	97.10
SR2-05	4.21	665	0.87	53	5.42	0.63	0.98	0.01	0.22	20	0.46	0.76	79.82	89	0.13	249	3.40	96.91
SR2-12	4.62	380	3.41	182	37.55	0.22	1.27	0.11	0.23	55	1.28	0.43	33.22	121	0.10	1420	15.14	97.57
SR2-15	8.10	819	5.89	133	17.62	0.86	2.25	0.04	0.47	47	3.32	1.18	48.18	302	0.22	788	8.68	96.81
SR3-01	4.36	657	6.40	91	17.06	0.51	1.30	0.15	0.27	34	0.98	0.48	53.20	188	0.13	689	11.71	96.53
SR3-04	5.55	687	0.26	69	5.85	0.81	0.81	0.01	0.22	20	0.10	0.23	79.68	71	0.17	292	3.51	97.21
SR3-09	4.58	387	1.77	172	35.17	0.62	1.43	0.13	0.46	47	1.13	0.78	36.52	116	0.11	1299	15.29	97.99
BR1-06	4.05	284	14.91	31	9.30	0.62	0.97	0.06	0.27	29	0.16	12.68	35.62	123	0.11	107	18.23	96.97
BR1-09	4.01	628	12.20	52	22.38	0.43	1.06	0.09	0.27	46	1.24	2.94	29.24	229	0.10	465	22.14	96.11
BR2-06	6.79	1158	4.03	79	22.38	0.78	0.64	0.08	0.34	163	2.97	0.20	47.62	271	0.20	599	11.16	97.18
BR3-02	2.47	801	1.34	62	11.76	0.46	0.24	0.01	0.09	19	0.31	2.55	71.86	74	0.07	301	6.70	97.86
IL-01	12.46	17	8.61	180	15.08	0.13	4.09	0.37	0.96	52	0.04	0.42	52.20	29	0.51	176	2.13	97.00
IL-10	15.50	58	7.35	223	9.03	0.31	4.60	0.18	2.54	87	0.04	0.20	56.38	114	0.55	212	0.65	97.33
Dupl. SR1-02	4.99	1340	9.41	51	5.23	0.74	0.52	0.02	0.36	7	6.34	0.88	62.86	611	0.15	130	4.66	96.16

Sample received on January 6, 2012

0.5 gm sample digested with multi acids and finished by ICP  
 Hi Ca and Fe over 10 % are recommended assaying by titration.

Certified by: \_\_\_\_\_



**Botha River 2012  
Core Logs**

Drilling Rig Name-No. **Radius Rig # 1**

Hole No.	<b>BR-01</b>	Hole ID	<b>BR-01</b>
GPS Elevation		Collar	<b>2788.68</b>
Sounding Depth		Top Ore	
		Base Ore	
Estimated		Actual	
Thickness Overburden		ft	Est. 5ft Sleeves <b>5.0</b>
Thickness of Upper Zone		ft	No. of Core Boxes
Est. Core Point	<b>2798.5</b>	ft	Core Cut
Thickness of Ore Interval		ft	Ore Core Cut
Thickness of Lower Zone		ft	
End of Hole		ft	

Overburden Notes

Core No.	From	To	Core Cut (ft)	Core Recovered	RQD	Notes
Core No. 1	<b>0.0</b>	<b>13.0</b>	<b>13.0</b>	<b>2.5</b>		
Core No. 2	<b>13.0</b>	<b>23.0</b>	<b>10.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 3	<b>23.0</b>	<b>28.0</b>	<b>5.0</b>	<b>3.0</b>	<b>3.0</b>	
Core No. 4	<b>28.0</b>	<b>33.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 5	<b>33.0</b>	<b>38.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 6	<b>38.0</b>	<b>45.0</b>	<b>7.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 7	<b>45.0</b>	<b>53.0</b>	<b>8.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 8	<b>53.0</b>	<b>58.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 9	<b>58.0</b>	<b>63.0</b>	<b>5.0</b>	<b>4.5</b>	<b>4.5</b>	
Core No. 10	<b>63.0</b>	<b>68.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 11	<b>68.0</b>	<b>74.0</b>	<b>6.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 12	<b>74.0</b>	<b>79.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 13	<b>79.0</b>	<b>83.0</b>	<b>4.0</b>	<b>3.0</b>	<b>3.0</b>	
Core No. 14	<b>83.0</b>	<b>93.0</b>	<b>10.0</b>	<b>1.0</b>	<b>1.0</b>	
Core No. 15	<b>93.0</b>	<b>103.0</b>	<b>10.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 16	<b>103.0</b>	<b>108.0</b>	<b>5.0</b>	<b>0.5</b>		
Core No. 17	<b>108.0</b>	<b>115.0</b>	<b>7.0</b>	<b>5.0</b>	<b>5.0</b>	
	TOTAL		<b>115.0</b>	<b>69.5</b>	<b>66.5</b>	
		% Recovery		<b>60.4%</b>	<b>57.8%</b>	

Coring Comments

Rig set up incorrectly - hole drilled at 85 degrees  
Page 1 of 2

Drilling Rig Name-No. **Radius Rig # 1**

Hole No.	<b>BR-01</b>	Hole ID	<b>BR-01</b>
GPS Elevation		Collar	<b>2788.68</b>
Sounding Depth		Top Ore	
		Base Ore	
Estimated	Actual		
Thickness Overburden		ft	Est. 5ft Sleeves <b>5.0</b>
Thickness of Upper Zone		ft	No. of Core Boxes
Est. Core Point	<b>2798.5</b>	ft	Core Cut
Thickness of Ore Interval		ft	Ore Core Cut
Thickness of Lower Zone		ft	
End of Hole		ft	

Overburden Notes

	From	To	Core Cut (ft)	Core Recovered	RQD	Notes
Core No. 1	<b>115.0</b>	<b>121.0</b>	<b>6.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 2	<b>121.0</b>	<b>126.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 3	<b>126.0</b>	<b>131.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 4	<b>131.0</b>	<b>143.0</b>	<b>12.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 5	<b>143.0</b>	<b>153.0</b>	<b>10.0</b>	<b>0.3</b>		
Core No. 6						
Core No. 7						
Core No. 8						
Core No. 9						
Core No. 10						
Core No. 11						
Core No. 12						
Core No. 13						
Core No. 14						
Core No. 15						
Core No. 16						
Core No. 17						
	<b>TOTAL</b>	<b>38.0</b>	<b>20.3</b>	<b>20.0</b>		
		<b>% Recovery</b>	<b>53.4%</b>	<b>52.6%</b>		

Coring Comments

Rig set up incorrectly - hole drilled at 85 degrees  
Page 2 of 2 Core Log

Drilling Rig Name-No. **Radius Rig # 1**

Hole No.	<b>BR-05A</b>	Hole ID	<b>BR-05A</b>
GPS Elevation		Collar	<b>2641.04</b>
Sounding Depth	<b>113.0</b>	Top Ore	<b>2562.3</b>
		Base Ore	<b>2556.8</b>
Estimated	Actual		
Thickness Overburden	<b>78.7</b>	ft	Est. 5ft Sleeves <b>5.0</b>
Thickness of Upper Zone		ft	No. of Core Boxes
Est. Core Point	<b>2650.9</b>	ft	Core Cut <b>113.0</b> ft
Thickness of Ore Interval	<b>5.5</b>	ft	Ore Core Cut <b>5.5</b> ft
Thickness of Lower Zone	<b>28.8</b>	ft	
End of Hole	<b>2528.0</b>	ft	

Overburden Notes

Core No.	From	To	Core Cut (ft)	Core Recovered	RQD	Notes
Core No. 1	<b>0.0</b>	<b>13.0</b>	<b>13.0</b>	<b>4.5</b>	<b>4.5</b>	
Core No. 2	<b>13.0</b>	<b>23.0</b>	<b>10.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 3	<b>23.0</b>	<b>37.0</b>	<b>14.0</b>	<b>4.0</b>	<b>4.0</b>	
Core No. 4	<b>37.0</b>	<b>63.0</b>	<b>26.0</b>	<b>2.0</b>	<b>2.0</b>	
Core No. 5	<b>63.0</b>	<b>78.0</b>	<b>15.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 6	<b>78.0</b>	<b>83.0</b>	<b>5.0</b>	<b>4.5</b>	<b>4.5</b>	
Core No. 7	<b>83.0</b>	<b>88.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 8	<b>88.0</b>	<b>93.0</b>	<b>5.0</b>	<b>4.5</b>	<b>4.5</b>	
Core No. 9	<b>93.0</b>	<b>98.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	
Core No. 10	<b>98.0</b>	<b>103.0</b>	<b>5.0</b>	<b>3.0</b>	<b>3.0</b>	
Core No. 11	<b>103.0</b>	<b>108.0</b>	<b>5.0</b>	<b>2.8</b>	<b>2.8</b>	
Core No. 12	<b>108.0</b>	<b>113.0</b>	<b>5.0</b>	<b>4.2</b>	<b>4.2</b>	
Core No. 13						
Core No. 14						
Core No. 15						
Core No. 16						
Core No. 17						
	<b>TOTAL</b>	<b>113.0</b>		<b>49.5</b>	<b>49.5</b>	
			<b>% Recovery</b>	<b>43.8%</b>	<b>43.8%</b>	

Coring Comments

Rig set up incorrectly - hole drilled at 85 degrees

Drilling Rig Name-No. **Radius Rig # 1**

Hole No.	<b>BR-08A</b>	Hole ID	<b>BR-08A</b>
GPS Elevation		Collar	<b>2765.71</b>
Sounding Depth	<b>203.0</b>	Top Ore	<b>2618.7</b>
		Base Ore	<b>2616.2</b>

	Estimated	Actual	
Thickness Overburden		<b>147.0</b>	ft
Thickness of Upper Zone			ft
Est. Core Point	<b>2775.6</b>	<b>2765.7</b>	ft
Thickness of Ore Interval		<b>2.5</b>	ft
Thickness of Lower Zone		<b>53.5</b>	ft
End of Hole		<b>2562.7</b>	ft
Est. 5ft Sleeves			<b>5.0</b>
No. of Core Boxes			
Core Cut			<b>203.0</b>
Ore Core Cut			<b>2.5</b>

Overburden Notes

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	From	To	Core Cut (ft)	Core Recovered	RQD	Notes
Core No. 1	<b>23.0</b>	<b>28.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	C
Core No. 2	<b>28.0</b>	<b>33.0</b>	<b>5.0</b>	<b>4.5</b>	<b>4.5</b>	C
Core No. 3	<b>33.0</b>	<b>43.0</b>	<b>10.0</b>	<b>5.0</b>	<b>5.0</b>	C
Core No. 4	<b>43.0</b>	<b>48.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	C
Core No. 5	<b>48.0</b>	<b>51.0</b>	<b>3.0</b>	<b>2.5</b>	<b>2.5</b>	C
Core No. 6	<b>51.0</b>	<b>58.0</b>	<b>7.0</b>	<b>5.0</b>	<b>5.0</b>	C
Core No. 7	<b>58.0</b>	<b>63.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	C
Core No. 8	<b>63.0</b>	<b>68.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	C
Core No. 9	<b>68.0</b>	<b>73.0</b>	<b>5.0</b>	<b>4.2</b>	<b>4.2</b>	C
Core No. 10	<b>73.0</b>	<b>78.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	C
Core No. 11	<b>78.0</b>	<b>83.0</b>	<b>5.0</b>	<b>4.8</b>	<b>4.8</b>	C
Core No. 12	<b>83.0</b>	<b>88.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	C
Core No. 13	<b>88.0</b>	<b>93.0</b>	<b>5.0</b>	<b>4.2</b>	<b>4.2</b>	C
Core No. 14	<b>93.0</b>	<b>98.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	C
Core No. 15	<b>98.0</b>	<b>103.0</b>	<b>5.0</b>	<b>4.6</b>	<b>4.6</b>	C
Core No. 16	<b>103.0</b>	<b>108.0</b>	<b>5.0</b>	<b>4.5</b>	<b>4.5</b>	C & SS
Core No. 17	<b>108.0</b>	<b>113.0</b>	<b>5.0</b>	<b>2.3</b>	<b>2.3</b>	C
	<b>TOTAL</b>		<b>90.0</b>	<b>76.6</b>	<b>76.6</b>	
	% Recovery			<b>85.1%</b>	<b>85.1%</b>	

Coring Comments

Rig set up incorrectly - hole drilled at 85 degrees  
 Water pump broke @ 2:00 pm Apr 28. 2 hours down.  
 Core Log PAGE 1/2

Drilling Rig Name-No. Radius Rig # 1

Hole No.	<b>BR-08A</b>	Hole ID	<b>BR-08A</b>	
GPS Elevation			Collar	<b>2765.71</b>
Sounding Depth	<b>203.0</b>	Top Ore	<b>2618.7</b>	Base Ore <b>2616.2</b>
Estimated	Actual			
Thickness Overburden		<b>147.0</b>	ft	Est. 5ft Sleeves <b>5.0</b>
Thickness of Upper Zone			ft	No. of Core Boxes
Est. Core Point	<b>2775.6</b>	<b>2765.7</b>	ft	Core Cut <b>203.0</b> ft
Thickness of Ore Interval		<b>2.5</b>	ft	Ore Core Cut <b>2.5</b> ft
Thickness of Lower Zone		<b>53.5</b>	ft	
End of Hole		<b>2562.7</b>	ft	

Overburden Notes

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Core No.	From	To	Core Cut (ft)	Core Recovered	RQD	Notes
Core No. 1	<b>113.0</b>	<b>123.0</b>	<b>10.0</b>	<b>2.7</b>	<b>2.7</b>	SS
Core No. 2	<b>123.0</b>	<b>131.0</b>	<b>8.0</b>	<b>3.0</b>	<b>1.6</b>	SANDS AND SS
Core No. 3	<b>131.0</b>	<b>140.0</b>	<b>9.0</b>	<b>5.0</b>	<b>5.0</b>	C/SS
Core No. 4	<b>140.0</b>	<b>143.0</b>	<b>3.0</b>	<b>2.8</b>	<b>2.8</b>	C/SS
Core No. 5	<b>143.0</b>	<b>148.0</b>	<b>5.0</b>	<b>4.6</b>	<b>4.6</b>	C/SS
Core No. 6	<b>148.0</b>	<b>152.0</b>	<b>4.0</b>	<b>4.2</b>	<b>4.2</b>	SS/ORE ZONE
Core No. 7	<b>152.0</b>	<b>153.0</b>	<b>1.0</b>	<b>1.0</b>	<b>0.5</b>	C/SS
Core No. 8	<b>153.0</b>	<b>158.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	C
Core No. 9	<b>158.0</b>	<b>162.0</b>	<b>4.0</b>	<b>5.0</b>	<b>5.0</b>	C/SS
Core No. 10	<b>162.0</b>	<b>167.0</b>	<b>5.0</b>	<b>4.9</b>	<b>4.9</b>	SS
Core No. 11	<b>167.0</b>	<b>172.0</b>	<b>5.0</b>	<b>5.0</b>	<b>4.9</b>	C
Core No. 12	<b>172.0</b>	<b>181.0</b>	<b>9.0</b>	<b>5.0</b>	<b>5.0</b>	C/SS
Core No. 13	<b>181.0</b>	<b>186.0</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	C
Core No. 14	<b>186.0</b>	<b>193.0</b>	<b>7.0</b>	<b>4.4</b>	<b>4.4</b>	C
Core No. 15	<b>193.0</b>	<b>198.0</b>	<b>5.0</b>	<b>4.0</b>	<b>4.0</b>	C
Core No. 16	<b>198.0</b>	<b>203.0</b>	<b>5.0</b>	<b>4.9</b>	<b>4.9</b>	C
Core No. 17						
	TOTAL	<b>90.0</b>		<b>66.5</b>	<b>64.5</b>	
			% Recovery	<b>73.9%</b>	<b>71.7%</b>	

Coring Comments

Rig set up incorrectly - hole drilled at 85 degrees  
 Water pump broke @ 2:00 pm Apr 28. 2 hours down.  
 Core Log PAGE 2/2

Drilling Rig Name-No. Radius Rig # 1

Hole No.	<b>BR-11A</b>	Hole ID	<b>BR-11A</b>
GPS Elevation		Collar	<b>2664.01</b>
Sounding Depth	<b>133.0</b>	Top Ore	
		Base Ore	
Estimated		Actual	
Thickness Overburden		ft	Est. 5ft Sleeves <b>5.0</b>
Thickness of Upper Zone		ft	No. of Core Boxes
Est. Core Point	<b>2673.9</b>	ft	Core Cut
Thickness of Ore Interval		ft	Ore Core Cut
Thickness of Lower Zone		ft	
End of Hole		ft	

Overburden Notes

Core No.	From	To	Core Cut (ft)	Core Recovered	RQD	Notes
Core No. 1	<b>0.0</b>	<b>13.0</b>	<b>13.0</b>	<b>5.0</b>		
Core No. 2	<b>13.0</b>	<b>18.0</b>	<b>5.0</b>	<b>5.0</b>		
Core No. 3	<b>18.0</b>	<b>23.0</b>	<b>5.0</b>	<b>2.3</b>		
Core No. 4	<b>23.0</b>	<b>28.0</b>	<b>5.0</b>	<b>1.5</b>		
Core No. 5	<b>28.0</b>	<b>33.0</b>	<b>5.0</b>	<b>1.2</b>		
Core No. 6	<b>33.0</b>	<b>44.0</b>	<b>11.0</b>	<b>5.0</b>		
Core No. 7	<b>44.0</b>	<b>53.0</b>	<b>9.0</b>	<b>5.0</b>		
Core No. 8	<b>53.0</b>	<b>58.0</b>	<b>5.0</b>	<b>5.0</b>		
Core No. 9	<b>58.0</b>	<b>66.0</b>	<b>8.0</b>	<b>5.0</b>		
Core No. 10	<b>66.0</b>	<b>71.0</b>	<b>5.0</b>	<b>4.0</b>		
Core No. 11	<b>71.0</b>	<b>83.0</b>	<b>12.0</b>	<b>5.0</b>		
Core No. 12	<b>83.0</b>	<b>88.0</b>	<b>5.0</b>	<b>5.0</b>		
Core No. 13	<b>88.0</b>	<b>93.0</b>	<b>5.0</b>	<b>2.6</b>		
Core No. 14	<b>93.0</b>	<b>98.0</b>	<b>5.0</b>	<b>2.3</b>		
Core No. 15	<b>98.0</b>	<b>103.0</b>	<b>5.0</b>	<b>4.8</b>		
Core No. 16	<b>103.0</b>	<b>108.0</b>	<b>5.0</b>	<b>5.0</b>		
Core No. 17	<b>108.0</b>	<b>113.0</b>	<b>5.0</b>	<b>2.0</b>		
	<b>TOTAL</b>		<b>113.0</b>	<b>65.6</b>		
	% Recovery			<b>58.1%</b>		

Coring Comments

Rig set up incorrectly - hole drilled at 85 degrees  
CORE LOG PAGE 1/2

Drilling Rig Name-No.

Hole No. BR-11A Hole ID BR-11A

GPS Elevation \_\_\_\_\_ Collar 2664.01

Sounding Depth \_\_\_\_\_ Top Ore \_\_\_\_\_ Base Ore \_\_\_\_\_

Estimated Actual

Thickness Overburden \_\_\_\_\_ ft Est. 5ft Sleeves 5.0

Thickness of Upper Zone \_\_\_\_\_ ft No. of Core Boxes \_\_\_\_\_

Est. Core Point 2673.9 ft Core Cut \_\_\_\_\_ ft

Thickness of Ore Interval \_\_\_\_\_ ft Ore Core Cut \_\_\_\_\_ ft

Thickness of Lower Zone \_\_\_\_\_ ft

End of Hole \_\_\_\_\_ ft

Overburden Notes

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	From	To	Core Cut (ft)	Core Recovered	RQD	Notes
Core No. 1	<u>113.0</u>	<u>123.0</u>	<u>10.0</u>	<u>4.0</u>		
Core No. 2	<u>123.0</u>	<u>128.0</u>	<u>5.0</u>	<u>5.0</u>		
Core No. 3	<u>128.0</u>	<u>133.0</u>	<u>5.0</u>	<u>5.0</u>		
Core No. 4						
Core No. 5						
Core No. 6						
Core No. 7						
Core No. 8						
Core No. 9						
Core No. 10						
Core No. 11						
Core No. 12						
Core No. 13						
Core No. 14						
Core No. 15						
Core No. 16						
Core No. 17						
	TOTAL	<u>20.0</u>	<u>14.0</u>			
				% Recovery <u>70.0%</u>		

Coring Comments

CORE LOG PAGE 2/2	
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**Botha River 2012  
Core Descriptions**

# Core Description Log

Hole ID **BR-01** Project **Botha River** Date Logged \_\_\_\_\_ Logged By \_\_\_\_\_

Collar **850.00** Total Depth \_\_\_\_\_ Core Size **HQ3** Lat \_\_\_\_\_ Long \_\_\_\_\_

Depth (ft)			Description	Sub-Depth (ft)			Sub-Interval Description	Remarks
From	To	Interval		From	To	Interval		
0.0	13.5	13.5	OVERBURDEN - Unconsolidated orange-brown clays with soil and organics. MOHS 1-2	0.0	2.5	2.5	2.5 feet recovered	
13.5	114.9	101.4	CLAY/MUDSTONE - Light grey to medium grey. Monotonous, homogeneous clay. Variable amounts of sand throughout, but primarily clay. MOHS 1-4.	2.5	13.0	10.5	No Recovery	
				13.0	13.5	0.5	0.5 Feet Recovered	
				13.5	23.0	9.5	4.5 Feet recovered. Lt Grey mudstone. MOHS 1.5	
				23.0	25.0	2.0	No Recovery	
				25.0	28.0	3.0	3 Feet recovered. Lt Grey mudstone MOHS2.	
				28.0	58.0	30.0	25 feet recovered - medium grey. Some pokerchip. MOHS 2-3. Dries to light grey	
				58.0	58.5	0.5	No Recovery	
				58.5	79.0	20.5	19.5 Feet Recovered	
				79.0	80.0	1.0	No Recovery	
				80.0	82.5	2.5	2.5 Feet recovered A/A	
				82.5	83.0	0.5	0.5 feet recovered - Orangey-red sandy mudstone. MOHS 3-4	
				83.0	92.0	9.0	No Recovery	

# Core Description Log

Hole ID **BR-01** Project **Botha River** Date Logged **2012/5/24** Logged By **Andrew Reader**

Collar **850.00** Total Depth \_\_\_\_\_ Core Size **HQ3** Lat \_\_\_\_\_ Long \_\_\_\_\_

Depth (ft)			Description	Sub-Depth (ft)			Sub-Interval Description	Remarks
From	To	Interval		From	To	Interval		
114.9	124.7	9.8	OOLITIC SANDSTONE - Highly cemented oolitic sandstone. Dark green to grey in colour. Calcite and iron ooids present. Horizontal to sub-horizontal veining throughout. Veins made up of both calcite and pyrite. Pyrite haloes around some veins. Pyrite replacing ooids throughout. MOHS 4	92.0	93.0	1.0	1 foot recovered - A/A	
124.7	126.0	1.3	MUDGY SANDSTONE - Dark Grey. MOHS 3	93.0	103.0	10.0	5 feet recovered - Med grey sandy mudstone. MOHS 3	
126.0	142.2	16.2	MUDSTONE - Medium grey, homogenous, monotonous mudstone. MOHS 2	103.0	107.6	4.6	No Recovery	
142.2	143.0	0.8	SANDY MUDSTONE - Beige sandy mudstone. Not competent.	107.6	114.9	7.3	5.1 feet recovered - A/A	
143.0	153.0	10.0	MICACEOUS SANDSTONE - Medium grey competent lithic sandstone.	114.9	116.0	1.1	Oxidized oolitic sandstone. Cement reddish-brown in colour. No veining or pyrite	
				116.0	124.2	8.2	As described in main description.	3-4mm pyrite vein @ 116.75 Large Calcite veins @ 118' Abundant veining @ 124'
				124.2	124.7	0.5	Light grey groundmass with abundant varied clasts. Very immature. Well cemented.	
				143.0	143.3	0.3	0.25 feet recovered.	
				143.3	153.0	9.8	No Recovery	

# Core Description Log

Hole ID **BR-05A** Project **Botha River** Date Logged \_\_\_\_\_ Logged By \_\_\_\_\_

Collar **805.00** Total Depth **770.6** Core Size **HQ3** Lat \_\_\_\_\_ Long \_\_\_\_\_

Depth (ft)			Description	Sub-Depth (ft)			Sub-Interval Description	Remarks
From	To	Interval		From	To	Interval		
0.0	23.0	23.0	OVERBURDEN - Organics, soil, and glacial till. MOHS 1-2	0.0	0.5	0.5	Organics/Soil - Brown, full of moss	
				0.5	23.0	22.5	Glacial Till - Brown to Medium grey. Homogenous clay with sparse pebbles throughout. Becomes more grey towards base.	
23.0	63.0	40.0	SANDSTONE - Yellow-red oxidized sand. Mostly unconsolidated. Fine to medium grained. Poor Recoveries. MOHS 1-4	23.0	37.0	14.0	4 feet recovered - Reddish in colour, last 1.5 feet more competent than overlying sands. Primarily subrounded quartz	
				37.0	63.0	26.0	2 feet recovered - More yellow in colour. Bottom 0.75 feet more red than above. One 3 inch section well cemented. Same mineralogy a/a.	
63.0	78.0	15.0	MUDDY SANDSTONE - Dark Grey. Semi consolidated, quartz sandstone with abundant mud. MOHS 2-3	63.0	63.5	0.5	Slightly more consolidated light grey muddy sandstone. MOHS 3	
				78.0	78.6	0.6	Heavily veined portion of sandstone. Pink calcite veining. Abundant sulphide.	
78.0	84.0	6.0	SPARSELY OOLITIC SANDSTONE - Highly cemented sandstone. Very competent. Dark grey-green in colour. Horizontal white and pink carbonate veins throughout. Whole rock appears to be carbonate cemented. Veins range in size from less than 1 to 4 mm in thickness. Some sections are dark grey (higher organic?). Sulphides throughout in patches and veins up to 1 cm.	78.6	79.5	0.9	No Recoveries	
				79.5	82.3	2.8	Moderately veined sandstone. Sparsely oolitic, primarily calcite ooids. Abundant sulphide	
84.0	113.0	29.0	Light Grey Mudstone - Somewhat fissile homogenous mudstone. Light grey. Some minor coaly particles throughout. Minor shell fragments throughout.	82.3	84.0	1.8	Sandstone - Heterogenous sandstone. Light to medium grey matrix. Moderate sulphides throughout. Abundant green grains 0.5-1mm throughout.	
				84.0	86.0	2.0	Sand component high at top grades into mud at bottom	
				86.0	90.5	4.5	Mostly mudstone. Light to Medium Grey. Some minor sulphide throughout.	
				90.5	93.0	2.5	Sandy mudstone/muddy sandstone	
				93.0	98.0	5.0	Light to medium grey mudstone, abundant coaly particles + some sulphides.	

# Core Description Log

Hole ID	<b>BR-05A</b>	Project	<b>Botha River</b>	Date Logged		Logged By	
Collar	<b>805.00</b>	Total Depth	<b>770.6</b>	Core Size	<b>HQ3</b>	Lat	

Depth (ft)			Description	Sub-Depth (ft)			Sub-Interval Description	Remarks
From	To	Interval		From	To	Interval		
				100.0	103.0	3.0	Light grey mudstone with coaly particles	
				103.0	105.0	2.0	No Recoveries	
				105.0	112.0	7.0	Light to medium grey with coaly particles	
				112.0	113.0	1.0	muddy sandstone. Fine grained.	

# Core Description Log

Hole ID	<b>BR-08A</b>	Project	<b>Botha River</b>	Date Logged		Logged By	
Collar	<b>843.00</b>	Total Depth	<b>781.1</b>	Core Size	<b>HQ3</b>	Lat	Long

Depth (ft)			Description	Sub-Depth (ft)			Sub-Interval Description	Remarks
From	To	Interval		From	To	Interval		
0.0	23.0	23.0	Not halved and Logged (Photos taken in field)	23.0	27.0	4.0	Slightly less resistive grey shale. MOHS 1-2. Small rounded quartz grains with micaceous grains	
23.0	103.0	80.0	SHALE - Medium grey, homogeneous, massive shale. No apparent inclusions. MOHS 2-3. Mildly silty with some evidence of small crystals in places (micaceous? gypsum?)	27.0	28.0	1.0	Six inch green/brown oolitic unit present. MOHS 4-5. Small white vein and mottled argillaceous look.	@ 25.6' Framboidal texture
103.0	106.2	3.2	SANDSTONE - Slightly darker grey. Homogeneous with increasing clay content with depth.	48.0	48.0	0.0	Evidence of horizontal burrowing and organic content	
106.2	110.4	4.2	SILTY SHALE - Sand content decreases with depth. Homogeneous with some rare and very small micaceous grains.	96.6	96.6	0.0	Bivalve shell	
110.4	120.4	10.0	LOST CORE					
120.4	123.0	2.6	SANDSTONE - More recessive and mature sandstone with abundant quartz grains. MOHS 2.	122.6	123.0	0.4	Mottled with argillaceous material	
123.0	128.0	5.0	LOST CORE	128.0	129.2	1.2	Lighter and recessive sands. MOHS 0.5	
128.0	131.0	3.0	UNCONSOLIDATED SANDS - Very recessive and weak sands.	132.3	141.6	9.3	Sandier and darker, MOHS 2.	138.8 - 2" competent sand MOHS 4
131.0	149.6	18.6	SILTY SHALE - Medium grey silty shale. MOHS 2-4 more resistive than above. Horizontal burrows present	150.0	151.9	1.9	Main zone of veins/sulphide	
149.6	152.2	2.6	SPARSELY OOLITIC SANDSTONE - Light grey siltstone with veining throughout. Surface very reactive to HCl, some areas non-reactive. Horizontal veining is present. Veins reactive to HCl (Calcite). Some veins made up of pyrite in some areas. Ooids present throughout. Some groups of ooids observed. Ooids green/red in colour. Some ooids react with HCl. Pyrite replacement present as well.	151.9	152.2	0.3	Pyrite present. Darker in colour. Sparsely oolitic. Increased mud content/no veining. MOHS 5-6	
152.2	159.6	7.4	SHALE - Medium grey in colour. Massive and homogeneous with no apparent inclusions or sulphides. MOHS 2-3					

# Core Description Log

Hole ID	<b>BR-08A</b>	Project	<b>Botha River</b>	Date Logged		Logged By	
Collar	<b>843.00</b>	Total Depth	<b>781.1</b>	Core Size	<b>HQ3</b>	Lat	

Depth (ft)			Description	Sub-Depth (ft)			Sub-Interval Description	Remarks
From	To	Interval		From	To	Interval		
159.6	167.0	7.4	SANDSTONE - Lighter grey sandstone with some rare micaceous grains. MOHS 2-3.					
167.0	203.0	36.0	SHALE - Medium grey shale/siltstone/mudstone units. MOHS 3. Some small amounts of disseminated sulphide. Massive. Horizontal and vertical burrows present.	178.7	179.2	0.5	Fissile	4" let grey sandstone at 170' 188.7' 4 inch silty sandstone

# Core Description Log

Hole ID	<b>BR-11A</b>	Project	<b>Botha River</b>	Date Logged		Logged By	
Collar	<b>812.00</b>	Total Depth		Core Size	<b>HQ3</b>	Lat	

Depth (ft)			Description	Sub-Depth (ft)			Sub-Interval Description	Remarks
From	To	Interval		From	To	Interval		
0.0	44.0	44.0	GLACIAL TILL - Medium to dark grey clay with gravel to cobble sized inclusions throughout. Fairly monotonous. MOHS 2.	0.0	13.0	13.0	5 Feet Recovered - Somewhat oxidized (orangey-grey) till	
				13.0	18.0	5.0	5 Feet Recovered - Med-Dark Grey till	
44.0	53.6	9.6	UNCONSOLIDATED SANDSTONE - 5.6 Feet Recovered - yellow-grey in colour. Fine grained sand. Sub rounded, primarily quartz. MOHS 0 -1. Some varying mud content.	18.0	20.7	2.7	No recoveries	
				20.7	23.0	2.3	2.3 feet recovered, as above	
53.6	55.8	2.2	CEMENTED SANDSTONE - Light grey, fine grained quartz sandstone with heavy carbonate cement. Moderate iron staining throughout. Sulphides 'disseminated' throughout section. Minor horizontal gypsum? veins throughout.	23.0	26.5	3.5	No Recoveries	
				26.5	28.0	1.5	1.5 Feet recovered, as above	
55.8	63.3	7.5	UNCONSOLIDATED SANDSTONE - 4.5 feet recovered. Dark grey-green quartz rich, fine grained sand. Minor mud content. MOHS - 0-1	28.0	32.0	4.0	No Recoveries	
				32.0	44.0	12.0	6 feet recovered, as above	
63.3	64.0	0.8	CEMENTED SANDSTONE - Light grey, heavily carbonate cemented sandstone. Vuggy texture throughout section with small red grains present in vugs. No visible sulphides.	44.0	48.0	4.0	Yellow sands	
				48.0	50.0	2.0	Muddy Sand - Medium grey with iron staining	
				50.0	53.6	3.6	Yellow sands	

# Core Description Log

Hole ID	<b>BR-11A</b>	Project	<b>Botha River</b>	Date Logged		Logged By	
Collar	<b>812.00</b>	Total Depth		Core Size	<b>HQ3</b>	Lat	

Depth (ft)			Description	Sub-Depth (ft)			Sub-Interval Description	Remarks
From	To	Interval		From	To	Interval		
64.0	69.0	5.0	UNCONSOLIDATED SANDS - Light grey, fine grained, sub-rounded quartz sand. Varying clay content. MOHS 0-1	64.0	66.0	2.0	2 feet sands recovered. No clay	
69.0	69.5	0.5	CEMENTED SANDSTONE - Light grey, heavily cemented sandstone. Not reactive to HCl. Horizontal veins of white gypsum(?) throughout. No visible sulphides. MOHS 3-4	66.0	67.0	1.0	No Recoveries	
69.5	71.0	1.5	UNCONSOLIDATED SANDS - Green, fine grained, sub-rounded quartz grains. MOHS 1-2	67.0	69.0	2.0	2 feet sands recovered. Medium grey sand with moderate clay content	
71.0	71.8	0.8	CEMENTED SANDSTONE - Light grey quartz sandstone. Some small vertical calcite veins throughout. No visible sulphides.					
71.8	83.0	11.3	UNCONSOLIDATED SANDY MUDSTONE - 4.25 feet recovered. Dark grey, Grades from more sandy at top to more muddy at base.					
83.0	84.8	1.8	DARK GREY MUD WITH PEBBLES - looks like till. sluff?					
84.8	85.3	0.5	CEMENTED SILTY SANDSTONE - Medium grey, with 0.5 mm sub-horizontal white veins. Carbonate cemented.					
85.3	88.0	2.8	MUDDY SANDSTONE - Dark grey, muddy, fine grained sand. Minor Pyrite throughout.					
88.0	90.4	2.4	NO RECOVERIES					
90.4	93.0	2.6	SANDY MUDSTONE - medium to dark grey sandy mudstone, minor lenses of sandstone throughout. MOHS 2.					
93.0	95.8	2.8	NO RECOVERIES					
95.8	99.0	3.3	MUDDY SANDSTONE - Dark grey, fine grained sand with abundant mud. Not cemented, no visible sulphides. Grades from more muddy at top to more sandy at base. MOHS 2-3					
99.0	100.8	1.8	CEMENTED OOLITIC SANDSTONE - Carbonate ooids with silty light grey matrix. Some minor horizontal calcite veins. Some trace fossils (ooid filled vertical tubes). No sulphides visible. MOHS 4					

# Core Description Log

Hole ID BR-11A Project Botha River Date Logged \_\_\_\_\_ Logged By \_\_\_\_\_  
 Collar 812.00 Total Depth \_\_\_\_\_ Core Size HQ3 Lat \_\_\_\_\_ Long \_\_\_\_\_

Depth (ft)			Description	Sub-Depth (ft)			Sub-Interval Description	Remarks
From	To	Interval		From	To	Interval		
100.8	102.0	1.3	MUDGY SANDSTONE - Dark grey muddy sandstone, quartz rich, fine grained sand with muddy matrix					
102.0	103.0	1.0	CEMENTED SANDSTONE - Some white horizontal veins (gypsum?). Fine grained sand with light grey mud matrix. No visible sulphides.					
103.0	133.0	30.0	MUDSTONE - Medium grey mudstone. Fairly uniform. Very minor sand component in some places throughout. Some coaly particles in a few places.	103.0	108.0	5.0	5 feet recovered - Med-dark grey mudstone. Slightly fissile at top. Quite monotonous. MOHS 2.	
				108.0	111.0	3.0	NO RECOVERIES	
				111.0	113.0	2.0	As Above. Three inches micaceous sandstone at bottom.	
				113.0	114.0	1.0	NO RECOVERIES	
				114.0	133.0	19.0	Light grey mudstone. Minor 4 inch sand at top. Light grey mudstone for remainder. Coaly particles at 126 feet, appears to be roots. Minor coaly seam at 131.5'	



**Botha River 2012  
Sample Logs**

# Geochemistry Sample Log

## **Program Name:** **2012 Botha River Drilling Program**

## Project Area: **Botha River**

**Sampling Notes**   **IR=Iron**   **NS=Not Sampled**   **LC=Lost Core**   **C=Clay**   **SH=Shale**   **M=Mudstone**   **CG=Conglomerate**

# Composite Samples 25

# Bulk Samples 2

**# Duplicate Samples** 1

**Dennis Simoneau**  
Core Cutting Technician

**Andrew Reader**  
**Core Sampling Supervisor**

## **Geochemistry Sample Log**

**Program Name:**  
**2012 Botha River Drilling Program**

## Project Area: Botha River

**Sampling Notes**    IR=Iron    NS=Not Sampled    LC=Lost Core    C=Clay    SH=Shale    M=Mudstone    CG=Conglomerate

### **# Composite Samples 25**

**# Bulk Samples** 2

# Duplicate Samples 1

**Dennis Simoneau**  
Core Cutting Technician

**Andrew Reader**  
**Core Sampling Supervisor**

# Geochemistry Sample Log

**Program Name:**  
**2012 Botha River Drilling Program**

## **Project Area:**

**Sampling Notes**    IR=Iron    NS=Not Sampled    LC=Lost Core    C=Clay    SH=Shale    M=Mudstone    CG=Conglomerate

# Composite Samples 28

# Bulk Samples 3

# Duplicate Samples 1

**Dennis Simoneau**  
Core Cutting Technician

**Liam Murphy**  
**Core Sampling Supervisor**

# Geochemistry Sample Log

Program Name:  
2012 Botha River Drilling Program

Project Area:  
Botha River

Hole No.	BR-11A	Hole ID	BR-11A	Collar	812.00		
WRA Top Ore		WRA Base Ore		Thickness Ore			
Top (ft)	Sam Top m	Sam Bot m	Sample No.	Standard No	Bulk Den No	Duplicate No.	Note ID
44.0	13.41	-	01				SS
	13.96	-	02				SS
	14.51	-	03				SS
	15.06	-	04				SS
	15.61	-	05				SS
	16.16	-	06				SS
	16.36	-	07				SS
	16.66	-	08				SS
	16.96	-	09				SS
	17.26	-	10				SS
	17.56	-	11				SS
	17.98	-	12				SS
		-	13	CDN-BL-10			-
	18.40	-	14				SS
	18.82	-	15				SS
	19.24	-	16				SS
	19.50	-	17				SS
	19.80	-	18				SS
		-	19	CDN-GS-1J			-
	20.10	-	20				LC
	20.41	-	21				SS
	20.72	-	22				SS
	21.03	-	23				SS
	21.18	-	24				SS
	21.48	-	25				SS
	21.63	-	26				SS
	21.86	-	27				SS
	22.52	-	28				SS
	23.18	-	29				SS
	23.84	-	30				SS
	24.50	-	31				SS
	25.16	-	32				SS
	25.83	-	33				SS
	25.98	-	34				SS
	26.28	-	35				SS
	26.58	-	36				SS
	26.88	-	37				LC
	27.18	-	38				LC
	27.48	-	39				SS
	27.78	-	40		39B		SS
	27.78	-					SS

Sampling Notes IR=Iron NS=Not Sampled LC=Lost Core C=Clay SH=Shale M=Mudstone CG=Conglomerate

Page 1 of 2 (58 samples total)

# Composite Samples 37

# Bulk Samples 2

# Duplicate Samples 1

Dennis Simoneau

Core Cutting Technician

Andrew Reader

Core Sampling Supervisor

# Geochemistry Sample Log

**Program Name:**  
**2012 Botha River Drilling Program**

## **Project Area: Botha River**

**Sampling Notes**   **IR=Iron**   **NS=Not Sampled**   **LC=Lost Core**   **C=Clay**   **SH=Shale**   **M=Mudstone**   **CG=Conglomerate**

**Page 2 of 2 (58 samples total)**

# Composite Samples 16

**Dennis Simoneau**  
Gore Cutting Technician

**# Bulk Samples** 1

**# Duplicate Samples** 1

Andrew Reader

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### **Core Sampling Supervisor**



**Botha River 2012  
Analytical Results**



**INSPECTORATE**

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# Certificate of Analysis

**12-360-04072-01**

Inspectorate Exploration & Mining Services Ltd.  
#200 - 11620 Horseshoe Way  
Richmond, BC V7A 4V5 Canada  
Phone: 604-272-7818

## Distribution List

Attention: Andrew Reader  
Suite 200, 6125 11th SE  
Calgary, Alberta T2H 2L6  
Phone: 403-640-7977  
EMail: andrew@ironstonerесources.com

Attention: Liam Murphy  
EMail: liam@ironstonerесources.com

Submitted By: **Ironstone Resources Ltd**  
**Suite 200, 6125 11th SE**  
**Calgary, Alberta T2H 2L6**

Attention: **Andrew Reader**

Project: **Botha River**  
Description: **IR-01-06-12**

Date Received: 06/27/2012  
Date Completed: 07/03/2012  
Invoice:

Location	Samples	Type	Preparation Description
Vancouver, BC	10	Pulp	SP-PU/Handling of submitted samples
Vancouver, BC	131	Rock	SP-RX-2K/Rock/Chips/Drill Core/Cuttings <2Kg

Location	Quantity	Method	Description
Vancouver, BC	136	Au-1AT-AA	Au, 1AT Fire Assay, AAS
Vancouver, BC	136	30-AR-TR	30 Element, Aqua Regia, ICP, Trace Level
Vancouver, BC	136	Hg-AR-TR-CVAA	Hg, AQR, CVAA, Trace Levels

The results of this assay were based solely upon the content of the sample submitted. Any decision to invest should be made only after the potential investment value of the claim or deposit has been determined based on the results of assays of multiple samples of geologic materials collected by the prospective investor or by a qualified person selected by him and based on an evaluation of all engineering data which is available concerning any proposed project. For our complete terms and conditions please see our website at [www.inspectorate.com](http://www.inspectorate.com).

For and on behalf of **Inspectorate Exploration and Mining Services Ltd**

By

*Sofia Devota – Operations Manager*



INSPECTORATE

A Bureau Veritas Group Company

#200 - 11620 Horseshoe Way

Richmond, BC V7A 4V5 Canada

## Certificate of Analysis

12-360-04072-01

Ironstone Resources Ltd  
 Suite 200, 6125 11th SE  
 Calgary, Alberta T2H 2L6

Sample Description	Sample Type	Au	Ag	Al	As	Ba	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	La
		Au-1AT-AA g/ton 0.005	30-AR-TR ppm 0.1	30-AR-TR % 0.01	30-AR-TR ppm 5	30-AR-TR ppm 10	30-AR-TR ppm 2	30-AR-TR ppm 0.01	30-AR-TR ppm 0.5	30-AR-TR ppm 1	30-AR-TR ppm 1	30-AR-TR ppm 0.01	30-AR-TR % 0.01	30-AR-TR ppm 2	
BR-01 01	Rock	0.006	<0.1	1.22	13	205	<2	0.25	<0.5	10	93	25	2.87	0.29	9
BR-01 02	Rock	0.006	<0.1	1.31	13	178	<2	0.25	<0.5	10	91	25	2.96	0.30	10
BR-01 03	Rock	<0.005	<0.1	1.27	14	193	<2	0.23	<0.5	10	89	24	2.95	0.29	9
BR-01 04	Rock	<0.005	<0.1	1.25	22	191	<2	0.25	<0.5	12	88	24	2.90	0.32	10
BR-01 05	Rock	<0.005	<0.1	1.16	15	169	<2	0.23	<0.5	9	106	21	2.90	0.30	10
BR-01 06	Rock	<0.005	<0.1	1.03	5	324	<2	2.34	3.0	14	72	9	>10	0.23	8
BR-01 07	Rock	<0.005	<0.1	1.62	57	369	<2	6.65	5.0	36	61	18	>10	0.30	27
BR-01 08	Rock	<0.005	<0.1	1.42	64	58	<2	8.47	2.4	23	52	12	>10	0.38	13
BR-01 09	Rock	<0.005	<0.1	1.67	112	51	<2	9.02	0.8	25	49	12	>10	0.34	9
BR-01 10	Rock	<0.005	<0.1	1.43	118	36	3	8.13	3.5	25	34	9	>10	0.24	15
BR-01 11	Rock	<0.005	<0.1	1.14	219	20	<2	4.82	6.3	32	36	8	>10	0.16	22
BR-01 12	Pulp	<0.005	0.1	1.66	6	108	<2	0.91	<0.5	11	34	28	2.74	0.18	4
BR-01 13	Rock	<0.005	<0.1	1.57	210	21	<2	3.61	5.7	56	57	11	>10	0.20	31
BR-01 13D	Rock	<0.005	<0.1	1.59	260	21	<2	3.93	5.8	56	57	10	>10	0.25	31
BR-01 14	Rock	<0.005	<0.1	1.81	78	41	<2	3.09	5.5	62	71	12	>10	0.23	40
BR-01 15	Rock	<0.005	<0.1	1.58	195	25	<2	3.27	4.1	57	70	10	>10	0.25	33
BR-01 16	Rock	<0.005	<0.1	1.08	17	214	<2	2.81	5.1	36	64	7	>10	0.18	30
BR-01 17	Rock	<0.005	<0.1	0.69	26	460	<2	3.75	4.3	8	44	24	>10	0.21	14
BR-01 18	Pulp	0.903	1.0	1.58	13	140	<2	1.02	<0.5	10	31	408	3.31	0.28	6
BR-01 19	Rock	0.006	<0.1	1.44	37	221	<2	0.82	<0.5	16	86	28	3.24	0.36	17
BR-01 20	Rock	0.006	<0.1	1.40	21	176	<2	0.42	<0.5	13	66	32	2.31	0.38	11
BR-01 21	Rock	0.006	<0.1	1.50	18	159	<2	0.39	<0.5	12	56	32	2.24	0.40	11
BR-01 22	Rock	<0.005	<0.1	1.40	18	133	<2	0.36	<0.5	13	49	32	2.31	0.38	10
BR-01 23	Rock	<0.005	<0.1	1.34	16	110	<2	0.36	<0.5	11	46	31	2.37	0.36	10
BR-01 24	Rock	<0.005	<0.1	1.39	14	117	<2	0.37	<0.5	11	47	31	2.32	0.38	10
BR-01 25	Rock	<0.005	<0.1	1.41	12	157	<2	0.38	<0.5	11	46	32	2.22	0.38	11
BR-05A 01	Rock	<0.005	<0.1	0.90	9	133	<2	0.44	<0.5	8	169	11	4.91	0.11	6
BR-05A 02	Rock	<0.005	<0.1	0.85	8	45	<2	3.64	1.3	17	134	9	9.15	0.15	10
BR-05A 03	Rock	<0.005	<0.1	0.57	18	135	<2	0.16	<0.5	2	135	11	1.49	0.20	9
BR-05A 04	Rock	<0.005	<0.1	1.17	26	32	<2	3.95	<0.5	20	90	17	6.79	0.33	12
BR-05A 05	Rock	<0.005	<0.1	1.28	24	171	<2	0.39	<0.5	16	120	23	3.38	0.33	15
BR-05A 06	Rock	<0.005	<0.1	1.18	30	145	<2	0.31	<0.5	14	164	19	3.26	0.28	14
BR-05A 07	Rock	<0.005	<0.1	1.05	39	49	<2	0.22	<0.5	21	130	16	4.37	0.21	11
BR-05A 08	Rock	<0.005	<0.1	0.91	35	52	<2	0.33	<0.5	10	188	16	3.23	0.23	8
BR-05A 09	Rock	<0.005	<0.1	0.63	43	13	<2	>10	0.8	6	48	14	9.65	0.25	5
BR-05A 10	Rock	<0.005	<0.1	0.96	102	29	<2	>10	1.4	16	50	15	>10	0.30	16
BR-05A 11	Pulp	0.871	1.0	1.64	16	141	<2	1.04	0.6	10	32	423	3.32	0.29	7
BR-05A 12	Rock	<0.005	<0.1	2.03	37	362	<2	1.94	1.1	40	180	32	>10	0.31	35
BR-05A 13	Rock	<0.005	<0.1	0.98	88	29	<2	>10	2.4	16	44	11	>10	0.29	9
BR-05A 14	Rock	0.006	<0.1	1.28	115	32	<2	>10	3.8	44	59	16	>10	0.29	19



INSPECTORATE

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#200 - 11620 Horseshoe Way

Richmond, BC V7A 4V5 Canada

## Certificate of Analysis

12-360-04072-01

Ironstone Resources Ltd  
 Suite 200, 6125 11th SE  
 Calgary, Alberta T2H 2L6

Sample Description	Sample Type	Au Au-1AT-AA	Ag 30-AR-TR	Al 30-AR-TR	As 30-AR-TR	Ba 30-AR-TR	Bi 30-AR-TR	Ca 30-AR-TR	Cd 30-AR-TR	Co 30-AR-TR	Cr 30-AR-TR	Cu 30-AR-TR	Fe 30-AR-TR	K 30-AR-TR	La 30-AR-TR
		g/ton	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	
BR-05A 14D	Rock	<0.005	<0.1	1.66	38	58	<2	7.56	2.8	37	97	21	>10	0.34	42
BR-05A 15	Pulp	0.009	<0.1	1.68	<5	104	<2	0.93	<0.5	11	34	30	2.69	0.18	4
BR-05A 16	Rock	<0.005	<0.1	0.91	72	41	<2	2.08	3.8	29	78	12	>10	0.24	14
BR-05A 17	Rock	<0.005	<0.1	1.50	67	79	<2	0.46	<0.5	23	103	22	5.48	0.34	14
BR-05A 18	Rock	<0.005	<0.1	1.39	45	64	<2	0.44	<0.5	20	59	27	3.39	0.36	13
BR-05A 19	Rock	<0.005	<0.1	1.32	23	89	<2	0.38	<0.5	16	43	29	2.73	0.36	12
BR-05A 20	Rock	0.005	<0.1	1.45	27	65	<2	0.66	<0.5	15	52	31	2.85	0.39	15
BR-05A 21	Rock	0.008	<0.1	1.64	58	20	<2	0.42	<0.5	18	80	33	3.49	0.45	12
BR-05A 22	Rock	<0.005	<0.1	1.60	17	176	<2	0.34	<0.5	13	51	37	2.34	0.41	15
BR-05A 23	Rock	<0.005	<0.1	1.56	19	72	<2	0.36	<0.5	12	68	35	2.93	0.39	15
BR-05A 24	Rock	<0.005	<0.1	1.30	10	129	<2	1.06	1.1	9	71	27	8.98	0.29	15
BR-05A 25	Rock	<0.005	<0.1	0.91	<5	293	<2	1.15	1.9	6	74	30	>10	0.22	13
BR-08A 01	Rock	0.006	<0.1	1.74	151	15	<2	0.32	<0.5	16	36	45	5.99	0.49	11
BR-08A 02	Rock	<0.005	<0.1	1.88	173	12	<2	0.35	<0.5	34	71	40	8.02	0.53	24
BR-08A 03	Rock	0.007	<0.1	2.76	38	218	<2	1.76	1.9	19	111	27	>10	0.52	30
BR-08A 04	Rock	<0.005	<0.1	1.77	272	114	<2	>10	1.3	27	78	11	>10	0.46	27
BR-08A 05	Rock	0.006	<0.1	1.13	68	331	<2	2.06	3.3	20	38	17	>10	0.39	8
BR-08A 06	Rock	<0.005	<0.1	1.62	276	75	<2	>10	2.2	25	69	10	>10	0.44	22
BR-08A 07	Rock	<0.005	<0.1	1.43	13	130	<2	0.35	<0.5	11	71	28	2.95	0.38	9
BR-08A 08	Rock	<0.005	<0.1	1.35	21	21	<2	0.30	<0.5	11	69	30	4.48	0.37	8
BR-08A 09	Rock	<0.005	<0.1	1.25	27	110	<2	0.26	<0.5	11	62	28	3.09	0.32	8
BR-08A 10	Pulp	0.855	0.9	1.57	15	140	<2	1.00	0.6	10	32	399	3.22	0.28	7
BR-08A 11	Rock	<0.005	<0.1	1.31	14	134	<2	0.28	<0.5	11	62	24	3.12	0.33	9
BR-08A 12	Rock	<0.005	<0.1	1.41	13	147	<2	0.27	<0.5	11	54	28	3.03	0.35	9
BR-08A 13	Rock	<0.005	<0.1	1.44	44	126	<2	0.25	<0.5	10	70	21	3.81	0.32	8
BR-08A 14	Pulp	<0.005	<0.1	1.65	<5	104	<2	0.93	<0.5	11	33	29	2.73	0.18	4
BR-08A 15	Rock	<0.005	<0.1	1.54	24	88	<2	1.93	<0.5	11	72	20	4.92	0.35	8
BR-08A 16	Rock	<0.005	<0.1	1.03	14	109	<2	>10	<0.5	8	46	9	5.69	0.31	7
BR-08A 17	Rock	<0.005	<0.1	0.80	37	15	<2	>10	0.6	11	28	5	>10	0.23	9
BR-08A 18	Rock	<0.005	<0.1	1.12	131	15	<2	4.79	1.8	27	43	10	>10	0.28	16
BR-08A 19	Rock	<0.005	<0.1	1.66	60	38	<2	2.95	<0.5	26	59	23	7.95	0.42	21
BR-08A 20	Rock	<0.005	<0.1	0.99	34	34	<2	0.37	<0.5	28	46	23	2.60	0.29	13
BR-08A 21	Rock	<0.005	<0.1	1.06	33	32	<2	0.36	<0.5	16	43	23	2.78	0.33	11
BR-08A 21D	Rock	0.006	0.1	0.99	23	23	<2	0.34	<0.5	14	45	22	2.97	0.29	10
BR-08A 22	Rock	<0.005	<0.1	1.02	19	25	<2	0.29	<0.5	11	41	25	2.74	0.32	10
BR-08A 23	Rock	<0.005	<0.1	1.11	18	53	<2	0.36	<0.5	13	45	27	2.27	0.31	13
BR-08A 24	Rock	<0.005	0.2	1.01	10	208	<2	0.71	<0.5	9	27	26	7.42	0.30	10
BR-08A 25	Rock	0.006	<0.1	1.13	8	184	<2	1.40	<0.5	9	47	27	5.39	0.30	15
BR-08A 26	Rock	0.005	0.2	0.80	<5	145	<2	0.60	<0.5	4	41	18	6.06	0.13	3
BR-08A 27	Rock	0.006	0.2	0.76	<5	139	<2	0.18	<0.5	1	50	14	2.05	0.11	4



INSPECTORATE

A Bureau Veritas Group Company

#200 - 11620 Horseshoe Way

Richmond, BC V7A 4V5 Canada

## Certificate of Analysis

12-360-04072-01

Ironstone Resources Ltd  
 Suite 200, 6125 11th SE  
 Calgary, Alberta T2H 2L6

Sample Description	Sample Type	Au-Au-1AT-AA	Ag ppm	Al %	As ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	La ppm
		g/ton	0.005	0.1	0.01	5	10	0.01	0.5	1	1	1	0.01	0.01	2
BR-08A 28	Rock	<0.005	0.1	0.81	<5	120	<2	0.10	<0.5	2	62	13	1.49	0.12	8
BR-11A 01	Rock	<0.005	<0.1	0.34	14	60	<2	0.10	<0.5	2	188	6	1.89	0.08	6
BR-11A 02	Rock	<0.005	<0.1	0.53	37	61	<2	0.11	<0.5	2	108	4	1.79	0.11	7
BR-11A 03	Rock	<0.005	<0.1	1.15	69	45	<2	0.59	<0.5	4	63	21	3.40	0.36	7
BR-11A 04	Rock	<0.005	<0.1	1.27	31	41	<2	1.53	<0.5	18	96	10	6.08	0.22	19
BR-11A 05	Rock	<0.005	<0.1	0.73	42	58	<2	0.62	<0.5	9	98	18	5.59	0.16	6
BR-11A 06	Rock	<0.005	<0.1	0.53	78	64	<2	0.65	<0.5	3	123	12	2.32	0.16	5
BR-11A 07	Rock	0.005	<0.1	0.60	28	24	<2	9.64	<0.5	18	79	9	7.15	0.17	5
BR-11A 08	Rock	<0.005	<0.1	0.48	9	39	<2	7.82	<0.5	10	101	7	7.13	0.13	7
BR-11A 09	Rock	<0.005	<0.1	0.60	6	155	<2	0.91	<0.5	18	170	9	2.94	0.10	19
BR-11A 10	Rock	<0.005	<0.1	0.37	10	56	<2	0.30	<0.5	8	174	7	3.26	0.09	5
BR-11A 11	Rock	<0.005	<0.1	0.34	10	58	<2	0.32	<0.5	7	188	6	3.54	0.08	4
BR-11A 12	Rock	<0.005	<0.1	0.33	9	64	<2	0.13	<0.5	6	184	6	1.60	0.07	5
BR-11A 13	Pulp	<0.005	0.3	1.43	<5	92	<2	0.70	<0.5	9	26	24	2.33	0.15	3
BR-11A 14	Rock	<0.005	<0.1	0.34	10	72	<2	0.12	<0.5	6	243	7	1.95	0.08	5
BR-11A 15	Rock	<0.005	<0.1	0.38	10	87	<2	0.20	<0.5	8	180	7	2.36	0.08	6
BR-11A 16	Rock	<0.005	<0.1	0.14	5	15	<2	5.50	<0.5	17	89	2	6.51	0.04	3
BR-11A 17	Rock	<0.005	<0.1	0.45	12	98	<2	0.26	<0.5	8	170	8	3.09	0.11	5
BR-11A 18	Rock	<0.005	<0.1	0.45	11	91	<2	0.19	<0.5	6	189	8	2.12	0.10	5
BR-11A 19	Pulp	0.956	1.6	1.50	14	129	<2	0.88	<0.5	9	27	370	3.01	0.26	6
BR-11A 20	Rock	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BR-11A 21	Rock	0.005	<0.1	0.42	9	68	<2	0.14	<0.5	5	150	8	1.41	0.09	4
BR-11A 22	Rock	<0.005	<0.1	0.72	24	77	<2	0.20	<0.5	9	150	12	2.30	0.16	5
BR-11A 23	Rock	<0.005	<0.1	0.52	21	19	<2	4.45	0.8	22	59	6	>10	0.14	9
BR-11A 24	Rock	<0.005	<0.1	0.54	17	119	<2	0.62	<0.5	15	196	8	5.97	0.09	7
BR-11A 24D	Rock	<0.005	<0.1	0.50	10	86	<2	0.12	<0.5	17	158	8	2.46	0.06	7
BR-11A 25	Rock	<0.005	<0.1	0.66	19	23	<2	3.39	<0.5	19	149	9	>10	0.21	5
BR-11A 26	Rock	<0.005	<0.1	0.29	31	25	<2	7.94	<0.5	16	51	2	8.19	0.12	6
BR-11A 27	Rock	0.006	<0.1	0.46	21	36	<2	0.16	<0.5	7	183	7	2.40	0.12	4
BR-11A 28	Rock	<0.005	<0.1	0.52	17	43	<2	0.14	<0.5	6	159	11	1.87	0.14	5
BR-11A 29	Rock	<0.005	<0.1	0.61	39	30	<2	0.15	<0.5	8	142	11	2.18	0.17	6
BR-11A 30	Rock	<0.005	<0.1	0.61	15	38	<2	0.17	<0.5	6	127	10	1.83	0.18	5
BR-11A 31	Rock	<0.005	<0.1	0.82	51	30	<2	8.07	<0.5	8	76	17	3.71	0.30	10
BR-11A 32	Rock	0.007	<0.1	0.90	17	85	<2	2.49	<0.5	8	86	21	2.45	0.25	10
BR-11A 33	Rock	0.006	<0.1	0.76	35	79	<2	>10	<0.5	6	65	8	2.23	0.35	14
BR-11A 34	Rock	<0.005	<0.1	0.92	31	11	<2	0.31	<0.5	10	69	17	4.88	0.22	7
BR-11A 35	Rock	<0.005	<0.1	0.95	56	14	<2	0.18	<0.5	10	121	13	5.35	0.20	7
BR-11A 36	Rock	<0.005	<0.1	1.05	23	25	<2	0.82	<0.5	12	100	14	4.48	0.19	7
BR-11A 37	Rock	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BR-11A 38	Rock	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

NS = No Sample



INSPECTORATE

A Bureau Veritas Group Company

#200 - 11620 Horseshoe Way

Richmond, BC V7A 4V5 Canada

## Certificate of Analysis

12-360-04072-01

Ironstone Resources Ltd  
 Suite 200, 6125 11th SE  
 Calgary, Alberta T2H 2L6

Sample Description	Sample Type	Au	Ag	Al	As	Ba	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	La
		Au-1AT-AA g/ton 0.005	30-AR-TR ppm 0.1	30-AR-TR % 0.01	30-AR-TR ppm 5	30-AR-TR ppm 10	30-AR-TR ppm 2	30-AR-TR % 0.01	30-AR-TR ppm 0.5	30-AR-TR ppm 1	30-AR-TR ppm 1	30-AR-TR % 0.01	30-AR-TR % 0.01	30-AR-TR ppm 2	
BR-11A 39	Rock	<0.005	<0.1	1.14	51	24	<2	0.87	<0.5	10	107	13	5.01	0.27	12
BR-11A 40	Rock	<0.005	0.1	0.92	21	40	<2	0.31	<0.5	7	85	16	3.23	0.23	7
BR-11A 41	Rock	<0.005	0.1	0.82	15	30	<2	0.44	<0.5	7	83	26	2.72	0.20	6
BR-11A 42	Rock	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BR-11A 43	Rock	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BR-11A 44	Rock	<0.005	<0.1	0.98	10	80	<2	0.29	<0.5	7	106	25	2.33	0.25	7
BR-11A 45	Rock	<0.005	<0.1	0.92	20	58	<2	0.26	<0.5	7	86	23	2.98	0.22	7
BR-11A 46	Rock	<0.005	<0.1	1.05	24	71	<2	0.22	<0.5	7	82	19	3.14	0.21	6
BR-11A 47	Rock	<0.005	<0.1	1.18	33	65	<2	0.38	<0.5	10	102	18	4.02	0.21	7
BR-11A 48	Pulp	0.962	1.3	1.57	13	137	<2	1.00	<0.5	10	29	369	3.18	0.27	7
BR-11A 49	Rock	0.005	<0.1	1.23	38	176	<2	3.49	1.5	21	64	13	>10	0.27	19
BR-11A 50	Rock	<0.005	<0.1	1.30	37	354	<2	>10	<0.5	22	67	14	9.71	0.31	29
BR-11A 51	Rock	<0.005	<0.1	1.44	36	93	<2	0.66	<0.5	25	89	18	5.21	0.26	17
BR-11A 52	Rock	<0.005	<0.1	0.83	45	101	<2	6.52	1.1	12	66	10	>10	0.23	24
BR-11A 52D	Rock	<0.005	<0.1	0.83	90	58	<2	6.07	0.6	19	66	11	>10	0.18	19
BR-11A 53	Rock	<0.005	<0.1	1.28	36	65	<2	0.53	<0.5	18	84	25	3.88	0.33	15
BR-11A 54	Rock	0.007	<0.1	1.37	31	35	<2	0.64	<0.5	17	82	29	3.52	0.41	14
BR-11A 55	Pulp	<0.005	0.1	1.48	<5	94	<2	0.77	<0.5	9	28	25	2.37	0.17	4
BR-11A 56	Rock	0.005	<0.1	1.17	17	94	<2	0.50	<0.5	14	40	30	1.93	0.34	12
BR-11A 57	Rock	0.005	0.2	1.18	16	46	<2	1.28	1.4	8	40	31	>10	0.30	13
BR-11A 58	Rock	0.009	0.2	1.55	13	103	<2	0.50	0.8	15	50	60	4.49	0.31	18

NS = No Sample



**INSPECTORATE**

A Bureau Veritas Group Company

#200 - 11620 Horseshoe Way

Richmond, BC V7A 4V5 Canada

# Certificate of Analysis

**12-360-04072-01**

**Ironstone Resources Ltd**  
**Suite 200, 6125 11th SE**  
**Calgary, Alberta T2H 2L6**

Sample Description	Sample Type	Mg 30-AR-TR %	Mn 30-AR-TR ppm	Mo 30-AR-TR ppm	Na 30-AR-TR %	Ni 30-AR-TR ppm	P 30-AR-TR ppm	Pb 30-AR-TR ppm	Sb 30-AR-TR ppm	Sc 30-AR-TR ppm	Sr 30-AR-TR ppm	Ti 30-AR-TR %	Tl 30-AR-TR ppm	V 30-AR-TR ppm	W 30-AR-TR ppm
BR-01 01	Rock	0.35	64	<1	0.02	26	484	8	3	4	63	<0.01	<10	38	<10
BR-01 02	Rock	0.38	63	<1	0.03	27	489	7	3	5	66	<0.01	<10	40	<10
BR-01 03	Rock	0.38	58	<1	0.03	27	455	9	<2	5	63	<0.01	<10	40	<10
BR-01 04	Rock	0.37	57	<1	0.03	30	522	9	3	4	68	<0.01	<10	42	<10
BR-01 05	Rock	0.33	55	<1	0.03	26	509	7	5	4	52	<0.01	<10	42	<10
BR-01 06	Rock	1.32	866	<1	0.03	32	898	14	7	6	105	0.01	<10	116	<10
BR-01 07	Rock	1.00	733	<1	0.06	80	6603	82	7	18	323	0.05	<10	619	<10
BR-01 08	Rock	1.08	944	<1	0.04	51	2452	33	7	8	234	0.01	<10	209	<10
BR-01 09	Rock	1.14	720	<1	0.04	42	1631	25	3	6	232	<0.01	<10	135	<10
BR-01 10	Rock	1.53	773	<1	0.05	47	4099	52	8	9	289	0.02	<10	281	<10
BR-01 11	Rock	1.35	879	<1	0.08	61	8182	67	9	13	379	0.02	<10	414	<10
BR-01 12	Pulp	0.87	421	2	0.08	27	632	<2	<2	5	53	0.13	<10	66	16
BR-01 13	Rock	0.94	641	2	0.09	96	9628	102	10	20	434	0.02	<10	648	<10
BR-01 13D	Rock	0.96	771	1	0.11	90	10927	97	12	19	454	0.02	<10	627	<10
BR-01 14	Rock	0.84	510	<1	0.08	110	8099	141	8	24	450	0.03	<10	814	<10
BR-01 15	Rock	0.89	608	<1	0.07	91	7674	106	9	18	410	0.02	<10	588	<10
BR-01 16	Rock	0.77	787	<1	0.06	68	5794	75	8	14	320	0.01	<10	461	<10
BR-01 17	Rock	0.83	1247	<1	0.07	14	7481	15	10	5	360	<0.01	<10	108	<10
BR-01 18	Pulp	0.82	489	9	0.10	29	638	292	<2	5	61	0.13	<10	65	12
BR-01 19	Rock	0.38	90	<1	0.04	32	2397	16	2	6	131	<0.01	<10	86	<10
BR-01 20	Rock	0.39	69	<1	0.04	34	806	10	<2	5	83	<0.01	<10	46	<10
BR-01 21	Rock	0.41	65	<1	0.04	34	640	10	4	6	85	<0.01	<10	48	<10
BR-01 22	Rock	0.40	63	<1	0.04	36	588	9	3	5	83	<0.01	<10	42	<10
BR-01 23	Rock	0.40	63	<1	0.05	35	602	10	<2	5	83	<0.01	<10	40	<10
BR-01 24	Rock	0.40	62	<1	0.05	35	616	10	2	5	92	<0.01	<10	40	<10
BR-01 25	Rock	0.43	65	<1	0.06	34	657	10	<2	5	97	<0.01	<10	41	<10
BR-05A 01	Rock	0.21	262	<1	0.01	28	749	5	4	3	32	<0.01	<10	52	<10
BR-05A 02	Rock	0.41	1122	<1	0.03	29	2377	9	5	4	107	<0.01	<10	50	<10
BR-05A 03	Rock	0.08	24	<1	0.03	7	271	5	3	2	50	<0.01	<10	29	<10
BR-05A 04	Rock	0.34	387	<1	0.04	38	3487	9	4	5	141	<0.01	<10	45	<10
BR-05A 05	Rock	0.28	104	<1	0.03	34	741	14	2	6	54	<0.01	<10	69	<10
BR-05A 06	Rock	0.25	84	<1	0.02	29	523	11	4	5	53	<0.01	<10	62	<10
BR-05A 07	Rock	0.24	68	<1	0.02	44	455	16	5	5	25	<0.01	<10	79	<10
BR-05A 08	Rock	0.22	62	<1	0.02	25	442	4	5	3	32	<0.01	<10	37	<10
BR-05A 09	Rock	0.65	375	1	0.05	14	6416	13	<2	4	464	<0.01	<10	74	<10
BR-05A 10	Rock	0.89	547	<1	0.06	32	6553	27	4	10	394	<0.01	<10	148	<10
BR-05A 11	Pulp	0.84	498	10	0.10	30	623	294	<2	5	65	0.14	<10	67	<10
BR-05A 12	Rock	0.76	375	<1	0.08	105	3971	157	11	17	248	0.02	<10	817	<10
BR-05A 13	Rock	0.86	671	<1	0.05	33	4766	28	5	6	383	<0.01	<10	160	<10
BR-05A 14	Rock	0.76	795	2	0.08	86	6002	72	9	13	431	<0.01	<10	467	<10

NS = No Sample



**INSPECTORATE**

A Bureau Veritas Group Company

#200 - 11620 Horseshoe Way

Richmond, BC V7A 4V5 Canada

# Certificate of Analysis

**12-360-04072-01**

**Ironstone Resources Ltd**  
Suite 200, 6125 11th SE  
Calgary, Alberta T2H 2L6

Sample Description	Sample Type	Mg 30-AR-TR	Mn 30-AR-TR	Mo 30-AR-TR	Na 30-AR-TR	Ni 30-AR-TR	P 30-AR-TR	Pb 30-AR-TR	Sb 30-AR-TR	Sc 30-AR-TR	Sr 30-AR-TR	Ti 30-AR-TR	Tl 30-AR-TR	V 30-AR-TR	W 30-AR-TR
		% 0.01	ppm 5	ppm 1	% 0.01	ppm 10	ppm 2	ppm 2	ppm 1	ppm 1	% 0.01	ppm 10	ppm 1	ppm 10	ppm 10
BR-05A 14D	Rock	0.82	636	<1	0.10	78	8218	99	5	19	468	0.01	<10	604	<10
BR-05A 15	Pulp	0.86	418	3	0.08	26	597	<2	<2	5	54	0.14	<10	65	15
BR-05A 16	Rock	0.74	946	<1	0.06	46	3242	27	9	7	165	<0.01	<10	181	<10
BR-05A 17	Rock	0.44	81	<1	0.07	40	1198	24	4	7	90	<0.01	<10	123	<10
BR-05A 18	Rock	0.42	67	<1	0.08	40	1013	14	2	6	103	<0.01	<10	62	<10
BR-05A 19	Rock	0.42	97	<1	0.09	35	799	10	3	6	101	<0.01	<10	43	<10
BR-05A 20	Rock	0.43	114	<1	0.10	36	1798	10	3	6	141	<0.01	<10	49	<10
BR-05A 21	Rock	0.45	102	1	0.10	48	816	13	3	6	137	<0.01	<10	50	<10
BR-05A 22	Rock	0.50	127	<1	0.12	41	636	11	<2	7	111	<0.01	<10	48	<10
BR-05A 23	Rock	0.50	107	<1	0.12	40	608	12	2	6	127	<0.01	<10	46	<10
BR-05A 24	Rock	0.72	946	<1	0.08	41	2278	7	4	6	119	0.02	<10	50	<10
BR-05A 25	Rock	0.91	1267	<1	0.07	30	1790	<2	5	8	103	0.02	<10	47	<10
BR-08A 01	Rock	0.59	121	7	0.07	42	371	16	3	5	92	<0.01	<10	89	<10
BR-08A 02	Rock	0.58	103	3	0.08	57	411	47	3	8	101	0.01	<10	502	<10
BR-08A 03	Rock	1.03	582	<1	0.09	28	2019	72	4	12	198	0.03	<10	1531	<10
BR-08A 04	Rock	0.87	944	<1	0.10	33	9664	67	3	12	725	0.05	<10	1210	<10
BR-08A 05	Rock	1.25	1238	<1	0.06	30	927	16	4	7	127	<0.01	<10	406	<10
BR-08A 06	Rock	0.80	949	<1	0.09	29	8206	57	4	10	652	0.04	<10	1081	<10
BR-08A 07	Rock	0.39	75	<1	0.12	30	804	7	3	5	75	<0.01	<10	48	<10
BR-08A 08	Rock	0.38	73	<1	0.12	32	752	8	<2	5	63	<0.01	<10	46	10
BR-08A 09	Rock	0.38	71	<1	0.12	31	663	8	<2	4	64	<0.01	<10	41	<10
BR-08A 10	Pulp	0.82	490	10	0.09	29	604	287	<2	5	63	0.13	<10	66	<10
BR-08A 11	Rock	0.40	71	<1	0.12	29	735	8	<2	5	70	<0.01	<10	43	<10
BR-08A 12	Rock	0.41	74	<1	0.13	31	629	8	<2	5	69	<0.01	<10	46	<10
BR-08A 13	Rock	0.46	70	<1	0.12	29	640	9	4	5	64	<0.01	<10	51	<10
BR-08A 14	Pulp	0.86	419	2	0.08	26	602	<2	<2	5	51	0.14	<10	65	17
BR-08A 15	Rock	0.52	96	<1	0.13	28	642	11	3	5	93	<0.01	<10	66	<10
BR-08A 16	Rock	0.69	433	<1	0.09	18	677	11	<2	5	311	<0.01	<10	86	<10
BR-08A 17	Rock	0.59	661	2	0.10	22	6002	13	<2	6	344	<0.01	<10	155	<10
BR-08A 18	Rock	0.72	891	1	0.13	52	5163	49	3	12	290	<0.01	<10	306	<10
BR-08A 19	Rock	0.54	570	<1	0.20	44	8080	53	<2	10	307	<0.01	<10	244	<10
BR-08A 20	Rock	0.29	62	<1	0.18	46	992	20	<2	6	88	<0.01	<10	51	<10
BR-08A 21	Rock	0.30	90	<1	0.18	32	877	9	<2	5	90	<0.01	<10	38	<10
BR-08A 21D	Rock	0.28	79	<1	0.18	30	803	10	<2	5	82	<0.01	<10	34	<10
BR-08A 22	Rock	0.27	67	<1	0.18	26	640	7	<2	5	79	<0.01	<10	31	<10
BR-08A 23	Rock	0.32	97	<1	0.20	30	843	9	<2	5	100	<0.01	<10	34	<10
BR-08A 24	Rock	0.50	783	<1	0.17	25	1090	<2	<2	5	104	<0.01	<10	32	<10
BR-08A 25	Rock	0.46	507	<1	0.17	31	3862	9	<2	6	168	<0.01	<10	38	<10
BR-08A 26	Rock	0.42	518	<1	0.15	19	731	<2	<2	3	68	<0.01	<10	28	<10
BR-08A 27	Rock	0.14	96	<1	0.17	11	72	6	<2	4	47	<0.01	<10	29	<10

NS = No Sample



**INSPECTORATE**

A Bureau Veritas Group Company

#200 - 11620 Horseshoe Way

Richmond, BC V7A 4V5 Canada

# Certificate of Analysis

**12-360-04072-01**

**Ironstone Resources Ltd**  
**Suite 200, 6125 11th SE**  
**Calgary, Alberta T2H 2L6**

Sample Description	Sample Type	Mg 30-AR-TR %	Mn 30-AR-TR ppm	Mo 30-AR-TR ppm	Na 30-AR-TR %	Ni 30-AR-TR ppm	P 30-AR-TR ppm	Pb 30-AR-TR ppm	Sb 30-AR-TR ppm	Sc 30-AR-TR ppm	Sr 30-AR-TR %	Ti 30-AR-TR ppm	Tl 30-AR-TR ppm	V 30-AR-TR ppm	W 30-AR-TR ppm
BR-08A 28	Rock	0.12	55	<1	0.12	13	37	4	<2	5	33	<0.01	<10	23	<10
BR-11A 01	Rock	0.03	25	<1	0.05	7	528	3	<2	2	41	<0.01	<10	47	<10
BR-11A 02	Rock	0.06	19	<1	0.05	6	800	<2	<2	3	46	<0.01	<10	46	<10
BR-11A 03	Rock	0.20	29	2	0.07	14	1118	11	<2	5	71	<0.01	<10	47	<10
BR-11A 04	Rock	0.34	769	<1	0.03	28	4457	17	<2	6	120	<0.01	<10	93	<10
BR-11A 05	Rock	0.20	378	<1	0.06	17	649	<2	<2	3	53	<0.01	<10	44	<10
BR-11A 06	Rock	0.08	37	<1	0.09	12	360	3	<2	2	57	<0.01	<10	32	<10
BR-11A 07	Rock	0.34	448	1	0.02	28	216	<2	<2	3	133	<0.01	<10	42	<10
BR-11A 08	Rock	0.36	564	<1	0.03	13	3268	4	<2	4	176	<0.01	<10	72	<10
BR-11A 09	Rock	0.13	125	<1	0.02	23	2725	22	<2	6	75	<0.01	<10	119	<10
BR-11A 10	Rock	0.17	106	<1	0.01	14	175	3	<2	2	14	<0.01	<10	49	<10
BR-11A 11	Rock	0.18	113	<1	0.02	13	147	<2	2	2	14	<0.01	<10	38	<10
BR-11A 12	Rock	0.08	53	<1	0.01	12	115	<2	<2	1	12	<0.01	<10	29	<10
BR-11A 13	Pulp	0.76	356	2	0.07	22	563	<2	<2	4	40	0.10	<10	51	15
BR-11A 14	Rock	0.10	94	<1	0.01	13	112	3	4	2	12	<0.01	<10	32	<10
BR-11A 15	Rock	0.12	119	<1	0.01	15	142	<2	<2	2	13	<0.01	<10	37	<10
BR-11A 16	Rock	0.07	400	<1	0.02	15	139	<2	<2	1	97	<0.01	<10	15	<10
BR-11A 17	Rock	0.18	187	<1	0.02	15	211	<2	4	2	15	<0.01	<10	27	<10
BR-11A 18	Rock	0.14	75	<1	0.02	14	155	3	2	2	19	<0.01	<10	28	<10
BR-11A 19	Pulp	0.79	454	9	0.09	26	600	276	<2	4	54	0.11	<10	56	11
BR-11A 20	Rock	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BR-11A 21	Rock	0.08	46	<1	0.02	11	145	<2	3	1	11	<0.01	<10	22	<10
BR-11A 22	Rock	0.16	68	2	0.02	19	221	5	<2	2	14	<0.01	<10	33	<10
BR-11A 23	Rock	0.50	832	<1	0.03	26	1618	3	<2	5	110	<0.01	<10	57	<10
BR-11A 24	Rock	0.31	330	2	0.02	26	417	9	<2	3	31	<0.01	<10	85	<10
BR-11A 24D	Rock	0.10	68	<1	0.01	26	176	17	<2	2	17	<0.01	<10	91	<10
BR-11A 25	Rock	0.50	639	1	0.03	25	493	<2	<2	4	64	<0.01	<10	43	<10
BR-11A 26	Rock	0.22	519	<1	0.03	18	932	<2	<2	2	134	<0.01	<10	18	<10
BR-11A 27	Rock	0.13	81	2	0.02	16	151	3	2	2	16	<0.01	<10	26	<10
BR-11A 28	Rock	0.13	46	<1	0.02	15	159	3	3	2	16	<0.01	<10	23	<10
BR-11A 29	Rock	0.16	45	2	0.02	21	205	6	<2	2	22	<0.01	<10	23	<10
BR-11A 30	Rock	0.16	44	<1	0.02	16	186	2	3	2	21	<0.01	<10	22	<10
BR-11A 31	Rock	0.66	355	2	0.03	21	1109	4	<2	3	154	<0.01	<10	37	<10
BR-11A 32	Rock	0.64	257	1	0.03	24	524	4	<2	3	65	<0.01	<10	37	<10
BR-11A 33	Rock	0.59	441	3	0.03	13	2371	3	<2	5	321	<0.01	<10	25	<10
BR-11A 34	Rock	0.29	47	<1	0.02	22	426	9	<2	4	26	<0.01	<10	38	<10
BR-11A 35	Rock	0.30	46	2	0.02	23	322	10	<2	4	20	<0.01	<10	46	<10
BR-11A 36	Rock	0.34	52	<1	0.02	24	371	12	2	5	29	<0.01	<10	64	<10
BR-11A 37	Rock	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BR-11A 38	Rock	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

NS = No Sample



**INSPECTORATE**

A Bureau Veritas Group Company

#200 - 11620 Horseshoe Way

Richmond, BC V7A 4V5 Canada

# Certificate of Analysis

**12-360-04072-01**

**Ironstone Resources Ltd**  
**Suite 200, 6125 11th SE**  
**Calgary, Alberta T2H 2L6**

Sample Description	Sample Type	Mg 30-AR-TR %	Mn 30-AR-TR ppm	Mo 30-AR-TR ppm	Na 30-AR-TR %	Ni 30-AR-TR ppm	P 30-AR-TR ppm	Pb 30-AR-TR ppm	Sb 30-AR-TR ppm	Sc 30-AR-TR ppm	Sr 30-AR-TR ppm	Ti 30-AR-TR %	Tl 30-AR-TR ppm	V 30-AR-TR ppm	W 30-AR-TR ppm
BR-11A 39	Rock	0.34	331	2	0.03	25	2342	8	<2	5	74	<0.01	<10	46	<10
BR-11A 40	Rock	0.28	87	<1	0.03	20	571	5	<2	3	27	<0.01	<10	29	<10
BR-11A 41	Rock	0.26	77	1	0.02	19	541	3	<2	3	29	<0.01	<10	26	<10
BR-11A 42	Rock	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BR-11A 43	Rock	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BR-11A 44	Rock	0.29	67	<1	0.03	20	550	4	<2	3	28	<0.01	<10	29	<10
BR-11A 45	Rock	0.29	93	1	0.02	21	471	4	<2	3	27	<0.01	<10	29	<10
BR-11A 46	Rock	0.33	55	<1	0.03	20	382	4	<2	3	24	<0.01	<10	31	<10
BR-11A 47	Rock	0.38	66	<1	0.02	25	480	12	<2	4	33	<0.01	<10	68	<10
BR-11A 48	Pulp	0.81	469	10	0.10	27	645	287	2	5	57	0.13	<10	61	11
BR-11A 49	Rock	0.91	967	<1	0.07	38	6740	25	<2	9	267	<0.01	<10	196	<10
BR-11A 50	Rock	0.70	578	<1	0.06	44	6251	45	<2	12	412	<0.01	<10	275	<10
BR-11A 51	Rock	0.43	89	2	0.03	46	1326	32	2	6	67	<0.01	<10	149	<10
BR-11A 52	Rock	0.64	1064	<1	0.05	27	5502	19	<2	8	334	<0.01	<10	148	<10
BR-11A 52D	Rock	0.54	830	1	0.04	38	3386	33	2	7	253	<0.01	<10	160	<10
BR-11A 53	Rock	0.41	68	<1	0.03	35	1142	21	<2	7	72	<0.01	<10	78	<10
BR-11A 54	Rock	0.41	243	1	0.03	40	1445	11	<2	6	99	<0.01	<10	47	<10
BR-11A 55	Pulp	0.77	369	3	0.07	22	563	<2	<2	4	44	0.11	<10	55	13
BR-11A 56	Rock	0.41	67	<1	0.03	36	969	9	<2	5	85	<0.01	<10	34	<10
BR-11A 57	Rock	1.05	1408	<1	0.04	31	1525	<2	<2	6	87	<0.01	<10	38	<10
BR-11A 58	Rock	0.79	723	2	0.03	55	720	14	<2	8	54	<0.01	<10	48	<10

NS = No Sample



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Richmond, BC V7A 4V5 Canada

# Certificate of Analysis

**12-360-04072-01**

Ironstone Resources Ltd  
Suite 200, 6125 11th SE  
Calgary, Alberta T2H 2L6

Sample Description	Sample Type	Zn 30-AR-TR ppm	Zr 30-AR-TR ppm	Hg Hg-AR-TR-CVAA ppm
BR-01 01	Rock	100	9	0.09
BR-01 02	Rock	102	10	0.06
BR-01 03	Rock	102	10	0.05
BR-01 04	Rock	110	10	0.06
BR-01 05	Rock	102	9	0.05
BR-01 06	Rock	136	7	0.07
BR-01 07	Rock	618	5	0.09
BR-01 08	Rock	294	3	0.05
BR-01 09	Rock	170	4	0.05
BR-01 10	Rock	349	4	0.05
BR-01 11	Rock	423	6	0.03
BR-01 12	Pulp	57	6	0.03
BR-01 13	Rock	668	5	0.03
BR-01 13D	Rock	634	5	0.04
BR-01 14	Rock	831	5	0.03
BR-01 15	Rock	597	5	0.04
BR-01 16	Rock	452	5	0.16
BR-01 17	Rock	140	4	0.07
BR-01 18	Pulp	225	6	0.11
BR-01 19	Rock	157	<2	0.09
BR-01 20	Rock	136	6	0.08
BR-01 21	Rock	142	8	0.07
BR-01 22	Rock	133	9	0.10
BR-01 23	Rock	127	9	0.11
BR-01 24	Rock	130	9	0.12
BR-01 25	Rock	133	8	0.08
BR-05A 01	Rock	81	6	0.01
BR-05A 02	Rock	153	5	0.02
BR-05A 03	Rock	22	5	0.02
BR-05A 04	Rock	96	3	0.06
BR-05A 05	Rock	133	9	0.06
BR-05A 06	Rock	115	9	0.04
BR-05A 07	Rock	158	13	0.10
BR-05A 08	Rock	76	9	0.05
BR-05A 09	Rock	89	<2	0.07
BR-05A 10	Rock	175	<2	0.05
BR-05A 11	Pulp	226	6	0.10
BR-05A 12	Rock	1015	<2	0.09
BR-05A 13	Rock	196	2	0.05
BR-05A 14	Rock	538	3	0.07

NS = No Sample



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Suite 200, 6125 11th SE  
Calgary, Alberta T2H 2L6

Sample Description	Sample Type	Zn 30-AR-TR ppm 2	Zr 30-AR-TR ppm 2	Hg Hg-AR-TR-CVAA ppm 0.01
BR-05A 14D	Rock	671	3	0.07
BR-05A 15	Pulp	53	6	0.07
BR-05A 16	Rock	227	4	0.06
BR-05A 17	Rock	204	4	0.08
BR-05A 18	Rock	169	6	0.08
BR-05A 19	Rock	129	9	0.09
BR-05A 20	Rock	140	<2	0.13
BR-05A 21	Rock	184	11	0.14
BR-05A 22	Rock	161	8	0.10
BR-05A 23	Rock	156	11	0.10
BR-05A 24	Rock	95	2	0.10
BR-05A 25	Rock	73	4	0.08
BR-08A 01	Rock	156	25	0.12
BR-08A 02	Rock	397	44	0.11
BR-08A 03	Rock	284	3	0.05
BR-08A 04	Rock	342	3	0.15
BR-08A 05	Rock	128	6	0.04
BR-08A 06	Rock	272	3	0.16
BR-08A 07	Rock	114	8	0.06
BR-08A 08	Rock	112	14	0.08
BR-08A 09	Rock	110	11	0.06
BR-08A 10	Pulp	228	6	0.09
BR-08A 11	Rock	114	10	0.05
BR-08A 12	Rock	115	10	0.05
BR-08A 13	Rock	120	10	0.06
BR-08A 14	Pulp	50	6	0.02
BR-08A 15	Rock	127	12	0.06
BR-08A 16	Rock	113	7	0.05
BR-08A 17	Rock	164	<2	0.08
BR-08A 18	Rock	393	3	0.12
BR-08A 19	Rock	391	<2	0.07
BR-08A 20	Rock	223	6	0.07
BR-08A 21	Rock	132	10	0.07
BR-08A 21D	Rock	136	11	0.07
BR-08A 22	Rock	103	10	0.07
BR-08A 23	Rock	124	6	0.06
BR-08A 24	Rock	103	3	0.04
BR-08A 25	Rock	117	<2	0.05
BR-08A 26	Rock	55	5	0.04
BR-08A 27	Rock	32	8	0.05

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Ironstone Resources Ltd  
Suite 200, 6125 11th SE  
Calgary, Alberta T2H 2L6

Sample Description	Sample Type	Zn 30-AR-TR ppm	Zr 30-AR-TR ppm	Hg Hg-AR-TR-CVAA ppm
BR-08A 28	Rock	33	7	0.05
BR-11A 01	Rock	27	5	<0.01
BR-11A 02	Rock	35	5	0.01
BR-11A 03	Rock	76	6	0.08
BR-11A 04	Rock	185	<2	0.02
BR-11A 05	Rock	106	6	0.03
BR-11A 06	Rock	36	6	0.02
BR-11A 07	Rock	121	7	0.03
BR-11A 08	Rock	99	4	0.01
BR-11A 09	Rock	172	3	0.01
BR-11A 10	Rock	79	6	<0.01
BR-11A 11	Rock	67	5	0.01
BR-11A 12	Rock	43	5	<0.01
BR-11A 13	Pulp	42	4	0.02
BR-11A 14	Rock	52	5	<0.01
BR-11A 15	Rock	73	5	0.01
BR-11A 16	Rock	93	3	<0.01
BR-11A 17	Rock	74	5	0.01
BR-11A 18	Rock	51	5	0.01
BR-11A 19	Pulp	206	5	0.08
BR-11A 20	Rock	NS	NS	NS
BR-11A 21	Rock	31	5	0.01
BR-11A 22	Rock	61	7	0.02
BR-11A 23	Rock	140	8	0.05
BR-11A 24	Rock	138	7	0.02
BR-11A 24D	Rock	154	8	0.02
BR-11A 25	Rock	122	7	0.02
BR-11A 26	Rock	58	5	0.02
BR-11A 27	Rock	56	5	0.02
BR-11A 28	Rock	51	5	0.02
BR-11A 29	Rock	55	6	0.03
BR-11A 30	Rock	53	6	0.02
BR-11A 31	Rock	63	8	0.06
BR-11A 32	Rock	71	9	0.06
BR-11A 33	Rock	47	<2	0.04
BR-11A 34	Rock	98	11	0.04
BR-11A 35	Rock	89	10	0.04
BR-11A 36	Rock	118	10	0.03
BR-11A 37	Rock	NS	NS	NS
BR-11A 38	Rock	NS	NS	NS

NS = No Sample



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Calgary, Alberta T2H 2L6

Sample Description	Sample Type	Zn 30-AR-TR ppm	Zr 30-AR-TR ppm	Hg Hg-AR-TR-CVAA ppm
BR-11A 39	Rock	88	3	0.05
BR-11A 40	Rock	73	8	0.04
BR-11A 41	Rock	74	8	0.11
BR-11A 42	Rock	NS	NS	NS
BR-11A 43	Rock	NS	NS	NS
BR-11A 44	Rock	80	8	0.05
BR-11A 45	Rock	75	8	0.05
BR-11A 46	Rock	73	9	0.05
BR-11A 47	Rock	118	10	0.05
BR-11A 48	Pulp	215	6	0.17
BR-11A 49	Rock	234	2	0.06
BR-11A 50	Rock	366	<2	0.10
BR-11A 51	Rock	250	2	0.07
BR-11A 52	Rock	177	<2	0.06
BR-11A 52D	Rock	252	2	0.08
BR-11A 53	Rock	178	3	0.08
BR-11A 54	Rock	160	2	0.11
BR-11A 55	Pulp	43	5	<0.01
BR-11A 56	Rock	157	2	<0.01
BR-11A 57	Rock	96	3	0.08
BR-11A 58	Rock	157	6	0.09

NS = No Sample



INSPECTORATE

A Bureau Veritas Group Company

#200 - 11620 Horseshoe Way

Richmond, BC V7A 4V5 Canada

## Certificate of Analysis

12-360-04072-01

Ironstone Resources Ltd  
 Suite 200, 6125 11th SE  
 Calgary, Alberta T2H 2L6

		Au	Ag	Al	As	Ba	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	La
Sample Description	Sample Type	Au-1AT-AA g/ton 0.005	30-AR-TR ppm 0.1	30-AR-TR % 0.01	30-AR-TR ppm 5	30-AR-TR ppm 10	30-AR-TR ppm 2	30-AR-TR % 0.01	30-AR-TR ppm 0.5	30-AR-TR ppm 1	30-AR-TR ppm 1	30-AR-TR ppm 0.01	30-AR-TR % 0.01	30-AR-TR ppm 2	
BR-01 01	Rock	<0.1	1.22	13	205	<2	0.25	<0.5	10	93	25	2.87	0.29	9	
BR-01 01 Dup		<0.1	1.32	14	221	<2	0.26	<0.5	10	100	25	2.96	0.31	10	
QCV1206-01891-0002-BLK		<0.1	<0.01	<5	<10	<2	<0.01	<0.5	<1	<1	<1	<0.01	<0.01	<2	
STD-Oreas 902-AR expected		0.3	0.54	569		8	4.19		908	24	3080	3.04			
STD-Oreas 902-AR result		0.4	0.51	622		11	4.42		885	24	3227	3.14			
BR-01 18	Pulp	1.0	1.58	13	140	<2	1.02	<0.5	10	31	408	3.31	0.28	6	
BR-01 18 Dup		1.0	1.61	15	142	<2	1.04	0.6	10	32	417	3.32	0.29	7	
QCV1206-01891-0005-BLK		<0.1	<0.01	<5	<10	<2	<0.01	<0.5	<1	<1	<1	<0.01	<0.01	<2	
STD-Oreas501 expected		0.7	2.20	17		2	1.40	0.4	13	88		4.10		29	
STD-Oreas501 result		0.6	2.15	17		3	1.41	<0.5	14	90		4.01		31	
BR-05A 11	Pulp	1.0	1.64	16	141	<2	1.04	0.6	10	32	423	3.32	0.29	7	
BR-05A 11 Dup		1.0	1.68	15	145	<2	1.10	0.7	11	33	435	3.47	0.30	7	
QCV1206-01891-0008-BLK		<0.1	<0.01	<5	<10	<2	<0.01	<0.5	<1	<1	<1	<0.01	<0.01	<2	
STD-Oreas92-2A expected		0.7				3			16		2352				
STD-Oreas92-2A result		0.6				3			16		2655				
BR-08A 03	Rock	<0.1	2.76	38	218	<2	1.76	1.9	19	111	27	>10	0.52	30	
BR-08A 03 Dup		<0.1	2.85	38	225	<2	1.76	1.9	20	116	27	>10	0.54	30	
QCV1206-01891-0011-BLK		<0.1	<0.01	<5	<10	<2	<0.01	<0.5	<1	<1	<1	<0.01	<0.01	<2	
STD-CDN-ME-12 expected		52.5										4.66			
STD-CDN-ME-12 result		55.0													
BR-08A 21	Rock	<0.1	1.06	33	32	<2	0.36	<0.5	16	43	23	2.78	0.33	11	
BR-08A 21 Dup		0.1	1.03	31	30	<2	0.36	<0.5	15	42	23	2.75	0.31	10	
QCV1206-01891-0014-BLK		<0.1	<0.01	<5	<10	<2	<0.01	<0.5	<1	<1	<1	<0.01	<0.01	<2	
STD-Oreas501 expected		0.7		17		2	1.40	0.4	13	88	2670		1.20	29	
STD-Oreas501 result		0.5		18		3	1.23	<0.5	12	74	2585		1.17	27	
BR-11A 10	Rock	<0.1	0.37	10	56	<2	0.30	<0.5	8	174	7	3.26	0.09	5	
BR-11A 10 Dup		<0.1	0.39	9	57	<2	0.31	<0.5	9	177	6	3.32	0.09	5	
QCV1206-01891-0017-BLK		<0.1	<0.01	<5	<10	<2	<0.01	<0.5	<1	<1	<1	<0.01	<0.01	<2	
STD-DS-1 expected		0.5		6930					10		27				
STD-DS-1 result		0.3		6624					7		23				
BR-11A 28	Rock	<0.1	0.52	17	43	<2	0.14	<0.5	6	159	11	1.87	0.14	5	
BR-11A 28 Dup		<0.1	0.54	17	46	<2	0.15	<0.5	6	164	11	2.01	0.14	5	
QCV1206-01891-0020-BLK		<0.1	<0.01	<5	<10	<2	<0.01	<0.5	<1	<1	<1	<0.01	<0.01	<2	
STD-Oreas-903 expected		0.3		48	63		0.63	0.2	131	26	6710	3.94	0.33	23	
STD-Oreas-903 result		0.4		50	61		0.65	0.8	129	24	6504	3.71	0.29	16	
BR-11A 50	Rock	<0.1	1.30	37	354	<2	>10	<0.5	22	67	14	9.71	0.31	29	
BR-11A 50 Dup		<0.1	1.23	35	334	<2	>10	<0.5	21	64	13	9.34	0.29	29	
QCV1206-01891-0023-BLK		<0.1	<0.01	<5	<10	<2	<0.01	<0.5	<1	<1	<1	<0.01	<0.01	<2	
STD-Oreas-903 expected		0.3		48	63		0.63	0.2	131	26	6710	3.94	0.33	23	
STD-Oreas-903 result		0.4		50	61		0.63	0.7	131	24	6976	3.70	0.32	16	



**INSPECTORATE**

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Richmond, BC V7A 4V5 Canada

# Certificate of Analysis

**12-360-04072-01**

**Ironstone Resources Ltd**  
Suite 200, 6125 11th SE  
Calgary, Alberta T2H 2L6

Sample Description	Sample Type	Au	Ag	Al	As	Ba	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	La
		Au-1AT-AA g/ton	30-AR-TR ppm	30-AR-TR %	30-AR-TR ppm	30-AR-TR ppm	30-AR-TR ppm	30-AR-TR %	30-AR-TR ppm	30-AR-TR ppm	30-AR-TR ppm	30-AR-TR ppm	30-AR-TR %	30-AR-TR ppm	
BR-01 01	Rock	0.006	<0.005	<0.005	5	10	2	0.01	0.5	1	1	1	0.01	0.01	
BR-01 01 Dup															
QCV1206-01892-0002-BLK															
STD-OxJ80 expected		2.331													
STD-OxJ80 result		2.293													
BR-05A 01	Rock	<0.005	<0.005	<0.005											
BR-05A 01 Dup															
QCV1206-01892-0005-BLK															
STD-OxE101 expected		0.607													
STD-OxE101 result		0.603													
BR-08A 01	Rock	0.006	<0.005	<0.005											
BR-08A 01 Dup															
QCV1206-01892-0008-BLK															
STD-OxE101 expected		0.607													
STD-OxE101 result		0.593													
BR-08A 26	Rock	0.005	<0.005	<0.005											
BR-08A 26 Dup															
QCV1206-01892-0011-BLK															
STD-OxJ80 expected		2.331													
STD-OxJ80 result		2.352													
BR-11A 24D	Rock	<0.005													
BR-11A 24D Dup		0.010													
STD-OxC102 expected		0.207													
STD-OxC102 result		0.210													
BR-11A 53	Rock	<0.005	<0.005	<0.005											
BR-11A 53 Dup															
QCV1206-01892-0016-BLK															
QCV1206-01892-0017-BLK															
STD-OxE101 expected		0.607													
STD-OxE101 result		0.604													



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12-360-04072-01

Ironstone Resources Ltd  
 Suite 200, 6125 11th SE  
 Calgary, Alberta T2H 2L6

		Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Sc	Sr	Ti	Tl	V	W
Sample Description	Sample Type	30-AR-TR %	30-AR-TR ppm	30-AR-TR ppm	30-AR-TR %	30-AR-TR ppm	30-AR-TR %	30-AR-TR ppm	30-AR-TR ppm	30-AR-TR ppm					
BR-01 01	Rock	0.35	64	<1	0.02	26	484	8	3	4	63	<0.01	<10	38	<10
BR-01 01 Dup		0.38	69	<1	0.03	27	512	8	<2	5	67	<0.01	<10	40	<10
QCV1206-01891-0002-BLK		<0.01	<5	<1	<0.01	<1	<10	<2	<2	<1	<1	<0.01	<10	<1	<10
STD-OREAS 902-AR expected		2.24	460	13		159	670	11	1	3		0	9		
STD-OREAS 902-AR result		2.35	467	11		164	670	14	<2	3		<10	8		
BR-01 18	Pulp	0.82	489	9	0.10	29	638	292	<2	5	61	0.13	<10	65	12
BR-01 18 Dup		0.83	496	10	0.10	29	621	295	2	5	63	0.14	<10	67	11
QCV1206-01891-0005-BLK		<0.01	<5	<1	<0.01	<1	<10	<2	<2	<1	<1	<0.01	<10	<1	<10
STD-Oreass501 expected		1.30	400	58			900	10	0	7		0.35		103	3
STD-Oreas501 result		1.29	382	58			948	14	<2	7		0.35		110	<10
BR-05A 11	Pulp	0.84	498	10	0.10	30	623	294	<2	5	65	0.14	<10	67	<10
BR-05A 11 Dup		0.86	514	10	0.11	30	655	304	3	5	67	0.15	<10	70	11
QCV1206-01891-0008-BLK		<0.01	<5	<1	<0.01	<1	<10	<2	<2	<1	<1	<0.01	<10	<1	<10
STD-OREAS92-2A expected								9	1						
STD-OREAS92-2A result								12	3						
BR-08A 03	Rock	1.03	582	<1	0.09	28	2019	72	4	12	198	0.03	<10	1531	<10
BR-08A 03 Dup		1.06	591	<1	0.09	29	2059	73	6	12	204	0.03	<10	1589	<10
QCV1206-01891-0011-BLK		<0.01	<5	<1	<0.01	<1	<10	<2	<2	<1	<1	<0.01	<10	<1	<10
STD-CDN-ME-12 expected				0.78				2220							
STD-CDN-ME-12 result				0.74				2324							
BR-08A 21	Rock	0.30	90	<1	0.18	32	877	9	<2	5	90	<0.01	<10	38	<10
BR-08A 21 Dup		0.29	89	<1	0.18	31	838	9	3	5	87	<0.01	<10	37	<10
QCV1206-01891-0014-BLK		<0.01	<5	<1	<0.01	<1	<10	<2	<2	<1	<1	<0.01	<10	<1	<10
STD-Oreas501 expected		1.30	400	58			900	10	0	7	63	0.35			3
STD-Oreas501 result		1.15	328	48			904	12	3	6	60	0.31			<10
BR-11A 10	Rock	0.17	106	<1	0.01	14	175	3	<2	2	14	<0.01	<10	49	<10
BR-11A 10 Dup		0.17	108	<1	0.01	15	187	4	<2	2	14	<0.01	<10	50	<10
QCV1206-01891-0017-BLK		<0.01	<5	<1	<0.01	<1	<10	<2	<2	<1	<1	<0.01	<10	<1	<10
STD-DS-1 expected				2.76	437		49	340				20			
STD-DS-1 result				2.59	410		41	294				13			
BR-11A 28	Rock	0.13	46	<1	0.02	15	159	3	3	2	16	<0.01	<10	23	<10
BR-11A 28 Dup		0.14	48	<1	0.02	16	168	2	<2	2	17	<0.01	<10	24	<10
QCV1206-01891-0020-BLK		<0.01	<5	<1	<0.01	<1	<10	<2	<2	<1	<1	<0.01	<10	<1	<10
STD-OREAS-903 expected				0.23	710	4	49	1030	9	1	3	18	0	13	1
STD-OREAS-903 result				0.22	671	4	48	1006	24	<2	3	15	<10	11	<10
BR-11A 50	Rock	0.70	578	<1	0.06	44	6251	45	<2	12	412	<0.01	<10	275	<10
BR-11A 50 Dup		0.66	551	<1	0.06	42	5893	43	<2	12	391	<0.01	<10	268	<10
QCV1206-01891-0023-BLK		<0.01	<5	<1	<0.01	<1	<10	<2	<2	<1	<1	<0.01	<10	<1	<10
STD-OREAS-903 expected				0.23	710	4	49	1030	9	1	3	18	0	13	1
STD-OREAS-903 result				0.21	683	4	48	985	23	<2	3	16	<10	11	<10



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**Suite 200, 6125 11th SE**  
**Calgary, Alberta T2H 2L6**

		Zn	Zr	Hg
		30-AR-TR	30-AR-TR	Hg-AR-TR-CVAA
Sample Description	Sample Type	ppm	ppm	ppm
BR-01 01	Rock	100	9	0.09
BR-01 01 Dup		104	10	0.06
QCV1206-01891-0002-BLK		3	<2	<0.01
STD-OREAS 902-AR expected		9		
STD-OREAS 902-AR result		9		
BR-01 18	Pulp	225	6	0.11
BR-01 18 Dup		232	6	0.09
QCV1206-01891-0005-BLK		<2	<2	<0.01
STD-Oreas501 expected		85	12	
STD-Oreas501 result		78	9	
BR-05A 11	Pulp	226	6	0.10
BR-05A 11 Dup		235	6	0.11
QCV1206-01891-0008-BLK		<2	<2	<0.01
STD-OREAS92-2A expected		81		
STD-OREAS92-2A result		87		
BR-08A 03	Rock	284	3	0.05
BR-08A 03 Dup		294	3	0.05
QCV1206-01891-0011-BLK		<2	<2	<0.01
BR-08A 21	Rock	132	10	0.07
BR-08A 21 Dup		131	10	0.07
QCV1206-01891-0014-BLK		<2	<2	<0.01
STD-Oreas501 expected		85	12	
STD-Oreas501 result		67	7	
BR-11A 10	Rock	79	6	<0.01
BR-11A 10 Dup		80	6	0.01
QCV1206-01891-0017-BLK		<2	<2	<0.01
STD-DS-1 expected		206		
STD-DS-1 result		185		
BR-11A 28	Rock	51	5	0.02
BR-11A 28 Dup		52	5	0.02
QCV1206-01891-0020-BLK		<2	<2	<0.01
STD-OREAS-903 expected		21		
STD-OREAS-903 result		20		
BR-11A 50	Rock	366	<2	0.10
BR-11A 50 Dup		354	<2	0.10
QCV1206-01891-0023-BLK		<2	<2	<0.01
STD-OREAS-903 expected		21		
STD-OREAS-903 result		20		



## APPARENT SPECIFIC GRAVITY DETERMINATION

**Client:** Ironstone Resources  
**Sample:** As per id

**Date:** 16-Jul-12  
**Project:** 1204206

**Objective:** Measure rock samples apparent specific gravity by wax immersion method

**Test description:**

- Samples air dried over night
- Weighed single piece of rock, coated with molten wax, recorded total weight
- Waxed sample placed into a graduated cylinder with water, removed bubbles
- Volume change was recorded. Wax specific gravity from literature.

Count	Sample ID	Apparent Specific Gravity g/cm <sup>3</sup>
1	BR-01, 09B	2.073
2	BR-05A, 13B	2.786
3	BR-08A, 16B	2.460
4	BR-08A, 17B	2.867
5	BR-08A, 18B	2.164
6	BR-11A, 26B	2.356
7	BR-11A, 50B	2.675
8	SW-02A, 01B	2.339
9	SW-10, 17B	2.139
10	SW-16, 09B	2.027
11	SW-16, 14B	2.156
12	SW-18, 04B	2.269
13	SW-18, 10B	2.168
14	SW-21R, 10B	2.382
15	SW-21R, 14B	2.181
16	SW-30, 05B	2.471
17	SW-01A, 09B	2.005
18	SW-01A, 13B	2.110
19	SW-02A, 15B	2.435
20	SW-06, 08B	2.263
21	SW-09, 05B	2.148
22	SW-18, 16B	2.027
23	SW-19, 12B	2.044
24	SW-22, 11B	2.398
25	SW-30, 10B	2.038
26	SW-11, 13B	2.145
27	SW-11, 18B	2.134
28	SW-15, 04B	2.542
29	SW-15, 09B	2.195
30	SW-17, 04B	1.769
31	SW-20A, 08B	1.770
32	SW-25, 01B	1.885
33	SW-25,03B	2.671
34	SW-26, 07B	2.318
35	SW-06, 13B	1.940
36	SW-11, 07B	2.145
37	SW-17, 11B	2.115
38	SW-17, 17B	2.158
39	SW-19, 15B	2.042
40	SW-22, 16B	1.928
41	SW-27, 06B	1.873



## SPECIFIC GRAVITY DETERMINATION

**Client:** Ironstone Resources  
**Test:** SG by Pycnometric method  
**Sample:** As per id

**Date:** 16-Jul-12  
**Project:** 1204206

**Objective:** Measure specific gravity by pycnometric method on samples received as <1/4"

**Test description:**

- Samples air dried over night
- Weight recorded and placed into the appropriate size volumetric flask
- Added deionized water and heated to remove air bubbles without boiling
- Content in the flask bulked up to the mark and weight recorded

Count	Sample ID	Solids Specific Gravity, g/cm <sup>3</sup>
1	BR- 01, 19B	2.63
2	BR-05A, 10B	2.88
3	BR-11A, 39B	2.98
4	SW-02A, 07B	2.87
5	SW-03A, 03B	2.89
6	SW-03A, 09B	3.08
7	SW-03A, 14B	2.97
8	SW-10, 07B	3.40
9	SW-12, 05B	3.12
10	SW-13, 04B	2.96
11	SW-16, 04B	2.97
12	SW-20A, 15B	2.61
13	SW-27, 2B	2.77
14	SW-30, 07B	2.96
15	SW-09, 13B	2.92
16	SW-10, 25B	2.76
17	SW-12, 10B	2.65
18	SW-12, 15B	2.78
19	SW-13, 10B	2.81
20	SW-20A, 03B	3.13
21	SW-24, 17B	3.01
22	SW-27, 11B	3.04
23	SW-28, 04B	2.61
24	SW-29, 09B	2.91
25	SW-29, 14B	2.59
26	SW-01A, 05B	2.76
27	SW-07, 05B	2.98
28	SW-15, 14B	2.71
29	SW-21R, 06B	3.12
30	SW-23, 06B	3.11
31	SW-23, 13B	2.93
32	SW-26, 03B	3.01
33	SW-26,11B	2.83
34	SW-28, 01B	2.83
35	SW-28,07B	2.79
36	SW-29, 04B	2.62
37	SW-05, 07B	3.00
38	SW-05, 13B	2.90
39	SW-05, 24B	2.69
40	SW-06, 03B	2.83
41	SW-07, 07B	3.02
42	SW-07, 09B	2.97
43	SW-07, 16B	2.99
44	SW-09, 21B	2.66
45	SW-22, 19B	2.93
46	SW-23, 11B	2.74



**Botha River  
Project Map**

