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REVIEW OF THE GEOLOGY AND EXPLORATION POTENTIAL OF THE RIOU LAKE PROJECT, NORTHERN ATHABASCA BASIN, SASKATCHEWAN

Prepared for

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SUMMARY

The Riou Lake project is a uranium exploration project located in northern Saskatchewan, southeast of Lake Athabasca. The project consists of approximately 57,000 hectares in three contiguous properties: the Riou Lake (Pioneer Metals Corporation, 100%), Black Lake (Cameco Corporation, 50%; Cogema Resources, 50%: Pioneer Metals earning 60% interest), and Serendipity Lakes (Pioneer Metals earning 60% interest from DF Exploration Uranium Ltd.) properties. An agreement has been entered into between Pioneer Metals Corporation ("Pioneer"), Cameco Corporation ("Cameco") and UEX Corporation ("UEX") providing for the transfer of Cameco's and Pioneer's interests in these dispositions to UEX following, the completion of a plan of arrangement proposed by Pioneer and UEX. This report reviews the geology, results of historical exploration, and exploration potential of the property, and was prepared by Panterra Geoservices for UEX as supporting documentation for use in a company prospectus.

The Riou Lake project is located in the northern Athabasca Basin, near the town of Stony Rapids. The area is accessible by road from southern Saskatchewan. The project area has been explored for uranium deposits principally since 1979 by a variety of companies, most recently by Pioneer, D.F. Exploration Uranium and Cameco. Exploration work has consisted of geological mapping, boulder in till geochemical and alteration sampling, lake water and sediment surveys, several hundred line kilometers of ground EM surveys, and diamond drilling in 33 holes totaling approximately 21,000 m.

Basement lithologies to the Riou Lake project comprise polydeformed, granulite to upper amphibolite grade, and Archean aged rocks of the Tantato Domain. Extensive Archean aged mylonitic shear zones are developed in the region, and include the northeast-trending Platt Creek shear zone and other discordant and concordant zones of mylonitization suggested by drilling and magnetic patterns. Drilling indicates that domains of low total magnetic intensity present throughout the property comprise metapelitic lithologies that locally contain graphitic gneiss units. The deformed metamorphic sequence is unconformably overlain by 300-900 m of shallow dipping Proterozoic quartz arenite of the Athabasca Group, predominantly of the Manitou Falls Formation. In southern portions of the project, the siltstone-mudstone-rich Wolverine Point Formation overlies the Manitou Falls Formation with probable angular unconformity. Post-Manitou Falls brittle faults trend principally to the northeast, and subordinately to the west-northwest, often remobilizing older mylonitic shear zones in the basement. The most significant of these structures, the Riou Lake Fault zone, is a southerly dipping reverse fault associated with a major upthrust block of sandstone and underlying basement. The fault zone bends progressively form northeast-striking to east and east-southeast-striking across central western portions of the project, conforming to the strike of underlying folded basement units.

The Riou Lake project is geologically similar to other portions of the Athabasca basin containing economic uranium deposits, and contains several favorable indicators of uranium mineralization environments, including (i) the presence of a radioactive boulder train in till located in central northern parts of the project and containing boulders with up to 11.3% U, (ii) linear phosphatic and U-rare-earth bearing boulder trains that may

represent the surface expression of altered fault systems, (iii) EM conductors, which tested by drilling have been identified as graphitic gneiss units – the typical underlying host rocks and reductant for uranium mineralization, (iv) the presence of radioactive, deeply sourced chloride-rich springs that may have tapped radioactive sources at depth, (v) local areas of highly anomalous lake sediments, (vi) significant areas of post-Athabasca reverse faulting, (vii) argillic alteration assemblages present in several drill holes that mineralogically and chemically are compatible with peripheral alteration associated with Athabasca uranium deposits, and (viii) direct intersection of anomalous uranium concentrations and pitchblende in several drill holes at, or near, the sub-Athabasca unconformity. Although the Athabasca sandstone is deep here (300-900 m), the factors listed above suggest the potential for McArthur River and Cigar Lake type deposits, the former of which is currently in production under sandstone depths of more than 500 m.

Several principal target areas have been identified for follow up drilling. Alteration identified immediately to the north of the Riou Lake Fault system has been intersected in three drill holes, which define an alteration zone with a minimum strike length of 1.5 km along an EM conductor (PM conductor), within which one hole (RLG-D10) has intersected concentrations of up to 3428 ppm U over 0.12 m straddling the unconformity. Strands of the Riou Lake fault system occur to the immediate south of this area of alteration, and have been intersected in other nearby drill holes, forming a further prospective structural trap for mineralization. Several drill holes are proposed in this area. Other targets that lie to the southwest include prospective structural sites on graphitic conductors, particularly near radioactive springs, and as follow up to anomalous uranium geochemistry previously identified by drilling. Anomalous alteration, low-grade uranium mineralization, and highly graphite-rich lithologies have been intersected in several locations in the few holes that have tested the Platt Creek Shear Zone, warranting further follow up drilling, especially at the projected potential source area of the uraniferous boulder in till train on the central parts of the property. In the Serendipity Lakes area, well developed clay alteration in hole SLG-D7, and pitchblende stringers intersected immediately below the unconformity in hole CLG-D1 form high priority target areas.

A two phase exploration program totaling $Cdn 1,709,000 is proposed to further explore the Riou Lake project area, mainly by diamond drilling in the principal target areas described above. Phase 1 comprises a $Cdn 1.23 million, eleven hole, 8300 m drilling program with both summer and winter drill sites. Targets are located throughout the project; principal target areas include prospective structural sites on the Riou Lake fault system south of Riou Lake, the potential source of radioactive boulders in till along the Platt Creek shear zone, and follow up to alteration and low grade mineralization previously intersected on the Black Lake and Serendipity Lakes properties. In addition, during a phase 2, $Cdn 476,000 program, further fixed and moving loop EM surveying are proposed to better outline the continuation of the Riou Lake Fault and the Platt Creek shear zone beyond the existing coverage, and a surface mapping and sampling program is recommended over western parts of the fault system where outcrop is abundant to identify alteration and geochemical features that could be indicative of peripheral alteration to uranium mineralization at depth. A five hole drilling program is also proposed during phase 2, to follow up the results of the geophysical and geological work, and the phase 1 drilling program.

1.0 INTRODUCTION AND TERMS OF REFERENCE

This report reviews the geology, results of historical exploration and the exploration potential of the Riou Lake project in northern Saskatchewan. The review was carried out by Panterra Geoservices Inc. at the request of UEX Corporation to provide an independent review of the exploration potential of the property. The report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1. It is based on a review of all available exploration data from the project undertaken by the author, discussions with Pioneer personnel and contractors/consultants who have performed exploration work on site, and examination of representative core and petrographic samples stored in the offices of Pioneer Metals Corporation during November and December, 2001, and April, 2002. While the writer has not performed a site visit to the project to date due to the limitations on accessibility, access to drill core, and obscuring of geological features and drill core by snow cover during winter and early spring weather conditions of 2001 to 2002, relief will be requested from the applicable securities commissions from the requirement that the author visit the Riou Lake project, provided a site visit will be undertaken during the summer of 2002 as soon as is practicable when conditions permit. Documentation of the visit, and observations on pertinent property features, drill core geology and sampling will be amended to this report, and the author's certificate annotated, upon completion of the property examination. Although a property visit has not been undertaken, the writer has extensive experience in the Athabasca Basin gained through consulting work in the region as a consulting geologist for Cameco Corporation between 1998 and 2001, and is consequently familiar with the region, and with the target types and geology of uranium deposits in the area

The Riou Lake project area has been subject to several exploration programs conducted since 1979, and earlier regional reconnaissance style exploration for uranium deposits. Details of this work are outlined below with references in section 4.0. All units of measure in this report are metric and monetary amounts are in Canadian dollars, unless otherwise noted.

2.0 PROPERTY DESCRIPTION AND LOCATION

The Riou Lake project is located near the northern margin of the Athabasca Basin in northern Saskatchewan approximately 750 km north of the city of Saskatoon (Figure 1), and 5-45 km south and southwest of the town of Stony Rapids (Figure 2). Approximate limits of the property are between latitude 58^0 53' N and 59^0 13' N, and 105^0 48' and 106^0 28' W. Portions of the property occur in 1:50,000 scale topographic map sheets 74J/16, 74 O/1, 74 P/4 and 74I/13 of the Canadian National Topographic system.

2.1 Concession descriptions and title

The Riou Lake project consists of three contiguous claim groups that together total 56,791 hectares. Under the terms outlined in the November 27, 2001 management information circular of Pioneer Metals Corporation ("Pioneer"), all of the interests of Pioneer and Cameco Corporation ("Cameco") in the Riou Lake properties will be transferred to UEX Corporation ("UEX") following the completion of the plan of arrangement proposed by UEX in the management information circular, subject to the fulfillment of certain other conditions.

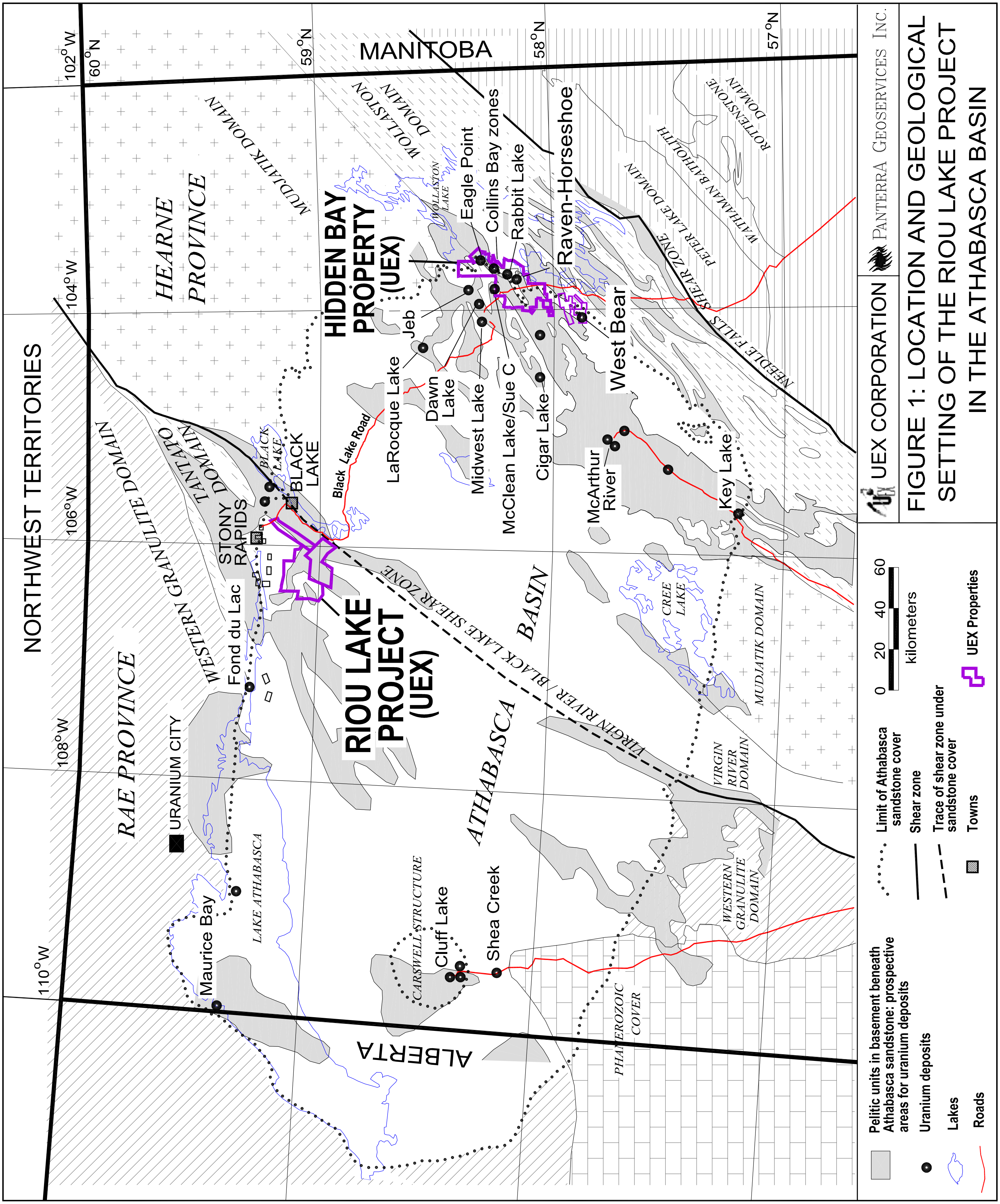


FIGURE 1: LOCATION AND GEOLOGICAL SETTING OF THE RIOU LAKE PROJECT IN THE ATHABASCA BASIN

The Riou Lake project comprises three claim groups (see Tables 1-3):

(i*) The Riou Lake property:* The Riou Lake property consists of 10 contiguous claims totalling 31,177 hectares (Table 1) that comprise the northwestern portions of the Riou Lake project (Figure 2). The claims are entirely owned by Pioneer Metals Corporation. A six-claim block (the “PM claims”, claims S-105651, S-105730, S-105731, S-105732, CBS 7845 and CBS 7849) consisting of 14,853 hectares in the east part of the Riou Lake property was optioned by Cameco in February, 1999. Pursuant to the Option Agreement, Cameco will be granted a 60% interest in the PM claims upon spending a total of $6,500,000 in scheduled increments by December 31, 2004. However, under the terms outlined in the November, 2001 Pioneer Metals management information circular, the option will terminate on the completion of the plan of arrangement, and UEX will have a 100% ownership in the claims.

Table 1: Riou Lake property, list of claim dispositions

Claim Number	Record Date	Area (hectares)
CBS 7844	July 28, 1997	4360
CBS 7845	July 28, 1997	1548
CBS 7849	July 28, 1997	4960
S-105651	July 28, 1997	1680
S-105730	Dec. 15, 1997	1575
S-105731	Dec. 15, 1997	3670
S-105732	Dec. 15, 1997	1420
S-105733	Dec. 15, 1997	2044
S-106103	April 1, 1998	4570
S-106104	April 1, 1998	5350
TOTAL		**31,177**

(ii) Black Lake property: The Black Lake property consists of 4 contiguous claims totaling 7,438 hectares that comprise the northeastern part of the Riou Lake project (Figure 2; Table 2). The Black Lake property is owned by UEM Inc., a company that is in turn owned by Cameco (50%) and Cogema Resources Inc. (50%). In October, 2000, and amended in October 2001, Pioneer signed an option agreement with UEM Inc. whereby Pioneer can earn a 60% interest in the property by spending a total of $2.5 million by December 31, 2007 according to a schedule of exploration expenditures that requires expenditures of $250,000, $350,000 and $450,000 between years 1 and 3, respectively, and $500,000 during years 4-6. Under the plan of arrangement outlined in the November, 2001 Pioneer Metals Information circular, Pioneer will transfer to UEX its interest in the Black Lake option. UEM has consented to the transfer of the Black Lake Option. Cameco has agreed to use its reasonable commercial efforts to obtain the consent of Cogema to the transfer to UEX from UEM of UEM's interest in the Black Lake property. Under the Cameco Agreement, Cameco agreed that no additional consideration will be payable to it or to UEM in connection with the transfer to UEX of Cameco's 50% indirect interest in the Black Lake property. Any payment required to be made to Cogema with respect to the 50% indirect interest in the property held by Cogema must be satisfactory to UEX. No agreement has been reached between UEX and Cogema in connection with the transfer to UEX of UEM's interest in the Black Lake property.

Table 2: Black Lake property, list of claim dispositions

Claim Number	Record Date	Area (Hectares)
S-99093	Dec. 1, 1994	2192
S-99094	Dec. 1, 1994	2096
S-99095	Dec. 1, 1994	2240
S-105652	Aug. 5,1997	910
TOTAL		**7,438**

(iii) Serendipity Lakes property: The Serendipity Lakes property consists of 5 contiguous claims totaling 18,236 hectares that form the southern part of the Riou Lake project (Figure 2; Table 3). The property is owned by D.F. Exploration Uranium Ltd. In February 2001, Pioneer entered into an Option Agreement with D.F. Exploration Uranium Ltd. ("D.F.") respecting the Serendipity Lakes property. Under the Option Agreement with D.F., and an amendment dated October 4, 2001, Pioneer has an option to earn up to a 60% interest in the property by spending a total of $1,750,000 by December 31, 2007 according to the following schedule of expenditures: Year 1 (2001) = $125,000; Year 2 (2002) = nil; Year 3 (2003) = $100,000; Year 4 (2004) = $200,000; Year 5 (2005) = $250,000; Year 6 (2006) = $500,000; Year 7 (2007) = $500,000. Under the Option Agreement, Pioneer earns a 1% interest in the Serendipity Lakes property for each $29,167 expended. To date, a total of approximately $200,000 has been expended by Pioneer on the Serendipity Lakes property, resulting in an ownership interest of approximately 7%. Pioneer is the operator of the Serendipity Lakes property during the option period. The Option Agreement further provides that any claim or mineral disposition acquired and staked in the Athabasca Basin during the option period without the consent of Pioneer by D.F. and its associates and affiliates, including Daniel Faure, will be held in trust for Pioneer and transferred to Pioneer upon its request. D.F. has also agreed to offer Pioneer an opportunity to participate on a 50% joint venture basis in any other claim or mineral disposition acquired or staked by D.F. and/or its associates and affiliates, including Daniel Faure, outside the Athabasca Basin during the option period. On the plan of arrangement becoming effective, Pioneer will transfer to UEX its interest in the Serendipity option.

Table 3: Serendipity Lakes property, list of claim dispositions

Claim Number	Record Date	Area (Hectares)
S-99096	Dec. 1, 1994	4415
S-99097	Dec. 1, 1994	4150
S-99075	Jan. 19, 1995	2400
S-99076	Jan. 19, 1995	2941
S-99077	Jan. 19, 1995	4330
TOTAL		**18,236**

Other properties

Pioneer holds several other claims in the Stony Rapids area of the Athabasca Basin that are not contiguous with the Riou Lake project. The claims were staked in 1996 for the purpose of nickel-copper-cobalt exploration. No work is presently being conducted on these claims, and exploration data from these claims are not reviewed here.

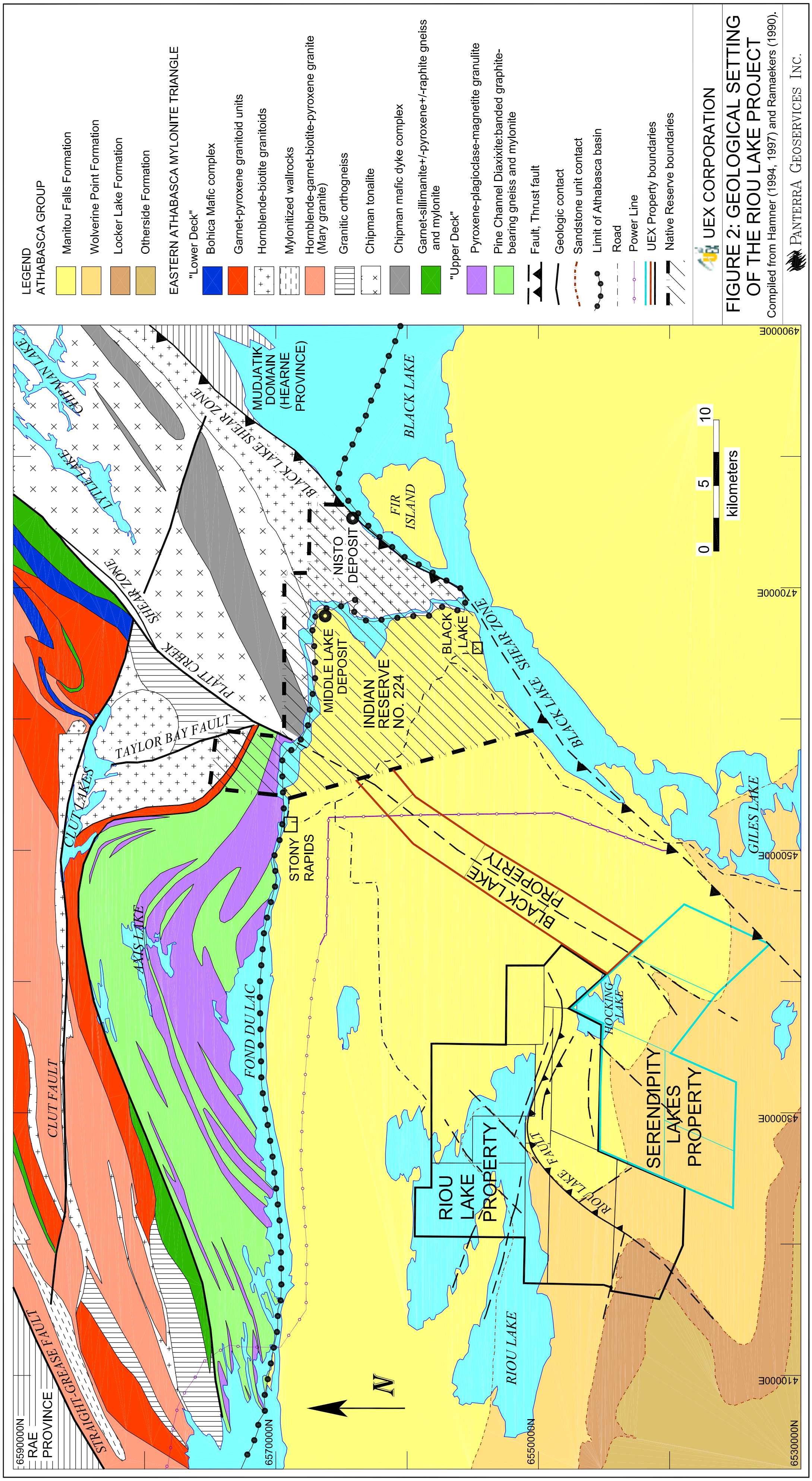


FIGURE 2: GEOLOGICAL SETTING OF THE RIOU LAKE PROJECT
Compiled from Hamner (1994, 1997) and Ramaekers (1990).

2.2 Fees and permits

Annual expenditures of $12.00 per hectare are required for the first 10 years after staking of a claim to retain each disposition. This rate currently applies to most of the dispositions comprising the Riou Lake project. The rate increases to $25.00 per hectare annually after 10 years beyond the date of record. The reader is referred to Eriks (2001, in preparation) for information regarding required assessment expenditures on claims comprising the Riou Lake project in Tables 1-3.

Permits for timber removal, work authorization, shoreland alteration, and road construction are required for most exploration programs from Saskatchewan Environment and Resource Management. Apart from camp permits, fees for these generally total less than $200 per exploration program annually. Camp permit fees are assessed on total man day use per hectare, with a minimum camp size of one hectare assessed. These range from $750 per hectare for more than 500 man days to $175 per hectare for less than 100 man days.

3.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

3.1 Accessibility and Infrastructure

North central parts of the Riou Lake project are accessible by a rough road from the hamlet of Stony Rapids (Figure 2). Other parts of the property are accessible by snowmobile or light plane on skis from Stony Rapids in winter, and by boat or float-equipped aircraft in summer. A permanent airstrip located at Stony Rapids has daily flights to cities in southern Saskatchewan. With the completion of a road from Points North Landing to Black Lake in the winter of 2000, the area became accessible year-round by vehicle from southern Saskatchewan (Figure 1). Stony Rapids is linked to the Saskatchewan power grid by a power line from the Charlot River hydroelectric power plant to the north, which extends to Points North and the main Saskatchewan power grid to the south. Abundant water is available from the numerous lakes in the area.

3.2 Climate, vegetation and physiography

Physiography of the Riou Lake property is typical of Canadian Shield terrain, comprising low rolling hills separated by abundant lakes and areas of muskeg. Glacial features such as drumlin ridges and eskers dominate this area of otherwise flat topography. Maximum local relief is approximately 165 metres, while the topography varies between 200 m and 350 m above sea level. Drainage varies with numerous lakes separated by swamps, muskeg and drift covered area. Throughout the region, lakes, islands and ridges are elongated in an east-west direction (255-265 azimuth), parallel to the last glacial advance. Apart from bedrock highs which form about 10% of the property, outcrop is limited in most other areas (<5%). Large frost-heaved slabs of Athabasca sandstone felsenmeer are often present. Hills are covered in a thick, mixed boreal jackpine, spruce and aspen forest and burnt over areas in various stages of regeneration, which are separated by low lying, swampy areas and muskeg fringed by stunted spruce stands.

The area generally receives low annual precipitation (<500 mm), which falls principally between September and December. Daily temperatures typically range from 10-30^o C in summer months, to -20^o C or lower during the winter.

4.0 EXPLORATION AND DEVELOPMENT HISTORY

4.1 Early uranium exploration activities (1940-1995)

Mineral exploration in the north central Athabasca Basin has been undertaken since the late 1940's. Initial exploration was for Beaverlodge-type uranium deposits like those at Uranium City, approximately 130 km northwest of the project area. In 1948, pitchblende-bearing veins were identified at the Nisto deposit in basement gneisses in the hangingwall of the Black Lake shear zone, 20 km east-northeast of the Riou Lake project (Figure 2; Homeniuk and Clark, 1986). Soon afterward, in 1952, unconformity style mineralization was identified at the Middle Lake prospect, 12 km northeast of the project and 8 km west of Nisto. In 1959, after diamond drilling and underground development, 500 tons of ore were mined from the Nisto veins and shipped to Uranium City, with one shipment of 106 tons grading 1.6% U_3O_8 (Beck, 1969). In 1969, during follow up prospecting of, a radioactive boulder train in till, Famok Limited discovered the Fond-du-Lac deposit, located 45 km northwest of the Riou Lake property (Homeniuk et al., 1982). Subsequent drill testing of the deposit identified a zone of mineralization developed principally in basal Athabasca sandstone immediately above the sub-Athabasca unconformity. Resources are estimated at approximately 200,000 tonnes grading 0.25% U_3O_8, containing local higher grade areas of up to 5% U_3O_8 (Homeniuk et al., 1982).

Initial uranium exploration activity occurred over the current project area in the late 1960's with the recognition of the uranium potential of the region as a result of new discoveries such as Fond-du-Lac in the local area, and Rabbit Lake to the east. Over the current area of the property, work comprised mainly prospecting and regional airborne geophysical surveys. A single diamond drill hole (P2-H1) was completed on the project in 1966 by Numac Oil and Gas, but due to technical problems, it was abandoned before reaching the sub-Athabasca unconformity (Beckett, 1966). During 1969, Amerada Hess Ltd. carried out an airborne radiometric survey with subsequent ground follow-up prospecting on a 77,000 hectare permit that covered much of the present day Riou Lake project area. Several anomalies were detected, but were all attributed to concentrations of granitic boulders on drumlins. Regional work by Famok Limited included a seismic survey which covered parts of the current Serendipity Lakes property.

No further work was carried out in the area until the late 1970's, when western portions of the project area were prospected by Marline Oil, during several radioactive phosphate-rich boulder fields were located and sampled (Bowdidge and Magrum, 1979). During 1977, Saskatchewan Mining and Development Company (SMDC) acquired permits 25 and 26 over much of the project area. In 1978 and 1979, SMDC conducted a reconnaissance geochemical survey of till, lake sediments and lake waters, airborne geophysical surveying, and prospecting in the region (Roy, 1981). A series of radioactive boulders in till were discovered by SMDC on Jacques Peninsula in Riou Lake and to the east of Riou Lake during this program, with boulders locally yielding concentrations of up to 11.27% U (Roy, 1980). Follow up auger overburden drilling by SMDC was conducted over Jacques Peninsula in 1980, but the bedrock source of the boulders was not identified (Roy, 1981), and due to depth limitations of the technology at that time, no EM surveys were conducted to identify prospective EM targets. Concurrent with the SMDC program, Eldorado Nuclear Ltd. explored the southwestern extensions of the Platt Creek shear zone under the Athabasca sandstone on what is now part of the Black Lake property (Bonnar and Rybansky, 1980). Airborne and ground EM surveys by Eldorado identified linear conductors along the projected trace of the fault, which were tested by drilling in 1979 and 1980 (DeCarle, 1978; White and Candy, 1980). Six angled diamond drill holes (ERL-1, 2, 3, 4A, 4B and 5; Figures 2,3) were drilled in the Raibl Lakes area within the area of the current claim S-105652, totaling 1578 m. Although two of the holes (ERL-4B and ERL-5) intersected faulted graphitic pelitic gneiss below the unconformity with anomalous U, Ni, As and Co concentrations (Bonnar and Rybansky, 1980), no follow-up drilling was completed by Eldorado on the property.

4.2 Exploration conducted since 1995

Since 1995, exploration conducted on the three properties comprising the Riou Lake project has been undertaken by Pioneer Metals Corporation, D.F. Exploration Uranium Ltd., Uranerz Exploration and Mining Limited, and Cameco Corporation. Exploration activities on each property are described below. Drill holes completed over the current project area are listed in Table 4, and results are described in section 8 of this report.

4.2.1 Riou Lake property

Since 1997, Pioneer Metals Corporation and Cameco Corp. have continuously explored the Riou Lake property. Pioneer Metals has operated the project throughout the period, and funded all exploration between 1997 and 1999. Since 1999, Cameco has funded exploration activities through an earn-in option agreement. Fourteen drill holes have been completed by Pioneer Metals to date, including three holes now on ground that has since lapsed to the west of the property. Drilling results are described in section 8.

Initial exploration work by Pioneer Metals Corporation in the region began with the staking of several claim blocks in the Stony Rapids area in late 1996, with the intention of exploring these properties for nickel/copper/cobalt mineralization associated with mafic intrusive bodies corresponding to airborne magnetometer anomalies. In February 1997, 183 km of UTEM-3 (University of Toronto Electromagnetic) ground geophysical surveying was carried out on many of the claim blocks (Thai and Visser, 1998). During the analysis of the survey data on the Riou Lake West claim, anomalous background responses were noted that were interpreted to represent a conductive, potential graphitic gneiss unit in the basement rocks. Since conductive graphitic lithologies are frequently associated with uranium deposits in the Athabasca Basin, follow up work was undertaken to evaluate the potential for uranium mineralization on the property. Subsequently, during early 1998, 150 line km of large loop (1600m x 1600m) UTEM time domain electromagnetic (TDEM) surveys and 8.4 km of stepwise moving loop TDEM surveys, were carried out over a corridor of low magnetic amplitude beneath Riou Lake to further define conductive units (Thai and Visser, 1998). A linear zone of higher conductivity ("PM Conductor") was detected near the southeastern end of Riou Lake, that is coincident with a prominent WNW-trending break in the magnetic patterns that may represent a fault potentially favorable for uranium mineralization. In addition, a boulder sampling survey was carried out on, and north of Jacques Point Peninsula in Riou Lake to test this area, and follow up the uraniferous boulder samples identified by SMDC in the late 1970's. An illite anomaly was identified (Earle, 1997).

In 1998, lake sediment sampling, boulder sampling, prospecting and geological mapping were carried out during the summer field program. Lake sediment samples were collected on north-south lines in Riou Lake, delineating anomalous metaliferous areas in the northwestern and central parts of Riou Lake (Armstrong and Faure, 1998). Also during 1998, a radioactive boulder field (the W-Zone) was discovered along the southeastern shore of Riou Lake, comprising a zone of locally derived phosphate-rich Athabasca sandstone boulders (Eriks et al., 1999).

During 1999, a 152 line km program of ground fixed-loop TDEM and gravity surveys on three grids, and diamond drilling was carried out to further delineate, and subsequently test, prospective areas identified in 1998. The TDEM surveys confirmed the presence and continuity of the PM Conductor under Riou Lake which represents a linear package of graphitic metapelitic gneiss within the basement, and a new, discrete basement conductor (KC conductor) on the W Grid south of Riou Lake (Cameron et al., 1999; Eriks et al., 1999; Figures 2,3). Eight diamond holes totaling 4760 meters were drilled during the 1999 winter program to test geophysical and geological targets; of these, 3 were drilled on claims to the west of the Riou Lake property that have subsequently lapsed. The drill holes completed on current parts of the property locally encountered broad zones of alteration in the sandstone column (e.g. hole RLG-D1). Several holes also intersected graphitic gneiss in basement rocks (e.g. RLG-D8; Eriks et al., 1999).

Exploration during the summer of 1999 included further lake sediment sampling, prospecting, geological mapping and a borehole EM geophysical survey of hole RLG-D7. The lake bottom geochemical survey on Riou Lake further delineated the area of anomalous metal values in lake sediments to the north of Jacques Point in 1998 (Armstrong, 1999), and identified similar multi-element anomalies in nearby minor lakes. Prospecting in the southern portion of the property resulted in the discovery of radioactive springs. The springs have high water ^{222}Rn, ^{226}Ra, As, Fe, and chloride concentrations, and low sulfate and bicarbonate concentrations, suggesting that the water is derived from a deep-seated, radioactive source (Faure, 2000b).

Table 4: Diamond drill holes completed in the Riou Lake project area. A total of 21,191 meters in 33 diamond drill holes have been completed on the project area to date, 27 of these since 1996. Holes RLG-D3 to RLG-D5, and SLG-D-3, 5, 7 and 9 are outside the current project area.

Hole	Claim group	Year	Collar elevation	Length (m)	Dip	Unconformity depth	UTM East	UTM North
P2-H1	Riou Lake	1966	240*	287	90	N/A	434550*	6550650*
RLG-D1	Riou Lake	1999	235	728.5	90	709.4	433031	6550591
RLG-D2	Riou Lake	1999	235	686	90	655.3	428316	6550958
RLG-D6	Riou Lake	1999	235	763	90	681.6	425370	6554081
RLG-D7	Riou Lake	1999	252	649	90	534.2/599.4	432713	6548999
RLG-D8	Riou Lake	1999	277	638	90	561.4	433339	6547489
RLG-D9	Riou Lake	2000	306	829	90	729.7	430285	6545680
RLG-D10	Riou Lake	2000	235	769	90	689.8	433815	6550435
RLG-D11	Riou Lake	2000	265	622	90	528.1	432950	6548800
RLG-D12	Riou Lake	2000	265	826.5	90	767.8	423909	6546327
RLG-D13	Riou Lake	2000	275	834	90	757.9	425988	6543854
RLG-D14	Riou Lake	2000	290	861.7	90	724.4	430539	6545365
SLG-D1	Serendipity Lakes	1996	296	437.6	90	N/A	436912	6539078
SLG-D2	Serendipity Lakes	1996	294	556.2	90	N/A	437012	6539053
SLG-D4	Serendipity Lakes	1996	290	226.8	90	N/A	437412	6538978
SLG-D6	Serendipity Lakes	1997	277	840	90	827.5	438362	6539073
SLG-D8	Serendipity Lakes	1998	276	704	90	691.7	441655	6540978
SLG-D10	Serendipity Lakes	2000	288	919	90	818.5	436451	6540937
SLG-D11	Serendipity Lakes	2001	299	947	90	880	437450	6538050
CLG-D1	Serendipity Lakes	1997	302	870	90	859.8	426704	6537875
CLG-D2	Serendipity Lakes	1997	292	872	90	864.3	430862	6540050
CLG-D3	Serendipity Lakes	1998	298	973	90	911.7	429855	6540065
CLG-D4	Serendipity Lakes	2000	287	765	90	717.7	427130	6542942
CLG-D5	Serendipity Lakes	2000	310	934	90	915.6	425203	6537066
ERL-1	Black Lake	1979	305**	293.8	70	257.2	455609	6562490
ERL-2	Black Lake	1979	308**	315.2	60	275.8	455311	6562558
ERL-3	Black Lake	1979	300**	316	60	267.4	455440	6562711
ERL-4B	Black Lake	1980	288	312.5	71	227.2	455396	6563277
ERL-5	Black Lake	1980	304	340	70	253.5	454986	6562991
BL-01	Black Lake	1998	317	674	90	582.2	445263	6548628
BL-02	Black Lake	1998	308	626	90	561.5	446113	6549928
BL-03	Black Lake	2001	323	386	90	296.9	454335	6561260
BL-04	Black Lake	2001	317	389	90	309.2	454076	6561419
			Total	**21,191 m**				

* = approximate location
** = estimated from topographic maps
N/A = hole did not intersect unconformity

During the winter of 2000, fixed-loop, moving-loop (206.8 line kilometres), and borehole TDEM surveys (7315 metres) were conducted, and three drill holes (2220 m total) were completed (Eriks, 2001a). Two significant basement conductors with strike lengths of at least 2 km, and two additional weaker conductors (RS1, RS2), were detected by fixed-loop TDEM on the "Checkerboard" (eastern) portion of the Riou South Grid lying conformably within an elongated northeast-trending magnetic low (Eastern Mag Low; McGowan, 2000). In addition, a detailed Moving-Loop TDEM survey was carried out over the northern end of the W-Grid as a follow up to 1999 holes RLG-D7 and RLG-D8 to further delineate conductors in several grid areas. The survey defined several potential drilling targets, three of which were tested by drill holes RLG-D9, D10 and D11. Two of these holes intersected anomalous uranium mineralization at or near the sub-Athabasca unconformity (Eriks, 2001a): (i) Hole RLG-D9, which tested the Checkerboard South (CS) conductor and intersected minor pitchblende mineralization immediately below the unconformity in graphitic biotite-feldspar-garnet gneiss, and (ii) Hole RLG-D10 intersected 3428 ppm U over 0.12 m in a wider anomalous zone of mineralization straddling the unconformity. Samples collected from artesian water flowing from hole RLG-D10 after its completion are radioactive and anomalously high in chloride content, suggesting a deep source and potential nearby radioactive body. Hole RLG-D11, drilled to test the intersection of an interpreted basement EM conductor with the fault previously intersected in hole RLG-D7, intersected major faults both in the sandstone column and in the basement gneiss sequence (Eriks, 2001a).

In the summer of 2000, prospecting and further diamond drilling to test EM anomalies in holes RLG-D-12 to RLG-D14, were carried out by Pioneer Metals at Riou Lake (Eriks, 2000). The holes intersected several zones of bleached, altered sandstone and anomalous radioactivity near the unconformity. Hole RLG-D14 intersected pyritic graphitic garnet-biotite-feldspar gneiss with 2-5% graphite, containing local sections of up to 20% graphite. Prospecting along the southern shore of Little Lake identified another zone of numerous anomalously radioactive phosphate-rich, angular, and probably locally derived sandstone boulders (Eriks, 2000).

In the winter of 2001, Pioneer carried out a further 102.5 km of TDEM surveying on the Riou Lake property. The survey on the Checkerboard grid established the connection between several conductors previously identified, and identified several prospective drilling targets at intersections between conductors and magnetic lineaments (Cameron, 2001). No work has been completed on the property since that time.

4.2.2 Black Lake property

The Black Lake property was staked by Uranerz Exploration and Mining Limited (UEM) in 1995. After conducting boulder sampling in 1995 (Belyk and Cutts, 1995) and fixed loop TEM surveys in 1996, Uranerz drilled two holes (1300 m cumulative drilling) in the southern half of the claim group during March 1998 targeted on EM conductors (Belyk, 1998). Hole BL-01 intersected faults in both the sandstone column and basement units, and graphitic gneiss. Hole BL-02 intersected uranium mineralization in hole BL-02, that included an interval containing 3552 ppm U immediately below the unconformity

(Belyk, 1998). After Cameco became operator of the property in 1998, the company carried out a widely spaced TDEM survey along the projected trace of the Platt Creek shear zone between the Raibl Lakes area and the two 1998 UEM drill holes in March, 2000 (Chan and Powell, 2000). The survey further delineated the trace of conductive basement units associated with the fault system throughout the core of the property.

After optioning the Black Lake property in 2000, Pioneer Metals carried out an exploration program early during 2001. A total of 48 km of fixed loop TEM and 32.4 km of total field magnetic surveying were conducted over two grids in the northeastern and southwestern parts of the Black Lake property outlining two parallel conductive units (Cameron, 2001). Two areas in the Raibl Lakes area which contained interpreted breaks across the conductors, possibly representing faults, were tested by two diamond drill holes totaling 775.0 metres (holes BL-03 and BL-04). Hole BL-03 intersected a significant fault, anomalous concentrations of B and Mg, and veinlets of dravitic tourmaline over wide intervals in the Athabasca sandstone column, and radioactive, uraniferous Fe-oxide altered graphitic gneiss immediately below the unconformity (Eriks, 2001b). Hole BL-04 tested the western EM anomaly and intersected radioactive, sooty pitchblende bearing clay alteration just below the unconformity which returned 0.16% U_3O_8 over 0.4 metres above graphitic pelitic gneiss (Eriks, 2001b).

4.2.3 Serendipity Lakes property

The Serendipity Lakes property was staked by D.F. Exploration Uranium Ltd. in 1994 over areas where highly anomalous uranium and base metal values in lake sediment samples were obtained by SMDC in the early 1980's. A lake sediment geochemical survey conducted by D.F. Exploration in 1995 confirmed the anomalous values and identified particularly anomalous areas at Circle Lake and Serendipity Lakes, where the lakes are supplied by probable deep seated, radioactive and uranium-bearing artesian water flow and associated springs (Faure, 1995a, 1995b). In 1996, D.F. Exploration drilled five diamond drill holes totaling 2300 m (holes SLG-D1 to SLG-D5) to test the origin of radioactive waters in the area. None of the holes reached the unconformity, either due to their intended testing of only the sandstone column in holes SLG-D1 to D3, or for technical reasons in holes SLG-D4 and D5 (Faure, 1996).

During 1997, a 16.2 km ground EM survey was conducted over the central part of the property, however, response from the basement was obscured by the clay-rich, conductive Wolverine Point Formation that is present at the top of the Athabasca group on much of the property (Faure, 1997b). Drilling of three holes in the Circle Lakes (CLG-D1 and CLD-D2) and Serendipity Lakes (SLG-D6) areas was completed during 1997. The first hole in the Circle lakes area, hole CLG-D1, intersected a narrow interval of mineralization in basement rocks immediately below the unconformity (Faure, 1997a).

D.F. Exploration conducted a further 2545 m of drilling in 1998. Three holes were completed (SLG-D7, D8; CLG-D3), focusing on the southern extensions of the Platt Creek shear zone in the Serendipity Lakes area (Faure, 1998a, 1998b). A zone of hydrothermal alteration in the sandstone column was intersected in hole SLG-D7 for up to 60 metres above the unconformity. Hole CLG-D3 was also completed in the Circle Lake area to the west. Subsequently, in 1999, one hole was completed (hole SLG-D9) to follow up alteration intersected in hole SLG-D7, and in 2000, holes CLG-D4 and D5 were drilled in the Circle Lakes area and hole SLG-D10 was completed in the Serendipity Lakes area (Faure, 2000d-f).

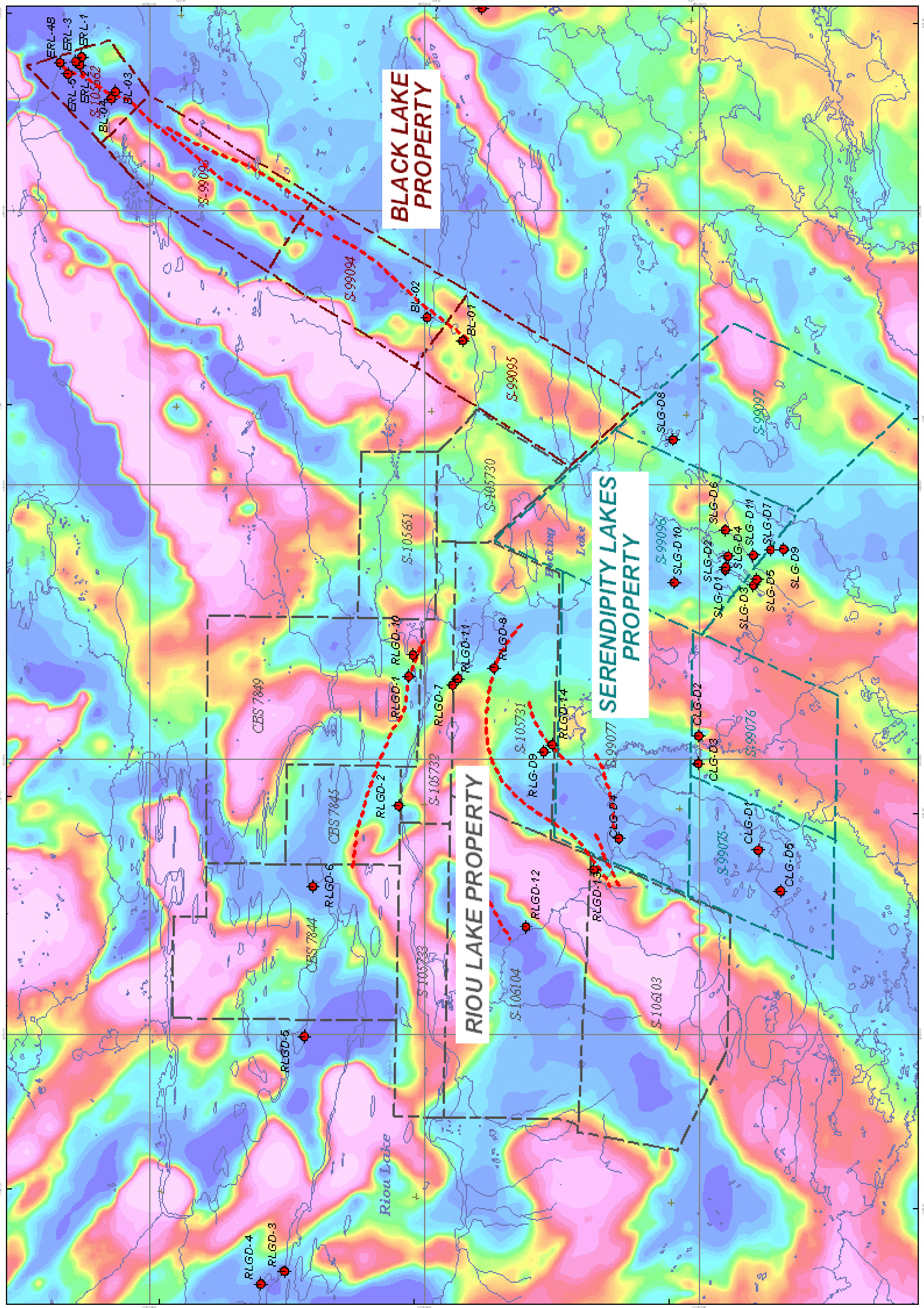
Subsequent to optioning the property from D.F. Exploration, Pioneer Metals completed hole SLG-D11 (947 m) in 2001 to follow-up alteration in hole SLG-D7, located 450 m to the south (Eriks, 2001c). To date, a total of 11,930 m of drilling in 16 diamond drill holes has been completed on the Serendipity Lakes property since 1996 (Table 4); drilling results are described in section 8 of this report.

5.0 GEOLOGICAL SETTING OF THE RIOU LAKE PROJECT

5.1 Regional Geological Setting

The Riou Lake project area is located within the northern part of the Athabasca Basin, and is underlain by 300-850 m of Proterozoic sandstone of the Athabasca Group. The Athabasca sandstone dips shallowly to the south, and becomes progressively thicker in that direction. The sandstone here unconformably overlies polydeformed, metamorphosed Archean aged basement rocks of the Tantato Domain (Macdonald, 1987; Hanmer et al., 1991), also referred to as the East Athabasca Mylonite Triangle of the Snowbird Tectonic zone (Hanmer et al., 1992, 1994, 1995). The zone comprises an anastomosing, northeast-trending array of mylonitic shear zones that separate lithons of amphibolite to granulite grade metamorphic rocks and igneous bodies (Hanmer, 1997). The tectonic zone separates granulite grade rocks of the Rae province to the northwest (Western Granulite Domain of Lewry and Sibbald, 1980) from rocks of the Proterozoic Trans-Hudson orogen comprising the Mudjatic Domain of the Hearne Province to the southeast (Figures 1, 2).

Where exposed to the north of Fond du Lac and Lake Athabasca, 15 km north of the Riou Lake property, the Tantato Domain / East Athabasca Triangle is composed of locally graphitic, banded leucocratic quartzo-feldspathic diatexite of semi-pelitic origin, intruded by late Archean tonalitic batholiths, two mafic igneous complexes, granitic plutons and at least two mafic dyke swarms (Figure 2: Hanmer et al., 1992; Hanmer, 1997; Colborne, 1961; Johnston, 1963, 1964). Based on the occurrence of two domains with geometrically distinct internal tectonic fabrics, Hanmer (1997) has divided the domain into a Lower Deck, comprising lithologies immediately to the north of Fond du Lac and Lake Athabasca and south of Clut Lake that extend southward under the Riou Lake project, and an Upper Deck, developed to the north. The Upper Deck may have been originally emplaced along a basal discrete thrust plane, which was subsequently reactivated by dip slip, normal mylonites. Rocks in the region are affected by regional granulite and upper amphibolite grade metamorphism (Hanmer et al., 1994, 1995).



drill holes

basement conductors

PMcGowan - updated May 14/02

UEx Corporation

Figure 3

Riou Lake Area

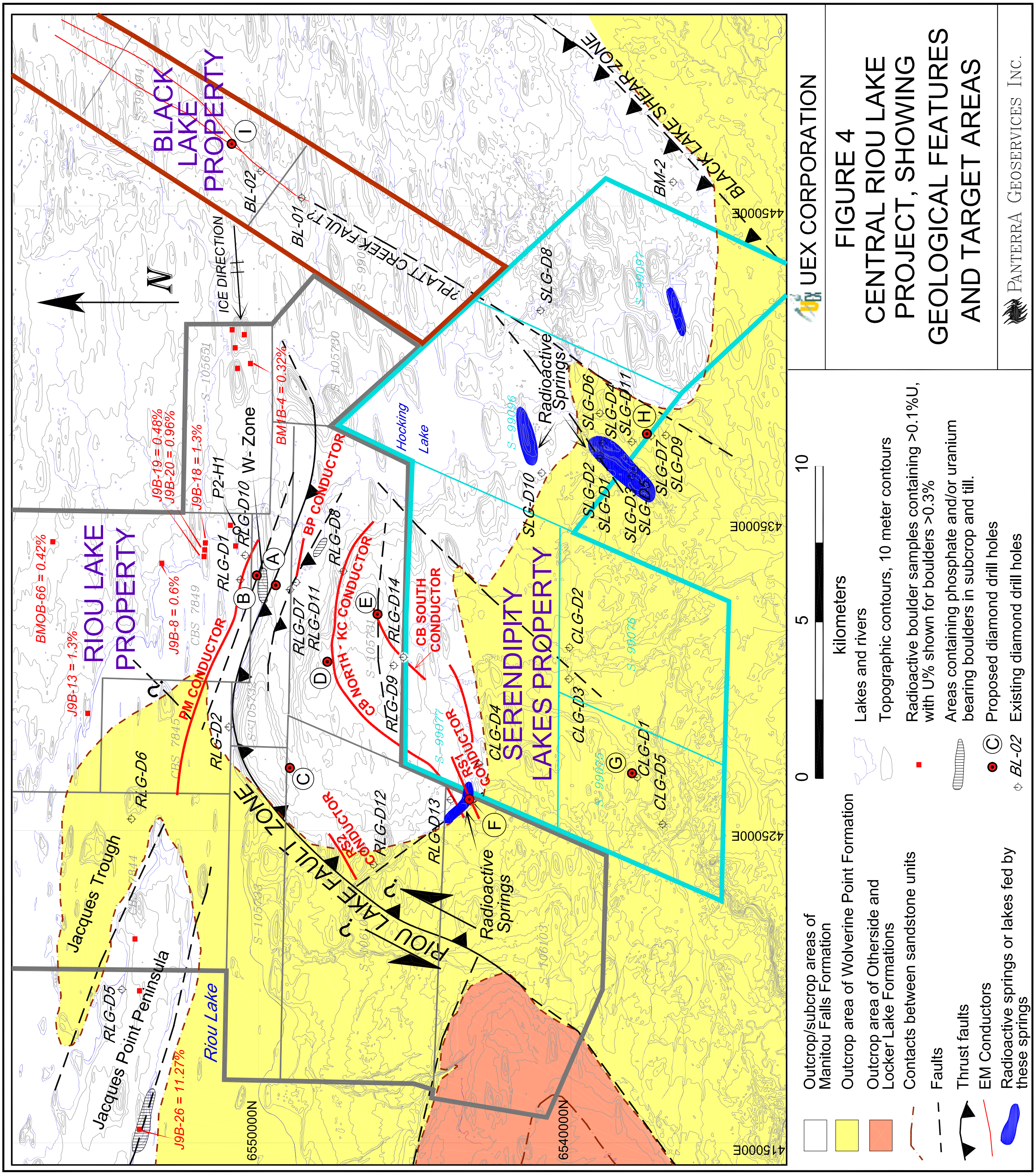
Exploration Compilation on Magnetic Gradient

Extensive zones of anastomosing, northeast trending mylonitization are developed in the Tantato Domain, defining the Snowbird tectonic zone. Mylonites formed at all metamorphic grades from eclogite and granulite to lower greenschist facies, probably over a protracted, progressive event (Hanmer, 1997). Mylonites in the domain vary from dextral on the west side of the domain to sinistral on the east, defining a conjugate set of syn-metamorphic shear zones (Hanmer et al., 1994). Displacements are parallel to shallow southerly plunging elongation lineations on all structures (Johnston, 1964; Hanmer, 1997). Mylonites generated at all metamorphic grades exhibit the same geometric and kinematic relationships, but with increasing localization into narrower domains with lower temperature (Hanmer, 1997).

The Tantato Domain is bounded by the greenschist facies Grease River-Straight River Mylonite zone and the Black Lake-Virgin River mylonitic shear zones to the east and west, respectively (Figure 2). Other important shear zones include the greenschist facies Platt Creek and Clut Lakes shear zones, the former being a sinistral mylonitic shear zone with significant pre-Athabasca displacement which extends southward beneath the Riou Lake property (Figure 2). All three of these structures contain core domains of greenschist-facies mylonite up to several hundred meters wide that are superimposed on older, broader (kilometer scale), earlier zones of granulite and amphibolite grade mylonite (Johnston, 1964; Hanmer, 1997). Dating of syntectonic igneous bodies in the area indicate that localization of deformation from high grade to greenschist facies mylonites occurred between 2620 and 2600 Ma (Hanmer, 1997) and that the area was largely unaffected by younger Proterozoic Hudsonian deformation and metamorphism that are widespread to the east in the Hearne Province (Mudjatic and Wollaston domains). Proterozoic, brittle remobilization of older greenschist facies mylonite zones has occurred along several shear zones in the area, including the Black Lake shear zone, where approximately 200m of apparent reverse (NW side up) displacement of Manitou Falls Formation and sub-Athabasca unconformity is apparent on this northwest-dipping structure along zones of clay gouge (Johnston, 1963).

5.2 Basement lithologies in the Riou Lake project area

Since they are covered by sandstones of the Athabasca Group, the distribution, type and structural style of basement lithologies underlying the Riou Lake property in the area are inferred from magnetic maps, with extrapolation from lithologies in the Tantato Domain to the north of the Athabasca Basin (Figure 2), and limited drill hole information. Regional aeromagnetic maps suggest that basement rocks trend predominantly northeast, and that several tight, megascopic and northeasterly-closing folds underlie the project area (Figure 3). The folds are outlined by magnetically positive units that are continuous with, and probably represent southern extensions of metamorphosed mafic intrusions of the Axis Mafic granulite exposed to the north of Fond-du-Lac and Lake Athabasca (Figure 2). These alternate with areas of low total magnetic intensity that are continuous on aeromagnetic maps with areas mapped to the north as graphite-gneiss bearing Pine Channel diatexite and intercalated granitic units to the north of the Athabasca Basin (Figure 2).


UEX CORPORATION
FIGURE 4
CENTRAL RIOU LAKE PROJECT, SHOWING GEOLOGICAL FEATURES AND TARGET AREAS
PANTERRA GEOSERVICES INC.
Outcrop/subcrop areas of Manitou Falls Formation
Outcrop area of Wolverine Point Formation
Outcrop area of Otherside and Locker Lake Formations
Contacts between sandstone units
Faults
Thrust faults
EM Conductors
Radioactive springs or lakes fed by these springs
Lakes and rivers
Topographic contours, 10 meter contours
Radioactive boulder samples containing >0.1%U, with U% shown for boulders >0.3%
Areas containing phosphate and/or uranium bearing boulders in subcrop and till.
Proposed diamond drill holes
BL-02 Existing diamond drill holes
kilometers
0
5
10
N
ICE DIRECTION
BLACK LAKE PROPERTY
RIOU LAKE PROPERTY
SERENDIPITY LAKES PROPERTY
BLACK LAKE SHEAR ZONE
?PLATT CREEK FAULT?
RIOU LAKE FAULT ZONE
W-Zone
Hocking Lake
Riou Lake
Jacques Trough
Jacques Point Peninsula
Radioactive Springs
PM CONDUCTOR
BP CONDUCTOR
CB NORTH - KC CONDUCTOR
CB SOUTH CONDUCTOR
RS1 CONDUCTOR
RS2 CONDUCTOR
BMOB-66 = 0.42%
J9B-13 = 1.3%
J9B-8 = 0.6%
J9B-18 = 1.3%
J9B-19 = 0.48%
J9B-20 = 0.96%
BM1B-4 = 0.32%
J9B-26 = 11.27%
P2-H1
BL-01
BL-02
BM-2
RLG-D1
RLG-D2
RLG-D5
RLG-D6
RLG-D7
RLG-D8
RLG-D9
RLG-D10
RLG-D11
RLG-D12
RLG-D13
RLG-D14
SLG-D1
SLG-D2
SLG-D3
SLG-D4
SLG-D5
SLG-D6
SLG-D7
SLG-D8
SLG-D9
SLG-D10
SLG-D11
CLG-D1
CLG-D2
CLG-D3
CLG-D4
CLG-D5
S-99097
S-99096
S-99077
S-99076
S-99075
6550000N
6540000N
415000E
425000E
435000E
445000E

Diamond drilling in areas of low total magnetic intensity on the Riou Lake project targeting prospective sites for uranium mineralization has intersected a variety of granulite and upper amphibolite grade biotite-amphibole-pyroxene-garnet-bearing pelitic and psammo-pelitic gneiss, quartzofeldspathic gneiss, quartzite, and associated mylonite, granitic partial melts and charnockite (Eriks, 1999-2001; Madore and Annesley, 1999a, 1999b, 2000, 2001; Madore et al., 2000). These lithologies are consistent with the range of lithologic types described by Hanmer (1997) in the Pine Channel diatexite to the north of the basin, with which they are magnetically contiguous. These predominantly metasedimentary domains locally contain graphite-bearing gneiss units, like the Pine Channel diatexite unit to the north (Hanmer, 1997). Basement units intersected in drill holes in the project area are lithologically comparable to parts of the metamorphic sequence in the Wollaston Belt in eastern portions of the Athabasca Basin (Madore and Annesley, 2000a, b), and to basement rocks associated with the Cluff Lake deposits, which together are host to the bulk of the uranium deposits in the Athabasca Basin. Graphite-bearing mylonite zones at Cluff Lake for example, host much of the uranium mineralization identified there to date (e.g Ey et al., 1985).

Common northwest-trending breaks and deflections of the predominantly northeast-trending lithologic sequence are apparent on the aeromagnetic maps and cross central parts of the project (Figure 3). These are similar in morphology and orientation to syn-metamorphic mylonitic shear zones exposed in outcrop to the north in the Tantato Domain (see Figure 2), and probably represent the magnetic expression of such structures. Ribbon mylonite textures intersected in basement rocks in some drill holes in the project area (e.g. Madore et al., 2000) suggest that both discordant and concordant Archean to Early Proterozic mylonites are present locally, as they are to the north of the Athabasca Basin. These structures have been locally remobilized by late, post-Athabasca semi-brittle to brittle displacements in late Proterozoic times (see below) forming potential structural traps for uranium mineralization.

Further descriptions of lithologies intersected in diamond drill holes within the project area are outlined with drilling results in section 8 of this report.

5.2.1 Potential distribution of graphitic units in the project area

Ground EM surveys (principally TDEM) have been conducted principally on the Riou Lake and Black Lake properties since 1997 to identify the distribution of conductive graphite-bearing lithologies and potential associated faults that may form prospective structural and chemical traps for uranium mineralization (e.g. Thai and Visser, 1998; McGowan, 2000). Locations of principal conductors identified are shown on Figures 2-4, and details of the survey areas and methodologies are further outlined or referred to in section 7 of this report. Principal basement conductors identified to date occur in three areas (Figure 4): a) as a series of curving, northeast to east and southeast trending conductors developed 2-7 km south of Riou Lake and for up to 12 km west of Hocking Lake, which include the CB North–KC and CB South conductors (McGowan, 2000; Figure 4), b) as a single southeast trending conductor, the PM conductor, developed under the southeastern portions of Riou Lake, and c) along the core of the Black Lake property, where one to two northeast-trending, anastomosing conductors are developed along the projected trace of the Platt Creek shear zone. In all three areas, the conductors occur in areas of low total magnetic intensity and mimic the shapes of local magnetic features (Figure 3). Other conductors may be present in other parts of the property where EM surveys have not been conducted, and to the south under exposures of the clay-rich Wolverine Point Formation, which obscures the EM response from the basement and hinders coverage (Faure, 1997b). Diamond drilling has confirmed the presence of graphite-bearing gneiss in several of these conductors, including those along the Black Lake trend and several conductors south of Riou Lake, suggesting that most do represent the trace of conductive, graphite-bearing gneiss units within the basement sequence, and consequently, prospective target areas for uranium mineralization (see section 8).

5.3 Athabasca Group lithologies

The metamorphosed Archean gneiss sequence of the Tantato Domain is unconformably overlain by gently south dipping quartz-rich sandstone of the Athabasca Group. The Athabasca Group thickens progressively to the south from the northern margins of the Athabasca Basin 5-10 km north of the project (Figure 2). U-Pb dates of authigenic apatite cement and Rb-Sr dating of the paleoweathered zone at the base of the Athabasca sequence suggest a depositional age of between 1600-1700 Ma (Cumming et al., 1987).

Within the Riou Lake project area, the Athabasca Group is composed predominantly of a basal fluvial, broadly upward fining succession of quartz arenite, the Manitou Falls Formation (575-840 m thick), which is subdivided into at least three members (B, C and D members) based on abundance and lithologic character of conglomerate, siltstone and mudstone units present in the sequence. In southern portions of the property, where the Athabasca Group is thickest, the siltstone-mudstone rich Wolverine Point Formation overlies the Manitou Falls Formation, probably with disconformity or acute angular unconformity.

Widespread argillic alteration occurs in basement metamorphic rocks immediately beneath the Athabasca Group. The alteration is similar in geochemistry, mineralogy and zoning to that observed today in lateritic profiles, and consequently has been commonly interpreted as a saprolitic (paleoweathering) profile related to pre-Athabasca erosion of the gneiss sequence (e.g. Hoeve and Sibbald, 1978; Hoeve and Quirt, 1985). Alternatively, it could be related to the reaction of oxidized diagenetic fluids in the Athabasca sandstone with underlying metamorphosed basement rocks, or a superposition of both processes (V. Sopuck, pers. comm., 1998). This sub-Athabasca alteration zone is referred to as “paleoweathering alteration” here, even though a post-Athabasca timing is possible. The alteration often displays a vertical zonation in mineralogy and texture. At the top of the alteration profile, in basement rocks immediately beneath the unconformity, a narrow zone of white clay alteration is often developed, followed downward by a hematitic, oxidized “red zone”, containing kaolinite +/- illite, which in turn gradationally overlies a reduced “green zone” containing illite and Fe-Mg trichlorite, which grades downward into fresh rock (Hoeve and Quirt, 1985). In graphitic lithologies, graphite is often completely to partially depleted in the oxidized red zone, and upper parts of the green zone. The combined thickness of red zone and green zone alteration in the project area typically ranges between 20 and 50 m.

5.3.1 Manitou Falls Formation

Members of the Manitou Falls Formation in the property area include the following (Ramaekers, 1990; Faure, 2000c; Ramaekers et al., 2001):

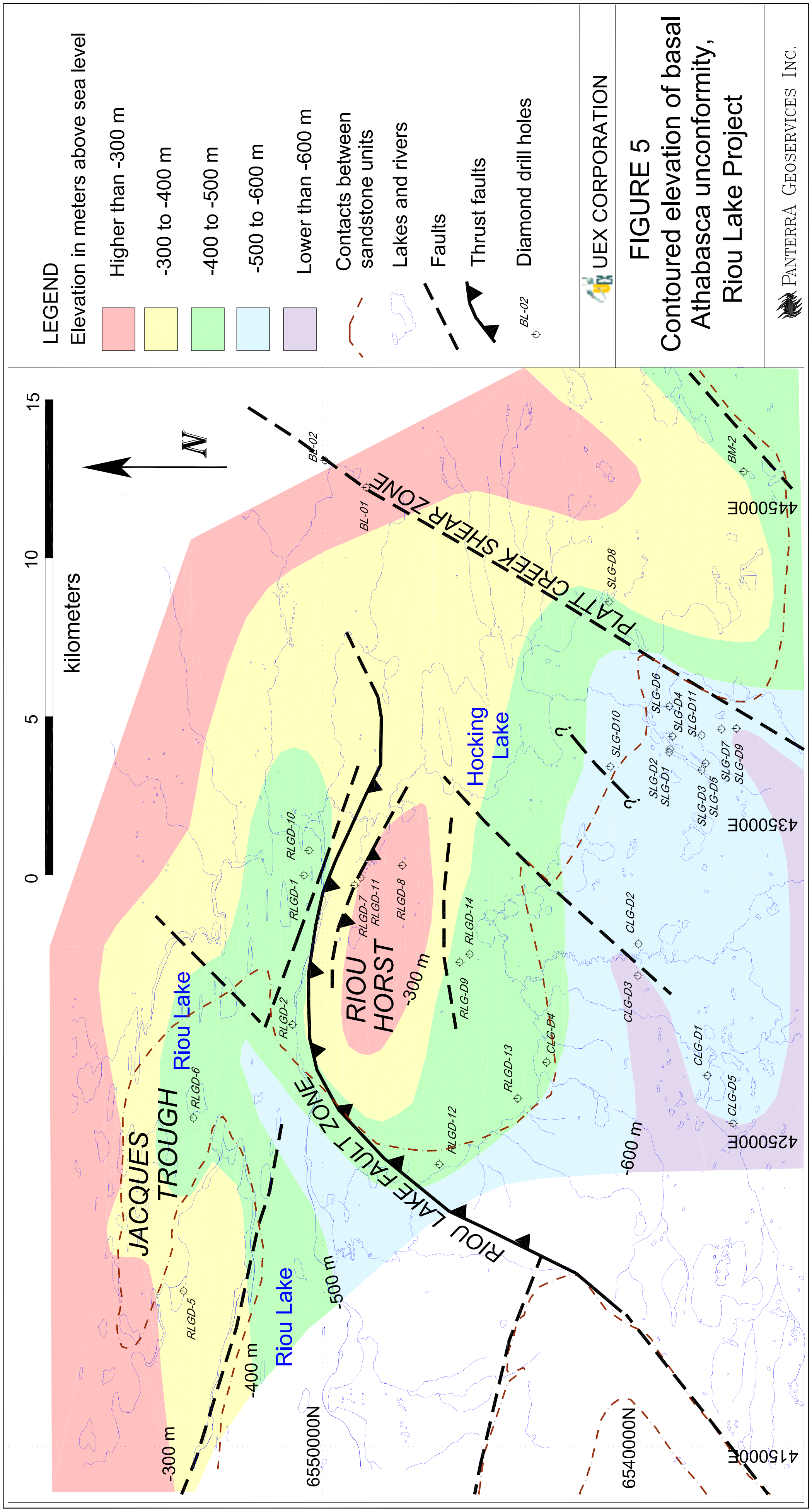
Manitou Falls B member (Mfb): Ramaekers (1990) defines this unit as the basal member of the Athabasca Group in the northern Athabasca Basin. Based on drill hole information, the B member generally ranges from 35 to 60 m thick in the northern project area, thickening up to 150 m to the south in the southern parts of the project area (Serendipity Lakes). It is defined by Ramaekers as consisting of quartz sandstone with at least 2% bedded clast-supported conglomerate beds >2 cm thick. In the project area, a basal quartz pebble conglomerate unit that may attain a thickness of up to 15 m (Faure, 2000c) is locally present, principally to the south in the Serendipity Lakes property area.

Manitou Falls C member (Mfc): This member is defined by Ramaekers (1990) as consisting of quartz sandstone lacking conglomerate beds >2 cm thick, and containing less than 1% clay intraclast layers. The C member is generally 300-390 m thick in the project area, although it locally thins to <250 m. Cross bedding, clay pebble horizons and clay silt horizons are common (Faure, 2000c).

Manitou Falls D member (Mfd): The uppermost member of the Manitou Falls Formation, the D member, is typically more than 300 m thick in the project area. It is characterized by generally fine grained quartz sandstone with locally abundant, fine grained clay intraclasts (Ramaekers et al., 2001; Faure, 2000c). In outcrop, clay clasts commonly erode preferentially, leaving distinctive voids (Eriks and McGowan, 1999). The Manitou Falls D member is partially to completely eroded off the upper parts of the sandstone column in the northern parts of the project area.

5.3.2 Upper parts of the Athabasca Group: Wolverine Point and higher units

In southern parts of the project area, the Manitou Falls Formation is overlain by the Wolverine Point Formation. It comprises sandstone, claystone, siltstone and mudstone, and attains a thickness of at least 80-100 m in the southernmost parts of the project area (Faure, 2000, 2001). The unit is finer-grained than the underlying Manitou Falls Formation. In the project area it comprises a) a basal 10 cm thick conglomerate with 5-6 mm jasper, quartz and sandstone clasts, b) 20-30 m of well layered, very fine-grained sandstone, c) 8-20 m of laminated red siltstone-mudstone, d) 20 m of fine-grained sandstone, and e) >15 m of green and red siltstone and mudstone (Faure, 2000c, 2001a). Phosphates, present in zones up to 6 m thick, comprise up to 20% P_2O_5 of the unit as fluorapatite and carbonate fluorapatite, principally as cement, and locally as veinlets and vug fillings, which are commonly present in both sandstone and siltstone/mudstone of the Wolverine Point Formation (Ramaekers, 1990; Ramaekers et al., 2001).


LEGEND
Elevation in meters above sea level
Higher than -300 m
-300 to -400 m
-400 to -500 m
-500 to -600 m
Lower than -600 m
Contacts between sandstone units
Lakes and rivers
Faults
Thrust faults
Diamond drill holes
BL-02
UEX CORPORATION
FIGURE 5
Contoured elevation of basal Athabasca unconformity, Riou Lake Project
PANTERRA GEOSERVICES INC.
0
5
10
15
kilometers
N
JACQUES TROUGH
Riou Lake
RIOU HORST
-300 m
Hocking Lake
PLATT CREEK SHEAR ZONE
RIOU LAKE FAULT ZONE
-300 m
-400 m
-500 m
-600 m
6550000N
6540000N
415000E
425000E
435000E
445000E
RLGD-1
RLGD-2
RLGD-5
RLGD-6
RLGD-7
RLGD-8
RLGD-10
RLGD-11
RLGD-12
RLGD-13
RLGD-14
RLG-D9
CLG-D1
CLG-D2
CLG-D3
CLG-D4
CLG-D5
SLG-D1
SLG-D2
SLG-D3
SLG-D4
SLG-D5
SLG-D6
SLG-D7
SLG-D8
SLG-D9
SLG-D10
SLG-D11
BL-01
BL-02
BM-2

The basal conglomerate of the Wolverine Point Formation may correspond with a disconformity or angular unconformity, since the underlying Manitou Falls Formation D member exhibits a significant lateral variation in thickness that may indicate pre-Wolverine Point erosion of its upper portions (Faure, 2000c, 2001b). On this basis, and on outcrop patterns, Faure (2000c) suggests that the Wolverine Point Formation may have been deposited on to an uneven, topographically variable unconformity above the Manitou Falls Formation, possibly in tectonic troughs generated by post-Manitou Falls, but pre-Wolverine Point Formation, reverse fault activity on the Riou Lake fault zone and associated faults (see section 5.4). Alternatively, post-Manitou Falls faulting may also postdate the Wolverine Point Formation, and the current outcrop pattern may simply reflect the different levels of erosion of adjacent fault bounded blocks.

Pebbly quartz arenite of the Locker Lake Formation and quartz arenite and siltstone of the Otherside Formation stratigraphically overlie the Wolverine Point Formation and outcrop in the southwestern corner of the property (Figures 2, 4).

5.4 Post Athabasca (Manitou Falls) faulting in the Riou Lake project area

Review of geophysical data, unconformity elevation maps, topographic features, surface geological mapping and drilling data suggests that faults which affect the Athabasca Group that are developed in the project area strike mainly to the northeast. However, faults are locally domainal in orientation, and northwest trending faults may occur where basement lithologies also trend northwest. Faults described here as post-Athabasca clearly affect and displace members of the Manitou Falls Formation. It is possible some of these displacements may have occurred prior to deposition of the Wolverine Point Formation, as suggested by Faure (2000b).

5.4.1 The Riou Horst and the Riou Lake fault system

To evaluate the distribution of post-Athabasca fault displacements, contoured sub-Athabasca unconformity elevation maps based on drill hole information have been generated (Figure 5; see also Ramaekers, 2000a). The maps indicate that a significant topographic high in the unconformity is developed for up to 5 km to the south of Riou Lake, and for up to 10 km west-northwest of Hocking Lake (Figure 5). This high is termed the Riou Horst by Ramaekers (2000a) and Faure (2001b). Drill holes RLG-D7, 8, and 11, drilled into the crest and flanks of the horst, have intersected the sub-Athabasca unconformity at elevations of 263-284 m below sea level, which is 150-200 m higher than the elevation of the unconformity intersected in holes located to the south (e.g. holes RLG-D9, 14) and north (holes RLG-D1, 2 and 10). Since all units within the Manitou Falls Formation also display similar variations in elevation above this feature (Figure 6), the horst cannot represent a pre-Manitou Falls paleotopographic feature, and is likely related to post-Manitou Falls fault displacements.

Direct evidence of post-Manitou Falls reverse fault generation of the Riou Horst is indicated by the presence of a significant reverse fault intersected in holes RLG-D7 and RLG-D11, where thrust duplication of the sub-Athabasca unconformity across a significant brittle fault zone occurs. Here, an overthrust wedge of metamorphic basement was intersected in the hangingwall of the fault over underlying Athabasca sandstone, with a vertical displacement of 65 m indicated (Figure 6A) in hole RLG-D7. Core re-orientation with use of an assumed westerly (azimuth 270) dip of cross bedding foresets in the Athabasca sandstone based on consistent westerly paleocurrent directions in the region suggests that the fault system has a moderate southwesterly dip (Ramaekers, 2000b). Hole RLG-D11 intersected a significant fault comprising a gouge-rich chlorite matrix breccia in the basement gneiss sequence at the projected down dip extension of this structure (Ramaekers, 2000b), consistent with the calculated orientation. A second fault gouge and breccia-filled fault was also intersected between 252.4 and 256.2 m in hole RLG-D11 within the Athabasca sandstone column. These structures probably only represent the southern part of a series of fault steps along the northern parts of the Riou Horst, since a further drop of approximately 120 m of the basement unconformity is apparent to the north between these holes and holes RLG-D10 and RLG-D1 (Figure 6A). Faults intersected in upper parts of the Manitou Falls Formation near the top of hole RLG-D10 and southwesterly dipping faults identified in outcrop at the W-zone (Ramaekers, 2000a) probably represent further reverse faults to the north that are parallel to the RLG-D7-D11 fault system, and which together comprise part of a broad fault zone present along the northern margins of the Riou Horst in this area (Figures 5, 6A).

The Riou Horst is expressed at surface by a plateau of Manitou Falls D Member that rises 50-100 m above the level of Riou Lake. Mapping by Ramaekers (2000a) indicates that bedding in the Manitou Falls Formation, normally flat or dipping southerly at dips of less than 2^0 regionally, forms an arcing, open monoclinal fold along the northwestern surface projection of the horst 1.5-3 km west-southwest of the location of hole RLG-D2, where bedding of the sandstone dips at up to 25^0 to the northwest (Figures 4, 6). The bedding strike rotates progressively from west-northwest to north-northwest progressing further to the east (Figure 4; Ramaekers, 2000b). Similarly, in the vicinity of the W-zone, on the south side of Riou Lake south of holes RLG-D10 and RLG-D1, bedding dips up to 8^o to the north (Ramaekers, 2000f).

The bedding dips and the curving variation in strike of bedding described above correspond with (i) the presence of parallel west and northwest striking minor faults developed in the W-zone (Ramaekers, 2000f), (ii) numerous minor irregular sandy gouge-filled fractures associated with the monoclinal fold southwest of hole RLG-D2 (Ramaekers, 2000b), (iii) the position of the northern margins of the Riou Horst, (iv) the morphology of basement hosted magnetic features (see Figure 3), (v) well developed curved topographic lineaments defined by outcrop ridges (Figure 4), and (vi) on the west side of the horst, the eastern limits of the Wolverine Point Formation. Taken together, and with the direct evidence of a broad fault system between holes RLG-D7/11 and RLG-D1/10, these features suggest that a curving, southerly dipping reverse fault system, here termed the Riou Lake fault zone, is developed along the northern and western margins of the Riou Horst, which generated the upthrust horst block, the monoclinal fold of the sandstone along the northern surface projection of the horst, and the current outcrop patterns of the Wolverine Point Formation (Figures 5, 6). Monoclinal folds of bedding in the Athabasca sandstone are common above reverse faults in other parts of the

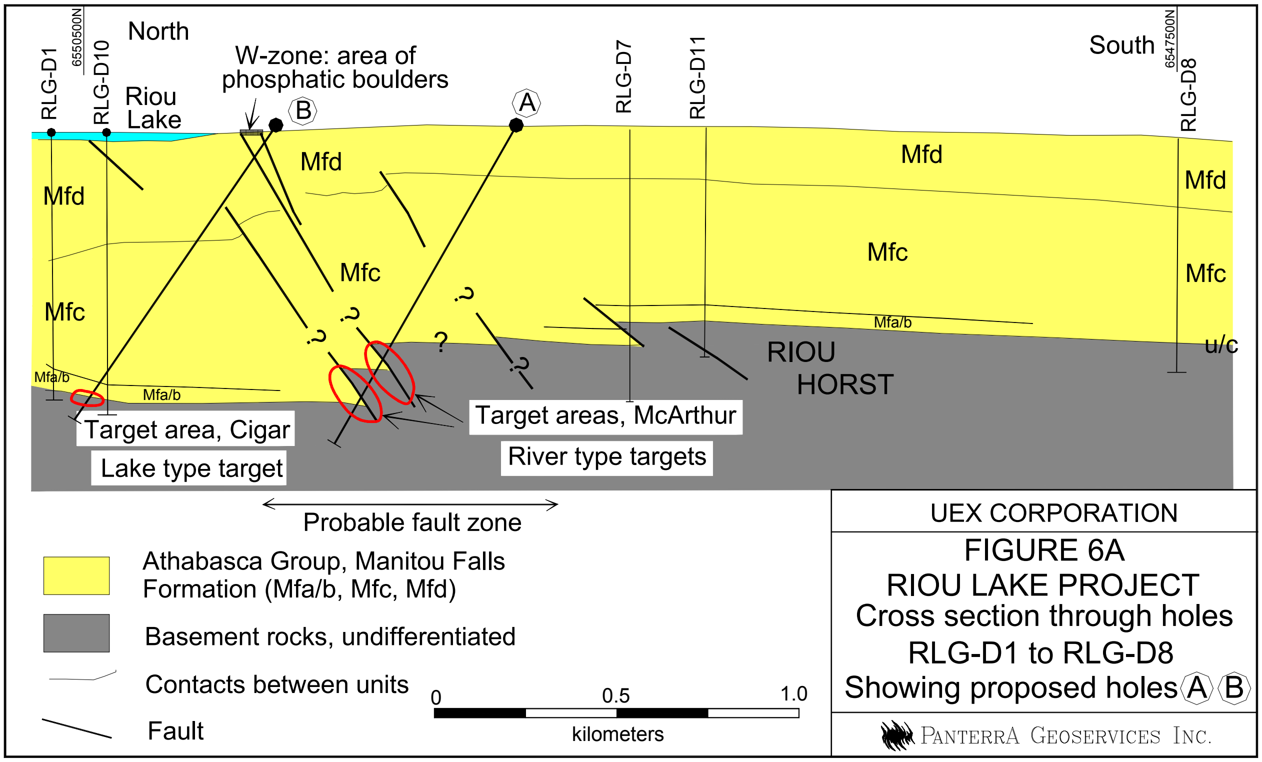
Athabasca Basin (Rhys and Ross, 1999; first suggested in the Riou Lake area by Ramaekers, 2000a), and tracking of variations in sandstone bedding can be used to determine both the location and dip (opposite that of affected bedding: see Figure 6) of the associated faults, which here suggests a southerly dip of the fault system. Faults in other parts of the basin also frequently display curved geometries that correspond with morphology of basement rocks, since these structures are often localized preferentially along folded, structurally weaker basement units before they penetrate upward above the unconformity (Rhys, 1998; Rhys and Ross, 1999). Such bends may form sites of structural permeability and low stress that comprise prospective sites for uranium mineralization.

Reverse displacement on the Riou Lake fault zone structure is greatest between holes RLG-D7, and 11 and RLG-D1 and 10, where, as described above, a total of approximately 200 m of vertical displacement may be accommodated in a series of fault steps (Figure 6A). To the west and southwest, the fault may pass along the eastern margin of outcrop exposures of the Locker Lake Formation (Figure 4), in an area of topographic low where Ramaekers (2000a) had previously interpreted a fault, which he named the Riou-Jaworski fault. In this area, drilling (Figure 5) suggests that the vertical displacement on the fault system decreases. The discrepancy in reverse displacement between areas may reflect the variable orientation of the fault, which could vary from predominantly a strike slip structure where it trends northeast-southwest, to principally a reverse thrust fault to the northeast where the fault bends to east-west and southeast strikes (Figures 4, 5).

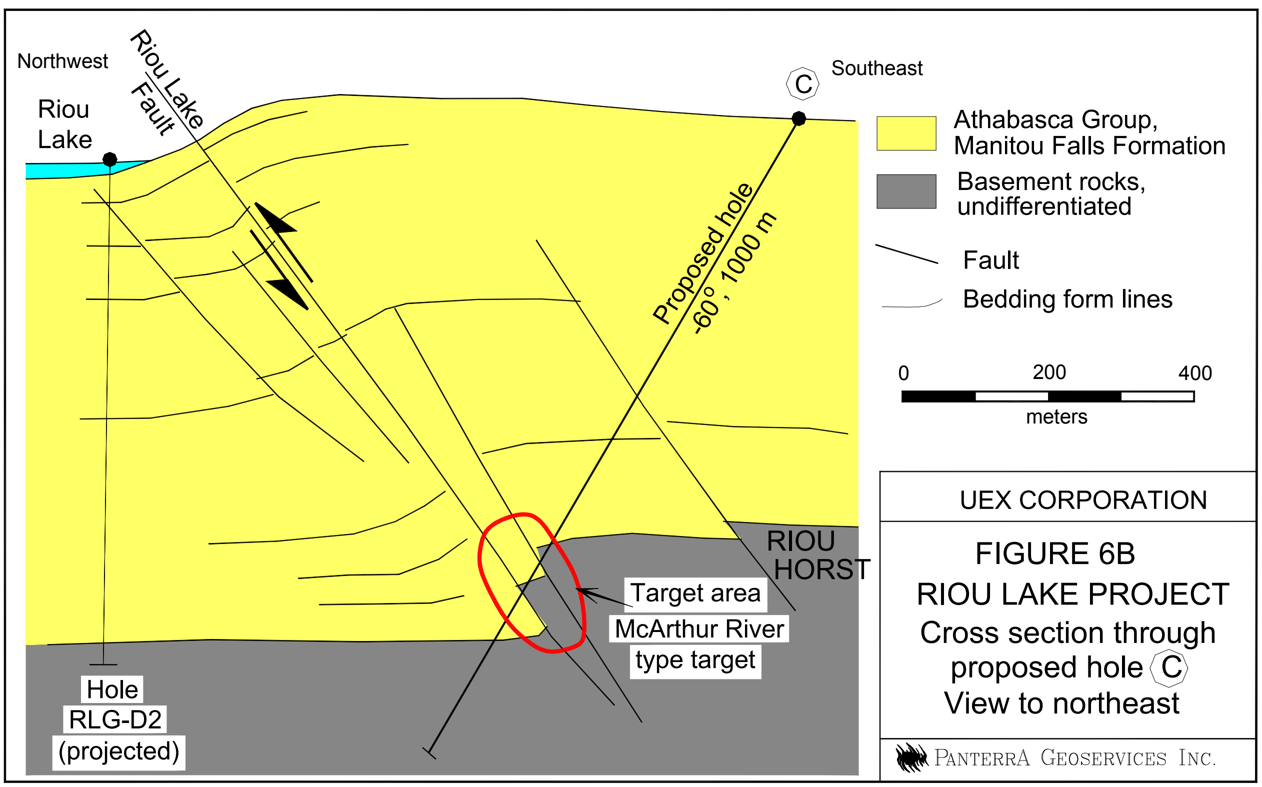
In summary, the existence of a curved, reverse-strike slip fault zone, here termed the Riou Lake fault zone, is suggested by the coincidence of several structural features and stratigraphic discontinuities in the Riou Lake area. East and southeast trending, probable southerly dipping parts of the fault bound the Riou Horst, and are associated with a curved monoclinal fold in its hanging wall (Figure 6). Faults intersected in holes RLG-D7, 11, RLG-D1, and exposed in outcrop in the W-zone probably form part of this fault system. Areas where strands of the fault are developed along, or cross chemically reactive basement lithologies, such as graphitic gneiss or calc-silicate rocks, will form highly prospective structural traps for uranium mineralization. Potential target areas are further discussed in sections 8 and 9.

5.4.2 Potential faults developed south of the Riou Horst

On the south side of the Riou Horst, unconformity elevations drop rapidly in drill holes to the south, more rapidly than the regional unconformity gradient, suggesting that faults may also be present along the south side of the graben. If so, an east-west or southeast trend is suggested (Figure 5), parallel to, or sub parallel to EM conductors identified in this area. Any fault present here may be conjugate to, and dip opposite to, the Riou Lake Fault to explain the displacement sense. Locations where any potential faults developed here exploit or cross reactive graphite-bearing conductive units represent prospective structural sites for uranium mineralization.



North
South
RLG-D1
6550500N
RLG-D10
Riou Lake
W-zone: area of phosphatic boulders
B
A
RLG-D7
RLG-D11
6547500N
RLG-D8
Mfd
Mfc
Mfa/b
u/c
RIOU HORST
Target area, Cigar Lake type target
Target areas, McArthur River type targets
Probable fault zone
Athabasca Group, Manitou Falls Formation (Mfa/b, Mfc, Mfd)
Basement rocks, undifferentiated
Contacts between units
Fault
0
0.5
1.0
kilometers
UEX CORPORATION
FIGURE 6A
RIOU LAKE PROJECT
Cross section through holes RLG-D1 to RLG-D8
Showing proposed holes A B
PANTERRA GEOSERVICES INC.



Northwest
Riou Lake Fault
Riou Lake
C
Southeast
Proposed hole -60°, 1000 m
RIOU HORST
Target area McArthur River type target
Hole RLG-D2 (projected)
Athabasca Group, Manitou Falls Formation
Basement rocks, undifferentiated
Fault
Bedding form lines
0
200
400
meters
UEX CORPORATION
FIGURE 6B
RIOU LAKE PROJECT
Cross section through proposed hole C
View to northeast
PANTERRA GEOSERVICES INC.

5.4.3 Distribution of Wolverine Point Formation and potential faults in Riou Lake

Outcrop, subcrop and drilling information indicate that a lobe of Wolverine Point Formation is present within Riou Lake north and east of Jacques Peninsula between 417000E and 430000E (Figure 4; Ramaekers, 2000a). The lobe extends northward from the main area of Wolverine Point outcrop, defining a trough termed the Jacques Point Graben by Ramaekers (2000a; Figures 4, 5), and which is referred to in this report as the Jacques Trough since a graben origin may not be applicable. Unconformity elevations in this area indicated in holes RLG-D5, D6 and D2, also suggest that this trough is present at the elevation of the sub-Athabasca unconformity (Figure 5). Drill hole RLG-D6 intersected Wolverine Point Formation to a depth of 58.5 m below Riou Lake, indicating a minimum depth of this trough. The origins of the trough are unclear, however. Ramaekers (2000b) suggests that it may represent a fault-bounded graben bounded to the east and west by northeast trending faults that could represent splays off the Riou Lake fault zone. However, distribution of Wolverine Point Formation float suggests that the trough extends further to the northwest and southeast than Ramaekers (2000a) projected faults, and no evidence for faults of this orientation are present under central Riou Lake. Alternatively, the northwest-southeast elongation of the trough and lake bathymetry instead suggests that if it is fault controlled, the controlling structures may have that orientation and may be parallel, or coincident with the PM conductor defined under Riou Lake by EM surveys (Figure 4).

5.4.4 Other Faults on the Riou Lake property

West-northwest trending faults may also be present along the northeast and southeast sides of Jacques Point Peninsula (Figure 4). Along the south side of the peninsula, a rapid change in EM conductivity coincident with the linear lake shoreline suggests the rapid appearance of Wolverine Point Formation immediately to the south of the peninsula. This may indicate the presence of a south side down, west-northwest trending fault in this area. This probable structure is parallel to underlying aeromagnetic lineaments, suggesting that it may represent the reactivation of a pre-Athabasca shear zone. Other linear features that may represent faults include: a) a west-northwest trending linear escarpment along the northern side of the Locker Lake Formation in the southwestern corner of the property, and b) a northwest trending linear break in EM conductivity representing the abrupt appearance of Wolverine Point Formation to the southwest of hole RLG-D12 and RLG-D13 (Figure 4). The latter is associated with radioactive springs, and may be tapping water from a deep, radioactive source.

5.4.5 Faults on the Serendipity Lakes property

Several northeast-trending faults are inferred on the Serendipity Lakes property on the basis of the distribution of lithologies, projections of faults identified regionally into the property area, and from variation in sub-Athabasca unconformity elevation indicated by drilling (Figures 4, 5). These include an inferred fault developed between drill holes CLG-D3 and CLG-D2, across which southeast-side up reverse displacement of approximately 40 m is suggested by a drop in unconformity elevation between these holes; lack of variation of the elevation of the base of the Wolverine Point Formation suggests that this displacement predates that unit (Faure, 2000a). Other northeast-trending faults include the Platt Creek shear zone, and the Black Lake shear zone, which passes into the southeastern-most parts of the Serendipity Lakes property (Figure 4).

5.4.6 Platt Creek shear zone

The Platt Creek shear zone is a northeast-trending, syn-metamorphic, Archean mylonitic shear zone that is developed in metamorphic basement rocks to the north of the Athabasca Basin (Figure 2). The structure defines a significant discontinuity in basement rocks, and based on map patterns, probably accommodated several kilometers to tens of kilometers of syn-metamorphic displacement (cf. Hanmer, 1997). The shear zone projects southwestward into a series of closely spaced magnetic lineaments and conductive, graphite-rich units that run through the core of the Black Lake property (Figure 3). Variations in the elevation of the sub-Athabsaca unconformity across the projected trace of this structure determined by diamond drilling in the Black Lake area (holes ERL-1 to 5; BL-03, BL-04) are minor, varying non-systematically by a maximum of approximately 20 m, and suggesting that at least in this area the Platt Creek shear zone has not accommodated significant post-Athabasca displacement. However, approximately 20 m of southeast-side up displacement is suggested by offset of a marker conglomerate unit between holes BL-03 and BL-04, which based on core re-orientation of minor faults, probably represents a southeast dipping fault system developed between the two drill holes. The main post-Athabasca fault displacements in this area may lie to the east of the area of drilling, since a significant southeast-dipping fault was intersected between 110 m and 127 m in hole BL-03 with rotated bedding that would intersect the unconformity to the east (R. Hill, pers. comm., 2002). In southern parts of the Black Lake property, holes BL-01 and BL-02 both intersected brittle faults in the Athabasca sandstone column (Belyk, 1998) providing further evidence of post-Athabasca faulting along this corridor.

To the southwest, in the Serendipity Lakes area, holes SLG-D6, D7, D9, D10 and D11, drilled to the west of the projected trace of the Platt Creek shear zone, have a basal unconformity elevation approximately 130-200 m lower (818-890 m below sea level) than in hole SLG-D8 (692 m below sea level) drilled to the east of the projected shear zone trace, and suggesting that more post-Manitou Falls displacement may have been accommodated in this area. Potential faults responsible for this elevation change have not yet been intersected by drilling. Even if post-Athabasca displacements are minor, or are less than 25 m, along much of this structure, the highly graphite-rich nature of lithologies in this trend intersected in drill holes on the Black Lake property (see section 5.4) and indications of prospective alteration from throughout the trend indicated by drilling (see section 8) indicate that this area is highly prospective for uranium mineralization, since even minor post-Athabasca faulting associated with graphitic units can be associated with major unconformity-type uranium deposits (e.g. Cigar Lake).

5.4.7 Black Lake shear zone

The Black Lake shear zone is a major syn-metamorphic crustal break corresponding with the boundary between the Tantato and Mudjatik domains, and which projects southward to the Virgin River shear zone south of the Athabasca Basin (Figure 1). The shear zone dips to the northwest and has been remobilized with approximately 200m of apparent post-Athabasca reverse displacement. The structure may pass through the southeastern margin of the Seredipity Lakes property (Figure 2), but at probable depths of almost 1 km, making exploration drilling in this area expensive, and surface indications and EM response of alteration and conductors are diluted by the depth, and presence of Wolverine Point Formation in the fault hangingwall. More cost effective exploration on this structure could be undertaken if open ground is acquired to the northeast, where the Athabasca group is shallower and the Wolverine Point Formation is absent.

5.5 Uranium deposit models and target types in the Athabasca basin

The Athabasca Basin is the principal uranium producing district in the world, accounting for more than 30% of global uranium production in 2000. Deposits in the basin contain almost 1.5 billion pounds of U_3O_8 in production and resources. The basin is the type location for unconformity type uranium deposits, the principal exploration target in the Riou Lake project area. Unconformity type deposits occur throughout the Athabasca basin (Figure 1), although the greatest abundance of known deposits occurs in the eastern parts of the basin, where graphite-bearing pelitic gneiss of the Wollaston Belt underlie the Athabasca sandstone. The deposits in this area include the giant, high grade McArthur River (total resources = 1.46 million tonnes grading 16.8 % U_3O_8 containing 540 million pounds U_3O_8: Cameco Corp., 2000 annual report) and the Cigar Lake (total resources = 0.89 million tonnes grading 17.75% U_3O_8 containing 350 million pounds U_3O_8: Cameco Corp., 2000 annual report) deposits. Although most abundant in the east, deposits have been discovered throughout the Athabasca basin where favorable basement host rocks and structural settings are found, such as in the Cluff Lake area in the west-central basin (Figure 1), where deposits contain past production and resources of more than 65 million pounds U_3O_8 (Ruzicka, 1996). Within the north rim area of the Athabasca Basin in the vicinity of the Riou Lake project, several unconformity-type deposits have been historically discovered by prospecting, including Fond du Lac (Figure 1), Middle Lake and Nisto (Figure 2), all located within 50 km of the project area, and indicating that the same ore-forming processes were active in this portion of the basin as were active in better explored areas to the east and west.

5.5.1 Unconformity deposit types

Unconformity-type uranium deposits are named for their occurrence at, or penetrating into basement rocks immediately below, the sub-Athabasca unconformity. The deposits comprise two general morphologic and chemical types that occur at or below the sub-Athabasca unconformity, usually in association with underlying graphitic gneiss units (Ruzicka, 1996):

(i) Polymetallic deposits developed straddling, or just above, the sub-Athabasca unconformity. These typically have assemblages of Ni and Ni-Co arsenides and sulpharsenides that accompany uranium mineralization. The deposits form narrow, cigar-like mineralized zones that are localized along the unconformity above graphitic gneiss units. They may either occur in Athabasca sandstone in the footwall wedge to graphite-bearing graphitic gneiss overthrust on Athabasca sandstone (e.g. Collins Bay zones; Key Lake), or in fault-related 5-20 m humps and steps in the unconformity above graphite-rich lithologies and faults (e.g. Cigar Lake, Midwest Lake, West Bear, McClean Lake; see Figure 7, right). Mineralization occurs in pods and disseminations in intense hematite-clay-chlorite alteration, locally overprinting spatially associated breccias and zones of intense clay alteration that sit directly above mineralization.

(ii) Monomineralic, completely or partially basement hosted deposits localized in, or adjacent to faults in graphitic gneiss and calc-silicate units. Deposits lack the As and Ni associated mineralogy of the polymetallic deposits. Deposits of this type include completely basement hosted deposits developed for up to 500 m below the unconformity (e.g. Eagle Point), or deposits which may extend several tens of meters from the unconformity downward along faults from basement overthrust wedges in, or adjacent to graphitic gneiss and/or calc-silicate units (e.g. McArthur River, Sue C). Mineralization is composed of discrete pitchblende, often massive veins and pods, planar replacements of fine-grained nodular pitchblende + clays, or undulating pitchblende/uraninite bearing redox fronts surrounding clay veins and faults.

Strike length of mineralized zones is highly variable. Mineralization at McArthur River and Cigar Lake, the two largest deposits, has been traced along strike at both for approximately 2 km, but in both cases, the bulk of the contained U_3O_8 in the resource occurs over much shorter strike lengths (<400 m) within the overall mineralized zone. Uranium deposits frequently occur in deposit clusters that comprise one or more deposits of both varieties, either in the same, or along parallel trends. Mineralization of both deposit types frequently occurs at redox fronts marked by zones of hematization, and a change from sulphide to oxide accessory mineral assemblages (Hoeve and Quirt, 1985).

5.5.2 Alteration and geochemical zonation associated with uranium deposits

Unconformity type uranium deposits are associated with, and generally enveloped by, intense zones of argillic alteration that are composed predominantly of illite, chlorite and kaolinite, and oftern associated dravite (Mg-tourmaline). The influence of alteration usually extends over a far greater area than the dimensions of the deposits themselves, and consequently the tracking of alteration distribution, mineral zonation and associated lithogeochemical changes is an important tool in vectoring exploration (Sopuck et al., 1983), particularly in areas of deep sandstone cover.

Alteration developed in the sandstone column above unconformity type deposits commonly forms chimneys in cross section that surround, and extend upward for several hundred meters from the deposits through the Athabasca sandstone column (Sopuck et al., 1983; Figure 7). In larger deposits, such as McArthur River or Cigar Lake, the alteration may form a subvertical, tabular 100-350 m wide zone that extends along the length of the deposit for up to several kilometers. Upper and lateral portions of alteration plumes above deposits are characterized by outer bleaching of regional, diagenetic purple hematitic banding in the Athabasca sandstone accompanied by elevated concentrations of U (1-5 ppm) that will commonly extend upward, gradually thinning, to the top of the sandstone column, even in deposits at depth of >500 m (Figure 7). In the eastern

Athabasca belt, where zoning has best been defined, two zoned alteration end members are present: (i) silicification-kaolinitization-dravitization, and (ii) desilicification-illitization, exemplified by Cigar Lake and Midwest Lake (Mathews et al., 1997). These different styles may reflect local basin hydrothermal conditions, since they occur in parts of the eastern basin that have differing regional diagenetic clay signatures; the presence of basement quartzite may also influence the silicification related deposits (Mathews et al., 1997). Alteration intensity and the concentration of pathfinder elements (e.g. U, Ni, Pb, As, Co, B) normally increases with depth and proximity to mineralization.

Alteration zoning associated with both sub-types is shown schematically in Figure 6. Pervasive pre-mineral silicification, often associated with fracture and vug drusy quartz, is extensive above McArthur River, and is associated with both the occurrence of kaolinite, and a boron anomaly induced by the presence of dravite (Mathews et al, 1997). It grades outward into illite-dominant clay assemblages, and downward into chlorite-dominant alteration associated with high pathfinder geochemical values. Clay alteration intensity is greater in deposits associated with desilicification-illitization style alteration. In these deposits, illite-bearing grey alteration, colored by the presence of fine-grained disseminated pyrite-marcasite, and contining drusy quartz vugs and fracture coatings, is frequently developed, and may extend for up to 200 m above the unconformity (Bruneton, 1987). The sandstone becomes progressively friable and clay-rich with depth, associated with the destructive clay alteration of primary framework quartz grains and authigenic overgrowths, culminating in laterally and vertically discontinuous zones of unconsolidated, brecciated and intensely altered sandstone frequently directly above the deposits. These areas are associated with anomalous concentrations of U, Ni, Pb and other metals. Immediately above and laterally to mineralization, red-brown hematitic illite often forms a halo that may interfinger with pervasive chlorite alteration near the unconformity. Beneath mineralized zones in both alteration types, basement rocks are usually intensely clorite and illite and/or kaolinite altered for several meters to tens of meters, accompanied by the loss of graphite in graphitic gneiss units.

Alteration in basement hosted deposits varies with lithology, but is typically composed of narrow zones of chlorite (sudoite) – illite +/- dolomite +/- K-feldspar +/- sericite assemblages that envelop mineralized zones. Associated faults may contain geochemically anomalous alteration assemblages that extend along the structures well beyond the limits of mineralization. Haloes of drusy quartz +/- carbonate +/- sulphide veins may surround orebodies peripheral to argillic alteration associated with mineralization. Early pre-ore to syn-ore pervasive silicification of basement lithologies may also occur peripheral to mineralized zones in some basement hosted deposits in the area, such as the Sue zones (Baudemont et al., 1993).

5.5.3 Structural setting of uranium deposits

Uranium deposits in the area are generally associated with brittle fault zones that are localized within, or cross graphitic gneiss and carbonate/calc-silicate units, often exploiting older syn-metamorphic shear zones. The occurrence of mineralization in veins and replacement zones that frequently occupy extensional fractures at several deposits (e,g Sue, Eagle Point, Key Lake) implies a late syn-faulting timing of mineralization late during a period of northwest-southeast shortening and fault activity in the region (Rhys, 1998; Rhys and Ross, 1999). Mineralization frequently occurs in areas of enhanced structural permeability and/or low stress (dilatancy) along faults including at fault junctions (e.g. Rabbit Lake), beneath brecciated sandstone under overthrust wedges (e.g. Key Lake, Collins Bay zones), at bends and en echelon steps in faults (e.g. B zone), and at dilational jogs (e.g. Eagle Point). These structural sites are in turn influenced at a broader scale by the occurrence of pre-Athabasca bends and lobes in the granitic domes and their mantling gneiss units, and folds within the metamorphic sequence, both of which have controlled the distribution, continuity and morphology of the faults. Such structural sites are identifiable through the use of magnetometer and EM surveys, which allow both definition of prospective lithologic types in magnetically low, conductive areas, and syn-metamorphic folds and bends that may influence the location and permeability of associated faults. Mineralization and associated alteration are generally structurally late, and often overprint fault fabrics and earlier shear zones.

5.5.4 Timing and origins of mineralization

The common occurrence of mineralization in, and associated alteration overprinting Athabasca sandstone, indicates a post-Athabasca (<1700 Ma) timing for uranium mineralization for unconformity hosted deposits. U-Pb age dates obtained from uraninite mineralization in deposits throughout the Athabasca Basin support a widespread period of uranium mineralization between 1330 and 1380 Ma (Cumming and Krstic, 1992). Periods of reworking and re-deposition of mineralization are evident from the age data, with younger ages of 1250-1300 Ma, 950-1100 Ma and sporadic younger dates also obtained from many of the deposits (Cumming and Krstic, 1992).

Several models have been proposed for the formation of uranium deposits in the Athabasca Basin. Based on current evidence, likely origins of the deposits include (Hoeve et al., 1981; Ruzicka, 1996):

a) Fluid mixing, in which reduced fluid fluids rising from the basement along faults react with oxidizing, probably diagenetic, fluids in the Athabasca Basin near the unconformity, producing deposits at the reaction front. Both basement (including magmatic, retrograde metamorphic, or fault-related syn-tectonic pressure solution sources) and Athabasca sandstone (diagenetic dissolution of radioactive detrital minerals) uranium sources have been variously invoked in this model.
b) A diagenetic-hydrothermal model, which relates mineralization to diagenetic processes active in Athabasca sediments, and precipitation of uranium by local reductants (e.g. graphite) in structural sites at the unconformity, or in the basement where structural permeability is sufficient to allow penetration of basinal fluids.

Both models require the presence of a reactive basement unit combined with structural permeability induced by fault systems at a stationary redox front.

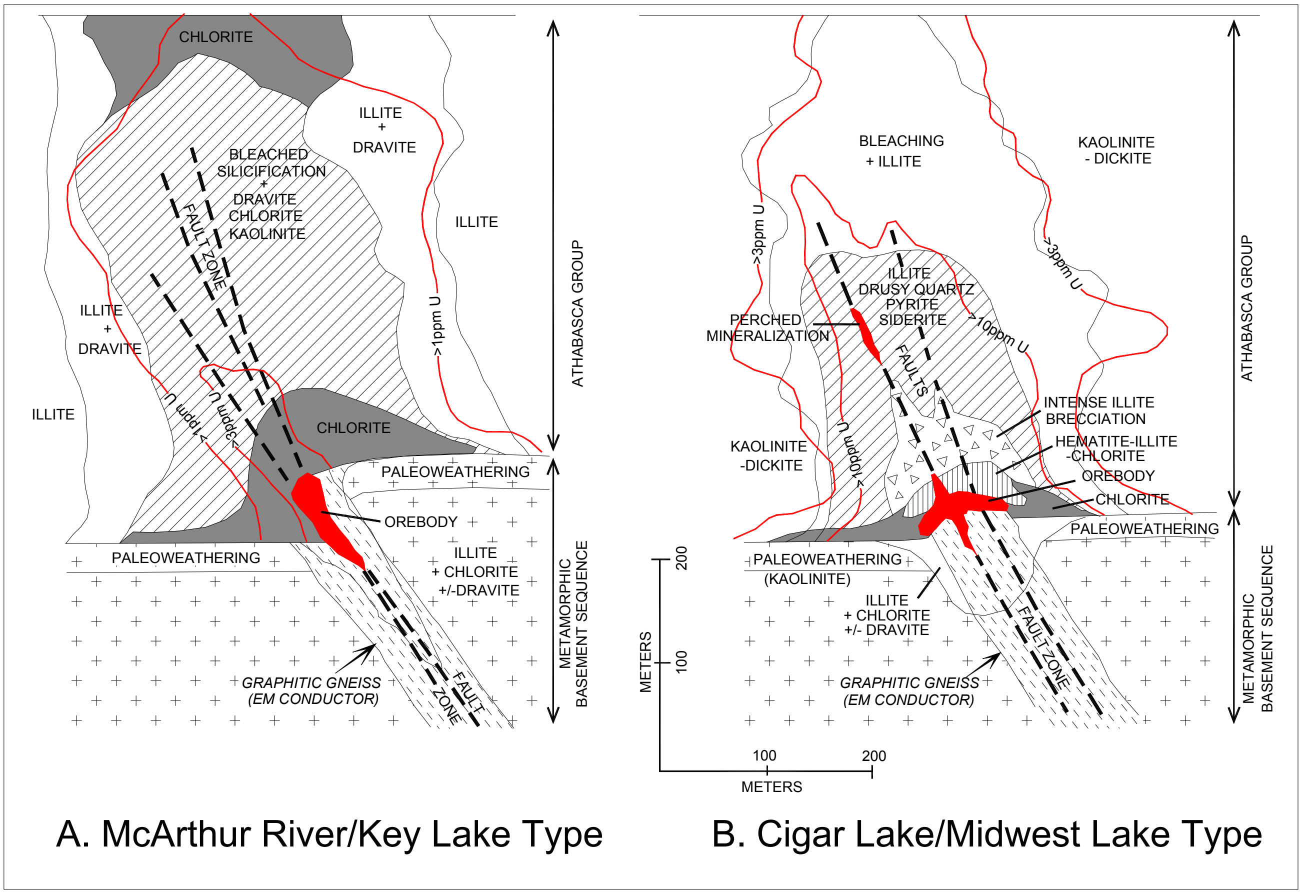


Figure 7: Schematic cross sections through unconformity type uranium deposits, showing alteration around large deposits. See text for details. Compiled from models and zoning patterns discussed and portrayed graphically in Sopuck et al. (1983), Bruneton (1986), Mathews et al. (1987) and Ayers et al. (1983).

6.0 SURFACE EXPLORATION RESULTS

Exploration activities in the project area have included surface geological mapping, boulder geochemical and alteration sampling, lake water and sediment surveys, ground geophysical surveys, and diamond drilling. Results of geological mapping are incorporated into section 5. Other surface exploration activities are activities are outlined below, and geophysical survey and diamond drilling results are described in sections 7 and 8, respectively.

6.1 Boulder sampling results: uraniferous boulder fields

Boulder sampling surveys and prospecting by SMDC in 1979-1981 (Roy, 1980, 1981), Uranerz in 1995 (Belyk and Cutts, 1995), and Pioneer Metals since 1996, have identified several areas of radioactive phosphatic boulder fields and subcrop on and adjacent to the Riou Lake property, and a uraniferous boulder train that extends across the north central parts of the Riou Lake property.

6.1.1 Riou Lake uraniferous boulder train

The most significant uraniferous boulder samples in the region have been obtained within, and immediately west of the Riou Lake property in a crudely east-west trending, >30 km long zone of widely dispersed boulders that occur between 6550000N and 6563000N (Figure 4). Here, 15 mineralized, rounded glacially transported, uranium-bearing Athabasca sandstone boulders and cobbles were collected in 1979-1980 by SMDC, which contain more than 1000 ppm U. The boulders occur isolated or in clusters, often on drumlins, and consist of medium to coarse-grained red sandstone which may contain abundant smoky quartz. Seven samples were collected which returned values >0.2% U, including three samples containing 1.0-1.3% U (samples J9B-15, 18, 20), and one sample containing 11.27% U (J9B-26; Roy, 1980; sample sites are shown in Figure 4). The latter sample was of medium-grained Athabasca sandstone with yellow U-oxide staining. Further prospecting and a program of auger overburden drilling by SMDC failed to identify a local source either on Jacques Point Peninsula, or the east side of Riou Lake (Roy, 1981). Re-analysis of the pulps from seven of the original boulder samples (stored by the Saskatchewan Research Council (SRC) in Saskatoon) by Pioneer Metals produced similar results, confirming the original analyses (Eriks and McGowan, 1999). The samples have also returned anomalous concentrations of Ni, Pb and As (Ramaekers, 2000g), typical pathfinder elements to unconformity-type uranium deposits.

Based on their broad distribution, isolated nature, small size, generally rounded shape and lack of an identifiable local source, the uranium-rich boulders are probably derived from a source potentially several kilometers to tens of kilometers to the east, up the last major ice advance direction, east of Riou Lake (Bayrock, 1979; Ramaekers, 2000g). The easternmost occurrence of uraniferous boulders is a drumlin north of Hocking Lake, approximately 6 km east of Numac Point in what is currently the eastern end of claim S-105651. Systematic boulder sampling conducted by Uranerz in 1995 (Belyk and Cutts, 1995) and previous operators to the east of the Platt Creek shear zone did not locate any further boulders, suggesting that the boulder train may be derived from the Platt Creek shear zone on the Black Lake property where drilling in hole BL-02 intersected anomalous mineralization south of the projected up-ice potential source area on this structure. If the boulders were redistributed from older till by the last ice advance, a potential source further to the northeast may be possible, based on the occurrence of earlier, northeasterly-oriented drumlins in the area that imply an earlier advance from that direction (Ramaekers, 2000g).

6.1.2 Clay alteration zones in boulders

A boulder lithogeochemical survey was carried out over the Jacques Point Peninsula area in Riou Lake in 1997. On the basis of normative clay mineral concentrations by Earle (1997) an extensive illite anomaly was identified along the northern shore of Jacques Point Peninsula and on some of the adjacent islands in Riou Lake. However, follow up geological investigations and more sampling in the summer of 1998 indicated presence of clay-rich Wolverine Point Formation rocks in the area, defining the Jacques Trough, and containing the most anomalous samples. Much of the apparent anomaly is thus due to lithologic contamination of the samples by inclusion of Wolverine Point material, and is thus not suggestive of hydrothermal alteration, as first suggested by Earle (1997). However, several other samples in the northwestern portions of the 1997 anomaly have significant normative enrichment of illite compared to the low illite levels of this region in general when samples from areas lacking Wolverine Point contamination are only considered. The samples may thus reflect transportation of illite altered material derived from a source to the east, and follow-up of the anomaly is warranted (Earle, 1998, 1999).

6.2 Phosphate-rich radioactive boulder fields

Radioactive sandstone boulder fields and felsenmeer with high P_2O_5 concentrations, and highly anomalous uranium and rare earth element concentrations, occur in several locations within and adjacent to the Riou Lake project (Bowdidge and Magrum, 1979; Roy, 1980, 1981; Ramaekers, 1999a, 2000a, 2000f, 2000g). In these areas, phosphatic material occurs as veinlets, breccia fillings, and pervasive fine-grained, pink apatite in sandstone of the Manitou Falls Formation D Member (Ramaekers, 1999a). The largest of these areason the Riou Lake property, the W-zone, consists of an east-west trending, 300 m long zone of boulders that occur along the southeastern shore of Riou Lake south of drill holes RLG-D1 and RLG-D10 (Figure 4; Ramaekers, 2000f). Here, hematitic and fractured angular blocks of Athabasca sandstone contain pink phosphate-filled fractures of variable orientation that locally impart a brecciated texture to the rock. The angular nature and distribution of the boulders suggests that they are locally derived, and not significantly transported by glacial processes (Ramaekers, 2000f). Pit excavations at the W-zone also encountered phosphatic material in bedrock beneath the boulder field (Ramaekers, 2000f). The boulders contain anomalous U, Pb, and V concentrations, and are highly phosphatic, locally with up to 13.5% P_2O_5 (Eriks, 2000). A positive correlation is apparent between U and P_2O_5 values.

A similar, but smaller, zone of radioactive phosphatic boulders in felsenmeer occurs along the southern shore of Little Lake, two km south-southeast of the W-zone (Eriks, 2000). Like the W-zone, the boulders here have both pervasive and fracture filling dusty red-pink apatite. Boulders are also probably locally derived based on their size, distribution and angular nature. Concentrations greater than 7% P_2O_5 have been obtained in sampling, associated with anomalous U and Pb concentrations. Other similar boulder fields identified near the Riou Lake property occur (i) over 1.5 km along the north shore of Froud Bay (south side of Jacques Peninsula) in southwestern Riou Lake, approximately 11 km west of the current Riou Lake property boundary ("Froud Bay zone"; local analyses of up to 22.5% P_2O_5; Ramaekers, 1999a, 2000a), (ii) further occurrences sporadically along the south shoreline of the Jacques Point Peninsula between the Froud Bay zone and the property boundary, and (iii) at the Marline Oil prospect, approximately 10 km west of the northwestern corner of the current Riou Lake property (Ramaekers, 2000a).

The phosphate mineral assemblage in these zones consists principally of apatite and cryptocrystalline phosphate that are intergrown with hematite (Ramaekers, 1999a). Phosphatic material and associated hematite are paragenetically late and precipitated after the formation of diagenetic quartz overgrowths on framework grains, locally replacing the quartz. Quartz dissolution is common near apatite-filled fractures (Ramaekers, 1999a). Mineral texture and geochemistry are simlar in all zones, associated with anomalous U (locally >300 ppm), and rare earth element concentrations. Texturally, phosphatic material generally completely fills fractures, although at Froud Bay, open vugs lined with euhedral apatite crystals are present (Ramaekers, 1999a).

Phosphatic boulders at the W-zone, Little Lake and Froud Bay define discrete, northwest-trending zones of phosphate enrichment that are parallel to, and developed along the trace of several known or suspected west-northwest trending faults (Ramaekers, 2000a). For example, the Little Lake boulder field lies southeast of, and along strike from, the fault zone intersected in drill holes RLG-D7 and RLG-D11. Faults are also present at the W-zone, and the Froud Bay zone occurs along the inferred trace of a fault marking the northern limit of the Wolverine Point Formation on the south side of the Jacques Point Peninsula. Displacements often observed across phosphate-bearing fractures also support syn-tectonic formation of the phosphatic material (Ramaekers, 2000a). The alignment of these apatite-rich zones along areas of known, and suspected, northwest-trending faults suggests a possible tectonic-hydrothermal association, possibly as distal alteration to clay alteration zones associated with uranium mineralization.

Phosphate-bearing boulder zones are also found regionally in upper parts of the Manitou Falls D Member near the stratigraphic base of the Wolverine Point Formation. Roy (1980, 1981) and Bowdidge and Magrum (1979) report the occurrence of similar zones for at least 40 km to the west of the property, and occurrences have also been noted throughout the central parts of the Athabasca Basin adjacent to the Wolverine Point Formation for up to 100 km to the south and southeast of the property (D. Faure, pers. comm., 2001). The Wolverine Point Formation is commonly phosphate, rare earth and U-rich, and occurrences of >15% P_2O_5 have been reported from basal portions of the formation both to the west and east of the property that have similar trace element geochemistry to the boulder fields in the Riou Lake area (Roy, 1980, 1981). Consequently, the source of the rare earth and U-bearing phosphate material in the upper Manitou Falls Formation may be related to stratigraphic and/or diagenetic controls, as opposed to syn-hydrothermal deposition of these minerals associated with uranium mineralization. In this scenario, penetration of phosphatic material into the upper parts of the Manitou Falls Formation may have resulted from a) phosphate deposition in a basal regolith unconformably on the Manitou Falls Formation, prior to deposition of the Wolverine Point Formation, b) downward penetration of diagenetic fluids from the Wolverine Point Formation into the Manitou Falls Formation, and/or c) downward penetration of phosphatic material from the Wolverine Point Formation, along post-Athabasca fault zones during fluid flow along the fault system. In the latter case, even if the Manitou Falls phosphates are unrelated to uranium-related hydrothermal activity, they may at least indicate the presence of permeable fault systems which at depth could form prospective structural sites for uranium mineralization.

To address the question of whether phosphatic minerals and associated hematite present in the boulder fields in the Riou Lake area were deposited during diagenesis or by hydrothermal fluids potentially related to uranium mineralization, an oxygen isotope study was undertaken by K. Ansdell at the University of Saskatchewan. Results are reported in Ansdell (2000). The study was intended to provide constraints on the formation temperature of the minerals using isotopic geothermometry. Of the 30 samples provided (14 from the W-zone and 16 from the Froud Bay zone) only two samples were suitable for study due to the difficulty in obtaining high purity mineral separates from samples. The $\delta\ ^{18}O$ values obtained from apatite and hematite suggest that these minerals precipitated from early diagenetic fluids at temperatures of approximately 150^o C (Ansdell, 2000). This temperature is consistent with convective models of the Athabasca Basin which suggest that at a distance of 1 km (slightly greater than the distance the W-zone is above the sub-Athabasca unconformity) above an ascending thermal plume associated with an unconformity-type uranium deposit, a temperature of 150^o C is permissible at the time of formation of a deposit, and is also consistent with the presence of a modeled distal phosphatic zone associated with deposits (Ramaekers, 2000e).

6.3 Lake bottom geochemical sediment and water sampling

Sampling of lake sediments has been conducted over much of the Riou Lake and Serendipity Lakes properties by Pioneer Metals and D.F. Exploration Uranium since 1995. On the Riou Lake property, lake sediment sampling was conducted in 1998 and 1999 principally in Riou Lake, but also extending to northern Hocking Lake and lakes between Hocking Lake and Riou Lake (Armstrong and Faure, 1998; Armstrong, 1999). 738 samples were collected during these programs. In Riou Lake, samples were collected at an approximate spacing of 100 m on north-south lines 1 km apart using a Hornbrook torpedo sampler. The survey was undertaken to delineate geochemical trends in lake bottom sediments which may be associated with possible metal leakage from artesian underground waters or anomalies related to fluid flow along faults underlying the lakes. Within Riou Lake, anomalous areas were detected (i) north of Jacques Point, where a northwest trending zone contains anomalous Mn, Ni, Cu, Co, Mo and Zn concentrations, and (ii) in the central part of East Riou Lake, where multi-line Fe, Fe_2O_3, and As anomalies occur (Armstrong and Faure, 1998). These anomalies generally occur in areas of deeper (>10 m) lake water that have approximate west-northwest trending orientations, and which may reflect the location of underlying, permeable metal-bearing faults which are discharging deep seated, reducing groundwater into the lake (Armstrong and Faure, 1998). Both areas contain isolated sites where anomalous sets of U-bearing lake sediment samples containing >3 ppm U have been obtained. Many metal values are highest, and consequently prospectivity is greatest, in the northern anomaly (Armstrong, 1999), which corresponds with the location of the Jacques Trough.

Southeast of Riou Lake, in minor lakes between Hocking and Riou Lake, several lake sediment samples anomalous in U and base metals have been obtained, with values locally up to 5.5 ppm U (Armstrong, 1999). These lakes are also anomalous in V, P_2O_5, Zn, Ni and Cu. Several of the lakes occur along the projected southeast trace of the Riou Lake fault zone from holes RLG-D7/11 and the W-zone, and consequently may reflect fault discharge of anomalous groundwater. Sporadic anomalous U samples also occur in northern Hocking Lake, but do not define any discrete pattern (Armstrong, 1999).

On the Serendipity Lakes property, more than 2500 lake bottom sediment samples have also been collected by D.F. Exploration. Anomalous to highly anomalous concentrations of uranium and associated pathfinder elements that are comparable to those near known uranium deposits in other portions of the Athabasca Basin (e.g. Cluff Lake, Cigar Lake) have been identified in several lakes, particularly the Serendipity Lakes in the vicinity of the current SLG-series drill holes, and at Circle Lakes, in the vicinity of the CLG-series drill holes (Faure, 2000a). Background values in these areas are also significantly higher for many metals than in Riou Lake, possibly reflecting the inflow of radioactive, metaliferous spring water into lakes in this area and the predominance of permeable sandy till, which may allow more groundwater influx into the lakes than clay-rich sediments that dominate at Riou Lake (see below; Armstrong and Faure, 1998). Several coincident U, Cu, As, Ni, Co, and Mo anomalies have been identified, locally with U concentrations >10 ppm, with highest values occurring on lakes along the northern limits of the Wolverine Point Formation where metaliferous radioactive springs discharge (Faure, 2000a). Follow up drilling of some of these anomalous areas on the Serendipity Lakes property has intersected alteration, and narrow intervals of pitchblende mineralization near the unconformity (e.g. hole CLG-D1). Further follow up work will be necessary, such as to the east where anomalous multi-element lake sediment samples have been collected over the trace of the Black Lake shear zone (Faure, 2000a). A digital compilation of lake sediment data from the Serendipity Lakes property is underway.

6.3.1 Limitations of the current Lake sediment sample database

Numerous Mn- and Fe-oxide nodules, and locally crusts, were identified in samples commonly collected from depths of 10-15 m and deeper in Riou Lake, from which samples typically returned significantly higher base and trace element concentrations than adjacent samples (Armstrong and Faure, 1998). Samples with Fe-dominant nodules typically are associated with high As values, while Mn-rich nodules typically are associated with highest Mo, Co, Pb, Ni and Cu values. The anomalous zones in Riou Lake reflect these two Fe- and Mn-related assemblages, suggesting that the anomaly distribution is dictated by the Mn and Fe-oxide abundance in precipitates, mainly as nodules and crusts, in the sample area. Similar nodules also occur in samples collected in Hocking Lake, where they are P_2O_5-rich (Armstrong, 1999). The abundance of oxides may be related to water depth and consequently related geochemical and temperature stratification of lake water, and variable oxygen availability with depth. This is reflected in contoured maps of the lake sediment geochemistry shown in Armstrong and Faure (1998), where samples collected from shallow water differ substantially in their geochemical signature from samples collected at greater depths. Sample pH and organic content, the latter of which can be measured with total C analyses, were not obtained for the samples; both of these factors also can fundamentally affect sample geochemistry. In addition, samples collected over areas underlain by the Wolverine Point Formation, such as in the Jacques Trough in Riou Lake may also differ geochemically from samples collected over the Manitou Falls Formation.

The diverse potential influences on lake sediment sample geochemistry in the Riou Lake project area must be taken into account to interpret the data before geochemical anomalies possibly related to tectonic activity, alteration associated with uranium mineralization, or geochemically anomalous artesian flow into the lake can be identified or assessed. Many of the raw geochemical anomalies identified in lakes in the area may be related to morphologic, stratified lake chemical patterns, local sediment pH, and organic content in the lake or bog sampled. For example, clean sand, reportedly collected from some from some lake sediment sample sites (cf. Armstrong, 1999) can not be compared directly to organic-rich samples from shallow, boggy lakes, which will have fundamentally different elemental concentrations. A review separating lake sediment samples by Fe- and Mn- content, water depth, and sediment type is currently underway to identify such potential anomalous populations within the data set, and to establish baseline background elemental concentrations for the project area; results will be reported separately. Metal ratios and normalization of some data using Fe- and Mn-concentrations of samples is currently also being attempted as part of this study. In all future sampling, measurement of pH and analysis for total C must be undertaken to assess the geochemical database, since these factors along with other considerations listed above can affect the base and trace metal concentrations of samples by orders of magnitude, creating false anomalies, and obscuring true ones. Use of partial extraction techniques may also help separate geochemical populations.

6.4 Radioactive chloride-rich springs and drilling water

6.4.1 Radioactive springs

Several areas of chloride-rich, radioactive radon-bearing springs and spring-fed lakes have been identified in the project area. The most extensive are (i) on the Serendipity Lakes property south of Hocking Lake where several lakes are spring-fed (see Figure 4: areas marked in the vicinity of SLG- series drill holes), and (ii) south of the Riou Lake fault zone on the boundary between the Serendipity Lakes and Riou Lake properties, immediately southwest of the collar location of drill hole RLG-D13 (Figure 4).

On the Riou Lake property, eight radioactive springs occur in the northeastern-most corner of claim S-106103, along the north shore of the Riou River. The springs have associated radioactive limonitic clay and silt rich sediments, which commonly coat rocks and boulders in the outflowing stream, giving a yellowish brown to reddish orange colour to the springs. Samples of the sediments returned highly anomalous values of Fe, Mg, As and Ba, and elevated concentrations of U, Fe, Mn, As, and Ba when compared to lake sediment and till samples in the property area (Eriks, 2000). Spring water has significant concentrations of ^{222}Rn and ^{226}Ra, and anomalous As, Fe, Cu and Mg. The water samples also have a very high chloride content with low sulfate and bicarbonate (Eriks, 2000).

Several spring fed lakes occur on the Serendipity Lakes property, principally in the vicinity of the SLG-series diamond drill holes (Figure 4). Spring sediments are highly anomalous in U (up to 250 ppm), Cu (up to 1200 ppm), Ni (200-400 ppm), Au (up to 19 ppb), As, Co, Mo and Zn, and spring waters are chloride-rich and contain anomalous U and other metal concentrations (Faure, 2000a). Surface water samples of lakes and ponds in the same area have also yielded high sulphate-chloride compositions, similar to waters of radioactive springs on the Riou River to the west (Faure, 2000a).

6.4.2 Radioactive drill hole water

Several drill holes completed in the Riou Lake project area have discharged artesian water after completion of the drilling. Artesian water samples taken from holes RLG-D10 and RLG-D11 are highly anomalous in chloride, Ca, Na, K, Mg, ^{222}Rn, ^{226}Ra and U (Eriks, 2000). Waters from these drill holes are chemically similar to waters from radioactive springs in the southern portion of the property. Several drill holes completed in the Serendipity Lakes area have also produced chloride-rich, radioactive artesian water. These include holes SLG-D5 and SLG-D6, both of which encountered artesian waters at depths of <100 m, immediately below the impermeable Wolverine Point Formation. Like other radioactive artesian waters and radioactive springs in the area, water from these drill holes carry anomalous metal concentrations, including Cu, Ni, Co and U.

6.4.3 Discussion: potential sources of radioactive waters

The chemistry of radioactive spring water and drill hole artesian water in the Riou Lake area is similar to that of basal brine connate water identified at the base of the sandstone column at the McArthur River deposit (Faure, 2000b), but differ from surficial lake and stream waters in the Riou Lake area that are generally chloride-poor, have low metal concentrations, and have Na-K-bicarbonate chemistry (Faure, 2000b). In the McArthur River area, deep-seated bicarbonate-chloride-rich water enriched in Rn, Ra and U is present immediately above the sub-Athabasca unconformity (Faure, 2000b). The bicarbonate-chloride water shows a vertical differentiation, with a gradational decrease in the chloride content upwards away from the unconformity (Environmental baseline study, McArthur River deposit). The upper part of the aquifer in these holes contains bicarbonate waters, similar in composition to surficial waters. These suggest that the radioactive springs and artesian drill hole waters in the Riou Lake area have a deep-seated, radioactive source near the basal unconformity level of the Manitou Falls Formation. The springs may be located where permeable fractures and faults carry upward deep, basinal waters, and suggesting that these areas form prospective combined structural and geochemical targets, for unconformity-type uranium deposits. A spatial relationship between radioactive springs and some unconformity-type uranium deposits is apparent in parts of the Athabasca basin. For example, radioactive chloride-rich springs similar in geochemistry to those identified at Riou Lake occur on the Douglas River near Cluff Lake (Descarreaux and Gosselin, 1980), within 4 km of the Shea Creek occurrence where recent drilling has intersected 2.8% U_3O_8 over 72.4 m (Collier et al., 2001).

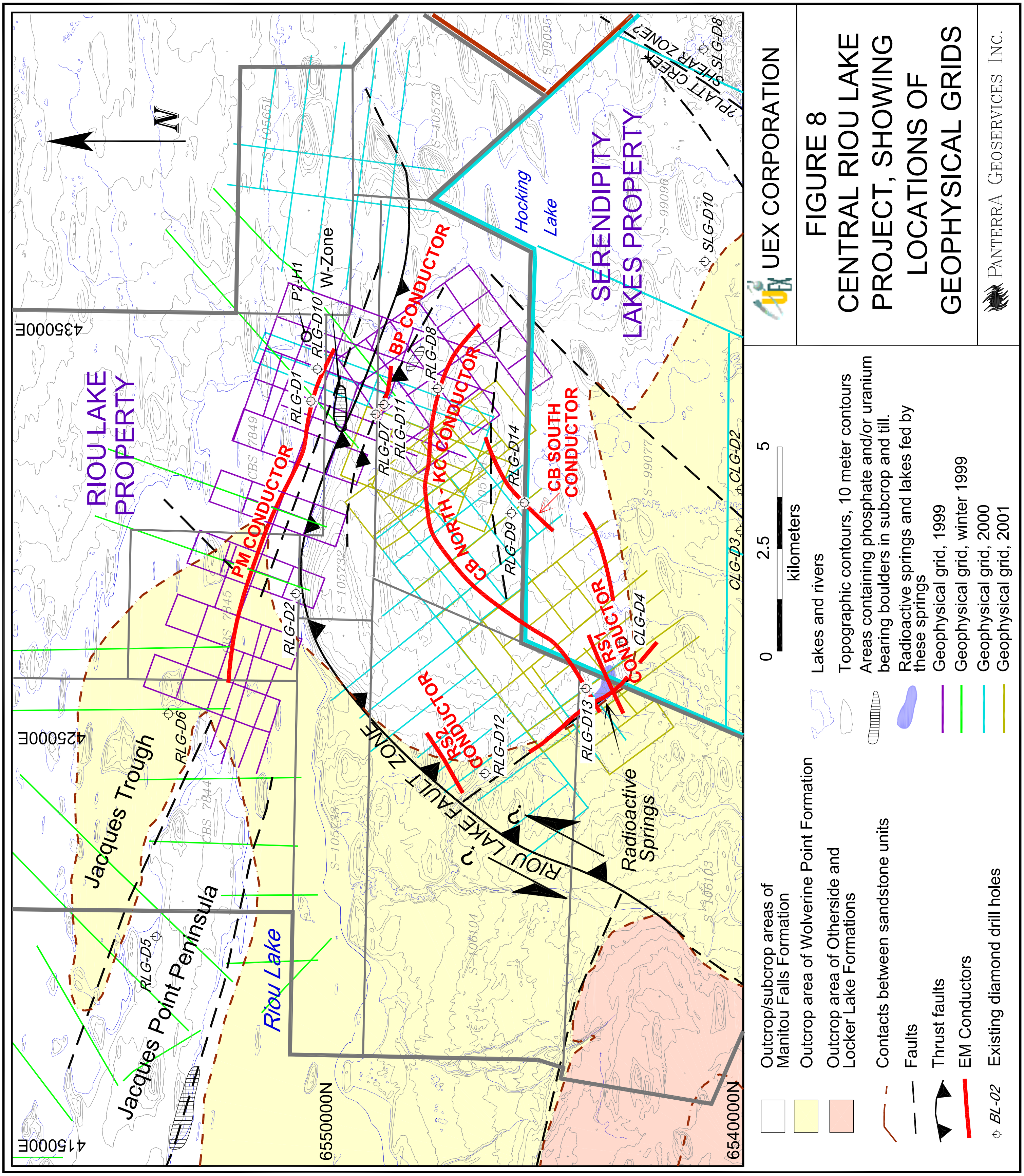
The springs, chloride-rich spring fed lakes, and chloride-bearing artesian waters in the Riou Lake project area occur near, or at the northern limits of the Wolverine Point Formation. The clay-rich Wolverine Point Formation forms a relatively impermeable cap to the underlying, permeable sandstone of the Manitou Falls Formation. Consequently the lateral limits of the unit may control the discharge to surface of brines channeled upward from the basal Athabasca units by fault systems, driven by a hydrostatic gradient induced by the natural recharge of the Athabasca Basin from its southern, topographically higher, edge (Faure, 2000b). Faults and drill holes, which penetrate through the Wolverine Point cap, may thus provide channel ways to surface in areas of structural permeability, as is suggested by the intersection of radioactive, metaliferous chloride brines in several SLG-series drill holes immediately after penetrating through the Wolverine Point Formation. In the Riou Lake project area, discharge points of radioactive springs along the Riou River occur along a probable northwest fault, defined by a topographic lineament and a sharp break in EM conductivity that marks the local limit of the Wolverine Point Formation. In the Serendipity Lakes area, apart from a probable fault zone in the upper parts of hole SLG-D10 that is spatially associated with the springs, drill holes completed to test the source of the springs have not yet intersected any significant faults that may be channeling the water.

7.0 Ground geophysical surveys conducted in the Riou Lake project area

Ground geophysical surveys, principally electromagnetic (EM) surveys conducted to identify basement conductive units, have been undertaken in the project area since 1996 by Pioneer Metals, Uranerz, Cameco and D.F. Exploration (see section 4).

7.1 Results of ground EM surveys on the Riou Lake property

Ground EM surveys carried out over the Riou Lake property by Pioneer Metals include TDEM surveys conducted over Riou Lake in 1997 and 1998, and several hundred kilometers of fixed and moving loop TDEM and gravity surveys carried out over several grids on, and south of Riou Lake for up to 12 km west of Hocking Lake between 1999 and 2001 (Figure 8). The surveys were performed over areas of low magnetic intensity (Figure 3) interpreted to represent areas of metasedimentary lithologies in the basement that could be host to graphite-rich units and associated faults, areas prospective for uranium deposits. Conductors that have been identified are described below.


UEX CORPORATION
FIGURE 8
CENTRAL RIOU LAKE PROJECT, SHOWING LOCATIONS OF GEOPHYSICAL GRIDS
PANTERRA GEOSERVICES INC.
Outcrop/subcrop areas of Manitou Falls Formation
Outcrop area of Wolverine Point Formation
Outcrop area of Otherside and Locker Lake Formations
Contacts between sandstone units
Faults
Thrust faults
EM Conductors
Existing diamond drill holes
BL-02
Lakes and rivers
Topographic contours, 10 meter contours
Areas containing phosphate and/or uranium bearing boulders in subcrop and till.
Radioactive springs and lakes fed by these springs
Geophysical grid, 1999
Geophysical grid, winter 1999
Geophysical grid, 2000
Geophysical grid, 2001
0
2.5
5
kilometers
N
RIOU LAKE PROPERTY
SERENDIPITY LAKES PROPERTY
Hocking Lake
Riou Lake
Jacques Trough
Jacques Point Peninsula
RIOU LAKE FAULT ZONE
Radioactive Springs
W-Zone
PM CONDUCTOR
BP CONDUCTOR
CB NORTH - KC CONDUCTOR
CB SOUTH CONDUCTOR
RS1 CONDUCTOR
RS2 CONDUCTOR
?PLATT CREEK SHEAR ZONE?
415000E
425000E
435000E
650000N
654000N
RLG-D1
RLG-D2
RLG-D5
RLG-D6
RLG-D7
RLG-D8
RLG-D9
RLG-D10
RLG-D11
RLG-D12
RLG-D13
RLG-D14
CLG-D2
CLG-D3
CLG-D4
SLG-D8
SLG-D10
P2-H1

7.1.1 PM conductor

The PM conductor is a broad, probably composite west-northwest trending conductor developed beneath southeastern portions of Riou Lake (Figure 8), and which was defined by 1998 and 1999 fixed loop TDEM surveys over a strike length of more than 8 km (McGowan, 2000). Two diamond drill holes completed to test the eastern end of this feature, holes RLG-D1 and RLG-D10, failed to intersect sufficiently conductive basement lithologies to explain the source of the anomaly. Down-hole TDEM surveys of hole RLG-D10 and a moving loop TDEM survey, both carried out in winter 2000, define an ambiguous anomaly, representing a complex source which is probably a combination of both a large, flat-lying conductor in the lower Manitou Falls Formation (saline brine) and possibly a shallow south-dipping basement conductor (McGowan, 2000; Powell, 2001). Deeply sourced chloride-rich artesian water emanating from the drill hole (see section 6, above) supports the presence of the conductive brine pool, however any basement conductor remains to be intersected. The area remains a high priority target since drill holes RLG-D1 and RLG-D10 intersected anomalous uranium mineralization, alteration, and uranium pathfinder geochemistry (see below). Therefore, further testing of this conductor is recommended. The whole zone may represent the trace of a northerly strand of the northwest-trending Riou Lake Fault Zone, along which saline fluids have been localized due to high structural permeability. Drilling of an angled hole is recommended across the trace of this conductor to maximize drill hole penetration across the width of this feature and obtain a wider cut across structural features, lithologies and potential alteration than a vertical hole could provide (proposed hole B, Figure 6).

7.1.2 Conductors on grids south of Riou Lake

Several overlapping time domain EM (TDEM) grids have been surveyed in this area, defining a series of conductors that trend progressively from southwest to northwest going from west to east (Figures 4, 8). These are conformable with aeromagnetic (Figure 3) and interpreted fault (Figure 4) patterns. The longest of these, the CB North - KC conductor (Figures 4, 8) has been traced for more than 10 km. Other conductors defined south of Riou Lake have shorter strike lengths and responses ranging from strong to weak. These include the BP and CB South conductors to the east, and the RS1 and RS2 conductors to the west (Figure 7; McGowan, 2000).

The CB North - KC conductor (Figure 8) follows the northern edge of an aeromagnetic low, which drilling to the south shows represents graphitic metapelitic gneiss in the basement. To date only the east end of this conductor has been drill tested (RLG-D8). The hole confirmed the presence of massive graphite within a pelitic gneiss unit, but no significant associated faults were intersected. The remaining 9 km of strike length to the west remains to be drill tested. Although the eastern limit of the conductor may be closed off, any possible southeastward extension into a magnetic low on the Serendipity Lakes Property remains to be surveyed. This magnetic low connects the CB North - KC conductor package to the Platt Creek fault. Therefore, a TDEM survey over an extension of the existing W-grid to the southeast is recommended.

In addition to defining the KC conductor, the TDEM surveys on the W-grid (winter 1999) detected a shallow, weak conductor (BP conductor) which probably represents the fault system intersected in hole RLG-D7 (McGowan, 2000). This idea is supported by an interpretation of down hole TDEM surveys of the adjacent hole RLG-D11, which suggests that a moderately conductive, southwest dipping feature lies to the north of hole RLG-D7 (McGowan, 2000). This fault could represent another strand of the Riou Lake fault zone developed to the north of holes RLG-D7/D11 (see Figure 6A).

Hole RLG-D9, drilled to test the mid section of the CB south conductor, identified by TDEM surveys on the Riou South grid in winter 2000, did not intersect conductive (graphitic) units. Follow-up down-hole TDEM surveys, however, indicated that in fact the conductor was located more than 100 m south of the hole, and follow-up drilling (RLG-D14) subsequently intersected a graphitic gneiss unit that probably represents the conductor (McGowan, 2000).

Weak conductors identified in the southwestern part of the EM survey coverage, RS1 and RS2, are interpreted by McGowan (2000) as potential conductive fault zones in the Athabasca sandstone. These cross a northwest-trending TEM anomaly that is coincident with the northeastern limit of the Wolverine Point Formation and which may be fault related (K. Cameron, memo to Pioneer Metals, 2001), forming a structurally complex area that may explain the presence of radioactive springs here (Figures 4, 8). Hole RLG-D13 intersected several steeply dipping faults in the sandstone column here. Further drilling is recommended here at the intersection of the RS1 conductor with the potential northwest-trending fault, to test both this structurally complex area, and the potential source of radioactivity in the springs.

Other favorable sites for uranium mineralization along the conductors include bends and steps in conductive graphitic units and associated faults, intersections of discordant faults with conductors, and conductor breaks, where faults may terminate requiring structural accommodation and localized fracturing. Subsequent drill testing of potentially structurally favorable sites along these conductors has intersected graphitic gneiss in several drill holes, confirming the presence of graphite in the area, at least one major fault, and associated anomalous and low grade uranium mineralization. Proposed drill targets in this area are further discussed in section 9. Further fixed loop EM surveys to the southeast of the current survey coverage, in the area west southwest and south of Hocking Lake, are recommended (see Appendix 1) to outline potential southeastern extensions of strands of the Riou Lake fault zone and extensions of conductors currently outlined to the south of Riou Lake. Here, magnetic maps suggest that these features may bend progressively to southeast and east-west orientations, forming potentially prospective structural sites in the resultant dilatational and constructional bends and accommodation points. Further moving loop lines along the Riou Lake fault zone to the west of holes RLG-D7/11 and RLG-D1/10 may also aid in the identification of conductive sites along this structure.

7.2 Ground EM surveys on the Black Lake property

A widely spaced TDEM survey conducted along the potential trace of the Platt Creek shear zone on the Black Lake property by Cameco in 2000, and follow up TEM and Total Field ground magnetometer surveys by Pioneer Metals in parts of this grid has traced two northeast-trending conductors along for more than 17 km length, from 6550000N to the northeastern limits of the property (Chan and Powell, 2000). The work extends coverage of an earlier fixed loop TDEM survey conducted by Uranerz in 1996 (Belyk, 1998), which defined the Black Lake conductor system further to the southwest, and has refined the location of the original EM anomalies identified by the 1978 Eldorado airborne EM survey over the area (DeCarle, 1978). The two conductors are spaced between 200 m up to 1 km apart in northeastern parts of the Black Lake property, and converge to the southwest in the vicinity of drill holes BL-01 and BL-02 (Figure 4). In the northeastern parts of the property, the western conductor passes through the axis of a discrete magnetic low, and displays several steps (Figure 9). Anomalous alteration, uranium geochemistry and presence of abundant graphite, intersected in drill holes in this area, particularly in the western conductor (drill holes ERL-4B, 5; BL-04), indicate that further drill testing is warranted in this area, which could be initially focused to the northeast of hole BL-04, to test both conductor breaks and the magnetic trough (Figure 9; K. Cameron, memo to Pioneer Metals, 2001). Drilling to the southwest (BL-01, BL-02), along the Black Lake conductor system has also intersected graphite gneiss units which have localized graphitic shear zones, and brittle faults in the sandstone column with associated low grade uranium mineralization (Belyk, 1998). Follow up drilling in this area to the northeast of hole BL-02 could target the convergence point of the two conductors in an area that may represent a potential source area for the uraniferous boulder train developed on the Riou Lake property to the west (Figure 4). Extensions of EM survey coverage along the Platt Creek shear zone trace into southern portions of the Black Lake and northeastern Serendipity Lakes properties is recommended to outline conductive units to the southwest of the current coverage (see section 9; Appendix 1).

7.3 Ground EM surveys on the Serendipity Lakes property

The presence of the clay-rich Wolverine Point Formation hinders EM response from the basement rocks in the southern parts of the project, principally on the Serendipity Lakes property, and a survey conducted here in 1997 failed to identify any discrete conductors (Faure, 2000a). Consequently, downhole EM surveys of existing and future drill holes in this area may be necessary to delineate the morphology and distribution of prospective conductive units in this area, and their proximity to the drill hole location. Future ground fixed loop EM surveys could be conducted in easternmost parts of the Serendipity Lakes property southeast of the trace of the Platt Creek shear zone could be conducted on claim S-99097 to identify potential conductive features that could be associated with lake sediment anomalies in this area north of the Wolverine Point Formation subcrop.

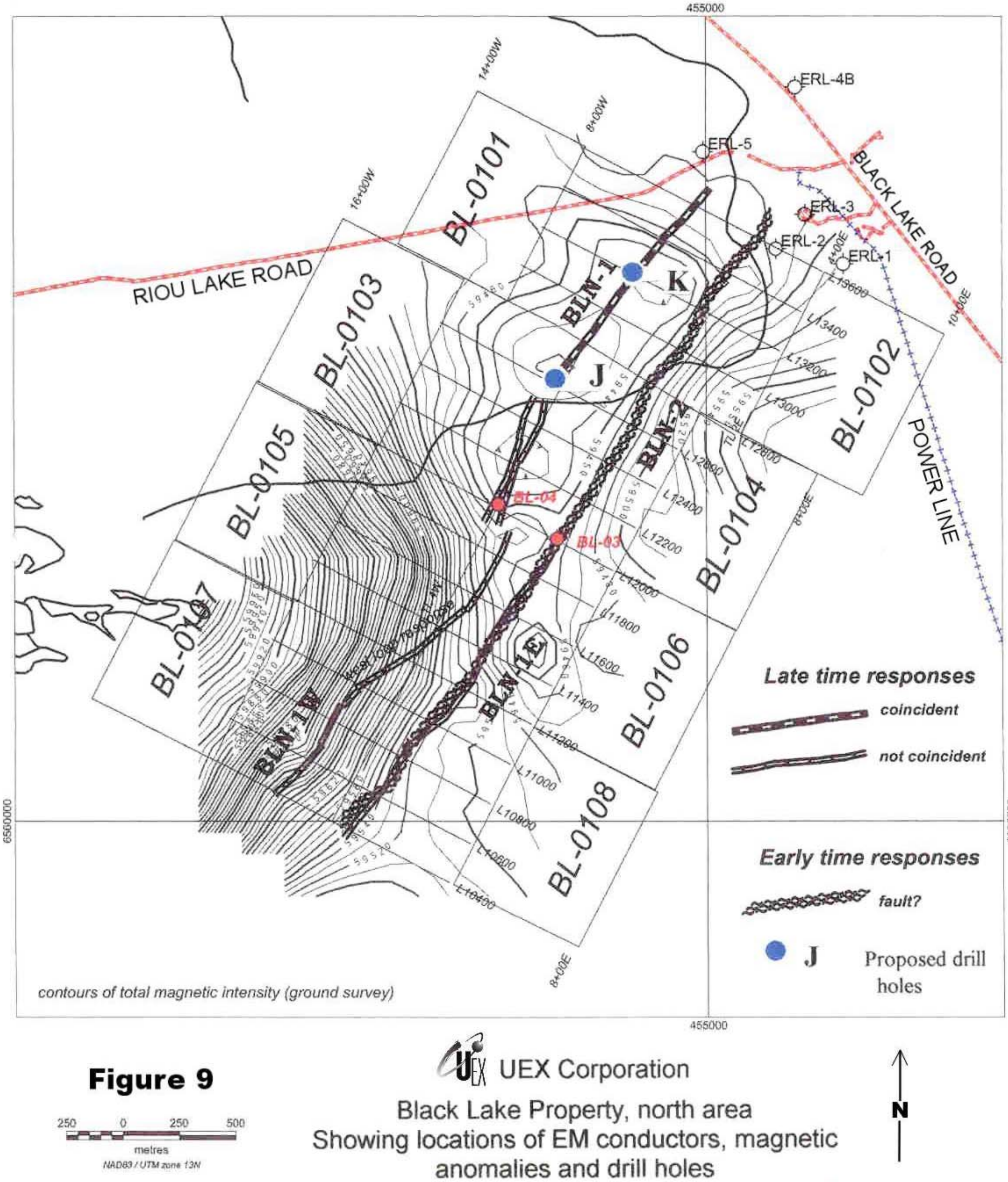


Figure 9

UEX Corporation

Black Lake Property, north area
Showing locations of EM conductors, magnetic anomalies and drill holes

7.4 Gravity surveys

An orientation gravity survey consisting of profiles over two 5 km long lines which was carried out on the Riou Lake southeast was hindered by both variation in near-surface density caused by variable overburden thickness, and the >550 m depth to basement, which masked any response (Eriks, 2000).

8.0 DIAMOND DRILLING

A total of 33 drill holes totaling approximately 21,000 m have been completed on the project since 1966 (Table 4), 27 of these since 1996. A further seven holes (RLG-D3 to RLG-D5; SLG-D3, D5, D7, D9) were drilled by Pioneer Metals and DF Exploration to the west and south on property that has since been dropped. A list of drill holes and pertinent information is in Table 4, and a tabulation of intersections >0.1% U_3O_8 is in Table 5. Drill holes have been sited on the basis of ground EM surveys over anomalies interpreted as conductive graphite-rich basement, anomalous lake and spring geochemistry, interpreted faults, and boulder sampling survey results. Due to the large size of the project and thickness of the Athabasca Group over the area, drilling has been of a reconnaissance nature, and is generally widely spaced. Highlights of drilling results from the three properties comprising the Riou Lake project are outlined below.

Table 5: Drill intersections containing >0.1% U_3O_8 obtained in the Riou Lake project area. See Table 4 and Figures 3-4 for hole locations and further information.

Hole	Property	From (m)	To (m)	Thickness (m)	Grade U (ppm)	Grade U_3O_8 (%)
RLG-D10	Riou Lake	689.51	689.63	0.12	3428	0.40
CLG-D1	Serendipity Lakes	862.27	862.29	0.02	8600	1.01
BL-02	Black Lake	562.90	563.00	0.10	3552	0.42
BL-04	Black Lake	310.00	310.40	0.40	1480	0.17
ERL-04B	Black Lake	247.05	247.20	0.15	1200	0.14

8.1 Riou Lake property (along and south of Riou Lake)

Drilling on the Riou Lake property is widely spaced, and has principally targeted EM conductors. Since 1997, Pioneer Metals has completed 11 drill holes within the current property area, and a twelfth hole P2-H1, was completed in the property area by Numac Oil and Gas in 1966. The information outlined below is compiled from Eriks et al. (1999), and Eriks (2000, 2001a, 2001b), unless otherwise noted.

8.1.1 PM conductor and holes drilled in Riou Lake

Five holes have been completed on and immediately adjacent to Riou Lake. Holes RLG-D1 and RLG-D10 targeted the southeastern portions of the PM conductor and a further hole, the 1966 Numac hole P2-H1 tested the Athabasca Group in the same area, but to the north of the conductor (Figures 4, 8). All three holes have intersected significant areas of alteration and anomalous geochemistry in the sandstone column, and locally, uranium mineralization at the unconformity, defining a large alteration zone with a minimum strike length of 1.5 km, and across strike width of 1 km. Within this zone, hole RLG-D10 intersected alteration straddling the unconformity containing pyrite, galena and uranium mineralization as sooty pitchblende over narrow intervals, including concentrations of 3428 ppm U over 0.12 m. Radioactive artesian water emanating from hole RLG-D10, and described in section 6.4, above, suggest the potential presence of a nearby radioactive source. Alteration in the sandstone column of these drill holes is characterized by common bleaching and silicification of the sandstone column, the presence of siderite and drusy quartz coated fractures and veinlets, and broad areas of anomalous Cu, Pb, Zn, Co, Mo, B, V and U geochemistry (Ramaekers, 200c, d; Quirt, 1998). Chlorite alteration is also present in upper parts of the sandstone column of hole P2-H1 (Earle, 1999b). Brittle faults occur within the upper sandstone column of all three holes, which may represent the passage of northern, footwall parts of the Riou Lake fault zone through the area (Figure 6A).

Although no conductive graphitic units were intersected in the basement in holes RLG-D1 and RLG-D10, the presence of a potential linear zone of basal basinal brines (McGowan, 2000) which may define the conductor suggests that a permeable zone, possibly a fault, runs along the axis of the conductor, which could act as a structural trap for uranium mineralization. An angled diamond drill hole is proposed which would cross the PM conductor between holes RLG-D1 and RLG-D10, further testing it for uranium mineralization, while more effectively testing the width of this structural corridor for faults and the extent of potential alteration associated with uranium mineralization to the south (hole B, Figure 6A).

To the west in Riou Lake, holes RLG-D2 and RLG-D6 tested western parts of the PM conductor corridor, and areas of anomalous lake geochemistry. Faults intersected in the upper portions of the sandstone column in holes RLG-D2 beneath southern portions of Riou Lake may represent the northernmost strands of the Riou Lake fault zone and associated structures (Figure 6B). Hole RLG-D6 intersected 59 m of Wolverine Point Formation in the top of the hole, defining part of the Jacques Trough; no alteration or faulting is apparent in the lower portions of the sandstone column.

8.1.2 Conductors south of Riou Lake

South of Riou Lake, seven drill holes have been completed on various EM conductors at prospective structural sites and inflection points (Figures 4, 8). As described in section 5.4, holes RLG-D7 and RLG-D11, both intersected a major southwest dipping fault system which is parallel to, and may represent a southerly portion of, the Riou Lake fault system. A 60 m wedge of basement is thrust over Athabasca sandstone in hole RLG-D7. In hole RLG-D11, drilled to the southeast of hole RLG-D7, a 18 m thick chlorite matrix breccia intersected in the basement rocks probably represents the down dip projection of this structure into the basement. Although no mineralization or significant alteration is associated with this fault in these holes, the style and magnitude of faulting is similar to that associated with uranium deposits elsewhere in the Athabasca basin. Further faults comprising the main strands of the Riou Lake fault must lie to the north of this structure to explain the further 110 m drop in the unconformity between holes RLG-D7 and RLG-D10. The presence of uranium mineralization in hole RLG-D10 and the broad area of alteration defined in the vicinity of this drill hole suggests that these southerly fault strands may also be prospective. Two angled holes (A and B, Figures 4, 6A) are proposed to test the width of the fault system. Re-evaluation of EM data, or the use of additional moving loop line coverage to the east and west may aid in tracking the fault system further in those directions.

Drilling of EM conductors south of Riou Lake in the Checkerboard grid area west of holes RLG-D7 and D11 has confirmed the presence of graphitic lithologies. Graphitic pelitic and graphitic biotite-quartz-feldspar gneiss, locally containing semi-brittle graphitic shear zones, has been intersected in holes RLGD-8, RLG-D9 and RLG-D14. Disseminated pitchblende occurs over narrow intervals near the unconformity in hole RLG-D9 associated with anomalous (295 ppm U) uranium concentrations. Drill holes here are widely spaced, and the presence of local mineralization, graphitic gneiss and probable faults indicate that further exploration is warranted here. Proposed drill hole sites are discussed in section 9.

8.2 Serendipity Lakes property

Drilling on the Serendipity Lakes property has focused on the source of radioactive springs, lake sediment and water anomalies associated with interpreted areas of faulting, and areas of low magnetic response (Figure 3). The presence of the Wolverine Point Formation has prevented the use of ground EM surveys to define drilling targets. Drilling results described below are sourced from Faure (1996; 1997a, b; 1998a, b; 1999; 2000e, f; 2001c) and the reader is referred to these documents for information sources.

8.2.1 Serendipity Lakes area (SLG-series drill holes)

Initial drilling in this area by DF Exploration during 1996 targeted the source of radioactive springs feeding the Serendipity Lakes. Holes SLG-D1 to SLG-D5 penetrated only the Athabasca Group and did not reach basement rocks. No significant faults or alteration were interested, although a zone of late hydrothermal siderite and pyrite coated fractures was intersected in some holes (Faure, 2000a). Subsequently, further drilling in this area, principally to the east of the initial holes, tested areas closer to the projected trace of the Platt Creek shear zone in holes SLG-D6, D7, D8, D9 and D11. All of these holes intersected basement rocks generally lacking graphite, but most of these holes did not penetrate to sufficient depths below the unconformity (<20 m) to penetrate below the graphite-destructive portions of the paleo-weathering profile. Anomalous concentrations of Cu, Ni and locally U, are present within the sandstone column, locally associated with zones of bleaching in hole SLG-D6. The basal sandstone in hole SLG-D11 intersected dravite near the unconformity and a 0.2 m wide interval of Y-rich (662 ppm) specular hematite at 725 m, together suggestive of distal hydrothermal alteration (Faure, 2001a).

The most significant area of alteration intersected at Serendipity Lakes is in hole SLG-D7, where a bleached zone of pervasive illite-chlorite alteration is developed for 100 m above the sub-Athabasca unconformity overprinting the background kaolinite-dickite +/- illite assemblage (Quirt, 2000). Fractures in this zone are commonly filled with pyrite and siderite, and locally, drusy smoky quartz, and anomalous Pb, Cu, Ni, As and Co concentrations accompany the alteration (Quirt, 2000; Faure 2000a). Further fractures, faults and bleached, geochemically anomalous areas are also present above this zone higher in the sandstone column. The alteration in this hole is typical in style and geochemistry to alteration zones proximal to unconformity-type uranium deposits. Follow up drilling to the northeast in the current property area, along the trend of basement lithologies suggested by magnetic patterns (Figure 3) is recommended here, accompanied by down hole EM surveys to delineate the position and morphology of conductive units, faults and alteration.

To the west of the principal cluster of SLG-series drill holes, hole SLG-D10 intersected a 250 m thick zone of tectonic disturbance in the upper part of the hole, high in the sandstone column that may represent the passage of a post-Athabasca fault through the area. If this is a northeast trending structure, it may be possible to trace it through to Hocking Lake to the northeast with the ground EM survey proposed in that area, to further assess its location and prospectively. A fault here may control the location of chloride-rich springs that feed lakes to the northeast of hole RLG-D10 (Figure 4).

As discussed in section 5, the unconformity elevations in hole RLG-D8 is significantly higher (at least 120 m) than in holes to the west, suggesting that post-Manitou Falls southeast-side up displacement may have occurred along the Platt Creek shear zone in this area. Extension of ground EM surveys southwestward from the Black Lake property along the Platt Creek shear zone to the area of subcropping Wolverine Point Formation are recommended to better define the location of this structure and potentially associated graphitic lithologies to better target this area of probably tectonic disturbance through future drilling.

8.2.2 Circle Lakes area (CLG-series drill holes)

Five widely spaced drill holes have been completed in the Circle Lakes area (CLG-D1 to D5), which comprises western portions of the Serendipity Lakes property. All holes have intersected the sub-Athabasca unconformity, but apart from holes CLG-D3 and CLG-D4, drill holes were not drilled sufficiently deep enough to penetrate below the graphite-destructive effects of paleo-weathering, so the presence of potential graphitic lithologies in the basement could not always be assessed here.

The most significant drilling intersection in the Circle Lakes area is in hole CLG-D1. Here, pitchblende stringers occur in altered basement rocks immediately below the sub-Athabasca unconformity. Concentrations of up to 1.01% U over 2 cm were obtained from this area (Table 5), associated with well developed fracturing potentially representative of a mineralized fault zone. A significant brittle fault was also intersected in the sandstone column within this hole. Follow up drilling along strike from this hole is recommended, which based on magnetic patterns, would be to the northwest and southeast. As with other areas, down hole EM surveys of future holes should allow better delineation of the morphology and position of prospective conductive features and basement units. Other drilling results in the Circle Lakes area include a) local anomalous U-bearing fractures in the sandstone column of hole CLG-D2, b) the presence of dravite (Mg-tourmaline) in basement lithologies and lowermost sandstone column of hole CLG-D3, accompanied by anomalous sulphate and Ba geochemistry, c) the occurrence of a narrow pyrite-siderite-xenotime phosphate-bearing breccia in the sandstone column in hole CLG-D5, which is comparable in mineralogy and style distal alteration effects associated with some unconformity-type uranium deposits (Faure, 2000a).

8.3 Black Lake property

8.3.1 Black Lake property south

Two drill holes were completed by Uranerz in 1998 on EM conductors identified along the projected trace of the Platt Creek shear zone in the central Black Lake property, south of the convergence point of the east and west conductors developed to the north (Figure 4). Both holes intersected faults within the sandstone column (Belyk, 1998). Graphitic pelitic gneiss was intersected in hole BL-01, and hole BL-02 intersected 0.4 m of uranium mineralization containing up to 3552 ppm U over 0.1 m in basement rocks immediately below the unconformity (Belyk, 1998; Table 5).

This central Black Lake area is located up the last dominant glacial ice direction from the uraniferous boulder in till train located on the Riou Lake property (Figure 4), and consequently further drilling is warranted to test the extent of the mineralization and favorable graphitic units here. The boulder train projects to the Platt Creek shear zone trace between 6550000N and 6560000N, with the nearest clustered boulder field located 5 km to the west of the Platt Creek conductors at 651000N. Follow up drilling is recommended to the north of hole BL-02 to test prospective sites in this area for a source of these boulders on the shear zone trace (proposed hole I in Figure 4; Table 6). Downhole EM surveys to determine the extent and orientation of conductive lithologies are recommended for future holes.

8.3.2 Black Lake property north (Raibl Lakes area)

Eldorado Nuclear drilled five angled holes (ERL-1 to ERL-5) at the northeast end of the Black Lake claims to test the Platt Creek shear zone in 1979 and 1980 (Bonnar and Rybansky, 1980). Further drilling in two holes (BL-03, BL-04), was subsequently completed by Pioneer Metals in 2001 (Figure 9; Eriks, 2002, in preparation). Thickness of the Athabasca sandstone varies from 215-250 m in northern parts of this area where the Eldorado drill holes have been completed to approximately 1.6 km m further to the southwest in the vicinity of drill holes BL-03 and BL-04. None of the Eldorado drill holes completed adjacent to the eastern conductor, later defined by Pioneer Metals in 2001, intersected graphitic gniess, probably because they were drilled to the east of the conductor. However, faults and bleaching in the sandstone column were intersected in holes ERL-1 and ERL-2, possibly forming part of a post-Athabasca brittle fault system localized along the Platt Creek shear zone. The two Eldorado drill holes (ERL-4B and

ERL-5) drilled along northwestern extensions of the western conductor (Figure 9) intersected faulted graphitic pelitic gneiss with elevated to highly anomalous U (up to 1200 ppm U; Table 5), Ni, Co, As and Cu values in basement rocks just below the unconformity (Bonnar and Rybansky, 1980). The thickest intersection of graphitic gneiss is in hole ERL-5, where the entire 87 m basement intersection is graphite-bearing, and locally contains >50% graphite over intervals of >10 m (Bonnar and Rybansky, 1980); although core axis angles are generally at less than 30^{o}. Further drilling by Pioneer Metals in two holes in 2001 (BL-03, BL-04) was completed 1.6 km to the southwest of the Eldorado drill holes (Figure 9) on two parallel EM conductors. Graphite-bearing gneiss and dravitic (Mg-tourmaline) alteration as stringers in the basal sandstone column, were intersected in both holes, as well as 1480 ppm U over 0.4 m and elevated Ni, Cu, Co and As in altered basement rocks 0.8 m below the unconformity in hole BL-04 (Eriks, 2002, in preparation). Trace black sooty pitchblende was also identified on fractures in hole BL-03 just below the unconformity.

As discussed in section 5.4, drill hole unconformity elevations from this area suggest that only minor post-Athabasca fault displacement (<20 m) has locally been accommodated arross the Platt Creek shear zone. However, the northwest Black Lake area contains several indicators of a prospective environment for uranium mineralization, including (i) the presence of two graphite-rich units developed along the trace of a major pre-Athabasca shear zone, (ii) anomalous uranium mineralization developed in several drill holes associated with typical unconformity-type uranium pathfinder elemental anomalies, and (iii) occurrence of chlorite and dravite alteration above the unconformity in an area of anomalous U geochemistry. Currently, the western conductor has yielded the most significant results, including highly anomalous U concentration associated with chlorite, and locally dravite alteration, near the unconformity in all three holes that have tested it (ERL-4B, 5; BL-04). Further drill testing between holes BL-04 and ERL-05 is recommended, along the axis of a zone of low magnetic intensity that could represent the expression of abundant graphite-rich lithologies and/or hydrothermal alteration (proposed holes J and K, Figure 9). Future drill testing of the eastern conductor north of hole BL-03 is recommended, since anomalous uranium geochemistry and dravite alteration in the basal sandstone column were intersected here, and more northerly parts of the conductor are untested. Downhole EM surveys should be performed on any future drill holes completed here to determine the dip directions and extent of conductive units. Due to the ease of access to the Black Lake road and relatively shallow sandstone thickness, this area represents the most cost-effective area for drill testing in the Riou Lake project area.

9.0 EXPLORATION CONDUCTED BY THE ISSUER (ITEMS 11-20, FORM 43-101F1)

No exploration on the property has been conducted by, or on behalf of, the issuer to date. However, comments concerning individual 43-101F1 items 11 to 20 are provided below with regard to historical exploration, based on the author's review of exploration data and discussions with personnel involved in exploration programs conducted on the project.

9.1 Exploration and drilling (Items 11 and 12, form 43-101F1)

Details regarding the nature and extent of exploration conducted historically on the property, including the results of surveys and investigations as per items 11 and 12 of form 43-101F1, are outlined in sections 4, 6, 7 and 8 of this report.

9.2 Sampling method and approach, preparation and security, and data corroboration (Items 13-15, form 43-101F).

Sampling methodology and approach for drill core on the Riou Lake project undertaken by Eldorado, UEM, D.F. Exploration and Pioneer Metals was conducted to industry standards during the time of each program. As is currently practiced in uranium exploration, sampling and data verification was multi-stage where documented, involving the initial use of down-hole radiometric probes to obtain gamma logs of each hole, from which the qualitative, and more recently, quantitative, tenor of uranium mineralization can be assessed, guiding subsequent geochemical sampling. Hand held scintillometers or similar equipment are also used to identify mineralized, and consequently radioactive, intervals in drill core to aid in geochemical sampling. Gamma logs and hand held scintillometers thus form an initial record of the position of mineralization, and a verification of the location and relative grade of mineralization obtained by subsequent geochemical sampling. Comparison of gamma log profiles to geochemical results in historic drill holes by the author has shown a consistent correlation between the two.

Where anomalous uranium mineralization was identified by down hole probe or scintillometer in drill holes on the Riou Lake project, geochemical sampling was conducted by splitting drill core over intervals of lengths generally less than 1 m, with ½ core placed in sample bags for shipment to an analytical laboratory, and the remaining ½ core left in core boxes. Laboratories that have historically been selected for analyses of Hidden Bay drill core have varied throughout the project's exploration history; analytical work since 1996 has been performed at the Saskatchewan Research Council (SRC). SRC is a laboratory with a certificate of laboratory proficiency provided by the Canadian Certified Reference Materials Project (PTP-Mineral analysis laboratories), and which is in the process of obtaining accreditation CAN-P-1579 under guidelines for accreditation of mineral analysis laboratories. Unlike other forms of mineral exploration, where standards are typically inserted in sample batches before transportation to the laboratory, uranium standard samples are not generally used in the uranium industry, since the transport and handling of radioactive materials must be minimized as per environmental and safety regulations. Consequently, data verification and quality control in mineralized intervals in is based on check analyses at multiple laboratories, internal laboratory standards, and comparison to downhole gamma logs. Drill core from holes completed historically on the Riou Lake project is available for inspection at core storage areas in the field on the project in the case of holes drilled since 1996, and at core storage facilities in Uranium City and Regina, Saskatchewan, in the case of the ERL-series holes and hole P2-H1, respectively. Representative drill holes, particularly those containing mineralization or significant alteration, will be inspected by the writer during the future property visit to verify the location and potential of mineralized and altered intervals.

Sampling for radioactive boulders in glacial till within the Riou Lake uraniferous boulder train has been conducted by SMDC, Eldorado and Pioneer in a similar manner to drill core sampling. Radioactive boulders were first identified with the use of hand held scintillometers, and were subsequently geochemically sampled. The initial scintillometer readings provide a qualitative verification of the subsequent geochemical analyses (e.g. Roy, 1980, 1981). Re-analysis of the pulps from seven of the original boulder samples collected by SMDC (stored by the Saskatchewan Research Council (SRC) in Saskatoon) by Pioneer Metals produced similar results, confirming the original analyses (Eriks and McGowan, 1999). In addition, Pioneer was able to relocate several of the boulders reported by Roy (1980) in the field that were not completely destroyed during the first phase of sampling, confirming their location, and also producing anomalous uranium concentrations (Eriks and McGowan, 1999).

9.3 Mineral processing and metallurgical testing (Item 17, form 43-101F1)

No mineral processing and/or metallurgical testing have been carried out on the project.

9.4 Mineral resources and reserve estimates (Item 18, form 43-101F1)

No uranium deposits have been delineated on the Riou Lake project, and consequently, no resource estimates have been performed.

10.0 SUMMARY AND CONCLUSIONS

10.1 Summary

1. Basement lithologies to the Riou Lake project comprise polydeformed, granulite to upper amphibolite grade, and Archean-aged basement rocks of the Tantato Domain. Extensive Archean-aged mylonitic shear zones are developed in the region, and include the northeast-trending Platt Creek shear zone, and other discordant and concordant zones of mylonitization suggested by drilling and magnetic patterns. Drilling indicates that domains of low total magnetic intensity correspond with areas of metapelitic gneiss that often contain graphitic gneiss. The granulite-upper amphibolite grade, graphite-bearing sequence and common presence of mylonites are comparable to the sequence hosting the Cluff Lake uranium deposits, and to parts of the uranium-rich Wollaston Belt to the east.

2. The deformed metamorphic sequence is unconformably overlain by 300-800 m of Proterozoic sandstone of the Athabasca Group, predominantly of the Manitou Falls Formation. In southern portions of the property, the siltstone-mudstone rich Wolverine Point Formation overlies the Manitou Falls Formation with probable angular unconformity. The clay-rich nature of the Wolverine Point Formation hinders the use of EM techniques to identify prospective conductive graphitic units in the basement rocks.

The unit also strongly influences the location of lake sediment and water anomalies, in part due to its phosphatic, rare earth bearing geochemistry, and due to its influence as an impermeable cap to the discharge of deep, radioactive metaliferous groundwater to surface.

3. Post-Manitou Falls faults which are developed in the project area strike mainly to the northeast, although northwest trending faults often also occur where underlying basement lithologies locally have that orientation. The most significant post-Athabasca fault identified to date, termed the Riou Lake fault zone, is a northeast-trending, southeast-south dipping reverse fault system that is developed south of Riou Lake. It bends to east-west and west-northwest trends south of Riou Lake where magnetic maps indicate that basement lithologies are deflected by northwest-trending, probable pre-Athabasca, shear zones. The Riou Lake fault zone and associated parallel faults developed for up to 1 km to the south, are associated with a major upthrust block of basement and sandstone, which indicates apparent reverse displacement of at least 200 m on the fault system. Other northeast-trending faults, possibly conjugate northwest and southeast dipping reverse faults, are reflected in displacements of Athabasca Group members and basement rocks. These include the Platt Creek shear zone, which extends north of the property into a series of major, older syn-metamorphic shear zones. Where developed, northwest trending faults have less vertical displacement than the other fault orientations. They may represent reactivation of underlying northwest-trending fabrics in basement rocks.

4. Boulder sampling surveys have identified a crudely east-west oriented uraniferous boulder train in till which runs through central portions of the Riou Lake property. Boulders contain up to 11.3% U, and have associated Pb-Ni-As anomalous geochemistry typical of metal associations in unconformity type uranium deposits. No boulders of this type have been found locally to the east of the trace of the Platt Creek shear zone – the farthest easterly area up the last dominant ice advance direction (east to west) – which may represent the source area.

5. Several areas of radioactive sandstone boulders and felsenmeer in the upper Manitou Falls Formation and containing up to 21% P2O5, that occur around Riou Lake are aligned along known and suspected west and northwest-trending fault zones. These may represent the distal effects of alteration associated with uranium mineralization along these structures.

6. Sampling of lake sediments and lake waters on the Riou Lake and Serendipity Lakes properties has returned anomalous to highly anomalous concentrations of uranium and associated pathfinder elements that are comparable to those near known uranium deposits in other portions of the Athabasca basin (e.g. Cluff Lake, Cigar Lake). The anomalous values occur in many lakes over a broad area and while providing a favorable indicator of potential uranium mineralization are too broad to focus individual drill holes. A review of the data with subdivision into subsets based on water depth, sediment type, and presence of Fe-Mn oxides is underway to further evaluate the data and identify more specific target areas.

7. Chloride-rich, radioactive radon-bearing springs that occur on the Serendipity Lakes property south of Hocking Lake, and south of the Riou Lake fault on the boundary between the Serendipity Lakes and Riou Lake properties are similar in chemistry to that of basal brine connate waters identified at the base of the sandstone column at the McArthur River deposit, and to springs that occur within 4 km of the Shea Creek occurrence in the Cluff Lake area. These spring waters may reflect the upward migration of deep, basinal waters along faults, in part focused by the capping effects of the Wolverine Point Formation. The springs suggest structural targets in areas where basinal waters may have tapped a radioactive source. Similar waters have been obtained from artesian flow out of drill holes RLG-10 and RLG-11, the former of which intersected low grade uranium mineralization at the unconformity, and in several drill holes on the Serendipity Lakes property.

8. Ground EM surveys carried out over the Riou Lake property have identified conductors both beneath (PM conductor), and south of (CB, RS conductors), Riou Lake. The latter conductors curve from southwest to northwest trends progressively to the east, mimicking map and fault patterns, and providing favorable structural sites at potential constrictional and dilational bends in associated faults. Subsequent drill testing of potentially structurally favorable sites along these conductors has intersected graphitic gneiss in several drill holes, confirming the presence of graphite in the area, at least one major fault, and associated anomalous and low grade uranium mineralization. Further follow-up drill testing will be necessary.

9. Drilling indicates that EM conductors developed along the trace of the Platt Creek shear zone on the Black Lake property are graphite-rich gneiss units with associated syn-metamorphic shear zones that have locally been remobilized by post-Manitou Falls faulting.

10. Drilling on and adjacent to the PM conductor in Riou Lake has intersected a broad area of alteration in the sandstone column over a minimum strike length of 1.5 km, and a width of 1 km. Hole RLG-D10 here has intersected alteration straddling the unconformity containing pyrite, galena and uranium mineralization as sooty pitchblende over narrow intervals, including concentrations of 3428 ppm U over 0.12 m. Faulting intersected in the upper portions of the sandstone column in holes RLG-D2 and RLG-D1 beneath southern portions of Riou Lake may represent the northernmost strands of the Riou Lake fault and associated structures; future drilling is warranted to test the projected intersection of these faults with the unconformity down dip to the south, and to define the extent of the alteration. Radioactive, chloride-rich artesian water emanating from hole RLG-D10 suggests that a deep, radioactive source may be nearby.

11. Holes RLG-D7 and RLG-D11, drilled south of Riou Lake, both intersected a major southwest dipping fault system which is parallel to, and may represent a southerly portion of, the Riou Lake fault system. A 70 m wedge of basement is thrust over Athabasca sandstone in hole RLG-D7. In hole RLG-D11, drilled to the southeast of hole RLG-D7, a 18 m thick chlorite matrix breccia intersected in the basement rocks probably represents the down dip projection of this structure into the basement. Although no mineralization or significant alteration is associated with this fault in these holes, the style and

magnitude of faulting is similar to that associated with uranium deposits elsewhere in the Athabasca basin. Further faults comprising the main strands of the Riou Lake fault must lie to the north of this structure to explain the further 110 m drop in the unconformity between holes RLG-D7 and RLG-D10. The presence of uranium mineralization in hole RLG-D10, and areas phosphate-rich boulders at surface in the W-zone immediately to the north suggests that these fault strands may be prospective in this area. Follow-up drilling along strike, and to define further fault strands to the north, is recommended.

12. Drilling on the Serendipity Lakes property has intersected alteration and anomalous geochemistry in several holes. Highlights include hole CLG-D1, which intersected pitchblende stringers in basement rocks immediately below the unconformity, which returned values up to 1% U over 2 cm, and hole SLG-D7, which intersected a zone of illite-chlorite-Fe-oxide alteration which extends through the Athabasca sandstone column for approximately 100 m above the unconformity. Variations in the elevation of the unconformity, distribution patterns of the Wolverine Point Formation and other parts of the Athabasca sandstone sequence, and faults intersected principally in the sandstone column in several drill holes indicate that significant faults are present in the area. Further follow up work will be required to test favorable structural environments and areas of anomalous alteration and mineralization.

13. The two drill holes completed by Uranerz in 1998 on EM conductors along the projected trace of the Platt Creek shear zones intersected faults within the sandstone column, graphitic gneiss in the basement, and anomalous uranium geochemistry near the unconformity, including 0.4 m of uranium mineralization containing up to 3552 ppm U over 0.1m in hole BL-02. This area is up ice direction from the uraniferous boulder in till train on the Riou Lake property. Further drilling to the north of the Uranerz holes is recommended to test the possible source area of the boulder train, and test the extent of the mineralization and favorable graphitic units. The projection of faults intersected in the sandstone column in both holes to the unconformity forms a prospective target here.

14. Drilling indicates that two parallel conductors in the northeastern parts of the Black Lake property along the trace of the Platt Creek shear zone are highly prospective for uranium mineralization. Two drill holes completed by Eldorado Resources in 1980 (ERL-4B and ERL-5) intersected faulted graphitic pelitic gneiss with elevated to highly anomalous U (up to 0.12% U_3O_8), Ni, Co, As and Cu values in basement rocks just below the unconformity. Drilling in 2001, 1.6 km to the southwest, intersected graphite-bearing gneiss and dravitic (Mg-tourmaline) alteration in the basal sandstone column in both holes drilled. In addition, highly anomalous U, elevated Ni, Cu, Co and As are present in altered basement rocks 0.8 m below the unconformity in hole BL-04, and pitchblende occurs on fractures in hole BL-03 just below the unconformity. The presence of dravite alteration – a common proximal alteration mineral to unconformity type uranium deposits – graphite in the basement lithologies, and locally anomalous mineralization together suggest that further exploration drilling is warranted in this area, particularly on the western conductor, where all three drill holes that have been completed along it over a 2 km strike length have intersected anomalous alteration and highly anomalous or low grade uranium mineralization.

10.2 Conclusions

The Riou Lake project contains many favorable indications of a prospective environment for unconformity-type uranium deposits, including the presence of significant reverse faults, graphitic gneiss units in the basement, uraniferous boulders in till, alteration characteristic of that spatially associated with uranium deposits, and several areas of low grade uranium mineralization developed near the unconformity. At the depths of >300 m to the unconformity in the area, the target must be large and high grade, and exploration here will be directed to the discovery of world class McArthur River and Cigar Lake style deposits. Both of these deposits are associated with continuous mineralized zones, or chains of mineralization, that extend 1-2 km along faulted graphitic gneiss units. These deposit types may occur both at the unconformity and in adjacent basement rocks. The degree of penetration of mineralization into the basement may be related to the size of the associated fault, and consequent structural permeability: Cigar Lake, which is associated with only minor faults at a topographic hump in the unconformity, is a long, narrow pod straddling the unconformity. In contrast, McArthur River extends from the unconformity into basement rocks down the P2 fault system, which has approximately 70 m of reverse displacement. Consequently, appropriate target areas for deposits of each type can be selected in the Riou Lake area. The Riou Lake fault system, with its large reverse displacement and reverse faults on the Serendipity Lakes property are most prospective for McArthur River type targets; here drilling should extend to at least 100 m below the unconformity to also test for basement mineralization. Conversely, in graphite-rich units where drilling may indicate faulting, but low displacement (<20 m), such as the conductors on the Checkerboard grid south of Riou Lake and the Black Lake (Platt Creek shear zone) conductors, may be more prospective for Cigar Lake type targets developed at the unconformity. Bends, steps, bifurcation points, and terminations of faults and conductive units are considered particularly prospective, since these areas require accommodation by faults that may induce areas of well fracturing and enhanced structural permeability.

Future drill holes should be continued until they have penetrated to depths of at least 50 m below the sub-Athabasca unconformity, to penetrate below the graphite-destructive effects of paleoweathering, and to test for basement-hosted uranium mineralization. Downhole EM surveys are recommended, particularly in areas where the morphology and distribution of conductive basement units, faults or alteration is poorly understood. Where the dip of faults and basement rocks are reasonably established, angled drill holes can provide significantly more information than vertical holes. Angled holes (i) allow core reorientation on sandstone bedding, or more directly with the use of core marking devices during drilling, (ii) allow a wider cut across faults and basement lithologies, and (iii) can more effectively test the extent and presence of vertical alteration plumes associated with deposits by crossing, instead of paralleling, these features.

11.0 Proposed Exploration program

A two phase, $Cdn 1,709,000, exploration program, comprising mainly diamond drilling, is proposed for the Riou Lake project to follow up the results of earlier work and to test prospective geophysical and structural targets. An initial $1,233,000 phase 1 program is planned, followed by a $476,000 program during phase 2 (Tables 7, 8).

11.1 Phase 1 program

The proposed phase 1 program is an eleven hole, 8340 m, drilling program which is outlined in Table 6. A budget for the program in Table 7, and proposed drill hole sites are shown on Figures 4, 6 and 9. Estimated budget for the program, which could be completed over both summer and winter seasons during a 12 or 18 month period, is $Cdn 1.23 million (Table 6). Proposed holes E to F are in topographically elevated areas that could be accessed in summer, while the majority of other drill sites are mainly winter accessible only.

The proposed drilling program is designed to (i) test for Cigar Lake and McArthur River type targets in the Riou Lake fault system near holes RLG-D10 and at the apex of its flexure south of Riou Lake (sites A-C, Figure 6), (ii) further test prospective structural sites on EM conductors (e.g. Checkerboard grid, Riou Lake south area: proposed drill sites A, B, C), (iii) to follow-up anomalous alteration and uranium mineralization in holes SLG-D7 and CLG-D1 in the Serendipity Lakes area (proposed sites G, H), (iv) to test conductors along the trace of the Platt Creek shear zone north of hole BL-02, in areas where the up-ice source of the Riou Lake uraniferous boulder train may occur (site I), and (v), to test the western conductor in the northeastern (Raibl Lakes) area of the Black Lake property along the axis of a low area of total magnetic response between anomalously altered and mineralized drill holes (sites J, K; Figure 9).

11.2 Phase 2 program

A further 2600 m of drilling is planned during phase 2, with target selection contingent on the results of the phase 1 program. Principal target areas for this program are a) the Platt Creek shear zone on the Black Lake project where three holes are planned to further test the source of radioactive boulders in till at prospective structural sites along conductive graphitic units, and b) two holes on the Riou Lake property to test fault systems beneath, and to the south of Riou Lake.

In addition to the drilling, surface mapping of bedding orientations, fracture densities and orientations, and selective geochemical sampling of structural features in outcrop over the trace of the Riou Lake fault zone are also proposed to identify areas of anomalous fracturing, alteration and geochemistry that may reflect surface manifestations of alteration and structural environments associated with mineralization at depth. Further EM survey coverage in the central project area is also recommended to cover prospective areas of low magnetic intensity along the southwest trace of the Platt Creek shear zone, and southeast continuation of conductors identified south of Riou Lake to the southeast onto the Serendipity Lakes property. This work should cover unsurveyed prospective portions of the central project between the previous Riou Lake and Black Lake EM surveys north of the Wolverine Point Formation cover (Appendix 1).

Table 6: Proposed phase 1 drilling program, Riou Lake project. See Figures 4, 6 and 9 for locations.

Hole site	Claim Group	UTM East	UTM North	Azimuth	Dip	Length (m)	Target
A	Riou	432850	6549450	020	-60	1000	Fault zone between holes RLG-D7 and RLG-D10 and down dip projection of zone of phosphate boulders (W- zone)
B	Riou	433100	6549900	020	-60	900	PM conductor between holes RLG-D1 and RLG-D10: angled hole to test altered area and cross fault/alteration system
C	Riou	427000	6549000	330	-60	1000	Riou Lake fault south of hole RLG-D2; test width of fault zone for alteration, and target area where fault intersects unconformity
D	Riou	430400	6547800	---	-90	640	Northwestern inflection point in north Checkerboard conductor; intersections with high magnetic features
E	Riou	431900	6546200	---	-90	850	Eastern end of south Checkerboard graphite conductor intersected in RLG-D14
F	Riou	425995	6543250	---	-90	830	SW end/inflection of western Checkerboard conductor near radioactive springs
G	Serendipity	426830	6538040	---	-90	900	Test lateral extent of mineralization and faults in CLG-D1
H	Serendipity	437700	6537560	---	-90	920	Test lateral extent of alteration zone and faults in SLG-D7
I	Black Lake	446950	6550850	---	-90	570	Conductor in potential source area of uraniferous boulder train, and extensions of alteration-mineralization intersected in BL-holes to south
J	Black Lake	454350	6561950	---	-90	380	Potential continuity of alteration, mineralization and faults between holes BL-04 and ERL holes in magnetic low, Platt Creek western graphitic conductor
K	Black Lake	454675	6562425		-90	350	Potential continuity of alteration, mineralization and faults between holes BL-04 and ERL holes in magnetic low, Platt Creek western graphitic conductor
						8340	**Cumulative length (m)**

Table 7: Budget for proposed phase I exploration program, Riou Lake project.

Item	Estimated cost ($ Cdn)
1. Diamond drilling program	
- 8340 m diamond drilling in 11 holes @$100 per meter, all inclusive	$834,000
2. Geology and support costs for drilling program	$176,700
- 1 geologist for 150 days @ $400 per day ($60,000), plus one junior geologist / technician for 150 days @ $320 per day ($48,000)	
- Field costs (vehicle rental, aircraft, etc.) = $35,500	
- Analytical costs = 830 samples @ $ 40 per sample = $33,200	
3. Downhole EM surveys of drill holes	
- 11 holes @ $6,000 per hole	$66,000
4. Permits	$2,000
- work camp, work authorization, application permit, timber permit, road building permit	
5. Review and evaluation of drilling and EM data, report preparation	
- 60 days by one geologist at $400 per day ($24,000); 40 days junior geologist / draftsman at $320 per day ($12800)	$42,300
- geophysical consultant to review EM data; 10 days @$550 per day ($5,500)	
Subtotal	$1,121,000
10% contingency	$112,100
Total cost, phase I	**$1,233,100**

Table 8: Budget for proposed phase II exploration program, Riou Lake project.

Item	Estimated cost ($ Cdn)
1. Winter surface geophysical program	
- 18 km fixed loop survey over area east of Checkerboard grid (6 km), and in area of anomalous lake geochemistry on northeastern portions of the Serendipity Lakes claims (12 km) @ $1,000 per km = $18,000	$38,000
- 24 km line cutting @$500 per km = $12,000	
- Support costs: air transportation, accommodation, materials $8,000	
2. Surface evaluation program	
- 14 days geological fieldwork, including traverses across sandstone outcrops south of Riou Lake fault to identify and sample fracture systems, and re-evaluation of diamond drill core: senior ($400 per day) and junior geologist ($300 per day) for 20 days, including travel and write-up = $14,000	$20,750
- 3 field assistants for 15 days at $150 per day = $6,750	
3. Diamond drilling program	
- 2,600 m diamond drilling in 5 holes on the Riou Lake and Black Lake properties @$100 per meter, all inclusive	$260,000
4. Geology and support costs for drilling program	
- 1 geologist for 55 days @ $400 per day ($22,000), plus a junior geologist / technician for 50 days @ $320 per day ($16,000)	$64,000
- Field and logistical costs (vehicle rental, snowmobile, etc.) = $16,000	
- Analytical costs = 250 samples @ $ 40 per sample = $10,000	
5. Downhole EM surveys of drill holes	
- 5holes @ $6,000 per hole	$30,000
6. Review and evaluation of drilling and EM data, report preparation	
- 30 days by one geologist at $400 per day ($12,000); 15 days junior geologist / draftsman at $320 per day ($4,800)	$16,800
7. Permits	$2,000
- work camp, work authorization, application permit, timber permit, road building permit	
Subtotal	432,550
10% contingency	43,255
Total cost, phase 2	**$475,805**

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Certificate of Author

1. I, David A. Rhys, P. Geo., am a Professional Geoscientist, employed by Panterra Geoservices Inc. at 14180 Greencrest Drive, Surrey, British Columbia, Canada

2. I am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia.

3. I am a graduate of the University of British Columbia with a B.Sc. (1989) and a M.Sc. (1993) in geology.

4. I have practiced my profession continuously since graduation in 1989, and have been involved in mineral exploration in Canada, Australia, Mexico, Ecuador and Peru.

5. I am president of Panterra Geoservices Inc., an independent geological consulting firm incorporated in the Province of British Columbia

6. As a result of my experience and qualification, I am a qualified person as defined in N.I. 43-101.

7. I am an independent qualified person as defined by N.I. 43-101

8. The foregoing report is based on a study of available data and company reports. A site visit will be conducted as soon as is practicable.

9. I have read N.I. 43-101 and Form 43-101F1, and the technical report has been prepared in compliance with both.

10. I, or Panterra Geoservices Inc., do not own or expect to receive any interest (direct, indirect or contingent) in the property described herein nor in the securities of UEX corporation, Pioneer Metals Corporation, or any of their affiliates.

11. I am not aware of any material fact or material change with respect to the subject matter of this technical report which is not reflected in this report, the omission to disclose which would make this report misleading.

Dated at Vancouver, British Columbia, this 16th day of May, 2002.

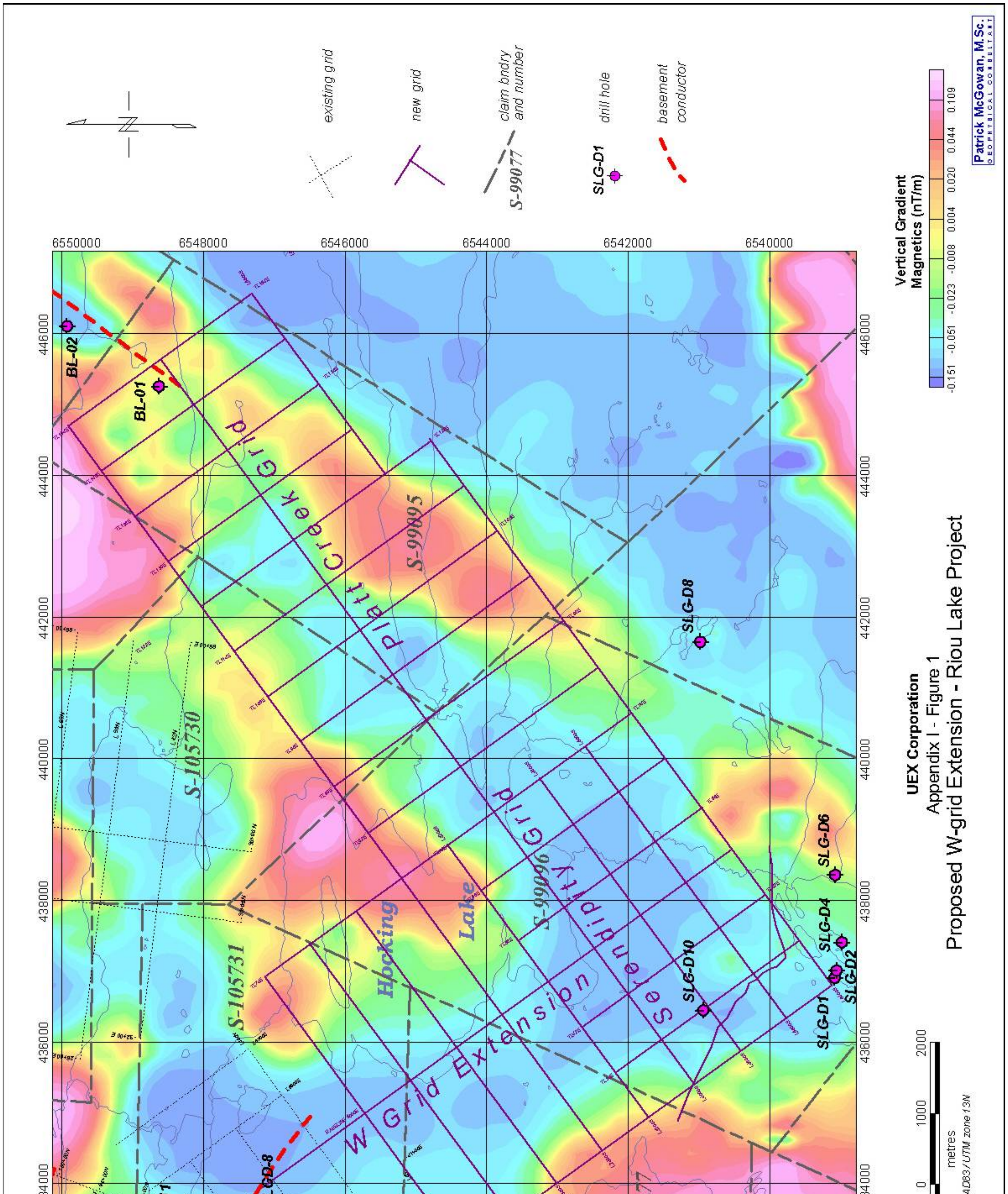
David A. Rhys, M.Sc., P.Geo.

PROFESSIONAL
PROVINCE OF
D. A. E. RHYS
BRITISH COLUMBIA
GEOSCIENTIST

DR 16/05/02

APPENDIX 1

Proposed EM fixed loop grid coverage, central Riou Lake project area


existing grid
new grid
claim bndry and number
S-99077
drill hole
SLG-D1
basement conductor
Vertical Gradient Magnetics (nT/m)
-0.151 -0.051 -0.023 -0.008 0.004 0.020 0.044 0.109
Patrick McGowan, M.Sc.
metres
NAD83 / UTM zone 13N
Platt Creek Grid
W Grid Extension
Serendipity Grid
Hooking Lake
S-99095
S-99096
S-105730
S-105731
S-99077
BL-01
BL-02
SLG-D8
SLG-D10
SLG-D6
SLG-D4
SLG-D2
SLG-D1
RLGD-7
RLGD-11
RLGD-8
UEX Corporation
Appendix I - Figure 1
Proposed W-grid Extension - Riou Lake Project