
Fording River Operations
Summary Report
2013 Exploration Program

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Statements of Author's Academic and Professional Qualifications
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I, Barry F. Musil, P.Geo, am employed as a Senior Geologist, Supervisor at Fording River Operations. This certificate applies to the report titled "Fording River Operations, Summary Report, 2013 Exploration Program". I graduated from the University of British Columbia with a Bachelor of Science Degree in Geology, 1984. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia (# 19361). Since 1986 I have been involved with coal mining projects at Fording River, and other Teck Coal Operations. As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

"Signed and Stamped"

Barry F. Musil, P.Geo.

SCHEDULE C

PROVINCE OF
BRITISH COLUMBIA

MINISTRY OF
ENERGY, MINES AND
PETROLEUM RESOURCES

TITLE PAGE OF
ASSESSMENT REPORT

GENERAL NATURE OF WORK

TOTAL COST

Exploration

\$592,000.00

Author of Landsman _____ Signature (s) _____

B. F. Musil (P. Geo.)

Date Report Filed _____ Year of Work 2013

Property Name Fording River Operations

Coal Type (if applicable) Medium to High Volatile Bituminous

Mining Division Fort Steele Longitude 114 52'
Latitude 50⁰12'

Coal License Numbers; Coal Leases; Freehold
Coal Lease, #389285

Owner (s) _____
(1) Teck Coal Limited
PO Box 100, Elkford, BC, V0B 1H0

Operator (s)
(a) Same

References to Previous Work
Annual Assessment Reports Since 1970

Fording River Operations

Summary Report

2013 Exploration Program

I. Introduction

1. General Geography and History

The Fording River Coal property is located in the Fording River and Upper Elk Valleys, approximately 25 kilometers north of Elkford, BC. Access is by paved road north from Elkford along the Fording River Valley, or north along the Elk River Valley via the Forestry Service gravel road or the Kan-Elk Powerline road.

The Fording River minesite is situated within the front range of the southern Canadian Rocky Mountains. At least ten major coal seams, generally greater than four meters thick, are contained in the Mist Mountain Formation of the Kootenay Group.

The Elk River portion of the property was actively explored by the Canadian Pacific Railway Company in the period 1902-1908. Until 1947, the property was comprised of 10,276 hectares in 40 Crown Granted Lots. In that year, the holdings were reduced to 2,979 hectares in 15 Crown Granted Lots. In 1967 and 1968, Canadian Pacific Oil and Gas reacquired part of the coal lands which had been abandoned in 1947. An additional nine Coal Licenses located at the south end of the property were acquired in 2001. At the present time, the Fording River Property consists of 22, 635 hectares, held on seven Coal Leases, 9 Coal Licenses, and 15 Crown Granted Lots.

Mining operations, which commenced in 1971, have produced more than 232 million tonnes of clean metallurgical and thermal coal for markets in North and South America, Africa, Europe, and Asia.

Reference:

- i) Illustration No. 1A: Index Map – Coal Properties

2. **Geology**

i) *Stratigraphy*

The general stratigraphic succession on the Fording River Property is summarized in the following table:

Table 1 - Fording River Stratigraphy

Period	Litho-Stratigraphic Units		Principle Rock Types
Recent			Colluvium
Quaternary			Clay, silt, sand, gravel, cobbles
Lower Cretaceous	Blairmore Group		Massive bedded sandstones and conglomerates
Lower Cretaceous to Upper Jurassic	KOOTENAY GROUP	Elk Formation	Sandstone, siltstone, shale, mudstones, chert pebble conglomerate, minor coal
		Mist Mountain Formation	Sandstone, siltstone, shale, mudstones, thick coal seams
		Moose Mountain Member	Medium to coarse-grained quartz-chert sandstone
		Weary Ridge Member	Fine to coarse-grained, slight ferruginous quartz-chert sandstone
Jurassic	Fernie Formation		Shale, siltstone, fine-grained sandstone
Triassic	Spray River Formation		Sandy shale, shale quartzite
	Rocky Mountain Formation		Quartzite
Mississippian	Rundle Group		Limestone

The oldest rocks present on the Fording River property are the Rundle Group limestone, located on the west bank of the Fording River, near the southern property boundary. They are in faulted contact with the Kootenay Group to the west, and unconformable contact with Rocky Mountain Formation quartzites to the north. The latter are best exposed on the eastern slope of the Brownie Creek valley.

The Fernie Formation shales occur throughout the area, generally along the sides of the valleys on the lower flanks of the mountains. The shales are recessive and, generally poorly exposed. However there are some good exposures of Fernie Formation strata on the lower western slopes of Eagle Mountain in some creek drainages. The Fernie Formation is in conformable contact with the Morrissey through the "Passage Beds," which are a transitional zone from marine to non-marine sedimentation.

The Morrissey Formation, which is the "basal sandstone" of the Kootenay Group, is a prominent cliff-forming marker horizon in many locations. On the Fording River property, the top of the Moose Mountain member (Morrissey Formation) is in sharp contact with 010 seam, the lowermost bed of the Mist Mountain Formation.

The Mist Mountain Formation contains all of the economic coal seams, and is the most widely occurring formation on the Fording River property. This economically important formation is an interbedded sequence of sandstones, siltstones, silty shales, mudstones, and medium to high volatile bituminous coal seams. The volatile content of the coal increases up section, with decreasing rank. Lenticular sandstones comprise about 1/3 of the Mist Mountain sediments at Fording River, but very few laterally extensive sandstone beds exist.

The sandstone above and below seam 040 and above 090, are the most persistent units, and are often cliff-forming marker horizons.

The Mist Mountain Formation is generally overlain conformably by strata of the Elk Formation. On the Fording property, this formation is commonly a succession of sandstones, siltstones, shales, mudstones, chert pebble conglomerates, and sporadic, thin, high volatile bituminous coal seams.

The coal seams are characterized by high alginate content and referred to as "Needle" coal. The Elk Formation is observed near the tops of the mountains, mainly on the east side of the Elk Valley on the Greenhills Range, and northward to the Mount Tuxford areas.

The top of the Elk Formation marks the upper boundary of the Kootenay Group, which is

unconformably overlain by the basal member of the Blairmore Group. This thick bedded, cliff-forming sandstone and conglomerate unit is observed on the upper slopes of Mount Tuxford.

ii) Structure

Subsequent to deposition, the sediments were involved in the mountain building movements of the late Cretaceous to early Tertiary Laramide orogeny. The major structural features of the Fording River property are the North-South trending synclines with near horizontal to steep westerly dipping thrust faults, and a few high angle normal faults. Some of the thrust faults were probably folded late in the tectonic cycle.

The formation of the major fold structures began early in the tectonic cycle. In the current mining area, two asymmetric synclines are evident: the Greenhills Syncline to the west, and the Alexander Creek Syncline to the east of the Fording River.

The thrust faulting (i.e.: the Ewin Pass and Brownie Ridge Thrusts), was probably contemporaneous with the later stages of folding. The intervening anticline was subsequently faulted (Erickson Fault), then eroded.

The Alexander Creek Syncline can be traced from the southern property boundary on Castle Mountain to the northern end of the property on Weary Ridge. The strata of the west limb, on the west face of Eagle Mountain, dip easterly at 20 to 25⁰, decreasing gradually to zero as the axis is approached. The east limb, however, attains a 20⁰ westerly dip within a much shorter (500m) distance of the axis.

This asymmetry is possibly due, at least in part, to the influence of the Ewin Pass Thrust which subcrops 600 to 800 meters east of the synclinal axis.

Further to the east, on Brownie Ridge, the strata dip westerly at a mean dip of 42⁰. The Brownie Ridge Thrust, which subcrops near the crest of the ridge, probably contributes to this steepening.

Within the mining area, the axis of the Alexander Creek Syncline plunges to the north at an

average of 4° . Turnbull Mountain exhibits a localized series of en echelon fold structure, plunging both to the north and to the south. These subsidiary folds may be related to thrust faulting. From the south end of Mount Tuxford, the synclinal axis continues north-northwest along the base of Mount Veits and into the Elk River Valley near Aldridge Creek.

On Mount Tuxford, the beds exposed are those of the Elk Formation and the overlying (non-coal bearing) Cadomin Formation. The area has not been extensively explored. The stratigraphic sequence of the east limb, in the more extensively explored Mist Mountain strata near Aldridge Creek (Elco property), closely resembles the east limb strata found on Henretta Ridge, ten kilometers to the south.

On the northwest corner of Eagle Mountain, the lower Kootenay-upper Fernie section is the locus for a zone of near horizontal thrust faulting. The effect is to cause a double repetition of the lower coal seams and basal sandstone on the west synclinal limb. This fault zone is synclinal in form and continuous with the Ewin Pass Thrust zone found in the east limb.

The Greenhills Syncline in the mining area is essentially a “mirror-image” of the Alexander Creek structure. The east limb of the asymmetric syncline dips westerly at 15 to 25° , except in areas near the Erickson Fault, where 45 to 55° dips are common. The west limb exhibits much steeper dips, commonly in the 35 to 45° range. The Greenhills Syncline plunges northward (340 to 350°), at less than 5° , and then appears to die out to the north in the area of the Osborne Creek Depression.

The Erickson Fault, which locally runs along the base of the Greenhills Range, west of the Fording River, is one of the major regional faults. From south to north, this westerly dipping (40 to 70°) normal fault, brings Mist Mountain strata progressively into contact with Rundle, Rock Mountain, Spray River, Fernie, and Morrissey strata. The downthrown block is to the west. Near the south end of Lake Mountain, the Erickson Fault begins to “splay” into two zones.

The main fault runs along the eastern margin of Lake Mountain, and the subsidiary fault

runs to the west and appears to “die out” northward. The steep northward dip exhibited in the Lake Mountain strata could be due to influence from these flanking “splays” of the fault. The flat lying region to the north of Lake Mountain (Osborne Creek Depression area) is completely void of outcrop, and the Erickson Fault has not been traced either through or to the north of this area.

Reference:

i) Illustration No. 1B: General Geology Map

3. 2013 Exploration Project

i) **Objective**

The objective of the 2013 Swift RC and LDRF drilling, in continuation of the previous drill programs, was to improve resource confidence, gain a better understanding of coal quality, and to increase Fording River Operations’ reserves both inside and outside the permitted C3 boundary. In order to increase the mine’s reserves, seam locations, thickness, and quality data needed to be verified with tighter drill spacing’s to approximate 200 meters in selected areas. The Swift Pit was actively mined until the early 1990s, at which point it was decommissioned in favor of mining at Eagle Mountain. Fording River Operations plans to recommence mining in Swift pit in 2016.

ii) **Summary of Work Done**

The Swift area is located west of the Fording River in the western part of the property. A total of 5 reverse circulation drill holes totaling 2,133 meters were completed outside of the C3 permitted boundary in the vicinity of the previously mined Lake and Lake Mountain pits.

LDRF (Large Diameter Reverse Flood) is a specialized method of drilling using a conventional reverse circulation rig to drill a 18 inch diameter hole to bulk sample coal seams. The seams targeted at sight BK-015 were 070, 050, and 040. A total of 5 large diameter holes were drilled on the same drill pad to extract sufficient coal from each seam for pilot plant and carbonization testing. RC hole 3347 was drilled initially as a pilot hole to determine suitability of the site and coals seams for bulk sampling.

Rotary drilling was performed by Foraco Canada Ltd (Calgary, AB) using Foremost DR-24 and Foraco BF-800 drill rigs. All holes were geophysically logged through the drill pipe using the gamma-neutron method. Holes that remained open following the removal of the drill pipe were logged for down hole deviation and gamma-density. The geophysical logs were produced by Century Wireline Services (Penhold, AB)(Appendix A). Management of the exploration project was under the direction and supervision of Fording River Operations' Geology department.

Coal seams intersected by rotary drilling were sampled in 0.5m intervals. Representative composite samples for each coal seam intersected were prepared at Fording River Operation's process plant laboratory. Samples from selected composites were forwarded to GWIL Laboratories (Calgary, AB) for single gravity wash and clean proximate analysis: Ash, VM, RM, Sulfur, FSI and P₂O₅. A split of each composite sample was sent to David E. Pearson and Associates (Victoria, BC) for petrographic analysis.

Bulk samples from seams 070, 050, and 040 were sent to GWIL Laboratories (Calgary, AB) for homogenization and washability analysis, then to Hazen Research Inc (Golden, CO) for pilot plant washability, and then to ALS Coal (Richmond, BC) for carbonization and testing.

Access roads and drillsite locations were laid out by Teck Coal, Fording River, Environmental personnel. Actual road and drillsite construction was completed by the Nohels Group (Sparwood, BC). Fording River Operations' surveyors provided collar pickups for all drillholes.

The following table shows the drillhole locations with respect to Coal Lease and District Lot boundaries:

Table 2 – Swift Drillhole Locations

Coal Lease / District Lot	Drillholes
Coal Lease #389285	3331, 3333, 3336, 3341, 3347, BK-015

Drill hole collar locations are given in Appendix A.

Reference:

- i. Illustration No. 1a. Index Map - Coal Properties
- ii. Illustration No. 2A: 2012 Completed Exploration – Swift Orthophoto Map

iii) Results

The 2013 drilling program primary goal in Swift was to improve resource confidence through tighter spaced drilling, and increase coal quality knowledge. The program targeted 040 seam, which is the lowermost economic seam in the Lake and Lake Mountain areas. Holes 3333, 3336, and 3341 in the Lake Pit area intersected the entire stratigraphic section, from the Elk formation (190 seam) to the Mist Mountain Formation (040 seam). Holes 3331 and 3347, drilled in the Lake Mountain Pit area intersected Mist Mountain Formation from the 110 to the 040 seam. The Mist Mountain Formation in the Swift area contains four dominant coal seams (040, 050, 070, and 090 packages) which are consistently greater than five meters in thickness, and often significantly thicker. The remaining seams packages were intersected but are often thin (less than three meters) and can lack continuity (see maps and cross sections 2a, 2b, 2c).

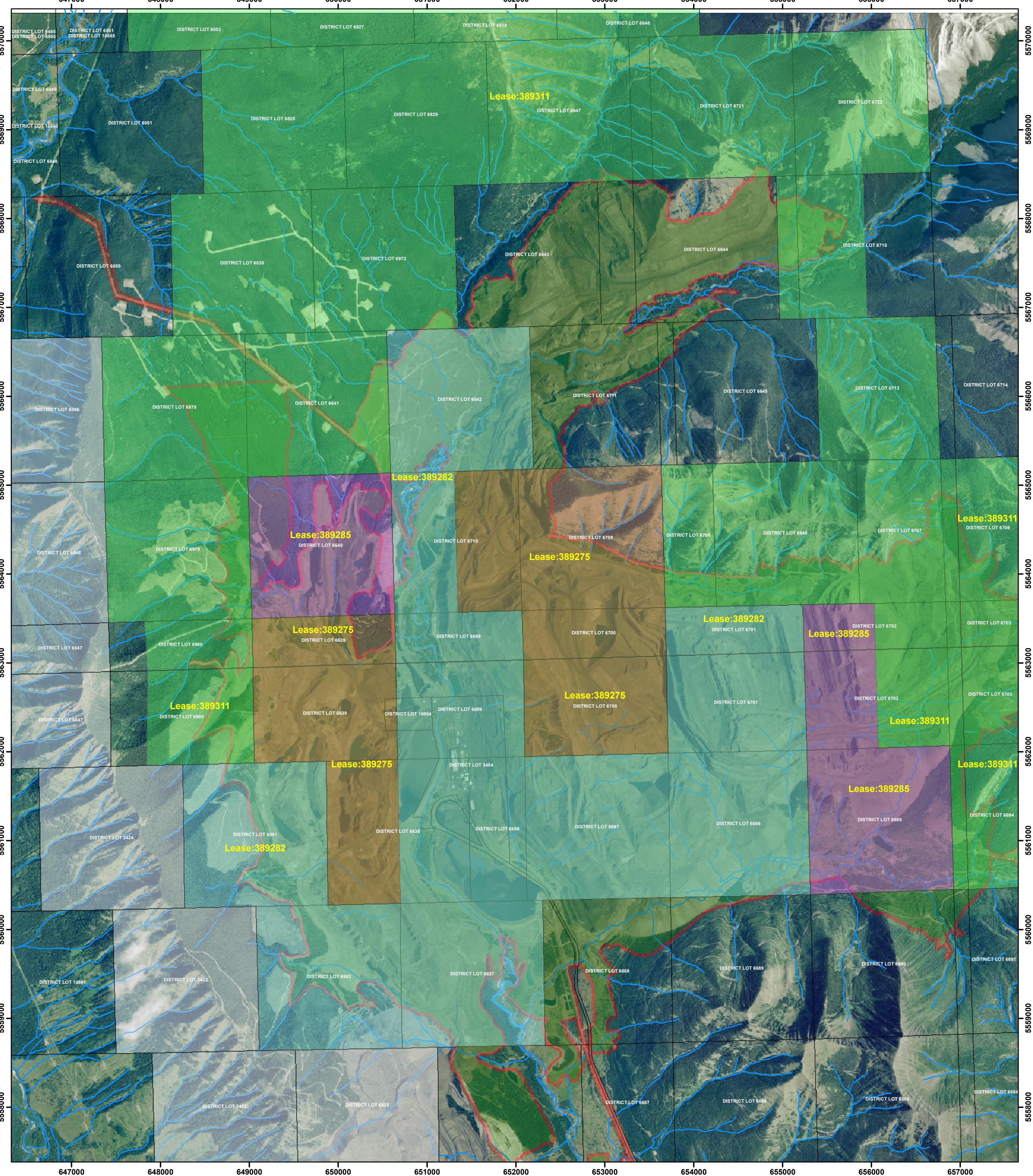
Swift is structurally dominated by the Greenhills syncline; primarily the east limb, with a number of the westernmost holes intersecting the relatively flat lying western limb of the syncline. Results from the 2013 drilling program are in the process of being incorporated into the Swift 3D Block Model.

The clean coal assay results from the composite samples will be added to the seam's qualities in the data base. Seam qualities increase the knowledge of the coal's marketability and assist the long term mine plan for the region (available analysis to date is given in Appendix B).

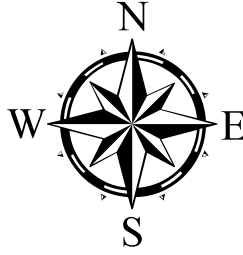
4. Conclusion

The 2013 exploration drilling program has successfully increased drillhole density outside of the pre-existing Swift pits. The program has increased geological model confidence through confirmation of the existence and continuity of all coal seams in the package. The initial assay results also confirm favorable coal quality. These results have allowed Fording River Operations to update its current reserves and resources model.

Further RC drilling is recommended in the Swift pit to move more resources from speculative and inferred categories into indicated and measured, as well as to increase the amount and density of quality data (ash, volatile matter, P205, S, FSI, and DDPM). The goal of future Swift programs will be to achieve 200 x 200 meter drill density in the areas planned to be mined in 2016 and to continue wider spaced exploration drilling on Greenhills Ridge.



927
Figure 1a

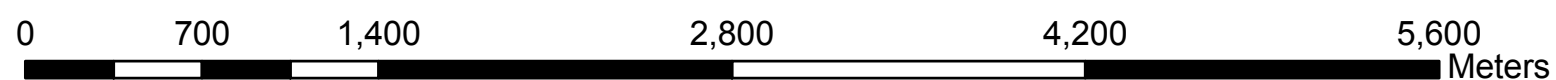


Fording River Operations

Projection: UTM NAD 83 Zone 11

Date: Feb 3, 2010

Path: S:\Environmental\TeamFiles\GIS\NoticeofWork2010.mxd

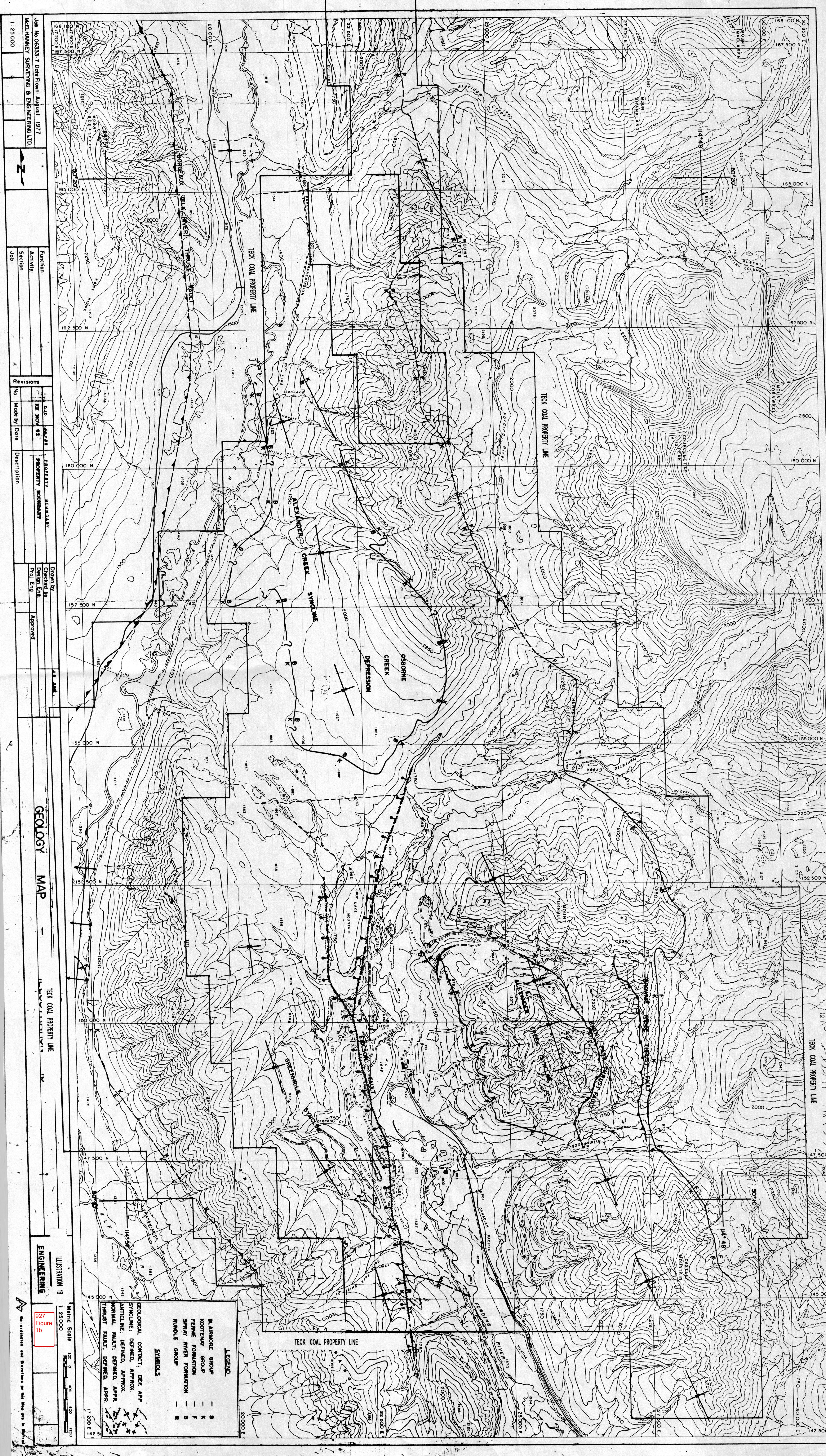


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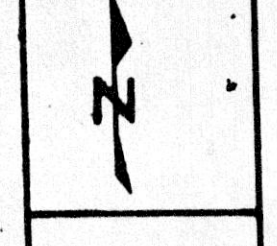
Legend

Coal Lease

- 389275
- 389282
- 389285
- 389311



JOB No. 06333-7 Date From: August 1977
 MCHAMNEY SURVEYING & ENGINEERING LTD
 1:25,000



Function	Activity
PROPERTY BOUNDARY	PROPERTY BOUNDARY
SECTION	SECTION

Revisions	No.	Made By	Date	Description
	1	RE MOY	93	PROPERTY BOUNDARY

Drawn by	Checked by	Approved
DRM/EN	DRM/EN	

1:25,000

TECK COAL PROPERTY LINE

GEOLOGY MAP

TECK COAL PROPERTY LINE

ILLUSTRATION B

ENGINEERING

Metric Scale

0 200 400 600 800 1000

1:25,000

927 Figure 1b

Geological Contact, Def. Appr.

Geological Contact, Def. Appr.

Geological Contact, Def. Appr.

Geological Contact, Def. Appr.

Geological Contact, Def. Appr.

Geological Contact, Def. Appr.

LEGEND

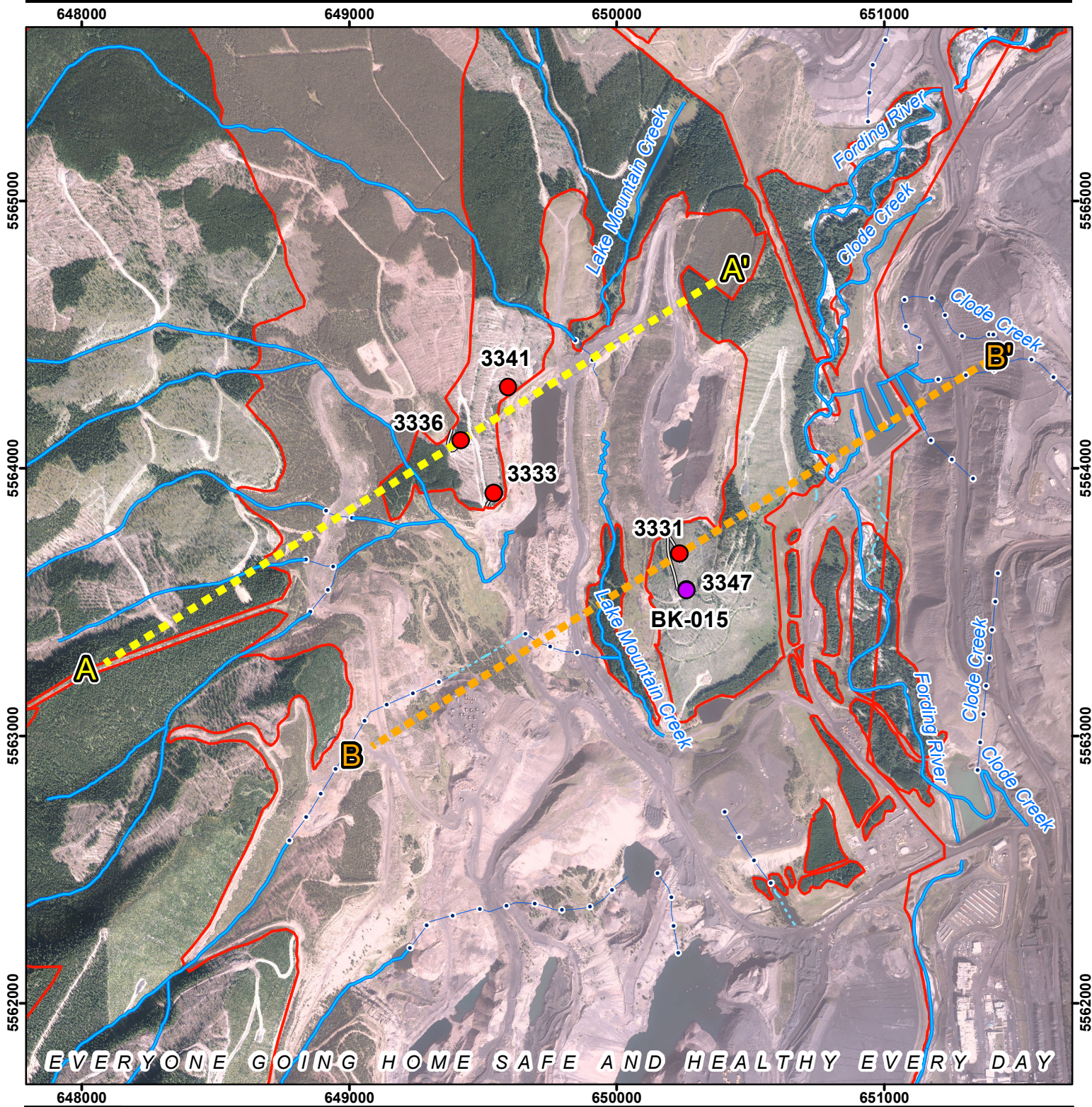
MAINROBE GROUP	—
ROOSTINAW GROUP	—
FENNIE FORMATION	—
SPRAY RIVER FORMATION	—
RAMBLE GROUP	—

SYMBOLS

GEOLOGICAL CONTACT, DEF. APPR.	—
ANTICLINE, DEFINED, APPROX.	—
NORMAL FAULT, DEFINED, APPROX.	—
THrust FAULT, DEFINED, APPROX.	—

FORDING RIVER OPERATIONS

2013 SWIFT DRILL HOLES & CROSS SECTION LINES

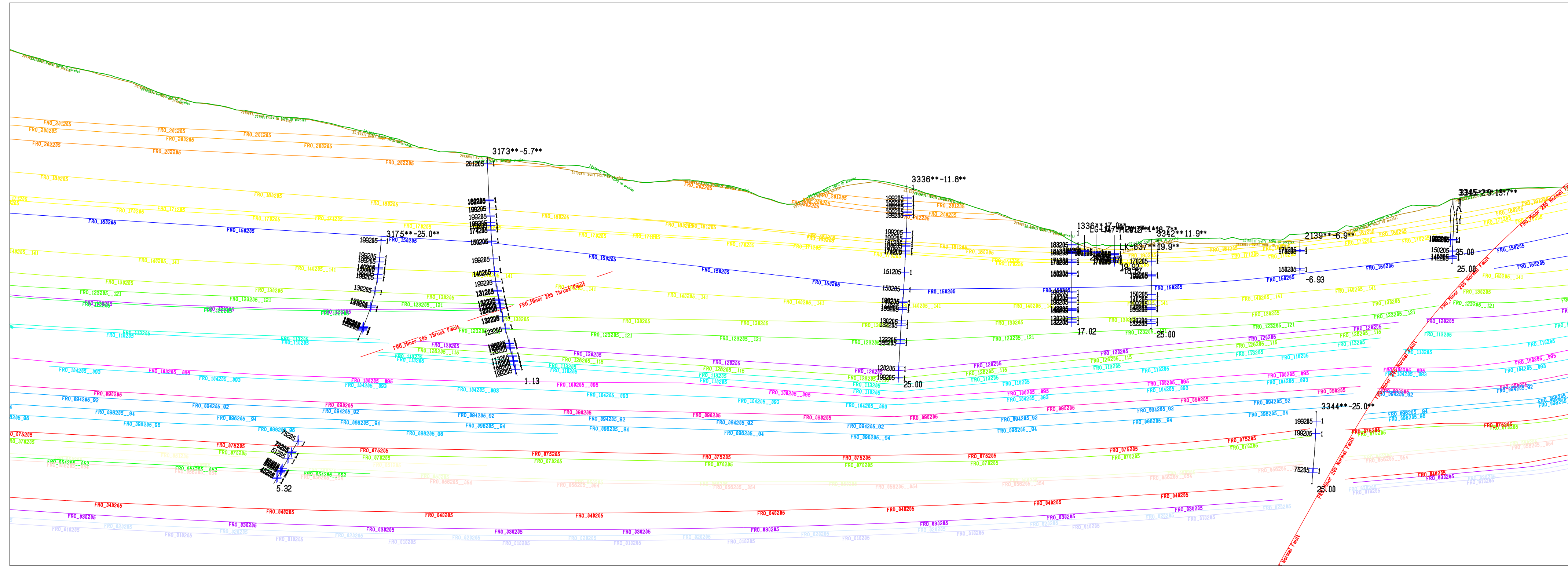


- Reverse Circulation Hole
- LDRF Hole
- A - A' Cross Section Line
- B - B' Cross Section Line
- C3 Permit Boundary
- New Roads
- Stream
- Flow Inferred
- Subsurface

927
Figure 2a

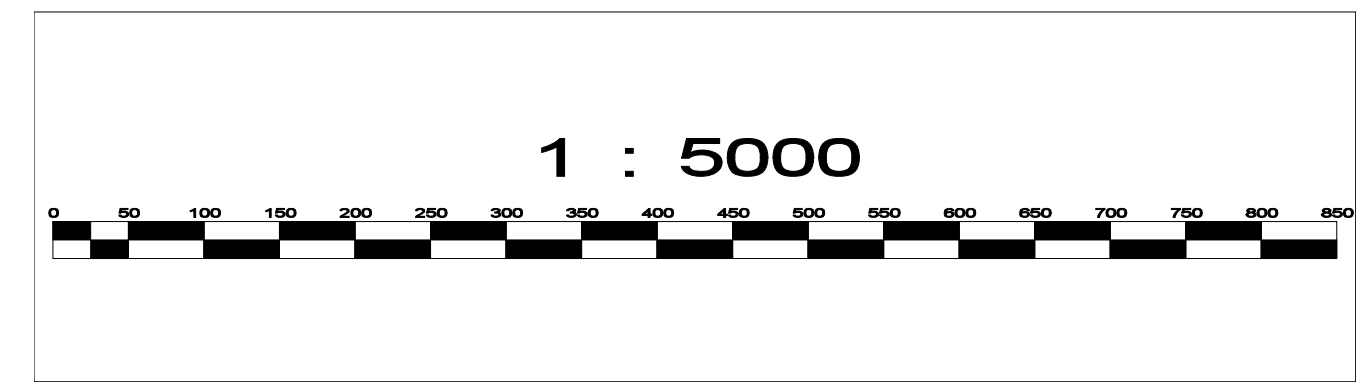
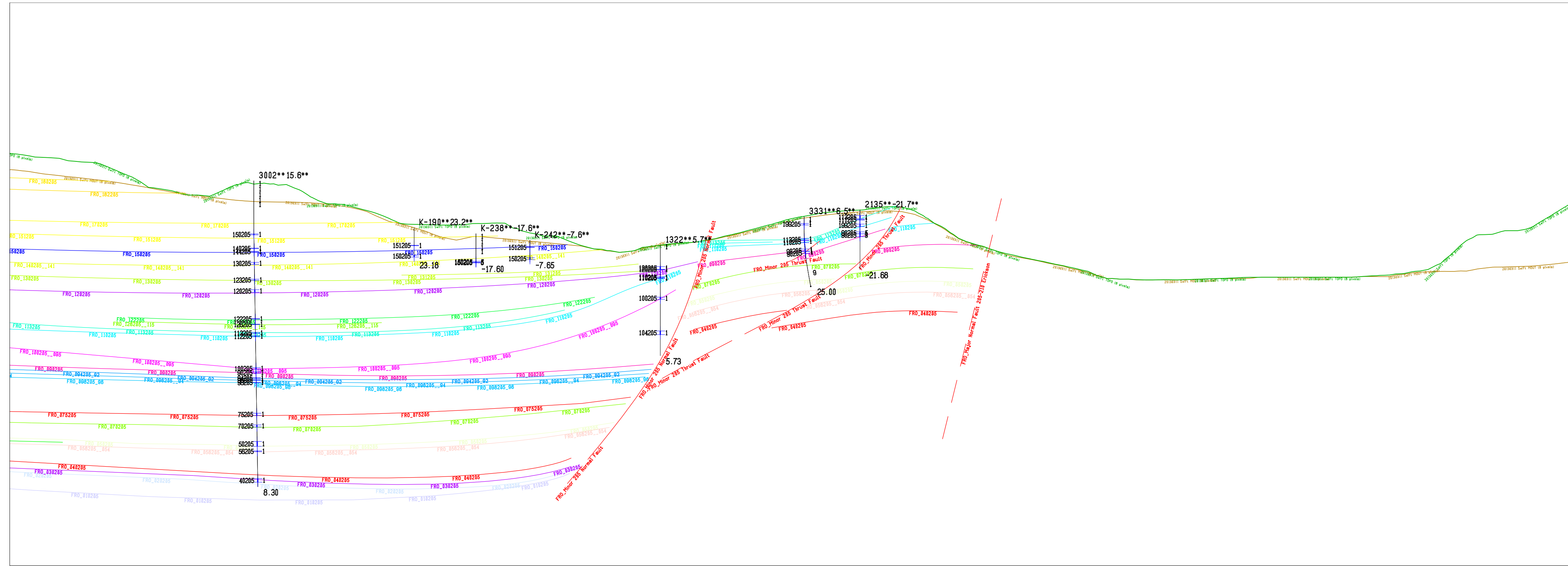
0 1 Km
Scale 1:20,000

Orthophotography by The Orthoshop
Imagery captured September, 2013
Date: March 31, 2014
Created By: K. Fischer



TITLE:	2014 EXPLORATION
	CROSS-SECTION A-A' (PLANE 525)
DATE:	2014/04/09
LOCATION:	Swift Pit
SCALE:	X = 1mm : 5000mm
	Y = 1mm : 5000mm
PLOTTED BY:	Michael A. Clarke

927 Figure 2b



TITLE:	2014 EXPLORATION
	CROSS-SECTION B-B' (PLANE 494)
DATE:	2014/04/09
LOCATION:	Swift Pit
SCALE:	X = 1mm : 5000mm
	Y = 1mm : 5000mm
PLOTTED BY:	Michael A. Clarke

927
Figure 2c

APPENDIX A - Hole Collar Survey**Swift**

Drillhole Name	UTM COORDINATES		Elevation	Azimuth	Dip	Hole Depth (m)
	Easting	Northing				
3331	681159	5477030	1780	0	-90	244
3333	680457	5477236	1795	0	-90	611
3336	680328	5477428	1837	0	-90	648
3341	680500	5477634	1769	0	-90	421
3347	681190	5476897	1765	0	-90	209
BK-015	681190.42	5476896.50	1764.98	0	-90	135