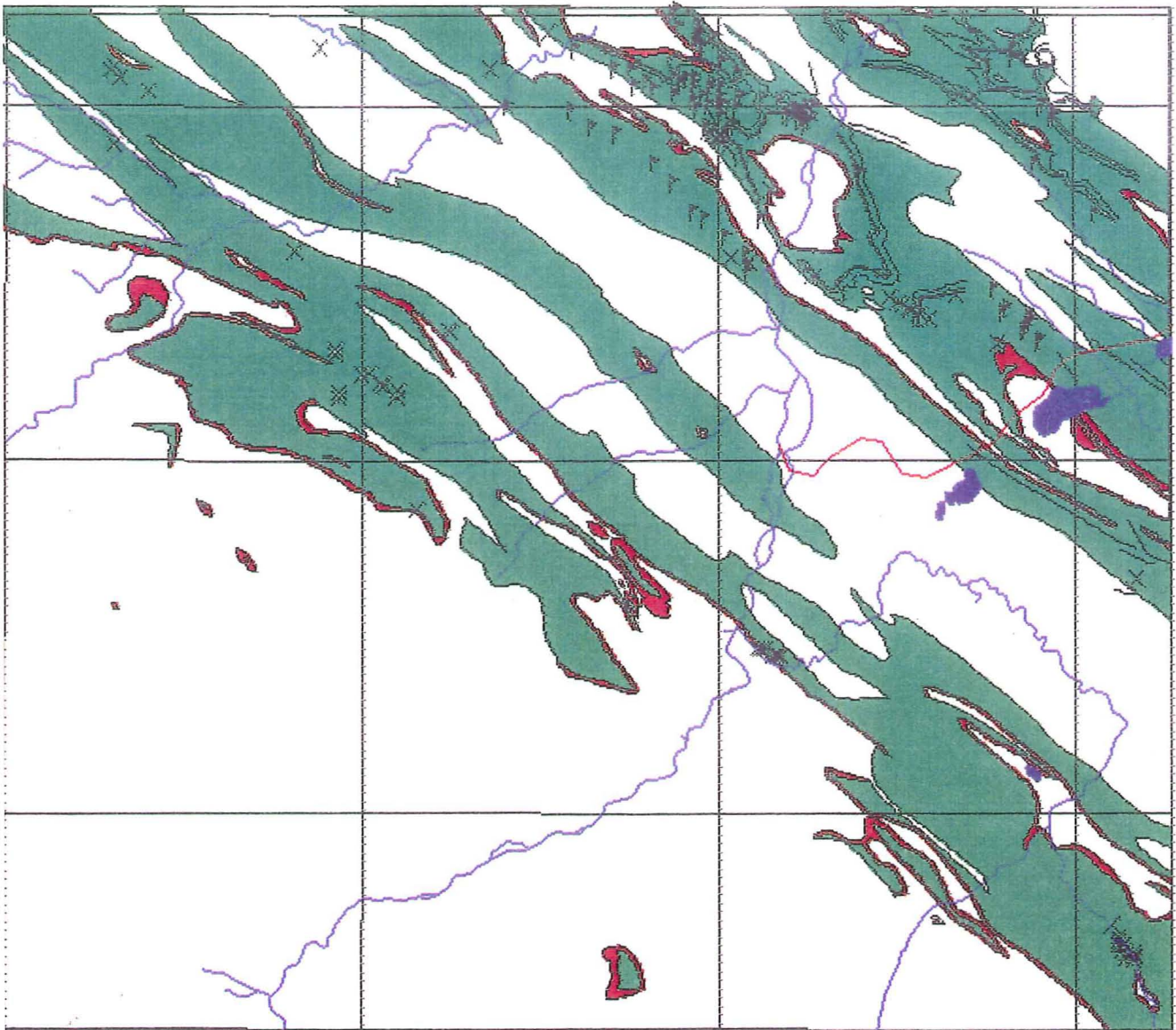


ALBERTA GEOLOGICAL SURVEY - COAL GEOLOGY

COAL COMPILATION PROJECT - GRANDE CACHE

NTS 83E/14

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Coal Compilation Project
Open File Report: 1990-5
Coal Geology Section
Alberta Geological Survey

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TABLE OF CONTENTS

Foreword	i
Acknowledgments	ii
Executive Summary	iii
Introduction	1
Objective	1
Methodology and Discussion of GIS	3
Location and Access	4
Geological Setting	4
Stratigraphy of Coal-Bearing Units	6
Luscar Group	6
Gates Formation	6
Structure	6
Environmental Setting	7
Integrated Resource Plans (IRP's)	7
Resource Management	7
Coal Dispositions	7
Established Coal Resources and Reserves	9
Exploration History	9
Coal	9
Coal Exploration Drillholes	9
Coal Exploration Trenches/Hand Trenches	11
Oil and Gas Wells	11
Coal Occurrences	11
Coal Exploration Drillholes	11
Coal Exploration Trenches/Hand Trenches	13
Coal Outcrops	13
Coal Quality Summary	13
Coal Rank	13
Coal Exploration Drillholes	13
Coal Outcrops	14
Coal Exploration Trench/Hand Trench Data	14
Operating and Abandoned Coal Mines	14
Coal Resource Development Potential	15
Coal Potential	15

Resources	15
Coal Quality.....	15
Mining Potential.....	15
Overburden	15
Geotechnical.....	16
Data Availability	16
Future Work	16
References.....	17

LIST OF FIGURES

- Figure 1. Coal Compilation Project - Grande Cache NTS 83E/14 : Location
- Figure 2. Stratigraphic Nomenclature Adopted for the Coal Compilation Project (after Macdonald et al., 1989)
- Figure 3. Locations/Outlines of IRP's in the Surrounding Vicinity (1989)

LIST OF APPENDICES

- Appendix 1. 83E/14 - Coal Drillholes
- Appendix 2. 83E/14 - Coal Intersections of the Coal Drillholes

LIST OF MAPS

ALBERTA RESEARCH MAP RCM3 (in pocket)

Foreword

The prime objective of the pilot Coal Compilation Project (CCP) is to provide coal resource maps to stimulate and support industry exploration programs, and assist government in matters of resource management. An essential feature of the program is the use of cost effective Geoscience Information System (GSIS) technology that allows the database and various thematic maps to be analyzed, updated, and displayed with complete flexibility at any scale.

Each map set is intended to be a stand alone, unique product contributing to an overall synthesis of information. Maps generated will be at a regional or reconnaissance level. Collection of new data was limited. Data compiled and evaluated will be based on the following principal sources; Alberta Research Council/Alberta Geological Survey (ARC/AGS); Energy Resources Conservation Board (ERCB); Geological Survey of Canada (GSC/ISPG); and information from the coal industry sector. Industry cooperation and support is shown in the making available of unpublished corporate reports to the AGS. The availability of these reports is an essential ingredient for the success of this project.

The CCP will encompass some eighteen 1: 50 000 scale mapsheets to be completed over a three year period.

Custom maps and database searches can be obtained by contacting the Coal Geology Section, Alberta Geological Survey, Alberta Research Council. Raw coal exploration data¹ that are in the 'public' domain can, for a nominal fee, be viewed in microfiche form at the Records Center of the Energy Resources Conservation Board in Calgary, Alberta. Arrangements can also be made to acquire copies of all/selected data.

¹specifically, the geophysical logs (and other associated data) of coal exploration drillholes and, as available, analytical data relating to coal quality.

Acknowledgments

The project was partly funded by the Alberta Office of Coal Research and Technology. The Alberta Geological Survey Coal Technical Advisory Sub-Committee provided valuable guidance for the project. Wolfgang Kalkreuth of the Geological Survey of Canada (GSC/ISPG) participated in the field component of the study and provided vitrinite reflectance measurements. Alberta Forestry, Lands and Wildlife is thanked for permission to enter the Willmore Wilderness Park. D. Goulet, J. Matthie and P. Sahota assisted with map digitization. Petro-Canada Resources Inc. and Union Oil Company of Canada are thanked for making unpublished reports available to the Alberta Geological Survey.

Executive Summary

The study area of mapsheet NTS 83E/14 (Grande Cache) is located in west-central Alberta. The community of Grande Cache (83E/14) is the primary population center in the study area. Most of mapsheet 83E/14 is located within the Berland IRP. Willmore Wilderness Provincial Park, in part, is located in the southern third of the mapsheet. The proposed Kakwa - Wapiti IRP is located, in part, in the extreme north-west part of the mapsheet.

Within the mapsheet 83E/14, coal measures are deposited amid thick successions of sandstones, siltstones, shales and conglomerates. Known coal-bearing sequences are part of the Lower Cretaceous Luscar Group. The Luscar Group consists of sandstones, shales, conglomerates and coals, deposited predominantly in nonmarine environments. Strata of the Lower Cretaceous Luscar Group have been subjected to deformation which has produced northwesterly trending thrust faults and folds. As a result, the Luscar Group coal seams are now exposed in a series of northwest trending thrust sheets and associated folds. Often the coal seams have been further locally folded and faulted. Depending on the severity of these local structural complexities, and acknowledging a general discontinuity of coal outcrops in the Mountain Region, coal seam correlations and evaluations can be extremely difficult. Within the mapsheet, up to fourteen seams are present within the Luscar Group. The seams have an average aggregate thickness of 24 meters and are contained within a 350+ meter-thick sedimentary sequence. Average seam thicknesses range from 0.7 to 4.1 meters. Seam correlations are preliminary.

There are no operating mines within the mapsheet 83E/14, however, there is one abandoned underground coal mine. The abandoned mine, designated as Mine Number 1765/5, was operated by McIntyre Mines Limited (now Smoky River Coal Limited) from 1969-09 to 1973-02 and again from 1979-02 to 1982-09. All coal produced was from the No. 4 Seam. Raw coal produced from Mine 1765/5 totalled 1.14 million tonnes. Current coal mining operations of Smoky River Coal Limited are located north of the mapsheet.

In the northeastern part of the map area a good exploration database exists; the balance of the mapsheet area has only been superficially examined from a coal resource/exploration point of view. Three hand-dug trenches were excavated to expose coal seams within the mapsheet 83E/14. Thicknesses of the coal seams exposed within the trenches range from 1.9 to 3.9 meters. Some 97 coal exploration holes have been drilled by 2 companies between 1960 and

1983. Of the holes drilled, 90 holes (93%) intersected coal as per the defined criteria (see Hughes et al., 1988); it follows that 7 holes (7%) did not intersect coal. Hole depths ranged from 17 to 425 meters in depth. Combined the AGS and the GSC have located some thirty one coal outcrops within the mapsheet 83E/14; the maximum thickness of coal in outcrop is 7 meters. Union Oil Company of Canada Limited (UNOCAL) has also identified a number of coal outcrops within the mapsheet 83E/14. Based on their 1980 field program, nine coal outcrops were identified; the maximum thickness of coal in outcrop was 6+ meters. In their 1982 field program, seven coal outcrops were identified; the maximum thickness of coal in outcrop was 6.5 meters.

Within the mapsheet 83E/14, the rank of the Luscar Group coal varies from low to medium volatile bituminous. Nine drillholes, within the mapsheet 83E/14, contain coal quality information. Coal quality data from the drillholes is limited to 126 analyses of FSI. Between the AGS and the GSC, 56 coal samples, from 31 outcrops, were obtained from within the mapsheet 83E/14. Sampling occurred between 1981 and 1989. R_{max} values generated from the AGS/GSC outcrop samples range between 1.12 and 1.78%. In 1982, Union Oil Company of Canada Limited conducted a field mapping program on their Sterne Creek Project area. Within the mapsheet 83E/14, 6 coal outcrops were sampled and analyzed for vitrinite reflectance. R_o values generated from the UNOCAL outcrop samples range between 0.99 and 1.41%. In 1982, Union Oil Company of Canada Limited conducted a field mapping program on their Sterne Creek Project area. Within the mapsheet 83E/14, 3 hand-dug, coal trenches were sampled, and analyzed for vitrinite reflectance; R_o values generated from the UNOCAL trench samples range between 1.23 and 1.40%.

Recent work by Langenberg et.al., (1987), in the northeastern part of map area, presents the complex geology of the region and demonstrates how structural studies and detailed mapping provides the significant perspective necessary for evaluation of coal resources in the Mountains Region. Similar studies are needed in the other areas mapped as Luscar Formation on the map since there is potential for both structurally thickened and 'hidden' coal resources.

The presence of thick coals of low to medium volatile bituminous rank and potential of structural trapping could indicate the area has potential for coalbed methane resources. Many of the areas between the Luscar Formation, shown as blank (white) on the accompanying map (RCM3), are shallow synclines, often faulted, with Luscar sediments at depth. However, much work will be needed before exploration for coalbed methane resources can be done in the area. At present no oil or gas wells have been drilled within the study area.

Introduction

Objective

The objective of the pilot Coal Compilation Project (CCP) is to provide coal resource maps on a 1: 50 000 scale, which will

- o stimulate and support industry exploration programs, and
- o assist government in matters of resource management (eg, Integrated Resource Plans) in areas that may have good coal development potential, but have a lack of data or understanding.

Each map set is intended to be a stand alone, unique product contributing to an overall synthesis of information. Maps generated will be at a regional or reconnaissance level. Collection of new data and/or actual time in the field will be limited. Data compilation and evaluation will be based on the following principal sources

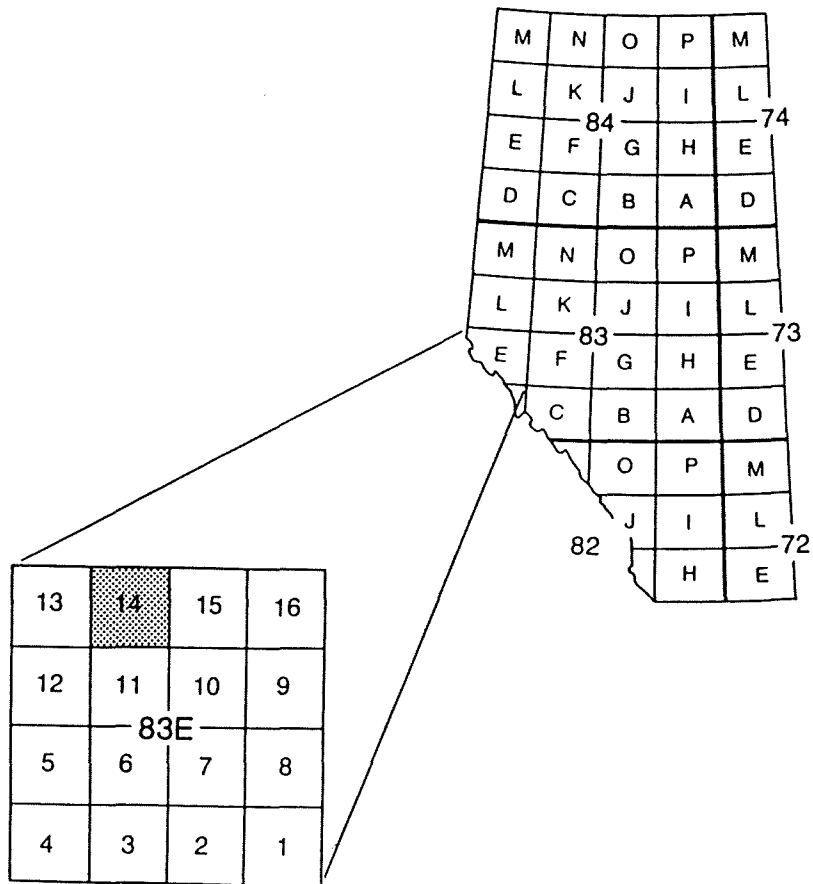
- o Alberta Research Council/Alberta Geological Survey (ARC/AGS)
- o Energy Resources Conservation Board (ERCB)
- o Geological Survey of Canada (GSC/ISPG)
- o cooperation from the coal industry sector.

The CCP will encompass some eighteen 1: 50 000 scale mapsheets to be completed over a three year period.

When completed, the CCP can be evaluated to determine if the project should be expanded province wide. As each map represents a complete product, the technical committee could monitor the progress of the research and react to changing priorities without being committed to spending funds more than one year in advance.

The fiscal year, 1989-90, was the first year of the CCP. The CCP focussed on the Hinton - Grande Cache Corridor and included four contiguous NTS mapsheets (see Figure 1). From

Figure 1. Coal Compilation Project - Grande Cache NTS 83E/14 : Location



southeast to northwest, they are 83F/5 (Entrance), 83E/9 (Moberly Creek), 83E/15 (Pierre Greys Lakes) and **83E/14 (Grande Cache)**.

For each mapsheet, a product has been generated that includes

- o a coal resource map (scale 1: 50 000)
- o 'snapshot' maps (scale 1: 250 000)
- o supplementary text.

Methodology and Discussion of GIS

Geographic Information Systems (GIS) which encompass spacial data storage, display and analysis by computer have been employed in the municipal, environmental and forestry sectors for many years. The term GIS has been applied to mainly surface or geographic studies and has not as a rule been extended to the 3rd dimension (depth) or temporal aspects (time). A Geoscience Information System (GSIS) goes beyond what is generally thought of as traditional GIS and is focused strongly on subsurface information. An essential feature of the Coal Compilation Project is the use of cost effective Geoscience Information System (GSIS) technology that allows the database and various thematic maps to be analyzed, updated, and displayed with complete flexibility at any scale. In addition custom maps can be produced from the various data and graphic elements that have been entered into the information system.

Much of the present methodology, software and hardware used in this study is described in detail in the Alberta Research Council, Open File Report 1989-03A (Richardson et al., 1989). In general both digital and hard copy data or graphic elements are entered into a GIS software product (pcARC/INFO) where they can be analyzed, displayed or plotted to hardcopy.

During this first year of the CCP, substantial time was spent in

- o developing the hardcopy, product template, and
- o replicating the above template into the electronic medium of GIS.

Assuming that all/most of the above design work will be utilized for future mapsheets, and that all other factors remain the same, the number of CCP sheets generated during a given year should increase. Rather than spending time on the design of the product, time will be spent on actual product compilation and generation.

Location and Access

The study area of mapsheet NTS 83E/14 (Grande Cache) is located in west-central Alberta between Latitudes 53^o 45' and 54^o 00' North, and Longitudes 119^o 00' and 119^o 30' West (West of the 6th Meridian, between Townships 55 and 58 inclusive, and Ranges 7 to 11 inclusive).

The communities of Hinton (83F/5) and Grande Cache (83E/14) are the primary population centers near the study area.

Paved access to and within the area is provided by Highways No. 16 and 40 . Numerous all-weather, gravelled wellsite and logging roads also exist. Additional secondary seasonal access is provided by a network of roads, trails and seismic lines.

The area is serviced by the Canadian National Railway and the Alberta Resources Railway; the rail lines have the capacity to accomodate coal unit trains. Coal could be shipped to:

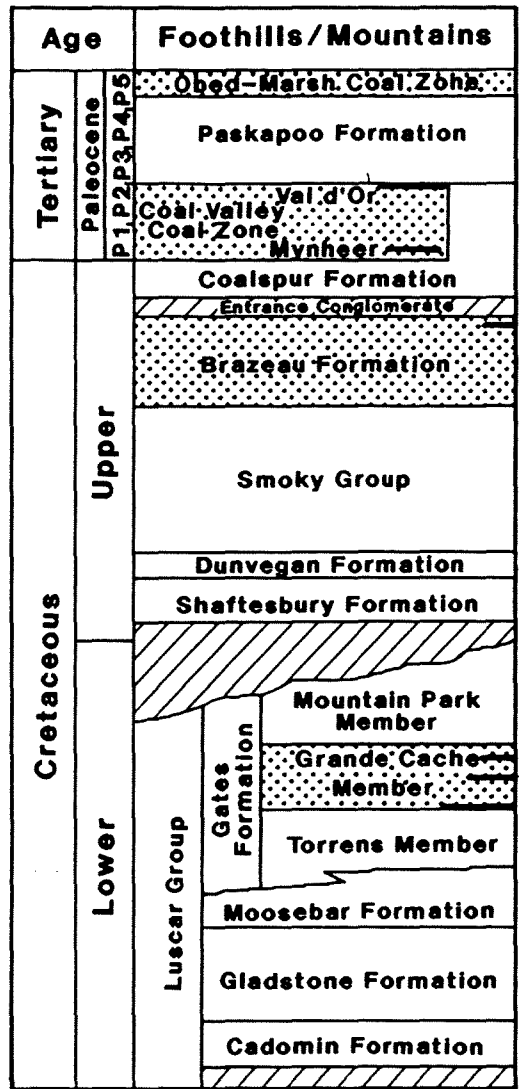
- o Ridley Island at Prince Rupert, B.C. located
 - o 1170 rail-kilometers from Hinton
 - o 1310 rail-kilometers from Grande Cache
- o Neptune Terminals at Vancouver, B.C. located
 - o 1010 rail-kilometers from Hinton
 - o 1150 rail-kilometers from Grande Cache.

Geological Setting




Within the mapsheet 83E/14, coal measures are deposited amid thick successions of sandstones, siltstones, shales and conglomerates. Known coal-bearing sequences are part of the Lower Cretaceous Luscar Group.

Stratigraphic nomenclature for the above strata is shown in Figure 2.

Figure 2. Stratigraphic Nomenclature Adopted for the Coal Compilation Project (after Macdonald et al., 1989)



LEGEND

-  Coal-bearing unit
-  Major seams
-  Hiatus or missing interval

Coal Valley Coal Zone	
Val d'Or	—
Arbour	—
McLeod	—
McPherson	—
Silkstone	—
Mynheer	—

Stratigraphy of Coal-Bearing Units

Luscar Group

The Luscar Group consists of sandstones, shales, conglomerates and coals that have been deposited predominantly in nonmarine environments. The strata of the Group have been divided into four formations (Langenberg and McMechan, 1985), ie:

- o Cadomin Formation, a basal conglomerate
- o Gladstone Formation, predominantly nonmarine sandstones and shales
- o Moosebar Formation, marine shales and sandstones
- o Gates Formation, nonmarine sandstones, shales and coals.

Within the mapsheet, up to fourteen seams are present within the Luscar Group. The seams have an average aggregate thickness of 24 meters and are contained within a 350+ meter-thick sedimentary sequence. Average seam thicknesses range from 0.7 to 4.1 meters. Seam correlations are preliminary.

Gates Formation

The Gates Formation can be divided into three members - the Torrens, Grande Cache and Mountain Park members. The Grande Cache Member contains the economic coal seams within the Luscar Group.

Structure

Strata of the Lower Cretaceous Luscar Group have been subjected to deformation which has produced northwesterly trending thrust faults and folds. As a result, the Luscar Group coal seams are now exposed in a series of northwest trending thrust sheets. Often the coal seams have been further locally folded and faulted. Depending on the severity of these local structural complexities, and acknowledging a general discontinuity of coal outcrops in the Mountain Region, coal seam correlations and evaluations can be extremely difficult.

Environmental Setting

Integrated Resource Plans (IRP's)

Most of the mapsheet 83E/14 is located within the Berland IRP.

In the January, 1990 edition of Planning in Progress (Volume 7 Number 1), the status of the Berland IRP was capsuled by the following statement...

'This plan has been deferred until completion of other projects in progress and resolution of the timber/caribou issue(s). An update will be sent to the public when the project resumes. (Contact: John Brownlee, Manager)'

In the future, additional IRP's may be undertaken in the areas of

- o Willmore Wilderness Park; the Willmore Wilderness Provincial Park is located, in part, in the southern third of the mapsheet.
- o Kakwa - Wapiti; the proposed IRP is located, in part, in the extreme north-west part of the mapsheet.

See also Figure 3 for locations/outlines of IRP's in the surrounding vicinity. On Figure 3, a bracketed letter trails the name of the IRP; this letter identifies the status of the IRP as

- o (C); completed
- o (P); in-progress or
- o (F); future.

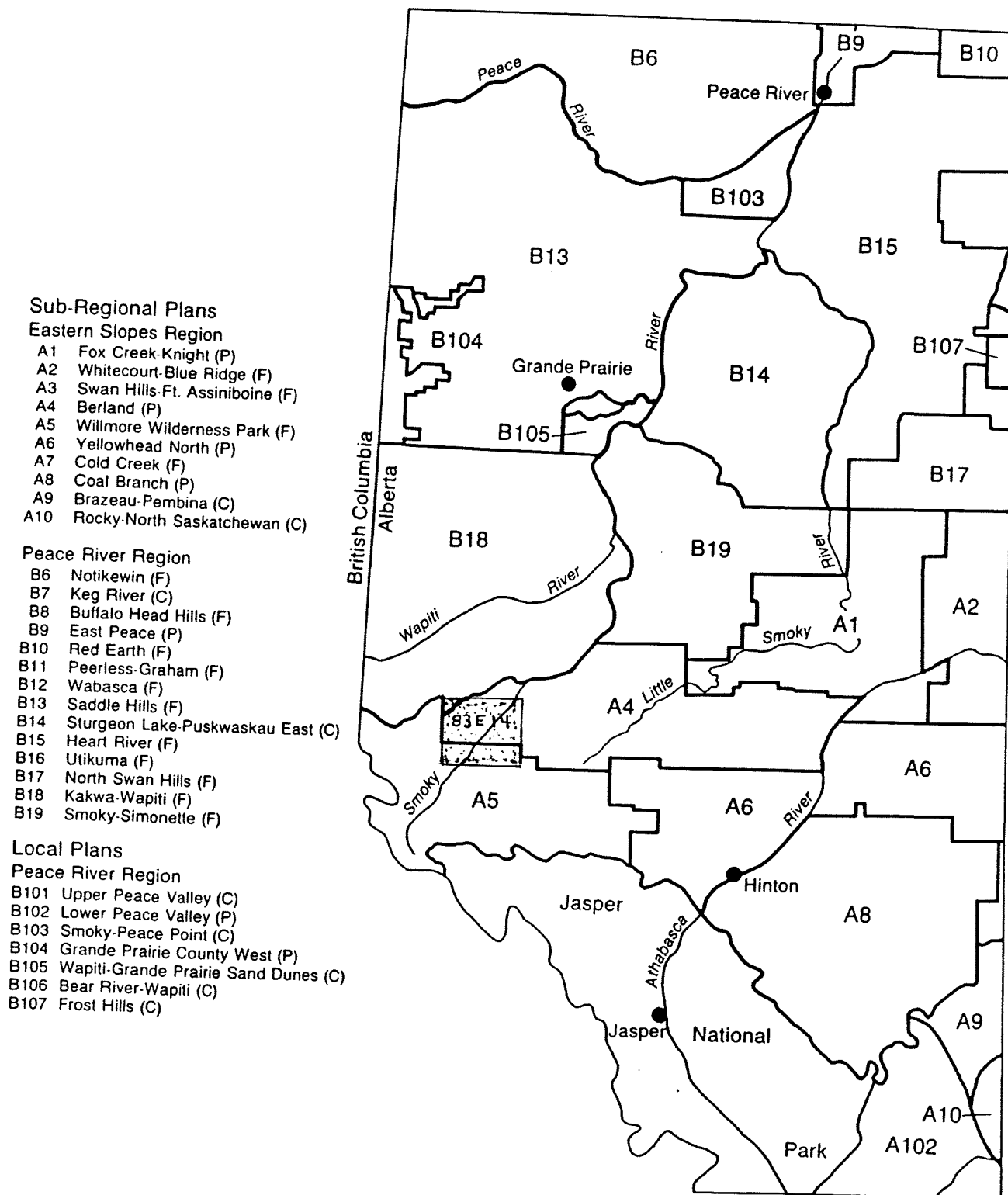
Resource Management

Coal Dispositions

The status of the rights_to_coal within an area can generally be categorized into one of the following

- o Crown coal lease
- o Crown coal lease under application

Figure 3. Locations/Outlines of IRP's in the Surrounding Vicinity (1989)



- o Areas with registered right of first refusal
- o Freehold coal rights
- o Coal withdrawn from disposition.

According to a recent (1989-05-09) Alberta Energy Coal Disposition Map of 83E/14, the following 4 companies are involved in one or more of the above activities

- o Alberta Power Limited
- o Esso Resources Canada Limited
- o Seaton-Jordan & Associates
- o Smoky River Coal Limited

It should be noted that most of the corporate coal lease activity is concentrated on the first two categories.

Established Coal Resources and Reserves

Coal resources and reserves have been calculated by the ERCB (1989) for the whole of Alberta.

The present mapsheet contains part of the Smoky River Coal Field, a coal field located within the ERCB-designated 'Mountain Region'.

The Coal Field outline has been shown on the GIS plot.

Exploration History

Coal

Coal Exploration Drillholes

Some 97 coal exploration holes have been drilled by 2 companies between 1960 and 1983. Of the holes drilled, 90 holes (93%) intersected coal as per the defined criteria (see Hughes et al.,

1988); it follows that 7 holes (7%) did not intersect coal. Hole depths ranged from 17 to 425 meters in depth.

Coal exploration drilling activities were carried out by two companies. A summary follows

<u>COMPANY</u>	<u>NUMBER OF HOLES DRILLED</u>
McIntyre Mines Limited	25
Smoky River Coal Limited	72

Based on the April, 1989 version of the ERCB Coal Hole File, details of the coal exploration drillholes are given in Appendix 1 and includes information on:

- o SITID; the assigned Site Identification Number within the AGS Coal Database
- o CAT_ID; the assigned Catalogue Identification Number within the ERCB Coal Hole File (April, 1989 version)
- o ORIG; the Original Identification Number of the Datapoint (ie, drillhole number)
- o EDITED; within the ERCB Coal Hole File, the equivalent to ORIG has been limited to 6 spaces; this, in some cases, has not been sufficient to record the ORIGINAL corporate assigned drillhole number; within the AGS Coal Database, ORIG has been allocated 11 spaces; a 'X' in the EDITED column identifies those drillholes whose ORIG's were truncated; drillholes listed in the ORIG column of the listing have been edited and now reflect the 'true' Original Identification Numbers.
- o NCinDH; a 'NC' in the column indicates that no coal thicker than 0.5m was intersected in the drillhole; this implies that thin coal seams less than 0.5m may be present.
- o M; Meridian
- o T; Township
- o R; Range
- o S; Section

- o RSEC; Reference Section
- o RCNR; Reference Corner
- o METN; Metres north or south from the reference corner
- o METE; meters east or west from the reference corner
- o ELEV; Ground or surface elevation of the datapoint (drillhole)
- o TD; Total depth of drillhole reported in meters
- o CORPNUM; the assigned Corporation Number within the AGS Coal Database
- o CPDT; completion date of the datapoint (drillhole); date coded as yymmdd
- o COMPANY; identifies the company that generated the datapoint (drillhole).

Coal Exploration Trenches/Hand Trenches

During 1982, Union Oil Company of Canada Limited conducted a field mapping program on their Sterne Creek Project area. The program was located, in part, on the mapsheet 83E/14. Three hand-dug trenches were excavated to expose coal seams within the mapsheet area.

Trench locations have been shown on the GIS plot.

Oil and Gas Wells

Within the study area, no oil and gas wells have been drilled.

Coal Occurrences

Coal Exploration Drillholes

On both Appendix 1 and the map, coal exploration drillholes have been identified as either

- o coal thicker than 0.5m intersected in the drillhole

or

- o no coal thicker than 0.5m intersected in the drillhole.

Coal is defined as greater than 50% carbonaceous material by weight and more than 70% carbonaceous material by volume as estimated from geophysical logs. The exclusion of coal seams thinner than 0.5m is consistent with Hughes et al. (1988), who exclude seams thinner than 0.5m in resource determination.

Coal intersections, per coal exploration drillhole, have been included in Appendix 3. The listing includes

- o SITID; the AGS Coal Database identification number
- o CAT_ID; the ERCB catalogue identification number
- o ORIG; the original company-assigned drillhole number
- o M T R S ; Dominion Land Survey (DLS) information; ie, Meridian, Township, Range and Section
- o TOP DEPTH; depth to top of coal in meters
- o BOT DEPTH; depth to bottom of coal in meters
- o THICK; thickness of the coal seam in meters
- o SEAM; Correlated Coal Seam Name/Number (if known); a '0' indicates that the seam has not been correlated
- o MIN; Mineral Matter content of the coal (often a best-estimate from geophysical log interpretation); a '0' indicates that the mineral matter of the coal was not available and/or not derived.
- o REGOLITH; thickness, in meters, of the regolith
- o PIKNUM; the geological pick identification number as stored in the AGS Coal Database
- o REMARKS

Coal Exploration Trenches/Hand Trenches

Three hand-dug trenches were excavated by Union Oil Company of Canada Limited (UNOCAL) to expose coal seams within the mapsheet 83E/14. Trench locations have been shown on the GIS plot.

Thicknesses of the coal seams exposed within the trenches range from 1.9 to 3.9 meters.

Coal Outcrops

Combined the AGS and the GSC have located some thirty one coal outcrops within the mapsheet 83E/14; the maximum thickness of coal in outcrop is 7 meters.

Union Oil Company of Canada Limited has also identified a number of coal outcrops within the mapsheet 83E/14. Based on their

- o 1980 field program; nine coal outcrops were identified; the maximum thickness of coal in outcrop is 6+ meters.
- o the 1982 field program; seven coal outcrops were identified; the maximum thickness of coal in outcrop is 6.5 meters.

Coal seam outcrop locations have been identified on the GIS plot.

Coal Quality Summary

Coal Rank

Within the mapsheet 83E/14, the rank of the Luscar Group coal varies from low to medium volatile bituminous.

Coal Exploration Drillholes

Nine drillholes, within the mapsheet 83E/14, contain coal quality information. Coal quality data from the drillholes is limited to 126 analyses of FSI.

Coal Outcrops

Between the AGS and the GSC, 56 coal samples, from 31 outcrops, were obtained from within the mapsheet 83E/14; sampling occurred between 1981 and 1989. R_{\max} values generated from the AGS/GSC outcrop samples range between 1.12 and 1.78%.

In 1982, Union Oil Company of Canada Limited conducted a field mapping program on their Sterne Creek Project area. Within the mapsheet 83E/14, 6 coal outcrops were sampled and analyzed for vitrinite reflectance. R_0 values generated from the UNOCAL outcrop samples range between 0.99 and 1.41%.

Coal Exploration Trench/Hand Trench Data

In 1982, Union Oil Company of Canada Limited conducted a field mapping program on their Sterne Creek Project area. Within the mapsheet 83E/14, 3 hand-dug, coal trenches were sampled and analyzed for vitrinite reflectance.

R_0 values generated from the above UNOCAL trench samples range between 1.23 and 1.40%.

Operating and Abandoned Coal Mines

There are no operating mines within the mapsheet 83E/14. Current coal mining operations of Smoky River Coal Limited are located north of the mapsheet.

There is one abandoned underground coal mine within the mapsheet area. The workings, contained within the mapsheet, are located south of the Smoky River in Sections 10 & 11, Township 58, Range 8, West of the 6th Meridian.

The abandoned mine, designated as Mine Number 1765/5, was operated by McIntyre Mines Limited (now Smoky River Coal Limited) from 1969-09 to 1973-02 and again from 1979-02 to 1982-09. All coal produced was from the No. 4 Seam. Raw coal produced from Mine 1765/5 totalled 1.14 million tonnes.

Coal Resource Development Potential

A semiquantitative and subjective evaluation of the potential of coal development in the map area is based on limited data. It is based on mainly geological criteria and does not take into account governmental restrictions on coal development or evaluate actual economic constraints to development now or in the future. The three criteria that have been used are Coal Potential, Mining Potential, and Data Availability (discussed in more detail below). Areas in green on the companion map (thematic inset 'Coal Development Potential') reflect higher level of knowledge and potential for development of coal than the blue (medium) or red areas (low). Areas rated in blue indicate more information is needed to determine the coal development potential. Areas colored red indicate some potential for development. The remaining uncolored areas have no data available often because the coal, if present, is at depth under non coal-bearing rocks.

Coal Potential

Resources

The amount of data is too small for a quantitative evaluation of coal resources except in those limited areas with drilling. The ERCB (1989) provides estimates of in-place resources for the Smoky River Coal Field.

Coal Quality

Very little coal quality data is available but where test results are present the potential of the coal for development is strengthened. In general where a sample has been collected and analyzed the coal has an inherent development potential.

Mining Potential

Overburden

An evaluation of overburden for surface mining and depth for underground mining has been made. (The 'Mining Potential' criteria did not take into account governmental restrictions on coal development or evaluate actual economic constraints to development now or in the future.)

Geotechnical

Geotechnical considerations included an evaluation of structural setting, both simple and complex, with the possibility of structurally thickened seams. Consideration was given to infrastructural concerns related to site, environment and potential mining problems.

Data Availability

Limited coal data is available in the map area but where present the potential of the coal for development is strengthened. In general, where a sample, drillhole, trench or outcrop is present the coal has an increased development potential. Some value was given to areas containing sediments that typically include coal.

Future Work

In the northeastern part of the map area a good exploration database exists and 1.14 million tonnes of coal has been mined in the area; the balance of the mapsheet area has only been superficially examined from a coal resource/exploration point of view. Additional coal quality data needs to be collected and detailed stratigraphic and/or structural studies are needed in most areas.

The work by Langenberg et.al., (1987), in the northeastern part of map area, presents the complex geology of the region and demonstrates how structural studies and detailed mapping provides the significant perspective necessary for evaluation of coal resources in the Mountain Region. Similar studies are needed in the other areas mapped as Luscar Formation on the map as there is potential for both structurally thickened and 'hidden' coal resources. The rank of the Luscar Group coals varies from low to medium volatile bituminous but other than some FSI tests coal quality data is lacking.

The presence of thick coals of low to medium volatile bituminous rank and potential of structural trapping could indicate the area has potential for coalbed methane resources. Many of the areas between the Luscar Formation, shown as blank (white) on the accompanying map, RCM3, are shallow synclines, often faulted, with Luscar sediments at depth. However, much work will be needed before exploration for coalbed methane resources can be done in the area. At present no oil or gas wells have been drilled within the study area.

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Appendix 1. 83E/14 - Coal Drillholes

 FILENAME: 83E14.GBM

NOTE: 1. 'ORIG' that has been edited...ie, ERCB Coal Hole File did not present 'true' original drillhole number;
 ORIG now represents 'true' original drillhole number.

2. No coal in drillhole as per criteria of Hughes, Mudry & Nikols in GSC Paper 88-21, 'A Standardized Coal Resource/
 Reserve System for Canada'; geology picks have been modified from the AGS Coal Database April, 1989 version of
 the ERCB Coal Hole File.

DWF 891206

SITID	CAT-ID	ORIG	EDITED(1)		NCinDH(2)		R	S	RSEC	RCNR	METN	METE	ELEV	TD	CORPNUM	CPDT	COMPANY
			V	V	V	V			V	V							
1044173	435735	00000008305			6	57	7	30	30	NE	-1538.000	-1033.000	1554.100	194.500	90	830900	SMOKY RIVER COAL LIMITED
1044174	435636	00000008316			6	57	8	12	12	NE	-101.000	-909.000	1254.400	48.800	90	831000	SMOKY RIVER COAL LIMITED
1044175	435651	00000008315			6	57	8	12	12	NE	-159.000	-971.000	1257.400	62.500	90	831000	SMOKY RIVER COAL LIMITED
1044176	435610	00000008310			6	57	8	13	13	NE	-1147.000	-1192.000	1291.800	67.100	90	830900	SMOKY RIVER COAL LIMITED
1044177	435644	00000008317		NC	6	57	8	13	13	NE	-1298.000	-1252.000	1298.500	31.000	90	831000	SMOKY RIVER COAL LIMITED
1044178	435669	00000008314			6	57	8	13	13	NE	-1424.000	-1313.000	1288.900	62.500	90	831000	SMOKY RIVER COAL LIMITED
1044179	435677	00000008309		NC	6	57	8	13	13	NE	-1005.000	-1200.000	1290.600	85.300	90	830900	SMOKY RIVER COAL LIMITED
1044180	435685	00000008307		NC	6	57	8	13	13	NE	-1239.000	-1139.000	1285.400	67.100	90	830900	SMOKY RIVER COAL LIMITED
1044181	435693	00000008318			6	57	8	13	13	NE	-1461.000	-1357.000	1291.100	49.400	90	831000	SMOKY RIVER COAL LIMITED
1044182	435628	00000008312		NC	6	57	8	14	14	NE	-953.000	-319.000	1347.200	54.900	90	831000	SMOKY RIVER COAL LIMITED
1044183	435743	00000008313			6	57	8	14	14	NE	-844.000	-206.000	1326.100	68.000	90	831000	SMOKY RIVER COAL LIMITED
1044184	435784	00000008308			6	57	8	14	14	NE	-357.000	-580.000	1394.800	129.500	90	830900	SMOKY RIVER COAL LIMITED
1044185	352153	00000006001			6	57	8	19	19	NE	-1289.900	-760.800	949.500	254.200	70	600600	MCINTYRE MINES LIMITED
1044186	352195	00000006005			6	57	8	19	19	NE	-1027.500	-787.900	955.500	120.100	70	600600	MCINTYRE MINES LIMITED
1044187	352203	00000006006			6	57	8	19	19	NE	-1494.400	-759.600	944.600	154.200	70	600700	MCINTYRE MINES LIMITED
1044188	352237	00000006009			6	57	8	19	19	NE	-55.800	-399.000	994.000	75.600	70	600700	MCINTYRE MINES LIMITED
1044189	352245	00000006011			6	57	8	19	19	NE	-530.400	-1357.300	1356.100	278.900	70	600700	MCINTYRE MINES LIMITED
1044190	435776	00000008306			6	57	8	25	25	NE	-187.000	-1051.000	1505.800	121.900	90	830900	SMOKY RIVER COAL LIMITED
1044191	435826	00000008311			6	57	8	28	28	NE	-432.000	-936.000	1298.400	119.000	90	831000	SMOKY RIVER COAL LIMITED
1044192	352252	00000006114			6	57	8	31	31	NE	-738.500	-1131.100	1868.400	297.800	70	610700	MCINTYRE MINES LIMITED
1044193	352260	00000006118			6	57	8	31	31	NE	-289.600	-1055.500	1838.900	282.200	70	610800	MCINTYRE MINES LIMITED
1044194	352278	000000CF09V			6	57	8	31	31	NE	-180.700	-1439.900	1698.000	113.700	70	720700	MCINTYRE MINES LIMITED
1044195	352286	000000DCF12V X			6	57	8	31	31	NE	-234.100	-1547.200	1749.600	173.700	70	730100	MCINTYRE MINES LIMITED
1044196	420430	000000CFR815			6	57	8	31	31	NE	-730.000	-1249.000	1849.700	280.400	70	810900	MCINTYRE MINES LIMITED
1044197	420448	000000CFR816			6	57	8	31	31	NE	-498.000	-1468.000	1739.800	189.000	70	810900	MCINTYRE MINES LIMITED
1044198	435859	00000008324			6	57	8	31	31	NE	-23.000	-347.000	1421.000	182.900	90	831000	SMOKY RIVER COAL LIMITED
1044199	352161	00000006002			6	57	8	32	32	NE	-307.500	-774.300	1055.800	102.500	70	600600	MCINTYRE MINES LIMITED
1044200	352179	00000006003			6	57	8	32	32	NE	-307.200	-773.300	1055.800	62.200	70	600600	MCINTYRE MINES LIMITED
1044201	352187	00000006004			6	57	8	32	32	NE	-625.100	-704.700	1015.000	38.800	70	600600	MCINTYRE MINES LIMITED
1044202	352211	00000006007			6	57	8	32	32	NE	-654.400	-783.600	1004.600	180.100	70	600700	MCINTYRE MINES LIMITED
1044203	352229	00000006008		NC	6	57	8	32	32	NE	-243.200	-569.400	950.100	193.200	70	600700	MCINTYRE MINES LIMITED
1044204	352294	000000FC7502			6	57	8	32	32	NE	-729.700	-851.300	1027.200	49.100	70	750900	MCINTYRE MINES LIMITED
1044205	352302	000000FC7503			6	57	8	32	32	NE	-505.700	-884.800	1101.900	55.200	70	750900	MCINTYRE MINES LIMITED
1044206	352310	000000FC7504			6	57	8	32	32	NE	-332.200	-1116.200	1178.100	73.500	70	750900	MCINTYRE MINES LIMITED
1044207	352328	000000FC7505			6	57	8	32	32	NE	-300.500	-1050.000	1176.500	36.600	70	750900	MCINTYRE MINES LIMITED
1044208	352336	000000FC7506			6	57	8	32	32	NE	-378.900	-1021.100	1149.100	39.600	70	750900	MCINTYRE MINES LIMITED
1044209	435727	00000008325			6	57	8	32	32	NE	-76.000	-1496.000	1327.400	131.000	90	831100	SMOKY RIVER COAL LIMITED
1044210	435768	00000008321			6	57	8	32	32	NE	-607.000	-983.000	1071.600	89.900	90	831000	SMOKY RIVER COAL LIMITED
1044211	435834	00000008322			6	57	8	32	32	NE	-501.000	-1239.000	1126.100	129.500	90	831000	SMOKY RIVER COAL LIMITED
1044212	435842	00000008323			6	57	8	32	32	NE	-448.000	-1340.000	1146.800	150.900	90	831000	SMOKY RIVER COAL LIMITED
1044213	435701	00000008303			6	57	8	36	36	NE	-537.000	-605.000	1465.600	102.700	90	830800	SMOKY RIVER COAL LIMITED

1044214	435719	00000008301	6	57	8	36	36	NE	-512.000	-492.000	1456.900	170.100	90	830800	SMOKY RIVER COAL LIMITED
1044215	435750	00000008304	6	57	8	36	36	NE	-230.000	-899.000	1453.800	71.600	90	830800	SMOKY RIVER COAL LIMITED
1044216	435818	00000008302	6	57	8	36	36	NE	-155.000	-817.000	1444.100	130.500	90	830800	SMOKY RIVER COAL LIMITED
1044217	352344	00000006010	6	57	9	24	24	NE	-45.100	-317.300	1347.800	362.700	70	600700	MCINTYRE MINES LIMITED
1044218	352351	00000006012	6	57	9	25	25	NE	-1468.200	-623.600	1493.200	298.700	70	600700	MCINTYRE MINES LIMITED
1044219	352369	00000006013	6	57	9	25	25	NE	-662.300	-1194.500	1602.000	425.200	70	600800	MCINTYRE MINES LIMITED
1044220	352377	00000006014	6	57	9	26	26	NE	-140.200	-95.400	1808.400	423.500	70	600800	MCINTYRE MINES LIMITED
1044221	352385	00000006015	6	57	9	33	33	NE	-211.800	-863.200	1155.800	380.700	70	600800	MCINTYRE MINES LIMITED
1044222	352393	00000006101	6	57	9	34	34	NE	-342.000	-723.000	1573.100	195.700	70	610600	MCINTYRE MINES LIMITED
1044223	352419	00000006104	6	57	9	34	34	NE	-777.500	-154.500	1657.200	172.200	70	610600	MCINTYRE MINES LIMITED
1044224	352401	00000006102	6	57	9	35	35	NE	-942.100	-1143.600	1813.000	103.600	70	610600	MCINTYRE MINES LIMITED
1044225	352427	00000006110	6	57	9	36	36	NE	-799.800	-246.300	1852.000	182.600	70	610700	MCINTYRE MINES LIMITED
1044226	352435	00000006111	6	57	9	36	36	NE	-798.000	-249.000	1852.300	139.600	70	610700	MCINTYRE MINES LIMITED
1044227	352443	00000006112	6	57	9	36	36	NE	-260.300	-547.400	1869.300	192.000	70	610700	MCINTYRE MINES LIMITED
1044228	420422	00000CF8104	6	57	9	36	36	NE	-190.000	-208.000	1840.800	311.200	70	810900	MCINTYRE MINES LIMITED
1044229	420455	00000CF8107	6	57	9	36	36	NE	-62.000	-650.000	1863.600	237.100	70	810900	MCINTYRE MINES LIMITED
1044234	435792	00000008319	6	58	8	2	2	NE	-282.000	-54.000	1527.500	152.400	90	831000	SMOKY RIVER COAL LIMITED
1044235	435800	00000008320	6	58	8	2	2	NE	-518.000	-44.000	1498.600	97.500	90	831000	SMOKY RIVER COAL LIMITED
1044236	354001	00000006108	6	58	8	6	6	NE	-649.500	-1423.100	1593.800	145.400	70	610700	MCINTYRE MINES LIMITED
1044237	354837	00000CF06E	6	58	8	6	6	NE	-1606.600	-1023.500	1736.800	172.200	70	720700	MCINTYRE MINES LIMITED
1044238	354845	00000DCF13V	6	58	8	6	6	NE	-1610.900	-1560.300	1746.500	160.900	70	730200	MCINTYRE MINES LIMITED
1044239	420398	00000DCF-13	6	58	8	6	6	NE	-1602.000	-1544.000	1747.000	159.400	70	811000	MCINTYRE MINES LIMITED
1044240	420406	00000CF81-2	6	58	8	6	6	NE	-1615.000	-913.000	1741.500	205.700	70	810800	MCINTYRE MINES LIMITED
1044241	420414	00000CFR813	6	58	8	6	6	NE	-1327.000	-1483.000	1720.000	112.800	70	810900	MCINTYRE MINES LIMITED
1044242	420562	00000CF8118	6	58	8	6	6	NE	-964.000	-1051.000	1528.700	111.500	70	811000	MCINTYRE MINES LIMITED
1044917	358861	00000006105	6	58	9	1	1	NE	-1088.100	-583.400	1702.300	146.000	70	610700	MCINTYRE MINES LIMITED
1044918	358879	00000006107	6	58	9	1	1	NE	-1546.600	-1163.100	1840.400	128.900	70	610700	MCINTYRE MINES LIMITED
1044919	358945	00000CF01V	6	58	9	1	1	NE	-1376.500	-158.800	1780.900	177.400	70	720500	MCINTYRE MINES LIMITED
1044920	358952	00000CF02V	6	58	9	1	1	NE	-1100.600	-782.400	1675.200	140.800	70	720500	MCINTYRE MINES LIMITED
1044921	358960	00000CF03V	6	58	9	1	1	NE	-1209.800	-954.000	1689.200	145.100	70	720700	MCINTYRE MINES LIMITED
1044922	358978	00000CF04V	6	58	9	1	1	NE	-1227.700	-110.000	1768.800	131.700	70	720700	MCINTYRE MINES LIMITED
1044923	358986	00000CF05V	6	58	9	1	1	NE	-1078.700	-1136.300	1652.900	90.500	70	720700	MCINTYRE MINES LIMITED
1044924	359018	00000DCF10V	6	58	9	1	1	NE	-1596.800	-358.100	1834.500	303.600	70	730100	MCINTYRE MINES LIMITED
1044925	359026	00000DCF11E	6	58	9	1	1	NE	-1255.800	-597.700	1772.800	178.900	70	730100	MCINTYRE MINES LIMITED
1044926	420356	000000CF-01	6	58	9	1	1	NE	-1371.000	-146.000	1778.100	176.700	70	811000	MCINTYRE MINES LIMITED
1044927	420364	000000CF-02	6	58	9	1	1	NE	-1104.000	-815.000	1671.300	133.100	70	811000	MCINTYRE MINES LIMITED
1044928	420372	000000CF-03	6	58	9	1	1	NE	-1212.000	-985.000	1685.500	142.200	70	811000	MCINTYRE MINES LIMITED
1044929	420380	000000CF05	6	58	9	1	1	NE	-1080.000	-1170.000	1649.000	87.700	70	811000	MCINTYRE MINES LIMITED
1044930	420463	00000CF8108	6	58	9	1	1	NE	-1408.000	-619.000	1799.700	291.700	70	810900	MCINTYRE MINES LIMITED
1044931	420513	00000CF8113	6	58	9	1	1	NE	-96.000	-603.000	1540.700	97.500	70	810900	MCINTYRE MINES LIMITED
1044932	420521	00000CF8114	6	58	9	1	1	NE	-197.000	-322.000	1553.600	140.200	70	810900	MCINTYRE MINES LIMITED
1044933	420539	00000CF8115	6	58	9	1	1	NE	-258.000	-354.000	1568.000	195.100	70	810900	MCINTYRE MINES LIMITED
1044934	358895	00000006113	6	58	9	2	2	NE	-819.600	-1166.500	1549.600	120.100	70	610700	MCINTYRE MINES LIMITED
1044935	358911	00000006116	6	58	9	2	2	NE	-1293.000	-614.200	1697.400	288.600	70	610700	MCINTYRE MINES LIMITED
1044936	358929	00000006117	6	58	9	2	2	NE	-1404.800	-100.300	1795.000	205.600	70	610800	MCINTYRE MINES LIMITED
1044937	358994	000000CF07E	6	58	9	2	2	NE	-1174.100	-321.600	1678.800	57.900	70	720700	MCINTYRE MINES LIMITED
1044938	359000	000000CF08E	6	58	9	2	2	NE	-871.400	-734.900	1587.400	17.200	70	720700	MCINTYRE MINES LIMITED
1044939	358937	00000006123	NC	6	58	9	3	NE	-304.200	-655.000	1219.200	201.800	70	610800	MCINTYRE MINES LIMITED
1044940	358887	00000006109	NC	6	58	9	12	NE	-1232.900	-533.400	1339.900	293.100	70	610700	MCINTYRE MINES LIMITED
1044941	358903	00000006115	NC	6	58	9	12	NE	-1602.900	-19.800	1352.700	251.800	70	610700	MCINTYRE MINES LIMITED
1044942	420471	00000CFR819	6	58	9	12	12	NE	-927.000	-1189.000	1408.400	159.000	70	810900	MCINTYRE MINES LIMITED
1044943	420489	00000CF8110	6	58	9	12	12	NE	-1542.000	-495.000	1511.700	100.000	70	810900	MCINTYRE MINES LIMITED
1044944	420497	00000CF8111	6	58	9	12	12	NE	-1309.000	-1058.000	1504.400	97.500	70	810900	MCINTYRE MINES LIMITED
1044945	420505	00000CF8112	6	58	9	12	12	NE	-1588.000	-512.000	1524.600	122.000	70	810900	MCINTYRE MINES LIMITED
1044946	420547	00000CF8116	6	58	9	12	12	NE	-1494.000	-443.000	1488.700	163.200	70	811000	MCINTYRE MINES LIMITED
1044947	420554	00000CF8117	6	58	9	12	12	NE	-849.000	-1101.000	1371.300	206.000	70	811000	MCINTYRE MINES LIMITED

Appendix 2. 83E/14 - Coal Intersections of the Coal Drillholes

 CURRENT FILENAME: 83E14_PX.DAT
 ORIGINAL FILENAME: [agscdb.regional]P_C.DAT 890824
 MAPSHEET: NTS 83E/14

NOTE: Geology picks have been modified from the AGS Coal Database, April, 1989 version of ERCB Coal Hole File.
 See GSC Paper 88-21 (Hughes, Mudry & Nikols) for the details of criteria.

DWF 891204

 LEGEND:

DLO: DRILLER'S LOG ONLY
 NGL: GEOPHYSICAL LOGS
 CDO: CORE DESCRIPTION ONLY
 CADOMIN: CADOMIN CONGLOMERATE INTERSECTED

SITID	CAT_ID	ORIG	M	T	R	S	TOP DEPTH	BOT DEPTH	THICK	SEAM	MIN	REGOLITH	PIKNUM	REMARKS
1044173	435735	8305	6	57	7	30	19.390	21.820	2.430	11	20	3.000	315256	
1044173	435735	8305	6	57	7	30	48.100	48.550	0.450	0	0	3.000	315257	
1044173	435735	8305	6	57	7	30	49.190	49.710	0.520	0	0	3.000	315258	
1044173	435735	8305	6	57	7	30	58.130	60.350	2.220	0	0	3.000	315259	
1044173	435735	8305	6	57	7	30	64.570	65.150	0.580	10	40	3.000	315260	
1044173	435735	8305	6	57	7	30	65.650	66.260	0.610	10	25	3.000	315261	
1044173	435735	8305	6	57	7	30	66.870	70.160	3.290	10	10	3.000	315263	
1044173	435735	8305	6	57	7	30	128.810	130.790	1.980	0	0	3.000	0	
1044173	435735	8305	6	57	7	30	136.170	137.220	1.050	0	0	3.000	315270	
1044173	435735	8305	6	57	7	30	139.020	139.750	0.730	0	0	3.000	315271	
1044173	435735	8305	6	57	7	30	145.050	146.180	1.130	0	0	3.000	315274	
1044174	435636	8316	6	57	8	12	19.150	19.600	0.450	0	0	1.800	315275	
1044175	435651	8315	6	57	8	12	33.150	33.610	0.460	0	0	3.000	315276	
1044176	435610	8310	6	57	8	13	12.370	13.140	0.770	0	0	6.100	315277	
1044176	435610	8310	6	57	8	13	15.480	16.000	0.520	0	0	6.100	315278	
1044178	435669	8314	6	57	8	13	7.500	7.960	0.460	0	0	3.000	315280	
1044178	435669	8314	6	57	8	13	9.850	10.400	0.550	0	0	3.000	315282	
1044178	435669	8314	6	57	8	13	37.150	38.380	1.230	0	0	3.000	0	
1044181	435693	8318	6	57	8	13	6.640	9.390	2.750	0	0	1.200	0	
1044181	435693	8318	6	57	8	13	11.830	13.110	1.280	0	0	1.200	315289	
1044181	435693	8318	6	57	8	13	24.540	30.780	6.240	0	0	1.200	0	
1044181	435693	8318	6	57	8	13	33.860	34.660	0.800	0	0	1.200	315298	
1044181	435693	8318	6	57	8	13	35.330	36.180	0.850	0	0	1.200	315299	
1044181	435693	8318	6	57	8	13	36.740	37.190	0.450	0	0	1.200	315301	
1044183	435743	8313	6	57	8	14	19.570	20.960	1.390	0	0	3.000	0	
1044183	435743	8313	6	57	8	14	31.090	32.190	1.100	0	0	3.000	315306	
1044183	435743	8313	6	57	8	14	36.850	37.520	0.670	0	0	3.000	315307	
1044184	435784	8308	6	57	8	14	35.360	38.310	2.950	8	10	4.600	315311	
1044184	435784	8308	6	57	8	14	86.960	87.400	0.440	6	15	4.600	315313	
1044184	435784	8308	6	57	8	14	88.970	89.920	0.950	6	15	4.600	315315	
1044184	435784	8308	6	57	8	14	90.860	92.400	1.540	6	0	4.600	0	
1044184	435784	8308	6	57	8	14	100.280	101.070	0.790	0	0	4.600	315320	
1044184	435784	8308	6	57	8	14	118.810	120.370	1.560	4	15	4.600	315321	
1044184	435784	8308	6	57	8	14	121.010	122.260	1.250	4	0	4.600	0	
1044185	352153	006001	6	57	8	19	38.400	42.030	3.630	4	0	12.000	315327	NGL CDO CADOMIN
1044185	352153	006001	6	57	8	19	49.680	50.320	0.640	0	0	12.000	315328	NGL CDO CADOMIN
1044185	352153	006001	6	57	8	19	66.840	68.880	2.040	3	0	12.000	315329	NGL CDO CADOMIN
1044185	352153	006001	6	57	8	19	152.000	154.020	2.020	2	0	12.000	315330	NGL CDO CADOMIN
1044185	352153	006001	6	57	8	19	200.130	201.410	1.280	X	0	12.000	315331	NGL CDO CADOMIN
1044185	352153	006001	6	57	8	19	229.790	230.490	0.700	1	0	12.000	315332	NGL CDO CADOMIN
1044185	352153	006001	6	57	8	19	233.170	233.780	0.610	W	0	12.000	315333	NGL CDO CADOMIN

1044186	352195	006005	6	57	8	19	22.280	24.660	2.380	2	0	19.000	315334	NGL CDO CADOMIN
1044186	352195	006005	6	57	8	19	57.450	58.610	1.160	1.5	0	19.000	315335	NGL CDO CADOMIN
1044186	352195	006005	6	57	8	19	72.390	73.580	1.190	X	0	19.000	315336	NGL CDO CADOMIN
1044186	352195	006005	6	57	8	19	97.140	99.300	2.160	1	0	19.000	315337	NGL CDO CADOMIN
1044187	352203	006006	6	57	8	19	57.520	62.760	5.240	9	0	17.000	315338	NGL CDO
1044187	352203	006006	6	57	8	19	82.970	83.820	0.850	8	0	17.000	315339	NGL CDO
1044187	352203	006006	6	57	8	19	94.490	95.550	1.060	6	0	17.000	315341	NGL CDO
1044187	352203	006006	6	57	8	19	109.730	110.580	0.850	5	0	17.000	315342	NGL CDO
1044187	352203	006006	6	57	8	19	134.420	136.890	2.470	4	0	17.000	315343	NGL CDO
1044188	352237	006009	6	57	8	19	21.950	22.650	0.700	X	0	2.000	315344	NGL CDO CADOMIN
1044189	352245	006011	6	57	8	19	72.730	75.830	3.100	9	0	3.000	315345	NGL CDO
1044189	352245	006011	6	57	8	19	89.580	90.500	0.920	8	0	3.000	315346	NGL CDO
1044189	352245	006011	6	57	8	19	101.500	102.320	0.820	7	0	3.000	315347	NGL CDO
1044189	352245	006011	6	57	8	19	104.240	104.700	0.460	6	0	3.000	315348	NGL CDO
1044189	352245	006011	6	57	8	19	117.040	118.540	1.500	5	0	3.000	315349	NGL CDO
1044189	352245	006011	6	57	8	19	141.120	143.500	2.380	4	0	3.000	315350	NGL CDO
1044189	352245	006011	6	57	8	19	170.080	171.600	1.520	3	0	3.000	315351	NGL CDO
1044189	352245	006011	6	57	8	19	258.900	260.730	1.830	2	0	3.000	315352	NGL CDO
1044190	435776	8306	6	57	8	25	11.920	14.840	2.920	4	0	1.000	0	
1044190	435776	8306	6	57	8	25	33.310	34.020	0.710	3	10	1.000	315358	
1044191	435826	8311	6	57	8	28	9.800	12.600	2.800	10	0	6.100	0	
1044191	435826	8311	6	57	8	28	61.800	62.650	0.850	6	10	6.100	315363	
1044191	435826	8311	6	57	8	28	64.400	65.600	1.200	6	0	6.100	0	
1044191	435826	8311	6	57	8	28	66.600	67.200	0.600	6	10	6.100	315366	
1044191	435826	8311	6	57	8	28	101.400	103.100	1.700	4	10	6.100	315368	
1044191	435826	8311	6	57	8	28	103.550	105.230	1.680	4	0	6.100	0	
1044192	352252	006114	6	57	8	31	201.080	203.210	2.130	9	0	3.000	315373	NGL CDO
1044192	352252	006114	6	57	8	31	223.110	224.150	1.040	8	0	3.000	315374	NGL CDO
1044192	352252	006114	6	57	8	31	229.670	230.890	1.220	7	0	3.000	315375	NGL CDO
1044192	352252	006114	6	57	8	31	231.340	232.560	1.220	6	0	3.000	315376	NGL CDO
1044192	352252	006114	6	57	8	31	267.190	271.580	4.390	4	0	3.000	315377	NGL CDO
1044192	352252	006114	6	57	8	31	293.740	295.960	2.220	3	0	3.000	315378	NGL CDO
1044193	352260	006118	6	57	8	31	202.390	203.210	0.820	8	0	1.000	315379	NGL CDO
1044193	352260	006118	6	57	8	31	214.550	216.070	1.520	7	0	1.000	315380	NGL CDO
1044193	352260	006118	6	57	8	31	216.710	217.540	0.830	6	0	1.000	315381	NGL CDO
1044193	352260	006118	6	57	8	31	251.580	255.730	4.150	4	0	1.000	315383	NGL CDO
1044193	352260	006118	6	57	8	31	276.820	278.680	1.860	3	0	1.000	315384	NGL CDO
1044194	352278	0CF09V	6	57	8	31	34.750	35.200	0.450	10	20	0.100	315385	
1044194	352278	0CF09V	6	57	8	31	35.660	36.450	0.790	10	28	0.100	315386	
1044194	352278	0CF09V	6	57	8	31	57.700	58.830	1.130	8	8	0.100	315387	
1044194	352278	0CF09V	6	57	8	31	69.800	70.930	1.130	7	41	0.100	315388	
1044194	352278	0CF09V	6	57	8	31	71.720	72.240	0.520	6	50	0.100	315389	
1044194	352278	0CF09V	6	57	8	31	106.220	110.490	4.270	4	0	0.100	0	
1044195	352286	DCF12V	6	57	8	31	84.670	85.400	0.730	0	0	0.000	315392	NGL CDO
1044195	352286	DCF12V	6	57	8	31	93.880	94.790	0.910	0	0	0.000	315393	NGL CDO
1044195	352286	DCF12V	6	57	8	31	95.830	96.620	0.790	0	0	0.000	315394	NGL CDO
1044195	352286	DCF12V	6	57	8	31	115.640	116.680	1.040	8	0	0.000	315395	NGL CDO
1044195	352286	DCF12V	6	57	8	31	126.580	127.960	1.380	7	0	0.000	315396	NGL CDO
1044195	352286	DCF12V	6	57	8	31	128.260	129.170	0.910	6	0	0.000	315397	NGL CDO
1044195	352286	DCF12V	6	57	8	31	140.150	140.670	0.520	0	0	0.000	315398	NGL CDO
1044195	352286	DCF12V	6	57	8	31	163.590	167.640	4.050	4	0	0.000	315399	NGL CDO
1044196	420430	CFR815	6	57	8	31	112.070	117.230	5.160	4	0	3.000	0	
1044196	420430	CFR815	6	57	8	31	193.850	196.100	2.250	3	0	3.000	315429	
1044196	420430	CFR815	6	57	8	31	203.900	205.310	1.410	0	0	3.000	315432	
1044196	420430	CFR815	6	57	8	31	206.230	207.690	1.460	0	0	3.000	0	
1044196	420430	CFR815	6	57	8	31	244.630	248.590	3.960	4	0	3.000	0	
1044196	420430	CFR815	6	57	8	31	269.810	271.550	1.740	3	0	3.000	0	
1044197	420448	CFR816	6	57	8	31	48.160	49.260	1.100	0	0	0.000	315447	
1044197	420448	CFR816	6	57	8	31	59.790	61.020	1.230	0	0	0.000	315448	
1044197	420448	CFR816	6	57	8	31	61.830	62.790	0.960	0	0	0.000	0	
1044197	420448	CFR816	6	57	8	31	98.160	99.700	1.540	0	0	0.000	315451	

1044197	420448	CFR816	6	57	8	31	110.930	112.430	1.500	0	0	0.000	0
1044197	420448	CFR816	6	57	8	31	113.140	113.630	0.490	0	0	0.000	315455
1044197	420448	CFR816	6	57	8	31	151.730	155.940	4.210	0	0	0.000	0
1044197	420448	CFR816	6	57	8	31	177.330	178.850	1.520	0	0	0.000	315462
1044198	435859	8324	6	57	8	31	23.610	24.400	0.790	0	0	11.000	0
1044198	435859	8324	6	57	8	31	25.950	26.400	0.450	10	15	11.000	315465
1044198	435859	8324	6	57	8	31	26.900	28.450	1.550	10	15	11.000	315467
1044198	435859	8324	6	57	8	31	78.950	79.650	0.700	0	0	11.000	315468
1044198	435859	8324	6	57	8	31	94.670	97.990	3.320	6	0	11.000	0
1044198	435859	8324	6	57	8	31	169.400	170.100	0.700	4	20	11.000	315471
1044198	435859	8324	6	57	8	31	170.700	176.600	5.900	4	10	11.000	0
1044199	352161	006002	6	57	8	32	48.770	52.970	4.200	4	0	6.000	315479
1044199	352161	006002	6	57	8	32	77.420	79.490	2.070	3	0	6.000	315480
1044200	352179	006003	6	57	8	32	55.840	59.830	3.990	4	0	3.000	315481
1044201	352187	006004	6	57	8	32	34.140	38.710	4.570	4	0	3.000	315482
1044202	352211	006007	6	57	8	32	109.910	110.550	0.640	1.5	0	1.000	315484
1044202	352211	006007	6	57	8	32	156.270	158.220	1.950	1	0	1.000	315485
1044202	352211	006007	6	57	8	32	161.540	162.400	0.860	W	0	1.000	315486
1044204	352294	FC7502	6	57	8	32	39.010	43.890	4.880	4	10	0.100	315488
1044205	352302	FC7503	6	57	8	32	43.130	48.160	5.030	4	10	0.100	315489
1044206	352310	FC7504	6	57	8	32	39.620	44.200	4.580	4	10	0.100	315490
1044206	352310	FC7504	6	57	8	32	68.280	69.800	1.520	3	0	0.100	315491
1044207	352328	FC7505	6	57	8	32	27.130	32.920	5.790	4	15	0.100	315492
1044208	352336	FC7506	6	57	8	32	30.480	35.660	5.180	4	0	1.500	0
1044209	435727	8325	6	57	8	32	56.650	58.100	1.450	6	30	4.600	0
1044209	435727	8325	6	57	8	32	59.100	59.530	0.430	6	20	4.600	315500
1044209	435727	8325	6	57	8	32	116.780	117.950	1.170	4	10	4.600	315505
1044209	435727	8325	6	57	8	32	118.400	123.680	5.280	4	0	4.600	0
1044210	435768	8321	6	57	8	32	73.800	78.280	4.480	4	0	28.300	0
1044211	435834	8322	6	57	8	32	69.860	70.620	0.760	6	0	10.400	0
1044211	435834	8322	6	57	8	32	72.600	74.300	1.700	6	10	10.400	315519
1044211	435834	8322	6	57	8	32	75.100	75.690	0.590	6	15	10.400	315520
1044211	435834	8322	6	57	8	32	118.500	122.650	4.150	4	0	10.400	0
1044212	435842	8323	6	57	8	32	13.950	15.150	1.200	10	15	7.600	315526
1044212	435842	8323	6	57	8	32	72.830	78.200	5.370	6	0	7.600	0
1044212	435842	8323	6	57	8	32	137.950	143.080	5.130	4	0	7.600	0
1044213	435701	8303	6	57	8	36	14.940	15.420	0.480	0	0	1.200	315539
1044213	435701	8303	6	57	8	36	18.470	19.140	0.670	0	0	1.200	315540
1044213	435701	8303	6	57	8	36	19.810	20.330	0.520	10	15	1.200	315541
1044213	435701	8303	6	57	8	36	21.000	24.200	3.200	10	10	1.200	315544
1044213	435701	8303	6	57	8	36	66.510	67.510	1.000	6	15	1.200	315551
1044213	435701	8303	6	57	8	36	69.250	70.590	1.340	6	0	1.200	0
1044213	435701	8303	6	57	8	36	85.190	86.900	1.710	4	5	1.200	315555
1044213	435701	8303	6	57	8	36	92.290	94.240	1.950	4	0	1.200	0
1044214	435719	8301	6	57	8	36	31.240	31.760	0.520	0	0	18.300	315559
1044214	435719	8301	6	57	8	36	40.140	40.870	0.730	0	0	18.300	315560
1044214	435719	8301	6	57	8	36	47.240	48.160	0.920	0	0	18.300	315562
1044214	435719	8301	6	57	8	36	82.140	82.720	0.580	10	15	18.300	315566
1044214	435719	8301	6	57	8	36	84.670	87.480	2.810	10	0	18.300	0
1044214	435719	8301	6	57	8	36	126.490	127.410	0.920	6	15	18.300	315577
1044214	435719	8301	6	57	8	36	128.530	129.480	0.950	6	0	18.300	0
1044214	435719	8301	6	57	8	36	145.480	146.730	1.250	4	5	18.300	315581
1044214	435719	8301	6	57	8	36	149.660	151.270	1.610	4	0	18.300	0
1044215	435750	8304	6	57	8	36	25.660	27.740	2.080	6	0	22.300	0
1044215	435750	8304	6	57	8	36	54.320	56.390	2.070	4	0	22.300	0
1044215	435750	8304	6	57	8	36	60.900	63.520	2.620	4	0	22.300	0
1044216	435818	8302	6	57	8	36	58.610	60.290	1.680	4	5	32.900	315596
1044216	435818	8302	6	57	8	36	63.400	64.010	0.610	4	10	32.900	315597
1044216	435818	8302	6	57	8	36	64.470	65.560	1.090	4	15	32.900	315599
1044216	435818	8302	6	57	8	36	96.960	97.510	0.550	0	0	32.900	315602
1044216	435818	8302	6	57	8	36	103.330	104.670	1.340	3	0	32.900	0

1044217	352344	006010	6	57	9	24	51.600	54.530	2.930	9	0	24.000	315606	NGL	CDO
1044217	352344	006010	6	57	9	24	117.840	120.300	2.460	4	0	24.000	315608	NGL	CDO
1044217	352344	006010	6	57	9	24	143.260	143.710	0.450	3	0	24.000	315609	NGL	CDO
1044217	352344	006010	6	57	9	24	238.960	241.280	2.320	2	0	24.000	315610	NGL	CDO
1044217	352344	006010	6	57	9	24	281.450	281.940	0.490	1.5	0	24.000	315611	NGL	CDO
1044217	352344	006010	6	57	9	24	303.640	304.340	0.700	X	0	24.000	315612	NGL	CDO
1044217	352344	006010	6	57	9	24	326.350	328.150	1.800	1	0	24.000	315613	NGL	CDO
1044218	352351	006012	6	57	9	25	203.180	205.250	2.070	9	0	1.000	315617	NGL	CDO
1044218	352351	006012	6	57	9	25	230.430	231.100	0.670	7	0	1.000	315618	NGL	CDO
1044218	352351	006012	6	57	9	25	232.560	233.420	0.860	6	0	1.000	315619	NGL	CDO
1044218	352351	006012	6	57	9	25	269.600	271.520	1.920	4	0	1.000	315621	NGL	CDO
1044218	352351	006012	6	57	9	25	294.560	296.300	1.740	3	0	1.000	315622	NGL	CDO
1044219	352369	006013	6	57	9	25	31.640	32.710	1.070	9	0	2.000	315625	NGL	CDO
1044219	352369	006013	6	57	9	25	45.260	45.810	0.550	7	0	2.000	315626	NGL	CDO
1044219	352369	006013	6	57	9	25	64.010	65.140	1.130	5	0	2.000	315627	NGL	CDO
1044219	352369	006013	6	57	9	25	87.930	91.960	4.030	4	0	2.000	315628	NGL	CDO
1044219	352369	006013	6	57	9	25	115.880	117.560	1.680	3	0	2.000	315629	NGL	CDO
1044219	352369	006013	6	57	9	25	121.550	122.860	1.310	3	0	2.000	315630	NGL	CDO
1044219	352369	006013	6	57	9	25	131.370	137.130	5.760	3	0	2.000	315631	NGL	CDO
1044219	352369	006013	6	57	9	25	238.050	239.730	1.680	2	0	2.000	315632	NGL	CDO
1044219	352369	006013	6	57	9	25	367.440	368.380	0.940	1.5	0	2.000	315633	NGL	CDO
1044219	352369	006013	6	57	9	25	405.780	406.510	0.730	1	0	2.000	315634	NGL	CDO
1044220	352377	006014	6	57	9	26	71.290	71.840	0.550	9	0	1.000	315636	NGL	CDO
1044220	352377	006014	6	57	9	26	88.700	89.310	0.610	7	0	1.000	315637	NGL	CDO
1044220	352377	006014	6	57	9	26	106.310	107.900	1.590	5	0	1.000	315639	NGL	CDO
1044220	352377	006014	6	57	9	26	128.600	130.730	2.130	4	0	1.000	315640	NGL	CDO
1044220	352377	006014	6	57	9	26	155.140	157.340	2.200	3	0	1.000	315641	NGL	CDO
1044220	352377	006014	6	57	9	26	252.070	253.260	1.190	3	0	1.000	315642	NGL	CDO
1044220	352377	006014	6	57	9	26	339.790	342.170	2.380	2	0	1.000	315643	NGL	CDO
1044220	352377	006014	6	57	9	26	375.210	376.060	0.850	1.5	0	1.000	315644	NGL	CDO
1044220	352377	006014	6	57	9	26	382.980	383.590	0.610	X	0	1.000	315645	NGL	CDO
1044220	352377	006014	6	57	9	26	419.100	420.810	1.710	1	0	1.000	315646	NGL	CDO
1044221	352385	006015	6	57	9	33	44.780	46.730	1.950	0	0	4.000	315647	NGL	CDO
1044221	352385	006015	6	57	9	33	131.160	133.110	1.950	9	0	4.000	315649	NGL	CDO
1044221	352385	006015	6	57	9	33	164.290	169.190	4.900	7to5	0	4.000	315650	NGL	CDO
1044221	352385	006015	6	57	9	33	189.010	192.360	3.350	4	0	4.000	315651	NGL	CDO
1044221	352385	006015	6	57	9	33	213.660	215.070	1.410	3	0	4.000	315652	NGL	CDO
1044221	352385	006015	6	57	9	33	296.170	298.030	1.860	2	0	4.000	315653	NGL	CDO
1044221	352385	006015	6	57	9	33	307.970	309.680	1.710	2	0	4.000	315654	NGL	CDO
1044221	352385	006015	6	57	9	33	325.830	326.750	0.920	1.5	0	4.000	315655	NGL	CDO
1044221	352385	006015	6	57	9	33	327.690	329.370	1.680	1.5	0	4.000	315656	NGL	CDO
1044222	352393	006101	6	57	9	34	39.620	40.170	0.550	5	0	6.000	315658	NGL	CDO
1044222	352393	006101	6	57	9	34	93.730	95.220	1.490	3	0	6.000	315659	NGL	CDO
1044222	352393	006101	6	57	9	34	193.430	194.890	1.460	2	0	6.000	315660	NGL	CDO
1044223	352419	006104	6	57	9	34	38.400	38.860	0.460	9	0	3.000	315661	NGL	CDO
1044223	352419	006104	6	57	9	34	47.090	48.680	1.590	8	0	3.000	315662	NGL	CDO
1044223	352419	006104	6	57	9	34	83.910	85.620	1.710	7	0	3.000	315663	NGL	CDO
1044223	352419	006104	6	57	9	34	88.090	91.140	3.050	6	0	3.000	315664	NGL	CDO
1044223	352419	006104	6	57	9	34	120.090	123.320	3.230	4	0	3.000	315665	NGL	CDO
1044223	352419	006104	6	57	9	34	149.660	152.000	2.340	3	0	3.000	315666	NGL	CDO
1044224	352401	006102	6	57	9	35	32.000	32.610	0.610	6	0	4.000	315668	NGL	CDO
1044224	352401	006102	6	57	9	35	41.700	42.670	0.970	5	0	4.000	315669	NGL	CDO
1044224	352401	006102	6	57	9	35	66.140	68.880	2.740	4	0	4.000	315670	NGL	CDO
1044224	352401	006102	6	57	9	35	93.880	95.950	2.070	3	0	4.000	315671	NGL	CDO
1044225	352427	006110	6	57	9	36	33.530	34.410	0.880	8	0	3.000	315673	NGL	CDO
1044225	352427	006110	6	57	9	36	52.640	53.950	1.310	7&6	0	3.000	315674	NGL	CDO
1044225	352427	006110	6	57	9	36	127.410	134.970	7.560	4	0	3.000	315676	NGL	CDO
1044225	352427	006110	6	57	9	36	155.910	157.640	1.730	3	0	3.000	315677	NGL	CDO
1044226	352435	006111	6	57	9	36	32.770	33.310	0.540	8	0	3.000	315678	NGL	CDO REDRILL OF 6110
1044226	352435	006111	6	57	9	36	34.230	35.200	0.970	8	0	3.000	315679	NGL	CDO REDRILL OF 6110
1044226	352435	006111	6	57	9	36	85.650	86.260	0.610	7	0	3.000	315681	NGL	CDO REDRILL OF 6110

1044226	352435	006111	6	57	9	36	88.090	88.700	0.610	6	0	3.000	315682	NGL CDO REDRILL OF 6110
1044226	352435	006111	6	57	9	36	129.840	137.190	7.350	4	0	3.000	315685	NGL CDO REDRILL OF 6110
1044227	352443	006112	6	57	9	36	83.520	84.120	0.600	9	0	2.000	315686	NGL CDO
1044227	352443	006112	6	57	9	36	91.590	92.840	1.250	8	0	2.000	315687	NGL CDO
1044227	352443	006112	6	57	9	36	105.060	105.860	0.800	7	0	2.000	315688	NGL CDO
1044227	352443	006112	6	57	9	36	106.620	107.230	0.610	6	0	2.000	315689	NGL CDO
1044227	352443	006112	6	57	9	36	157.730	161.000	3.270	4	0	2.000	315690	NGL CDO
1044227	352443	006112	6	57	9	36	186.840	188.850	2.010	3	0	2.000	315691	NGL CDO
1044228	420422	CF8104	6	57	9	36	108.140	108.940	0.800	0	0	4.000	0	
1044228	420422	CF8104	6	57	9	36	189.280	190.440	1.160	0	0	4.000	0	
1044228	420422	CF8104	6	57	9	36	209.150	210.780	1.630	0	0	4.000	315710	
1044228	420422	CF8104	6	57	9	36	222.750	224.280	1.530	0	0	4.000	0	
1044228	420422	CF8104	6	57	9	36	225.980	227.670	1.690	0	0	4.000	0	
1044228	420422	CF8104	6	57	9	36	242.770	244.110	1.340	0	0	4.000	315723	
1044228	420422	CF8104	6	57	9	36	244.880	245.790	0.910	0	0	4.000	0	
1044228	420422	CF8104	6	57	9	36	281.640	285.900	4.260	4	0	4.000	0	
1044228	420422	CF8104	6	57	9	36	305.960	307.850	1.890	3	0	4.000	0	
1044229	420455	CF8107	6	57	9	36	58.000	58.640	0.640	0	0	5.000	0	
1044229	420455	CF8107	6	57	9	36	59.340	60.840	1.500	0	0	5.000	0	
1044229	420455	CF8107	6	57	9	36	102.530	105.330	2.800	0	0	5.000	315749	
1044229	420455	CF8107	6	57	9	36	127.640	128.380	0.740	0	0	5.000	315750	
1044229	420455	CF8107	6	57	9	36	129.300	130.210	0.910	0	0	5.000	0	
1044229	420455	CF8107	6	57	9	36	182.090	191.170	9.080	0	0	5.000	0	
1044229	420455	CF8107	6	57	9	36	230.790	232.620	1.830	0	0	5.000	0	
1044234	435792	8319	6	58	8	2	52.200	52.800	0.600	0	0	3.400	0	
1044234	435792	8319	6	58	8	2	53.450	53.900	0.450	0	0	3.400	315774	
1044234	435792	8319	6	58	8	2	60.150	62.830	2.680	0	0	3.400	0	
1044234	435792	8319	6	58	8	2	79.820	80.300	0.480	0	0	3.400	315781	
1044234	435792	8319	6	58	8	2	84.900	85.400	0.500	10	10	3.400	315782	
1044234	435792	8319	6	58	8	2	88.230	91.200	2.970	10	0	3.400	0	
1044235	435800	8320	6	58	8	2	10.800	11.770	0.970	0	0	1.500	315789	
1044235	435800	8320	6	58	8	2	16.320	17.350	1.030	0	0	1.500	315791	
1044235	435800	8320	6	58	8	2	39.100	39.620	0.520	0	0	1.500	315792	
1044235	435800	8320	6	58	8	2	44.900	45.500	0.600	0	0	1.500	0	
1044235	435800	8320	6	58	8	2	50.600	51.300	0.700	0	0	1.500	315796	
1044235	435800	8320	6	58	8	2	61.090	68.000	6.910	4	10	1.500	315800	
1044236	354001	006108	6	58	8	6	19.080	19.660	0.580	9	0	3.700	315801	NGL CDO
1044236	354001	006108	6	58	8	6	55.660	56.330	0.670	8	0	3.700	315802	NGL CDO
1044236	354001	006108	6	58	8	6	67.670	69.340	1.670	7&6	0	3.700	315803	NGL CDO
1044236	354001	006108	6	58	8	6	77.720	78.580	0.860	5	0	3.700	315804	NGL CDO
1044236	354001	006108	6	58	8	6	108.510	111.710	3.200	4	0	3.700	315805	NGL CDO
1044236	354001	006108	6	58	8	6	135.670	137.130	1.460	3	0	3.700	315807	NGL CDO
1044237	354837	0CF06E	6	58	8	6	79.550	81.900	2.350	10	30	0.100	0	
1044237	354837	0CF06E	6	58	8	6	102.720	103.940	1.220	8	10	0.100	315809	
1044237	354837	0CF06E	6	58	8	6	114.300	115.820	1.520	7	0	0.100	0	
1044237	354837	0CF06E	6	58	8	6	116.430	117.040	0.610	6	22	0.100	0	
1044237	354837	0CF06E	6	58	8	6	166.880	170.990	4.110	4	0	0.100	0	
1044238	354845	DCF13W	6	58	8	6	75.830	77.720	1.890	0	0	9.100	315815	NGL CDO
1044238	354845	DCF13W	6	58	8	6	79.030	80.040	1.010	10	0	9.100	315816	NGL CDO
1044238	354845	DCF13W	6	58	8	6	98.600	99.460	0.860	8	0	9.100	315818	NGL CDO
1044238	354845	DCF13W	6	58	8	6	110.220	111.250	1.030	7	0	9.100	315819	NGL CDO
1044238	354845	DCF13W	6	58	8	6	112.170	112.900	0.730	6	0	9.100	315820	NGL CDO
1044238	354845	DCF13W	6	58	8	6	149.200	153.470	4.270	4	0	9.100	315821	NGL CDO
1044239	420398	DCF-13	6	58	8	6	75.290	76.990	1.700	10	0	0.000	0	
1044239	420398	DCF-13	6	58	8	6	97.780	98.760	0.980	7	10	0.000	315832	
1044239	420398	DCF-13	6	58	8	6	109.610	110.700	1.090	6	5	0.000	315833	
1044239	420398	DCF-13	6	58	8	6	111.400	112.290	0.890	6	0	0.000	0	
1044239	420398	DCF-13	6	58	8	6	148.860	152.950	4.590	4	0	0.000	0	
1044240	420406	CF81-2	6	58	8	6	81.930	84.400	2.130	10	0	9.800	0	
1044240	420406	CF81-2	6	58	8	6	105.980	106.920	0.940	7	10	9.800	315846	
1044240	420406	CF81-2	6	58	8	6	170.080	174.960	4.880	4	10	9.800	315847	

1044240	420406	CF81-2	6	58	8	6	199.370	200.990	1.620	3	0	9.800	0	
1044241	420414	CFR813	6	58	8	6	76.620	81.140	4.520	4	0	0.000	0	
1044241	420414	CFR813	6	58	8	6	104.120	105.520	1.400	3	5	0.000	315857	
1044242	420562	CF8118	6	58	8	6	10.300	11.490	1.190	0	0	3.000	0	
1044242	420562	CF8118	6	58	8	6	27.280	28.910	1.630	0	0	3.000	315862	
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1044242	420562	CF8118	6	58	8	6	104.490	106.220	1.730	3	0	3.000	315882	
1044917	358861	006105	6	58	9	1	29.660	31.060	1.400	8	0	3.000	319701	NGL CDO
1044917	358861	006105	6	58	9	1	42.060	42.670	0.610	7	0	3.000	319702	NGL CDO
1044917	358861	006105	6	58	9	1	86.500	90.830	4.330	4	0	3.000	319704	NGL CDO
1044917	358861	006105	6	58	9	1	114.480	116.460	1.980	3	0	3.000	319706	NGL CDO
1044918	358879	006107	6	58	9	1	30.780	31.700	0.920	8	0	3.000	319707	NGL CDO
1044918	358879	006107	6	58	9	1	43.310	44.230	0.920	7	0	3.000	319708	NGL CDO
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1044918	358879	006107	6	58	9	1	93.150	97.110	3.960	4	0	3.000	319710	NGL CDO
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1044919	358945	0CF01V	6	58	9	1	14.020	16.150	2.130	0	30	0.100	0	
1044919	358945	0CF01V	6	58	9	1	87.170	87.780	0.610	0	19	0.100	0	
1044919	358945	0CF01V	6	58	9	1	93.270	93.880	0.610	10	41	0.100	0	
1044919	358945	0CF01V	6	58	9	1	117.040	117.650	0.610	8	11	0.100	0	
1044919	358945	0CF01V	6	58	9	1	128.020	128.930	0.910	7	55	0.100	0	
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1044919	358945	0CF01V	6	58	9	1	173.130	176.940	3.810	4	28	0.100	0	
1044920	358952	0CF02V	6	58	9	1	18.290	18.930	0.640	0	32	0.100	0	
1044920	358952	0CF02V	6	58	9	1	50.290	51.510	1.220	0	10	0.100	0	
1044920	358952	0CF02V	6	58	9	1	61.260	62.480	1.220	7&6	15	0.100	0	
1044920	358952	0CF02V	6	58	9	1	107.900	110.700	2.800	4	15	0.100	0	
1044920	358952	0CF02V	6	58	9	1	117.650	118.260	0.610	0	11	0.100	0	
1044920	358952	0CF02V	6	58	9	1	135.640	136.860	1.220	3	20	0.100	0	
1044921	358960	0CF03V	6	58	9	1	82.420	84.120	1.700	8	50	0.100	0	
1044921	358960	0CF03V	6	58	9	1	95.550	96.560	1.010	7	10	0.100	0	
1044921	358960	0CF03V	6	58	9	1	96.990	97.690	0.700	6	24	0.100	0	
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1044922	358978	0CF04V	6	58	9	1	8.720	10.970	2.250	10	44	0.100	0	
1044922	358978	0CF04V	6	58	9	1	44.810	46.020	1.210	8	18	0.100	0	
1044922	358978	0CF04V	6	58	9	1	59.130	60.350	1.220	7	4	0.100	0	
1044922	358978	0CF04V	6	58	9	1	60.350	61.870	1.520	6	32	0.100	0	
1044922	358978	0CF04V	6	58	9	1	120.700	126.190	5.490	4	12	0.100	0	
1044923	358986	0CF05V	6	58	9	1	35.050	35.970	0.920	8	0	0.100	0	
1044923	358986	0CF05V	6	58	9	1	48.460	49.530	1.070	7	12	0.100	0	
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1044923	358986	0CF05V	6	58	9	1	85.650	89.760	4.110	4	18	0.100	0	
1044924	359018	DCF10V	6	58	9	1	117.470	118.450	0.980	0	0	17.100	319751	NGL CDO
1044924	359018	DCF10V	6	58	9	1	211.710	213.480	1.770	10	0	17.100	319753	NGL CDO
1044924	359018	DCF10V	6	58	9	1	237.070	238.660	1.590	8	0	17.100	319757	NGL CDO
1044924	359018	DCF10V	6	58	9	1	253.440	255.120	1.680	7	0	17.100	319758	NGL CDO
1044924	359018	DCF10V	6	58	9	1	255.910	256.640	0.730	6	0	17.100	319759	NGL CDO
1044924	359018	DCF10V	6	58	9	1	266.240	266.760	0.520	5	0	17.100	319760	NGL CDO
1044924	359018	DCF10V	6	58	9	1	292.210	296.570	4.360	4	0	17.100	319761	NGL CDO
1044925	359026	DCF11E	6	58	9	1	83.240	84.430	1.190	10	0	18.300	319763	NGL CDO
1044925	359026	DCF11E	6	58	9	1	111.010	111.950	0.940	8	0	18.300	319765	NGL CDO
1044925	359026	DCF11E	6	58	9	1	122.900	124.050	1.150	7	0	18.300	319766	NGL CDO
1044925	359026	DCF11E	6	58	9	1	166.820	171.300	4.480	4	0	18.300	319768	NGL CDO
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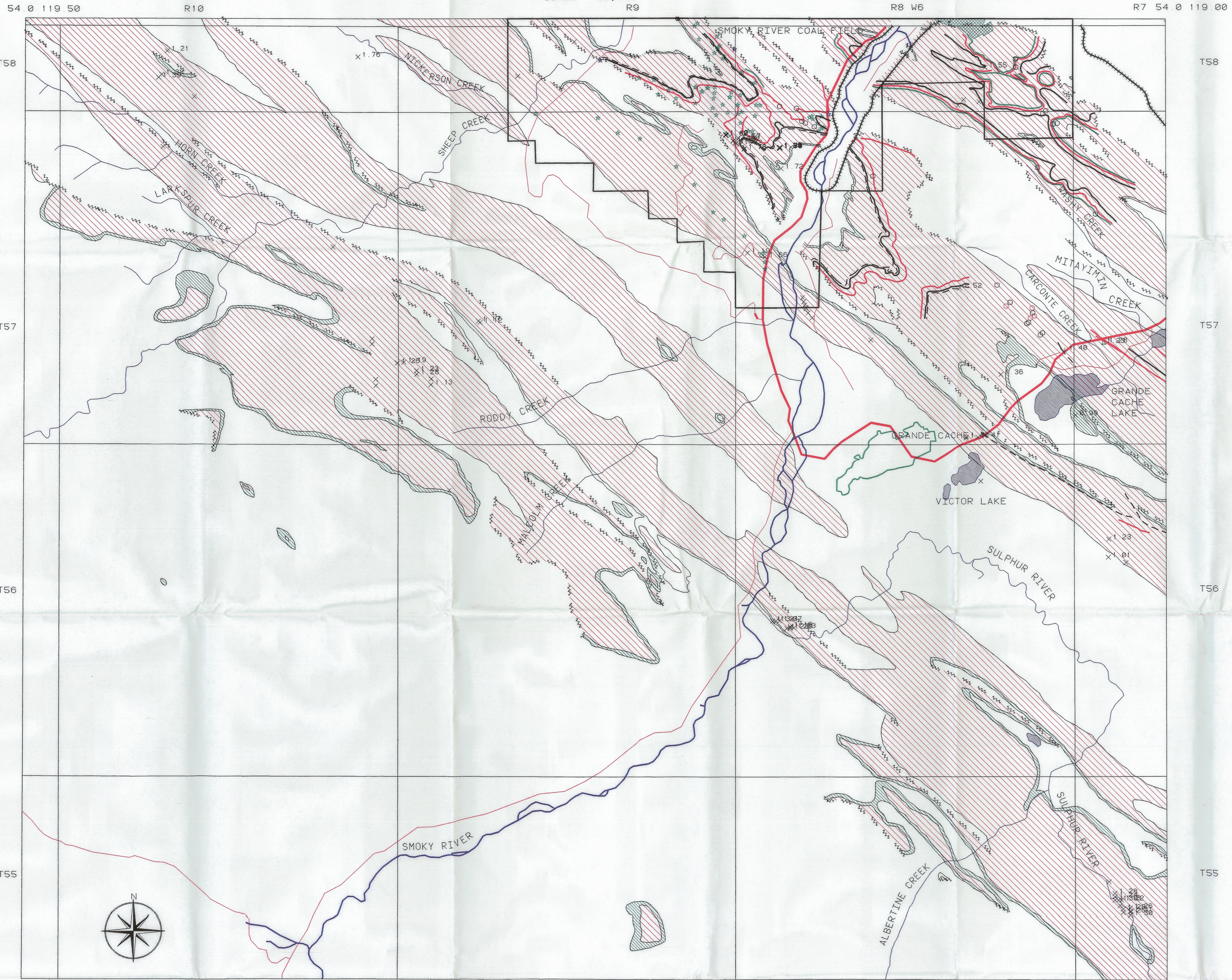
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1044930	420463	CF8108	6	58	9	1	99.460	100.770	1.310	0	0	24.000	0	
1044930	420463	CF8108	6	58	9	1	206.210	207.070	0.860	0	0	24.000	319824	
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1044930	420463	CF8108	6	58	9	1	220.000	220.610	0.610	6	0	24.000	319826	
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1044931	420513	CF8113	6	58	9	1	10.610	12.180	1.570	0	0	9.000	319842	
1044931	420513	CF8113	6	58	9	1	53.040	54.540	1.500	6	0	9.000	0	
1044931	420513	CF8113	6	58	9	1	55.320	57.610	2.290	6	0	9.000	0	
1044932	420521	CF8114	6	58	9	1	4.100	4.630	0.530	0	0	6.000	0	
1044932	420521	CF8114	6	58	9	1	10.270	19.880	9.610	0	0	6.000	0	
1044932	420521	CF8114	6	58	9	1	61.690	62.170	0.480	0	0	6.000	319873	
1044932	420521	CF8114	6	58	9	1	62.540	64.620	2.080	0	0	6.000	319875	
1044933	420539	CF8115	6	58	9	1	105.340	107.270	1.930	0	0	5.000	0	
1044933	420539	CF8115	6	58	9	1	139.450	140.390	0.940	6	0	5.000	0	
1044933	420539	CF8115	6	58	9	1	140.700	142.520	1.820	6	0	5.000	0	
1044934	358895	006113	6	58	9	2	27.740	28.350	0.610	8	0	10.300	319890	NGL CDO
1044934	358895	006113	6	58	9	2	41.450	42.310	0.860	7	0	10.300	319891	NGL CDO
1044934	358895	006113	6	58	9	2	59.890	60.750	0.860	5	0	10.300	319893	NGL CDO
1044934	358895	006113	6	58	9	2	82.970	86.900	3.930	4	0	10.300	319894	NGL CDO
1044934	358895	006113	6	58	9	2	109.090	110.520	1.430	3	0	10.300	319895	NGL CDO
1044935	358911	006116	6	58	9	2	141.820	142.400	0.580	9	0	7.000	319896	NGL CDO
1044935	358911	006116	6	58	9	2	247.310	250.240	2.930	4	0	7.000	319898	NGL CDO
1044935	358911	006116	6	58	9	2	271.910	273.560	1.650	3	0	7.000	319899	NGL CDO
1044936	358929	006117	6	58	9	2	113.230	114.420	1.190	8	0	7.000	319900	NGL CDO
1044936	358929	006117	6	58	9	2	126.710	127.710	1.000	7	0	7.000	319901	NGL CDO
1044936	358929	006117	6	58	9	2	172.670	175.380	2.710	4	0	7.000	319903	NGL CDO
1044936	358929	006117	6	58	9	2	197.510	199.100	1.590	3	0	7.000	319904	NGL CDO
1044937	358994	0CF07E	6	58	9	2	50.600	56.210	5.610	4	11	0.100	0	
1044938	359000	0CF08E	6	58	9	2	13.380	16.920	3.540	4	8	0.100	0	
1044940	358887	006109	6	58	9	12	166.630	168.040	1.410	9	0	9.000	319913	NGL CDO
1044940	358887	006109	6	58	9	12	217.570	218.270	0.700	6	0	9.000	319916	NGL CDO
1044940	358887	006109	6	58	9	12	257.920	263.040	5.120	4	0	9.000	319917	NGL CDO
1044940	358887	006109	6	58	9	12	289.560	290.320	0.760	3	0	9.000	319918	NGL CDO
1044942	420471	CFR819	6	58	9	12	35.300	56.940	21.640	0	0	0.000	0	
1044942	420471	CFR819	6	58	9	12	136.490	138.860	2.370	0	0	0.000	0	
1044942	420471	CFR819	6	58	9	12	141.240	142.890	1.650	0	0	0.000	319936	
1044943	420489	CF8110	6	58	9	12	7.070	8.410	1.340	0	0	6.100	0	
1044943	420489	CF8110	6	58	9	12	18.810	20.730	1.920	0	0	6.100	319937	
1044943	420489	CF8110	6	58	9	12	21.180	22.560	1.380	0	0	6.100	0	
1044943	420489	CF8110	6	58	9	12	61.690	68.790	7.100	0	0	6.100	0	
1044943	420489	CF8110	6	58	9	12	94.850	96.390	2.080	0	0	6.100	0	
1044944	420497	CF8111	6	58	9	12	88.390	89.920	1.530	0	0	4.000	319969	DLO
1044945	420505	CF8112	6	58	9	12	38.100	38.710	0.610	0	0	0.000	319973	
1044945	420505	CF8112	6	58	9	12	39.200	40.070	0.870	0	0	0.000	319975	
1044945	420505	CF8112	6	58	9	12	40.570	41.030	0.460	0	0	0.000	319977	
1044945	420505	CF8112	6	58	9	12	41.640	47.790	6.150	0	0	0.000	319980	
1044945	420505	CF8112	6	58	9	12	58.190	58.630	0.440	0	0	0.000	319984	
1044945	420505	CF8112	6	58	9	12	91.150	91.870	0.720	0	0	0.000	319985	
1044945	420505	CF8112	6	58	9	12	92.350	94.370	2.020	0	0	0.000	319987	
1044946	420547	CF8116	6	58	9	12	69.490	71.240	1.750	0	0	7.000	0	

1044946	420547	CF8116	6	58	9	12	81.320	82.910	1.590	0	0	7.000	320005
1044946	420547	CF8116	6	58	9	12	126.670	133.510	6.480	0	0	7.000	0
1044946	420547	CF8116	6	58	9	12	160.800	161.850	1.050	0	0	7.000	0
1044947	420554	CF8117	6	58	9	12	105.060	106.250	1.190	0	0	4.000	320029
1044947	420554	CF8117	6	58	9	12	116.310	118.410	2.100	0	0	4.000	320030
1044947	420554	CF8117	6	58	9	12	118.750	120.080	1.330	0	0	4.000	0
1044947	420554	CF8117	6	58	9	12	163.310	170.330	7.020	4	0	4.000	0
1044947	420554	CF8117	6	58	9	12	200.200	202.140	1.940	0	0	4.000	0

REGIONAL COAL MAPPING - GRANDE CACHE NTS 83E/14

R. J. H. RICHARDSON, W. LANGENBERG, D. K. CHAO, D. FIETZ

SCALE 1:50,000
R9

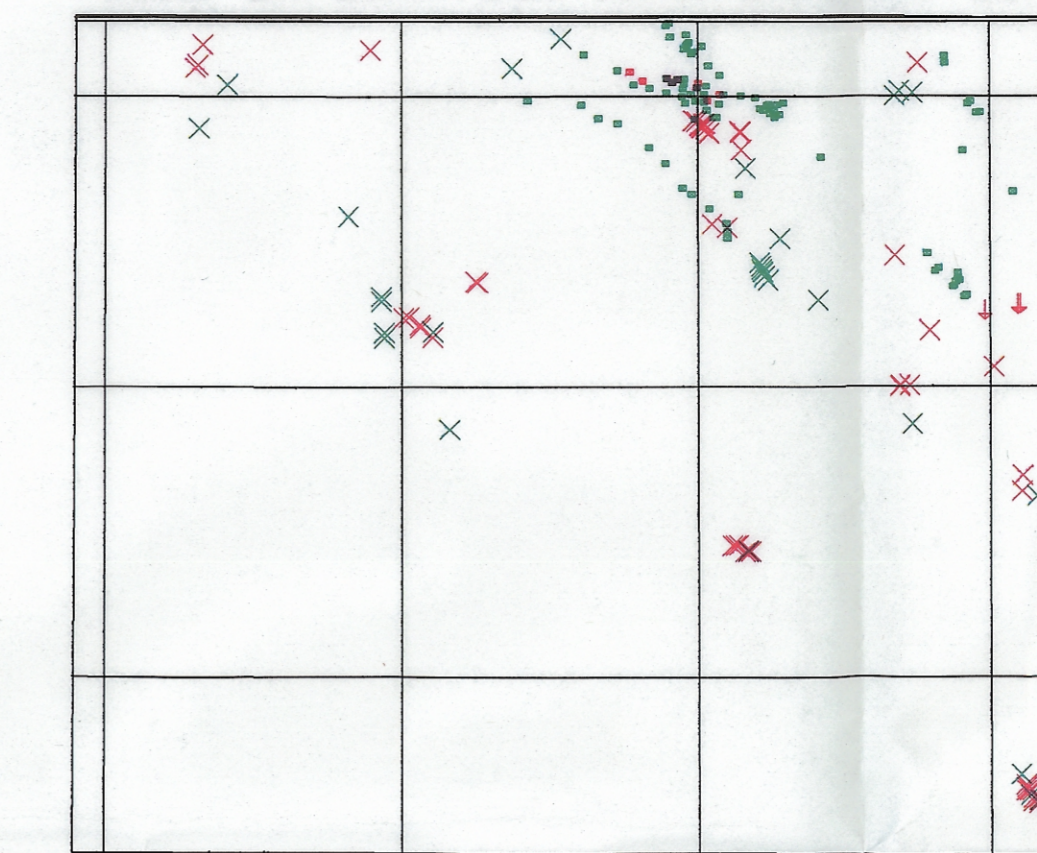


54 0 119 50 R10 R9 R8 W6 R7 54 0 119 00
53.75 119.50 R10 R9 R8 W6 R7 53.75 119.00

1:50,000 LEGEND

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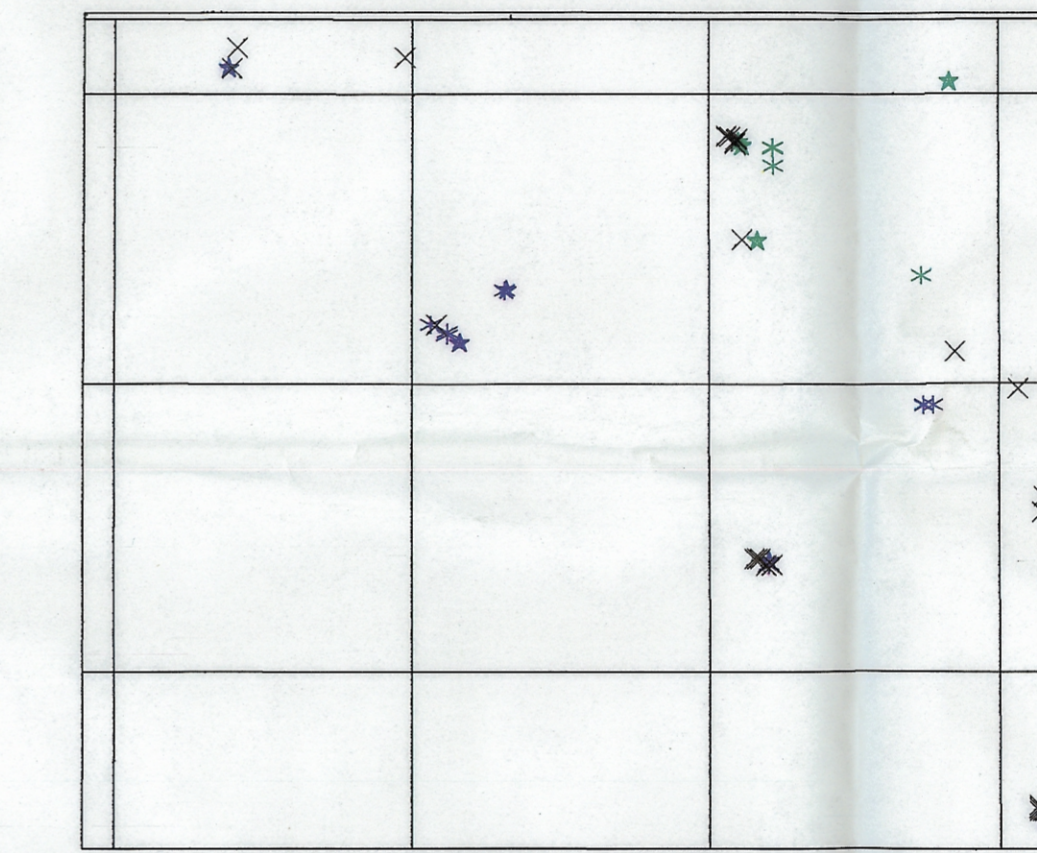
REGIONAL COAL MAPPING - GRANDE CACHE NTS 83E/14 COAL EXPLORATION DATA INFORMATION



SCALE 1:250,000

- COAL DRILLHOLE, WITH COAL QUALITY
- COAL DRILLHOLE, NO COAL QUALITY
- COAL OUTCROP, WITH COAL QUALITY
- COAL OUTCROP, NO COAL QUALITY
- TRENCH, WITH COAL QUALITY

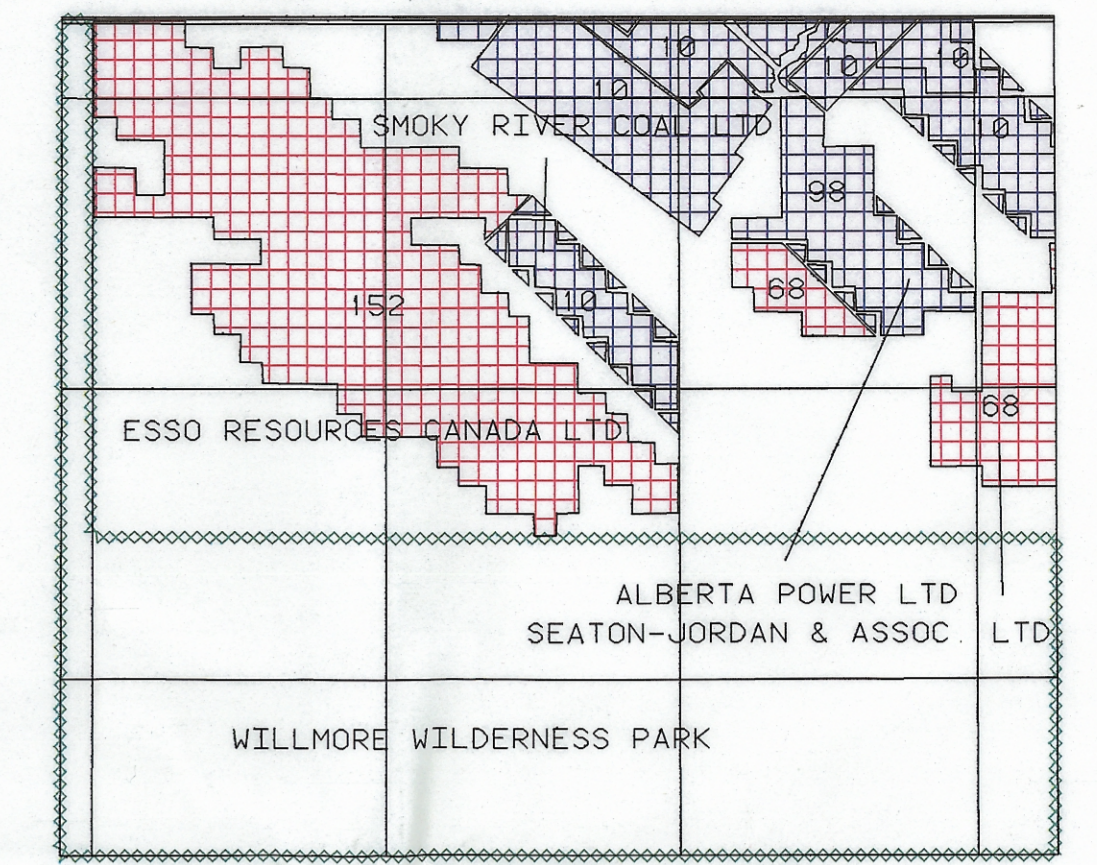
REGIONAL COAL MAPPING - GRANDE CACHE NTS 83E/14 VITRINITE REFLECTANCE CLASSIFICATION



SCALE 1:250,000

- MEDIUM-VOLATILE BITUMINOUS COAL SEAM 3
- HIGH-VOLATILE BITUMINOUS COAL SEAM 3
- MEDIUM-VOLATILE BITUMINOUS COAL SEAM 4
- HIGH-VOLATILE BITUMINOUS COAL SEAM 4
- MEDIUM-VOLATILE BITUMINOUS COAL SEAM 10
- HIGH-VOLATILE BITUMINOUS COAL SEAM 10
- OTHER SEAMS

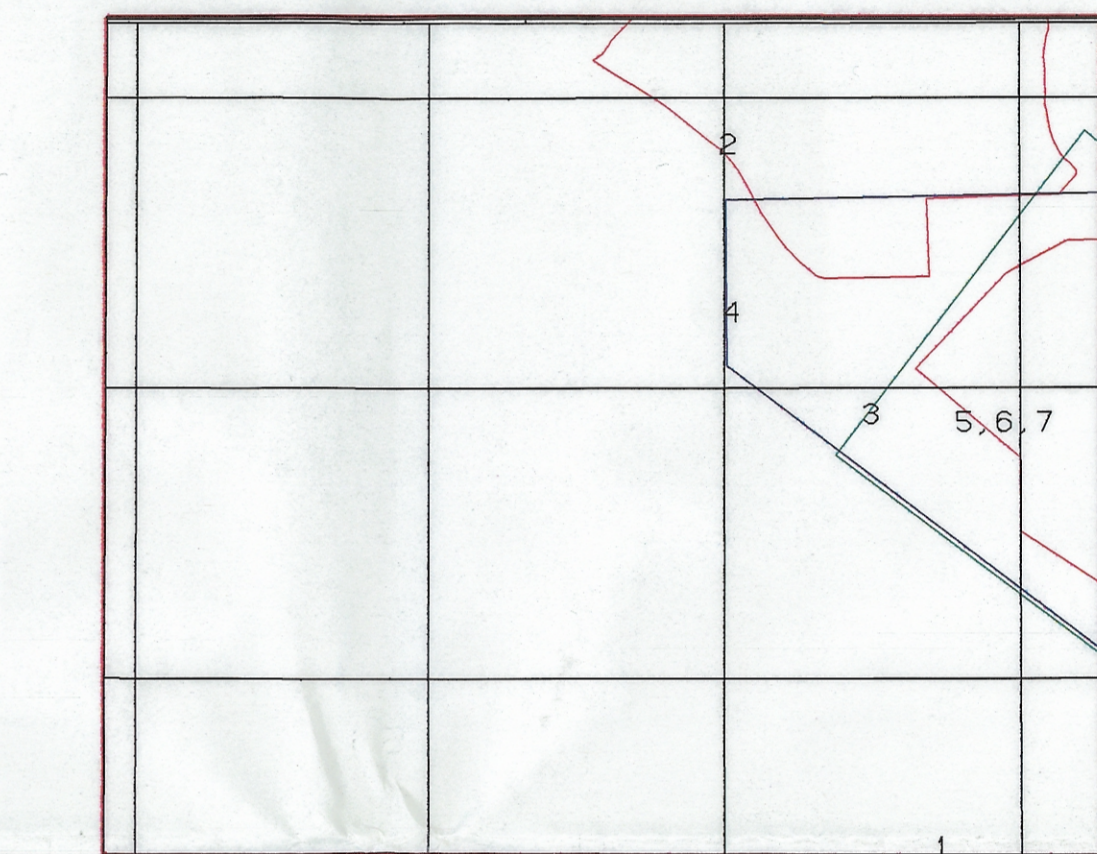
REGIONAL COAL MAPPING - GRANDE CACHE NTS 83E/14 COAL DISPOSITIONS



SCALE 1:250,000

- COAL LEASE
- COAL LEASE APPLICATION

REGIONAL COAL MAPPING - GRANDE CACHE NTS 83E/14 INDEX TO SPECIFIC REFERENCE DOCUMENTS



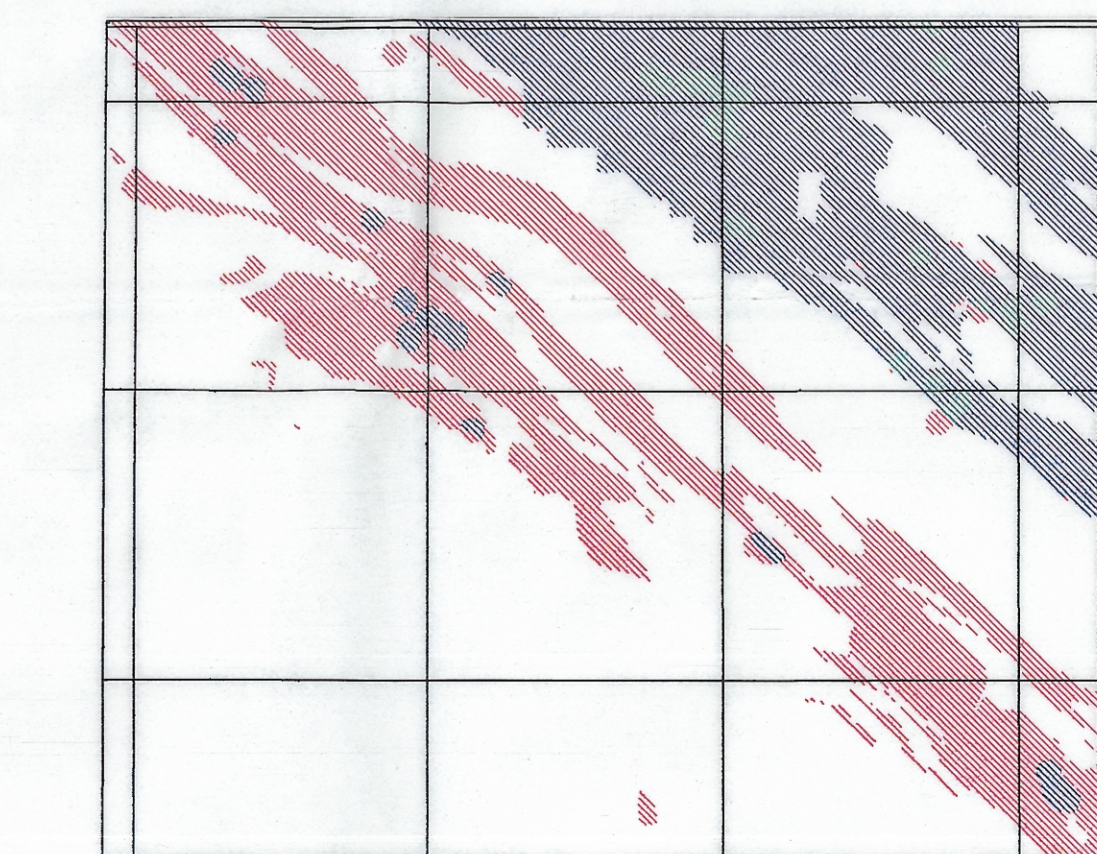
SCALE 1:250,000

INDEX TO SPECIFIC DOCUMENTS for the MAPSHEET NTS 83E/14

- Irish, E.J.M. and Thorsteinsson, R. 1957. Grande Cache mapsheet. Geological Survey of Canada Map 1880A. Scale 1:63500. Outline identified as 1 on G15 plot.
- Langenberg, C.W., Kalkreuth, M. and Wrightson, C.B. 1987. Deformed Lower Carboniferous coal-bearing strata of the Grande Cache area, Alberta. Alberta Research Council - Alberta Geological Survey Bulletin No. 56. Report, Geomorphology, Alberta Geological Survey, Edmonton, Alberta. Scale 1:50,000.
- Geological Map Grande Cache Area, Alberta. Scale 1:50,000. Cross Sections, Grande Cache Area, Alberta. Scale 1:50,000. Structure of Top of Number 4 Coal Seam, Grande Cache, Alberta. Scale 1:50,000.
- Outline identified as 2 on G15 plot.
- Irish, E.J.M. 1978. Coal Geological Work, Grande Cache, Alberta. Report prepared for Pacific Petroleum Ltd., Calgary, Alberta. Report contains 1:250,000 regional geological map. Outline identified as 3 on G15 plot.
- McDonald, C. 1981. West of 6th Project - Starna Creek, Grande Mountain and Grizzly Creek Metallurgical Coal Prospects - Preliminary Geological Evaluation - 1980 Field Programme. Mining Department - Union Oil Company of Canada Limited. Outlined identified as 4 on G15 plot.
- David E. Pearson and Associates Ltd. Prepared for Union Oil Company of Canada Limited. 1982-12. Report on 1982 Program Starna Creek Project. 2 Volume. Report contains 1:250,000 geological maps (3) and cross-section (7). Outline identified as 5 on G15 plot.
- David E. Pearson and Associates Ltd. Prepared for Union Oil Company of Canada Limited. 1982-12. Petrography of Starna Creek Trench Samples. Outline identified as 6 on G15 plot.
- David E. Pearson and Associates Ltd. Prepared for Union Oil Company of Canada Limited. 1982-88. Reflectance Data for Starna Creek Coals. Outline identified as 7 on G15 plot.

Industry cooperation and support exemplified by sharing of knowledge... unpublished corporate reports on loan to the Alberta Geological Survey.

REGIONAL COAL MAPPING - GRANDE CACHE NTS 83E/14 COAL DEVELOPMENT POTENTIAL*



SCALE 1:250,000

- HIGH POTENTIAL
- MEDIUM POTENTIAL
- LOW POTENTIAL
- NO DATA AVAILABLE

* NOTE *
Coal Development Potential is a semi-quantitative and subjective evaluation of the potential for coal development based on limited data and reflecting current mining technology and general economic factors. CAUTION SHOULD BE EMPLOYED IN THE USE OF THIS ANALYSIS. The analysis is based on mainly geological criteria and does not take into account governmental restrictions on coal development or evaluate actual economic feasibility for development now or in the future. To establish a "potential" map for a particular set of criteria, please contact the AS.

ALBERTA RESEARCH COUNCIL MAP RCMS
IMAGE NAME : 83E14p1.t
COMPILED DATE : MAY, 1990
REVISION DATE : JULY 17, 1990

RELIABILITY AND USE
Information contained on this map sheet has been derived from a large number of different sources, scales, and formats (digital and hard copy). Every attempt has been made to accurately portray the data, however, this map is intended to provide a basic compilation and overview of Coal Resources. For more specific information please contact the Head, Coal Geology Section, Alberta Geological Survey, Alberta Research Council, P.O. Box 6590, Station F., Edmonton, Alberta.

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