Appendix 16-A

Murray River Coal Project: 2013 Non-traditional Land and Resource Use Baseline Report

HD Mining International Ltd.

MURRAY RIVER COAL PROJECT
2013 Non-traditional Land and Resource Use Baseline Report



Addendum Included October 2014

Rescan™ Environmental Services Ltd.
Rescan Building, Sixth Floor - 1111 West Hastings Street
Vancouver, BC Canada V6E 2J3
Tel: (604) 689-9460 Fax: (604) 687-4277

July 2013

MURRAY RIVER COAL PROJECT

2013 NON-TRADITIONAL LAND AND RESOURCE USE BASELINE REPORT

Addendum Included October 2014

July 2013
Project #0194106-003-0015

Citation:
Rescan. 2013. *Murray River Coal Project: 2013 Non-traditional Land and Resource Use Baseline Report*. Prepared for HD Mining International Ltd. by Rescan Environmental Services Ltd.: Vancouver, British Columbia.

Prepared for:

HD Mining International Ltd.

Prepared by:

Rescan™ Environmental Services Ltd.
Vancouver, British Columbia

Executive Summary

Rescan™
Engineers and Scientists

Executive Summary

HD Mining International Ltd. (HD Mining) proposes to develop the Murray River Coal Project (the Project) as a 6 million tonne per annum (Mtpa) underground metallurgical coal mine. The property is located approximately 12.5 km south of Tumbler Ridge, British Columbia (BC). The Project is located within the Peace River Coalfield, an area with a long history of metallurgical grade coal mining, mainly from open pit mining. HD Mining is proposing to access deeper zones of the coal field (600 to 1,000 m below surface) through underground mining techniques.

To support HD Mining's planning and development of the Project, and to contribute to the environmental assessment process, environmental and socio-economic baseline studies were initiated by Rescan Environmental Services Ltd. (Rescan). Project-specific studies began in 2010 and have continued through 2013. As appropriate and available, historical data from government sources and neighbouring projects, as well as traditional use/knowledge information, have been compiled and incorporated into analysis.

This report presents a cumulative summary of all land use information compiled for the Project to date.

An understanding of the commercial and non-commercial land and resource interests within the vicinity of the Project is necessary to assess and avoid potential Project effects on these interests. The study considers Crown-granted tenures, Crown lands, private land, parks, ecological reserves, Protected Areas, provincial land and resource management plans, and other land and resource uses within a local study area (LSA), which focuses on the Project footprint, and a regional study area (RSA). The boundaries of the LSA and RSA were informed by the boundaries for other baseline studies, such as wildlife and terrestrial ecology, which considered local watershed boundaries, key wildlife habitat and ecosystem components selected for monitoring.

The main objectives of this baseline study report are to:

- review the objectives and management guidance in provincial land and resource management plans are they relate to the Project;
- identify private land, parks, ecological reserves and Protected Areas that might be impacted by the Project;
- identify Crown-granted land and resource tenures that might be impacted by the Project; and
- identify non-tenured land and resource uses that might be impacted by the Project.

The proposed Project is located on provincial Crown land and falls within the Dawson Creek Land and Resource Management Plan. Table 1 summarizes commercial and non-commercial land and resource uses within the LSA and RSA. Information related to historic and current Aboriginal land and resource uses within the vicinity of the Project is included in Rescan (Rescan 2012; see Sections 2.1.1 and 4.13).

Table 1. Summary of Commercial and Non-commercial Land and Resource Interests within the Local and Regional Study Areas, as of July, 2013

Private land	There is no private land in the LSA or RSA.
Parks and Protected Areas	One provincial park and protected area overlaps the RSA by approximately 5,779 ha (32%).
Fishing and Angling	No provincially-licenced commercial angling takes place in the LSA or RSA. Recreational fishing takes place on the Murray River which flows through the RSA and LSA.
Recreation and Tourism	There are no commercial recreation tenures in the LSA or RSA. One private campsite and one forest recreation site are located in the RSA. Non-commercial activities take place in the LSA and RSA, such as hiking, motorized recreation, and boating.
Hunting	The LSA and RSA overlap with two provincial wilderness management units used by resident and non-resident hunters. Primary species targeted by resident hunters include moose, elk and deer.
Guide Outfitting	Two guide outfitter tenures overlap with the LSA; four guide outfitter tenures overlap with the RSA. One guide outfitter tenure overlaps with the majority of the LSA and more than half of the RSA.
Trapping	Three trapline tenures overlap with the LSA; ten trapline tenures overlap with the RSA. Harvested species include squirrel, marten, beaver, and weasel, with coyote, fisher, lynx and muskrat.
Forestry	Five forest tenures are located in the LSA, including one tree farm licence, two BC timber sales agreements, one pulpwood agreement, and one community forest agreement.
Agriculture and Range	There are no agriculture or range tenures in the LSA or RSA.
Mineral Exploration and Mining	There are two coal leases (operating coal mines) and 45 coal licences within the LSA (27 of which are held by HD Mining; the remaining 20 licences are held by three companies).
Aggregates and Construction	Two construction companies hold three *Land Act* (1996f) quarry tenures in the LSA. One tenure overlaps with the southern tip of the Infrastructure Investigation Area. Within the RSA, one construction company holds one quarry tenure.
Petroleum and Natural Gas	The LSA contains 32 petroleum and natural gas leases, held by ten companies. No drill licences occur in the LSA. Within the RSA, there are 217 petroleum and natural gas leases and ten drill licenses.
Wind Power	There are two *Land Act* (1996f) tenures related to wind power in the LSA, held by two companies. Within the RSA, there are sixteen *Land Act* tenures related to wind power tenures, held by nine tenure holders.
Domestic Water Use	There are no domestic water licences in the LSA. Within the RSA, the City of Dawson Creek holds one water licence, authorizing it to draw water from the Kiskatinaw River for storage and waterworks.
Transportation	The LSA encompasses portions of one highway and 17 resource roads. Resource roads include seven forest roads, seven petroleum and natural gas roads and three *Land Act* (1996f) roadway authorizations. Within the RSA, there are two highways and 245 active road use tenures. There are two *Land Act* railway tenures in the LSA and one *Land Act* railway tenure in the RSA. There are no *Land Act* airstrips within the LSA. Two *Land Act* airstrips are located within the RSA.
Utilities and Communication	The LSA contains a single electric power line, held by BC Hydro and Power Authority. BC Hydro holds an additional four power line tenures in the RSA, while a communication company holds one tenure. No communication sites are located in the LSA. Four communication sites are located in the RSA.

Acknowledgements

Rescan™
Engineers and Scientists

Acknowledgements

This report was prepared for HD Mining International Ltd. by Rescan Environmental Services Ltd. (Rescan). The *Land and Resource Use* fieldwork was conducted by Rescan scientists Jeremy Pittman and Maurice DePaoli (B.A.). The report was written by Justin Page (Ph.D.) with contributions from Agata Kosinski (M.Sc.), Jeremy Pittman (M.Sc.), and Maurice DePaoli (B.A.). Andrew Robinson (M.Sc.) provided senior technical review. The work was managed by Anne Currie (B.A., MPA) and Jason Rempel (M.Sc., P.Geo.) and directed by Clem Pelletier (B.Sc.).

Table of Contents

Rescan™
Engineers and Scientists

MURRAY RIVER COAL PROJECT
2013 NON-TRADITIONAL LAND AND RESOURCE USE BASELINE REPORT

Table of Contents

List of Figures

List of Tables

TABLE **PAGE**

List of Appendices

Glossary and Abbreviations

Rescan™
Engineers and Scientists

Glossary and Abbreviations

Terminology used in this document is defined where it is first used. The following list will assist readers who may choose to review only portions of the document.

AAC	Annual Allowable Cut
ALR	Agricultural Land Reserve
ATV	All-terrain vehicle
BC ALC	British Columbia Agricultural Land Commission
BC EAO	British Columbia Environmental Assessment Office
BC MEMPR	British Columbia Ministry of Energy, Mines and Petroleum Resources
BC MFLNRO	British Columbia Ministry of Forests, Lands and Natural Resource Operations
BC MOE	British Columbia Ministry of Environment
BC MOT	British Columbia Ministry of Transportation and Infrastructure
BC OGC	British Columbia Oil and Gas Commission
DTR	District of Tumbler Ridge
GMD	General Management Direction
GOABC	Guide Outfitters Association of British Columbia
HD Mining	HD Mining International Ltd.
ILMB	Integrated Land Management Bureau
LRMP	Land and Resource Management Plan
LSA	Local Study Area
Project	Murray River Coal Project
OPC	Official Community Plan
RCMP	Royal Canadian Mounted Police
Rescan	Rescan Environmental Services Ltd.
RMZ	Resource Management Zone
RSA	Regional Study Area
TSA	Timber Supply Area
WMU	Wildlife Management Unit

1. Introduction

Rescan™
Engineers and Scientists

1. Introduction

HD Mining International Ltd. (HD Mining) proposes to develop the Murray River Coal Project (the Project) as a 6 million tonne per annum (Mtpa) underground metallurgical coal mine. The property is located approximately 12.5 km south of Tumbler Ridge, British Columbia (BC; Figure 1-1), and consists of 57 coal licences covering an area of 16,024 hectares (ha). The Project is located within the Peace River Coalfield, an area with a long history of metallurgical grade coal mining, mainly from open pit mining. HD Mining is proposing to access deeper zones of the coal field (600 to 1,000 metres below surface) through underground mining techniques.

In October 2011, HD Mining submitted an application to the BC Ministry of Energy and Mines and the BC Ministry of Environment (BC MOE) seeking permission to complete a bulk sampling program as part of exploration of the property. In March 2012, HD Mining received approval to conduct a 100,000 tonne bulk sample for the purpose of conducting testing to assist in developing markets for the coal.

Beyond the bulk sample program, in order to develop a full mine at the proposed 6 Mtpa, the Project is subject to both the BC and Canadian environmental assessment processes. Development of any infrastructure for the full mine is not permitted before the requirements of these processes are met.

To support HD Mining's planning and development of the Project, and to contribute to the environmental assessment process, environmental and socio-economic baseline studies were initiated by Rescan Environmental Services Ltd. (Rescan). Project-specific studies began in 2010 and have continued through 2012. As appropriate and available, historical data from government sources and neighbouring projects, as well as traditional use/knowledge information, have been compiled and incorporated into analysis.

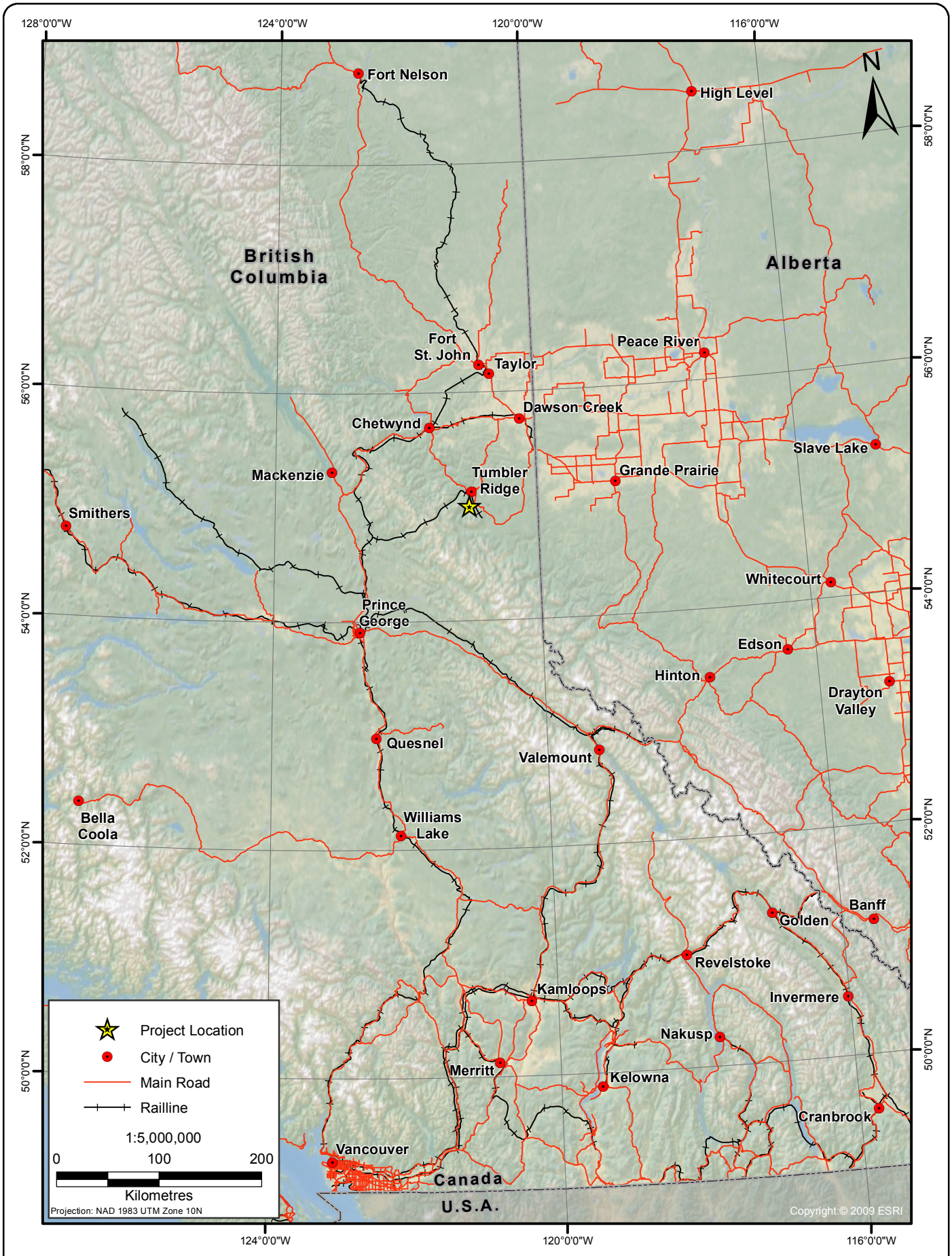
In order to help guide the scope of baseline studies, regional and local study areas (RSA and LSA, respectively) have been developed (Figures 1-2 and 1-3). The RSA is intended to encompass an area beyond which effects of the Project would not be expected. It is also intended to be ecologically relevant based on the home range of key wildlife species known to inhabit the region. The LSA encompasses an area surrounding the proposed Project infrastructure (referred to in this report as the *infrastructure investigation area*) within which direct effects from the Project may be anticipated. Its boundary has also been developed following natural terrain and drainage boundaries in order to be ecologically relevant. For consistency, the same RSA and LSA are used for all environmental studies.

This report presents a cumulative summary of all land use information compiled for the Project to date.

An understanding of the commercial and non-commercial land and resource uses and interests within the vicinity of the Project is necessary to assess and avoid potential effects on these interests. This baseline report considers private land, Crown-granted or third-party tenures, Crown lands, parks, ecological reserves, Protected Areas, land and resource management plans, and non-commercial land and resource uses within the LSA and RSA.

The main objectives of this baseline study report are to:

- review the objectives and management guidance in provincial land and resource management plans are they relate to the Project;
- identify parks, ecological reserves and Protected Areas that might be impacted by the Project;
- identify private land that might be impacted by the Project;



hd Mining | MURRAY RIVER COAL PROJECT

Project Location

Figure 1-1

Rescan™ Engineers & Scientists

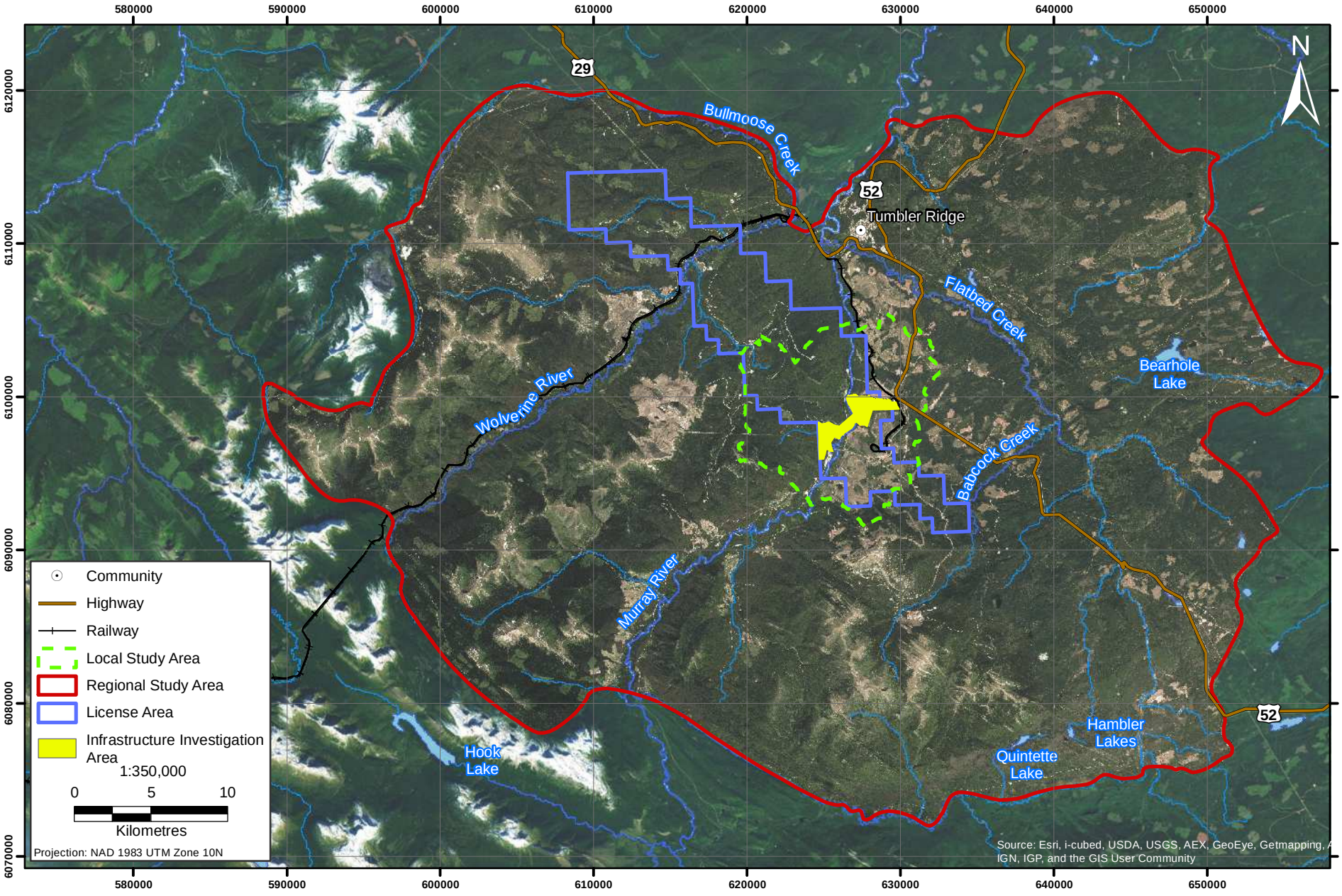


Figure 1-2

MURRAY RIVER COAL PROJECT

Project Study Boundaries

Figure 1-2

Rescan Engineers & Scientists

- identify Crown-granted land and resource tenures that might be impacted by the Project; and
- identify non-tenured land and resource uses that might be impacted by the Project.

The following chapters outline the available background information that supports the study (Chapter 2); a description of the methods and rationale used to identify sites and collect Project-specific data (Chapter 3); the results of data collection (Chapter 4); and a summary that synthesizes the key findings of the baseline program (Chapter 5).

PROJECT # 0791-007-01 *GIS #* MUR-15-071 *VERSION #* T0.10 February 18 2013

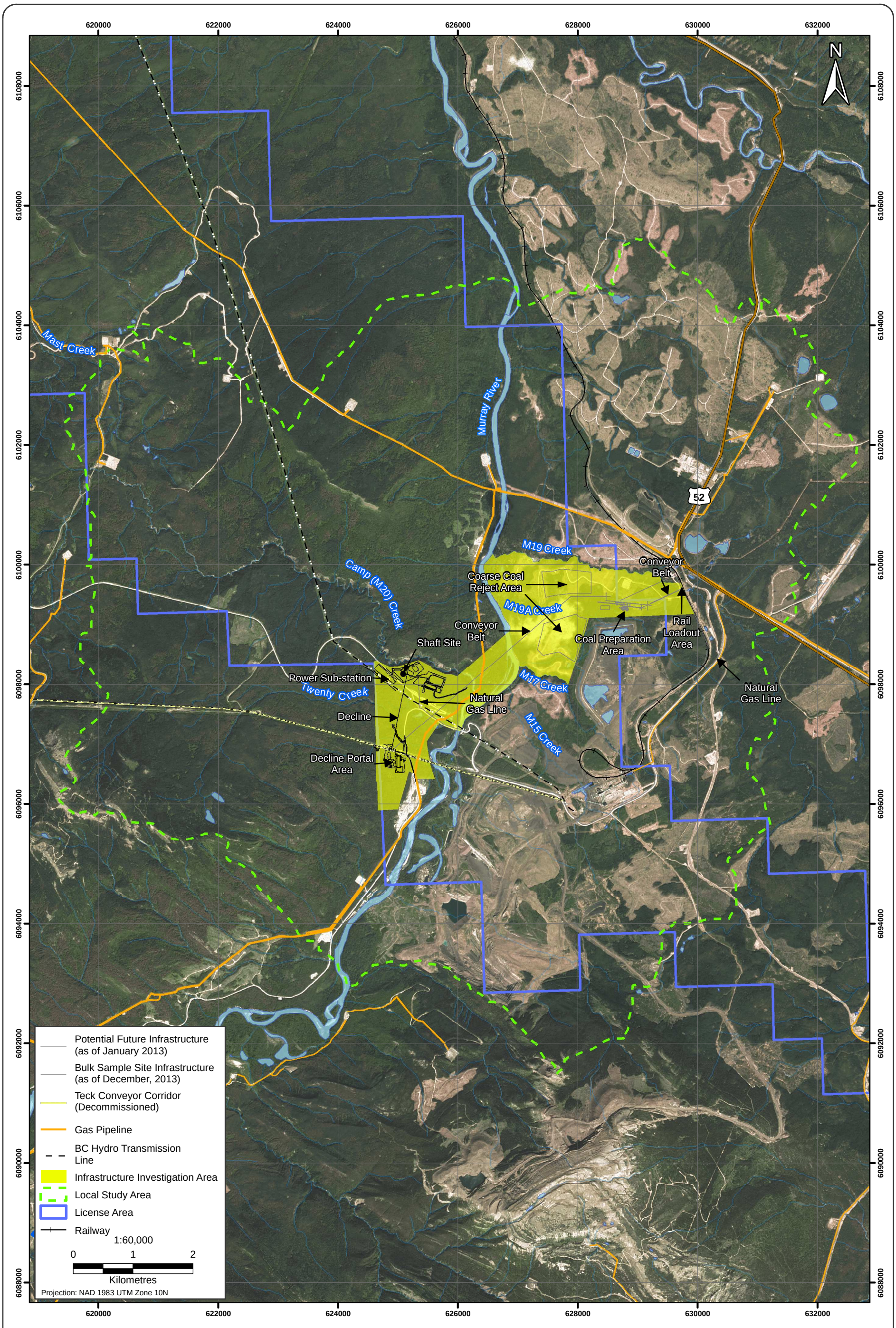


Figure 1-3

hd Mining

MURRAY RIVER COAL PROJECT

Preliminary Site Layout

Figure 1-3

Rescan™ Engineers & Scientists

2. Background

2. Background

2.1 REGULATORY AND POLICY FRAMEWORK

Land and resource us in BC is guided by provincial and federal land and resource legislation, provincial land and resource management plans, and local government official community plans. The following sections outline the regulatory and policy framework guiding land use in the study areas.

2.1.1 Provincial and Federal Legislation

Table 2.1-1 provides an overview of the legislative governing land and resources in BC.

Table 2.1-1. British Columbia Legislation Governing Land and Resources

Legislation	Description	Regulatory Authority
Agricultural Land Commission Act, SBC 2002. C. 36	Authorizes the designation of land suitable for farm use as an agricultural land reserve. Prohibits use of agricultural land for other than farm use.	BC ALC
Coal Act, SBC 2004. C. 15	Authorizes coal exploration and development activities and outlines tenure requirements. Coal Licenses grant exclusive rights to the holder to explore and develop Crown owned coal resources, limiting production to 100,000 tonne sample for testing purposes. Coal Leases grant holders exclusive rights to explore, develop and produce coal on the lease location. Initial term for a coal lease is 30 years followed by 15 years upon renewal.	BC MEMPR
Drinking Water Protection Act, SBC 2001. C. 9	Provides for the regulation of water systems to protect drinking water, including water quality standards and mechanisms for source protection.	BC MOE
Ecological Reserve Act, RSBC 1996. C. 103	Authorizes the reservation of Crown land for ecological purposes. Limits public access to low-impact activities, such as nature observation or hiking. High impact recreational activities, such as motorized vehicle use, are not permitted.	BC MOE
Environmental Management Act, SBC 2003. C. 53	Prohibits the introduction of waste into the environment from industries listed in the Waste Discharge Regulation, or from any activity that causes pollution. Activities which introduce waste may operate in accordance with a permit, Code of Practice or a regulation.	BC MOE
Fish Protection Act, SBC 1997. C. 21	Protects fish and fish habitat by prohibiting dams on provincially significant rivers and establishing special rules in relation to licences or approvals under the *Water Act* (1996k). The Act also provides for the designation of sensitive streams and the granting of streamflow protection licences.	BC MOE
Fisheries Act, RSBC 1996. C. 149	Defines activities requiring licences, including: fishing in provincial waters; the processing of fish or aquatic plants; the operation of fish buying stations; the construction and operation of fish farms or other aquaculture operations; and the harvesting of kelp.	BC MFLNRO

(continued)

Table 2.1-1. British Columbia Legislation Governing Land and Resources (continued)

Legislation	Description	Regulatory Authority
Forest Act, RSBC 1996. C. 157	Provides for disposition of timber, road permits, timber scaling, payments to government, and inspections and penalties. Volume-based tenures grant the non-exclusive right to harvest a certain volume of timber within a Timber Supply Area. Area-based tenures grant the exclusive rights to harvest timber within a specified area. Primary volume-based tenures include: Forest Licences, Timber Sale Licences, Pulpwood Agreements, Licences to Cut, and Free Use Permits. Primary area-based tenures include: Tree Farm Licences, Timber Licences, Community Forest Agreements, First Nation Woodland Licences, and Woodlot Licences. Forest service road designation provides for the administration and maintenance of forest service roads by government. A road use permit authorizes use of one or more segments of a forest service road. A road permit is required for the construction, (non-exclusive) use and maintenance of a road other than a forest service road. A special use permit gives non-exclusive authority to construct and maintain a road.	BC MFLNRO
Forest and Range Practices Act, SBC 2002. C. 69	Sets the requirements for planning, road building, logging, reforestation, and grazing. Requires forest operators to set specific targets or strategies for environmental objectives established by the government.	BC MFLNRO
Land Act, RSBC 1996. C. 245	Governs the disposition, management and administration of Crown land, as well as the surveying of Crown land. Disposition of Crown land may be made through a variety of tenure types. Investigative permits allow proponents to access Crown land for study purposes but do not allow the construction of any improvements (usually two years). Temporary permits grant the right to carry out specified activity(s) for a short term. Works permits are issued for the construction of a road, non-commercial airstrip, bridge, or trail. A licence of occupation is issued where minimum improvements are proposed or where medium term tenure is required (5 to 45 years). A licence of occupation may also be issued where it is in the best interest of the Crown to allow high demand areas or parcels to be used by numerous users. A lease is issued where long term tenure is required, where substantial improvements are proposed, and/or where definite boundaries are required in order to avoid land use and property conflicts (usually 30 to 45 year terms). A statutory right of way is normally granted to authorize linear uses of Crown land for transportation, communication, energy production and utility developments (e.g., roads, power lines, cable telecommunications, oil and gas pipelines, etc.; 30-45 years). An easement is a right to do something, or to prevent something from being done, on one parcel of land (the “servient tenement”) which benefits another parcel of land (the “dominant tenement”). The Act applies to the following land uses: adventure tourism/commercial recreation; aggregates and quarry materials; agriculture; airports; all seasons resorts/alpine skiing; aquaculture; general commercial; communication sites; community and institutional use; film; floating home community; golf courses; grazing; general industrial; log handling; marinas and yacht clubs; mining; ocean energy; oil and gas; private moorage; residential; roadways; utilities; waterpower; and wind power.	BC MFLNRO
Land Title Act, RSBC 1996. C. 250	Provides the legal framework registering and transferring titles and other interests in land. Fee simple title is the most secure, and broadest, type of property ownership recognized under the Act.	BC Land Title and Survey
Mineral Tenure Act, RSBC 1996. C. 292	Authorizes the registration of mineral and placer claims within the Province and provides the framework for tenure administration.	BC MEMPR

(continued)

Table 2.1-1. British Columbia Legislation Governing Land and Resources (completed)

Legislation	Description	Regulatory Authority
Mines Act, RSBC 1996. C. 293	Authorizes mineral exploration and mine development, including construction, production, closure, reclamation and abandonment activities. Mineral claims are granted for exploration and development work and limit production to maximum of 1,000 tonnes of ore per unit per year or 10,000 tonne bulk sample as permitted in the regulations. Mineral leases are granted for a specific term to enable production in excess of 1,000 tonnes per year.	BC MEMPR
Oil and Gas Activities Act, SBC 2008. C. 36	Regulates conventional oil and gas production, shale gas production and other oil and gas facilities, as related to exploration, development, pipeline transportation and reclamation. Provides authority for the BC OGC to grant approvals under the *Environmental Management Act* the *Forest Act*, the *Heritage Conservation Act* (1996e), the *Land Act* (1996f) and the *Water Act* (1996m).	BC OGC
Park Act, RSBC 1996. C.344	Provides for the establishment, classification and management of provincial parks, conservancies and recreation areas (collectively referred to as "parks"). Park use permits may be issued to applicants wishing to conduct commercial enterprises in a park. Activities such as mining and forestry are usually prohibited within provincial parks, but authorizations, licences and permits may be issued under the *Petroleum and Natural Gas Act* (1996k).	BC MOE
Petroleum and Natural Gas Act, RSBC 1996. C. 361	Requires proponents to obtain various approvals before undertaking exploration or production work. Permits authorize exploration work. Drilling licences convey the exclusive right to drill oil and gas wells in a defined area. Leases allow production, in addition to providing exclusive drilling rights.	BC OGC BC MNG
Protected Areas of British Columbia Act, SBC 2000. C. 17	Establishes a number of parks, ecological reserves and places that are listed in schedules to the Act. Also transfers existing Class "A" parks and ecological reserves previously established by orders-in-council to schedules to the Act.	BC MOE
Range Act, SBC 2004. C. 71	Defines the disposition of rights over Crown range and includes compliance and enforcement provisions. Grazing and hay-cutting tenures are issued as either a licence (10-year term) or a permit (1- to 5-year term).	BC MFLNRO
Railway Act, RSBC 1996. C. 395	Provides authority for the establishment and statutory governance of railways operating solely within the province and falling under provincial jurisdiction, including common carrier, industrial and commuter railways.	BC MOT
Transportation Act, SBC 2004. C. 44	Deals with public works related to transportation, as well as the planning, design, holding, construction, use, operation, alteration, maintenance, repair, rehabilitation and closing of provincial highways.	BC MOT
Water Act, RSBC 1996. C. 483	Provides for the granting and management of water licenses and approvals (for a term of less than 24 months). Licence holders are permitted to divert and use water for the purpose specified in the licence; construct, maintain and operate works necessary for the specified water use; and alter or improve a stream or channel for the specified purpose.	BC MOE
Water Protection Act, RSBC 1996. C. 484	Prohibits removal of water from BC or transfer of water between major watersheds.	BC MOE
Wildlife Act, RSBC 1996. C. 488	Regulates the management of wildlife, including: establishing and protecting wildlife management and critical wildlife areas; declaring and protecting endangered species; regulating import and export of wildlife; regulating the conditions under which wildlife can be killed for recreational reasons and for the protection of property; granting, suspending and cancelling licenses; and establishing and enforcing quotas. BC residents must obtain a Hunter Number Card and a hunting and species license in order to be granted hunting privileges. Non-resident big game hunters are required to be accompanied by a licenced guide or by a resident 19 years of age or older who holds a Hunt Permit.	BC MOE

2.1.2 Dawson Creek Land and Resource Management Plan

The proposed Project is located within the boundaries of the Dawson Creek Land and Resource Management Plan (LRMP). Completed in 1999, the Dawson Creek LRMP provides land use objectives and strategies to guide land and resource development on Crown land within the Dawson Creek Forest District (Dawson Creek LRMP Working Group 1999). The Dawson Creek LRMP borders the Fort St. John Forest District to the north, the Mackenzie Forest District to the west, the Prince George Forest District to the south, and the province of Alberta to the east (Figure 2.1-1). The overarching goal of the Dawson Creek LRMP is to:

> *provide a stable strategic plan balanced between (1) resource development industries with continued access to natural resources outside of Protected Areas, and (2) the protection of environmental and recreational resource values* (Dawson Creek LRMP Working Group 1999).

Three management categories organize the Dawson Creek LRMP recommendations: General Management Directions (GMDs); area-specific Resource Management Zones (RMZs); and Protected Area Management. Each management category is discussed separately below[1].

General Management Directions

GMDs guide the management of key resources, interests and activities throughout the planning area (Dawson Creek LRMP Working Group 1999). Principles guiding GMDs include:

- sustainable use of renewable natural resources;
- management of any one resource shall take into consideration other resource values, rights, tenures and development opportunities which recognize the biological and physical limitations of the land and resources;
- maintenance or enhancement of the quality of life, social and economic stability, employment opportunities including job creation, and the vitality of local communities;
- acknowledgement that communities located within the planning area should have the opportunities to benefit from the natural resources within the planning area. This can be achieved through, but is not limited to: economic diversification, managed access to resources, and increased value-added manufacturing and process (*Intent: To accommodate existing industry, wherever possible*);
- land, water, air and all living organisms are integral parts of the ecosystem and should be sustained and accommodated by management plans.

The coal and minerals GMD recognizes the economic importance and potential of coal and mineral mining in the region. According to the GMD, "mineral exploration, mining roads and mining developments are acceptable uses of the land outside of Protected areas, subject to the consideration of other values through the appropriate regulatory framework" (Dawson Creek LRMP Working Group 1999). More information about the Coal and Minerals GMD is provided in Section 4.10.

[1] The Plan recommends the establishment of a monitoring committee that would engage in annual review and reporting. However, no evidence of such a committee or monitoring and reporting activities could be found.

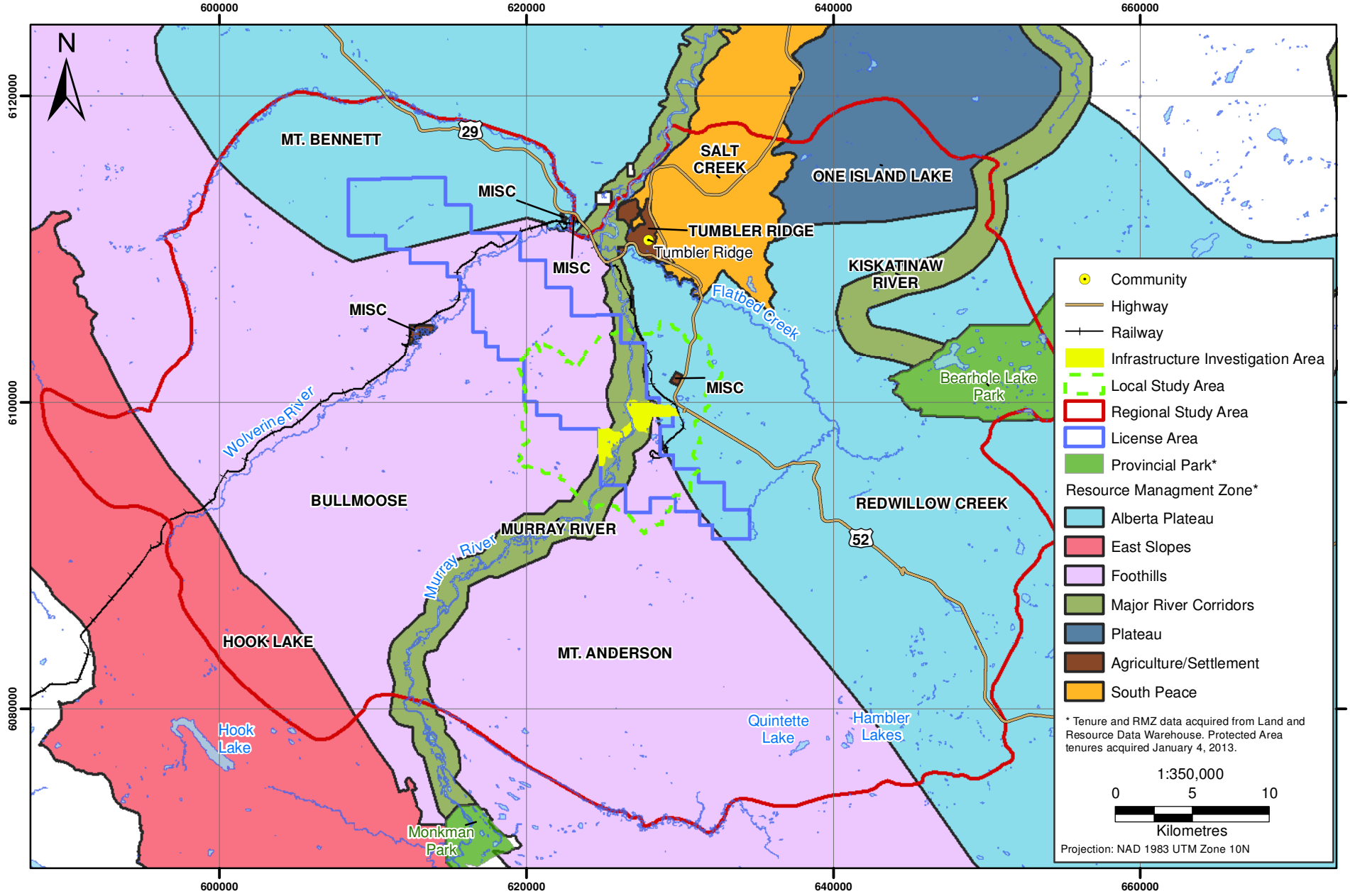


Figure 2.1-1

hd Mining

MURRAY RIVER COAL PROJECT

Dawson Creek LRMP Resource Mangement Zones in the Local and Regional Study Areas

Figure 2.1-1

Rescan Engineers & Scientists

Area Specific Management: Resource Management Zones

RMZs provide specialized recommendations to further define specific management needs with respect to distinct areas within the LRMP. RMZs are subdivided into subzones which reflect specific management regimes for each RMZ based on localized resource values, existing economic activities, environmentally important locations, and agricultural uses. The Dawson Creek LRMP defines 11 RMZs. Three RMZs fall within the LSA: the Foothills RMZ, the Alberta Plateau RMZ, and the Major Rivers Corridor RMZ (Figure 2.1-1).

Foothills Resource Management Zone

The Foothills RMZ contains a number of significant resource values including deciduous and coniferous timber resources, oil and gas, coal, fish and wildlife, recreation, range and cultural resources. This RMZ includes the Bullmoose Creek and Mount Anderson subzones, situated in the north and south-western region of the RSA (Figure 4.1-1). A large portion of the RMZ has well developed infrastructure, including roads, seismic lines, pipeline corridors and trails and has high potential for future development (Dawson Creek LRMP Working Group 1999). Objectives and strategies related to individual land uses are described in the appropriate sections below.

Alberta Plateau Resource Management Zone

The Alberta Plateau RMZ contains important resource values, including wildlife, oil and gas, timber and recreation (Dawson Creek LRMP Working Group 1999). The Redwillow Creek subzone, located in the southeastern area of the RSA, is part of the Alberta Plateau RMZ (Figure 4.1-1). Objectives and strategies related to individual land uses are described below.

Major River Corridors Resource Management Zone

The Major River Corridors RMZ falls within Special Resource Management directives, signifying that substantive management requirements are specifically prescribed for this area of the LRMP. The rivers within this RMZ are important because they may serve as a domestic water supply for communities within the planning area. Objectives and strategies related to individual land uses are described in the appropriate sections below.

2.1.3 District of Tumbler Ridge Official Community Plan

The proposed Project site falls within the District of Tumbler Ridge's (DTR's) municipal boundary (Figure 2.1-2). The District's Official Community Plan (OCP) includes a land use strategy that provides objectives and policies to guide the form and character of future land use patterns within the district boundary (DTR 2012).

Two OCP land use zones are relevant to the proposed Project. The RSA encompasses land zoned as *rural resource*, while the LSA is entirely situated within *rural resource* land. Mineral exploration and resource development are permitted uses with the Rural Resource zone. While the OCP does not contain any specific regulations regarding mining, the plan supports and encourages mining, as long as recreation is considered and environmental stewardship is implemented (DTR 2012).

Resource and recreation objectives under the OCP include:

- supporting resource based activities throughout the District as an integral part of Tumbler Ridge;
- recognizing the importance of recreational uses throughout the District; and
- encouraging the wise stewardship of resources to protect the environmental integrity of the backcountry.

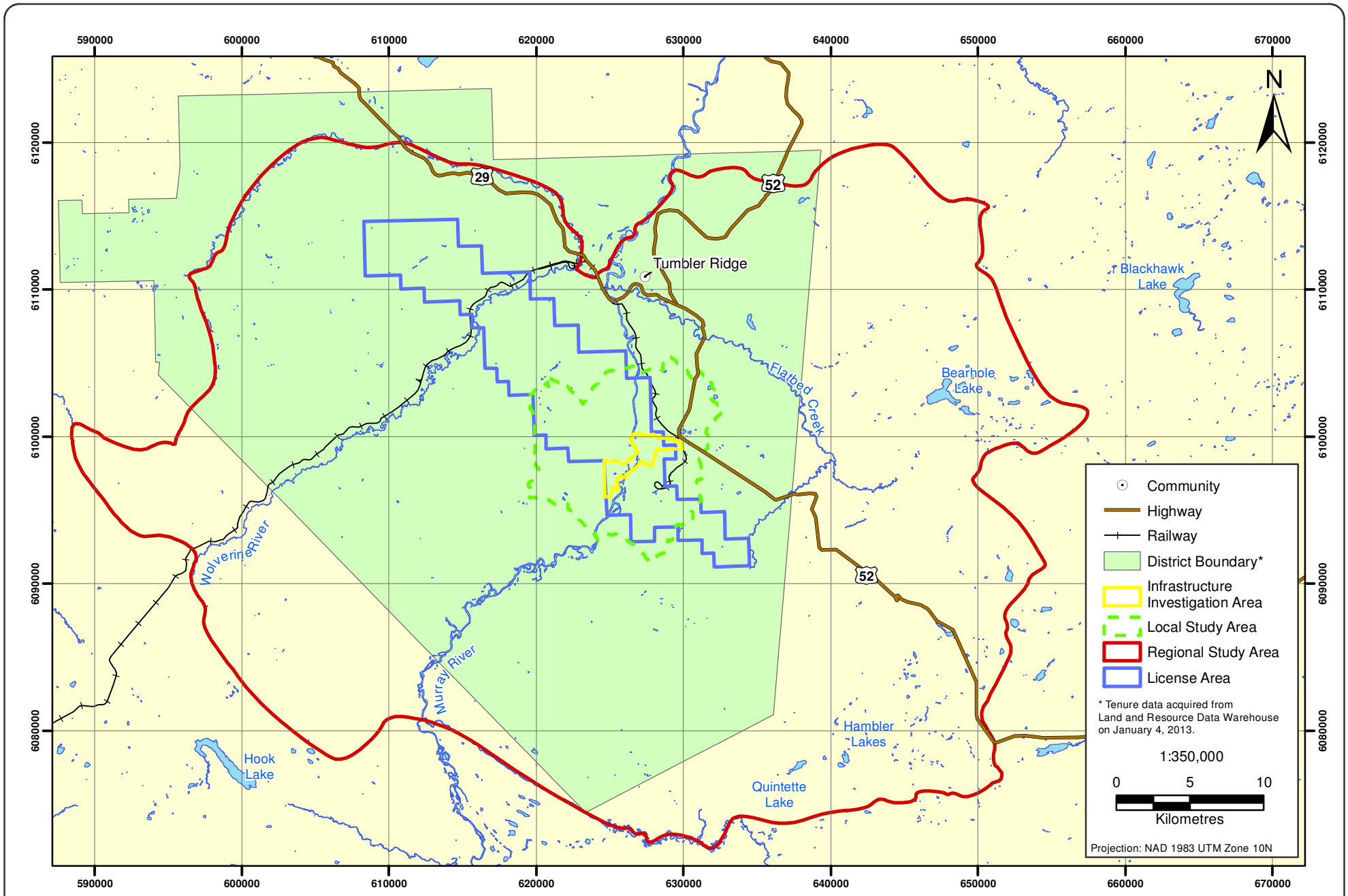


Figure 2.1-2

hd Mining

MURRAY RIVER COAL PROJECT

District of Tumbler Ridge Municipal Boundaries

Figure 2.1-2

Rescan™ Engineers & Scientists

3. Methodology

3. Methodology

The land use baseline research program proceeded in three steps. First, existing (secondary) sources of land use information were collected and reviewed. Second, land and resource interviews were held to ground-truth data and to gain further information about particular land uses. Third, land use data was analyzed and presented in relation to the LSA and RSA.

3.1 SECONDARY DATA SOURCES

Table 3.1-1 presents sources of existing land use data that were accessed by the land use baseline research study.

Table 3.1-1. Secondary Data Sources

Source	Database, Document or Website	Information Type
DataBC	Data Distribution Service (Data BC 2013)	Tenure shapefiles and attribute data
BC MFLNRO	Integrated Land and Resource Registry (BC MFLNRO 2013g)	Tenure ownership
	Forest Analysis and Inventory (BC MFLNRO 2013e)	Forestry tenure information
	Big game harvest statistics 1976-2010 (BC MFLNRO 2012a)	Resident & non-resident hunter harvest statistics
	Land Tenures Branch (BC MFLNRO 2013i)	Crown land tenure information
	Fish, Wildlife and Habitat Management Branch (BC MFLNRO 2013d)	Fishing, hunting and trapping information
	Recreation Sites and Trails BC (BC MFLNRO 2013k)	Recreation sites and trails
	Land and Coastal Marine Plans in BC (BC MFLNRO 2013h)	Dawson Creek LRMP
BC MOE	Recreation – Park Finder (BC MOE 2013a)	Provincial Park information
	Water licences query (BC MOE 2013b)	Water licences information
BC MEMPR	Mineral Exploration and Mining (BC MEMPR 2013)	Mineral and coal titles information
BC OGC	BC Oil and Gas Commission (BC OGC 2013)	Oil and gas information
BC ALC	BC Agricultural Land Commission (BC ALC 2013)	Agricultural land information
BC EAO	Project Information Center (e-PIC; BC EAO 2013)	Related projects undergoing or completed application for environmental certification
GOABC	Guide Outfitter Directory (Guide Outfitters Association of BC 2013a)	Guide outfitter contact information
DTR	District of Tumbler Ridge (DTR 2012)	Official Community Plan

3.2 PRIMARY DATA SOURCES AND METHODS

Two sets of research interviews were conducted. The first set engaged provincial and local government representatives to ground-truth data and to gain further context about land uses in the study areas. Representatives from BC MOE; BC Ministry of Forests, Lands and Natural Resource Operations (BC MFLNRO; Resource Operations); BC MFLNRO (recreation); and BC MFLNRO (Wildfire Management Branch) were interviewed.

The second set of interviews was conducted with commercial tenure holders and recreation groups to collect information about tenure usage, interests and concerns. Interviewees were selected from the

list of tenure holders developed from existing sources of data. Guide outfitting, trapping, forestry, aggregates, wind power tenure holders, as well as representatives of recreation groups, were contacted by letter inviting them to participate in an interview (Table 3.2-1). Structured, open-ended interview questions were developed for each land use type, focusing on the following broad areas:

- interviewee background;
- primary land use activities;
- values (economic, social, cultural, etc.);
- issues related to land use; and
- general comments.

Table 3.2 1. Interviews Requested and Held with Tenure Holders

Land Use	Tenure Holder	Certificate Number	Interview requested (y/n)	Interview completed (y/n)
Guide Outfitting	Tracks BC and High Prairie Oufitters, Gary Drinkall	701245	Y	N
	Bone Mountain Outfitters, Tim Ethier	Inactive	Y	N
	Fredland Guide Services, Aaron Fredland	701249	Y	Y
	Daniel Ganson	700183	Y	N
	Wolverine Valley Outfitters, Timothy Millward	701253	Y	Y
	Mulvahill Hunting, Michael Mulvahill	Inactive	Y	N
	Riley Nikirk	Inactive	Y	N
	Steve Yanish	701258	Y	N
Trapping	Lawrence Reynen	721T003	Y	Y
	Carl Gitscheff	721T005	Y	Y
	John Marston	Inactive	Y	N
	Hale Hilton	721T006	Y	Y
	Maureen Ethier	721T007	Y	N
	Tracy Reynen	721T008	Y	N
Forestry	West Fraser Mills, Walter MacFarlane	A13840 and A64393	Y	N
Quarry	Interoute Construction, Erwin Speltzer	8015394	Y	N
Wind Power	Finavera Renewables, Carlie Smith	8015353	Y	N
Recreation	Monkman Expeditions, Kreg Alde	N/A	Y	N
	Tumbler Ridge Riders Snowmobile Association, Chris Dell	N/A	Y	N
	Wolverine Nordic and Mountain Society, Kevin Sharman	N/A	Y	N
	Wolverine Nordic and Mountain Society, Charles Helm	N/A	N	Y

Twenty letters were sent requesting an interview and six interviews were completed, representing a response rate of 30%[2].

[2] Follow-up letters were sent to guide outfitters, trappers and forestry companies (15 follow up letters in total) in an attempt to increase the response rate. The most recent letters were sent July 16, 2013.

3.3 ANALYSIS

Textual analysis of secondary data sources was used to extract contextual material for each land use, such as the land use's provincial economic contribution, general usage numbers and historical trends. Specific land use rights and responsibilities were determined through the identification of relevant legislation. Tenure size and the extent of overlap between tenures and study areas were calculated, where appropriate. Maps, graphs and tables were developed to represent tenure information in relation to the Infrastructure Investigation Area, LSA and RSA. Baseline tenure usage information was extracted from research interviews and described, when available.

3.4 DATA LIMITATIONS

The quality and extent of available secondary data varies by source. Data limitations are described below.

3.4.1 British Columbia Parks Visitor Numbers

Data relating to visitor attendance rates and trends in certain BC Parks were limited as visitor numbers are not collected for all provincial parks, particularly parks that are not staffed (e.g., Monkman Provincial Park), parks that are not easily accessed, or parks that not highly used. Furthermore, the methods for collecting visitor data vary, relying on individual BC Parks personnel as opposed to a standardized methodology.

3.4.2 Resident and Non-resident Harvest Data (1976 to 2010)

Resident and non-resident hunters in BC are required to register kills using the Hunter Sample and the Guide Declaration. However, in some cases kill data are incomplete or cannot be assigned to a specific Wildlife Management Unit (WMU). In these instances, data may be assigned to either a region or to the province as a whole. As a result, data from WMUs that overlap the LSA may under-represent the actual wildlife harvest. Additionally, First Nations hunting is not captured in the Big Game Harvest Database. As such, available data on resident hunters potentially provide only partial information for assessing the overall level of hunting in the RSA. Another limitation of harvest data arises from missing data. Missing data for some species in some years may mean: 1) no individuals of that species were harvested that year; 2) the species was not historically reported; or 3) systems were not in place to record harvests of that particular species.

3.4.3 Trapline Harvest Data (1985 to 2008)

Some traplines may be used for recreational purposes only (if there is a cabin on site, for example) prompting some owners to register the minimum harvest required to maintain active status, even if they are not actively trapping fur. Additionally, enforcement of harvest data submission has lapsed since the decline of the trapping industry in the 1980s, and limited resources limit an effective ability of the BC MOE to gather accurate data.

3.4.4 Non-tenured and Illicit Land Use Activities

Non-tenured land use activities are difficult to track as systematic data is generally lacking. In the absence of comprehensive surveys, information about non-tenured activities is obtained from estimates provided by government or association representatives. Consequently, this data generally lacks precision. Illicit land use activities, such as illegal hunting and fishing, present greater methodological difficulties as surveys are difficult to undertake and as estimates are even more uncertain.

3.4.5 Research Interviews

Despite best efforts, research interviews were held with only a small percentage of land users. Consequently, tenure usage data is subject to information gaps.

4. Results

4. Results

The following sections describe land use tenures and interests in the LSA and RSA. A general overview a is provided for each land use, as well as guidance from the Dawson Creek LRMP, followed by the identification of specific interests and a discussion of how the land use interests are exercised (depending on data availability). Land use tenures and interests are also located spatially in relation to the LSA and RSA on maps. Following the presentation of primary tenures and interests for each land use, ancillary tenures are presented. Ancillary tenures are authorizations for activities that are secondary to, or supportive of, primary land use activities.

4.1 PRIVATE LAND

4.1.1 Private Land Overview

Private land is land held in "fee simple" and registered in the BC Land Title Register under the *Land Title Act* (1996g; see Section 2.1.1).

4.1.2 Private Land in the Local and Regional Study Areas

There are no fee simple lands in the LSA or RSA.

4.2 PARKS AND PROTECTED AREAS

4.2.1 Parks and Protected Areas Overview

Provincial parks, conservancies, recreation areas and ecological reserves are established for the purposes of conservation and recreation under the *Park Act* (1996j) and *Protected Areas of British Columbia Act* (2000; see Section 2.1.1). Generally, parks and protected areas restrict extractive land uses, such as forestry and mining.

4.2.2 Parks and Protected Areas in the Dawson Creek Land and Resource Management Plan

Protected area management applies to LRMP land and water resources of high ecological and cultural value. Sixteen new Protected Areas were created within the Dawson Creek LRMP encompassing over 180,000 ha (approximately 6% of the LRMP area).

4.2.3 Parks and Protected Areas in the Local and Regional Study Areas

There are no provincial parks or protected areas located within the LSA or near Project infrastructure. The RSA contains a portion of Bearhole Lake Provincial Park and Protected Area (approximately 32% or 5,779 ha; Figure 4.2-1). Bearhole Lake Provincial Park and Protected Area is a Class A Park[3] created under the *Park Act* (1996j) and *Environment and Land Use Act* (1996b) in 2001. Located 25 km east of Tumbler Ridge, the 17,460 ha park and protected area is accessed via the Kiskatinaw Forest Service Road from the Heritage Highway.

[3] Class A Parks provide the highest level of protection, prohibiting any uses that do not preserve or maintain the recreational values of the park. Bearhole Lake Provincial Park and Protected Area was established by Order in Council.

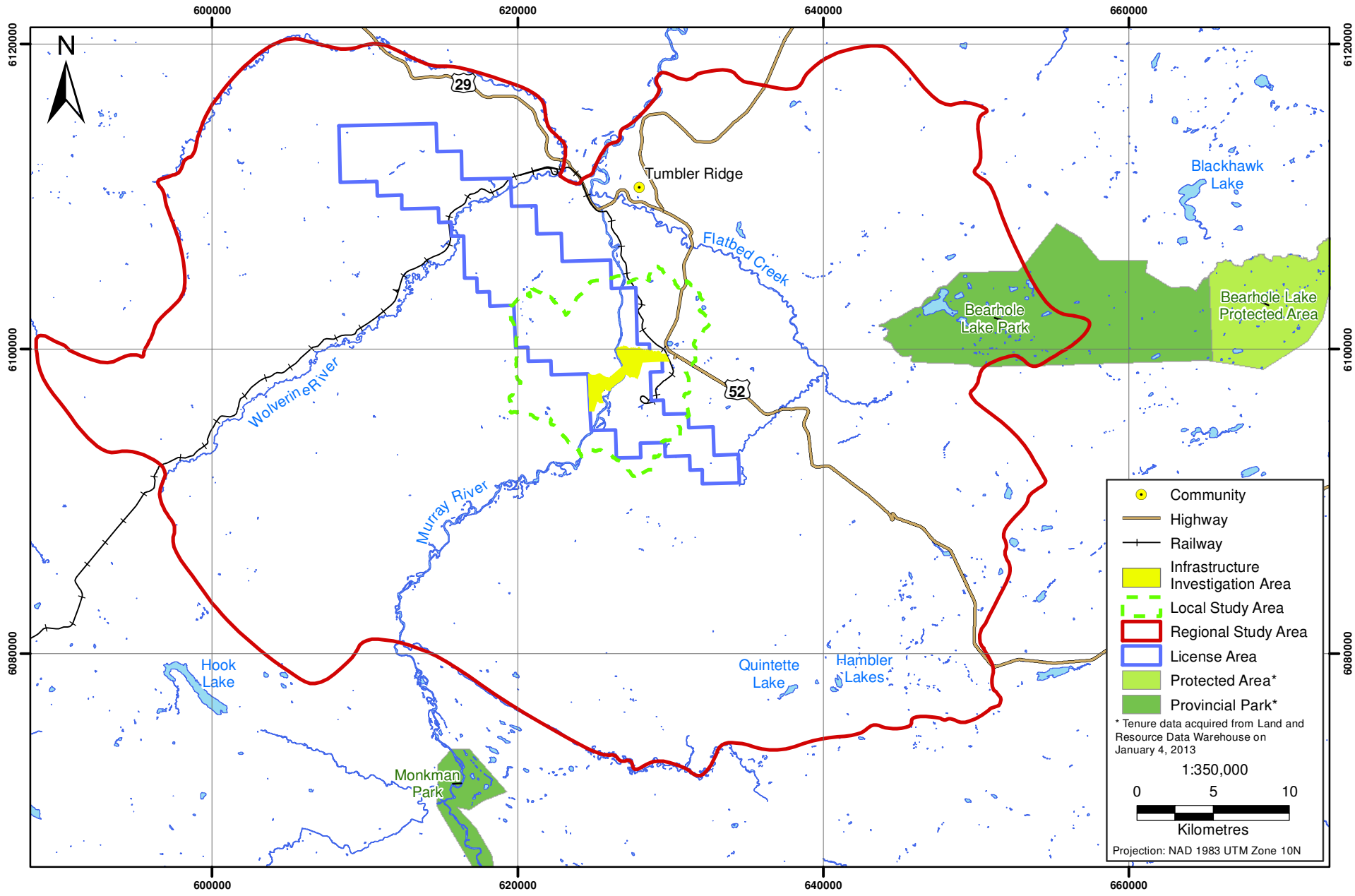


Figure 4.2-1

hd Mining

MURRAY RIVER COAL PROJECT

Protected Areas in the Regional Study Area

Figure 4.2-1

Rescan™ Engineers & Scientists

The park and protected area represents a transition zone with mixed wood forests including the Boreal White and Black Spruce biogeoclimatic zones, as well as wetlands within the Kiskatinaw Plateau. Low elevation caribou, moose, and white-tailed deer find important winter range within the park and protected area. Trumpeter swans find critical nesting habitat in and around Bearhole Lake. The lake contains yellow perch, burbot, rainbow trout, northern pike, large-scale sucker, and white sucker. Trumpeter swans use the lake and surrounding marsh to nest and fledge their young. Moose, caribou, black bear, white-tailed deer and numerous small mammals and birds all reside in the park and protected area.

The headwaters of the Kiskatinaw River watershed, a major water supply source for the City of Dawson Creek, are within the boundaries of the park (City of Dawson Creek 2007). Usage of the park and protected area is greatly dependant on the condition of the connecting access roads. No precise visitation statistics are currently available due to limited staffing capacity and lack of traffic counters or other means of maintaining visitor statistics (D. Merritt, pers. comm.).

4.3 FISHING AND ANGLING

4.3.1 Fishing and Angling Overview

A number of lakes and rivers in northeastern BC support a variety of fish species including lake trout, Arctic grayling, northern pike, walleye, mountain whitefish, and bull trout. As such, fishing and angling are popular local and tourist activities in the region. Fishing can be year-round recreational activity, as there are fishing opportunities both in the summer and winter in the nearby lakes (Hello BC 2013). However, some of the local rivers and lakes are difficult to access, depending on the conditions of local access roads. A 2005 survey of sport fishing in the Peace region revealed over 6,000 active anglers fishing almost 70,000 angler-days, spending approximately $7,000,000 (GSGislason & Associates Ltd. 2009). Over half (54%) of the total catch was attributed to three species: walleye (pickerel) (28%), rainbow trout (26%), and northern pike (16%). Other notable species included perch (9%), whitefish (7%), and artic grayling (6%).

4.3.2 Fishing in the Dawson Creek Land and Resource Management Plan

Table 4.3-1 identifies the GMD related to fishing and wildlife provided in the Dawson Creek LRMP for the project area (objectives and strategies relevant to fishing only are presented):

Table 4.3-1. Dawson Creek Land and Resource Management Plan General Management Direction for Fishing and Wildlife

Objectives	• Sustain and manage fish habitat and water quality for red, blue, and yellow-listed species. • Provide opportunities for the sustainable harvest of fish and wildlife resources.
Strategies	• Implement government guidelines for the management of habitats for listed species as these guidelines are developed. • On a priority basis, identify, map and incorporate appropriate management strategies to sustain and manage rare, threatened or endangered habitats and/or plant communities in landscape unit level and operational plans. • Apply appropriate fish and wildlife management strategies to address resource use conflicts by means of, but not limited to: Managing and monitoring fish and wildlife populations and distributions, assessing conflicts, and through proactive consultation, recommending solutions concerning fish and wildlife harvest strategies.

Source: Dawson Creek LRMP Working Group (1999).

Table 4.3-2 identifies the management direction related to fishing for the Foothills, Alberta Plateau and Major River Corridors RMZs.

Table 4.3-2. Dawson Creek Land and Resource Management Plan Management Direction for Fishing and Wildlife in the Foothills, Alberta Plateau, and Major River Corridors Resource Management Zones

Objectives	• Manage access to high quality fisheries to assist in sustaining viable, healthy sport fish populations.
Strategies	• Identify and map critical fish habitat (e.g., pools, migration patterns, spawning and rearing areas), and incorporate in landscape unit level and operational planning (*Intent: Government to undertake*). • Identify and map critical fish habitat (e.g., pools, migration patterns, spawning and rearing areas), and incorporate in landscape unit level and operational planning (*Intent: Government to undertake*). (Applies to Major River Corridors only)

Source: Dawson Creek LRMP Working Group (1999).

4.3.3 Fishing and Angling in the Local and Regional Study Areas

There are no commercial angling guides operating within the RSA or LSA. The Murray River, which runs through the LSA and RSA, provides recreational fishing opportunities for grayling, bulltrout and whitefish (L. Reynan, pers. comm.). Aside from the Murray River, there are no popular fishing destinations within the RSA[4].

4.4 RECREATION AND TOURISM

4.4.1 Recreation and Tourism Overview

Existing tourism attractions and tourist activities within and near LSA and RSA are focussed on the outdoor environment, along with the paleontological discoveries in the region (Economic Growth Solutions Inc. 2008). Most recreational activities are non-commercial and include wildlife viewing, fishing, hiking, snowmobiling, and all-terrain vehicle (ATV) use. The area has a network of recreational trails, with over 40 trails actively used by hikers, trail runners, snowmobilers, and ATV riders (Figure 4.4-1). Commercial activities are limited to commercial campsites. There is no tourism infrastructure (such as lodges or outdoor camps) in the LSA or RSA.

4.4.2 Recreation and Tourism in the Dawson Creek Land and Resource Management Plan

Table 4.4-1 identifies the GMD related to recreation and tourism provided in the Dawson Creek LRMP. Table 4.4-2 identifies the management direction related to recreation and tourism direction for the Foothills, Alberta Plateau and Major River Corridors RMZs.

4.4.3 Recreation and Tourism in the Local and Regional Study Areas

4.4.3.1 Camping

There are no commercial campgrounds or recreation sites within the LSA (see Figure 4.5-1). Within the RSA, there is one commercial campground (Lions Campground) and one forestry recreation site with camping facilities. The Lions Campground is situated on the banks of the Flatbed Creek, 3 km south of Tumbler Ridge. The campground has 40 rustic campsites with basic amenities. The site is open May to October and there is a charge to camp. The Flatbed Creek Recreation site, located 32 km southeast of Tumbler Ridge, maintains six campsites and offers canoeing, fishing, boating, and nature study. There is no charge for using this site.

[4] Some popular fishing areas outside of the RSA include Monkman Lake, Gwillim Lake, Moose Lake, Quality Lake, Stony Lake, and the edge of the Murray River, near Tumbler Ridge.

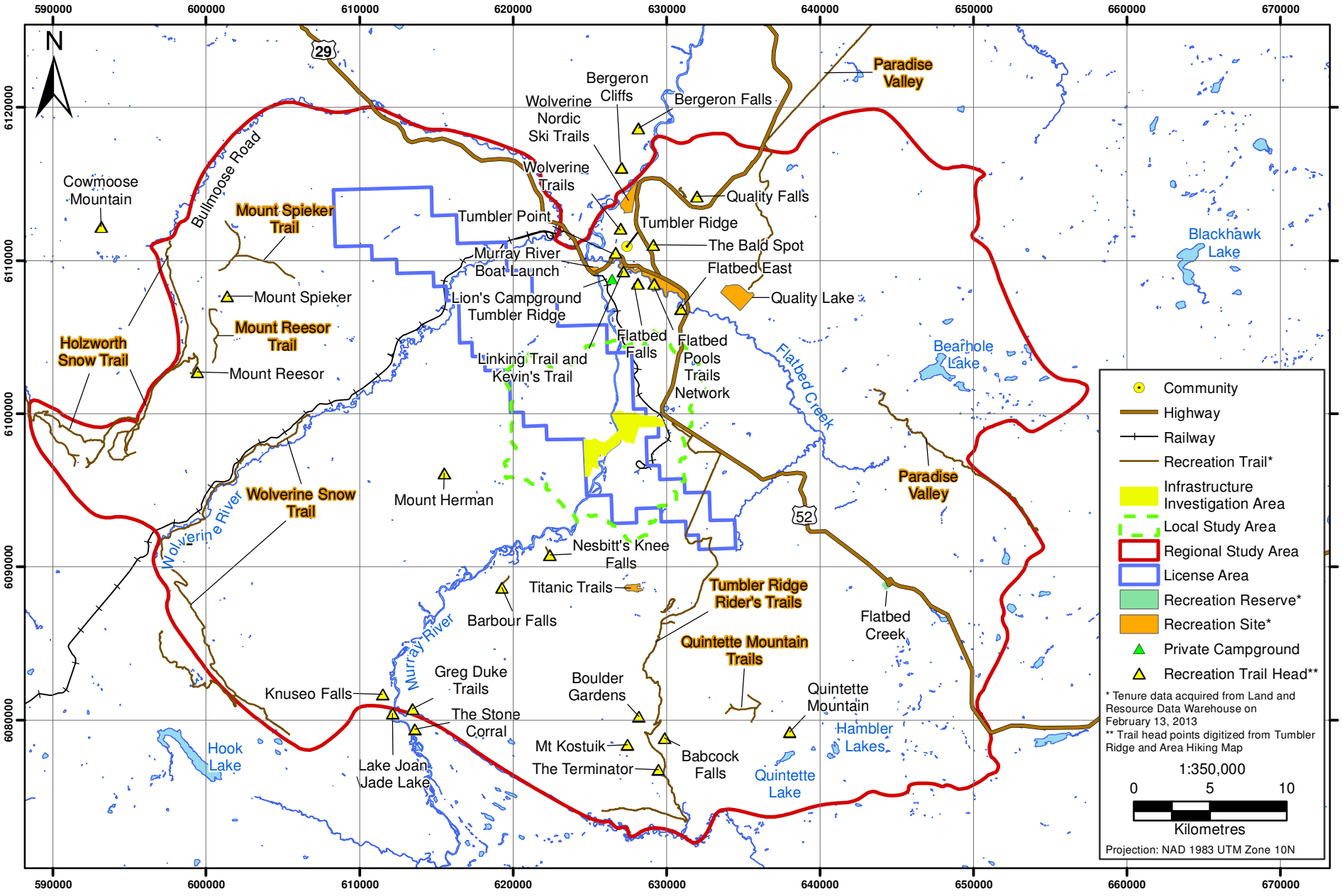


Figure 4.4-1

MURRAY RIVER COAL PROJECT

Recreation in the Local and Regional Study Areas

Figure 4.4-1

Rescan Engineers & Scientists

Table 4.4-1. Dawson Creek Land and Resource Management Plan General Management Direction for Recreation and Tourism

Objectives	• Sustain and manage a complete spectrum of public, commercial and tourism-related recreation values, opportunities and activities.
Strategies	• Identify, classify and manage existing recreational resource values and physical features on Crown lands important to developing outdoor recreation opportunities *(Intent: Government to undertake)*. • Use the Recreational Opportunity Spectrum inventory to develop and guide appropriate management strategies to sustain a range of recreation opportunities. • Use recreation inventories to develop and guide appropriate management strategies in landscape unit level and operational plans to sustain a range of recreation opportunities and features. • Plan new access routes to mitigate the negative impacts of resource use on outdoor recreational experiences. • Manage, maintain and develop public recreational facilities, including sites and trails. • Establish recreation sites and trails objectives *(Intent: Government to undertake)*. • Monitor to ensure public and commercial recreation activities do not exceed acceptable limits of use *(Intent: Government to undertake)*.

Source: Dawson Creek LRMP Working Group (1999).

Table 4.4-2. Dawson Creek Land and Resource Management Plan Management Direction for Recreation and Tourism in the Foothills, Alberta Plateau and Major River Corridors Resource Management Zones

Objectives	• Provide for quality public and commercial recreational opportunities and values.
Strategies	• Identify areas of high recreation use or significance and develop appropriate management strategies in landscape unit level and operational planning. • Incorporate existing recreational activities and assess potential for the development of new recreational opportunities in more detailed plans (i.e., additional motorized or non-motorized recreational pursuit). • Provide opportunities for roaded recreation, upgrade main access routes and establish hardened campsites to accommodate recreational use (Alberta Plateau RMZ only) • In consultation with user groups, provide new opportunities for public and commercial recreational access through referrals to organizations and agencies. • Winter recreation (e.g., snowmobile use) may be limited in some areas to sustain winter habitat needs for wildlife (Foothills and Alberta Plateau RMZs only) • Maintain public recreational access to rivers (Major River Corridors RMZ only)

Source: Dawson Creek LRMP Working Group (1999).

4.4.3.2 Hiking and Outdoor Clubs

The Wolverine Nordic and Mountain Society based in Tumbler Ridge promotes non-motorized recreation (including hiking, cross country skiing, ski touring, ice climbing, mountain biking, paddling, and dog sledding) in the RSA. The club hosts an annual half marathon race called the Emperor's Challenge Mountain Run and is responsible for establishing many of the area's hiking trails (the Wolverine Nordic and Mountain Society has an agreement with BC MFLNRO to maintain these trails; T. Bennett, pers. comm.).

There are no hiking trails within the LSA. Three trails border the LSA – Mt. Herman, Barbour Falls and Nesbitt's Knee Falls – and travel through the LSA is required to access these trails (C. Helm, pers. comm.). In addition to these three trails, there are fourteen trails within the RSA, including Babcock Falls, Boulder Gardens, Quintette Mountain, Mt. Kostuik, the Terminator, Kinuseo Creek to Creek, Wolverine Dinosaur Footprints, Flatbed Falls, Flatbed Pools, the Linking Trail/Kevin's Trail, Tumbler Point, Bald Spot, Quality

Falls, and Wolverine Nordic Ski Trails (Figure 4.4-1). Tentfire Creek may be more used in the future for back country skiing, ice climbing, and numerous other activities (C. Helm, pers. comm.).

The Tumbler Ridge Museum Foundation provides guided, interpretive, dinosaur trackway tours in the summer months.

4.4.3.3 Snowmobiling

The Ridge Riders Snowmobile Association, based in Tumbler Ridge, maintains over 300 km of snowmobile trails in the area. The Core Lodge Riding Area is located in the RSA. This area has a backcountry cabin which accesses a number of trailheads including: Babcock Mountain, Hidden Valley, Windy Ridge, Eanny/Meany/Meaner, Kinusea Falls, Summit Meadows, Back Meadows, Superbowl, Terminator (District of Tumbler Ridge 2012). Snowmobile trails are heavily used, with 200 to 300 people per day (D. Merritt, pers. comm.).

4.4.3.4 All-terrain Vehicles

There are no established ATV trails, but there is a network of cutlines and forestry roads which constitute more than 300 km of informal trails (District of Tumbler Ridge 2012). In many areas, ATVs are restricted above 1,400 ft. and generally follow existing access corridors (T. Bennett, pers. comm.).

4.4.3.5 Water-based Activities

The Murray River is popular for canoeing and river boating, and kayakers enjoy grade II/III white-water paddling on Flatbed Creek (DTR 2013). Rocky Mountain Trench Adventures and TR Gallery Framing operate jet boat tours on the Murray River. There are no water-based commercial recreation tenures in the RSA. However, in April 2012, Loiselle Investments Ltd. applied for a Commercial Recreation Licence (Crown land tenure, file #8003270) for the purpose of canoeing on the Wolverine River to the west of the LSA and the lower portion of the Murray River (T. Moorhouse, pers. comm.).

4.5 RESIDENT AND NON-RESIDENT HUNTING

4.5.1 Hunting Overview

Hunting in BC contributed $48 million to the provincial gross domestic product and employed more than 1,700 people in 2003 (BC Stats 2005).[5] Target species for hunting include black bear, caribou, cougar, elk, grizzly bear, moose, mountain goat, mountain sheep, mule deer, white-tailed deer and wolf. Resident hunters tend to hunt animals that provide meat for consumption (such as moose, elk and deer), while non-resident hunters tend to target trophy animals (such as black bear and grizzly bear). Within the LSA and RSA, resident hunting declined from the 1990s to the early 2000s, while non-resident hunting increased over the same period (BC Stats 2005). The latter part of the 2000s saw an increase in resident hunting, which is largely attributed to hunting of elk and white-tailed deer. While non-resident hunters harvest animals in much lower numbers than residents, they play a more significant role economically.

The province is divided into nine administrative regions, comprising a total of 225 WMUs for the purpose of game management. The Project lies within Region 7B (Peace), WMUs 7-20, 7-21, and 7-22 (Figure 4.5-1). The entire LSA falls within WMU 7-21. WMU 7-20 overlaps 24% of the RSA while WMU 7-21 overlaps 75% of the RSA. WMU 7-22 has the smallest amount of overlap—less than 1% at its westernmost edge—and subsequently will not be characterized further within the context of this report.

[5] Most recent data available.

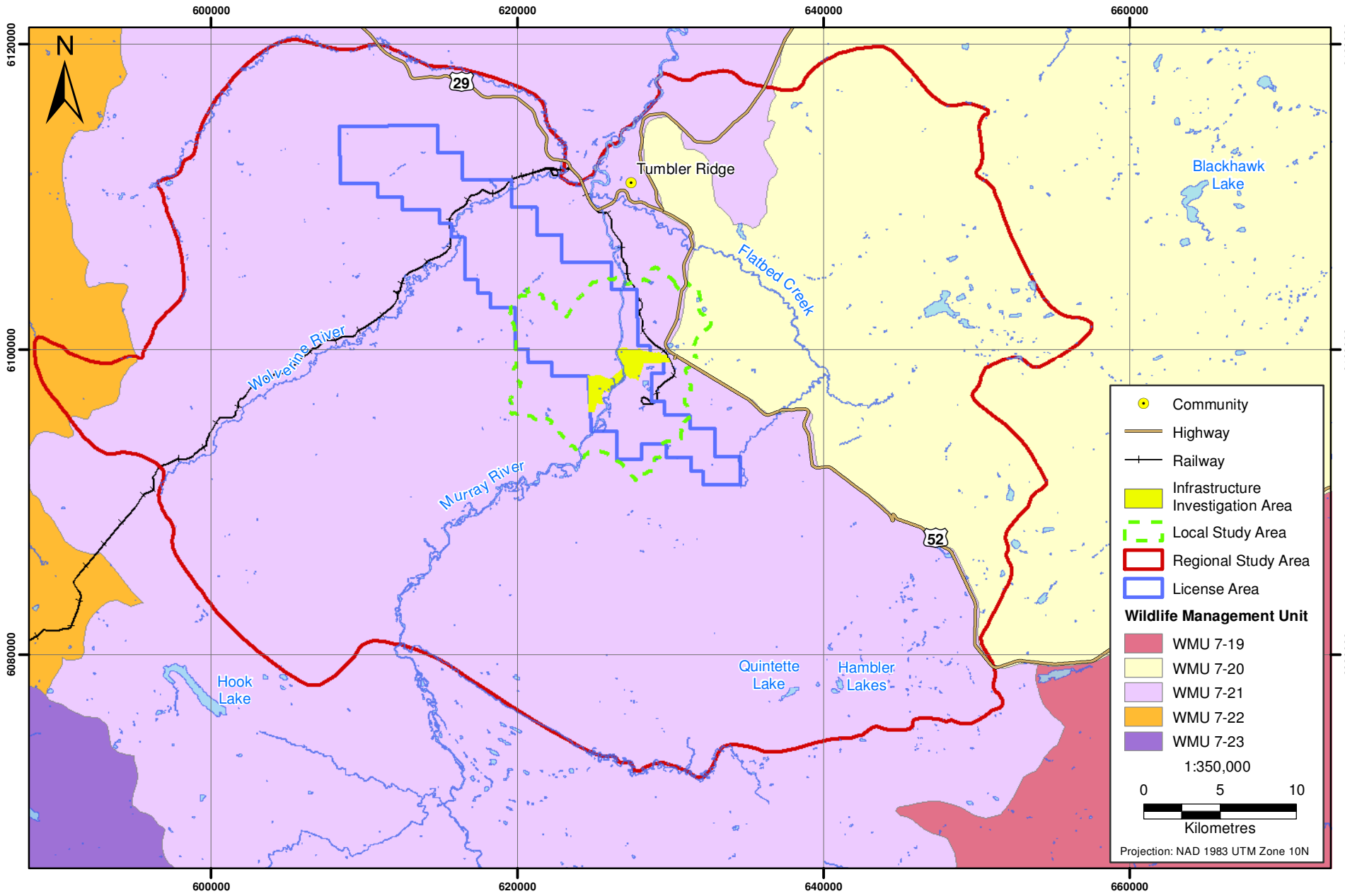


Figure 4.5-1

hd Mining

MURRAY RIVER COAL PROJECT

Wildlife Mangement Units in the Local and Regional Study Areas

Figure 4.5-1

Rescan Engineers & Scientists

4.5.2 Hunting in the Local and Regional Study Areas

The BC MFLNRO collects harvest data for provincially managed WMUs, including WMUs 7-20 and 7-21 (BC MFLNRO 2012a). These data describe the type and frequency of animal harvests reported per year by resident and non-resident hunters for the years 1976 to 2010.[6] Figures 4.5-2 to 4.5-5 detail non-resident and resident hunter effort and reported kills by species in both WMUs.

WMU 7-20 was consistently used by resident hunters between 1976 and 2010. Resident hunters averaged 7,488 hunter days per year in this management unit. Greatest hunter effort was directed toward moose (44% of all species targeted), followed by elk (24%), mule deer (13%), and white tailed deer (11%; Figure 4.5-2a). Kills generally follow hunter effort, with an average of 135 moose, 68 elk, 56 mule deer and 37 white tail deer killed per year (Figure 4.5-2b; note that there is no data for the latter two species from 1976 to 1987 so numbers may be higher). Resident hunter effort and kill numbers are generally stable across the period, but sharply increase at the end of the period. Increases are attributed to greater hunter effort and kills of elk and white tailed deer, with 492 and 282 kills, respectively, in 2010.

By comparison, non-resident hunters in WMU 7-20 were less active, with an average of 54 hunter days per year. Non-residents concentrated their efforts primarily on black bear (42% of all species targeted), but also elk (17%), wolf (15%) and moose (15%; Figure 4.5-3a). As with resident hunters, non-resident hunter kills generally follow hunter effort, with an average of 2 black bears, 0.4 moose and 0.3 elk killed per year across the period (Figure 4.5-3b). A spike in effort and kills occur in the early 1990s (206 hunter days and 14 animals killed in 1993) and remain somewhat variable for the remainder of the period.

WMU 7-21 was used consistently by resident hunters between 1976 and 2010, with an average hunter effort of 9,083 hunter days per year (Figure 4.5-4a). Greatest hunter effort was directed to moose (42% of all species targeted), followed by elk (24%), mule deer (11%) and white tail deer (10%; Figure 4.5-4b). In line with hunter effort, an average of 157 moose, 45 elk, 45 mule deer, and 43 white tail deer are killed per year (Figure 4.5-4b). Resident hunter effort increased from the late 1980s to the early 1990s, peaking in 1991 (13,913 hunter days and 488 kills), with a gentle decline to the early 2000s. The latter part of the 2000s saw a sharp increase in hunter effort, particularly with respect to elk and white tailed deer.

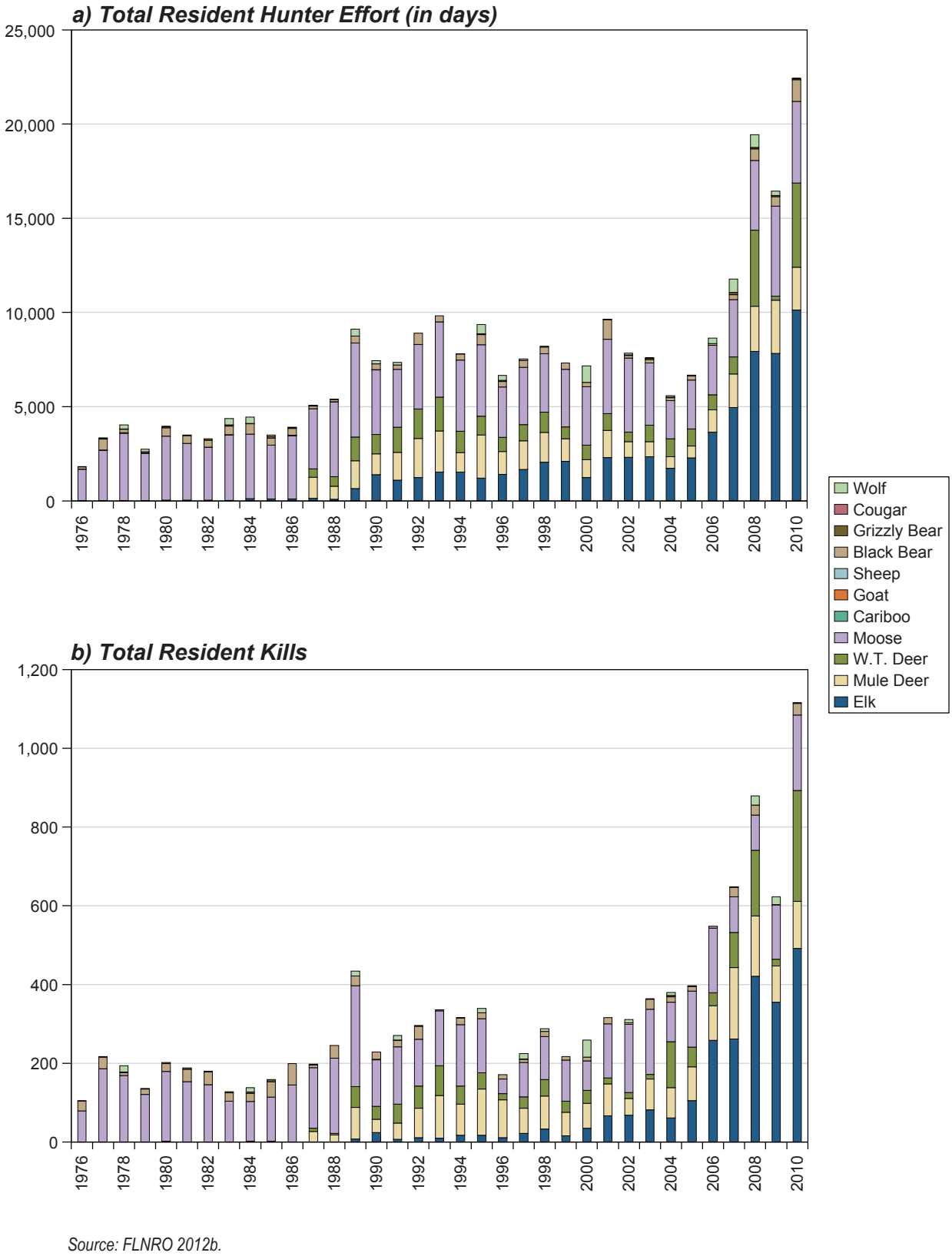
Non-resident hunters also used WMU 7-21 between 1976 and 2010, although less than resident hunters: non-residents averaged 269 hunter days per year (Figure 4.5-5a). Non-residents directed their hunting effort primarily at black bear (24% of total hunter effort), but moose (21%), elk (19%), and grizzly bear (11%) were also targeted. Kill numbers follow hunter effort numbers, with an average of 4 black bears, 3 moose, 2 elk, and 2 grizzly bears killed per year (Figure 4.5-5b). Non-resident hunter effort declined in the mid-1990s, but has since rebounded to earlier levels.

4.6 GUIDE OUTFITTING

4.6.1 Guide Outfitting Overview

Guide outfitters provide guide services, camping gear, food, accommodations, transportation, and other supplies and services to hunters who are usually hunting in unfamiliar territory (GSGislason & Associates Ltd. 2002). The guide outfitting industry in British Columbia employs more than 2,000 people and generates about $120 million of economic activity each year (Guide Outfitters Association of BC 2013b). There are approximately 245 guide outfitters in BC at present (BC MFLNRO 2013f).

[6] Note that Aboriginal hunters are not required to report kills.

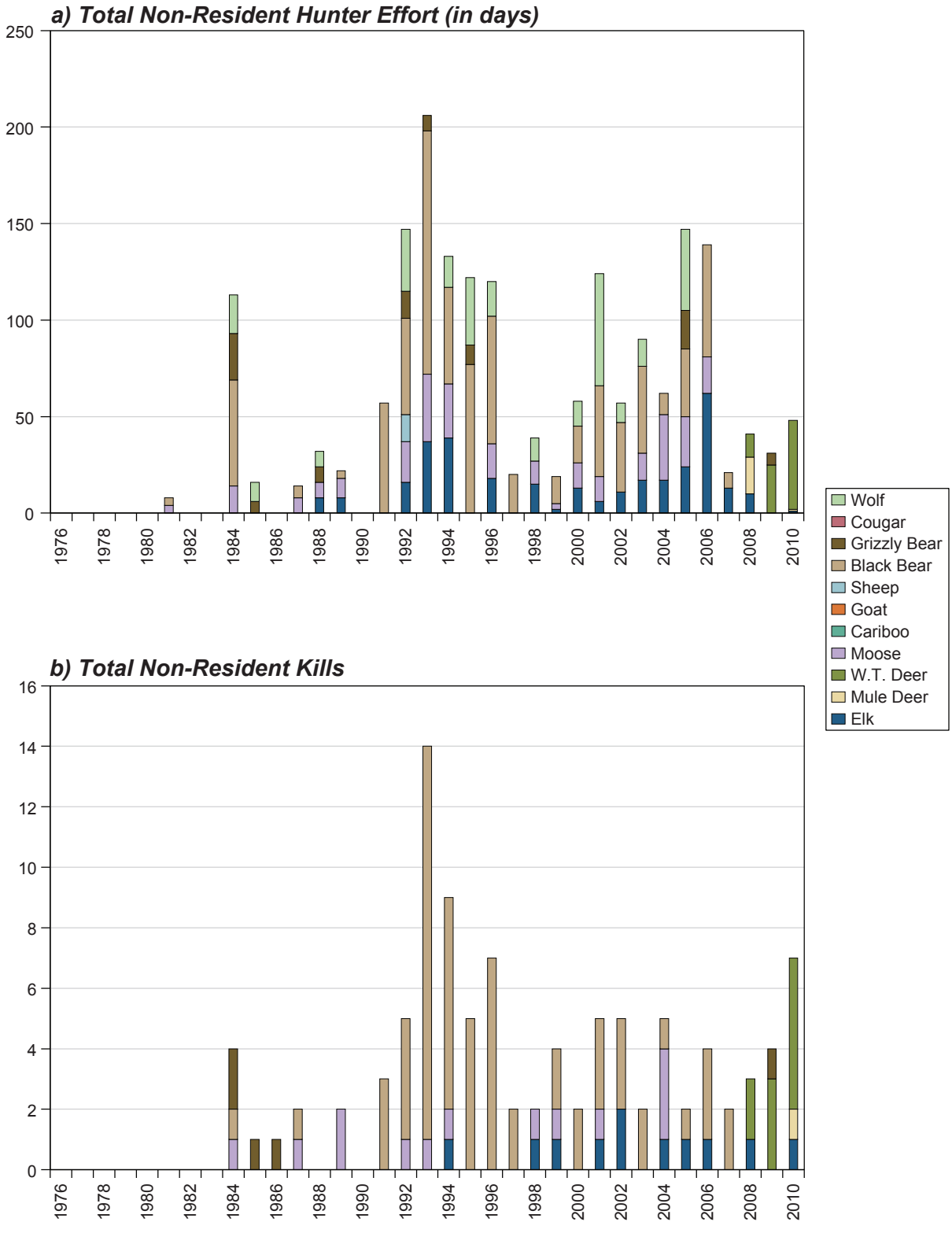


Source: FLNRO 2012b.

MURRAY RIVER COAL PROJECT

Total Resident Hunter Effort and Kills by Species in Wildlife Management Unit 7-20, 1976 to 2010

Figure 4.5-2

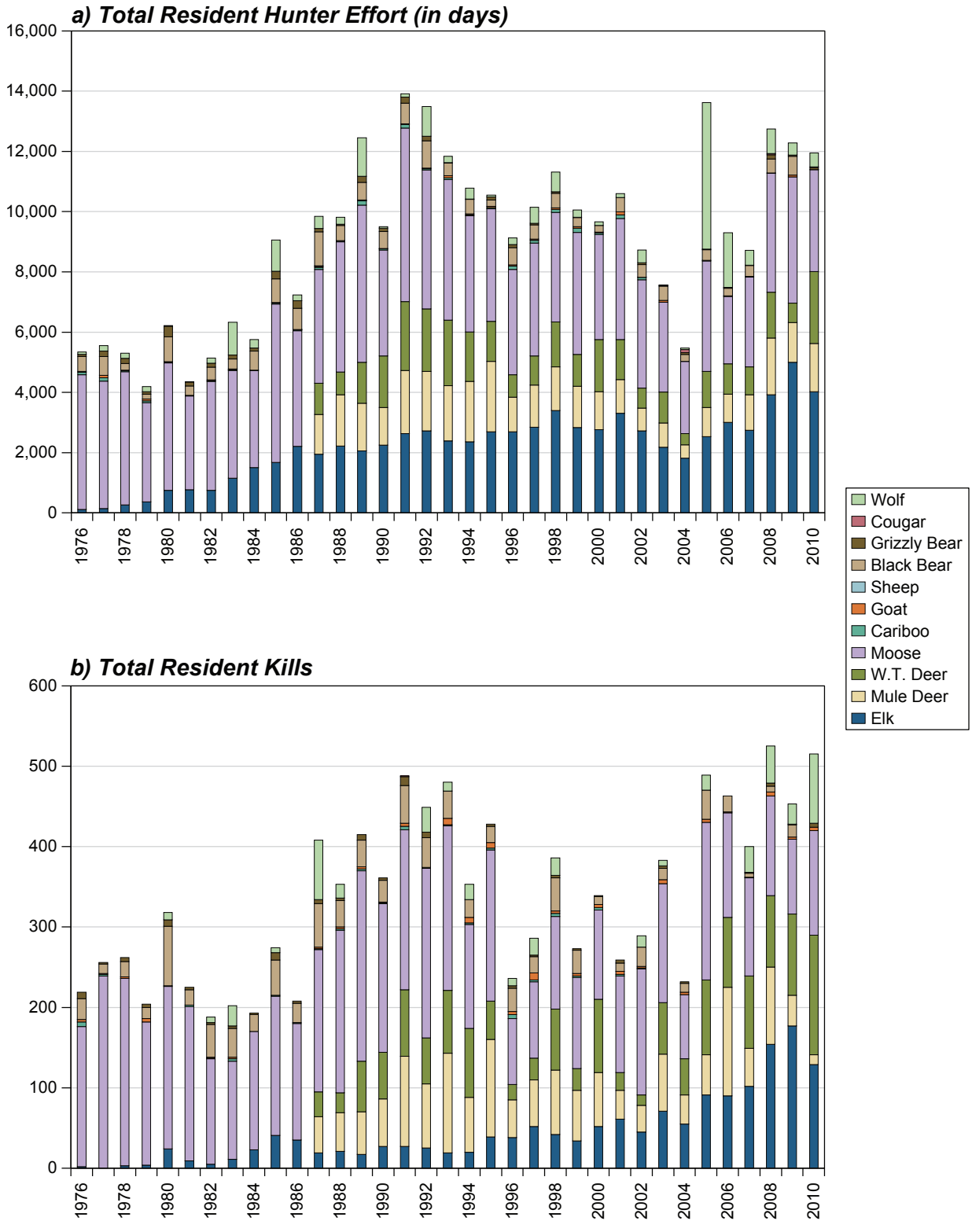


Source: FLNRO 2012b.

MURRAY RIVER COAL PROJECT

Total Non-resident Hunter Effort and Kills by Species in Wildlife Management Unit 7-20, 1976 to 2010

Figure 4.5-3

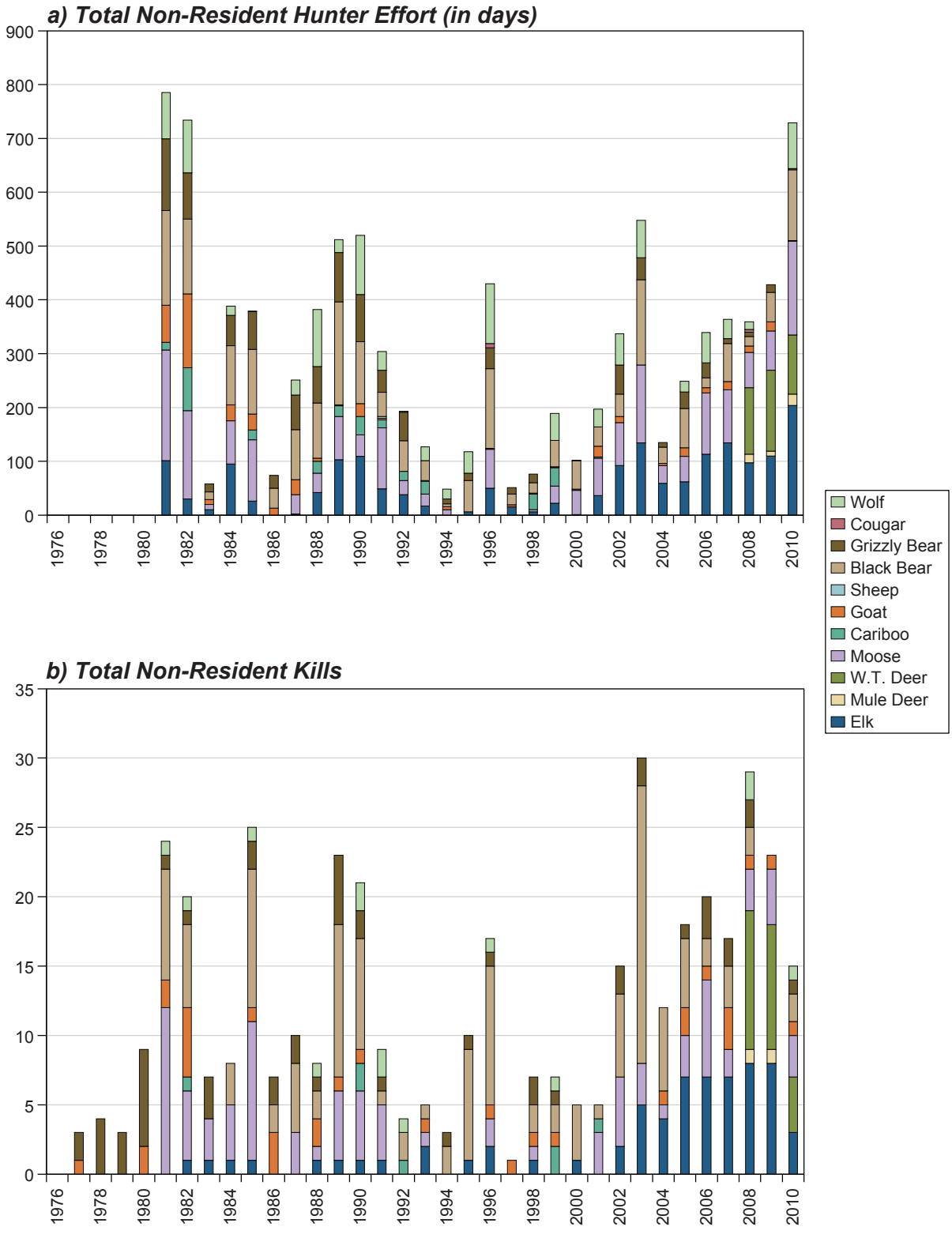


Source: FLNRO 2012b.

MURRAY RIVER COAL PROJECT

Total Resident Hunter Effort and Kills by Species in Wildlife Management Unit 7-21, 1976 to 2010

Figure 4.5-4



Source: FLNRO 2012b.

An average market value of an existing operation is estimated at $200,000 to $400,000, depending on the size of the guide outfitter's area and corresponding infrastructure (S. Ellis, pers. comm.). In order to supplement and extend the guiding business, some operations will also serve non-hunting clients during the summer down season, for trail riding, fishing, and wildlife viewing.

Each guide outfitter is licensed to guide resident and non-resident hunters in an exclusive guide area with clearly defined and legally described boundaries. The guide areas vary considerably in size and availability of big game species. The responsibility for issuing guide licences and guiding territory certificates lies with the Regional Fish and Wildlife Managers within the Wildlife Management Regions in the province. Guiding is regulated by the *Wildlife Act* (1996o; see Section 2.1.1). The guide outfitter licence is issued annually. Certificates grant exclusive control over guiding privileges in the licence area for a stated period of time (not exceeding 25 years).

4.6.2 Guide Outfitting in the Dawson Creek Land and Resource Management Plan

Table 4.6-1 identifies the GMD related to guide outfitting in the Dawson Creek LRMP.

Table 4.6-1. Dawson Creek Land and Resource Management Plan General Management Directions for Guide Outfitting

Objectives	• Sustain and manage existing guide outfitting opportunities.
Strategies	• Recognize guide outfitting tenures and manage resource development activities to mitigate negative impacts to guide outfitting. • Notify guide outfitters of impending resource developments in a timely manner. • Permit grazing activities in support of guide outfitting operations where appropriate. • In consultation with guide outfitters and BC MOE's habitat protection staff, identify known wildlife habitat features for large carnivores and ungulates, and guide outfitter improvements such as base camps and satellite camps, and incorporate this information into forest development, resource development, landscape unit level and operational planning to mitigate negative impacts to guide outfitting and guide outfitter improvements. • Encourage industrial proponents and guide outfitters to work cooperatively to accommodate guide outfitting values, resource values and industrial operations.

Source: Dawson Creek LRMP Working Group (1999).

Guide outfitting management direction for the Foothills, Alberta Plateau and Major River Corridors RMZs follow the GMD.

4.6.3 Guide Outfitting Tenures in the Local and Regional Study Areas

Four guide outfitting tenures overlap with the RSA: 701254, 701245, 701258, and 701249 (Figure 4.6-1 and Table 4.6-2). The majority of the LSA, as well as over half of the RSA, overlaps with a guide outfitting area 701254. This tenure has one main base camp but the operator most likely uses spike camps throughout the season (T. Moorhouse, pers. comm.). Alpine Valley Outfitters operates tenure number 701258, which overlaps the north-western part of the RSA, and the LSA. Tracks BC and High Prairie Outfitters Ltd. operate tenure number 701245, which overlaps a small north-western section of the RSA. Fredlund Guide Services operates tenure number 701249, which overlaps a very small section of the south-east section of the RSA.

One guide outfitter operating in the RSA (licence #701249) considers guide outfitting to be a way of life in addition to a livelihood. The outfitter raised concerns about the impacts of industrial development in general on loss of wildlife habitat, loss of economic opportunity, increased hunting pressure, and reduction of grizzly bear quotas (A. Fredlund, pers. comm.).

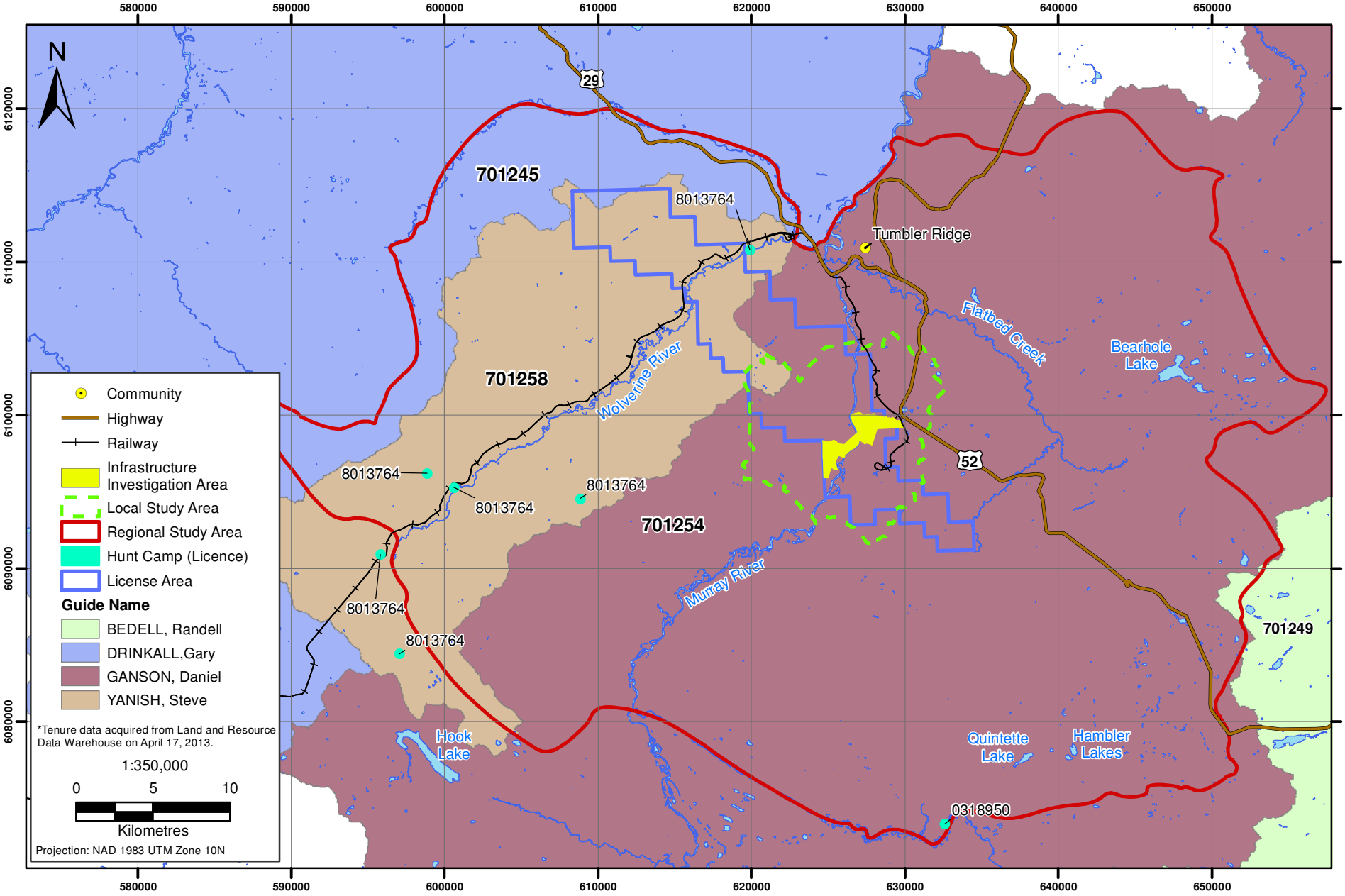


Figure 4.6-1

MURRAY RIVER COAL PROJECT

Guide Outfitting Tenures in the Local and Regional Study Areas

Figure 4.6-1

Rescan Engineers & Scientists

Table 4.6-2. Guide Outfitting Tenures in the Local Study Area

Certificate Number*	Operator	Target Species	Size (ha)	Overlap with RSA - ha (%)	Overlap with LSA - ha (%)
701254	Daniel Ganson	Black Bear, Grizzly Bear, Deer, Elk, Moose, Mountain Goat, Wolf	359,841	161,695 (45%)	11,579 (3%)
701258	Alpine Valley Outfitters	Black Bear, Grizzly Bear, Deer, Elk, Moose, Wolf	56,337	47,210 (84%)	514 (0.9%)
701249	Fredlund Guide Services	Black Bear, Grizzly Bear, Deer, Elk, Moose, Mountain Sheep, Mountain Goat	499,935	512 (0.1%)	0
701245	Tracks BC and High Prairie Outfitters Ltd.	Black Bear, Grizzly Bear, Cougar, Deer, Elk, Moose, Wolf	831,004	18,198 (22%)	0

** Current as of March, 2013*
Source: BC MFLNRO (2013g)

4.7 TRAPPING

4.7.1 Trapping Overview

Trapping involves harvesting furbearing species by setting or placing traps, or killing by the use of a firearm. In BC, approximately 3,500 trappers actively manage 17 furbearing animal species (BC MFLNRO 2012b). About half of the province's trappers are First Nations[7]. Marten, beaver, otter, wolverine and lynx are valued by trappers (BC Stats 2005; L. Reynan, pers. comm; C. Gitschef, pers. comm.; H. Hilton, pers. comm.). Trapping and commercial hunting generated less than $1 million in 2003[8]. About 1,400 trap licenses were issued in BC in 2003 and about 140 people were employed in trapping. Based on low revenue, it is estimated that commercial trapping and hunting provides a source of supplemental income (BC Stats 2005)[9].

Trapping is regulated under the *Wildlife Act* (1996o). The administrative regions for trapping are the same as those defined for hunting (i.e., nine administrative regions and 225 management units). The registered trapline system sets harvest guidelines and manages furbearing animals. Registration of a trapline does not give the holder proprietary rights in wildlife or restrict the rights of another person to hunt or capture wildlife.

4.7.2 Trapping in the Dawson Creek Land and Resource Management Plan

Table 4.7-1 identifies the GMD related to trapping in the Dawson Creek LRMP.

Trapping management direction for the Foothills, Alberta Plateau and Major River Corridors RMZs follow the GMD.

4.7.3 Trapping Tenures in the Local and Regional Study Areas

Trapline tenures TR0721T006, TR0721T003, and TR0721T005 cover the bulk of LSA; they are also the most frequently used and maintain the most profitable harvests, as illustrated in Table 4.7-2. The boundaries of the RSA overlap an additional six traplines (Table 4.6-1 and Figure 4.7-1). Two trapline cabins are located in the LSA; the RSA contains an additional eight trapline cabins (Figure 4.7-1).

[7] Aboriginal people are not required to report trapping activity.
[8] Most recent information.
[9] Most recent data available.

Table 4.7-1. Dawson Creek Land and Resource Management Plan General Management Direction for Trapping

Objectives	• Recognize existing trapping tenures, and manage furbearer habitats and populations (considering enhancement at the landscape unit and operational levels) to provide long term opportunities for trapping. • Recognize trapping and the use of trapping areas as a way of life and of special year round cultural significance to First Nations.
Strategies	• Apply government guidelines for identifying and incorporating critical fur bearer habitat and habitat management objectives for priority species (marten, fisher and lynx) into landscape unit level and operational planning. • Notify registered trappers of impending resource developments in a timely manner. • Where possible, maintain traditional routes of transport for trappers to allow for the harvest of fur. • In consultation with trappers and BC MOE habitat protection staff, identify known wildlife habitat features, known furbearer refuge areas, and known trapper improvements (such as cabins, trails and sets) and incorporate this information into landscape unit and resource development planning, and consider in operational planning, to mitigate negative effects on trapping and trapping environments. • Manage resource activities on trapping areas with respect to their special year round significance to First Nations. • Encourage industrial proponents and trappers to work cooperatively to accommodate trapping values, resource values and industrial operations.

Source: Dawson Creek LRMP Working Group (1999).

Table 4.7-2. Trapline Licences in the Local and Regional Study Areas

Trapline No.*	Interest Area (ha)	Overlap with RSA - ha (%)	Overlap with LSA - ha (%)	Trapline Area in Relation to the Project
TR0720T005	24,585	2,711 (11%)	n/a**	A small portion overlaps the eastern edge of the RSA.
TR0720T006	30,921	5,563 (18%)	n/a	Majority of the tenure is located in the western section of the RSA. A portion of the tenure overlaps the eastern portion of the LSA.
TR0720T007	47,448	17,689 (37%)	n/a	A large portion of the tenure overlaps the north-western section of the RSA.
TR0721T003	26,725	13,005 (49%)	3,633 (14%)	Infrastructure Investigation Area is within this trapline area.
TR0721T005	88,356	86,571 (98%)	6,187 (7%)	Infrastructure Investigation Area is within this trapline area. Trapline area overlaps with a large eastern portion of the RSA.
TR0721T006	85,812	62,491 (73%)	2,273 (3%)	A small portion of this trapline area is located within the western boundary of the project LSA and overlaps a large western portion of the RSA.
TR0721T007	51,826	22,113 (43%)	n/a	A portion of the tenure overlaps with the north-eastern section of the RSA.
TR0721T008	29,464	11,643 (40%)	n/a	A portion of the tenure overlaps with the northern section of the RSA.
TR0722T001	151,941	1,819 (0.1%)	n/a	A small portion overlaps with the western edge of the RSA.

** Current as of March, 2013.*
*** n/a = not applicable.*
Source: BC MFLNRO (2013g).

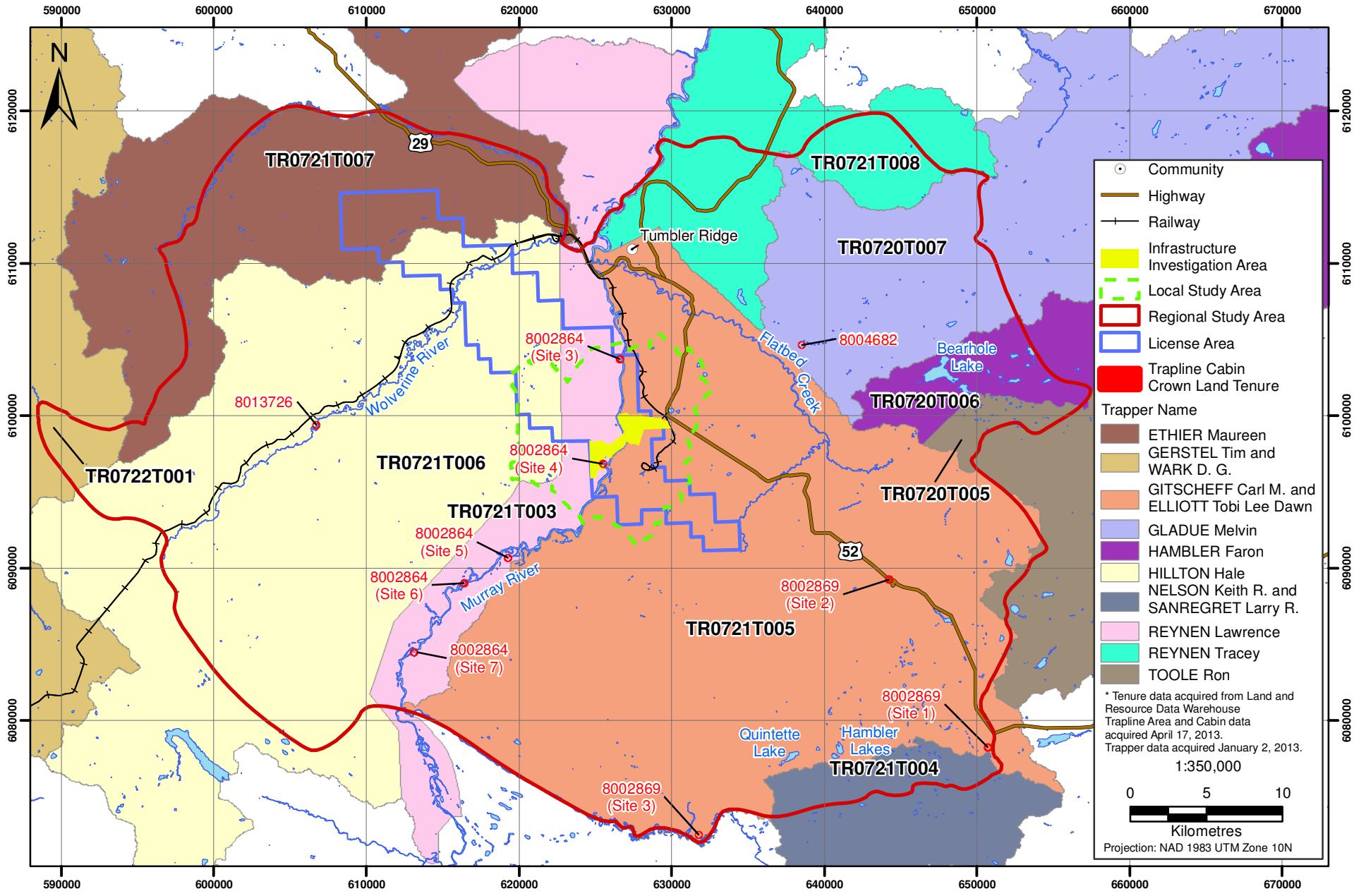


Figure 4.7-1

hd Mining

MURRAY RIVER COAL PROJECT

Trapline Tenures in the Local and Regional Study Areas

Figure 4.7-1

Rescan Engineers & Scientists

According trapping statistics obtained from the BC MFLNRO, the most commonly harvested species in WMU 720 over 2000-2010 were squirrel (869 harvested), marten (619 harvested), beaver (230 harvested), and weasel (204 harvested). Yearly harvests over 2000-2010 were highly variable. WMU 721 is more productive than WMU 720, having four times the total 10-year harvest (8,423 versus 2,111). During this ten-year period, the most commonly harvested species in WMU 721 were marten (3,428 harvested), squirrel (2,126 harvested), weasel (875 harvested), and beaver (803 harvested), with a large numbers of coyote, fisher, lynx and muskrat also harvested. Appendix 1 provides detailed trapline harvest data for 2000 to 2010 for WMU 720 and WMU 721.

The average price per pelt fluctuates with market demand and the annual average price typically affects the level of trapline use in a given year. Overall prices have risen steadily since the early 2000's, fuelled by demand from both China and Russia (Greene 2010).Table 4.7-3 illustrates market prices from the North American Fur Auction held in February 2012. The pelt prices at this auction ranged from $0.63, for a squirrel pelt, to $319.67 for a wolverine pelt.

Table 4.7-3. Average Price per Pelt, North American Fur Auctions, 2012

Species	Average Market Price per Pelt for 2012 (CDN)
Beaver	$31
Ermine (Weasel)	$3
Marten	$85
Muskrat	$10
Squirrel	$0.63

Source: North America Fur Auctions (2012).

The monetary value of a trapline can be estimated by multiplying the number of pelts reported per year by the aggregate monetary sum of 23 years of trapping activity for each species—assuming that the furs were of average quality and that all pelts obtained were reported. Traplines TR0721T003, TR0721T005, and TR0721T007 were estimated to have produced the most value since 1985 (Table 4.7-4).

Table 4.7-4. Summary of Trapline Activity and Use in the Local and Regional Study Areas (1985 to 2008)

Area	Trapline	Most Recent Use (to 2008)	Total Value Of Trapline* (1985 to 2008)	Level of Activity** (1985 to 2008)
LSA	TR0721T003	2008	$96,554	High
	TR0721T005	2008	$147,986	High
	TR0721T006	2005	$32,942	Medium
RSA	TR0721T007	2000	$68,285	High
	TR0720T006	2000	$21,554	Medium
	TR0720T007	2003	$34,757	Medium
	TR0720T008	2008	$10,790	Low

** Sum of all registered revenues for each year trapped*
*** Low = 0-500 total individuals trapper; Medium = 501 to 1,000 total individuals trapped; High = 1,001 to 5,000 total individuals trapped.*

Trapline tenure holders in the LSA express concerns about the impacts of industrial development on trapline tenures in relation to habitat loss, noise, and cumulative impacts. Tenure usage data for trapline tenure holders in the LSA and RSA are presented in Table 4.7-5.

Table 4.7-5. Trapline Tenure Usage in the Local Study Area

Trapline Tenure #	Species harvested	Seasonal Pattern	Number of species harvested	Economic value
TR0721T006	• Squirrels • Weasels • Marten • Fisher • Lynx • Mink • Beaver • Wolverine • Coyote • Fox • Wolf • Otter • Muskrat • Bear (allowed 2 – hunted not trapped)	• Marten (and all short-hair) until Christmas • Long hair (lynx, fisher) after Christmas	Not provided	Not provided
TR0721T003	• Marten • Lynx • Wolves • Mink • Otter • Coyotes • Fox • Beaver	• August to September: prepare equipment and trapline • Mid-October: beaver • November to December: marten (from Quintet to the southern reach of tenure; i.e. near MRP) • December to March: marten, lynx, wolves, mink, otter, coyotes, fox (in tenure area that is north of Tumbler Ridge) • Note: although the above describes a typical season, trapping activities could take place near the MRP at any time throughout the year	• Approx. 100 marten per year (150 this year) • Approx. 1 to 2 wolverine per year • Haven't had any lynx for 4 years, but used to get 3 to 4 per year • Beaver: 0 to 35 per year	• $45 to $110 per pelt • Main activity but small percentage of livelihood
TR0721T005	• All species, but focus on marten throughout tenure	Not provided	• Martens: from high of 211-246 to low of 45 per year; average is 100 per year	Not provided

Source: H. Hilton, pers. comm.; L. Reynan, pers. comm.; C. Gitscheff, pers. comm.

4.8 FORESTRY

4.8.1 Forestry Overview

The LSA and RSA are located within the Dawson Creek Timber Supply Area (TSA), which is approximately 2.28 million ha in size. Part of the Northern Interior Region, the Dawson Creek TSA is administered by the Peace District. The current allowable annual cut (AAC) for the Dawson Creek TSA is 1.86 million cubic metres (BC MFLNRO 2013c). Within the Dawson Creek TSA there are two large processing facilities: a pulp mill in Chetwynd and, in Dawson Creek, an oriented strand board plant dedicated to the processing of Trembling Aspen and Black Cottonwood (KPMG 2010). Conifer is also harvested and there are currently two major sawmills within the TSA (West Fraser Mills and Canfor, both in Chetwynd) that rely on the harvesting of conifer tree species (KPMG 2010). For further information on the economic importance of forestry in the Peace River Regional District (which contains the Dawson Creek TSA) please refer to the *Murray River Coal Project: Socio-economic Baseline Study* (Rescan 2013).

The BC MFLNRO manages forest tenures under the *Forest Act* (1996d). Timber tenures may be volume-based or area-based and may be replaceable or single-use.

4.8.2 Forestry in the Dawson Creek Land and Resource Management Plan

Table 4.8-1 describes the GMD related to forestry in the Dawson Creek LRMP.[10] GMDs for RMZs are presented in Table 4.8-2.

4.8.3 Forestry Tenures in the Local Study Area

Within the LSA, there are four forest tenures held by four companies (Table 4.8-3 and Figure 4.8-1). West Fraser Mills Ltd. holds a Forest Licence located in the south-eastern and north-eastern sections of the LSA, which grants a renewable right to harvest a percentage of the Dawson Creek TSA AAC. The southeastern edge of the LSA encompasses a Community Forest Agreement held by the Tumbler Ridge Community Forest Corp., which provides the exclusive right to harvest 20,000 m^3 annually for a period of 25 years, as well as the opportunity to manage and profit from other forest resources (BC MFLNRO 2011). The entirety of the LSA is covered by Tembec's Pulpwood Agreement Grant (a form of forest tenure that is no longer being issued), which provides a conditional right to harvest pulp quality timber where other sources are insufficient or uneconomic. Babcock Mountain Sawmills Ltd. hold an occupant licence to cut and a licence of occupation in the LSA. Forestry tenures are specific to timber harvesting and road building rights; other land use tenures overlap with timber agreements.

4.8.3.1 Ancillary Tenures

Water Diversion and Use

Surface water in BC is owned by the Crown. Authority to divert and use surface water requires a licence or approval granted by BC MOE under the *Water Act* (1996m) or the *Water Protection* (1996n; see Sections 2.1.1 and 4.13). Where Crown lands are involved, tenures are issued by BC MFLNRO under the *Land Act* (1996f). There are no water licences in the LSA. In the RSA, Chetwynd Forest Industries holds one water licence authorizing the company to draw water from three streams (Club Creek, Flatbed Creek, and Windfall Creek) and two rivers (Murray River and Wolverine River) for water delivery.

[10] LRMP GMDs for forestry were not declared as a higher level plan under the *Forest and Range Practices Act* (which would provide legally-binding strategic direction to operational plans). Forest companies nevertheless operate by the "spirit and intent" of the LRMP in their plans (R. Kopecky, pers. comm.).

Table 4.8-1. Dawson Creek Land and Resource Management Plan General Management Direction for Forestry

Objectives	• Sustain or enhance existing forest management and provide new opportunities for forest management activities. • Manage for a sustainable forest resource. • Where feasible, increase the area of operable forest land base. • Where feasible, increase the productivity of the operable forest land base. • Minimize risk to proposed and existing forestry investments while recognizing agricultural investment and potential on Crown Agricultural Land Reserve (ALR) land. • Ensure the availability of the short-term timber supply without compromising future sustainability and other resource values.
Strategies	• Minimize the risk to proposed and existing forestry investments on Crown ALR land through appropriate planning and referral processes which take into consideration agricultural investment and demand. • Minimize timber losses through the use of silvicultural systems; prompt reforestation; forest fire protection; pest management; salvage of damaged or dead timber, and; stand management regimes. • Manage forest resource values at the landscape unit level using a variety of harvesting patterns and cut block sizes which emulate natural disturbances. • Evaluate and use a range of silvicultural systems and treatment regimes across the planning area where ecologically and economically feasible. • Increase the area of operable forest land base through, but not limited to, conversion of non-commercial brush areas to productive forest where ecologically and economically feasible, and reforestation of marginal ALR lands where appropriate. • Enhance the productivity of the operable forest land base through the development and use of innovative technology, and application of incremental forestry where ecologically and economically feasible. • Recognize that the hidden nature of subsurface resources may require adaptive management techniques to accommodate seasonal and temporary access. • Plan for five years of AAC approved in the Forest Development Plan.

Source: Dawson Creek LRMP Working Group (1999).

Table 4.8-2. Dawson Creek Land and Resource Management Plan Management Direction for Forestry in the Foothills, Alberta Plateau and Major River Corridors Resource Management Zones

Objectives	• Natural Disturbance Type (NDT) 2 • NDT 3 • Provide opportunities for environmentally responsible development of forestry resources to sustain long-term timber supply.
Strategies	• NDT 2 • NDT 3 • Minimize losses from damaging agents through aggressive and prompt fire and pest management, including the salvage of damaged or killed timber (Foothills and Alberta Plateau only). • Promptly and aggressively reforest and manage cutovers and wildfires within the timber harvesting land base to sustain timber harvest levels (Foothills and Alberta Plateau only). • Where environmentally sound and ecologically appropriate, utilize a range of forest patch sizes to provide a cut/leave pattern that more closely mimics the natural disturbance pattern (Foothills and Alberta Plateau only).

Source: Dawson Creek LRMP Working Group (1999).

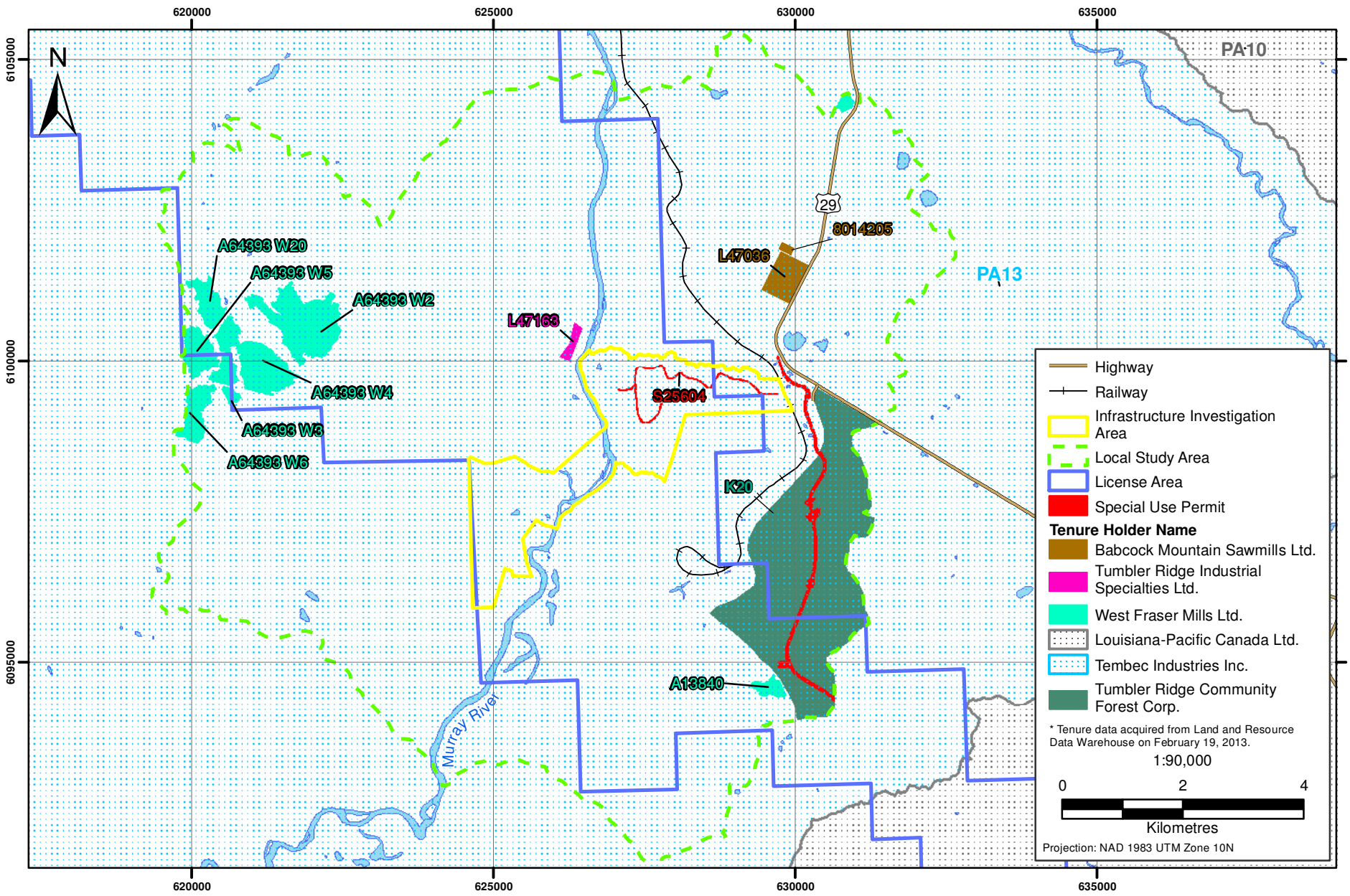


Figure 4.8-1

MURRAY RIVER COAL PROJECT

Forestry Tenures in the Local Study Area

Figure 4.8-1

Rescan Engineers & Scientists

Table 4.8-3. Forestry Tenures in the Local Study Area

Forest File ID*	Interest Holder	Tenure Type	Size (ha)	Overlap with LSA - ha (%)
L47036	Babcock Mountain Sawmills Ltd.	Occupant Licence to Cut	39	39 (100%)
8014205	Babcock Mountain Sawmills Ltd.	Licence of Occupation	2.2	2.2 (100%)
TFL48	Canadian Forest Products Ltd.	Tree Farm Licence	643,433	5,692 (0.9%)
PA13	Tembec Industries Inc.	Pulpwood Agreement	831,619	12,093 (14.5%)
K2O	Tumbler Ridge Community Forest Corp.	Community Forestry Agreement	22,000	711 (3%)
A64393 (cutting permit W3)	West Fraser Mills Ltd.	BC Timber Sales	19	19 (100%)
A64393 (cutting permit W4)	West Fraser Mills Ltd.	BC Timber Sales	73	73 (100%)
A64393 (cutting permit W5)	West Fraser Mills Ltd.	BC Timber Sales	36	36 (100%)
A64393 (cutting permit W6)	West Fraser Mills Ltd.	BC Timber Sales	36	36 (100%)
A64393 (cutting permit W20)	West Fraser Mills Ltd.	BC Timber Sales	2	27 (100%)
A64393 (cutting permit W2)	West Fraser Mills Ltd.	BC Timber Sales	102	102 (100%)
A13840 (cutting permit 128)	West Fraser Mills Ltd.	Forest Licence	240	12 (5%)
A13840 (cutting permit 124)	West Fraser Mills Ltd.	Forest Licence	92	5.4 (6%)

** Current as of March, 2013*
Source: BC MFLNRO (2013g).

4.9 AGRICULTURE AND RANGE

4.9.1 Agriculture and Range Overview

There are two forms of tenured agriculture in BC (BC MFLNRO 2013b). Extensive (or large) agriculture provides farmers with access to land for the cultivation and production and mechanical harvesting of crops including cereal, seed, forage, vegetable or fruit crops. Intensive (or small) agriculture provides access to Crown land in BC for the commercial farm production of animals, fruits and/or vegetables including poultry farms, dairy farms, market gardens, greenhouses, nurseries, piggeries and feed lots.

Agricultural tenures are administered by the BC MFLNRO under the *Land Act* (1996f) Grazing and hay-cutting licenses and permits are administered by BC MFLNRO and issued under the *Range Act* (2004b). Grazing leases are administered by the BC MFLNRO under the *Land Act* (1996f; see Section 2.1.1).

4.9.2 Agriculture and Range in the Local and Regional Study Areas

No agricultural tenures or ALRs exist within the LSA or RSA as the area is deemed to have low agricultural capability and is currently not used for agricultural production.

4.10 MINERAL EXPLORATION AND MINING

4.10.1 Mineral Exploration and Mining Overview

The LSA lies within the Peace River Coalfield, an area which extends for 400 kilometres through BC's northeast. The coalfield consists of more than 3.3 billion tonnes of measured and indicated coal resources, and an additional 6 billion tonnes of inferred resources (Dawson Creek LRMP Working Group 1999).

Coal developments within the Peace River Regional District include four currently operating coal mines: Willow Creek, Brule, Trend, and Perry Creek (Wolverine; Britton et al. 1993). A number of additional coal projects in the region are currently in permitting or in advanced exploration. For further information on mineral exploration and mines in the Peace River Regional District, please refer to the *Murray River Coal Project: Socio-economic Baseline* (Rescan 2013).

Mineral exploration and mining is regulated by the BC Ministry of Energy and Mines under the *Mines Act* (1996i) and *Coal Act* (2004a; see Section 2.1.1).

4.10.2 Mineral Resources in the Dawson Creek Land and Resource Management Plan

Table 4.10-1 identifies the GMD related to coal and minerals in the Dawson Creek LRMP. Two of the RMZs in the LSA provide further guidance related to coal and minerals.

Table 4.10-1. Dawson Creek Land and Resource Management Plan General Management Directions for Mineral and Energy Resources

Objectives	• Provide opportunities and access for mineral, coal and aggregate exploration, development and transportation (Intent: to recognize that access management direction with RMZs should not be unduly prohibitive due to the coal and mineral resource potential which may be currently hidden). • Honour existing tenures. • Permit exploration and development of mineral resources within the appropriate regulatory and approval framework for environmentally responsible development of surface and subsurface resources.
Strategies	• Continue geological, geochemical and geophysical surveys and mineral deposit research to improve data within the planning area. • Integrate coal and mineral exploration and development activities with other resource use activities where feasible. • Within local level planning processes, consider low effect exploration methods where appropriate. • Consider the hidden nature of subsurface resources in landscape unit level and operational planning. • Manage visual quality, at or adjacent to, coal and mineral mine developments using a range of management tools (e.g., information viewpoints describing mining and reclamation programs).

Source: Dawson Creek LRMP Working Group (1999).

Table 4.10-2 identifies the management direction related to mineral exploration and mining for the Foothills, Alberta Plateau and Major River Corridors RMZs.

4.10.3 Mineral Exploration and Mining Tenures in the Local and Regional Study Areas

4.10.3.1 Coal Licences and Leases

There are two coal leases and 45 coal licences within the LSA. Coal lease #417059 applies to Peace River Coal Inc.'s Trend coal mine, an open cut operation that produces hard coking coal. This coal lease overlaps with the northeast corner of the Infrastructure Investigation Area. Coal lease #389287 applies to Teck Coal Ltd.'s Quintette metallurgical coal project; this coal lease is on the east side of the Murray River in the southeast corner of the LSA. Teck Coal Ltd. received approval for a *Mines Act*

Permit Amendment in 2013; production is planned to begin in the first half of 2014. HD Mining holds 27 of the 47 coal licences in the LSA. The remaining 20 licences are held by 0541237 B.C. Ltd. (nine licences), Peace River Coal Inc. (nine licences), and Teck Coal Ltd. (two licences; Table 4.10-3 and Figure 4.10-1).

Table 4.10-2. Dawson Creek Land and Resource Management Plan Management Direction for Mineral and Energy Resources in the Foothills, Alberta Plateau and Major River Corridors Resource Management Zones

Objectives	• Provide opportunities for environmentally responsible exploration and development of surface and subsurface resources. • Plan and manage coal, mineral and aggregate exploration and development activities with sensitivity to identified wildlife (e.g., bighorn sheep, mountain goat) and recreation values (Foothills RMZ only).
Strategies	• Recognize the hidden nature of the subsurface resource by incorporating this information into landscape unit level and operational planning. • Manage visual quality at or adjacent to coal and mineral mine development using a range of management tools such as information viewpoints describing mining and reclamation programs.

Source: Dawson Creek LRMP Working Group (1999).

Table 4.10-3. Coal Tenures in the Local Study Area

Tenure Number*	Interest Holder	Interest Type	Overlaps with Infrastructure Investigation Area (Y/N)
383181	0541237 B.C. Ltd.	Licence	N
383183	0541237 B.C. Ltd.	Licence	N
405136	0541237 B.C. Ltd.	Licence	N
405137	0541237 B.C. Ltd.	Licence	N
405138	0541237 B.C. Ltd.	Licence	N
405139	0541237 B.C. Ltd.	Licence	N
405140	0541237 B.C. Ltd.	Licence	N
405141	0541237 B.C. Ltd.	Licence	N
405142	0541237 B.C. Ltd.	Licence	N
417059	Peace River Coal Inc.	Lease	Y
416846	Peace River Coal Inc.	Licence	N
417030	Peace River Coal Inc.	Licence	N
417036	Peace River Coal Inc.	Licence	N
417451	Peace River Coal Inc.	Licence	N
417469	Peace River Coal Inc.	Licence	N
417470	Peace River Coal Inc.	Licence	N
417471	Peace River Coal Inc.	Licence	Y
417472	Peace River Coal Inc.	Licence	N
417524	Peace River Coal Inc.	Licence	N
389287	Teck Coal Ltd.	Lease	N
327590	Teck Coal Ltd.	Licence	N
327601	Teck Coal Ltd.	Licence	N

** Current as of February 2013.*
Source: BC MFLNRO (2013g).

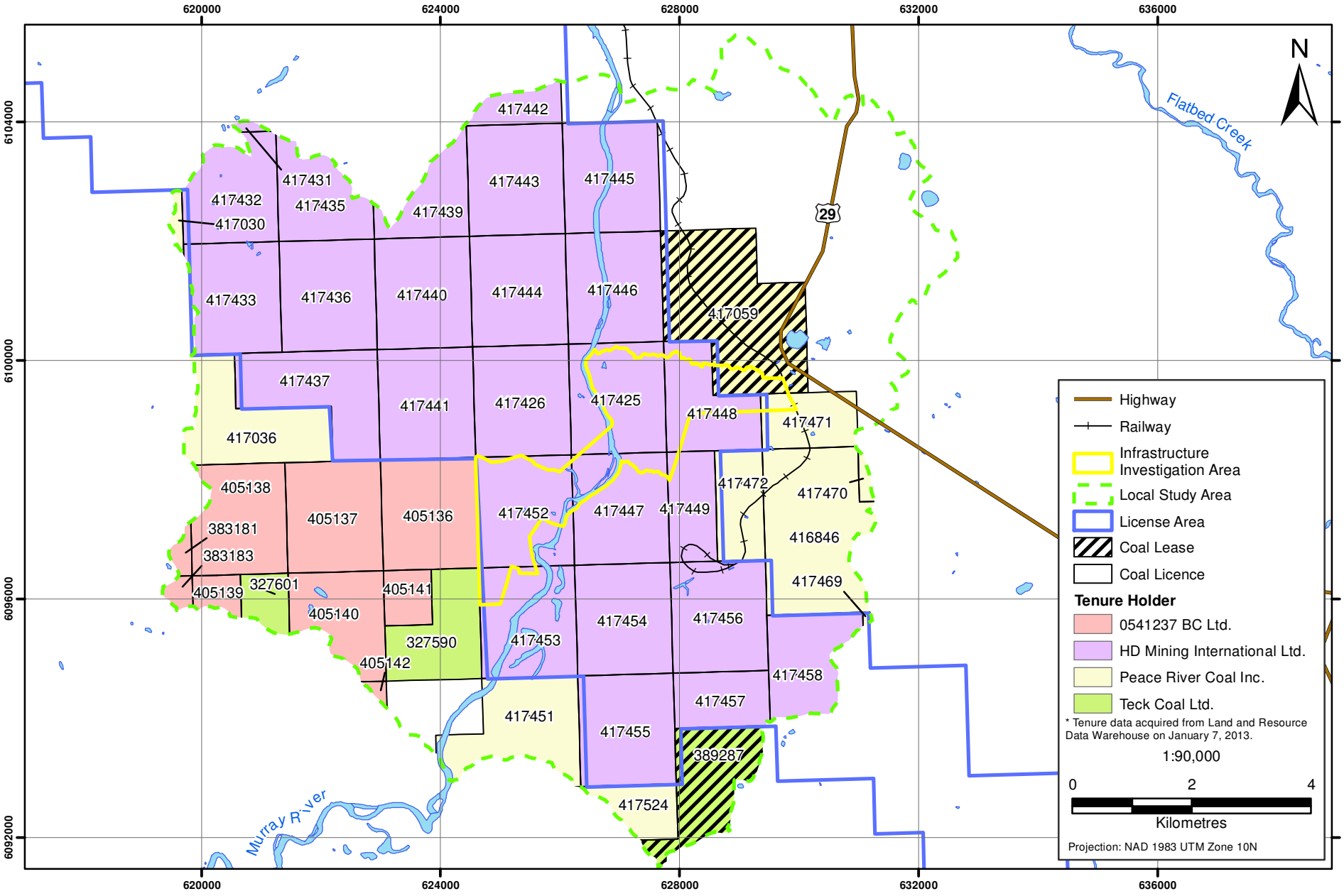


Figure 4.10-1

MURRAY RIVER COAL PROJECT

Coal Tenures in the Local Study Area

Figure 4.10-1

Rescan Engineers & Scientists

There are 216 coal licences and six coal leases in the RSA (Table 4.10-4 and Figure 4.10-2).

Table 4.10-4. Coal Tenures in the Regional Study Area

Coal License and/or Lease Tenure Holder*	Number of Coal Licenses	Number of Coal Leases
0154237 BC Ltd.	27	0
Boreas Coal Ltd.	1	0
Canadian Dehua Mines Group	20	0
HD Mining International Ltd.	57	0
Peace River Coal Inc.	67	2
Sumisho Coal Canada Ltd.	13	0
Talisman Energy Inc.	1	0
Teck Coal Ltd./Teck Resources Ltd.	23	3
Walter Canadian Coal Partnership	6	0
Wolverine Coal Partnership	1	1
Total	**216**	**6**

** Current as of February 2013.*
Source: BC MFLNRO (2013g).

4.10.3.2 Mineral and Placer Claims

There are no mineral or placer tenures in the LSA or RSA.

4.10.3.3 Ancillary Tenures

Aggregate Extraction

Aggregates refer to all types of quarry material (see Section 4.11); quarry tenures are granted under the *Land Act* (1996f; see Section 2.1.1). Within the LSA, Teck Coal Ltd. holds one quarry Licence of Occupation (#8003072) authorizing the excavation of sand and gravel. This tenure overlaps with the southern tip of the Infrastructure Investigation Area. No other quarry tenures are held by mineral exploration and mining interests in the LSA or RSA.

Industrial Infrastructure

Industrial use of Crown land includes: natural resource storage; processing, refinement and transportation; docks; truck terminals; machine shops; and factories, plants or mills (BC MFLNRO 2013j). Industrial Crown land tenures are granted under the *Land Act* (1996f; see Section 2.1.1). Within the LSA, there are eight industrial tenures, all held by Teck Coal Ltd. (Table 4.10-5). Tenure number 8003317 is located in the Infrastructure Investigation Area. Within the RSA, mineral production companies hold ten industrial tenures.

Water Diversion and Use

Surface water in BC is owned by the Crown. Authority to divert and use surface water requires a licence or approval granted by the BC MOE under the *Water Act* (1996m) or the *Water Protection Act* (1996n; see Sections 2.1.1 and 4.13). Where Crown lands are involved, tenures are issued by BC MFLNRO under the *Land Act* (1996f; see Section 2.1.1). Within the LSA, three mining companies hold four water use tenures. Peace River Coal Inc. holds a licence to draw water out of MT100 Creek for sediment control. Teck Coal Ltd. draws water out of the Murray River for coal washing and out of Fifteen Creek for land improvement. HD Mining draws water out of the Murray River for road maintenance purposes (Table 4.10-6).

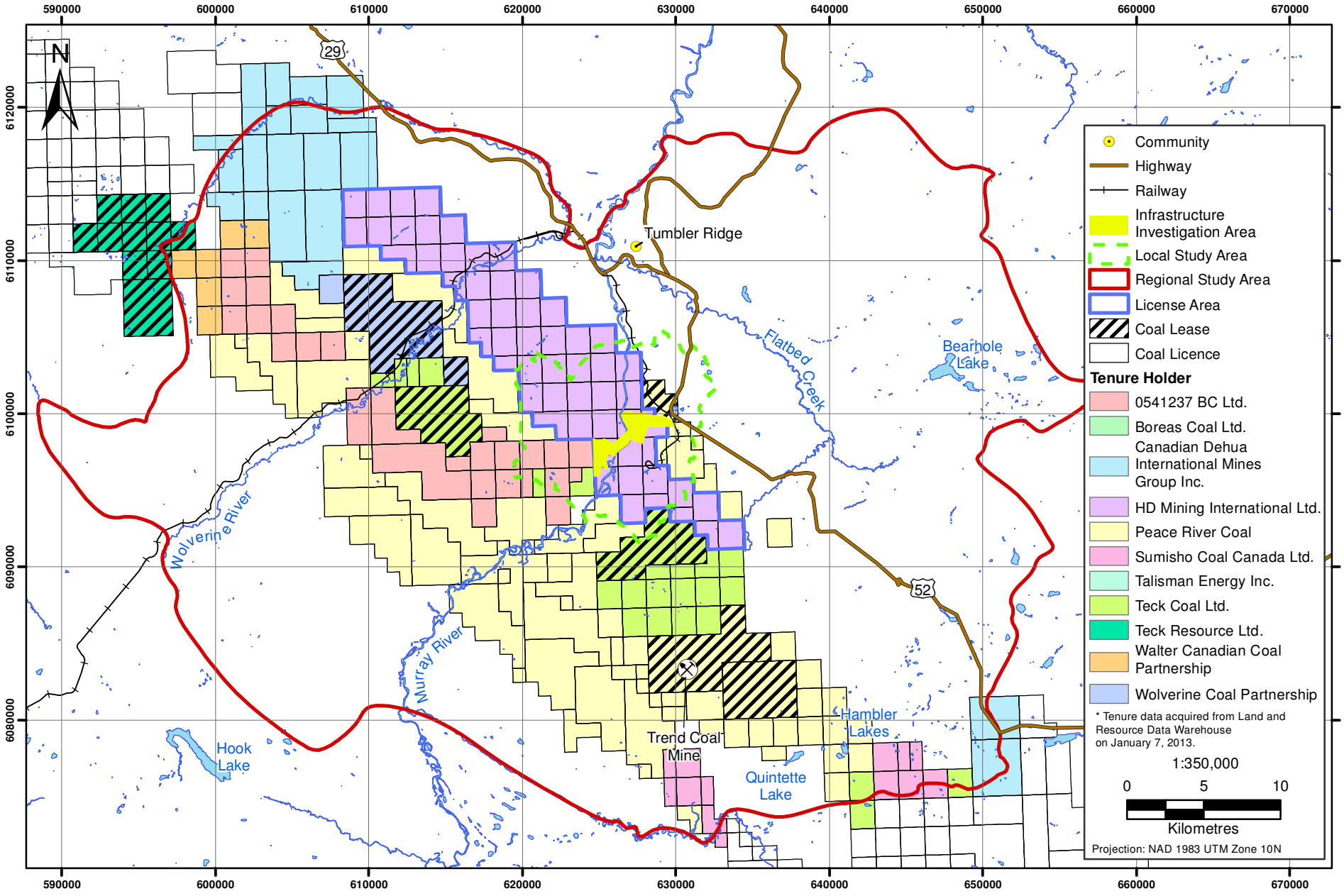


Figure 4.10-2

MURRAY RIVER COAL PROJECT

Coal Tenures in the Local and Regional Study Areas

Figure 4.10-2

Rescan Engineers & Scientists

Table 4.10-5. Mining Infrastructure Crown Land Tenures in the Local Study Area

File Number*	Interest Holder	Tenure Purpose	Tenure Subpurpose	Tenure Type	Tenure Area (ha)	Overlap with LSA - ha (%)
8002983	Teck Coal Ltd.	Industrial	Mineral Production	Standard Lease	579	579 (100%)
8003317	Teck Coal Ltd.	Industrial	Mineral Production	Statutory Right of Way (or Easement)	98	55 (56.33%)
8003491	Teck Coal Ltd.	Industrial	Mineral Production	Standard Lease	5,540	703 (12.70%)
8003545 (site 1)	Teck Coal Ltd.	Industrial	Miscellaneous	Licence of Occupation	1.1	1.1 (100%)
8003545 (site 2)	Teck Coal Ltd.	Industrial	Miscellaneous	Licence of Occupation	0.26	0.26 (100%)
8003545 (site 3)	Teck Coal Ltd.	Industrial	Miscellaneous	Licence of Occupation	0.03	0.03 (100%)
8003545 (site 4)	Teck Coal Ltd.	Industrial	Miscellaneous	Licence of Occupation	0.48	0.48 (100%)
8003545 (site 5)	Teck Coal Ltd.	Industrial	Miscellaneous	Licence of Occupation	0.60	0.60 (100%)

** Current as of March 2013.*
Source: BC MFLNRO (2013g).

Table 4.10-6. Water Licences Held by Mining Companies in the Local Study Area

License Number*	Tenure Holder	Stream Name	Purpose/Use
C120821	Peace River Coal Inc.	MT100 Creek	Dust control and sediment control
C058880	Teck Coal Ltd.	Murray River	Coal washing
C103818	Teck Coal Ltd.	Fifteen Creek	Land improvement
A703671	HD Mining International Ltd.	Murray River	Industrial (road maintenance)

** Current as of April 2013*
Source: BC MFLNRO (2013g).

Within the RSA, four mining companies hold eleven water tenures, drawing water from sixteen creeks (Table 4.10-7).

Table 4.10-7. Water Crown Land Tenures Held by Mining Companies in the Regional Study Area

License Number	Tenure Holder	Stream Name	Purpose/Use
C124178	Peace River Coal Inc.	GT16C Creek	Not provided
		GT16E Creek	Not provided
		GT20 Creek	Not provided
		GT22A Creek	Not provided
		GT22C Creek	Not provided
		GT26 Creek	Not provided
		GT28 Creek	Not provided
		GT32 Creek	Not provided
		GT42A Creek	Not provided

(continued)

Table 4.10-7. Water Crown Land Tenures Held by Mining Companies in the Regional Study Area (completed)

License Number	Tenure Holder	Stream Name	Purpose/Use
C121160	Peace River Coal Inc.	BT11 Creek	Dust control
		BT13 Creek	Dust control
		BT11 Creek	Fire protection
		BT13 Creek	Fire protection
		BT11 Creek	Sediment control
		BT13 Creek	Sediment control
C120968	Peace River Coal Inc.	BT17 Creek	Sediment control
C121982	Peace River Coal Inc.	BT-31A Creek	Sediment control
		GT-42L Creek	Sediment control
C120821	Peace River Coal Inc.	MT100 Creek	Sediment control
C058993	Teck Coal Limited	Mesa Creek	Sediment control
C058992	Teck Coal Limited	W9 Creek	Sediment control
C120869	0762998 B.C. Unlimited Liability Company	W12 Creek	Dust control
		W6 Creek	Dust control
		W12 Creek	Mining-washing coal
		W6 Creek	Mining-washing coal
C120674	0762998 B.C. Unlimited Liability Company	W12 Creek	Sediment control
C120673	0762998 B.C. Unlimited Liability Company	W6 Creek	Sediment control
C107343	Wolverine Coal Partnership	Bullmoose Creek	Dust control
		Flatbed Creek	Dust control
		Flatbed Creek	Dust control
		Quality Creek	Dust control
		Bullmoose Creek	Dust control

** Current as of April 2013.*
Source: BC MFLNRO (2013g).

Utilities

Utilities consist of distribution lines, pipelines, flow lines, sewer and water systems, electrical transmission and distribution lines (BC MFLNRO 2013l; see Section 4.15). Utilities are authorized by a statutory right-of-way or licence of occupation under the *Land Act* (1996f; see Section 2.1.1). There are no utilities tenures held by mining companies in the LSA. Within the RSA, Teck Coal Ltd. holds four tenures authorizing electric power lines (Table 4.10-8).

Table 4.10-8. Utility Tenures Held by Mining Companies in the Regional Study Area

File Number*	Tenure Holder	Tenure Type	Purpose
8003348	Teck Coal Ltd.	Utility Right-of-way	Electric Power Line
8003508	Teck Coal Ltd.	Utility Right-of-way	Electric Power Line
8004041	Teck Coal Ltd.	Utility Right-of-way	Electric Power Line
8004042	Teck Coal Ltd.	Utility Right-of-way	Electric Power Line

** Current as of February 2013.*
Source: BC MFLNRO (2013g).

Timber Clearing

Non-forestry companies whose primary activities require timber removal (e.g. site clearing and road building) are required to obtain an Occupant Licence to Cut or a Special Use Permit under the *Forest Act* (1996d; see Sections 2.1.1 and 4.7). Within the LSA, three mining companies hold eight Licences to Cut and one Special Use Permit (Table 4.10-9).

Table 4.10-9. Forestry Tenures Held by Mining Interests in the Local Study Area

Forest File ID	Interest Holder	Tenure Type	Size (ha)	Overlap with LSA - ha (%)
L48708	Canadian Dehua International Mines Group Inc.	Occupant Licence To Cut	5.4	5.4 (100%)
L48247	Canadian Dehua International Mines Group Inc.	Occupant Licence To Cut	39	33 (84%)
S24740	Peace River Coal Inc.	Special Use Permit (road right of way)	45	25 (55%)
L47471	Peace River Coal Inc.	Occupant Licence To Cut	11	7.3 (67%)
L46863	Peace River Coal Inc.	Occupant Licence To Cut	78	78 (100%)
L49134	Teck Coal Ltd.	Occupant Licence To Cut	5.3	0.84 (16%)
L49155	Teck Coal Ltd.	Occupant Licence To Cut	27	0.38 (1%)
L49010	Teck Coal Ltd.	Occupant Licence To Cut	3.1	3.1 (100%)

**Current as of April 2013*
Source: BC MFLNRO (2013g).

4.11 PETROLEUM AND NATURAL GAS

4.11.1 Petroleum and Natural Gas Overview

The Peace region is part of a geological hydrocarbon bearing area known as the Western Canada Sedimentary Basin. The Sedimentary Basin spans an area of 1.4 million square kilometres, and includes southwestern Manitoba, southern Saskatchewan and Alberta, northeastern BC, and the southwest corner of the Northwest Territories. This Sedimentary basin holds one of the largest reserves of petroleum and natural gas in the world and supplies most of the North American market (South Peace Economic Development Commission 2013). For more information on the economic importance of petroleum and natural gas in the Peace River Regional District, please refer to the *Murray River Coal Project: Socio-economic Baseline Study* (Rescan 2013).

The BC Oil and Gas Commission regulates oil and gas activity in the province, while the Ministry of Natural Gas manages petroleum and natural gas rights. Petroleum and natural gas leases are governed by the *Petroleum and Natural Gas Act* (1996k; see Section 2.1.1).

Petroleum and natural gas tenures are difficult to display graphically due to their spatial complexity (C. Blaney, pers. comm.). Petroleum and natural gas tenure is described using a grid system for the aerial extent, but the actual rights issued are based on subsurface stratigraphic geological formations (or zones). Rights can include petroleum and natural gas in all geological zones, or a range of zones, or in specific zones. Moreover, rights to specific zones revert to the Crown if they have not been proven capable of production and tenure holders can choose to relinquish a portion of their rights. Consequently, petroleum and natural gas tenures involve a constantly evolving three-dimensional layering of rights, and several tenures can occupy the same areal extent.

4.11.2 Oil and Gas Resources in the Dawson Creek Local Resource Management Plan

Table 4.11-1 identifies the GMD related to oil and gas in the Dawson Creek LRMP.

Table 4.11-1. Dawson Creek Land and Resource Management Plan Management Directions for Oil and Gas

Objectives	• Provide opportunities and access for oil and gas exploration, development and transportation. • Honour existing oil and gas tenures.
Strategies	• Integrate oil and gas exploration and development activities with other resource use activities where feasible. • Permit exploration and development of oil and gas resources using the appropriate regulatory framework that promotes environmentally responsible development of subsurface resources. • Consider potential infrastructure requirements for development when exploring for oil and gas resources. • Within local level planning processes, encourage low effect exploration where appropriate. • Consider the hidden nature of subsurface resources in landscape unit level and operational planning.

Source: BC MFLNRO (2013g).

4.11.3 Petroleum and Natural Gas Tenures in the Local and Regional Study Areas

4.11.3.1 Petroleum and Natural Gas Leases and Drill Licences

The LSA contains 32 petroleum and natural gas leases, held by ten companies (Table 4.11-2). Canadian Natural Resources Ltd. holds about 60% of the leases. No drill licences occur in the LSA.

Table 4.11-2. Petroleum and Gas Leases in the Local Study Area

Title Number*	Tenure Holder	Area (ha)	Overlap with LSA - ha (%)
52369	Apache Canada Ltd./Devon Canada Corp.	3,261	335 (10.28%)
4566	Canadian Natural Resources Ltd.	296	37 (12.42%)
8876	Canadian Natural Resources Ltd./Suncor Energy Inc.	296	122 (41.05%)
12125	Canadian Natural Resources Ltd./Imperial Oil Resources/ Talisman Energy Inc.	1,189	5.3 (17.90%)
12533	Canadian Natural Resources Ltd./Imperial Oil Resources/ Talisman Energy Inc.	549	364 (66.32%)
42757	Canadian Natural Resources Ltd./Imperial Oil Resources/ Talisman Energy Inc.	445	68 (15.27%)
43111	Canadian Natural Resources Ltd./Imperial Oil Resources/ Talisman Energy Inc.	297	12 (38.92%)
45633	Canadian Natural Resources Ltd.	296	12 (41.08%)
46320	Canadian Natural Resources Ltd./Imperial Oil Resources/ Talisman Energy Inc.	594	12 (19.46%)
46321	Canadian Natural Resources Ltd./Imperial Oil Resources/ Talisman Energy Inc.	1,486	77 (5.19%)
46587	Canadian Natural Resources Ltd./Imperial Oil Resources/ Talisman Energy Inc.	297	127 (42.88%)
46588	Canadian Natural Resources Ltd./Imperial Oil Resources/ Talisman Energy Inc.	148	96 (64.66%)

(continued)

Table 4.11-2. Petroleum and Gas Leases in the Local Study Area (completed)

Title Number*	Tenure Holder	Area (ha)	Overlap with LSA - ha (%)
46589	Canadian Natural Resources Ltd./Imperial Oil Resources/ Talisman Energy Inc.	297	290 (97.69%)
47302	Canadian Natural Resources Ltd./Imperial Oil Resources/ Talisman Energy Inc.	297	20 (6.75%)
48151	Canadian Natural Resources Ltd.	296	157 (53.11%)
56628	Canadian Natural Resources Ltd./Imperial Oil Resources/ Talisman Energy Inc.	297	297 (100%)
56629	Canadian Natural Resources Ltd./Imperial Oil Resources/ Talisman Energy Inc.	297	297 (100%)
58740	Canadian Natural Resources Ltd./Suncor Energy Inc.	1,781	928 (52.13%)
59675	Canadian Natural Resources Ltd.	889	158 (17.80%)
58500	Encana Corporation/ Suncor Energy Inc.	3,553	485 (13.66%)
58501	Encana Corporation/ Suncor Energy Inc.	2,961	485 (16.39%)
58741	Encana Corporation/ Suncor Energy Inc.	2,373	2,373 (100%)
49103	Imperial Oil Resources Ltd./ Talisman Energy Inc.	297	297 (100%)
49105	Canadian Natural Resources Ltd.	297	297 (100%)
48148	Meridian Land Services (90) Ltd.	297	297 (100%)
48149	Meridian Land Services (90) Ltd.	297	122 (41.15%)
48150	Meridian Land Services (90) Ltd.	296	296 (100%)
45634	Scott Land & Lease Ltd.	296	254 (85.81%)
45635	Scott Land & Lease Ltd.	296	296 (100%)
58532	Suncor Energy Inc.	1,782	1,015 (56.94%)
58533	Suncor Energy Inc.	2,374	2374 (100%)
53078	Western Land Services Co. Ltd.	296	147 (49.75%)

** Current as of February 2013*
Source: BC MFLNRO (2013g).

There are 217 petroleum and natural gas leases, and ten drill licenses in the RSA (Table 4.11-3 and Figure 4.11-1). Drilling licences convey the exclusive right to drill oil and gas wells in a defined area. Leases allow production, in addition to providing exclusive drilling rights. The primary tenure holders in the RSA are the larger oil and gas operators in the Peace Region, such as Canadian Natural Resources Inc., Talisman Erergy Inc., Suncor Energy Inc., and Imperial Oil Resources. Scott Land & Lease Co. holds 34 petroleum and natural gas leases.

4.11.3.2 Ancillary Tenures

Oil and Gas Pipelines

Oil and gas pipelines are authorized by the Oil and Gas Commission under the *Land Act* (1996f; see Section 2.1.1). Within the LSA, there are nine active oil and gas pipeline tenures held by five companies (Table 4.11-4 and Figure 4.11-2). One pipeline (#8008555 held by Westcoast Energy Inc.) transects the Infrastructure Investigation Area.

Table 4.11-3. Petroleum and Natural Gas Tenures in the Regional Study Area

Tenure Holder*	Number of PNG Leases	Number of Drill Licenses
AAC International Energy Inc.	2	0
Antelope Land Services Ltd.	2	0
Apache Canada Ltd.	13	0
Artek Exploration Ltd.	2	0
Bancroft Oil and Gas Ltd.	0	3
Bristol Land and Leasing Ltd.	3	0
Britt Resources Ltd.	2	0
Canadian Coastal Resources Ltd.	2	0
Canadian Natural Resources Ltd.	115	0
Charter Land Services Inc.	1	0
ConocoPhillips Canada Operations Ltd.	5	1
Den-Mara Enterprises Ltd.	1	0
Devon Canada Corp.	4	0
Devon NEC Corp.	9	0
Encana Corp.	3	0
Enerplus Corporation	1	0
ExxonMobil Canada Energy	2	0
Husky Oil Operations Ltd.	2	0
Imperial Oil Resources	46	0
Intercon Petroleum Inc.	2	0
Kerr-McGee Canada Ltd.	3	0
Lone Pine Resources Canada Ltd.	1	0
Meridian Land Services (90) Ltd.	5	1
NAL Energy Corp.	5	0
Quest International Resources Corp.	2	0
Sandstone Land & Mineral Company Ltd.	1	0
Saskatoon Assets Inc.	1	0
Scott Land & Lease Ltd.	34	1
Sekani Resources	2	0
Shell Canada Ltd.	2	1
Sinopec Daylight Energy Ltd.	0	2
Standard Land Company Inc.	1	1
Suncor Energy Inc.	23	0
Talisman Energy Inc.	83	0
Western Land Services Co. Ltd.	4	0
Windfall Resources Ltd.	3	0

** Current as of February 2013*
PNG = Petroleum and natural gas
Source: BC MFLNRO (2013g).

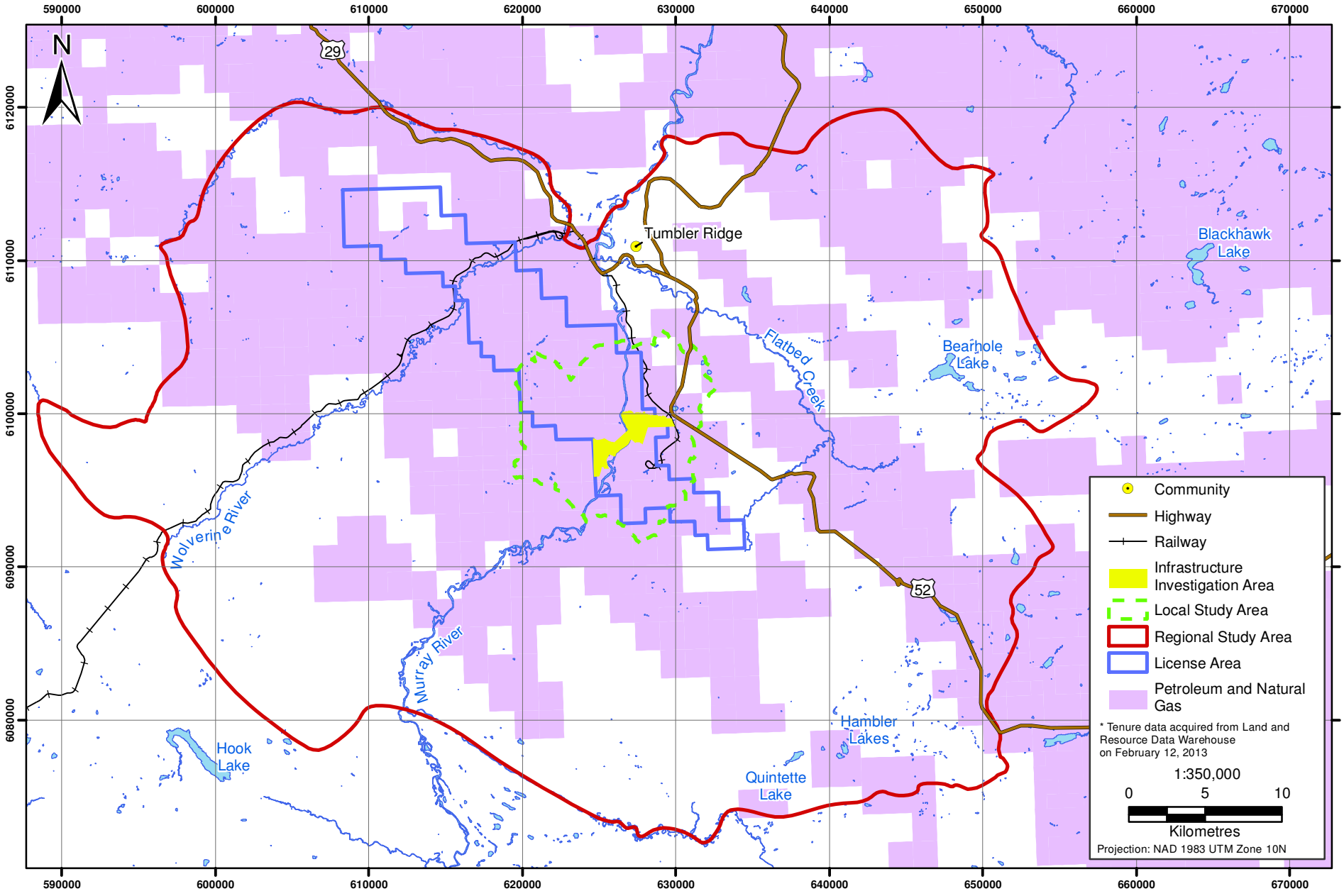


Figure 4.11-1

MURRAY RIVER COAL PROJECT

Petroleum and Natural Gas Tenures in the Local and Regional Study Areas

Figure 4.11-1

Rescan Engineers & Scientists

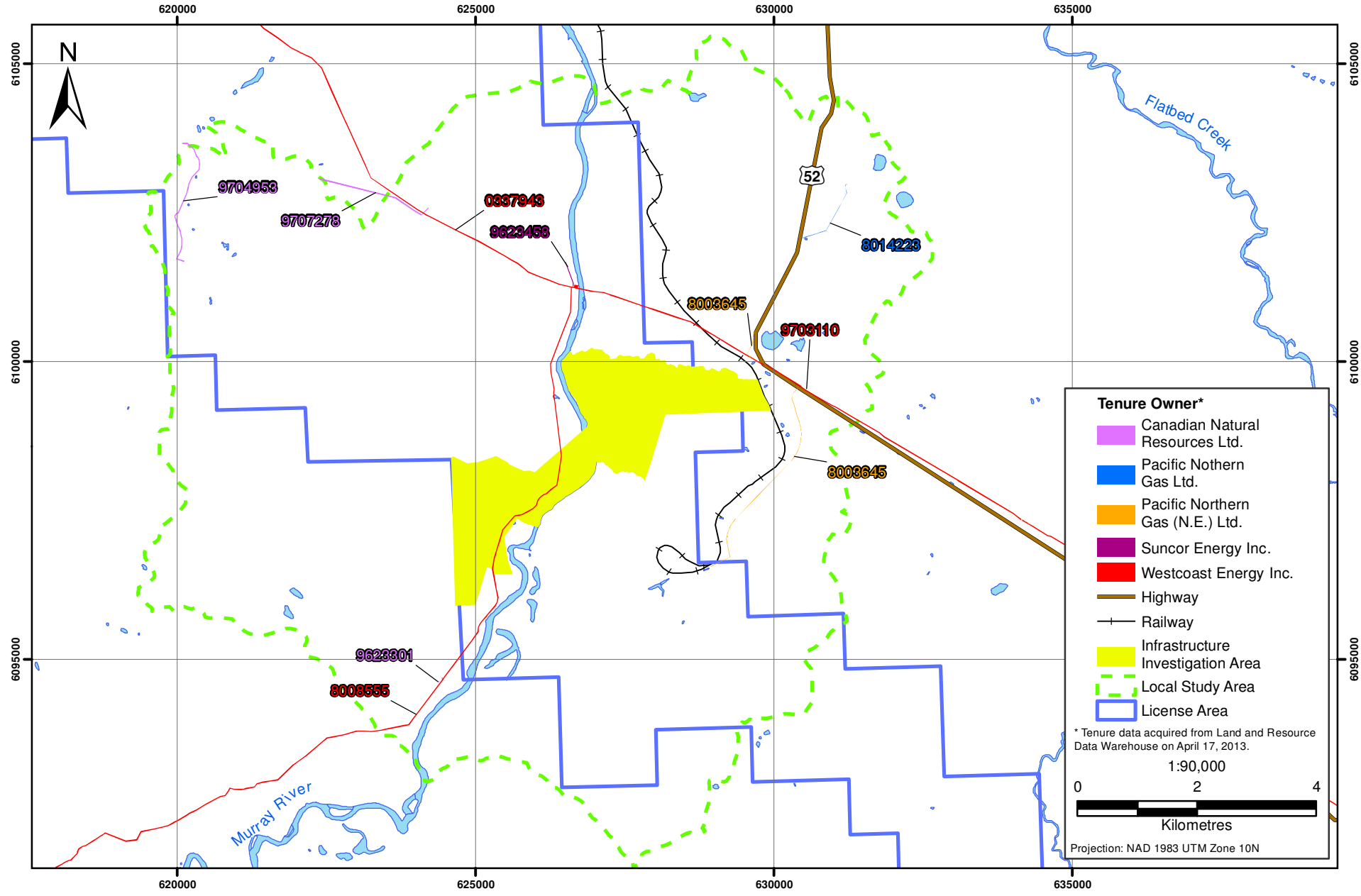


Figure 4.11-2

hd Mining

MURRAY RIVER COAL PROJECT

Oil and Gas Pipeline Tenures in the Local Study Area

Figure 4.11-2

Rescan Engineers & Scientists

Table 4.11-4. Oil and Gas Pipeline Tenures in the Local Study Area

Title Number*	Tenure Holder	Tenure Type
9707278	Canadian Natural Resources Ltd.	Temporary Permit
9623301	Canadian Natural Resources Ltd.	Right-of-Way (interim licence)
9704953	Canadian Natural Resources Ltd.	Right-of-Way (interim licence)
8003645	Pacific Northern Gas (N.E.) Ltd.	Right-of-Way
9703110	Pacific Northern Gas (N.E.) Ltd.	Right-of-Way
8014223	Pacific Northern Gas Ltd.	Right-of-Way
9623458	Suncor Energy Inc.	Right-of-Way (interim licence)
337943	Westcoast Energy Inc.	Right-of-Way
8008555	Westcoast Energy Inc.	Right-of-Way

** Current as of May 2013*
Source: BC MFLNRO (2013g).

Within the RSA, eight companies hold 48 active oil and gas pipeline tenures (interim licenses and statutory rights of way). The majority of these tenures (44%) are owned by Canadian Natural Resources Ltd. (Table 4.11-5 and Figure 4.11-3).

Table 4.11-5. Oil and Gas Pipeline Tenures in the Regional Study Area

Tenure Holder*	Number of Active Pipeline Tenures
Canadian Natural Resources Ltd.	21
ConocoPhillips Canada Operations Ltd.	1
Husky Oil Operations Ltd.	1
Pacific Northern Gas/Pacific Northern Gas (N.E.) Ltd.	10
Suncor Energy Inc.	1
Talisman Energy Inc.	6
Westcoast Energy Inc.	8

** Current as of May 2013*
Source: BC MFLNRO (2013g).

Industrial Infrastructure

Infrastructure associated with Petroleum and natural gas development is authorized by the Oil and Gas Commission under the *Land Act* (1996f). Tenured infrastructure situated on Crown land include: drillsites, wellsites, dehydrator sites, and meter sites. Within the LSA, a total of 15 energy production rights-of-way are held by Canadian Natural Resources Ltd., Suncor Energy Inc., Devon Canada Corp., Husky Oil Operations Ltd. and Pacific Northern Gas (N.E.) Ltd. (Table 4.11-6) One Drillsite/Wellsite, held by Suncor Energy Inc., is located in the Infrastructure Investigation Area. One hundred energy production rights of way (interim licenses and easements) are located within the RSA.

Aggregate Extraction

Aggregates refer to all types of quarry material which are used primarily for construction purposes (see Section 4.11). The Oil and Gas Commission authorizes quarry tenures for petroleum and natural gas interests under the *Land Act* (1996f; see Section 2.1.1). Canadian Natural Resources Ltd. holds one tenure for the extraction of sand and gravel within the LSA. Within the RSA, four companies hold nine quarry tenures (Table 4.11-7).

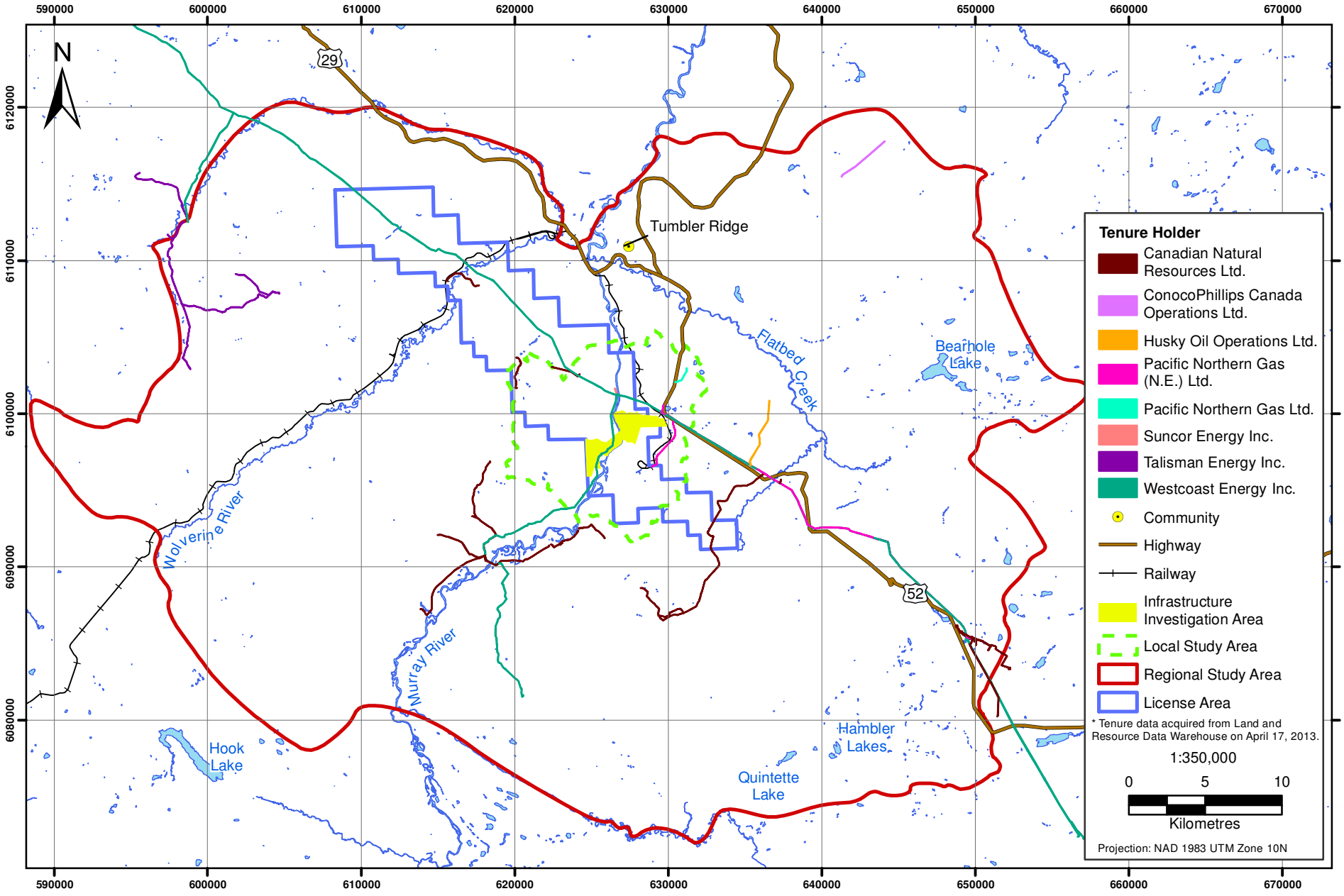


Figure 4.11-3

MURRAY RIVER COAL PROJECT

Oil and Gas Pipeline Tenures in the Local and Regional Study Areas

Figure 4.11-3

Rescan Engineers & Scientists

Table 4.11-6. Oil and Gas Infrastructure in the Local Study Area

File Number*	Interest Holder	Tenure Purpose	Tenure Type	Tenure Area (ha)
9619982	Canadian Natural Resources Ltd.	Drillsite/Wellsite	Statutory Right Of Way (or Easement)	1.4
9621142	Canadian Natural Resources Ltd.	Drillsite/Wellsite	Energy Production Right-of-Way (Interim Licence)	2.0
9627910	Canadian Natural Resources Ltd.	Drillsite/Wellsite	Energy Production Right-of-Way (Interim Licence)	2.4
9628319	Canadian Natural Resources Ltd.	Drillsite/Wellsite	Energy Production Right-of-Way (Interim Licence)	2.0
9633523	Canadian Natural Resources Ltd.	Drillsite/Wellsite	Energy Production Right-of-Way (Interim Licence)	2.0
9700646	Canadian Natural Resources Ltd.	Dehydrator Site	Energy Production Right-of-Way (Interim Licence)	4.0
8009856	Devon Canada Corp.	Drillsite/Wellsite	Statutory Right Of Way (or Easement)	2.0
9630618	Husky Oil Operations Ltd.	Drillsite/Wellsite	Energy Production Right-of-Way (Interim Licence)	2.0
9703470	Pacific Northern Gas (N.E.) Ltd.	Meter Site	Energy Production Right-of-Way (Interim Licence)	0.01
9617574	Suncor Energy Inc.	Drillsite/Wellsite	Energy Production Right-of-Way (Interim Licence)	1.6
9619361	Suncor Energy Inc.	Drillsite/Wellsite	Energy Production Right-of-Way (Interim Licence)	1.9
9620305	Suncor Energy Inc.	Drillsite/Wellsite	Energy Production Right-of-Way (Interim Licence)	2.0
9622021	Suncor Energy Inc.	Dehydrator Site	Energy Production Right-of-Way (Interim Licence)	1.8
9622364	Suncor Energy Inc.	Drillsite/Wellsite	Energy Production Right-of-Way (Interim Licence)	2.4
9702791	Suncor Energy Inc.	Meter Site	Energy Production Right-of-Way (Interim Licence)	1.2

** Current as of March 2013*
Source: BC MFLNRO (2013g).

Table 4.11-7. Quarry Tenures Held by Petroleum and Natural Gas Companies in the Local and Regional Study Areas

File Number*	Tenure Holder	Tenure Purpose	Tenure Type	Interest Area (ha)	Overlaps with LSA (Y/N)	Overlaps with RSA (Y/N)
8013953	0887837 B.C. Ltd.	Sand and Gravel	Licence Of Occupation	20	N	Y
8014478	0887837 B.C. Ltd.	Sand and Gravel	Licence Of Occupation	3.8	N	Y
9604948	Canadian Natural Resources Ltd.	Sand and Gravel	Licence Of Occupation	0.92	N	Y
8008808	Canadian Natural Resources Ltd.	Sand and Gravel	Licence Of Occupation	4.4	N	Y

(continued)

Table 4.11-7. Quarry Tenures Held by Petroleum and Natural Gas Companies in the Local and Regional Study Areas (completed)

File Number*	Tenure Holder	Tenure Purpose	Tenure Type	Interest Area (ha)	Overlaps with LSA (Y/N)	Overlaps with RSA (Y/N)
9629396	Canadian Natural Resources Ltd.	Sand and Gravel	Licence Of Occupation	1.1	N	Y
9634868	Canadian Natural Resources Ltd.	Sand and Gravel	Temporary Permit	2.2	Y	Y
9634869	Canadian Natural Resources Ltd.	Sand and Gravel	Temporary Permit	0.6	N	Y
9621190	Talisman Energy Inc.	Sand and Gravel	Licence Of Occupation	0.6	N	Y
8003419	Westcoast Energy Inc.	Rip Rap	Licence Of Occupation	1.5	N	Y

** Current as of March 2013.*
Source: BC MFLNRO (2013g).

Utilities and Communication

Utilities and communication sites in support of petroleum and natural gas interests are authorized by the Oil and Gas Commission under the *Land Act* (1996f; see Sections 2.1.1 and 4.15). Within the LSA, two petroleum and natural gas companies—Devon Canada Corp. and Suncor Energy Inc.—hold Crown land tenures authorizing electric power lines. One company—Westcoast Energy Inc.—holds a communication Crown land tenure in the LSA. Within the RSA, there are four Crown land tenures authorizing electric power lines and six communication sites (Table 4.11-8).

Table 4.11-8. Utility and Communication Tenures Held by Petroleum and Natural Gas Companies in the Local and Regional Study Areas

File Number*	Tenure Holder	Tenure Type	Purpose	Location
9615962	Devon Canada Corp.	Right-of-Way	Electric power line	LSA
9630897	Suncor Energy Inc.	Right-of-Way	Electric power line	LSA
8009672	Westcoast Energy Inc.	Communication Licence	Communication site	LSA
9625639	Canadian Natural Resources Ltd.	Right-of-Way	Electric power line	RSA
9631305	Husky Oil	Right-of-Way	Electric power line	RSA
9617430	Suncor Energy Inc.	Right-of-Way	Electric power line	RSA
8004879	Talisman Energy Inc.	Right-of-Way	Electric power line	RSA
349065	Canadian Natural Resources Ltd.	Licence of Occupation	Communication site	RSA
8013679	Canadian Natural Resources Ltd.	Licence of Occupation	Communication site	RSA
8014003	Talisman Energy Inc.	Licence of Occupation	Communication site	RSA
8009672	Westcoast Energy Inc.	Licence of Occupation	Communication site	RSA
8013593	Westcoast Energy Inc.	Licence of Occupation	Communication site	RSA
8014749	Westcoast Energy Inc.	Licence of Occupation	Communication site	RSA

** Current as of March 2013.*
Source: BC MFLNRO (2013g).

4.12 AGGREGATES AND CONSTRUCTION

4.12.1 Aggregates Overview

Aggregates refer to all types of quarry material such as sand, gravel and rock used to build and maintain roads, bridges, playing fields, buildings, water lines, sewer systems and other physical infrastructure. In addition to material extraction, a quarry operation may also include:

- material sorting;
- crushing;
- stockpiling;
- washing; and
- on-site operation of a temporary portable asphalt plant.

Quarry tenures are administered by BC MFLNRO under the *Land Act* (1996f; see Section 2.1.1).

4.12.2 Aggregates in the Local and Regional Study Areas

Two construction companies hold three quarry tenures in the LSA. Interroute Construction Ltd. holds two tenures, one of which is adjacent to the infrastructure investigation area on its north-east side. H.F. Noades Construction Ltd. holds one tenure which overlaps with the southern tip of the Infrastructure Investigation Area. Within the RSA, Kodiak Ridge Construction Ltd. holds one quarry tenure (Table 4.12-1 and Figure 4.12-1).

Table 4.12-1. Quarrying Tenures in the Local and Regional Study Areas

File Number*	Interest Holder	Tenure Purpose	Tenure Type	Interest Area (ha)	Overlaps with LSA (Y/N)	Overlaps with RSA (Y/N)
8014530	H.F. Nodes Construction Ltd.	Sand and Gravel	Licence Of Occupation	4.8	Y	Y
8015394	Interoute Construction Ltd.	Sand and Gravel	Licence Of Occupation	6.8	Y	Y
8014556	Interoute Construction Ltd.	Sand and Gravel	Licence Of Occupation	7.8	Y	Y
8014577	Kodiak Ridge Construction Ltd.	Sand and Gravel	Licence Of Occupation	1.4	N	Y

** Current as of February 2013.*
Source: BC MFLNRO (2013g).

Mining and oil and gas companies also hold quarry tenures in support of their primary activities (see Sections 4.9.3.3 and 4.10.3.4)

4.12.2.1 Ancillary Tenures

Water Diversion and Use

Surface water in BC is owned by the Crown. Authority to divert and use surface water requires a licence or approval granted by the BC MOE under the *Water Act* (1996m) or the *Water Protection Act* (1996n; see Sections 2.1.1 and 4.13). Where Crown lands are involved, tenures are issued by BC MFLNRO under the *Land Act* (1996f; see Section 2.1.1). Within the LSA, Interoute Construction Ltd. holds a water licence (number C125492), authorizing it to draw water from the Murray River for processing.

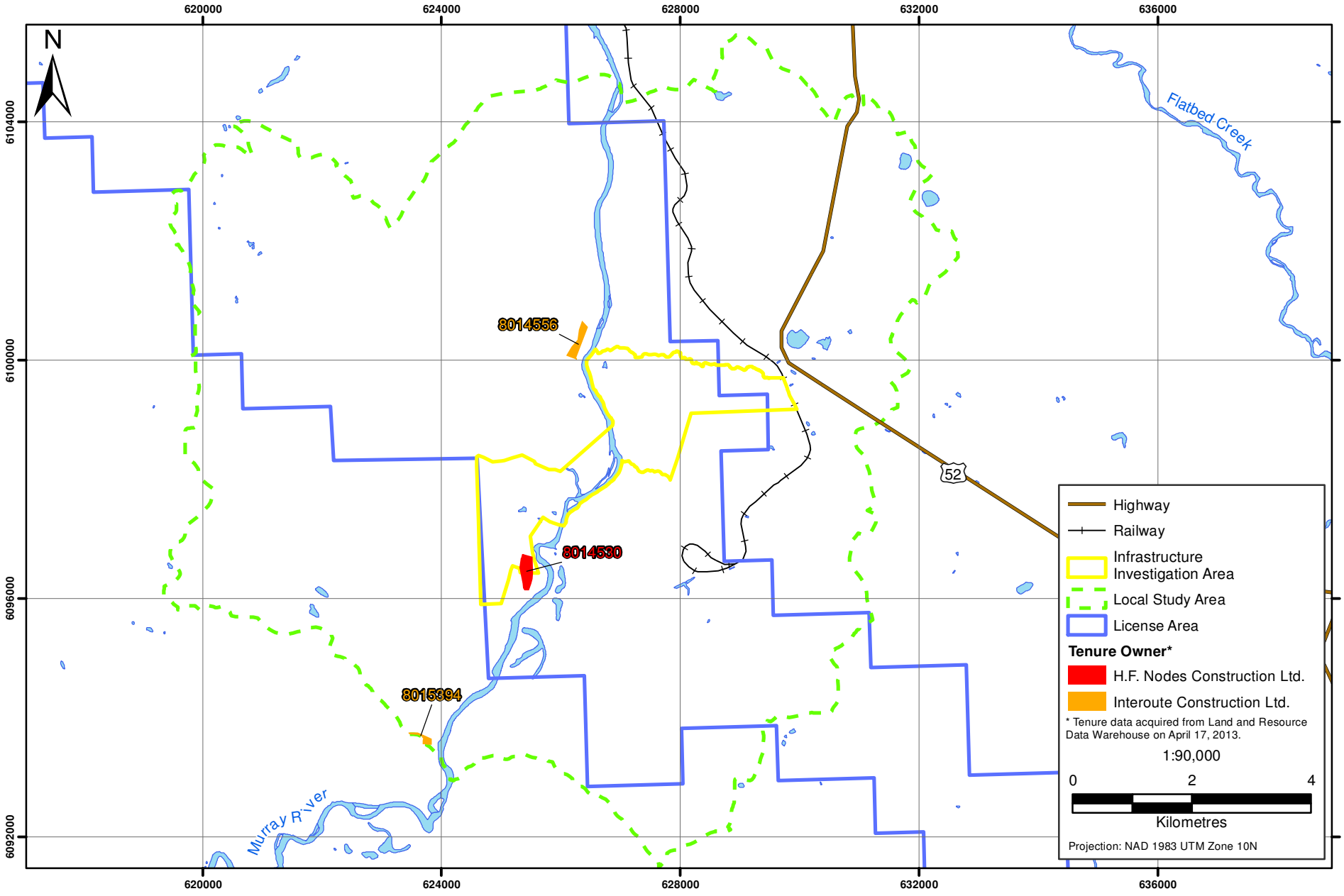


Figure 4.12-1

MURRAY RIVER COAL PROJECT

Quarry Crown Land Tenures in the Local Study Area

Figure 4.12-1

Rescan Engineers & Scientists

Timber Clearing

Non-forestry companies whose primary activities require timber removal (e.g. site clearing and road building) are required to obtain an Occupant Licence to Cut or a Special Use Permit under the *Forest Act* (1996d; see Sections 2.1.1 and 4.7). Within the LSA, two construction companies and one industrial services company hold licences to cut (Table 4.12-2).

Table 4.12-2. Forest Tenures Held by Construction Companies in the Local Study Area

Forest File ID*	Interest Holder	Tenure Type	Size (ha)	Overlap with LSA - ha (%)
L47228	Grizzly Ridge Sand & Gravel Ltd.	Occupant Licence To Cut	4.8	4.8 (100%)
L48607	Interoute Construction Ltd.	Occupant Licence To Cut	6.8	2.8 (41%)
L47163	Tumbler Ridge Industrial Specialties Ltd.	Occupant Licence To Cut	7.9	7.9 (100%)

** Current as of March 2013.*
Source: BC MFLNRO (2013g).

4.13 WIND POWER

4.13.1 Wind Power Overview

The Peace region contains a number of wind energy development projects (South Peace Economic Development Commission 2013). In 2008, BC Hydro issued a Clean Power Call Request for Proposals, spurring a large number of investigative projects on ridges and mountain tops surrounding Tumbler. In 2010, BC Hydro sought 5,000 gigawatt hours of electricity and secured Electricity Purchase Agreements with four wind projects located in the Tumbler Ridge Area, including: Quality Wind (Capital Power Corporation); Meikle Wind Energy (Finavera Renewables Inc.); Tumbler Ridge Wind Energy (Finavera Renewables Inc.); and Bullmoose Wind Energy (Finavera Renewables Inc.).

Tenures for wind power are administered by BC MFLNRO and issued under the *Land Act* (1996f; see Section 2.1.1). Wind power projects are authorized under a multi-tenure instrument. The multi-tenure instrument initially conveys rights equivalent to a general area licence of occupation and is subsequently amended to add or drop rights that are appropriate for the project, using instruments such as leases and statutory right-of-way (BC MFLNRO 2013m).

4.13.2 Wind Power Tenures in the Local and Regional Study Areas

Two wind power companies hold two tenures in the LSA. Finavera Wind Energy Inc. holds a general area licence, while Wind Prospect British Columbia Inc. holds an investigative licence split into one area and four sites (Table 4.13-1 and Figure 4.13-1). None of these tenures overlap with the Infrastructure Investigation Area.

Within the RSA, nine companies hold 16 wind power tenures, split into a total of 38 sites (Table 4.13-2 and Figure 4.13-1).

4.13.2.1 Ancillary Tenures

Timber Clearing

Non-forestry companies whose primary activities require timber removal (e.g. site clearing and road building) are required to obtain an Occupant Licence to Cut or a Special Use Permit under the *Forest Act* (1996d; see Sections 2.1.1 and 4.7). Within the LSA, one wind power company (Finavera Wind Energy Inc.) holds three licences to cut (Table 4.13-3).

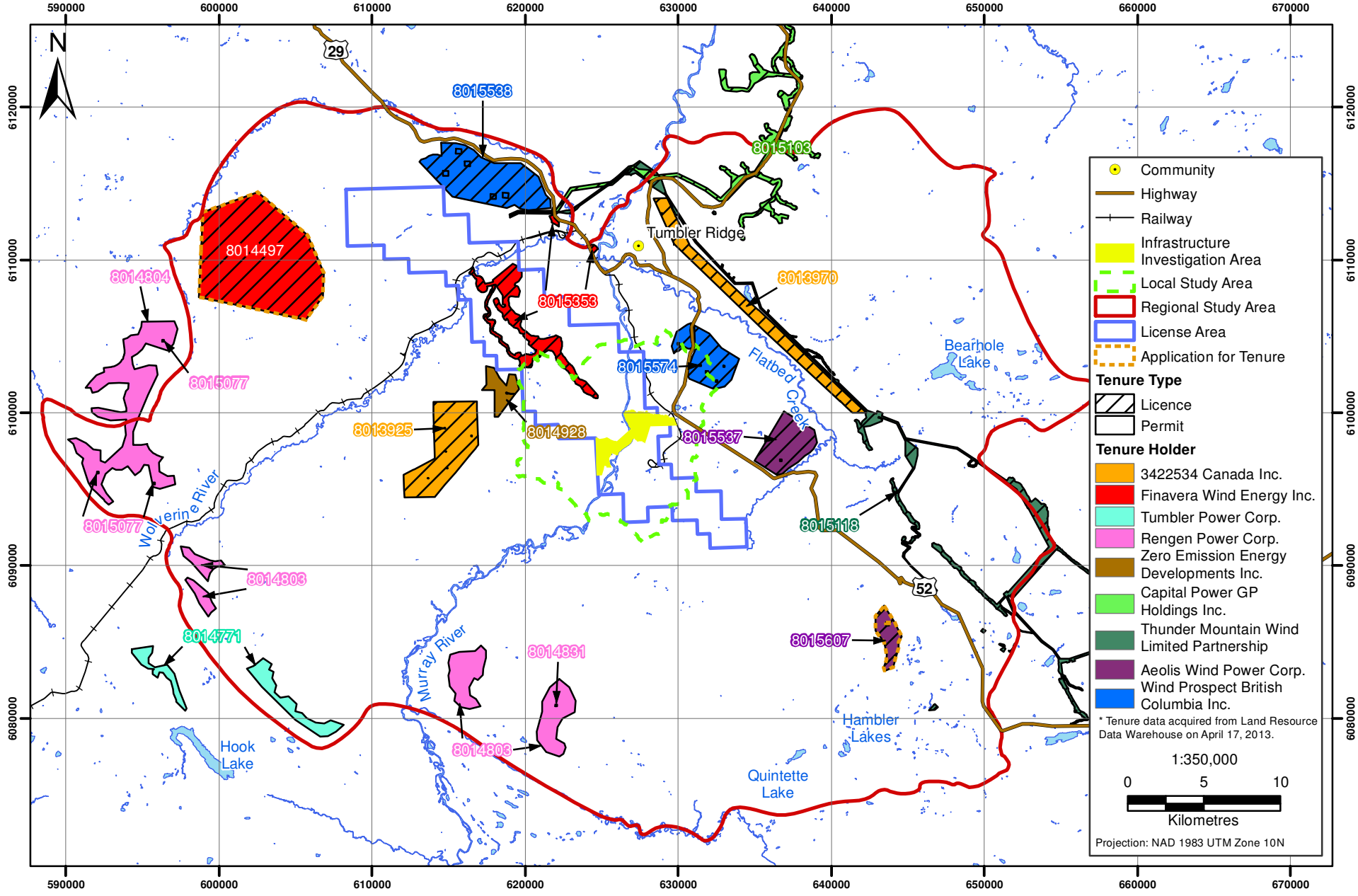


Figure 4.13-1

MURRAY RIVER COAL PROJECT

Wind Power Tenures in the Local and Regional Study Area

Figure 4.13-1

Rescan Engineers & Scientists

Table 4.13-1. Wind Power Tenures in the Local Study Area

Licence Number*	Tenure Holder	Tenure	Area (ha)	Overlap with LSA – ha (%)
8015353	Finavera Wind Energy Inc.	Licence of Occupation	1149	129 (11%)
8015574 (Investigative Area)	Wind Prospect British Columbia Inc.	Investigative Licence	986	335 (34%)
8015574 (Site 1)	Wind Prospect British Columbia Inc.	Investigative Licence	1.4	1.4 (100%)
8015574 (Site 2)	Wind Prospect British Columbia Inc.	Investigative Licence	1.5	1.5 (100%)
8015574 (Site 3)	Wind Prospect British Columbia Inc.	Investigative Licence	2.5	0.90 (33.57%)
8015574 (Site 4)	Wind Prospect British Columbia Inc.	Investigative Licence	1.0	1.0 (100%)

** Current as of April 2013.*
Source: BC MFLNRO (2013g).

Table 4.13-2. Wind Power Tenures and Sites in the Regional Study Area

Tenure Holder*	Number of Tenures	Number of Sites
3422534 Canada Inc.	2	8
Aeolis Wind Power Corp.	2	4
Capital Power GP Holdings Inc.	1	1
Finavera Wind Energy Inc.	2	2
Rengen Power Corp.	4	6
Thunder Mountain Wind LP	1	3
Tumbler Power Corp.	1	1
Wind Prospect British Columbia Inc.	2	12
Zero Emission Energy Developments Inc.	1	1
Total	**16**	**38**

** Current as of April 2013.*
Source: BC MFLNRO (2013g).

Table 4.13-3. Forestry Tenures Held by Wind Energy Interests in the Local Study Area

Forest File ID*	Interest Holder	Tenure Type	Size (ha)	Overlap with LSA – ha (%)
L47440	Finavera Wind Energy Inc.	Occupant Licence to Cut	1.0	0.65 (65%)
L48618	Finavera Wind Energy Inc.	Occupant Licence to Cut	5.1	1.3 (26%)
L49281	Finavera Wind Energy Inc.	Occupant Licence to Cut	1,149	129.3 (11%)

** Current as of March 2013.*
Source: BC MFLNRO (2013g).

4.14 DOMESTIC WATER USE

4.14.1 Water Use Overview

All surface water in BC is owned by the Crown on behalf of residents of the province. Authority to divert and use surface water requires a licence or approval under *Water Act* (1996m) or the *Water Protection Act* (1996n; see Section 2.1.1). Licences are managed by the BC MOE.

4.14.2 Water Management in the Dawson Creek Land and Resource Management Plan

Table 4.14-1 identifies the GMD related to water in the Dawson Creek LRMP. Table 4.14-2 presents water management direction for the Alberta Plateau and Major River Corridors RMZs.

Table 4.14-1. Dawson Creek Land and Resource Management Plan General Management Direction for Domestic Water Use

Objectives	• Sustain and manage water supplies for domestic water users and community waterworks licenses. • Sustain and manage, where possible and appropriate, the natural stream flow regime (timing of flow, water quality and quantity) for identified watercourses, recognizing that natural hydrologic processes are beyond the control of resource managers. • Manage land resource developments within community domestic water supply areas to sustain water quality and quantity.
Strategies	• Establish and maintain instream flow requirements and hydrologic regimes on a priority basis (*Intent: Government to undertake*). • Determine the equivalent clearcut area thresholds for specific watersheds on a priority basis (*Intent: Government to undertake*). • Identify high priority watersheds and use the appropriate levels of watershed assessment to determine impacts, potential impacts, prescriptions and rehabilitations measures. • Identify and establish water quality monitoring sites. Parameters to be monitored may include, but are not limited to: turbidity, stream flow, water temperature, conductivity, faecal and total coliforms (*Intent: BC Ministry of Environment, Lands and Parks and local government to coordinate planning, and program implementation and monitoring*). • Identify and, where appropriate, consider designating smaller watershed in settled areas with licenced water use and high intensity of present of future forest resource development as community watersheds under the Forest Practices Code. • Consider "community domestic water supply areas: in landscape unit planning (*Intent: Government to undertake*). • Include the intent of the *Kiskatinaw Integrated Watershed Management Plan* into landscape unit level and operation planning to sustain and manage water quality and quantity within the Kiskatinaw River Community Domestic Water Supply Area.

Source: Dawson Creek LRMP Working Group (1999).

Table 4.14-2. Dawson Creek Land and Resource Management Plan Management Direction for Domestic Water Use in the Alberta Plateau and Major River Corridors Resource Management Zones

Objectives	• Manage the natural streamflow regime (water quality, water quantity and timing of flow) of rivers and streams to assist in sustaining community domestic water supplies (Alberta Plateau RMZ only). • Maintain water quality for community domestic water supplies (Major River Corridors RMZ only).
Strategies	• Conduct the appropriate level of watershed assessment for identified community domestic water supply areas (*Intent: Government to undertake*).

Source: Dawson Creek LRMP Working Group (1999).

4.14.3 Domestic Water Use in the Local Study Area and Regional Study Area

There are no domestic water licences in the LSA. Within the RSA, the City of Dawson Creek holds one water licence (number C125120), authorizing it to draw water from the Kiskatinaw River for storage and waterworks (Figure 4.14-1).

Water tenures are also required for industrial and commercial purposes. Industrial water licences are held by forestry interests (Section 4.7.3.1), mineral exploration and mining interests (Section 4.9.3.3), petroleum and natural gas interests (Section 4.10.3.2), and construction interests (Section 4.11.2.1). There are no commercial water licences in the LSA or RSA.

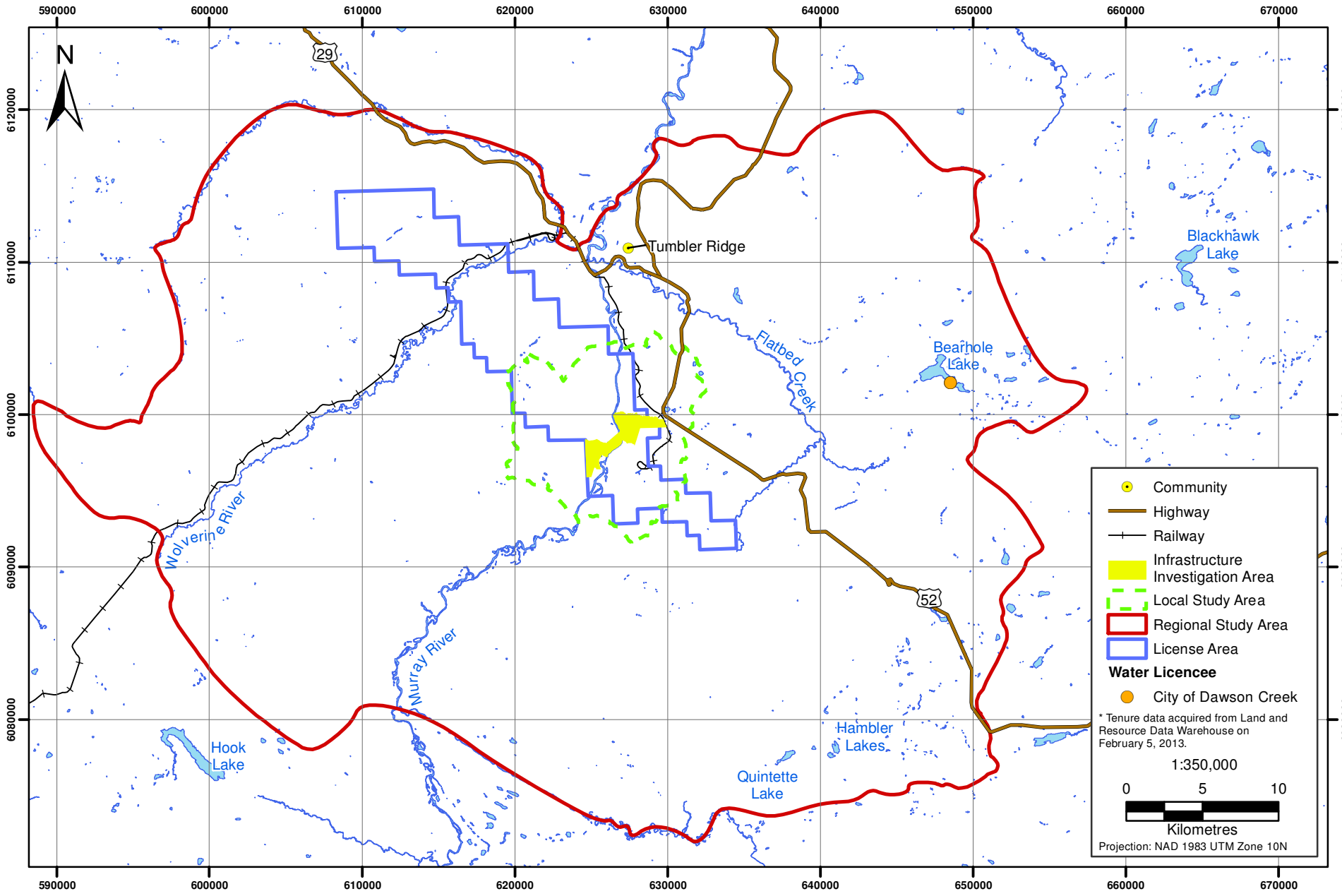


Figure 4.14-1

MURRAY RIVER COAL PROJECT

Domestic Water Licences in the Local and Regional Study Areas

Figure 4.14-1

Rescan Engineers & Scientists

4.15 TRANSPORTATION

4.15.1 Transportation Overview

In addition to major public highways, the Peace River area contains many forestry and petroleum and natural resource roads. The Peace River area also contains several railways and airstrips.

Public roads are administered by Ministry of Transportation under the *Transportation Act* (2004c). Forestry roads are administered by BC MFLNRO under the *Forest Act*. Petroleum and natural gas roads are administered by the Oil and Gas Commission under the *Oil and Gas Activities Act* (2008; petroleum development roads were previously granted under the now-repealed *Petroleum Natural Gas Act*). Roadways are also authorized under the *Land Act* (1996f). See Section 2.1.1 for more details about these acts and associated tenure provisions.

The Canadian rail system includes both federal and provincial railways. Railways that cross provincial boundaries are governed by federal legislation, while railways that operate strictly within the boundaries of the province are governed by provincial legislation. BC railways are governed by the Ministry of Transportation under the *Railway Act* (1996l). Railway tenures are granted under the *Land Act* (1996f). See Section 2.1.1 for more details about these acts and associated tenure provisions.

Commercial Aviation is regulated by the federal government. Non-commercial airstrips are granted under the *Land Act* (1996f; see Section 2.1.1).

4.15.2 Transportation in the Dawson Creek Land and Resource Management Plan

Table 4.15-1 identifies the GMD related to communication, transportation and utilities in the Dawson Creek LRMP.

Table 4.15-1. Dawson Creek Land and Resource Management Plan General Management Directions for Communication, Transportation and Utilities

Objectives	• Provide opportunities for communication, transportation and utility corridors and sites. • Provide opportunities for access and infrastructure to provide for transportation and utility corridors, ensuring future development utilizes existing corridors and sites wherever possible.
Strategies	• Coordinate expansion needs and associated corridors with other users (e.g., through specific local level planning or other appropriate referral processes). • Develop, maintain, and upgrade utility corridors with sensitivity to high capability wildlife habitat, recreational values and visual quality objectives. • Rehabilitate unused corridors, where feasible.

Source: Dawson Creek LRMP Working Group (1999).

4.15.3 Transportation in the Local and Regional Study Areas

4.15.3.1 Roads

The LSA encompasses portions of one highway (Highway 52) and 17 resource roads (Table 4.15-2). Forestry roads make up eight of the LSA's resource roads authorizations, including the Murray River Forest Service Road, four road permits held by West Fraser Mills Ltd., one road permit held by Canadian Forest Products Ltd., one special use permit held by Finavera Wind Energy Inc. and one special use permit held by HD Mining. Seven petroleum and natural gas road authorizations, held by Canadian Natural Resources Ltd., Suncor Energy Inc. and Husky Oil Operations Ltd., are located in the LSA. There are also three Crown land roadway authorizations in the LSA, held by Suncor Energy Inc. and Canadian Natural Resources Ltd. Roads overlapping the Infrastructure Investigation Area include the

Murray River Forest Service Road, a roadway permit held by Suncor Energy Inc.'s Crown land roadway (#9635570), and Suncor Energy Inc.'s Petroleum Development Road (#9634254; Figure 4.15-1).

Table 4.15-2. Road Tenures in the Local Study Area

File #	Interest Holder	Tenure Type	Tenure Purpose
8638	BC MFLNRO (District Manager Peace)	Forestry	Forest Service Road
R14639	Canadian Forest Products Ltd.	Forestry	Road Permit
R06882 (Sites B, C, G, Y, and 03)	West Fraser Mills Ltd.	Forestry	Road Permit
R07192 (Sites I, H, and K)	West Fraser Mills Ltd.	Forestry	Road Permit
R13360 (Sites A and E)	West Fraser Mills Ltd.	Forestry	Road Permit
R17309 (Sites K, L, N, and O)	West Fraser Mills Ltd.	Forestry	Road Permit
S25382	Finavera Wind Energy Inc.	Forestry	Special Use Permit, Forest
S25604	HD Mining International Ltd.	Forestry	Special Use Permit, Forest
9624481	Canadian Natural Resources Limited	Petroleum and Natural Gas	Petroleum Development Road
9629425	Canadian Natural Resources Limited	Petroleum and Natural Gas	Petroleum Development Road
9628468	Canadian Natural Resources Limited	Petroleum and Natural Gas	Petroleum Development Road
9631331	Husky Oil Operations Limited	Petroleum and Natural Gas	Petroleum Development Road
9626757	Suncor Energy Inc.	Petroleum and Natural Gas	Petroleum Development Road
9628956	Suncor Energy Inc.	Petroleum and Natural Gas	Petroleum Development Road
9634254	Suncor Energy Inc.	Petroleum and Natural Gas	Petroleum Development Road
9800137	Canadian Natural Resources Ltd.	Crown Land	Roadway (Transportation Permit)
9634254	Suncor Energy Inc.	Crown Land	Roadway (Transportation Permit)
9635570	Suncor Energy Inc.	Crown Land	Roadway (Transportation Permit)

** Current as of February 2013.*
Source: BC MFLNRO (2013g).

Within the RSA, there are two highways (Highways 52 and 29) and 245 active road use tenures, including five forest service roads, 33 petroleum development roads and eight petroleum access roads. There are also ten Crown land roadways tenures (Figure 4.15-1).

4.15.3.2 Rail

There are two railway tenures in the LSA, held by Teck Coal Ltd. and BC Rail (Table 4.15-3 and Figure 4.15-1). Within the RSA, Rio Algom Ltd., Sojitz Coal Development (Canada) Ltd. Teck Corporation, and Teck-Bullmoose Coal Inc. collectively hold one railway tenure (Table 4.15-3 and Figure 4.15-2).

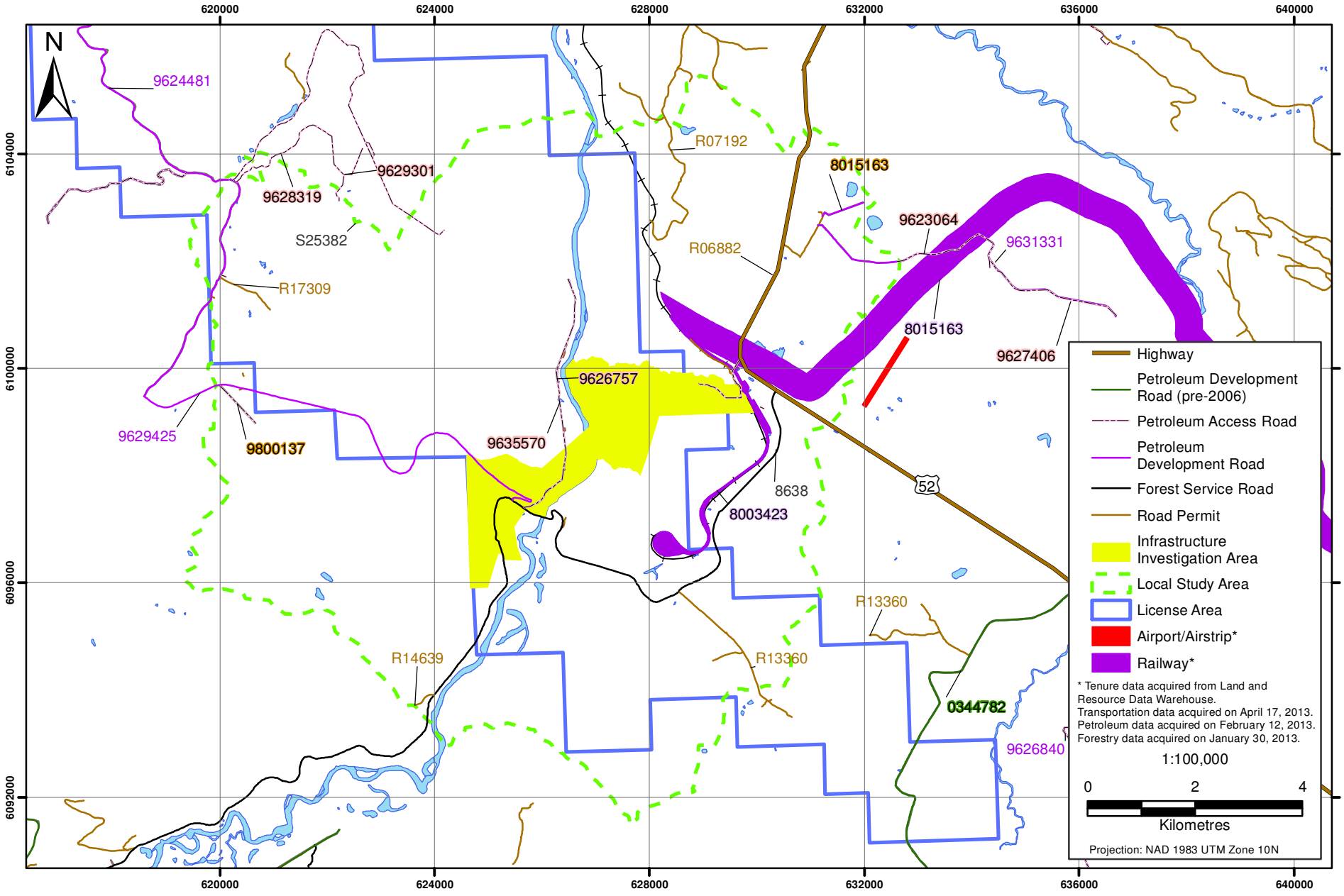


Figure 4.15-1

MURRAY RIVER COAL PROJECT

Transportation in the Local Study Area

Figure 4.15-1

Rescan Engineers & Scientists

PROJECT #0194106-0003 GIS # MUR-11-059 VERSION # T0.10 July 10, 2013

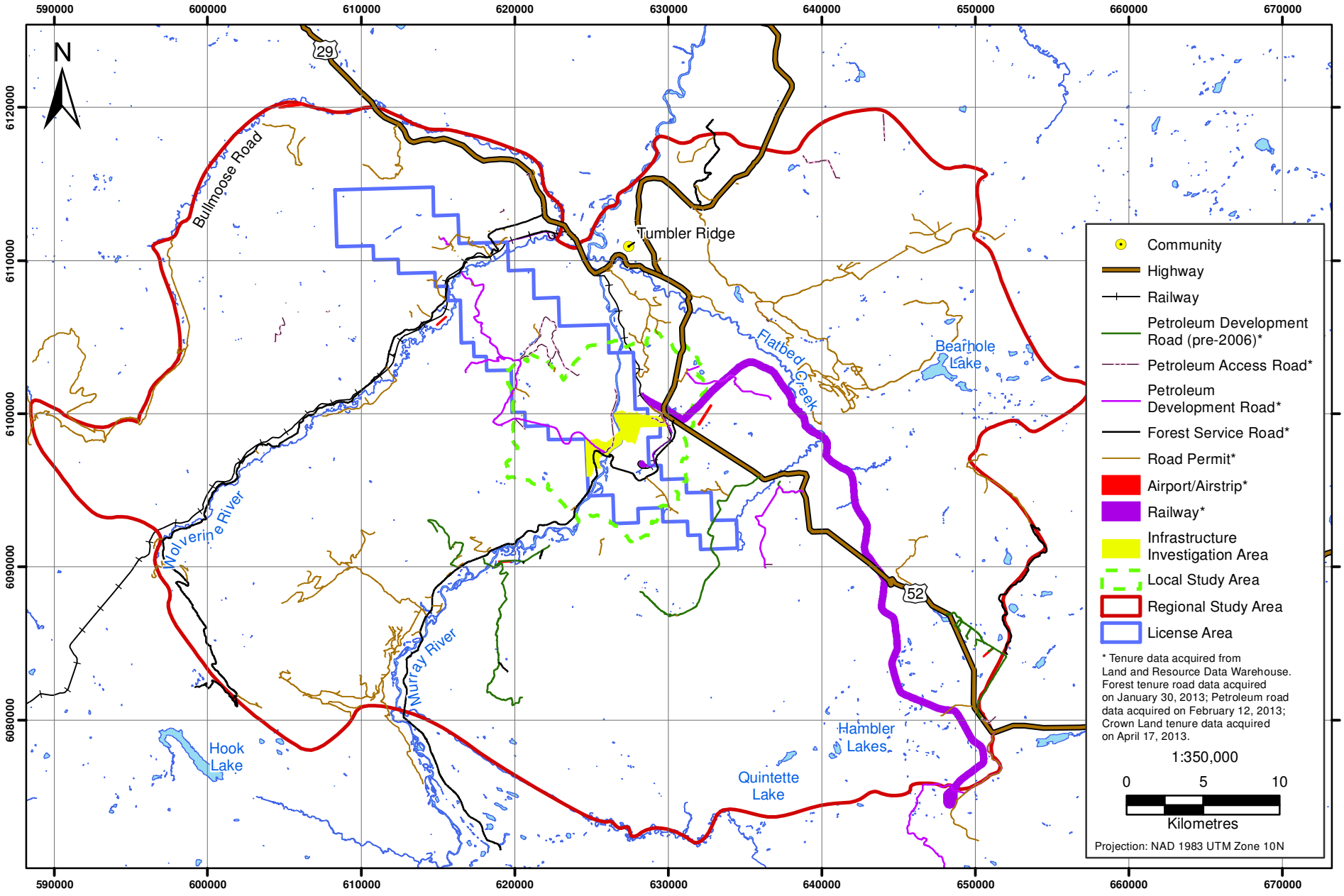


Figure 4.15-2

MURRAY RIVER COAL PROJECT

Transportation in the Local and Regional Study Areas

Figure 4.15-2

Rescan Engineers & Scientists

Table 4.15-3. Railway Tenures in the Local and Regional Study Areas

File Number*	Tenure Holder	Tenure Type	Location
8003423	Teck Coal Ltd.	Right-of-Way	LSA
8003388	BC Rail	Map Reserve	LSA
8003096	Rio Algom Limited Sojitz Coal Development (Canada) Ltd. Teck Corporation Teck-Bullmoose Coal Inc.	Right-of-Way	RSA

** Current as of February 2013.*
Source: BC MFLNRO (2013g).

4.15.3.3 Ancillary Tenures

Utilities and Communication

Utilities and communication sites in support of petroleum and natural gas interests are authorized by the Oil and Gas Commission under the *Land Act* (1996f; see Sections 2.1.1 and 4.15). There are no utilities or communication sites in the LSA. Within the RSA, BC Rail holds a licence of occupation (number 8003447) for a communication site.

4.16 UTILITIES AND COMMUNICATION

4.16.1 Utilities and Communication Overview

Utilities consist of distribution lines, pipelines, flow lines, sewer and water systems, electrical transmission and distribution lines (BC MFLNRO 2013l). Communication sites are small land areas usually located on a mountain top used to situate infrastructure services such as radio, television, microwave, satellite, and cellular phones (BC MFLNRO 2013a). Utilities and communication sites are authorized by a statutory right-of-way or licence of occupation under the *Land Act* (1996f; see Section 2.1.1).

4.16.2 Utilities and Communication in the Dawson Creek Land and Resource Management Plan

Communications and utilities are discussed together with transportation in the Dawson Creek LRMP (see Section 4.14.2).

4.16.3 Utilities and Communication in the Local and Regional Study Areas

The LSA contains a single electric power line, held by BC Hydro and Power Authority. BC Hydro holds an additional four power line tenures in the RSA, while Telus Communications holds one tenure. No communication sites are located in the LSA. Four communication sites are located in the RSA (Table 4.16-1 and Figure 4.16-1).

Utilities and communication tenures are also held by other interests in support of their primary tenure activities, including mineral exploration and mining (Section 4.9.3.3), petroleum and natural gas (Section 4.10.3.2), and transportation (Section 4.14.3.4).

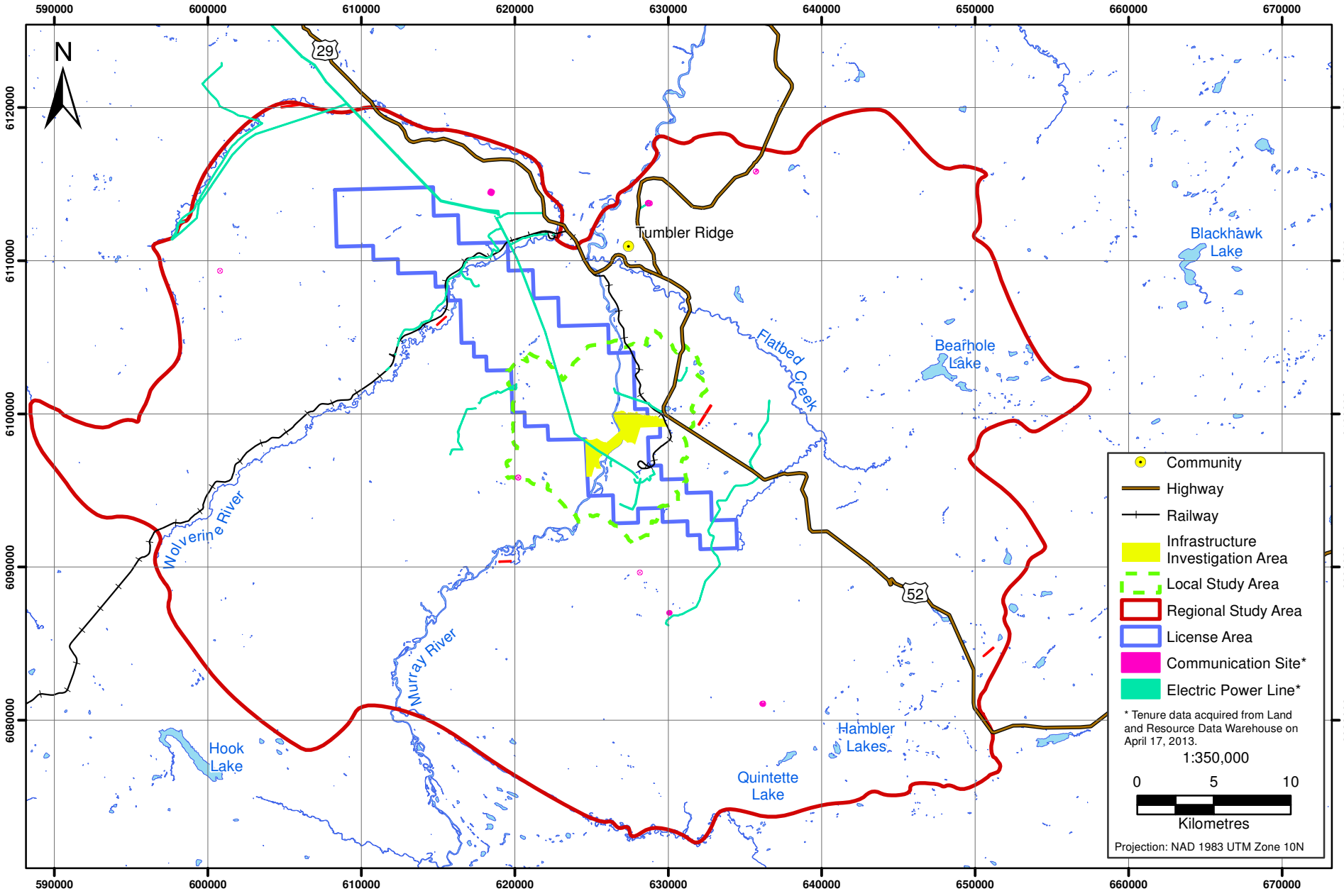


Figure 4.16-1

hcl Mining

MURRAY RIVER COAL PROJECT

Utilities and Communication in the Local and Regional Study Areas

Figure 4.16-1

Rescan™ Engineers & Scientists

Table 4.16-1. Utilities and Communication in the Local and Regional Study Areas

File Number*	Tenure Holder	Tenure Type	Tenure Purpose	Location
7401287	BC Hydro and Power Authority	Right-of-Way	Electric power line	LSA and RSA
8003100	BC Hydro and Power Authority	Right-of-Way	Electric power line	RSA
8003392	BC Hydro and Power Authority	Right-of-Way	Electric power line	RSA
8014407	BC Hydro and Power Authority	Right-of-Way	Electric power line	RSA
8015516	BC Hydro and Power Authority	Right-of-Way	Electric power line	RSA
8014748	Telus Communications	Right-of-Way	Electric power line	RSA
349326	RCMP	Licence of Occupation	Communication site	RSA
8003648	Petron Communications Ltd.	Licence of Occupation	Communication site	RSA
8014862	Telus Communications Inc.	Licence of Occupation	Communication site	RSA

** Current as of March 2013.*
Source: BC MFLNRO (2013g).

5. Summary

5. Summary

The proposed Murray River Coal Project is located in a highly active land use area. Fourteen of sixteen land uses considered in the baseline report are located in the LSA and/or RSA. The LSA alone contains 118 primary use tenures and 50 ancillary tenures, in addition to non-tenured land uses. Many of these tenures support resource extraction, including forestry, petroleum and natural gas, aggregates, and mineral exploration and mining. The Dawson Creek LRMP acknowledges the importance of resource extraction activities to the regional economy and finds activities such as mineral exploration and mining to be acceptable land uses. However, the LRMP also notes that resource extraction activities must be guided by the principle of sustainable use and must consider other resource values, rights, tenures and development opportunities. Assessment of the potential effects of the Murray River Coal Project on land users in the study areas will need to consider any potential restrictions on industrial land users' access to their tenure sites (keeping in mind the large number of resource roads in the study areas), as well as potential effects to the quality and quantity of natural resources, which may affect recreation, hunting, guide outfitting, and trapping land uses.

References

Rescan™
Engineers and Scientists

References

Definitions of the acronyms and abbreviations used in this reference list can be found in the Glossary and Abbreviations section.

1996a. *Ecological Reserve Act*, RSBC. C. 103.

1996b. *Environment and Land Use Act*, RSBC. C. 117.

1996c. *Fisheries Act*, RSBC. C. 149.

1996d. *Forest Act*, RSBC. C. 157.

1996e. *Heritage Conservation Act*, RSBC. C. 187.

1996f. *Land Act*, RSBC. C. 245.

1996g. *Land Title Act*, RSBC. C. 250.

1996h. *Mineral Tenure Act*, RSBC. C. 292.

1996i. *Mines Act*, RSBC. C. 293.

1996j. *Park Act*, RSBC. C. 344.

1996k. *Petroleum and Natural Gas Act*, RSBC. C. 361.

1996l. *Railway Act* RSBC. C. 395.

1996m. *Water Act*, RSBC. C. 483.

1996n. *Water Protection Act*, RSBC. C. 484.

1996o. *Wildlife Act*, RSBC. C. 488. s. 1.1.

1997. *Fish Protection Act*, SBC. C. 21.

2000. *Protected Areas of British Columbia Act*, SBC. C. 17.

2001. *Drinking Water Protection Act*, SBC. C. 9.

2002. *Agricultural Land Commission Act*, SBC. C. 36.

2004a. *Coal Act*, SBC. C. 15.

2004b. *Range Act*, SBC. C. 71.

2004c. *Transportation Act*, SBC. C. 44.

2008. *Oil and Gas Activities Act*, SBC. C. 36.

BC ALC. 2013. *Provincial Agricultural Land Commission*. http://www.alc.gov.bc.ca/ (accessed July 2013).

BC EAO. 2013. *Project Information Centre*. http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_home.html (accessed July 2013).

BC MEMPR. 2013. *Mineral Titles*. http://www.empr.gov.bc.ca/Titles/MineralTitles/Pages/default.aspx (accessed July 2013).

BC MFLNRO. 2011. *Community forest rolled out for Tumbler Ridge*. BC MFLNRO press release. January 20, 2011. http://www2.news.gov.bc.ca/news_releases_2009-2013/2011FOR0006-000045.htm (accessed July 2013).

BC MFLNRO. 2012a. *Big game harvest statistics for resident & non-resident hunters from hunter sample and guide declarations 1976-2010*. British Columbia Ministry of Forests, Lands and Natural Resource Operations: Victoria, BC.

BC MFLNRO. 2012b. *Hunting and Trapping Synopsis 2012-2014*. http://www.env.gov.bc.ca/fw/wildlife/hunting/regulations/1214/docs/hunting_trapping_2012_2014.pdf (accessed July 2013).

BC MFLNRO. 2013a. *Communication Sites*. http://www.for.gov.bc.ca/land_tenures/tenure_programs/programs/communicationsites/index.html (accessed July 2013).

BC MFLNRO. 2013b. *Crown Land Uses*. http://www.for.gov.bc.ca/land_tenures/crown_land_application_information/program_areas.html (accessed July 2013).

BC MFLNRO. 2013c. *Dawson Creek Timber Supply Area*. http://www.for.gov.bc.ca/hts/tsa/tsa41/ (accessed July 2013).

BC MFLNRO. 2013d. *Fish, Wildlife and Habitat Management Branch*. http://www.env.gov.bc.ca/fw/ (accessed July 2013).

BC MFLNRO. 2013e. *Forest Analysis and Inventory*. http://www.for.gov.bc.ca/hts/analysis.htm (accessed July 2013).

BC MFLNRO. 2013f. *Guide Outfitting*. http://www.env.gov.bc.ca/pasb/applications/process/game_guide.html (accessed July 2013).

BC MFLNRO. 2013g. *Integrated Land and Resource Registry*. GeoBC. http://archive.ilmb.gov.bc.ca/ilrr/index.htm (accessed July 2013).

BC MFLNRO. 2013h. *Land and Coastal Marine Plans in BC*. http://www.ilmb.gov.bc.ca/slrp/lrmp/index.html (accessed July 2013).

BC MFLNRO. 2013i. *Land Tenures Branch*. http://www.for.gov.bc.ca/land_tenures/documents/Q_and_As/clean_energy_producers_Q&A.html (accessed July 2013).

BC MFLNRO. 2013j. *Land Tenures Branch- Crown Land Program Areas- Industrial- General*. http://www.for.gov.bc.ca/Land_Tenures/tenure_programs/programs/generalindustrial/index.html (accessed July 2013).

BC MFLNRO. 2013k. *Recreation Sites and Trails BC*. http://www.sitesandtrailsbc.ca/default.aspx (accessed July 2013).

BC MFLNRO. 2013l. *Utilities*. http://www.for.gov.bc.ca/land_tenures/tenure_programs/programs/utilities/index.html (accessed July 2013).

BC MFLNRO. 2013m. *Wind Power Projects*.

BC MOE. 2013a. *Find a Park*. http://www.env.gov.bc.ca/bcparks/explore/explore.html (accessed July 2013).

BC MOE. 2013b. *Water Licences Query*. http://a100.gov.bc.ca/pub/wtrwhse/water_licences.input (accessed July 2013).

BC OGC. 2013. *BC Oil and Gas Commission*. http://www.empr.gov.bc.ca/Titles/MineralTitles/Pages/default.aspx (accessed July 2013).

BC Stats. 2005. *British Columbia's hunting, trapping & wildlife viewing sector*. http://www.bcstats.gov.bc.ca/StatisticsBySubject/BusinessIndustry/FisheriesAquacultureHuntingTrapping.aspx (accessed July 2013).

Britton, J., R. Chu, D. Grieve, P. Jago, J. Kyba, B. Madu, and B. Northcote. 1993. *Provincial Summary: Exporation and Mining in British Columbia, 2012*. BC MEMNG. http://www.empr.gov.bc.ca/Mining/Geoscience/PublicationsCatalogue/InformationCirculars/Pages/IC2013-1.aspx (accessed June 2013).

City of Dawson Creek. 2007. *Kiskatinaw River Watershed Source Protection Plan*. http://www.dawsoncreek.ca/wordpress/wp-content/uploads/2011/10/Kiskatinaw_Final.pdf (accessed May 2013).

Data BC. 2013. *Data Distribution Service*. http://www.data.gov.bc.ca/dbc/geographic/download/index.page?WT.svl=TopNav (accessed July 2013).

Dawson Creek LRMP Working Group. 1999. *Dawson Creek Land and Resource Management Plan*. http://ilmbwww.gov.bc.ca/slrp/lrmp/fortstjohn/dawson_creek/index.html (accessed July 2013).

DTR. 2012. *Official Community Plan, Bylaw 584, 2012*. http://www.tumblerridge.ca/LinkClick.aspx?fileticket=m4m8PlT9Q-s%3d&tabid=112 (accessed March 2013).

DTR. 2013. *Canoing and Kayaking*. http://www.visittumblerridge.ca/YourAdventure/SummerActivities/CanoeingandKayaking/tabid/75/Default.aspx. (accessed July 2013).

Economic Growth Solutions Inc. 2008. *Tumbler Ridge Tourism Investment Attraction Strategy: Final Report*. http://www.growourregion.ca/images/file/Investment_attraction/TumblerRidgeTourismInvestmenAttractionFinalReporfinal.pdf (accessed May 2013).

Greene, L. 2010. Fur fervour. *Financial Times*: http://www.ft.com/cms/s/2/66028cf0-cce9-11df-9bf0-00144feab49a.html#axzz2YZwGl41J (accessed July 2013).

GSGislason & Associates Ltd. 2002. *The Guide Outfitting Industry in BC: An Economic Profile*. Economic Development Branch, BC Ministry of Sustainable Resource Management. http://www.agf.gov.bc.ca/clad/strategic_land/blocks/cabinet/guide_outfitting.pdf (accessed July 2013).

GSGislason & Associates Ltd. 2009. *Freshwater sport fishing in British Columbia: Sending ripples through the provincial economy*. Victoria.

Guide Outfitters Association of BC. 2013a. *Directory*. http://www.goabc.org/outfitter-directory-and-hunt-guide-directory.aspx (accessed July 2013).

Guide Outfitters Association of BC. 2013b. *Economic contribution*. http://www.goabc.org/economic-contribution.aspx (accessed July 2013).

Hello BC. 2013. *Tumbler Ridge: Fishing*.

KPMG. 2010. *Forest Certification Report: 2010 SFI Surveillance Audit BCTS Peace-Liard Business Area-Dawson Creek TSA*. http://www.for.gov.bc.ca/ftp/TPL/external/!publish/EMS2/PLBA_Audit_Reports/SFI/2010%20CSA%20and%20SFI%20Surveillance%20Audit%20Report%20for%20BCTS%20Peace.pdf (accessed May 2011).

North American Fur Auctions. 2012. *February Wild Fur Sale*. http://www.nafa.ca/en/wp-content/uploads/NAFA_2011-02-WF-CA16.pdf (accessed June 2013).

Rescan. 2012. *Murray River Coal Project: Traditional Knowledge and Traditional Use Desk-Based Research Report (Draft)*. Prepared for HD Mining International Ltd. by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2013. *Murray River Coal Project: 2013 Socio-economic Baseline Report*. Prepared by Rescan Environmental Services Ltd.: Vancouver, BC.

South Peace Economic Development Commission. 2013. *Wind / Renewable Energy Industry*. http://www.southpeacebc.ca/industries/energy/wind.php (accessed July 2013).

Personal Communications

Bennett, T. 2012. District Forest Recreation Officer, Ministry of Forests, Lands, and Natural Resource Operations, Peace Regional Office. Personal Communication: June 22, 2012.

Blaney, C. 2013. Crown Sales and GIS Services Manager, P&NG Titles Branch, Oil and Gas Division, Ministry of Energy, Mines and Natural Gas: February 2013.

Ellis, S. 2011. Executive Director, Guide Outfitters Association of British Columbia. Personal Communication: July 20, 2011.

Fredlund, A. 2012. Guide Oufitter, Fredlund Guide Services, Tumbler Ridge, BC. Personal Communication: June 12, 2012.

Gitshef, C. 2012. Trapper, Dawson Creek, BC. Personal Communication: June 12, 2012.

Helm, C. 2012. Historian, Wolverine Mountain and Nordic Society, Tumbler Ridge, BC. Personal Communication: June 7, 2012.

Hilton, H. 2012. Trapper, Chetwynd, B.C. Personal Communication: June 5, 2012.

Kopecky, R. 2012. District Manager, Resource Operations, and Regional Water Manager, Peace Regional District, Dawson Creek, BC. Personal Communication: July 12, 2012.

Merritt, D. 2012. Senior Park Ranger, BC Ministry of Environment, Regional Operations Division, Peace Regional Office. Personal Communication: May 25, 2012.

Moorhouse, T. 2012. Senior Policy Analyst, Tourism Strategy, Policy and Research, Ministry of Jobs, Tourism and Skills Training. Personal Communication to Jennifer Davis: November 2, 2012.

Reynan, L. 2012. Trapper, Arras, BC. Personal Communication: June 5, 2012.

ADDENDUM TO THE NON-TRADITIONAL LAND USE BASELINE REPORT

(OCTOBER 1, 2014)

This addendum to the Non-traditional Land Use Baseline Report (Appendix 16-A of the Murray River Application for Environmental Assessment Certificate/Environmental Impact Statement) identifies the location of private land in the land use local study area (LSA) and regional study area (RSA).

No private lands overlap the Project footprint. There are a total of 84 fee simple parcels within or overlapping the LSA (Table 1 and Figure 1). The majority of these are in a development known as Tumbler Ridge South (DTR 2012), along Highway 52, in the northeast corner of the LSA. Tumbler Ridge South is a combination of rural residential and heavy industrial lots. An additional 1,466 parcels are outside of the LSA but within or overlapping the RSA. The vast majority of these (1,450 or 99%) are within the Tumbler Ridge townsite, at the northern boundary of the RSA. Figure 2 shows the location of private land in relation to the RSA.

The remainder of the private land parcels in the LSA and RSA are zoned as "Open Space and Rural Resource" under Schedule B of the Tumbler Ridge OCP.

Table 1. Fee Simple Parcels within the Non-traditional Land Use Local Study Area

Parcel Identification Number (PID)	Area (ha)	Parcel Identification Number (PID)	Area (ha)
District Lot 3198, Peace River District		10602003	57.55
District Lot 4154, Peace River District		27883850	33.49
District Lot 4154, Peace River District		27883850	24.96
District Lot 3184, Peace River District (Heavy Industrial)			
29207649	1	5612357	0.25
6991149	0.99	6990959	1.01
26611627	0.6	16024222	0.49
6991114	0.51	5855578	0.99
5855551	0.5	6991084	0.52
5855535	0.5	6990975	0.5
5855501	1.01	6991033	0.75
5612373	0.24	28987713	2
6991025	0.51	6991050	0.5
5855471	0.99	6991009	0.5

(continued)

Table 1. Fee Simple Parcels within the Non-traditional Land Use Local Study Area (completed)

Parcel Identification Number (PID)	Area (ha)	Parcel Identification Number (PID)	Area (ha)
District Lot 4134, Peace River District (Rural Residential).			
27317765	0.48	27317501	2.37
27317757	0.4	27317455	2.06
27317633	0.72	27317510	3.72
27317650	0.48	27317447	2.16
27317641	0.57	27317439	2.01
27317684	0.42	27317811	3.16
27317749	0.41	27317412	3.09
27317625	0.57	27317285	2
27317731	0.4	27317404	2.26
27317722	0.39	27317803	0.72
27317617	0.56	27317421	2
27317838	1.47	27317391	2.17
27317714	0.39	27317790	2.7
27317706	0.4	27317293	2.2
27317609	0.63	27317307	2
27317692	0.38	27317315	2.7
27317595	0.4	27317382	2.45
27317544	2.02	27317323	2
27317587	0.4	27317374	2.01
27317676	0.39	27317331	2.05
27317579	0.4	27317366	2
27317668	0.38	27317340	2
27317561	0.4	27317358	2
27317552	0.4	27317277	2.91
27317536	2.01	27317773	0.65
27317820	1.92	27317781	17.63
27317528	2.03	27317242	2
27317480	2.01	27317234	2.38
27317471	2.45	27317269	2.01
27317498	2.05	27317251	2
27317463	2.17		

Figure 1
Private Lands in the Local Study Area

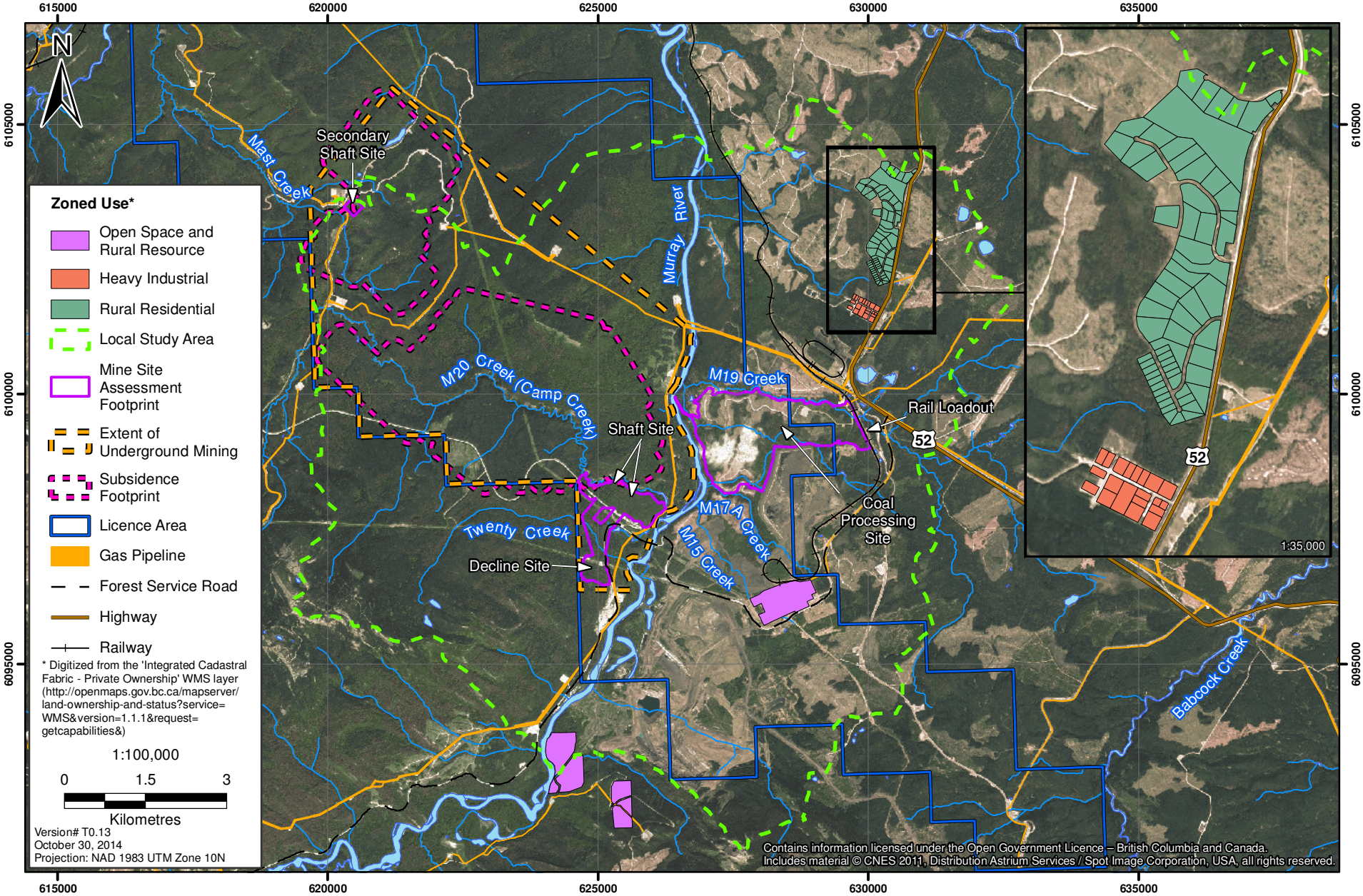
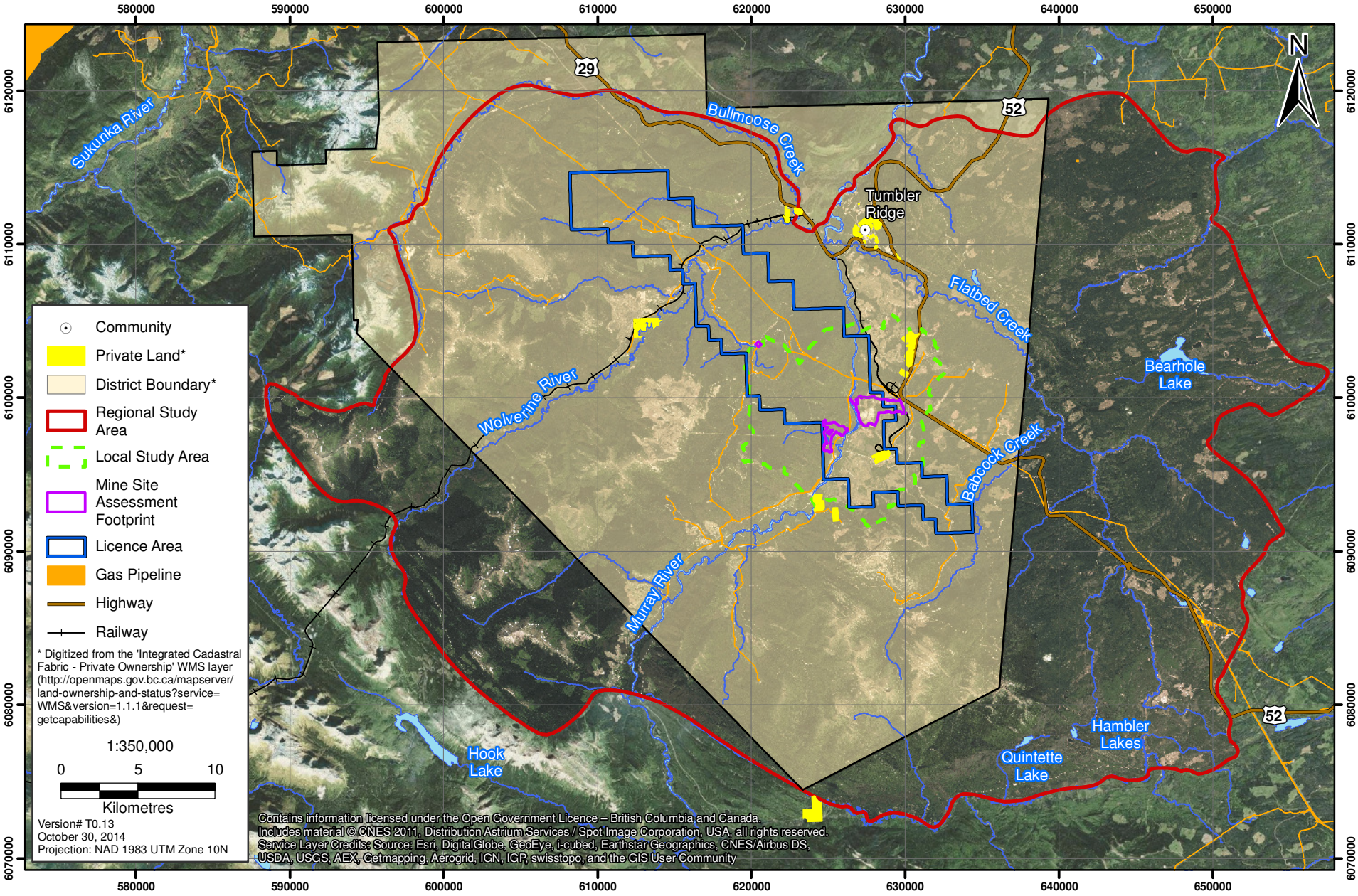


Figure 2
Private Lands in the Local and Regional Study Areas



Appendix 1
Trapline Harvest Data

Rescan™
Engineers and Scientists

Appendix 1. Trapline Harvest Data

Table A1-1. Trapline Harvest Data for WMU 720 (2000-2010)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Black Bear	1	0	0	0	0	0	0	0	0	0	0	**1**
Beaver	31	9	32	19	52	18	0	0	1	63	5	**230**
Coyote	14	5	20	1	2	15	7	0	2	5	4	**75**
Fisher	4	6	7	0	0	2	1	5	7	8	2	**42**
Fox	0	0	0	0	1	2	0	0	0	0	0	**3**
Lynx	1	4	6	2	3	2			2	2	15	**37**
Marten	83	49	43	100	5	36	5	49	68	92	89	**619**
Mink	2	0	0	4	4	0	0	0	0	1	2	**13**
Muskrat	3	0	0	1	0	0	0	0	0	0	0	**4**
River Otter	1	0	0	0	3	3	0	0	0	0	0	**7**
Squirrel	32	15	405	214	2	81	0	3	57	0	60	**869**
Weasel	13	1	7	20	1	0	0	71	26	0	65	**204**
Wolf	0	0	0	3	0	0	1	0	0	0	1	**5**
Wolverine	1	0	0	1	0	0	0	0	0	0	0	**2**
Total	**186**	**89**	**520**	**365**	**73**	**159**	**14**	**128**	**163**	**171**	**243**	**2,111**

Source: Ministry of Forests, Lands and Natural Resource Operations, Fish, Wildlife and Habitat Management Branch Trapping Statistics.
Note: Missing data is interpreted as a value of zero. According to the ministry, missing data can mean: (1) no animals were harvested that year, (2) the species was historically not reported, or (3) systems were not in place to record harvests in that year (K. Craig, pers. comm.). Given that most missing values occur after at least one occurrence of recorded values in a previous year, missing values are interpreted to be a value of zero.

Table A1-2. Trapline Harvest Data for WMU 721 (2000-2010)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Black Bear	0	8	0	0	0	0	4	0	0	1	0	**13**
Beaver	131	178	56	118	50	61	42	44	36	54	33	**803**
Bobcat	1	0	0	0	0	0	0	0	0	0	0	**1**
Coyote	48	41	84	78	24	56	18	14	14	13	50	**440**
Fisher	9	15	12	0	0	38	14	24	13	15	15	**155**
Fox	9	4	4	8	4	1	3	3	3	2	3	**44**
Lynx	16	6	30	24	17	26	6	10	4	3	1	**143**
Marten	194	312	182	385	252	275	362	418	290	354	404	**3,428**
Mink	10	16	5	20	4	6		7	3	3	7	**81**
Muskrat	29	13	12	28	9	21	14	21	22	42	21	**232**
River Otter	2	0	3	2	1	2	0	0	0	0	0	**10**
Skunk	0	0	0	1	0	0	0	0	0	0	0	**1**
Squirrel	129	509	171	251	110	295	103	289	75	100	94	**2,126**
Weasel	59	30	58	120	54	36	107	198	100	28	85	**875**
Wolf	5	12	8	5	3	7	4	2	0	1	1	**48**
Wolverine	3	1	1	6	1	0	3	1	1	5	1	**23**
Total	**645**	**1,145**	**626**	**1,046**	**529**	**824**	**680**	**1,031**	**561**	**621**	**715**	**8,423**

Source: Ministry of Forests, Lands and Natural Resource Operations, Fish, Wildlife and Habitat Management Branch Trapping Statistics.
Note: Missing data is interpreted as a value of zero. According to the ministry, missing data can mean: (1) no animals were harvested that year, (2) the species was historically not reported, or (3) systems were not in place to record harvests in that year (K. Craig, pers. comm.). Given that most missing values occur after at least one occurrence of recorded values in a previous year, missing values are interpreted to be a value of zero.