

# Coal and Mineral Development in Alberta 2015 Year in Review



Coal mining and projects  
Metallic and industrial mineral activity  
Land-use planning  
Industrial mineral and coal production and royalty  
Alberta Interactive Minerals Map

Alberta

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**All Alberta Acts and Regulations are available online:**  
[www.qp.alberta.ca/Laws\\_Online.cfm](http://www.qp.alberta.ca/Laws_Online.cfm)

**Permit and Leasing Toolkits**  
[www.energy.alberta.ca/minerals/547.asp](http://www.energy.alberta.ca/minerals/547.asp)

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## Contents

<b>Introduction</b>	<b>3</b>
<b>Metallic and industrial minerals</b>	<b>3</b>
2015 metallic and industrial mineral exploration highlights	4
2015 industrial mineral quarry activities	7
<b>Coal</b>	<b>8</b>
2015 coal exploration highlights	8
2015 coal mine activities	9
<b>CMD Updates</b>	<b>11</b>
Alberta Mineral Assessment Report System	11
<b>Alberta Geological Survey</b>	<b>12</b>
Alberta Interactive Minerals Map	13
Mineral Core and Geological Samples.	13
<b>New publications</b>	<b>13</b>
Alberta Geological Survey	13
<b>Land-use planning</b>	<b>14</b>
Alberta Land Stewardship Act (ALSA)	14
Land-Use Framework (LUF)	14
Lower Athabasca Regional Plan (LARP)	14
South Saskatchewan Regional Plan (SSRP)	14
North Saskatchewan Regional Plan (NSRP)	15
Other Regional Plans	15
<b>About Alberta’s regulatory system</b>	<b>15</b>

The information contained within this report has been collected from publicly available government information, company websites, press releases, and reports filed on Sedar ([www.sedar.com](http://www.sedar.com)). All figures quoted are current as of the time of publication. Please consult the company websites for specific information regarding any projects outlined in this report. Any other references are noted within the document. The authors make no warranty of any kind with respect to the content and accept no liability, either incidental, consequential, financial or otherwise, arising from the use of this document.

Cover photos  
Credit: Alberta Geological Survey

## Introduction

2015 was another challenging year for both the mineral and coal sectors.

There were few metallic and industrial minerals exploration projects operating in 2015. Activity focused on Ironstone Resources' Clear Hills iron project and silica sand (frac sand) projects.

Export coal miners continued to struggle with low global prices. The Grande Cache coal mine suspended operations on December 24 and the Cardinal River coal mine enacted measures to reduce their mining costs. On the positive side, a number of companies continued to move new metallurgical coal projects forward. Riversdale Resources submitted an environmental impact assessment and approval applications for its Grassy Mountain metallurgical coal project in the Crowsnest Pass.

New geoscience projects were released by Alberta Energy and the Alberta Geological Survey. An assessment report search application will help users access published mineral assessment reports and a new Alberta Interactive Minerals Map improves the accessibility of existing geoscience data that has been collected by the Alberta Geological Survey.

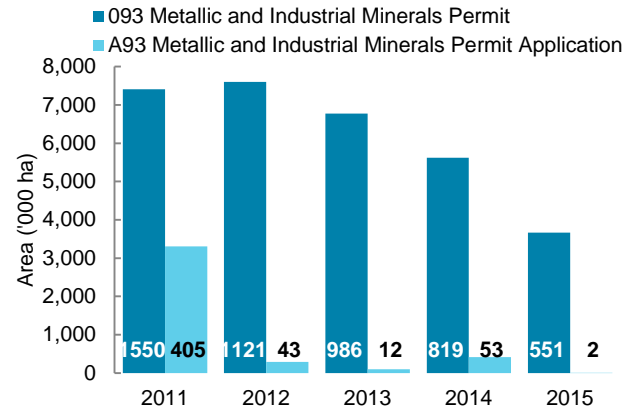
The development and implementation of regional plans continued through 2015 to support Alberta's Land-use Framework.

## Metallic and industrial minerals

In 2015 the mineral exploration industry faced another year of severe challenges due to low metal prices, increased global competition, tight capital markets and the lack of new, accessible mineral discoveries. Mineral exploration in Alberta in 2015 was minimal; however, project development work continued on the Clear Hills iron project in northwest Alberta. In late 2015, there was increased interest in the lithium potential of the Fox Creek area reflected by a number of new Metallic and Industrial Minerals Permit acquisitions.

The area held under metallic and industrial mineral permits fell for a fourth straight year (Figure 1). The area under metallic and industrial mineral lease remained the same as the previous year (Figure 2). The number of active metallic and industrial mineral licences increased again in 2015, continuing the five-year trend (Figure 3). Metallic licences grant

## Metallic and Industrial Minerals Permits



**Figure 1.** A bar graph with the total area of metallic and industrial minerals permits and permit applications from 2011 through 2015 (the report period is October 1 through September 30). Numbers at the base of the bars indicate the number of individual permits or applications.

## Metallic and Industrial Minerals Leases



**Figure 2.** A bar graph with the total area of metallic and industrial minerals leases and lease applications from 2011 through 2015 (the report period is October 1 through September 30). Numbers at the base of the bars indicate the number of individual leases or applications.

the right to recover gold through recreational placer mining, generally through the use of a sluice box.

The number and area of permits submitted for assessment and the total expenditures accepted are at an exceptionally low level (Figure 4).

Figure 5 shows the distribution of metallic and industrial mineral permits and leases.

## 2015 metallic and industrial mineral exploration highlights

### Iron

Ironstone Resources Ltd. continued to advance its Clear Hills iron-vanadium project, located approximately 80 kilometres northwest of Peace River in northwest Alberta. Ironstone's intent is to produce high-value, uniform metallic iron briquettes containing at least 90 per cent iron. A vanadium pentoxide (V<sub>2</sub>O<sub>5</sub>) byproduct may also be recovered.

Ironstone and Hatch Ltd., in conjunction with Hazen Research Inc., conducted metallurgical tests designed to test the iron reduction process. Reported results are positive with 90 per cent or greater metallization after reduction. Ironstone and Hatch plan to conduct a pilot test on commercial scale equipment as the next step. In October 2015, Ironstone reported that North American Coal Corporation completed Ironstone's Clear Hills 25-year mine plan and cost estimate. SRK Consulting (Canada) Ltd. is preparing a Preliminary Economic Assessment for the Clear Hills project.

In 2012, SRK Consulting (Canada) Inc. prepared a resource estimate outlining mineral resources at Clear Hills.

### Uranium

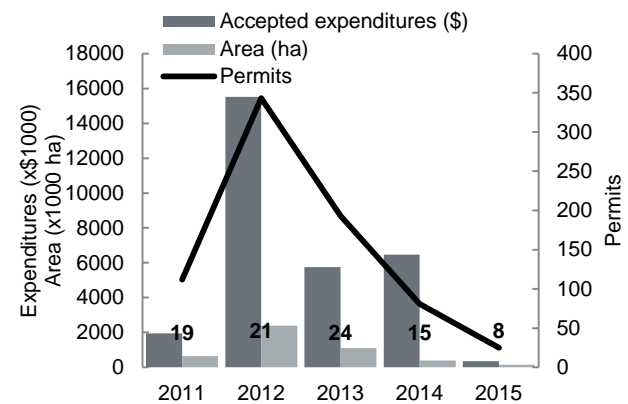
Uranium exploration activity in Alberta declined in 2015, despite continued strong interest in uranium exploration and project development across the border in Saskatchewan. The Athabasca Basin, which straddles the Alberta-Saskatchewan border, produces about 15 per cent of the world's uranium for energy. Most of the significant uranium discoveries to date and all of the operating uranium mines are located on the Saskatchewan side of the basin. In 1988 high grade uranium was found in northeast Alberta in the Dragon Lake area, on the far west side of the Athabasca Basin. The Alberta Geological Survey states that potential

## Metallic and Industrial Minerals Licences



**Figure 3.** A bar graph with the total number of active metallic and industrial minerals licences from 2011 through 2015 (the report period is October 1 through September 30).

## Assessment Report Expenditures



Year	Reports	Permits	Area (ha)	Accepted expenditures (\$)	Payment in lieu
2011	19	112	642,758	\$1,953,248	\$39,712
2012	21	343	2,392,416	\$15,510,795	\$0
2013	24	193	1,101,370	\$5,746,824	\$0
2014	15	81	391,064	\$6,463,459	\$0
2015	8	25	149,159	\$357,442	\$0

**Figure 4.** A graph of mineral assessment report statistics for 2011 through 2015. The number of permits and area are those reported in submitted reports. The accepted expenditures are those accepted by Alberta Energy; the total amount claimed is not reported, but is higher than the accepted expenditure value. Accepted values for 2015 are preliminary because not all report reviews were completed at the time of publication. Numbers at the base of each bar are the number of reports received.

exists for additional uranium discoveries on the Alberta side of the Athabasca Basin.

In March 2015, Opal Energy Corp. announced that it received final approval of its property option agreement with Declan Resources Inc. and 877384 Alberta Ltd. to earn up to a 75 per cent interest in the Firebag River property in northeast Alberta. The proponents believe the Firebag River property has potential for both uranium and frac sand.

In June 2015, Brazil Resources Inc. announced that it had received environmental permits from the Alberta government for a proposed drill program on the Rea uranium project in northeast Alberta. The Rea project is controlled 75 per cent by Brazil Resources Inc. and 25 per cent by Areva Canada Inc. The environmental permits are valid until October 11, 2016.

#### *Diamonds*

New metallic and industrial mineral permits were recorded in the Buffalo Head Hills area in close proximity to the known cluster of diamond bearing kimberlites in the area.

#### *Lithium*

After a four year lull, interest in the Fox Creek area lithium brine potential increased with several new metallic and industrial minerals permits recorded in the last quarter of 2015.

The exploration target is lithium brines contained within the Beaverhill Lake aquifer system. Commodities found in the brines include lithium, potassium, boron, bromine, calcium, magnesium and sodium.

#### *Polymetallic Shale*

DNI Metals Inc. currently holds 21 metallic and industrial mineral permits (SBH property) covering three near-surface Cretaceous black shale formations which are locally enriched in base metals, uranium, specialty metals (for example lithium, scandium and thorium) and rare earth elements. The company also explored frac sand potential on the SBH property in 2014. Exploration and development activities at the SBH property were curtailed in 2015.

#### *Silica sand*

In February 2015, Athabasca Minerals Inc. announced the results of a Preliminary Economic Assessment for its 100 per cent owned Firebag

silica sand project located on two Surface Mineral Leases 95 kilometres north of Fort McMurray. The Firebag operation has the potential to produce high quality silica sand ("frac sand") for use in the hydraulic fracturing of oil and gas wells. Potential production is estimated at approximately 900,000 tonnes of frac sand per year for 25 years. Athabasca is working on advancing the engineering and infrastructure development needed for the project.

In March 2015, the company announced additional laboratory test results on the Firebag project silica sand. Impurities such as carbonates, silts and clay particles were removed from the silica sand, resulting in a higher quality product.










In May 2015, Athabasca announced that it entered into an agreement with Coal Valley Resources Inc., a subsidiary of Westmoreland Coal Company, to purchase a private rail transloading facility located at the Obed Mountain Mine. The Obed facility has direct highway access, a private load-out structure, storage, water, power, natural gas connections, and 4.6 kilometres of private rail line connecting to the CN main line. The closing of the purchase agreement is dependent on a number of conditions and is expected during the fourth quarter of 2015.

On December 17, 2014, Brilliant Sands Inc. (formerly known as Consolidated Goldfields Corporation) entered into an Agreement of Purchase and sale with 1824455 Alberta Ltd. to purchase a 100 per cent interest in two Alberta properties and one Manitoba property with frac sand potential. The McClelland frac sand project is situated on three Metallic and Industrial Minerals Permits covering 26,624 hectares, 95 kilometres northeast of Fort McMurray. The company carried out surface sampling and a near-surface geophysical survey to better determine silica sand distribution, quality and potential deposit size. A second phase program of deeper mechanized drilling and backhoe test pitting is in the planning stage. The Alberta Project is located west of Edmonton and covers 35,207 hectares. Brilliant Sands collected samples by hand auger and completed 30 kilometres of geophysical surveys. In July, 2015 Brilliant announced that it had engaged Morton Jagodich Inc. to assist with the exploration and development of the McClelland and Alberta projects and to prepare frac sand resource estimates.





## Metallic & Industrial Minerals Agreement Activity

-  Permit
-  Lease
-  Permit Application
-  Indian Reserve
-  Métis Settlement
-  National Park
-  Municipality
-  Hydrography
-  Primary Highway

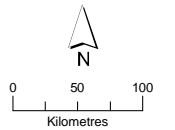
- 1 Clear Hills
- 2 Buckton polymetallic
- 3 Firebag River/ Maybelle North/ Richardson River
- 4 Rea
- 5 North Shore
- 6 Firebag
- 7 Peace River Silica
- 8 Parson Creek



SOURCE INFORMATION:  
 Mineral Agreements: Alberta Energy, January 13, 2016  
 Base Map Data Provided by the Government of Alberta under the Alberta Open Government Licence.

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 Author: Resource Mapping and Analysis



Transverse Mercator Projection (10TM)  
 North American Datum 1983 (NAD83)



S:\Custom\2016\Projects\ResourceRevenueOperations\Coal\MineralDevelopment\CMD\_2015\_Report

**Figure 7.** A map of Alberta showing metallic and industrial mineral tenure activity as of January 2016. An interactive, real-time version of this map is available at [www.energy.alberta.ca/OurBusiness/1072.asp](http://www.energy.alberta.ca/OurBusiness/1072.asp)

## Dolostone and Granite

Athabasca Minerals Inc. announced an initial Inferred resource estimate for the company's Richardson aggregate project located in northeast Alberta approximately 130 kilometres north of Fort McMurray. Athabasca Minerals is assessing the Richardson Project for its crushed rock aggregate potential suitable for applications such as building construction, road stone, railway track blast, and mortar. In addition, Athabasca is assessing the basement granite on the property. The Richardson resource estimate states an initial inferred resource estimate of 683 million tonnes of aggregate, mainly dolostone, in the Winnipegosis Formation and an initial inferred resource estimate of 165 million tonnes of underlying granite.

## Heavy minerals

Titanium Corporation Inc. announced in October 2015 that an agreement has been reached with Syncrude Canada Ltd. that provides for the co-ownership of one of Titanium's patents and the first right for Titanium to propose commercial recovery of heavy minerals at Syncrude sites. Titanium has developed a process for extracting zircon, titanium and residual bitumen from oil sands tailings.

For additional information about metallic and industrial permits and leases that did not report active exploration in 2015, go to Alberta Energy's online interactive map: [www.energy.alberta.ca/OurBusiness/1072.asp](http://www.energy.alberta.ca/OurBusiness/1072.asp).

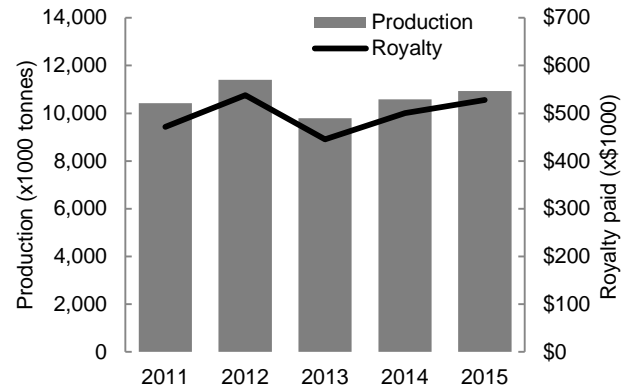
## 2015 industrial mineral quarry activities

The locations of all quarries were added to Alberta Energy's metallic and industrial minerals online interactive map in 2015. This new layer displays a boundary around the group of leases that are associated with each quarry.

**Production and royalty.** The production of quarriable minerals (including limestone, dolomitic siltstone, sandstone, and silica sand) increased compared to last year. Salt production is slightly up from 2014, which reverses a three-year trend (Figure 6 and 7). The most significant quarriable mineral produced during this five year period continues to be limestone. Salt production, from the Devonian Elk Point Group, is from in situ leach operations (rather than traditional mining methods).

Table 1 lists all operating industrial mineral quarries in Alberta.

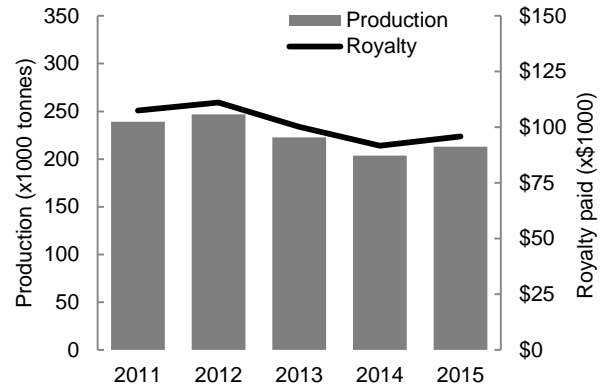
## Quarriable Mineral Production



Year	Production	Royalty
2011	10,423,433	\$471,404
2012	11,399,983	\$537,621
2013	9,794,655	\$445,496
2014	10,583,127	\$500,671
2015	10,934,343	\$527,966

**Figure 5.** The total quarriable mineral production and royalty collected for the last five years, including 2015. The report period is from October 1 to September 30.

## Salt Production



Year	Production	Royalty
2011	239,061	\$107,577
2012	246,968	\$111,136
2013	222,631	\$100,184
2014	203,659	\$91,647
2015	213,004	\$95,852

**Figure 6.** The total salt production and royalty collected for the last five years, including 2015. The report period is from October 1 to September 30.

## Industrial Mineral Quarries

Mine/Quarry	Commodity	Location	Operator
Bay Tree	Shale	Grande Prairie	WK Ventures Ltd.
Calling Lake*	Salt	North of Athabasca	Calcium Inc.
Clearwater	Limestone	Rocky Mountain House	Burnco Rock Products Ltd.
Cougar Ridge	Limestone	Rocky Mountain House	Prairie Creek Quarries Ltd.
Exshaw	Limestone	Exshaw	Lafarge Canada Ltd.
Fish Creek	Limestone	Nordegg	Graymont Western Canada Inc.
Fort McMurray West	Limestone	Fort McMurray	Suncor Energy Inc.
Gap	Limestone	Exshaw	Graymont Western Canada Inc.
McLeod	Limestone	Cadomin	Lehigh Hanson Materials Ltd.
Mitsue*	Salt	Slave Lake	Tiger Calcium Services Inc.
Muskeg	Limestone	North of Fort McMurray	Hammerstone Corporation
Peace River Silica	Silica Sand	Peace River	Contractors Leasing Corp.
Riverview*	Salt	Riverview	The Canadian Salt Company Ltd.
Rundle Stone	Dolomitic Siltstone	Canmore	Kamenka Quarries Ltd.
Seebe	Shale	Kananaskis	Lafarge Canada Ltd.
Sprayfalls	Sandstone	Exshaw	Thunderstone Quarries Ltd.
Steepbank	Limestone	North of Fort McMurray	Hammerstone Corporation
Summit Lake	Limestone	Coleman	Graymont Western Canada Inc.
Sunnynook*	Salt	Drumheller	Jarodon Resources Ltd.
Vicory	Sandstone	Coleman	Pat Dwyer Construction Inc.
Yamnuska	Sandstone	Kananaskis	Lafarge Canada Ltd.

**Table 1.** A table of the active industrial mineral quarries in Alberta; there are no metallic mines. \*Salt is produced through in situ leaching from the Elk Point group.

## Coal

Global coal prices remained low through 2015, caused mainly by a glut of both thermal and metallurgical coal. In November 2015 the Government of Alberta announced a new climate change plan whose objective is to phase out all pollution created by burning coal and transition to renewable energy and natural gas generation by 2030.

The total area and number of coal leases in the province remained relatively constant from 2014 to 2015 (Figure 8). See Figure 9 for a map of Alberta's coal fields, coal ranks, mines, and projects.

## 2015 coal exploration highlights

In April 2015, Altitude Resources Ltd. entered into a joint venture agreement with Japan Oil, Gas and Metals National Corporation to explore Altitude's Palisades metallurgical coal property in west-central Alberta. JOGMEC agreed to a three year commitment to spend \$4.8 million to complete field work, drilling, and a mining study; this will earn JOGMEC a 51 per cent interest in the property. The Alberta Energy Regulator (AER) granted a two year authorization for a drill program at the Palisades property. Altitude plans to drill 15 reverse circulation and three core drill holes for a total of 3,240 metres. Altitude expected to have an updated NI 43-101 compliant resource in the fourth quarter of 2015.



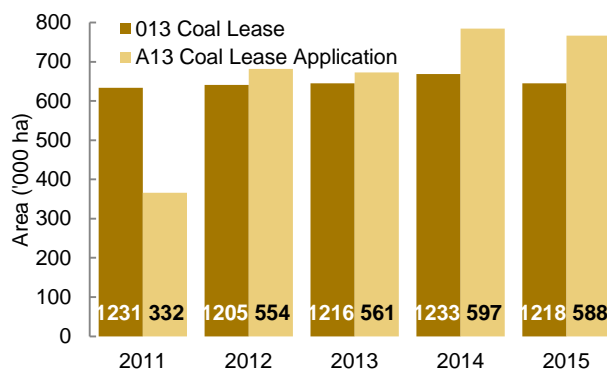
The Palisades property is located north of Highway 16, just west of Hinton, Alberta (Figure 9). Last year, Altitude released a NI 43-101 report on the Palisades project, which outlined a Measured and Indicated Resource of 10.05 million tonnes. This joint venture is JOGMEC's first in Alberta's coal sector.

On November 19, 2015, the AER gave notice that Riversdale Resources Ltd. submitted applications to develop its Grassy Mountain coal mine project. The project is operated under the Riversdale subsidiary Benga Mining Ltd. The proposed surface mine would produce up to four million tonnes of coal over a 24 year mine life. The permit application also includes plans for a coal processing plant, a conveyer system, and a new rail loading facility.

In addition to the permit applications, Riversdale has submitted an environmental assessment which was referred to an independent review panel by the Canadian Environmental Assessment Agency. The Canadian Environmental Assessment Agency has allocated \$745,983.07 to 13 applicants to support participation in the project's environmental assessment.

The Grassy Mountain project is located in the Crowsnest Pass, approximately seven kilometres north of Blairmore. Pending the project review, Riversdale currently plans to begin construction in 2017 with initial coal shipments in 2019. Riversdale holds three additional coal exploration properties south of Highway 3 in the Crowsnest Pass: Belleview, Adnac, and Lynx Creek.

## Coal Leases



**Figure 8.** A bar graph with the total area of coal leases and lease applications from 2011 through 2015 (the report period is October 1 through September 30). Numbers at the base of the bars indicate the number of individual leases or applications.

Historic activity on the Grassy Mountain project includes several hundred drill holes, over 30 trenches, bulk samples in the 1970s, and a feasibility study for a 1.2 to 2.3 million tonne per year mine in 1982. From 1956 to 1960, approximately 400,000 tonnes of coal were mined.

Ram River Coal Corp. continued to work on mine plans and stakeholder consultation for their Aries metallurgical coal project located 50 kilometres west southwest of Rocky Mountain House. Current plans for the Aries project anticipate production of 3-5 million tonnes per year of high volatile bituminous metallurgical coal. A total of 601 drill holes have been completed on the property between 1970 and 2014.

## 2015 coal mine activities

**Production and Royalty.** Bituminous coal production in Alberta decreased significantly in 2015. Correspondingly, bituminous royalty is also lower than 2014 (Figure 10). The total subbituminous coal production remained about the same in 2015 as the previous four years (Figure 11). The royalty collected on subbituminous coal also remained the same as 2014 with the proportion of production from Crown-owned coal rights remaining at around 70 per cent.

Table 2 lists all operating coal mines in Alberta.

### Grande Cache Coal Mine

On December 24, 2015, Grande Cache Coal Corporation suspended operations of its underground mine, putting 220 employees out of work. Grande Cache cites poor global coal prices as the reason for suspending operations; however, they plan to recommence mining as soon as possible. Forty employees will be kept on to maintain the site and prepare for a restart of the mine when possible.

The recent closure follows the suspension of surface operations and the processing plant at the Grande Cache Mine in early 2015, which affected 170 miners.

On December 15, 2015 the AER announced that it is reviewing an application from Grande Cache to amend their approvals for the 12 South A underground coal mine project. If the amendment application is approved by the AER, construction on the underground mine would begin mid-2016.

# Export Bituminous & Domestic Subbituminous Coals

- Coal Mine
- Advanced Coal Project
- Export/Domestic Boundary
- Land Use Framework Boundaries
- Coal Leases/Applications
- Coal Fields & Deposits
- Bituminous Coals
- Subbituminous Coals
- Lignites
- Indian Reserve
- Métis Settlement
- National Park
- Municipality
- Hydrography
- Primary Highway



**SOURCE INFORMATION:**  
 Mineral Agreements: Alberta Energy, January 13, 2016  
 Alberta Coal Data: Alberta Energy Regulator  
 British Columbia Coal Data: BC Ministry of Energy & Mines  
 Base Map Data Provided by the Government of Alberta under the Alberta Open Government Licence.

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0 50 100  
 Kilometres

Transverse Mercator Projection (10TM)  
 North American Datum 1983 (NAD83)

**Figure 9.** A map of Alberta showing coal tenure activity (dark brown), and coal mines and projects, as of January 2016. Coal fields (light brown) and approximate coal rank distribution (coloured bands) are also shown. An interactive, real-time version of the coal tenure on this map is available at [www.energy.alberta.ca/OurBusiness/1072.asp](http://www.energy.alberta.ca/OurBusiness/1072.asp).

### Vista Project

In spring 2015, Coalspur Mines Ltd. sold the Vista thermal bituminous coal mine project to KC Euroholdings Sarl. Vista has all of the required approvals from the AER to begin construction, the last of which was received in early 2014. However, low global coal prices have delayed the project. KC Euroholdings has stated that in the current situation, it sees the Vista project as a long term investment and has no immediate plans to begin construction.

KC Euroholdings is part of the Cline Group LLC, the parent company of Kameron Collieries, which is currently working on putting the undersea Donkin coal mine in Nova Scotia into production.

### Cardinal River Mine

Teck Resources Ltd. shut down production for a three week period at each of its coal mines in Alberta and B.C. to reduce operating costs and production volumes as a way to combat low metallurgical coal prices. This shutdown included the Cardinal River Mine near Hinton, which is Teck's sole Alberta coal mine. Teck also reduced their use of contractors at all of their mine sites to further reduce operating costs.

## CMD Updates

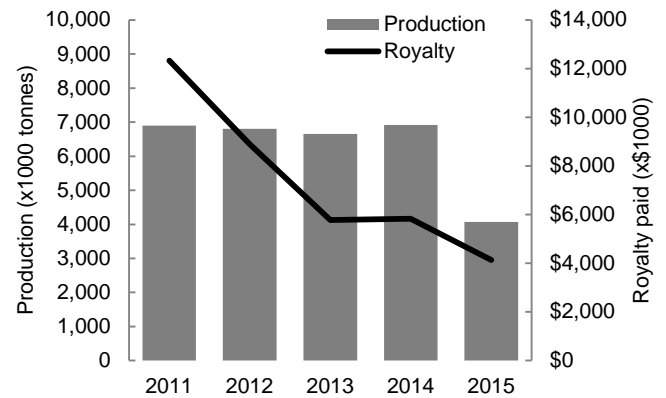
### Alberta Mineral Assessment Report System

In May 2015, Alberta Energy launched a new Alberta Mineral Assessment Report System (ABMARS). ABMARS provides two functions: 1) an administrative function that facilitates Alberta Energy's review of mineral assessment reports, and 2) a public mineral assessment report database.

The public database builds on the progress previously made to scan all assessment reports and make them available online. With ABMARS, search functionality has been added to allow users to search report metadata and the full text of each report. The search page can be found on the Alberta Energy website.

ABMARS improves the accessibility of mineral assessment reports to the public, industry, and government. Mineral assessment reports are the record of mineral exploration work in Alberta and are a significant collection of geological information. The current database contains reports from as early

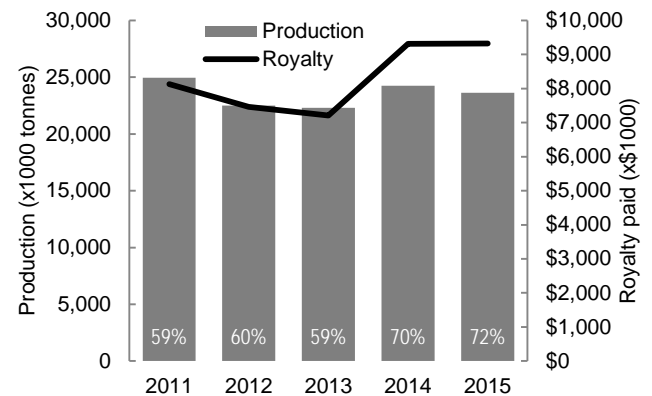
## Bituminous Coal Production



Year	Production	Royalty
2011	6,898,123	\$12,325,969
2012	6,805,148	\$8,892,626
2013	6,653,820	\$5,775,640
2014	6,915,435	\$5,826,830
2015	4,066,285	\$4,139,311

**Figure 10.** The total bituminous coal production and royalty collected for the last five years, including 2015. The report period is from October 1 to September 30.

## Subbituminous Coal Production



Year	Production	Crown %	Royalty
2011	24,938,975	59%	\$8,124,111
2012	22,483,777	60%	\$7,463,258
2013	22,288,559	59%	\$7,209,349
2014	24,230,326	70%	\$9,314,753
2015	23,613,875	72%	\$9,324,471

**Figure 11.** The total subbituminous coal production and royalty collected for the last five years, including 2015. The percentages are the portion of the production from Crown coal rights. Alberta Energy does not collect royalty on freehold coal production. The report period is from October 1 to September 30.



as 1949. It is updated on a regular basis as new reports become available to the public.

When they are submitted, mineral assessment reports have a one-year confidentiality period, after which they are scanned and made available through ABMARS.

## Alberta Geological Survey

Building on over 95 years of history, the Alberta Geological Survey (AGS) provides geological information and advice about the geology of Alberta to the Government of Alberta, AER, industry and the public. The AGS is the official provincial geological survey of Alberta, and as such operates by the guiding principles of the Canada Intergovernmental Geoscience Accord, which identifies the provincial survey as being the principal steward, resident authority, and principal investigator for public geoscience. The AGS is responsible for the systematic description of the geology and resources within the province as well as providing information and knowledge to assist in the resolution of land use, environmental, public health and safety issues related to geosciences. The AGS resides within the AER and provides

world-class geoscience support for Alberta's regulatory process.

The AGS delivers geoscience in several key areas, including surficial mapping, bedrock mapping, geological modelling, resource evaluation (hydrocarbons and minerals), groundwater, and geological hazards. The AGS is also responsible for maintaining the Alberta Table of Formations and providing geoscience outreach to stakeholders, ranging from professional colleagues and academia to the general public.

The AGS creates and disseminates geoscience information in the form of reports, maps, and digital data sets, as well as posters and presentations. Many AGS products are built within an interactive GIS environment that is accessible by the public. The survey is actively building 3D geological models of Alberta that include surface and subsurface features in a format that will allow users to incorporate their information within our models.

The AGS website ([www.ags.gov.ab](http://www.ags.gov.ab)) delivers a variety of product lines and information on Alberta geology. The website provides access to over 2500 reports, 400 maps, and 1300 datasets (digital data, shapefiles, and digital imagery). Current projects and activities are highlighted, along with additional geoscience information about Alberta.

## Coal Mines

Mine	Coal rank	Location	Owner/Operator	Main use
Burtonsville	Subbituminous	Burtonsville	Keephills Aggregate Company Inc.	Small-scale sales
Cheviot (Cardinal River)	Bituminous	Hinton	Teck Coal Ltd.	Export: metallurgical
Coal Valley	Bituminous	Hinton	Westmoreland Coal Co.	Export: thermal
Dodds	Subbituminous	Ryley	Dodd's Coal Mining Company Ltd.	Small-scale sales
Genesee	Subbituminous	Warburg	Capital Power LP / Westmoreland Coal Co.	Electricity: Genesee generating stations
Grande Cache	Bituminous	Grande Cache	Grand Cache Coal Corp	Export: metallurgical
Highvale	Subbituminous	Wabamun	Transalta Corp / SunHills Mining LP	Electricity: Keephills and Sundance generating stations
Paintearth/Vesta	Subbituminous	Forestburg	Westmoreland Coal Co.	Electricity: Battle River generating stations
Sheerness	Subbituminous	Hanna	Westmoreland Coal Co.	Electricity: Sheerness generating stations

**Table 2.** A table of the active coal mines in Alberta.

## Alberta Interactive Minerals Map

Alberta's newest web-based interactive product is a GIS-based mapping application serving Alberta base maps, mineral, and geochemical data. The Alberta Interactive Minerals Map (AIMM) web mapping application was developed as a joint project between the AGS and Alberta Energy. It is designed to provide the Government of Alberta, the general public, and industry with an interactive tool for exploring, discovering, and downloading mineral and geochemical data. All features on the AIMM have a pop-up window, which includes a link to the corresponding dataset on ArcGIS Open Data ([opendata.arcgis.com](http://opendata.arcgis.com)). The AIMM is continually being updated with additional datasets as the AGS continues to migrate all mineral and geochemical data holdings into the product. The AGS is planning to add additional geoscience datasets and maps to the ArcGIS Open Data site and into new GIS-based delivery products. To explore the AIMM site, please visit the interactive geology map page on the AGS' website.

## Mineral Core and Geological Samples.

The AGS assists Alberta Energy to administer the *Metallic and Industrial Minerals Tenure Regulation* under the *Mines and Minerals Act*. Under this regulation, the Crown can collect mineral core and rock samples from companies working on mineral permits and make these materials publicly available to prospectors, mineral exploration companies, and academia for mineral exploration and research purposes.

Core and rock samples are stored at the Mineral Core Research Facility (MCRF). The MCRF contains more than 60,500 metres of mineral core, 12,500 metres of coal core, and 17,000 rock samples. The core and rock samples have been collected by AGS geologists and donated by industry and academia. Included in the rock samples are those collected from the Canadian Shield in northeast Alberta over a period of 40 years by the late Dr. John Godfrey.

Location and information on specific core is available through the AIMM, described above. The facility is located in southeast Edmonton. To view core or access the facility, please contact the MCRF at 780-466-1779.

## New publications

### Alberta Geological Survey

All reports, maps and digital datasets are available for free from the AGS website: [www.ags.gov.ab.ca](http://www.ags.gov.ab.ca).

Paleotopographic Reconstruction and Subcrop Geological Mapping of the Sub-Cretaceous Unconformity in Central Alberta: Methodology and Results. Mei, S., Bechtel, D.J., Grobe, M., and Palombi, D., AER/AGS Open File Report 2015-05, 2015.

Turtle Mountain Field Laboratory, Alberta (NTS 82G): 2012 Data and Activity Summary. Warren, J.E., Morgan, A.J., Chao, D.K., Froese, C.R., Wood, D. E., AER/AGS Open File Report 2014-09, 2014.

Surficial Sand and Gravel Deposits of Alberta: Digital Mosaic (GIS data, polygon features). Pawley, S.M., Atkinson, N., Kendall, A.N., Utting, D.J., AER/AGS Digital Dataset 2015-0027, 2015.

Surficial Geology of the Sturgeon Lake Area (NTS 83N/SW) (GIS data, line features). Atkinson, N., Pawley, S., AER/AGS Digital Dataset 2015-0026, 2015.

Surficial Geology of the Sturgeon Lake Area (NTS 83N/SW) (GIS data, polygon features). Atkinson, N., Pawley, S., AER/AGS Digital Dataset 2015-0025, 2015.

Surficial Geology of the Mikkwa River Area (NTS 84G/NE) (GIS data, permafrost polygon features). Pawley, S.M., AER/AGS Digital Dataset 2015-0024, 2015.

Surficial Geology of the Mikkwa River Area (NTS 84G/NE) (GIS data, line features). Pawley, S.M., AER/AGS Digital Dataset 2015-0023, 2015.

Surficial Geology of the Mikkwa River Area (NTS 84G/NE) (GIS data, polygon features). Pawley, S.M., AER/AGS Digital Dataset 2015-0022, 2015.

Surficial Geology of the Haig River Area (NTS 84E/NE) (GIS data, permafrost polygon features). Utting, D.J., Pawley, S.M., AER/AGS Digital Dataset 2015-0024, 2015.

Surficial Geology of the Haig River Area (NTS 84E/NE) (GIS data, line features). Utting, D.J., Pawley, S.M., AER/AGS Digital Dataset 2015-0003, 2015.

Surficial Geology of the Haig River Area (NTS 84E/NE) (GIS data, polygon features). Utting, D.J., Pawley, S.M., AER/AGS Digital Dataset 20015-0002, 2015.





Compilation of Airborne-Electromagnetic and -Magnetic Geophysical Data in the Edmonton-Calgary Corridor, Alberta. 2007-2010 (digital data, various formats). Fugro Airborne Surveys, Larch Consulting Ltd., AER/AGS Digital Dataset 20015-0001, 2015.

## Land-use planning

### Alberta Land Stewardship Act (ALSA)

The ALSA was passed on June 4, 2009 and is the legislative mechanism to implement and support the development of regional plans under the Land-use Framework (LUF).

### Land-Use Framework (LUF)

A key strategy of the LUF is the development of seven regional land use plans. Along with environmental monitoring and regulatory enhancement, regional planning is a cornerstone of the world-leading resource system that the Government of Alberta is building in Alberta.

### Lower Athabasca Regional Plan (LARP)

The LARP, the first regional plan developed under the LUF, was publicly released on August 22, 2012 and the regulatory components of the plan took effect on September 1, 2012. The LARP is a forward-looking, 50-year blueprint that provides the strategic direction for environmental management in the Lower Athabasca Region which hosts the Athabasca Oil Sands Area.

The LARP includes future opportunities for oil sands, petroleum and natural gas, electricity and metallic and industrial mineral development. The establishment of six new conservation areas by the LARP brings the total conserved area in the region to two million hectares or approximately 22 per cent of the land base. Nine new recreation areas were also established by the LARP.

Implementation of the LARP began with the establishment of the Urban Development Sub-Region (UDSR) boundaries through an Order in Council and implementation of new conservation areas and new provincial recreation areas (PRAs) designated by the LARP. This required the cancellation of oil sands agreements within the UDSR, oil sands and metallic and industrial mineral (MIM) agreements in conservation areas, and MIM agreements within PRAs. As of the end of 2015,

all oil sands and almost all metallic and industrial mineral agreements within the new conservation and recreation areas have been cancelled and compensated.

Environmental management frameworks for air, surface water quality, and groundwater were developed as part of the LARP and a biodiversity management framework is still under development based on commitments made in the LARP.

### South Saskatchewan Regional Plan (SSRP)

The final SSRP came into force on September 1, 2014. Direction in the SSRP supports Alberta's Integrated Resource Management System (IRMS) by establishing clear regional outcomes, providing clear direction to land use decision-makers, and the use of monitoring to support achievement of the outcomes.

Economically, the SSRP seeks to provide certainty for industry by ensuring clear rules for access to, and development of, natural resources are in place and also ensures opportunities for the responsible development of the region's renewable energy industry in the region are maintained. The SSRP also identifies strategies to provide for more tourism opportunities, forest management, and maintaining a sustainable agriculture industry in the region.

Environmentally, to protect critical watersheds, habitats and native grasslands, the SSRP created eight new or expanded conservation areas, including a new 54,588 hectare Castle Wildland Provincial Park and the 34,356 hectare Pekisko Heritage Rangeland. The SSRP also establishes environmental management frameworks for ensuring air and water quality as well as a commitment to develop a biodiversity management framework. In September 2015, the government announced that it would be protecting the full Castle area and entered into consultations to determine the final boundary. This change will require an amendment to the regional plan.

Socially, the SSRP has identified two new and six expanded Provincial Parks to help meet growing demand for recreational opportunities and to provide a dedicated land base to support recreation and tourism development. Twelve new primitive public land recreation areas in the eastern slopes for camping and trail access are also created by the SSRP.

The SSRP has also directed the Government of Alberta to review the coal categories as laid out in

the 1976 *A Coal Development Policy for Alberta* along with the Integrated Resource Plans in the region. The review of the coal categories will only apply to the the South Saskatchewan Region at this time. The intent is for the SSRP and associated tools developed under the SSRP to supersede the coal categories within the region and provide clear direction about where exploration and development of all mineral resources, including coal, can and cannot occur in the planning region. Work on the coal categories is still ongoing.

### North Saskatchewan Regional Plan (NSRP)

The Regional Advisory Council (RAC) for the NSRP concluded its series of eight meetings in various locations in the region in November 2014. The RAC was guided by a Terms of Reference for the region which specified areas for the RAC to provide advice to the Government of Alberta. The RAC Advice for the NSRP has been presented to the Government of Alberta for consideration. Once the RAC advice is released to the public, consultations will begin and the Government of Alberta will begin to write the draft regional plan.

### Other Regional Plans

Pre-planning work for the Upper Peace, Lower Peace, Upper Athabasca and Red Deer Regional Plans is underway. It is expected that the Lower Peace region's planning process will begin in 2016.

## About Alberta's regulatory system

The Crown owns 81 per cent of the mineral rights in Alberta. The other 19 per cent are *Freehold* mineral rights and are owned by individuals, companies or the federal government on behalf of First Nations. The Coal and Mineral Development Branch is responsible the administration of the Crown's mineral rights for metallic and industrial minerals and coal.

The mineral rights for coal, and metallic and industrial minerals are managed using a variety of agreements, depending on the specific substance and/or activity a client wishes to pursue. Each agreement type is defined and governed through the Alberta's *Mines and Minerals Act*, and the *Metallic and Industrial Minerals Tenure Regulation*. Fees and rentals are set out in the *Mines and Minerals Administration Regulation*.



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