

# **Investigation Summary Report**

## **2015-020: Benga Mining Limited, operating as Riversdale Resources**

### **Coal Exploration Program Authorizations 130011, 140009**

**March 8, 2017**

<b>Investigation number:</b>	2015-020
<b>Regulated party:</b>	Benga Mining Limited, BA code A6WZ, operating as Riversdale Resources
<b>Field centre of origin:</b>	Red Deer
<b>Incident location (nearest town):</b>	07-036-08-4W5, about 8 km north of Blairmore, Alberta
<b>Incident date:</b>	July 17, 2015
<b>FIS incident number</b>	20152030
<b>Authorization numbers and relevant legislation, regulations, and rules:</b>	Coal Exploration Program Authorization 130011,140009,

**Alberta Energy Regulator**

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Published by

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## Summary of Facts

### Company Overview

Benga Mining Limited is owned by Riversdale Resources Ltd., an Australian incorporated coal exploration and development company. The company is registered in Alberta as an extra-provincial corporation with offices in British Columbia and Alberta. On January 23, 2014, Benga registered the trade name, Riversdale Resources, with the Government of Alberta.

Riversdale Resources (Riversdale) is an Alberta-registered coal exploration and development company focused on developing mines to supply hard coking coal to the overseas market. Riversdale's main Alberta assets are

- the Grassy Mountain Project, which is a coking-coal development project, and
- three properties (Bellevue, Adanac, and Lynx Creek) for metallurgical coal exploration.

### History of the Grassy Mountain Mine Site<sup>1</sup>

- 1913 West Canadian Collieries Ltd. appears to have started to surface mine the coal on Grassy Mountain.
- 1951 West Canadian Collieries Ltd. attempts to purchase the land under Right of Entry (ROE) 8751, but is denied by the Alberta government.
- 1952 West Canadian Collieries Ltd. obtains ROE 8751 to access the coal within their lease boundaries under the *Right of Entry Arbitration Act*.
- 1961 West Canadian Collieries Ltd. shuts down the Grassy Mountain surface mine.
- 1965 West Canadian Collieries Ltd. goes into receivership and transfers assets to West Canadian Holdings.
- 1966 West Canadian Holdings is purchased by Scurry Rainbow Oil and Gas Ltd.
- 1973 Consolidated Coal Company<sup>2</sup> acquires a 50 per cent undivided interest in the lands from Scurry Rainbow Oil Limited.
- 1993 Scurry Rainbow Oil and Gas merges with Home Oil.
- 2003 Home Oil amalgamates with Devon Canada and becomes Devon Canada (Devon).

**Note: No commercial mining activity occurred on lands under ROE 8751 between 1966 and 2012.**

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<sup>1</sup> Historical records: Right of Entry 8751 supplied by Alberta Environment and Parks (AEP); Devon Canada responded to an information request on November 27, 2015; Benga Mining Limited responded to an information request on November 26, 2015.

<sup>2</sup> Consolidated Coal Company became Consol Energy Inc. in 1991.

- 2013 Benga purchases private land and acquires the rights to the ROE from Devon and Consol of Canada Inc.<sup>3</sup>
- 2014 Benga receives authorization from the Alberta Energy Regulator (AER) for CEP130011<sup>4</sup> to conduct a coal exploration program on Grassy Mountain.
- 2015 Benga receives authorization from the AER for CEP140009 to conduct a coal exploration program on Grassy Mountain.

## Incident Overview

On July 17, 2015, it rained heavily in the Grassy Mountain area, about 8 kilometres north of Blairmore. The surface-water runoff from the heavy rainfall flowed off of the historical disturbed area on top of Grassy Mountain to an old coal-mine access road.

The runoff from Benga's property combined with runoff that had been intercepted by the old coal-mine access road, then crossed the access road and eroded a pre-existing exposed coal seam that was covered by a mixture of loose coal and coal fines<sup>5</sup>. The runoff transported the mixture down the east side of Grassy Mountain through a natural drainage channel.

The natural drainage channel below the coal seam passes from the ROE #8751 Crown land to Crown land with no ROE, to land owned by Benga, to private (freehold) land before entering a tributary that flows into Gold Creek which is about 1700 metres (m) from the coal seam.

## Investigation Findings

This investigation concerned a release from a historical coal-mining site impacting Gold Creek. Information to complete this investigation summary report required information from the Alberta Energy Regulator, Alberta Environment and Parks, the Alberta Surface Rights and Land Compensation Board, Benga Mining Limited, and Devon Canada.

### July 20, 2015

- The AER Medicine Hat Field Centre inspector was notified using the Communication Information Centre (CIC) call sheet (301074) that was originally sent to Alberta Environment and Parks (AEP). A public complaint first identified the release.

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<sup>3</sup> Consol of Canada Inc. is a subsidiary of Consol Energy Inc.

<sup>4</sup> CEP is Coal Exploration Program.

<sup>5</sup> Coal with a maximum particle size usually less than one-sixteenth of an inch and rarely more than one-eighth inch.

## July 21, 2015

- An AER inspector, AEP investigator, and AEP fisheries biologist met with the public complainant and walked the section of Gold Creek where they noticed the coal deposits.<sup>6</sup> During the inspection it was evident that coal fines were deposited into Gold Creek, and it was obviously the tributary that conveyed the coal.
- During the visit to the site where the tributary flows into Gold Creek, it was evident by the pushed-over vegetation where the water had travelled during the July 17 rainfall and runoff. Coal deposits were clearly evident along the tributary, indicating that coal runoff from Grassy Mountain may have occurred before.<sup>7</sup>
- The Benga Mining geologist said that the coal was part of a natural seam that had been exposed by mining when the mine was operating in the early 1960s.<sup>8</sup>
- The inspection of Gold Creek identified where the coal entered the creek from the tributary.<sup>9</sup> How far the coal travelled down Gold Creek and the exact impacted area were not determined.
- AER staff did check the Gold Creek Bridge at Hwy 3 near Frank, Alberta, and could not identify any coal deposit at that location. For about the 200 metres that was inspected where the tributary enters Gold Creek, the coal settled to the creek bed in natural areas of the creek—e.g., back eddies and pools—where water flows more slowly. Deposits were up to **6 inches deep**. Less coal was deposited between these locations.

**Note: That the gulley that becomes the tributary is eroded at higher elevation from the high velocity of water travelling down it. This gulley will continue to be a source of sediment during rainfall events.**

- The Department of Fisheries & Oceans (DFO), which had also received the CIC call sheet, called the AER inspector on July 21. DFO was concerned about the sensitivity of the stream as habitat for west slope cutthroat trout (*Oncorhynchus clarkia lewisi*), which is listed under the *Species at Risk Act*.

## July 23, 2015

- The AER inspector, AER *Public Lands Act* authorization staff, and Benga staff attended the natural coal-seam location. GPS software was used to confirm that the location was within ROE 8751 (on Crown land).

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<sup>6</sup> Appendix figure 3

<sup>7</sup> Appendix figure 4

<sup>8</sup> Appendix figure 1

<sup>9</sup> Appendix figure 2

## **November 10, 2015**

- The environmental impact assessment, section E, page E 98, of the Benga Grassy Mountain Coal Project application indicated that the middle reaches of the creek contain varying amounts of coal sediments and fines, likely from either (i) coal outcroppings or (ii) coal fines and sediments generated by previous mining activities in the watershed and deposited in Gold Creek.<sup>10</sup>

## **November 25, 2015**

The AER review of the Devon response to an information request found the following:

- Based on records available to Devon, Devon and its predecessors have not undertaken any commercial mining activities on the lands in the ROE from the time Scurry-Rainbow Oil Limited acquired the lands and ROE (1966–2012).
- Before the 2013 sale to Benga, Devon and its predecessors conducted general environmental evaluation activities in the Grassy Mountain coal area. Specifically, Devon did ground assessments of the Grassy Mountain coal area annually along with aerial surveys about every three years.
- The focus of the annual ground assessment was to assess potential risks of subsidence or trespass damage, but a general review was done and any other issues that might have a negative environmental impact were addressed. Upon completion of the yearly review a remediation, reclamation, or repair/stabilization program was initiated to mitigate any identified risks.
- In addition to ground assessments, a helicopter review of the lands was done about every three years to identify any risks that would not be readily identifiable during a ground review. Risks identified in the aerial reviews were incorporated into the annual repair/stabilization program.
- The ground and helicopter assessments undertaken by Devon did not detect any material issues relating to water (or coal) runoff and erosion, although, as stated above, Devon's focus was primarily on ground subsidence. Devon met periodically with stakeholders in the area, including the landowner who raised concerns about the July 2015 incident.
- Devon met with landowners when they raised issues and concerns; however, Devon does not recall or have any records of concerns related to the ROE and, specifically, coal fine water migration and erosion. Furthermore, Devon does not have any records indicating issues of noncompliance or onsite inspections of the lands or the ROE by the AER, the AEP, or any of their predecessors other than in relation to the ground subsidence issues that Devon mitigated.

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<sup>10</sup> The environmental impact assessment created by Millennium EMS Solutions is part of the Benga Mining November 10, 2015, joint application to the Canadian Environmental Assessment Agency and the AER for the Grassy Mountain Project.



- As far as Devon is aware, no such concerns about the ROE coal fine water migration and erosion were ever reported, raised by third parties, or evident from Devon's evaluations.

### **November 26, 2015**

The AER review of the Benga response to an information request found the following:

- It identified that the source is a natural coal seam near the summit of Grassy Mountain on Crown land under an ROE (8751) held by Devon. Excess rain runoff from land owned by Benga at the top of Grassy Mountain beside the top of the former mine pit flowed off site and onto Crown land within the ROE.
- The water from the Benga-owned lands came from heavy precipitation running off an area of exposed sandstone and shale at the top of the mountain and contained no coal, coal fines, or sediment. The runoff combined with runoff from the ROE and was channelled by existing access trails in the ROE toward the natural drainage.
- The runoff crossed an access trail running horizontal to the mountain and perpendicular to the drainage channel in several places, cutting through a natural coal seam that lies exposed at the top of the drainage. The area in the ROE contains old slag dumps and access trails. The terrain is steep and much of the surface material is loose, unconsolidated, and easily eroded. The exposed coal seam is heavily weathered with lots of coal and coal fines at the surface. The heavy flow resulting from the rain runoff eroded the coal seam and transported coal and sediment into the drainage channel<sup>11</sup> where it followed a steep gully about 1700 m down the east slope of Grassy Mountain into Gold Creek.
- The drainage below the coal seam passes from Crown land in ROE 8751 onto Crown land with no ROE, back onto land owned by Benga, and finally onto private (freehold) land before entering Gold Creek.<sup>12</sup>
- Evidence of the coal and coal fines were observed throughout the drainage below the coal seam and in Gold Creek downstream from the confluence.

The flow from the heavy rain caused fresh scouring along the drainage gully, and there is evidence of new channels and braiding of the tributary near the confluence with Gold Creek. Alberta Environment stream-flow data for Gold Creek (north of the release) confirms that there was a large spike in the measured flow in Gold Creek on July 17.

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<sup>11</sup> Appendix figures 6 and 7

<sup>12</sup> Appendix figure 8 map

LIDAR<sup>13</sup> imagery from 2013 shows evidence of scouring and erosion in the coal seam.

- This suggests that this type of erosion and transport of sediments and coal into Gold Creek has been happening for some time.
- The results of Benga's field investigation indicate that such releases have occurred since the mine was abandoned in the early 1960s but were not reported.
- Based on Benga's review of the 2013 LIDAR data, it is evident that historical erosion at this site has led to the formation of three gullies, the largest of which extends about 150 m downslope to the associated unnamed tributary of Gold Creek. Visual observation of the gully indicates that it is about 3 to 4 m deep in places and up to 20 m wide.
- When roads were initially upgraded by Benga in 2013–2014, they were given a slight camber to prevent the accumulation of water. Some minor trenching was done along sections of the S-road. Upgrading included grading, levelling, and smoothing, and snow removal during winter programs. No new roads were built around the location of the incident.

### **October 2016**

- The Alberta Surface Rights and Land Compensation Board supplied copies of the most current board orders numbers 2126 and 2129 dated July 26, 2004, related to ROE 8751 showing Devon Canada Corporation as the operator. No conditions are attached to the orders.
- The documented histories of the ROE also indicate that the land owner has been various Government of Alberta departments and were Sustainable Resource Development at the time of the last board order.

### **Conclusion**

The investigation into the release of coal and loose coal fines into Gold Creek reported on July 20, 2015, has not revealed any noncompliance of AER requirements by an AER-regulated party. There is no evidence to show coal and loose coal fines came from areas under Benga's control above the open coal seam. The AER has no jurisdiction over the ROE, which is under the jurisdiction of the Alberta Surface Rights and Land Compensation Board.

Accordingly, no enforcement action will be taken.

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<sup>13</sup> LIDAR (light detection and ranging) is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to generate precise, three-dimensional information about the shape of the Earth and its surface characteristics.

## Appendix 1



Figure 1. Source of coal on ROE 8751 (July 2015 from AER staff)





**Figure 2. Tributary enters Gold Creek (point of entry of coal in Gold Creek); July 2015 from AER staff.**





**Figure 3. Example of coal deposits in Gold Creek (July 2015 from AER staff)**





**Figure 4. Evidence of historical coal deposits in tributary of Gold Creek (July 2015 from AER staff)**





**Figure 5. Gold Creek above Lillie Slack Pile (supplied by public submission)**



**Figure 6. Initial breach water after/during rain (supplied by Millennium EMS Solution)**





**Figure 7. Initial breach water after/during rain (supplied by Millennium EMS Solution)**



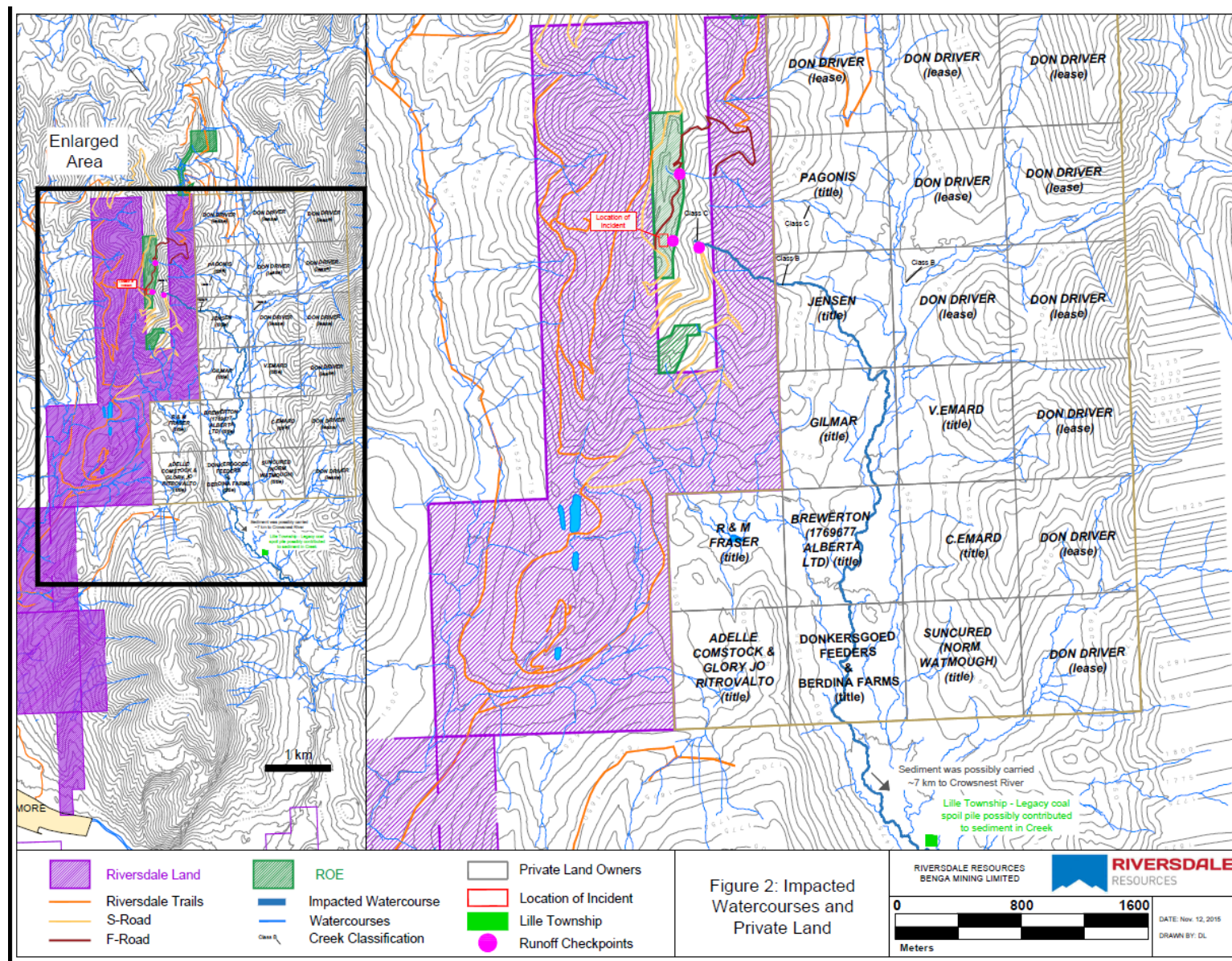


Figure 8. Impacted water courses and private land (map supplied by Benga Mining)