COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY
COAL PROGRAM INSPECTION REPORT

PERMIT INFORMATION

Permit Number: C-1992-080 **Mine Name:** Carbon Junction Mine **Operator:** Oakridge Energy, Inc. **Operator Address:** Mr. Michael S. Savage 4610 Haystack Drive Windsor, CO 80550	**County:** La Plata **Operation Type:** Surface **Permit Status:** Inactive **Ownership:** Private
	Operator Representative Present: None
Operator Representative Signature: (Field Issuance Only) This report was issued electronically from the Division's Durango Field Office.	

INSPECTION INFORMATION

Inspection Start Date: April 30, 2013 **Inspection Start Time:** 09:40 **Inspection End Date:** April 30, 2013 **Inspection End Time:** 14:25	**Inspection Type:** Coal Partial Inspection **Inspection Reason:** OSM Special Focus **Weather:** Windy
Joint Inspection Agency: OSM	**Joint Inspection Contacts:** Elizabeth Shaeffer Joe Wilcox Howard Strand Spencer Shumate
Post Inspection Agency: None	**Post Inspection Contacts:**

Inspector(s):	**Inspector's Signature:**	**Signature Date:**
Marcia L. Talvitie, P.E. Sandra L. Brown		23 May 2013

Inspection Topic Summary
NOTE: **Y**=Inspected **N**=Not Inspected **R**=Comments Noted **V**=Violation Issued **NA**=Not Applicable

NA - Air Resource Protection
N - Availability of Records
N - Backfill & Grading
Y - Excess Spoil and Dev. Waste
NA - Explosives
Y - Fish & Wildlife
V - Hydrologic Balance
N - Gen. Compliance With Mine Plan
N - Other
NA - Processing Waste
Y - Roads
N - Reclamation Success
N - Revegetation
NA - Subsidence
Y - Slides and Other Damage
NA - Support Facilities On-site
N - Signs and Markers
NA - Support Facilities Not On-site
N - Special Categories Of Mining
N - Topsoil

COMMENTS

The DRMS conducted a partial inspection of the Carbon Junction Mine on April 30, 2013. Marcia Talvitie and Sandy Brown of the Division were accompanied by four representatives of the Office of Surface Mining (OSM); their names are listed on the first page of this report. The mine was selected by the OSM as part of this year's Special Focus on Reclamation Success: "Stream Channel and Drainage Reconstruction". The inspection evaluated the various reaches of the Carbon Junction drainage system within the permit area.

We arrived at the gate at 9:40 a.m. Skies in the morning were clear, but the wind picked up in the middle of the day, and continued to build in intensity. By the conclusion of the inspection, at 2:25 p.m., the skies had become opaque with dust blown in from Arizona and New Mexico.

HYDROLOGIC BALANCE - Rule 4.05
Drainage Control 4.05.1, 4.05.2, 4.05.3; Siltation Structures 4.05.5, 4.05.6; Discharge Structures 4.05.7, 4.05.10; Diversions 4.05.4; Effluent Limits 4.05.2; Ground Water Monitoring 4.05.13; Surface Water Monitoring 4.05.13; Drainage – Acid and Toxic Materials 4.05.8; Impoundments 4.05.6, 4.05.9; Stream Buffer Zones 4.05.18:

Carbon Junction Canyon is an ephemeral drainage that bisects the permit area from northeast to southwest. The drainage area is less than one square mile in size. Disturbed areas tributary to the drainage are located on both sides of the channel.

Permanent placement of overburden spoil was previously approved within a segment of the Carbon Junction drainage. Placement of this material (now termed the "Permanently Reclaimed Spoils Area", or PRSA) necessitated that a permanent diversion of the Carbon Junction drainage be constructed. This diversion skirts the northern limit of the PRSA.

To conduct this inspection, the group parked at the location where twin 66" corrugated metal pipes (CMPs) carry the Carbon Junction permanent diversion channel beneath the paved haul road. We followed the riprapped channel downstream to the point where it terminates in a

tributary to Carbon Junction Canyon, and then traveled down the tributary to its intersection with Carbon Junction Canyon, and explored the canyon a short distance downstream of the confluence. Reclaimed Sediment Pond #2 was observed. The team then retraced its steps, collecting measurements of the permanent diversion channel throughout its length. These measurements consisted of channel gradient, channel width, and size of riprap used.

As we proceeded upstream from the permanent diversion, we noted the erosion that has occurred on the southern side of the drainage. (This issue has been addressed in previous Division inspection reports, beginning with March 29, 2013.) We continued to move upstream, along the diversion berm which parallels the original channel on the south, passed beneath the toe of the reclaimed North Pit, and eventually reached the undisturbed, native channel.

Designs for reconstruction of the Carbon Junction Canyon drainage were approved with TR-11 in October 2002. Details may be found in pages 5-8 thru 5-17 of Section 2.05 (Operation and Reclamation Plan). The approved design plan, profile, and cross section views of the Carbon Junction channel and its environs appear on the following permit maps, also approved under TR-11: Mine Plan Map, Site Cross Sections, Mine Hydrology Map, and Post Mining Topography Map. (Note: the location of the shared permit boundary with the adjacent gravel pit, Ewing Mesa Pit No. 1, was subsequently revised in July 2004 under TR-12.)

Permanent Diversion

The permanent diversion channel was stable; however, certain field measurements indicate that the channel was not constructed as designed:

- The gradients of Segments 1 through 6 differed from what was shown on the Site Cross Sections Map, with Segment 1 being steeper and the other five segments being generally flatter than was specified, as seen in the table below.

Channel Segment*	% Grade (Measured)	%Gradient (Design)
1	14.0	7.30
2	1.4	2.19
3	4.0	5.31
4	15.0	16.14
5	9.0 to 10.0	9.78
6 (lower)	1.0	2.15
6 (upper, to curve)	1.4	2.15

*As shown on Site Cross Sections Map, approved with TR-11

- The riprap size was frequently coarser than what was required.

- For the culvert crossing of the permanent haul road (Segment 4), the design called for a single pipe arch culvert, whereas twin 66" CMPs were installed. An as-built design for the twin culverts was submitted in May 2007; however, the design was not revised in the permit.

Reconstructed Carbon Junction Drainage

The team observed numerous issues with the disturbed portion of the Upper Carbon Junction Channel, located upstream of the riprapped permanent diversion channel:

- An erosional gully, approximately six feet deep, has formed at the downstream terminus of the diversion berm.

- Sediment generated by this erosion has created a physical barrier to the flow of the channel, and would result in flow being ponded upstream of the sediment fan.

- The un-named tributary channel that enters the Carbon Junction drainage from the east is confined behind the diversion berm, rather than being allowed to flow directly into the main drainage. This would potentially contribute to continued erosion of the gully.

- At the location where the diversion berm was breached in the fall of 2012, the profile of the channel is significantly steeper than what exists both upstream and downstream. Head-cutting of the channel could potentially result from this nick point.

- The Lower Sump identified on the Mine Hydrology Map appears to have filled with sediment, and the site is now populated by narrow-leaf cottonwoods and willows.

- Approved designs for this segment of the Carbon Junction Channel could not be located.

- The Mine Hydrology Map approved with TR-11 clearly shows that Carbon Junction was diverted just downstream of the lower slope of the North Pit, and that flow was to be restored to the original channel. Additionally, this map shows that the natural channel upstream of the diversion was affected by the disturbance of the North Pit.

- The Division had identified some of these issues last year. In an August 29, 2012 letter to Oakridge, the Division had requested that a Minor Revision(s) be submitted to address these issues. However, due to number and complexity of items now involved, a Technical Revision will be required, as set forth in the Abatement Steps below.

ENFORCEMENT ACTIONS/COMPLIANCE

Infraction Number: CV2013005

Inspection Date: April 30, 2013

Date Issued:

Primary Topic: Hydrologic Balance

Secondary Topic: None

Tertiary Topic: None

Description: Failure to Minimize Damage to the Prevailing Hydrologic Balance Within the Permit Area.

Abatement #: 1

Abatement Due Date: 7/1/2013

Submit a complete Technical Revision to the permit that accurately represents the as-built configuration of the Carbon Junction Permanent Diversion, with supporting design details per Rule 4.05.3. This revision shall also include an updated, accurate post-mining topography map for the entire permit area and a map delineating the Carbon Junction drainage area.

Abatement #: 2

Abatement Due Date: 7/1/2013

Abatement Description: Submit a complete Technical Revision to the permit that presents designs and plans for reestablishment of the Upper Carbon Junction Channel, including the un-named tributary that enters the drainage from the east, and reclamation and stabilization of the Carbon Junction Temporary Diversion and gully erosion. [The Upper Carbon Junction channel segment runs from the undisturbed channel upstream of the North Pit down to the beginning of the rip-rapped Carbon Junction Permanent Diversion, a distance of approximately 1900 feet.]

Abatement #: 3

Repair and stabilize the gully erosion that has formed in the Carbon Junction Temporary Diversion, according to the approved plan required by Abatement Step #2.

Abatement #: 4

Reestablish the Upper Carbon Junction Channel, including the un-named tributary that enters the drainage from the east, according to the approved plan required by Abatement Step #2.

Undisturbed Carbon Junction channel, downstream of permanent diversion

Permanent diversion channel at outlet of twin 66" CMPs

Number of Partial Inspection this Fiscal Year: 2
Number of Complete Inspections this Fiscal Year: 3

View upstream from remnant diversion berm; breach to CJ channel on L, diversion channel on R

Looking downstream through breached diversion berm

Number of Partial Inspection this Fiscal Year: 2
Number of Complete Inspections this Fiscal Year: 3