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State of Utah
DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Oil, Gas and Mining
JOHN R. BAZA
Division Director

Technical Analysis and Findings
Utah Coal Regulatory Program

PID: C0070019
TaskID: 4602
Mine Name: CENTENNIAL MINE
Title: MIDTERM PERMIT REVIEW

Summary

Findings:
The submitted subsidence monitoring data appears adequate to make the determination that no surface affects have occurred in the two years since the Mine was idled. The survey conducted by the Permittee was of a differential level type. If coal recovery is re-initiated in the future, the Division should re-evaluate the subsidence monitoring method used for the Aberdeen Mine. This re-evaluation might require the following;

- 1) A surface walkover of exposed geologic formations where they parallel head gate and tail gate entries;
- 2) Reporting of observed surface affects to the Division, as well as documentation of their location on a topo map of the mining area;
- 3) the development of a new subsidence model for the longwall panels being mined under deeper cover than what has been extracted to date (prior to May 2007).
- 4) A re-evaluation of pillar sizes where main entries must be developed under deeper cover.

Deficiencies Details:

None

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Deficiencies Details:

None

schriste

General Contents

Identification of Interest

Analysis:

The Centennial Mine MRP, Appendix 1, Part 1, Ownership and Control was reviewed to ensure that it is current and correct as compared to the information found in the Applicant Violator System (AVS).

Murray Energy Holding Company is owner of Murray Energy Corporation which owns UtahAmerican Energy, Inc., 100% owner of Andalex Resources, Inc. Andalex Resources, Inc. is the operator of the Centennial Mine located in Carbon County, Utah.

There were several anomalies found within the Murray Energy Corporation ownership and control contained in Section 3 of the MRP. The anomalies must be addressed in accordance with R645-301-112.330.

The Chapter 1 Ownership and Control information in the Centennial MRP was also reviewed.

Deficiencies Details:

R645-301-112.220. David Hibbs is listed on page 1-6 of Chapter 1 of the MRP. It is suggested that the Operator update page 1-6 to specify Jay Marshall as resident agent, as he has been the acting resident agent for the Centennial Mine.

R645-301-112.300. Some of the information in the current MRP does not match the information found in the OSM/AVS database. The following deficiencies must be addressed:

The AVS includes the following information for MURRAY ENERGY CORPORATION (#152552). Please address these discrepancies by either correcting the information in the MRP or by providing a Secretary's Certificate to correct the AVS.

MURRAY ENERGY CORPORATION

Michael McKown, Senior Vice President, 8/15/2012

B Cornelius, Senior Vice President, 8/15/2012

John Forrelli, Senior Vice President, 11/1/2010

Robert Moore, Exec Vice President, Chief Financial Officer, Chief Operations Officer, 8/15/2012

Paul Piccolini, Vice President, 1/4/2014

Robert Murray, Vice President, 8/15/2012

Jason Witt, Assistant Secretary, 4/30/2013

Michael Carey, Vice President, 6/1/2012

Ryan Murray, Vice President, 9/11/2007

Roy Heidelberg, Vice President, 9/11/2007

sssteab

Violation Information

Analysis:

An OSM Applicant Violator System Evaluation Report was generated on June 25, 2014. 18 violations were retrieved in the system. A narrative was requested. The narrative stated that all violations are under the Island Creek settlement. Linking entities are Robert Eugene Murray, etc.

Appendix 1, Part 3 of the Mining Reclamation Plan contains the Violation History Information dated November 25, 2009.

Deficiencies Details:

R645-301-113 The operator should update Appendix 1, Part 3 of the Mining Reclamation Plan in order to contain a listing of all violations received within the last three years by Andalex and affiliated companies.

sssteab

Operation Plan

Mining Operations and Facilities

Analysis:

On July 7th and 8th the Division conducted a site visit at the Centennial mine and associated GVH sites in conjunction with the Mid-term review of this facility. Mine personnel were represented by Jay Marshall and Karen Odenhal, DOGM personnel were represented by Steve Christensen, Priscilla Burtonn, Pete Hess and Joe Helfrich.

The mine is currently inactive, (non-producing), and is basically used as a storage and maintenance facility. The group

began the site visit above the upper most storage pad and worked their way down to the guard shack and mine office. This took the balance of the day and a portion of the next morning. The remainder of the next day was spent visiting the GVH drill sites.

During the tour of the main facility it became apparent that ditches, culverts and berms had not been subject to routine maintenance in quite some time as ditches were full of sediment and debris, culverts were plugged, berms were breached and outcrops of pads had been subject to piping and erosion. Drainage control patterns were somewhat difficult to discern as corresponding maps did not seem to accurately portray the site conditions. A more detailed description of the drainage control structures and site conditions are included in the hydrology sections of this review.

Commitments summarized in the MRP include:

SEALING OF WELLS Permanent closure of wells using measures required by DOGM to prevent access prevent contamination of groundwater. When no longer needed. Wells are in use until no longer needed. Report status when mining is terminated or wells no longer needed. Chapter 6, page 6-10. The status of plugging and site reclamation is included in the Contemporaneous reclamation section of this document.

SUBSTITUTE TOPSOIL TESTING To confirm the suitability of substitute topsoil prior to reclamation Within five years prior to reclamation Future commitment Proposed substitute topsoil that is designated by reclamation area in Summary table 2-8 and further described in appendix 5-1 will be re-tested in the final five years of operations according to Table 5O-1 and testing will include Total Petroleum Hydrocarbons by EPA Methods 8015 and 418.1. MRP, Chapter 2, Section R645-301-241 IC 11/22/13: added per Priscilla's email request.

SAGE GROUSE NEST SITE EVALUATION Prior to development of the well site a Sage Grouse nest site evaluation will be conducted by a knowledgeable wildlife biologist. If nests are located an alternative drill site location will be determined Based on the need to drill additional de-gas wells. Surveys will be required in future if new de-gas wells are proposed in addition to those drilled prior to 8/1/2014. Appendix X, chapter 3, page 3-5, paragraph 1.

RECLAMATION ENHANCEMENT MEASURES Andalex will consult with the Division of Wildlife Resources, at the time of final reclamation, to determine exactly what reclamation designs, planting arrangements, and artificial structures would best enhance wildlife habitat. once Will be required prior to reclamation Report reclamation plans to division for incorporation into MRP Volume 1 chapter 3 page 3-23 paragraph 1. No action is required at this time, (7/28/2014), as the mine is in temporary cessation.

FIRE SUPPRESSION Andalex will commit to prevent, control and suppress range forest and coal fires within the permit area. When fires occur Ongoing Report if range fires have occurred on the permit area during the year. Volume 1 chapter 3 page 3-10 paragraph 5.

WATER MONITORING Reactivate water monitoring sample point locations prior to resuming mining activity. Sampling locations include: 8-1, 17-1, 17-2,18-2, S25-1, 25-2, B263, B261, B362, B351, 352,31-1, 7-1,12-1,AC-1, SC-1. Quarterly Prior to any upstart of mining Quarterly submission to the Division database. Division Final Approval Letter dated Mar 26, 2009 Task #2671 New Commitment

WATER MONITORING If ever there is a discharge at any UPDES location, field measurements of flow, air and water temperature, pH and EC will be made, as well as flow. Observe throughout the year Ongoing Quarterly submission to the Division database. Volume 1, Chapter 7, Page 7-7. This commitment is redundant in that sampling these parameters for a discharge is part of the UPDES permit protocol already.

SUBSIDENCE MONITORING Determine subsidence effects. Annually Ongoing Provide annual subsidence monitoring data and report of impacts in Annual Report. Vol. 1, Chapter 5, Pg. 5-150a, pg. 5-151

TAKE PERMITS Andalex is committed to acquiring take permits prior to longwall mining in areas where golden eagle nests have been identified As needed None required to date NA Volume 1 chapter 3 page 3-11 paragraph 1

WATER MONITORING Permittee commits to monitoring surface water stations with an emphasis on storm events. Every effort will be made to collect samples during runoff on a quarterly basis, should runoff occur. Observe throughout the year Ongoing Included in quarterly reports to Division database. Volume 1, Chapter 7, Page 7-6. This commitment is redundant in that there is already an established water monitoring protocol outlined in Chapter 7, Page 7-2 thru 7-8.

SUBSIDENCE MITIGATION Andalex has committed to compensation of livestock lost as a result of subsidence from

underground mining activities. Andalex commits to mitigate all subsidence related damage to renewable resources including, but not limited to water, grazing and wildlife habitat including raptor nests. Annually Cessation, no subsidence occurring Identify if any compensation was paid out or if mitigation was completed in annual report. Volume 1 chapter 3 page 3-11, paragraph 2, pg 3-19 paragraph 1.

TEST PLOTS Determine reclamation success. Andalex will sample beginning in 1993 years 1, 2, 5, 9, and 10. Data will be submitted starting with the 93' annual report. See objectives Completed Annual olume 1 chapter 3 page 3-18 paragraph 1.

RAPTOR SURVEY Identify if new raptor nest are in the area. Annually or as long as the gob vent wells are in operation Ongoing Annual Appendix X, chapter 3, page 3-4, paragraph 6 Raptor Commitment No Longer Applicable. Amendment to discontinue raptor surveys was approved on 6/9/2009.

GAS VENT HOLE STATUS UPDATE To keep the Division apprised of the status of all wells drilled above the Aberdeen mine including any future venting of existing wells and / or development of non GVH pads and to ensure that reclamation of each disturbance is accomplished in a timely manner once the wells are no longer in use. Provide a spreadsheet showing the progress of reclamation at each drill pad, indicating the date of interim or final grading; the date of seeding and mulching; stating whether the well is still producing; stating whether there is Blue Tip equipment (solar arrays, valves) still on site. Please comment on the status of plugging wells and removal of Blue Tip Energy equipment from these sites. The landowner requested that final reclamation include construction of water bars on the road down to GVH 13. Please comment on the status of water bar construction. App. X Section 341.200 states that wood fiber mulch is to be applied on top of the seed with hydroseeding equipment at the rate of 2,000 lbs/ac and anchored with a tackifier. Where work differed from this plan, please comment on the type and rate of mulch applied to each site. Roads constructed to GVH 4, GVH 5A, GVH 6, GVh 8, GVH 8A, GVH 11, GVH 12, GVH 16, and GVH 17 will be reclaimed as shown on Figure 1-1. Please comment on the status of road reclamation. Annually beginning in 2010 Ongoing Annual report item Appendix X, page 1-2 Bolded comments added on 10/28/13 by IC as per PBB's comments in 2012 annual report.

jhelfric

Coal Recovery

Analysis:

COAL RECOVERY

Regulatory Reference: 30 CFR Section 817.59; R645-301-522

Analysis:

As is previously noted, the Centennial Project / Aberdeen Mine was placed into temporary cessation status on May 11, 2007. The Pinnacle and the Apex Mines are sealed, and awaiting backfilling and re-grading of the outcrop exposure.

The Permittee was conducting longwall secondary extraction at the time of closure. No changes in method are anticipated at this time, assuming that the Mine re-opens in the future.

The Permittee is currently preparing a lease addition for the Kenilwork lease, which will add, if approved, 1,760 acres of Federal coal reserves to the Centennial Project permit area.

phess

Subsidence Control Plan Performance STD

Analysis:

SUBSIDENCE MITIGATION

Analysis:

Andalex Resources has committed to replace or compensate the owner for any lost livestock grazing above the underground mining areas. No losses have been reported to the Division in 2013.

Findings:

The Permittee is currently meeting the requirements of this permit condition.

phess

Fish and Wildlife Protection and Enhancement Plan

Analysis:

FIRE SUPPRESSION

Analysis:

The Centennial Project contains a permit condition to prevent, control and suppress range / forest and coal fires within the permit area. Range fires did occur in close proximity to several of the methane GVH well sites in 2013. All fires were suppressed, and no mine emergencies occurred at that time. To date, no fires have been reported in the Book Cliffs area.

Findings:

The Permittee is meeting the requirements of this permit condition.

phess

Hydrologic General

Analysis:

R645-301-512, -731.272: The Permittee must revise Plates 6, "As-Constructed Surface Facilities" and Plate 8, "Support Facilities Surface Area Drainage" to clearly and accurately reflect the drainage network at the mine-site. The narrative/text sections of the MRP that describe the surface drainage network must be revised as well.

During the field inspection conducted on July 7th and 8th, several instances were identified where Plates 6 and 8 did not accurately/clearly identify components of the mine-sites drainage network. For example:

- I. Based on observations during the field inspection, Plate 8 does not appear to accurately reflect the alignment and length of culverts CD-9, CD-10 and CD-11.
- II. Plate 8, Support Facilities Surface Area Drainage, does not depict Catch Basin B.
- III. A 24" culvert located on the east side of the primary haul road (PR-1) was observed. The culvert is located approximately 300'-500' north of the guard shack. The culvert does not appear on either Plate 6 or Plate 8.

Deficiencies Details:

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schriste

Hydrologic Diversion General

Analysis:

The mid-term review identified a deficiency relative to the diversion information provided in the MRP. Drainage diversion DD-3 is the main diversion for the primary haul road (PR-1) at the site.

Figure IV-3, Typical Disturbed Diversion Ditch, contains a footnote (See footnote 2) that indicates that this typical cross-section applies to "all disturbed diversion ditches except DD-3, which has a one-foot bottom width." The only design drawing that depicts a diversion with a flat bottom channel is Figure IV-3A, Typical Section for Trapezoidal Ditch. Figure IV-3A states that "minimum depth and/or area will be maintained to dimensions shown on Table IV-B". However; Table IV-B is not contained within the approved MRP nor found on the list of tables found on page lvii of the Table of Contents.

Deficiencies Details:

: R645-301-731, -732.300, -741 and -742.300: The Permittee must update the MRP with Table IV-B (in the body of the MRP as well as the table of contents) and provide clarification that the typical cross-section for diversion DD-3 is Figure IV-3A.

Figure IV-3, Typical Disturbed Diversion Ditch, contains a footnote (See footnote 2) that indicates that this typical cross-section applies to "all disturbed diversion ditches except DD-3, which has a one-foot bottom width." The only design drawing that depicts a diversion with a flat bottom channel is Figure IV-3A, Typical Section for Trapezoidal Ditch. Figure IV-3A states that "minimum depth and/or area will be maintained to dimensions shown on Table IV-B" However; Table IV-B is not contained within the approved MRP nor found on the list of tables found on page Ivii of the Table of Contents.

schriste

Hydrologic Sediment Control Measures

Analysis:

The Division initiated a midterm review of the Centennial Mine mining and reclamation plan (MRP) on June 2nd, 2014. As part of that review, the MRP was evaluated to ensure that commitments were established for application of the best technology currently available (BTCA) to prevent additional contributions of suspended solids to stream flows outside the Permit area. Additionally, a field inspection was conducted on July 7th and 8th to evaluate the effectiveness of the various sediment control measures implemented at the mine-site.

The approved drainage design for the site consists of a series of disturbed and undisturbed diversions and culverts to control storm-water runoff. The disturbed drainage network routes storm-water to a series of four sedimentation ponds that prevent additional contributions of suspended solids from flowing outside of the permit area. At the time of the inspection, evidence of off-site impacts, as a result of suspended solids leaving the permit area, was not observed.

Although no evidence was observed of additional suspended solids outside of the permit area, numerous maintenance/repair issues were identified with various components of the mine-sites drainage network. The issues are documented in Inspection Report #3907. The assigned inspector will follow up and insure that the action items detailed in Inspection Report #3907 are completed.

schriste

Hydrologic Siltation Sedimentation

Analysis:

The Centennial Mine utilizes a series of sediment ponds and catch-basins to prevent additional contributions of suspended solids from flowing off the permit area. At the time of the inspection, the sediment ponds and catch basins were observed to be in stable condition. No evidence of embankment or spillway instability was noted.

schriste

Reclamation Plan

Mine Openings

Analysis:

SEALING OF WELLS

Analysis:

Two gob vent wells at Centennial Project have been sealed, GVH-1 and GVH-5. The following GVH's remain open, although some are venting, or will be allowed to vent in the future; GVH-3, GVH-4, GVH-6, GVH- 7, GVH-8, GVH-8A, GVH-9, GVH-11, GVH-12, GVH-13, GVH-14.

The Permittee has agreed to plug GVH's 12, 13, and 14 in the last quarter of 2014 or the second quarter of 2015 and is preparing a plugging plan for submittal to the BLM (as of June 27, 2014).

Three water wells at the Centennial Project surface facilities area remain open to supply water for culinary needs, should the Aberdeen Mine resume operation.

GAS VENT HOLE STATUS UPDATE

Analysis:

The Centennial Project mining and reclamation plan contains a permit condition requiring the Permittee to update the Division on the status of the reclamation work for each of the gas vent holes (GVH's) drilled above the Aberdeen Project to enhance the Mine's ventilation bleeder system.

Several wells are being used to collect methane for commercial sale through Blue Tip Operating (formerly OSO) and the well pad areas have been reduced in size. Only well sites GVH 1 and 5 have been plugged and totally reclaimed.

After reviewing the 2013 Annual Report containing the GVH update report, the Division determined the GVH's 12, 13, and 14 had not been mined past in Panel 10. Therefore, no methane can be extracted for commercial sale from these three wells. The Division met with Mr. David Hibbs, President of UAE and Mr. Jay Marshall, Resident Agent for the Centennial Project on May 21, 2014 to discuss the future of these wells. The Division told the Permittee that the wells needed to be plugged as there appeared to be no future need for them (the coal lease associated with the three wells was relinquished under Task ID # 4503 on March 11, 2014). UAE has determined that the wells will be plugged and as of the date of this document (June 23, 2014), a plugging plan is being prepared for submittal to the U. S. D. O. I. / Bureau of Land Management / Price Field Office.

There is approximately 6, 550 feet of access road going to the different well sites associated with the Centennial GVH wells.

The Permittee did not complete any reclamation on these roads in 2013.

The access road to well site GVH- 13 has a step section of road which needs to have water bars installed to complete the reclamation (as requested by the surface landowner) . This road was not reclaimed in 2013, as noted above, and therefore no water bars were constructed.

Findings:

The Permittee met the requirements for reporting on the status of the numerous gob vent hole sites in the 2013 Annual Report. A great deal of reclamation work (re-grading, topsoil placement, and seeding) was accomplished in 2013. Updates on the status of these wells will continue to be reported in future Annual Reports.

Findings:

The Permittee is currently meeting the requirements of this permit condition.

phess

Contemporaneous Reclamation General

Analysis:

Deficiencies Details:

R645-301-121.100, Appendix X, Table 1-2 itemizes acres of original and existing degas well disturbance, reflecting the reduced disturbance due to contemporaneous reclamation. This table should be updated to reflect the work that has been done recently.

R645-301-121.100, Reclamation techniques described in Chapter 2 and 3 should be updated to reflect the used of 1 Ton/acre hay mulch rather than the wood fiber mulch stated.

R645-301-244.200 and R645-301-357.331, Grazing has severely impacted the revegetation of the contemporaneous degas well pads. The plan describes fencing of reclaimed well sites during operations and until bond release (Chap. 3, Section 333.300 and Section 341). Consequently, the Permittee must install grazing exclusion fences around all the reclaimed well pads.

pburton

Contemporaneous Reclamation General

Analysis:

At site 5A: topsoil was graded and the site was mulched and seeded last fall (a valve remains on the site). The only vegetation noted on site 5A was knotweed, polygonum arenastrum. Site 6 was graded around the remaining equipment , topsoiled and seeded last fall,. This spring the cheat grass on the interim reclaimed slope was sprayed with Plateau. The result was 100% kill of cheat grass and all grasses. The interim slope should be reseeded in the fall of 2014. Vegetation growth at site 6 was sparse and a little weedy, which was similar to the situation found at all sites seeded last fall. Sites 3,

7, 7A, 4, 8, 8A, 9, 15 and 16 were heavily grazed so that no tillers were found growing from the crown of the plant. The effect on the revegetated sites was devastating in terms of reduction in soil cover, soil temperature and grass regeneration. Grazing must not be allowed to persist at reclaimed sites until plants are well established and can handle the grazing pressure. The permittee needs to fence these sites in accordance with Section 333.300 page 3-10 of Appendix X, Protective Measures, Refer to Section 333.300 of the approved M&RP, and Section 333 above. All well sites will be fenced and road construction will be minimized by utilizing existing roads where possible.

The topsoil for sites 1 and 5 were redistributed the seed mix in table 3-3 along with 5#'s per acre of triticale were applied in 2009. The majority of the grasses and forbs and shrubs mostly one or two species of sage brush listed in the mix were noted during this site visit. The following sites, 5a, 6, 11, 12, 13, 14, 7, 7a, 3, 4, 8a, 16 and 17 received the same treatment in 2013. Site 15 received the same treatment, (topsoil redistribution and seeding), in 2012. Site 9 is a collection point for the wells, it is active and will be the last site to be reclaimed.

With regard to the ten year reclamation liability period the bond clock for sites, (1 & 5) could possibly begin in 2009. However, there is no monitoring data for these sites. The remaining sites would need to be adequately plugged, risers and collars removed, compacted areas ripped and seeded before the liability period could begin.

RECLAMATION SUCCESS (this is a commitment in the MRP) The permittee needs to address the following deficiency noted in this commitment; Reclaimed areas will be monitored monthly for the first two growing seasons following reclamation. Volume 1 chapter 3 page 3-17 paragraph 5. This commitment was from the original MRP under the heading Measures to Determine Success. The GVH sites were later permitted separately under Appendix X. The Protective Measures section in Appendix X (p. 3-10) refers to Section 333.300 of the MRP, but the correct citation should be MRP Section 301-331 p. 3-17, Measures to Determine Success Therefore the monitoring of the Gob Vent holes should take place at least twice in a growing season. At an average elevation of 8400' the number of frost free days would average about 60. Therefore monitoring during the growing season at this elevation should occur in June and July. Please make the correction in Appendix X of the MRP.

Deficiencies Details:

The information in the MRP is not adequate to meet the requirements of these sections of the regulations. Prior to approval the following information is required in accordance with R645-301-330 and 340 et. sec.. It is suggested that the permittee meet with DOGM staff to:

Develop and implement a plan to fence the the GVH sites in accordance with Section 333.300, page 3-10 of Appendix X, Protective Measures, Refer to Section 333.300 of the approved M&RP, and Section 333 above. All well sites will be fenced and road construction will be minimized by utilizing existing roads where possible.

Discuss when the bond clock and vegetation monitoring will commence for sites 1 and 5, (Reclamation was completed in 2009. However no monitoring has been initiated to date), and the remaining GVH sites. Appendix X of the approved MRP includes a two phased approach to reclaiming the sites, (contemporaneous and final), the remaining sites would need to be adequately plugged, risers and collars removed and compacted areas ripped and seeded before the liability period could begin.

Discuss the possible need of a weed control protocol for the sites reclaimed in 2013 that showed a dominance of knotweed.

RECLAMATION SUCCESS The permittee needs to address the following deficiency noted in this commitment; Reclaimed areas will be monitored monthly for the first two growing seasons following reclamation. Volume 1 chapter 3 page 3-17 paragraph 5. This commitment was from the original MRP under the heading Measures to Determine Success. The GVH sites were later permitted separately under Appendix X. The Protective Measures section in Appendix X (p. 3-10) refers to Section 333.300 of the MRP, but the correct citation should be MRP Section 301-331 p. 3-17, Measures to Determine Success Therefore the monitoring of the Gob Vent holes should take place at least twice in a growing season. At an average elevation of 8400' the number of frost free days would average about 60. Therefore monitoring during the growing season at this elevation should occur in June and July. Please make the correction in Appendix X of the MRP.

jheltric

Bonding Determination of Amount

Analysis:

Deficiencies Details:

R645-301-830.140. Please provide updated information for estimated bonding costs with supporting calculations for the estimates. This includes updated unit costs (to be used to update bond calculation spreadsheets) and updated escalation factors. Updates should be provided using the 2013 data from R.S. Means Heavy Construction Cost data manual and the Caterpillar Handbook or other appropriate resources. The bonding summary sheet and corresponding bond calculation sheets need to be updated and appropriately escalated to 2019 dollars using Division's approved 1.9% and 5 year escalation.

jowen