



State of Utah
 DEPARTMENT OF NATURAL RESOURCES
 DIVISION OF OIL, GAS AND MINING

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December 29, 1999

TO: File

THRU: Pam Grubaugh-Littig, Permit Supervisor *agl*

FROM: Wayne H. Western, Reclamation Specialist III *WHW*

RE: Phase II Bond Release, Western States Minerals Corp., J.B. King Mine
ACT/015/002-BR99B, Folder # 2, Emery County, Utah

Summary:

The Division evaluated the request for bond release at the J. B. King mine. The topics covered in this memo are approximate original contours, backfilling and grading, and subsidence. The Division found that the Permittee met the minimum requirements of those reclamation activities and recommends that Phase II bond release be granted.

RECLAMATION PLAN

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Analysis:

The requirements for (AOC) approximate original contours are that the reclaimed topography blends into the surrounding area and that reclaimed drainage patterns complements the off site patterns. The Permittee met the AOC requirements by having the site was graded to it blend into the existing topography and have drainage patterns complement those in the surrounding areas. The edges of the reclaimed area were feathered into the surrounding area so no jumps occur in the topography.

Findings:

The Permittee met the minimum requirements of this section.

BACKFILLING AND GRADING

Analysis:

The backfilling and grading requirements have been met. The slopes are stable and meet the required safety factor and AOC requirements. All coal and coal mine waste has been properly disposed: covered with 4 feet of material. Some coal material was exposed by erosion. The amount of exposed coal was small and the Division does not consider the material to be a hazard to humans or the environment.

The area was monitored for subsidence from 1985 to 1997. Subsidence monitoring ceased because surface movement could no longer be detected. After subsidence monitoring ceased surface cracks appeared above the area where full extraction mining occurred. The following is a chronology of the surface subsidence monitoring program.

- MRP UMC 784.20 - The Permittee states that no existing or planned structures occur in the subsidence zone. In the permit boundaries no aquifers or recharge areas are above the coal. The only renewal resource in the subsidence zone is grazing.

Drill hole data and on site inspection show that no aquifers exist between the surface and the I seam. The depth from the surface to the I seam is 120 feet.

A 75 ft. barrier pillar will be maintained around the permit boundary to prevent subsidence from occurring outside the permit area. A 100 ft. barrier pillar will be maintained around the coal outcrop of the I seam.

The Permittee calculated that the surface would drop between 5 ft. to 8 ft. The most likely amount of subsidence is 7 ft.

- Amendment approved June 28, 1985 (UMC 817.124) - Surface subsidence took place above the mined-out areas. Tension cracks formed in the subsidence zone. To date the ground subsided 7 feet. Comparisons between the observed and the predicated subsidence amount show that most of the expected subsidence has occurred. Surface damage is limited to surface cracks which self heal after 3 years.
- Annual report 1996 - The Division reviewed the subsidence monitoring data for the 1996 annual report. The Division found that no significant surface movement

or damage had occurred since 1983.

- April 28, 1997 - The Permittee submitted an application to cease subsidence monitoring.
- May 1997 - The Division approved and incorporated an amendment to cease subsidence monitoring at the J.B. King Mine. The Division and the Permittee analyzed the subsidence data and concluded that significant surface movement and damage had not occurred since 1984. Minor amounts of subsidence were noticed between 1988 and 1990 after a 5.0 magnitude earthquake occurred in the area in July 1988.

The Division and the Permittee continued to monitor subsidence until 1997. The Division and the Permittee concluded that the area has stabilized and the no material damage or impacts to groundwater had occurred. The groundwater table is approximately 335 ft. below the ground surface. Based on the depth to groundwater and the surface drainage no detrimental impacts to the groundwater are expected.

- August 20, 1998 - From inspection report "Walked through the subsidence area on top and observed several subsidence cracks. Most of the cracks are along the northern and eastern edges of the subsidence area. With recent rains some cracks have been exposed and are more prominent from past observations. The rains have washed sand into the cracks and have exposed the edges of sandstone slabs that have separated during subsidence. The cracks in the sandstone range in width from 3 to 4 inches, are up to several feet long, and are sometimes many feet deep."
- May 22, 1998 - From inspection report "Walked through the subsidence area on top and observed several subsidence cracks."
- September 23, 1998 - From inspection report "The subsidence cracks have worsened considerably since the last inspection, especially the north-south trending cracks along the eastern edge of the subsidence area. Sand and soil continues to erode down into the cracks furthering the exposure. Some cracks are now several tens of feet long. Personal injury to an unwary person or animal is a possibility. The cracks need to be repaired and filled accordingly. The possibility of injecting foam down into the crack was discussed with Buzz Gerrick on August 8, 1998."
- October 21, 1998 - From inspection report "Walked through the subsidence area

on top and observed several subsidence cracks.”

- June 25, 1999 - From the inspection report “Three subsidence fist-size holes have reformed in the upper subsidence area. All other cracks and holes have healed over nicely.”
- September 28, 1999 - From the inspection report “The subsidence fist-sized holes that reformed this summer in the upper subsidence area have not increased in size. There are not additional signs of other cracks and holes.”
- November 16, 1999 - Email to and from Susan White.

>>> Wayne Western 11/16/99 2:42:08 PM >>>

Did the Permittee ever backfill the subsidence cracks or did they self heal?

Numerous times. Timbers, sand and just recently foam. They heal for a short time and then reappear. I'll show you photos of the cracks from last week when I get them returned.

- November 18, 1999 - Conversation Wayne Western and Susan White. Susan showed Wayne pictures of the holes. The holes are 6 inches in diameter and have not grown since the last inspection. Susan does not believe that the holes or cracks are significant hazards and that bond release should proceed.

The Division does not know why cracks are forming. The Divisions analyzed the data from the subsidence monitoring program and determined that subsidence had been completed in the full extraction areas. Possible reasons for the cracks are piping caused by existing fractures or areas where coal was partially extracted are subsiding. Since subsidence monitoring ceased in 1997 the Division has no way of determining if cracks are caused by new subsidence.

The Division does not bond for potential subsidence damage. However, the Division does require a Permittee to post bond for any subsidence damage to land, structures, facilities or to water supplies protected under R645-301-731.530 not repaired within 90 days unless an extension is granted (R645-301-525.550). The Division found that water supplies, structures or facilities do not exist in the permit area. The only potential subsidence item that the Division could require the Permittee to bond for is to repair subsidence cracks.

Surface cracks continue to form at the site. The surface cracks poses a trip and fall hazards that are similar to existing items. The cracks may not prevent the post mining land use, grazing, from being implemented. If the landowner (State Institutional Trusts Lands) finds that the cracks do not pose a hazard to humans or animals then the Division should continue with bond release. Should the landowner find that the cracks damage the land then the Division must

further investigate the matter.

Surface cracks usually self heal in a few years. The Division assumes that the surface cracks in the permit area will eventually self heal. Unless the landowner requests that the surface cracks be repaired, the Division should not take further action.

Findings:

The Permittee met the minimum requirements of this section.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Analysis:

All roads in the permit area have either been reclaimed or were retained as part of the post mining land use. The roads in the permit area were constructed to be stable and control erosion.

Findings:

The Permittee met the minimum requirements of this section.

RECOMMENDATIONS:

The Division should grant Phase II bond release.

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