m/017/001

State of Utah

Department of Natural Resources

Division of Oil, Gas & Mining

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February 4, 2004

TO: Minerals File

FROM: Paul Baker, Senior Reclamation Biologist

RE: Site Inspection; U. S. Energy, Frank M and Tony M Mines, M/017/001 and S/017/017, Garfield County, Utah

Date of Inspection: January 29, 2004
Time of Inspection: 8:30 a.m. to 1:00 p.m.
Conditions: Mostly clear, 40's
Participants: Fred Craft (operator's representative), Jim Butt (reclamation contractor), Will Stokes (SITLA), Buzz Rakow (BLM), Paul Baker (DOGM)

**Purpose of Inspection:**

The operator has nearly completed reclamation, and we wanted to ensure that grading and seedbed preparation were adequate before equipment and personnel were gone.

**Observations**:

As far as I am aware, we looked at every area of the mine disturbance, including all the vent holes, the impoundment, the cut created for the pipeline leading to the impoundment, ore and waste piles, and adits. In every area the operator said had been seeded, I was able to find seed. Distribution of the seed was sometimes a little uneven, but this may promote landscape and vegetation diversity.

Throughout the mine site, the reclamation contractor used a unique device to prepare the surface. Rather than simply ripping the surface, "wings" were welded to the upper part of the ripper shanks. This was done so the disturbed areas could be ripped deeply while furrowing the surface at the same time. This technique has created a rough surface that I believe will hold seed and water well.

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The road leading to the impoundment had been ripped and seeded. The dam was breached, and large rocks from the inside of the dam were placed on the first part of the resulting channel through the dam (Photo 1). A more traditional riprapped channel was created where this channel begins to drop more steeply (Photo 2).

The pond area itself (Photo 3) had not held appreciable water in several years. There was no vegetation in the pond, but there were tamarisks growing around the edges. The watershed that drains into the pond is about 58 acres.

During operations, water was piped from the mine to the pond through a pipeline laid in a cut on the clay slopes above the impoundment (Photo 4). The operator did not backfill this cut and does not intend to do so. We hiked up to this area to view it more closely, and although the cut looks large from below, a lot of material has sloughed into it (Photo 5). There is not much of a cut left, and over time, it will probably disappear altogether.

All of the vent holes were reclaimed in a similar manner, although there was some variation. The same technique was used at the Velvet Mine in San Juan county. I did not actually see how the holes were capped, but Mr. Butt had documented the process in photographs. He showed us pictures of each site. A plate was first welded to the casing in the shaft. Next, a collar was placed around the top of the shaft. This collar has a diameter a few feet larger than the shaft and was intended to hold the concrete. Reinforcing steel was then placed inside the collar. In all cases but one, the reinforcing steel included rebar and small I-beams. Rebar alone was used at one of the holes with a smaller diameter (six inches?). Concrete was then poured into each of these shafts, and the whole thing was covered with about four feet of soil. These sites were all graded so it is essentially impossible to tell anything was there (Photo 6). The access roads and the pads were all roughened to promote water retention, infiltration, and plant growth (Photo 7). The operator has blocked most of the reclaimed roads with large rocks.

We next went to the emergency escape. Part of this area had not been ripped, and Mr. Butt said he would bring equipment back to rip it. The short access road had banks on either side (Photo 8), and the way the site was configured, most runoff from the pad would be channeled to the road where there

could be some erosion problems. During an inspection in November, the operator was advised to put a berm at the top of the road to direct water to the side and away from the road. This had been done (Photo 9).

Ore and waste in the main part of the mine had been graded, but there was still some surface preparation and seeding that needed to be done. Views of some of these areas are in Photos 10 through 13. Except for the main waste area shown in Photos 10 and 11, these areas were simply graded and roughened in preparation for seeding.

The waste pile in front of the main mine area (Photos 10 and 11) was graded so there are three terraces. The uppermost of these was the mine pad, and it was being ripped during the inspection. Runoff from above the mine would be caught on this terrace and channeled toward the south. Mr. Craft indicated water would then go into some abandoned portals. The other terraces are designed to decrease the slope length, and one takes water to the north and the other to the south.

There is an area below the main waste area that had not yet been ripped; the operator had dug a hole where miscellaneous debris found on the site was being buried at least four feet deep. There was nothing hazardous that I saw; it consisted of things like electrical wire and pieces of metal found in the waste pile.

On the south side of the main mine area is an access road with a culvert that will remain. During last November's inspection, the Division asked the operator to put some rock or riprap material on the downstream side of the culvert to reduce head cutting. This has been done (Photo 16). In this same area, there was a powder magazine that has been reclaimed.

The operator had test plots that I understand were marked with metal posts. These posts have been removed. The test plots are shown in Photos 14 and 15.

**Conclusions and Recommendations:**

Considering the size of the watershed above the pond, and also considering the amount of water the pond would hold even with the dam being

breached, I believe it is unlikely the pond will discharge in the foreseeable future. If discharge was likely, I would be concerned about the lack of graded material in the channel through the breach. If there was flow, it would tend to erode the clay around the large rocks.

There is very little vegetation on the clay slopes around the pond, so from a vegetation standpoint, I am not concerned about the lack of vegetation in the bottom of the pond. The Division should, however, obtain copies of analyses of the pond sediment and ensure it is not potentially deleterious.

Material used as soil varies from very sandy to somewhat clayey. Probably the least desirable substitute soil is in the waste pile at the main mine area. It appears to be a clayey sand or sandy clay. The test plots shown in Photos 14 and 15 are probably a good representation of the potential vegetation cover in the area, and it may be possible to use them as a success standard.

I am pleased with the work that has been done and feel the portion of the bond that covers backfilling and grading can be released. The Division will need to retain adequate bond to revegetate the site. Mr. Stokes and Mr. Rakow agreed the bond could be reduced, but the Division should obtain written concurrence if possible. Because this area does not have a lot of precipitation, revegetation may be difficult, but the operator has maximized the chances for revegetation success.

PBB:jb
cc: Will Stokes, SITLA
Fred Craft, U. S. Energy
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**ATTACHMENT**
**Photographs**
**M/017/001 and S/017/017, Frank M and Tony M Mines, U. S. Energy**
Inspection Dated: January 29, 2004; Report Dated: February 4, 2004

**Photo 1. The breach in the dam for the mine water impoundment.**

**Photo 3. The mine water impoundment. The trees near the old water line are tamarisks.**

**Photo 2. Channel leading down from the breach shown in Photo 1.**

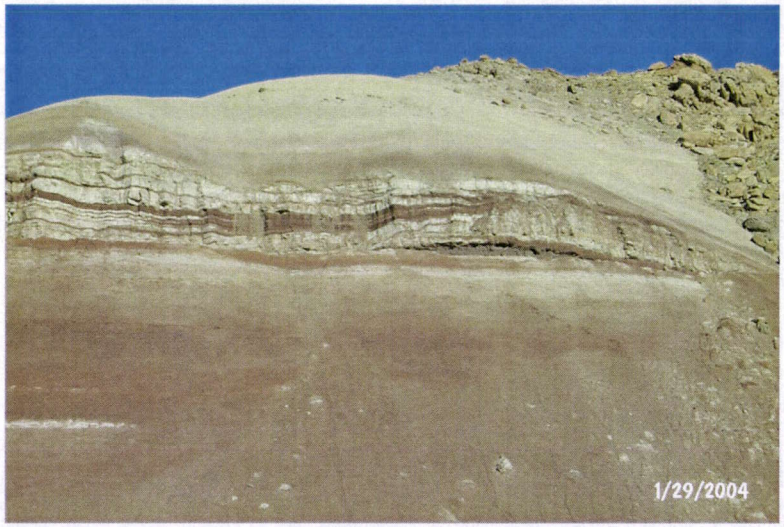


**Photo 4. The cut on the hill above the mine water impoundment. The water line used to be in this cut.**

**Photo 5. Cut where the water line used to be. Note how the cut is healing.**

**Photo 6. The mound near the center of the photograph is the site of one of the vent holes.**

**Photo 7. Road leading to one of the vent holes. Note how the road was ripped and roughened, and also note the large rocks in the roadway.**

**Photo 8. Road leading to the escapeway.**

**Photo 9. Near the center of this picture is a berm that directs water away from the road leading to the escapeway.**

**Photo 11. Another view of the waste pile at the main mine area.**

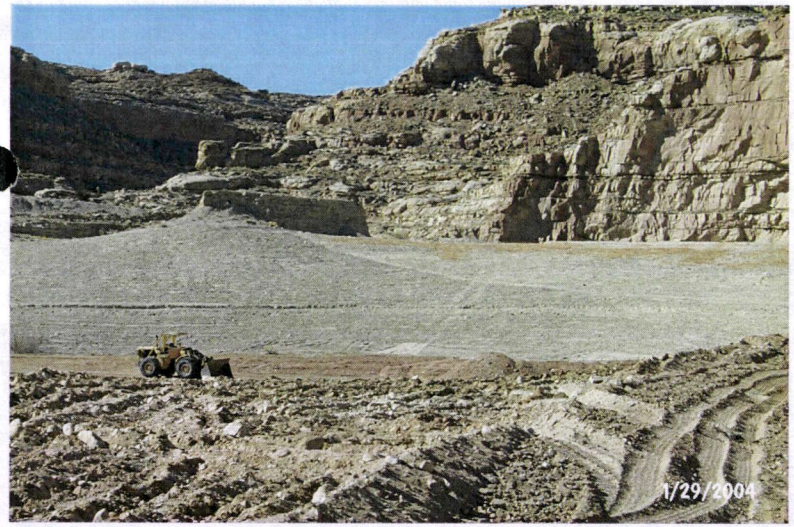


**Photo 10. Waste pile at the main mine area. Note the terraces.**

**Photo 12. Two ore piles up canyon from the main mine area.**

**Photo 13. An ore pile down canyon from the main mine area. Note also the abandoned adits and waste piles in the canyon wall above the ore pile.**

**Photo 14. One of the revegetation test plots.**

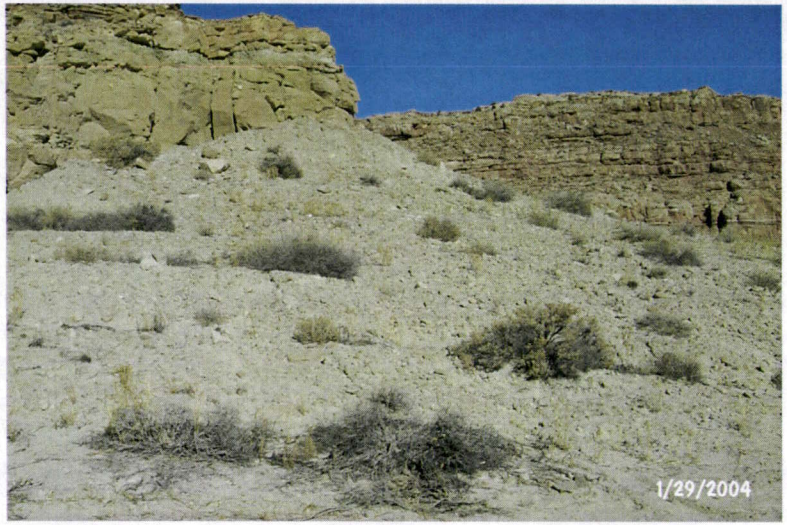


**Photo 15. Another revegetation test plot.**

**Photo 16. Rock placed on the downstream side of a culvert that will not be removed.**