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

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February 4, 2002

TO: Internal File

THRU: Pamela Grubaugh-Littig, Permit Supervisor *PHH*

FROM: Peter Hess, Reclamation Specialist III *SM - from PHH*

RE: Citizen Complaint Concerns, Potential for Adverse Impacts from Surface Blasting, Lodestar Energy, Inc., Mountain Operations, White Oak/Whiskey Creek Surface Mine, C/007/001

On January 25, 2002 at approximately 1:50 PM, a verbal citizen complaint was filed by Mr. Steve Tanner with the Division relative to the fact that the permittee operating the Whiskey Creek surface mine in Carbon County, Utah, was operating without having a reclamation bond in place. Mr. Tanner also contended that without an adequate reclamation bond in place, that the permittee does not have a permit to mine, in reference to R645-301-812.700. The permittee is Lodestar Energy, Inc.

On January 28, 2002, at 8 AM, Mr. Tanner filed a formal written complaint at the Division's Price Field Office with Peter Hess, which not only addressed the bond issue, but which expressed concern over several secondary issues.

One of Mr. Tanner's concerns was for the potential for affect that the surface blasting operation might have on the stability of pond 004 (the Mine site sediment pond) and for the affect on the Madsen well, which is below the sediment pond.

This document will address Mr. Tanner's concerns relative to the proposed surface blasting program and its potential affect on pond 004 and the Madsen well.

Mr. Tanner's concerns are relative to the potential affect of ground vibration from the blasting operations on pond 004 and the Madsen well. Both the pond and the Madsen well are below the floor elevation of the lower O'Connor coal seam, which will be the lowest point of borehole depth.

INTERNAL MEMO

During the January 10, 2002 meeting with the Division, Lodestar Energy, Inc., Questar, and Bradley Safety Consultants, Mr. Mick Bradley of Bradley Safety Consultants calculated the maximum peak particle velocity which would develop during the utilization of ammonium nitrate and fuel oil blasting agents at the Whiskey Creek site. The permittee has contracted Wolfe Management, Inc. to conduct the surface blasting activities. Using a 6.75 inch borehole and a maximum explosive column height of eighty feet (average amount of interburden between the upper and lower O'Connor coal seams) Mr. Bradley determined that a maximum peak particle velocity of 0.3 inches/second would be developed per 8 millisecond delay, using a scaled distance factor of 55, which is the factor to be applied without seismic monitoring for a distance separating the blasting site from the nearest potentially affected structure by 301 to 5000 feet. The closest distance separating the Questar transmission line from the blasting area is approximately 1,000 feet.

The allowable maximum peak particle velocity for the Whiskey Creek site, as determined through the utilization of R645-301-524.642, and a distance of 1,000 feet from the blast site (use 301 to 5,000 foot distance from blast site) is 1.00 inch per second per 8 millisecond delay. Thus the utilization of the blasting agent on a 16 X 25 foot pattern will generate a maximum peak particle velocity that is one-third the maximum allowable limit as approved within the R645 coal rules.

As the ammonium nitrate and fuel oil mixture is detonated in the borehole, a detonation wave is initiated at the base of the hole. As the wave travels up the hole, it expands and travels out from the borehole in the generation of a compression wave. As with all types of energy in nature, the greatest percentage of this energy will travel the path of least resistance, that is in the direction of the two free faces (i.e., the horizontal surface and the vertical surface at the bench area). When the compression wave reaches the free faces, it encounters the atmosphere, where it meets with resistance of such magnitude that it is forced to rebound into the burden material. At this point of rebound, the compression wave becomes a tensile wave, again, traveling back through the burden material. The tensile wave is what fractures the burden.

The path of least resistance and the amount of energy that will travel toward the free faces is the issue at this point. Only a minimum amount, if any, would travel below the pit area, through any ground. Upon reaching air, it would rebound into the rocky areas. As the Madsen well and pond 004 are below the floor elevation of the lower O'Connor seam, virtually no effect from ground vibration will be felt by either structure.

A concern relative to the fact that both the aforementioned structures are within a fault zone is appreciated, but creates no major issue as the State of Utah experiences on the average some two hundred seismic tremors each day. As the Mine's permit area is crossed by several faults, each probably moves a minimal amount in numerous directions in order to relieve the energy generated via the shifting of the earth's plates. It is when the faulted areas do not relieve the energy, that seismologists develop major concerns due to the buildup of huge amounts of energy. This energy buildup may accumulate to a point, that when released may create a major seismologic event within the Wasatch Plateau. This area has also experienced numerous man-made seismic events from the secondary extraction of coal via longwall mining methods at the Canyon Fuel Company Skyline Mine.

The quarterly impoundment inspections which are required for pond 004, as well as the other sediment containments within the White Oak surface facilities, have not revealed any abnormal or hazardous conditions with the pond 004 impounding embankment. Thus, the numerous seismic events that have occurred in the area have had no affect on either of the two structures.

Lastly, the Madsen well is the property of Lodestar Energy. Any affect due to the blasting operation is of no concern, except to the owner. The Madsen well is not utilized in the ground water monitoring regime at the Whiskey Creek Mine site. The well is used for culinary purposes and, as such, it is sampled for SE Utah District Health Department reasons only.