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State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

Michael O. Leavitt
Governor
Lowell P. Braxton
Division Director

DIVISION OF OIL GAS & MINING FIELD VISIT FORM TECHNICAL

Date : 9/09/1998

Time: 9:00 a.m.- 1:00 p.m.

Mine: Star Point Mine

File Number: ACT 007/006, Folder #2

Subject: Citizens Complaint, Star Point Spring Impacts

DOGM Staff

Joe Helfrich, Bill Malencik, Dave Darby, Jim Smith, Sharon Falvey, Wayne Western

Other Attendees

Johnny Pappas, Cyprus Plateau Mining Corporation (CPMC); Jeff DeFrest, U.S. Forest Service, Manti-LaSal National Forest; Kay Jensen, Lee McElprang and Dennis Ward, Huntington Cattle Association.

Purpose

Observe and collect site information about Star Point Spring on Gentry Mountain (the spring is listed as water monitoring site 971 in CPMC's water monitoring plan). Members of the Huntington Cattle Association and Huntington-Cleveland Irrigation Company filed a citizens complaint on August 24, 1998, which contends Plateau Mining operation has depleted flows to the spring.

Observations

There was no flow at the spring. There was an old cattle trough which records show was developed in 1936. The trough was smashed in the center by a large tree, which the cattlemen said had fallen across it a couple years ago. There was also a rotted and dilapidated log fence surrounded the spring keep the cattle from reaching the effluent source. An embankment had been built by the cattlemen to trap any flows that still come from the site. The pond contained only a skim of water, probably from the last rainstorm. No flow was present in the surrounding region although some sedges and wet meadow plant species were present in the area surrounding

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the spring. The original effluent location had boulders of sandstone from the surrounding formation.

Background Information

Star Point Spring is located in the SE 1/4, S 1/2 of Section 12, T15S, R7E. The spring lies east of the Bear Canyon Fault where subsidence occurred. The flow rate at this spring was recorded at 0.8 gpm on June 30, 1986 (Map 722.100a) and 0.5 gpm in May 1990. Mining of the panels beneath the spring occurred between 1986 to 1987. Water quality data was obtained on May 30, 1990 and July 15, 1991. The Star Point Spring is approximately 1,200 feet above the Wattis Seam. Longwall panels were mined in the Third Seam from July 1987 through July 1988.

The overburden within Section 12 ranges from 800 to 1,500 feet above the Wattis Seam. This region was mined with a longwall miner. Several panels, oriented west to east, were mined (Map 1, dated February 18, 1990, 1990 Annual Report) in the Wattis Coal Seam which undermined most of the area beneath Haug Ridge in Sections 12 and 13 of T15S, R7E. Two panels were mined in the 3rd Seam, oriented west to east, in Section 12 of T15S, R7E. Both seams underlie the spring. The spring subsided about 4 feet. According to the 1997 subsidence monitoring report, subsidence cracks which reached the surface varied from 0-2 feet of displacement across cracks and were hairline to 6 inches in width.

The water right to Star Point Spring was filed by the Forest Service under 91-977 for stock watering. The priority date is 1869 and the period of use is referenced to right number 91-982 (WUC 982). Note: the water rights information was obtained off the Internet (World Wide Web) and should be confirmed by the State Division of Water Rights or the Forest Service.

Haug Ridge is the likely recharge source for Springs 971, 753 and 978 (see accompanying maps). Springs 971 and 735 are located on the east side of the ridge, and Spring 953 appears on the south side of the ridge. Mining has subsided most of the area under the ridge. While the Cattlemen claim flows have diminished at Spring 971, groundwater still emanates from Springs 753 and 978. Two noticeable differences exist between Star Point Spring and the other Springs. Spring 971 lies within the subsided zone, while Springs 753 and 978 lie outside the subsidence zone. The later springs lie on the opposite sides of a fault that bisects the ridge from west to east. There is differential settling of the surface between the two sides of the fault zone.

The 1989 Annual Report, illustrates impacts of subsidence by describing how a stream near monitoring point GS-1 was diverted from the stream channel to flow underground. The area where the stream capture occurred is far enough from the dry spring that the two events were not caused by the same subsidence cracks. However, the stream capture does show that the

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subsidence cracks can divert surface water. Therefore, the possibility exists that subsidence could have damaged the spring by way of underground fracturing.

Another possible effect is the tilting of bedding planes from subsidence. Subsidence Map 521.121e, Volume III, Star Point MRP, shows that the surface in the vicinity of the spring subsided approximately four feet, and up to 6 feet west of the spring, a change in gradient of about 0.25%, relatively small, but maybe enough to disrupt flow to a intermittent spring. Subsidence could have changed the gradient of the recharge source. A 0.25% change in slope is relatively small, but could create a bowl effect which collects groundwater instead of allowing it to flow along the bedding plane to the surface. The change in dip of the beds could change the flow pattern and potentially cause the groundwater to flow to another discharge site.

Most longwall subsidence damage occurs within twelve months of mining. Since the spring was not monitored frequently to establish seasonal variation in flow the Division is unable to determine if subsidence caused the spring to dry up. It is unknown whether the water supply to the springs has changed since there is a lack of data defining the seasonal flow. The recharge area is small and flow usually diminishes over the summer. These springs appear shallow given their location on the ridge and likely fluctuate directly with snowmelt and rainfall. Previous monitoring indicate that flow from the spring is relatively small. The site review that took place at the Star Point Spring would not necessarily pick up flows that appear in early summer.

There is a possibility that groundwater is still in the vicinity of the spring, but was not reaching the surface. It was suggested that animals tromping in the riparian area could have clogged the effluent and stop the flow to the spring. Mr. Pappas suggests this could also effect Spring 753 if it remains unfenced.

It was decided during the site visit that the Huntington Cattle Association would apply to the Forest Service to conduct trenching operations to redevelop the spring. Cypress Plateau Mining Corporation would assist the Huntington Cattle Association with this development. Additionally, Cypress Plateau will assist them with clean out maintenance at the Stock watering Pond Monitoring site 978 located in the SE $\frac{1}{4}$, S $\frac{1}{2}$ of Section 13, T15S R7E. If adequate water is not supplied by the methods identified above, the Huntington Cattle Association would pursue other avenues to replace the water.

Recommendations/Conclusions:

Without historic flow measurements and seasonal flow data it is difficult to assess the amount of damages if in fact subsidence caused diminished flows. The low flow measurements of 0.8 and 0.5 gpm are relatively low flows. If it is determined in the future that mining has impacted the spring a guzzler could likely be installed to replace the source. Hopefully, the proposed trenching will contact the source.

The Cattlemen should proceed with the excavation plans to see if groundwater can be intercepted. All parties should check to see what type of flow emanates from the spring during the high runoff season. Measurements should be taken of any flow from the site.

Final conclusions of impacts can only be addressed after these steps are taken.

Signature: Joseph C. Helfrich on September 24, 1998
Joseph Helfrich, Supervisor

Signature: Sharon Falvey on September 24, 1998
Sharon Falvey, Senior Reclamation Specialist

Signature: Jim Smith on September 24, 1998
Jim Smith, Senior Reclamation Specialist

Signature: Dave Darby on September 24, 1998
Dave Darby, Senior Reclamation Specialist

Signature: Wayne Western on September 24, 1998
Wayne Western, Senior Reclamation Specialist