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**Utah
power**
& LIGHT COMPANY
MINING DIVISION
P.O. Box 310
Huntington, Utah 84528

file AUL/015/019 #2

July 19, 1988

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DIVISION OF
OIL, GAS & MINING

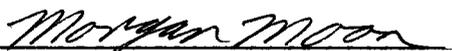
Mr. John Whitehead
Department of Oil, Gas
and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Dear Mr. Whitehead:

For your information, please find enclosed a copy of the proposed scope of work for the geotechnical study for the Cottonwood lease that was sent to the consulting firms. We are anticipating a response to the proposal by late August.

If you have any questions please contact me.

Sincerely,


Morgan Moon
Managing Director
of Technical Services

MM/sg

Enclosure

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PROPOSAL FOR GEOTECHNICAL SUBSIDENCE STUDY

PURPOSE

Utah Power and Light Company operates two coal mines near Huntington, Utah. The operation consists of continuous miner and longwall mining methods. The mines are located on the Wasatch Plateau with overburden depths ranging from a few hundred feet to excess of two thousand feet. The operation consists primarily of two seams with approximately forty to one hundred and twenty feet of separation between them.

Generally this area is a flat-topped mesa surrounded by vegetated slopes which extend to precipitous cliffs leading to the valley below. The plateau has a vertical relief of up to two thousand five hundred feet from the valley below. The coal outcrops on the steep mountain sides above the valley floor.

Coal extraction under and adjacent to the steep slopes resulted in surface subsidence and the failure of the Castle Gate sandstone cliffs in the 6th and 7th-East panels at the Cottonwood Mine. The mechanics of the failure of the sandstone cliffs is not understood and conventional subsidence prediction methods do not work well for this geologic environment.

A joint agreement between the Utah State Division of Oil, Gas and Mining, United States Forest Service, United States Bureau of Land Management, and Utah Power and Light Company was reached to establish the Cottonwood Mine South Lease as a study area to determine the mechanics and effect of surface subsidence. The study was divided into two major areas. The first is a detailed geotechnical study to determine the mechanics of subsidence and possible cliff failures from mining under the steep escapements. The second is to determine the effect of mining on the area resources and the success of mitigation measures in the event of cliff failure.

The mining is currently progressing in the South Lease at Cottonwood Mine. At the present time three longwall panels have been extracted and the fourth is being mined. Three continuous miners are working in the lease developing mains and longwall gate entries. It is anticipated that the mining on the South Lease will continue until 1993 or 1995, depending on the conditions found in the Cottonwood seam.

The proposed study should cover the mining of the entire South Lease.

Utah Power and Light Company Deer Creek Mine will be moving north into the Rilda and Meetinghouse Canyon area. It is anticipated that longwall extraction will begin in areas effected by the Castle Gate sandstone cliffs in the late 1990's. It is proposed to utilize the data gathered from the Cottonwood Mine South Lease to evaluate mine plans for the Deer Creek Mine. Therefore, a proposal separate from the joint study on the Cottonwood Mine South Lease should be prepared for this area. See attached maps.

SCOPE OF WORK

The project should be divided into two separate parts. The first is the Cottonwood Mine South Lease and the second the Deer Creek Mine Meetinghouse and Rilda Canyon areas.

The work should include but not be limited to:

1. A detailed geological evaluation including but not limited to:
 - A. Joint orientation - strike and dip.
 - B. Joint spacing.
 - C. Joint roughness.
 - D. Joint strike and dip continuity.
 - E. Geologic discontinuities.
 - F. Sedimentary features.
 - G. Structural features.
2. Relationships between surface topography and cliff failure.
3. Modes of failure.
4. Effect of longwall panel orientation to geological features and cliff orientation.
5. Measurement of in situ stress field and mining induced stress.
6. Establish monitoring network to measure subsidence.

7. Necessary laboratory tests to determine the physical properties of the rock mass.
8. Modeling simulation of mining and geometry.
9. Develop a predictive model for subsidence and cliff failure.
10. An estimated cost to supply the necessary geotechnical software to Utah Power and Light Company to conduct subsidence predictions.
11. Verification of the model with field measurements.
12. Update the type and amount of data needed as the project progresses.
13. The vendor should propose alternatives to the above scope of work, as deemed necessary.
14. A series of interim reports updating the status of the study and a final report should be prepared for Utah Power and Light Company.

Utah Power and Light Company has collected a large amount of the geological data which will be available to the vendor. Utah Power and Light Company also has a geological staff that may be available to gather information and collect data for the study.

The proposal should be divided into two separate parts. The first should be for the Cottonwood Mine South Lease and the second for the Deer Creek Mine Meeting house and Rilda Canyon area.

An engineering proposal should be provided with respect to the above scope of work with detailed cost information on each portion of the project, a time table for completion of the project and personnel qualification of the principals involved in the work.

This proposal should be submitted to Utah Power and Light Company, Mining Division, Purchasing Department, 31 North Main, P. O. Box 310, Huntington, Utah, 84528. Attention: Bid Coordinator.

If you have any question please contact Morgan Moon, at Utah Power and Light Mining Division, telephone number (801) 687-9821, Extension 202.

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