



ENGINEERS & CONTRACTORS

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Mr. Don Dewey
Utah Power & Light Company
Mining and Exploration Dept.
P.O. Box 899
Salt Lake City, Utah 84110

Dear Mr. Dewey:

In response to your request, we have made a study of the impact of the "Surface Mining Reclamation and Enforcement Provisions of 1977" upon the existing site drainage plans at the Wilberg Mine. We find that the major scope of these provisions which affect the drainage plan are as follows:

1. Sedimentation ponds will be required in lieu of the sand filter presently proposed.
2. The sedimentation ponds must be designed to receive a 10-year, 24-hour precipitation event from the disturbed area including a certain specified amount of sediment storage. The accumulated sediment must be removed from the ponds and disposed of in an approved manner when it reaches 80 percent of this capacity.
3. The disturbed area must include as a minimum all areas upon which major surface activities are conducted and which might contribute undesirable contaminants to surface runoff. These areas include service and storage yards, parking lots, coal handling facilities and conveyor-ways. Also included are those areas which contribute runoff which becomes contaminated by passing over disturbed areas.



4. Runoff from undisturbed areas above the surface operation site must be diverted away from disturbed areas and channeled back into the natural stream below the site. If these diversion structures are to be utilized only for the life of the operation, they need only be designed to pass a 10-year precipitation event. If, on the other hand, they are to remain in use after the termination of the coal mining operation, they must be designed to pass a 100-year precipitation event as well as meet certain other design requirements.
5. Surface runoff collected in the sedimentation ponds must be detained for a minimum 24-hour period, but at least sufficiently long to meet the minimum water quality standards stated in the "enforcement provisions" or State water quality standards, whichever is more stringent. If these standards cannot be met using sedimentation, other water treatment methods must be implemented.
6. Pond effluent water quality must be monitored in accordance with a program approved by the regulatory authority. Regular reports must be filed with the regulatory authority.
7. The dams must be designed by a registered professional engineer. A periodic inspection program of the dams must be implemented in accordance with current Title 30 regulations.

We have developed a preliminary modified site drainage plan which we feel meets the requirements and stated objectives of the new regulations. This plan is illustrated on the enclosed Plate No.3.

The proposed modified plan consists of diversion ditches and large diameter bypass-culverts to catch runoff above the site and convey it underground and back into the natural channel at a point downstream from the site. The diversion ditches will be required in the side hills above a portion of the portal area as well as along the edge of perimeter roads and parking lots. The large diameter culvert-bypass system will function as presently planned,

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but must be extended past the proposed sedimentation ponds. The diversion ditches and by-pass culverts are proposed to be temporary as defined under the enforcement provisions and will be designed to handle a 50-year precipitation event with the exception of the diversion ditch above the portal level which will handle a 100-year storm.

The modified drainage plan will also consist of a system of surface ditches and small diameter culverts to collect runoff from the disturbed area and direct it into the sedimentation ponds. These ditches will also be designed to handle the 50-year storm. The limits of the disturbed area is shown on the enclosed plate with a background pattern and consists of the portal, storage and parking areas as well as the service yard area which includes the actual coal preparation facility. The disturbed area also includes that portion of the natural side-slopes of the canyon contributing runoff which cannot practically be diverted into the bypass system. This includes an area above a portion of the portal level on which diversion ditches cannot practically be built.

Paragraph (a) of Section 717.17 "Protection of the Hydrologic System" of the enforcement provisions defines disturbed area as follow:

"For the purposes of this section only, disturbed areas shall include areas of surface operations, but shall not include those areas in which only diversion ditches, sedimentation ponds, or roads are installed in accordance with this section and the upstream area is not otherwise disturbed by the permittee".

This paragraph seems to justify the exclusion of ponds, roads and diversion ditches from the disturbed area. Therefore, they have not been included with the area receiving background pattern on the enclosed plate and were also not used in determining the capacities of the sedimentation ponds.

We feel that further justification exists for the exclusion of road cuts that are not polluted with oil, grease, coal or other toxins or mine wastes from the disturbed area. This justification is based on the quality of natural runoff from regional watersheds typical of the Wilberg area.

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The enforcement provisions state that runoff effluent from disturbed areas shall not contain concentrations of suspended solids in excess of 45 mg/l. However, an investigation of existing water quality records points out that natural runoff from regional watersheds similar to the Wilberg area contain far in excess of the maximum concentration of suspended solids allowed by the enforcement provisions. For instance, water quality data for the upper Joe's Valley watershed (available from the Bureau of Reclamation) shows that average suspended solids concentrations was approximately 300 to 400 mg/l for the years 1958 thru 1961. The maximum value recorded during this period was 15,026 mg/l which occurred on April 21, 1958. Dam construction at the Joe's Valley site began in June 1963. The sampling station for the above data was in the vicinity of the present Joe's Valley damsite at elevation 6990. The station is approximately 8.5 miles southwest from the Wilberg Mine and is composed of similar geologic formations to those found at the Wilberg Mine site.

It seemed apparent while reviewing the data that suspended solids concentrations of the order of 300 to 400 mg/l represented base flow conditions while the extreme values were accompanied by high discharges which, in turn, were associated with precipitation over the watershed. A case in point is the data available for Drunkards Wash at Highway 10 (approximately 2 miles south of Price). At 9:20 A.M. on August 29, 1969, the data shows a discharge in the wash of 2.5 cfs and a suspended solids concentration of 408 mg/l. At 12:30 P.M. on the same day the discharge had increased to 150 cfs and the suspended solids concentration to 184,500 mg/l. Climatological data indicates that a general precipitation event occurred on the above date in the Castle Valley area with gaging stations at Castle Dale, Hanksville, Hiawatha, Scofield Dam and Sunnyside reporting 24-hour accumulations of 1.07", 0.25", 0.52" 0.35", and 0.85", respectively.

The evidence points to the fact that natural base flows occurring over the Castle Valley region exceed by many times the maximum suspended solids concentration allowed by the enforcement provisions. Also, this maximum allowable concentration is exceeded by thousands of times in naturally occurring runoff during substantial precipitation events. It should be expected, then, that natural runoff

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developing over the undisturbed areas at the Wilberg site will greatly exceed the 45 mg/l concentration allowed by the enforcement provisions. Therefore, it does not seem consistent, considering this particular region and geologic domain, that runoff from such areas as road cuts, that are otherwise free from contaminants such as coal, toxins, etc., be separated from the natural runoff on the basis of suspended solids concentration alone. For this reason we feel that sufficient grounds exist to approach the regulatory authority for a variance to exclude road cuts from the 45 mg/l requirement.

Our modified drainage plan diverts runoff from road cuts which are on the perimeter of the site and conveys it back into the natural channel below the site. We have also included in the drainage proposal provisions to attempt the reseedling of the side slopes that are disturbed by construction operations. It is proposed that the hydroseeding-mulching technique be employed for this purpose.

The disturbed area shown on Plate 3 will include 20-25 acres, depending upon the final location of diversion ditches in the side hills. Runoff from this area will be collected and held in sedimentation ponds for a minimum 24-hour period. There is a location available for sedimentation ponds below the disturbed area which would not necessitate the disturbance of additional National Forest land. This location is inside the truck turn-around loop and could accommodate two ponds having a total capacity of approximately 5 acre-feet. Using this site will require a minor realignment of the west half of the truck turn-around road in order to provide the capacity shown.

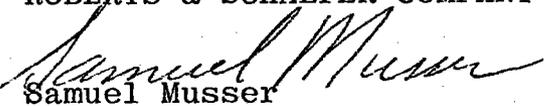
Climatological data available from N.O.A.A. indicates that a 10-year, 24-hour precipitation event will produce 2.4 inches of moisture. This will develop 1.5 inches of runoff based on 0.6 runoff coefficient. For 25 acres of disturbed area the ponds will, therefore, have to store approximately 3.1 acre-feet of runoff.

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In addition, the enforcement provisions state that the ponds must have a sediment storage capacity of 0.2 acre-feet per acre of disturbed area. We propose that Utah Power & Light Company adopt a more frequent pond dredging schedule than that contemplated in the enforcement provisions. By providing a 0.07 acre-feet per acre sediment storage capacity, the total sediment storage required for 25 acres would be 1.8 acre-feet. This brings the total pond capacity required to 4.9 acre-feet, which is within the capacity available at the location outlined above. For this reason we therefore, recommend that a maximum 0.07 acre-feet per acre sediment storage capacity be provided in the design of the ponds and that a more frequent pond dredging schedule be adopted.

A preliminary order-of-magnitude estimate indicates that the cost impact of the modified drainage plan will add approximately \$670,000.00 to the total construction cost of the facility. This figure includes additional engineering required in the modifications. The cost of the additional items of work contemplated by the modifications must be negotiated with W. W. Clyde and Company who has been awarded the site work contract at Wilberg. The above cost estimate is partially based on the unit costs quoted by W. W. Clyde and Company under the existing contract.

Yours very truly,
ROBERTS & SCHAEFER COMPANY


Samuel Musser

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cc: D. Jense w/encl.
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