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STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

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January 6, 1988

TO: John Whitehead, Permit Supervisor
FROM: Tom Munson, Reclamation Hydrologist *TM*
RE: Stipulation Review of Plateau's Five-Year Renewal Response, Cyprus-Plateau Mining Company, Starpoint Mine, ACT/007/006, Folder #2, Carbon County, Utah

History of Proposal

This memo will address on a regulation-by-regulation basis the responses contained in Plateau's response to stipulations received October 29, 1987.

Regulations and Stipulations

Stipulation 817.43-(1)-(TM)

Plateau Mining Company shall submit by October 31, 1987, for inclusion in the PAP, flow, velocity, and sizing calculations, location maps, and inlet and outlet protection measures for all culverts in the disturbed area.

Compliance

The applicant has proposed to monitor the outlets of 26 culverts, 5A, 6A, 7B, 8A, 10D, 15A, UT16G, 17A, 18B, 25A, 28A, 29A, 33A, 42C, 57A, 66A, 68A, 69A, 69B, 70C, 71A, 71B, 72A, 74A, and 75B).

In addition, the applicant has proposed that variances be granted for 19 culverts that discharge onto rock ledges or cliffs or rock rubble piles. These culverts are 4A, 5B, 10E, 16G, 17B, 34A, 47A, 48A, 54A, 55A, 56A, 57B, 58A, 59A, 60A, 61A, and 62A, as stated in Table 77B. In addition, culverts 28A, 29A and 75B are shown to discharge onto rock rubble piles on Map 42.

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The Division will allow variances to be granted for the 26 culverts which currently do not have outlet protection with outlet velocities in excess of 5 F.P.S., if the applicant agrees to the following monitoring plan. The Division currently considers severe erosion as any rill or gully in excess of 9 inches (UMC 817.106). Therefore, the applicant needs to qualify if severe erosion is occurring at the outlet of these 26 culverts. This will be accomplished by placing a rebar monitoring stake at the outlet of each culvert which, based on field inspection, is determined to be unstable and still actively eroding. The culverts selected will be decided in the field between a Plateau representative and a Division hydrologist. The sites, selected to be monitored, will be checked on a quarterly basis in March, June, September, and December, and the amount of erosion documented, and this information submitted to the Division on a quarterly basis.

The culverts discharging onto rock rubble piles will be site verified by a Division hydrologist and variances granted on a site-specific basis.

Based on the information submitted in Table 77A, "Diversion Ditch Design Criteria" the Division feels that the applicant has adequately met the requirements of the regulations and submitted the necessary calculations to demonstrate compliance. On January 8, 1986, a variance was granted for having to provide channel lining for the downcut portion of Ditch #7E.

Recommendations

1. The 46 culvert outlets that either discharge onto rock rubble or are proposed to be monitored for severe erosion will be field verified by a Division hydrologist, and on a site-specific basis will be granted a variance or approved with a site-specific monitoring plan. The culvert outlets chosen for monitoring will be monitored on a quarterly basis in March, June, September and December of each year, and the data submitted to the Division quarterly. A field visit by a Division hydrologist will be carried out by June 30, 1988.

Stipulation 817.44-(1)-(TM)

Plateau Mining Company shall submit by October 31, 1987 for inclusion in the PAP, complete and adequate design, calculations, profiles, cross sections, and drawings to detail final reclamation and channel restoration measures which will be employed. This will include post mining drainage patterns, and water monitoring locations.

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Compliance

The applicant has submitted Map 50 and Exhibit 50 "Reclamation Channel Calculations", to describe post-mining reclamation of channels. Also, pages 784.14-22 and 784.16-25 through 784.16-28 give an explanation of the applicant's intentions regarding channel reclamation.

Specifically stated on pages 784.16-27 and 28 is the disclaimer that for slopes in excess of 28 percent, no riprap protection will be provided for reclaimed channels because adequate erosion protection is not currently available, and therefore it is not possible to design erosion protection for these areas. It is also stated that riprap design methodologies presented are used for mean riprap sizes not in excess of 2.0 to 2.5 feet. It is stated on page 784.16-27 that when design of riprap is attempted beyond these values, the practicality of the design and installation is taxed to the point that accuracy of design cannot be reasonably determined.

A review of the applicant's reclamation plan for disturbed drainages shows that the applicant has not submitted a complete reclamation plan. The applicant has failed to provide reclamation plans for every disturbed drainage, including removal of culverts and rehabilitation of drainages. Although the plan addresses major drainages, it has not addressed rehabilitation of the following areas:

1. Diversion ditches south of proposed Channel 25c and 25b.
2. Diversion ditches and culverts associated with the topsoil stockpile area.
3. Diversions and culverts associated with the areas west of Ponds 6 and 7.
4. Diversions and culverts associated with Pond 8.
5. Culvert removal and drainage construction of all road crossings and associated ditches.

The construction of reclaimed drainages 4A, 63A, 46B, 23B, and 26B are stated in the applicant's review as being too steep for riprap design. This may be true based on the applicability of the riprap methodologies referenced. The applicant, however, has not provided any means other than riprap for stabilization of channels. The Division feels that serious consideration must be given to the use of other methodologies to stabilize steep slope channels. The research of methodologies must consider drop structures and other

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conveyance structures suited to steep slope reclamation. The Division is not willing to accept abandonment of excavated channels on steep slopes without documentation that these channels are stable and will not upset the dynamic equilibrium of the hydrologic system.

The applicant has failed to identify the source and type of riprap which will be used for reclamation. This assessment must include a rock durability evaluation procedure. The rock's geologic origin must be identified and what field tests will be used to identify durability and acceptance as a riprap material.

PMC proposes only one post-mining monitoring point below Pond #4, upon acceptance of their reclamation plan. PMC needs to address what its intentions are regarding removal of its sediment ponds. PMC must also address how monitoring will be carried out following reclamation at all pond locations. These monitoring points will need to be located prior to any sediment ponds in order to determine compliance with the applicable state and federal water quality standards.

Recommendations

1. The applicant will research and identify what methodologies for stabilizing steep slope channels will be used when standard riprap designs are not deemed acceptable.
2. The applicant will provide complete and adequate designs, calculations, profiles, cross sections, and drawings to detail final reclamation and channel restoration measures which will be employed for all disturbed channels and road crossings within the permit area. This will include post mining drainage contours, and water monitoring locations.
3. The applicant will provide the source and type of riprap which will be used in reclamation. An assessment methodology including rock durability evaluation will be spelled out by the applicant in the PAP.
4. PMC will submit detailed post-mining monitoring plans which meet the requirements of the regulations to determine compliance with applicable state and federal water quality standards.

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Stipulation 817.45-.47-(3)-(TM)

1. Plateau Mining Company shall submit by October 31, 1987, for inclusion in the PAP, detailed calculations, maps and drawings showing the nature and location of pond outlet and inlet protection measures presently installed with supporting calculations which demonstrate the adequacy of these measures.
2. Plateau Mining Company will include on their quarterly sediment pond inspection forms, the cleanout volume (Ac.Ft.) for each facility and an updated sediment volume (Ac.Ft.) based on a current survey of each pond and treatment facility.
3. Plateau Mining Company shall submit by October 31, 1987, detailed silt fence design drawings showing design height, materials used, and general field construction details. Moreover, PMC shall submit by October 31, 1987, detailed sediment trap design drawings showing size, depth and location, a 60 percent sediment cleanout elevation for these structures with a location map of a scale greater than Map 43, sufficient to determine drainage area, ditch location, and ditch length contributing to these structures.

Compliance

STIPULATION #1

The applicant has submitted designs for inlet protection on Pond #4 and #9, and outlet protection for Ponds #2, #6, #7, #8 and #9. The remainder of the inlet and outlet protection designs are discussed on pages 784.16-18 through 784.16-23. The inlets or outlets of the other ponds discharge onto rock rubble piles or conveyor belting to prevent erosion. The inlet to Pond #3, Ditch 51, has eroded to bedrock and a variance is requested from having to provide erosion protection.

A monitoring plan will be developed and a quarterly inspection of the inlets and outlets will be conducted to verify if severe erosion is occurring. If severe erosion is found, routine maintenance will be performed to prevent additional erosion. A field inspection by a Division hydrologist will determine if a variance will be granted for providing calculations for each pond's inlet and outlet controls based on the information presented in the review response.

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The following ponds will have to be inspected to determine if a variance will be granted for inlet and outlet calculations for erosion control, based on the stability of current inlet and outlet conditions.

POND #	INLET	INSPECTION	OUTLET
1	Yes		Yes
2	No		Yes
3	Yes		Yes
4	No		No
5	Yes		Yes
6	Yes		No
7	Yes		No
8	No		No
9	No		No

Recommendations

1. The Division's hydrologist will conduct an on-site inspection of all sediment pond sites without inlet or outlet supporting calculations for erosion controls by June 30, 1988. A monitoring plan will be conducted on a quarterly basis for all ponds deemed necessary by the Division's hydrologist that does not meet the specifications of standard erosion control practices, verified by field inspection.

STIPULATION #2

The sediment design parameters for Ponds 1 through 9 have been summarized in Table 85. In PMC's response to the Division's renewal review, PMC stated that it will survey the ponds to determine if they have reached the 60 percent cleanout level, and then determine if cleanout is necessary. PMC committed to include on their quarterly pond inspection forms, the cleanout volume (ac. ft.) for each facility and an updated sediment volume (ac. ft.) based on a current survey of each facility. This will supply adequate documentation for inspectors.

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Recommendation

1. PMC's commitment to survey ponds to determine sediment levels must be incorporated into the text of the PAP.

STIPULATION #3

Attachment #1 of PMC's Stipulation Response contains revisions and additions in the text of the PAP concerning this stipulation. Map 42, Surface Water and Sedimentation Control Facilities, Map A and Map B, have been revised to show all runoff control facilities. The scale of this map is the same as the old map, but the maps have been redrawn to show more detail. PMC has failed to show detailed silt fence design drawings showing design height, materials used, and general field construction details for any silt fence.

PMC has provided Typical Sediment Trap Details on Figure 42 and discussed the use of sediment traps on page 784.14-16. This is not adequate to meet the requirements of Stipulation #3. The stipulation specifically stated that PMC submit detailed sediment trap designs showing size, depth and location, and a 60 percent sediment cleanout elevation. If the operator supplies additional size dimensions for each sediment trap and the 60 percent sediment cleanout elevation, then this will meet the requirements of this stipulation. The redesigned Map 42, Map A and B is clear enough to show location and Figure 42 is adequate as a generic design drawing.

Recommendations

1. PMC will submit by March 11, 1988, detailed silt fence design drawings showing design height, materials used, and general field construction details.
2. PMC will submit by March 11, 1988, design details for all sediment traps and cleanout elevations for all sediment traps.

Stipulation 817.52-(4)-(TM)

1. Plateau Mining Company (PMC) shall upon permit approval, utilize the monitoring stations proposed in PMC's April 30, 1987 letter to the Division. Moreover, PMC shall monitor springs S11-1, 238, and 494 at least one time in 1987 during low flow conditions in accord with the approved monitoring plan.

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2. By October 31, 1987, Plateau Mining Company shall update the PAP water monitoring plan including text and tables, to:
 - a. reflect the revised monitoring stations proposed in PMC's April 30, 1987 letter to the Division as well as to add springs 238 and 494 to the monitoring program.
 - b. reflect that all new source and existing baseline monitoring points for surface and groundwater monitoring shall be monitored in accord with the Division's baseline parameter list for a two-year period.
3. Plateau Mining Company will by August 31, 1987, install a continuous monitoring station at Station M-8 as shown on Map 29. PMC will begin to monitor stream flow continuously and water quality monthly from August 31, 1987 until October 31, 1987, weather permitting. Monitoring will be undertaken from June until October per the baseline water quality parameter list through 1988 and 1989.
4. Plateau Mining Company will amend the current PAP by August 31, 1987, to commit to carry out stream surveys equivalent to the one carried out in the NFRF Miller Creek on July 2, 1986, in July and September of every year mining occurs, including 1987, within Section 18 of the New Lands Permit Area, and until subsidence impacts have been stabilized. PMC will flag and determine the exact location of each monitoring station for the survey so the survey can be carried out at the same stations using the same monitoring methods, on a yearly basis.

Compliance

STIPULATION #1

PMC has complied with this stipulation by monitoring the stations proposed in PMC's April 30, 1987 letter to the Division. As well, springs S11-1, 238, and 494 were monitored during low flow in October, 1987.

Recommendation

This stipulation has been adequately addressed.

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STIPULATION #2A

PMC has adequately addressed this stipulation, with the following minor changes. Instead of monitoring 443 and 444, PMC will monitor 444 because they were located 30 feet apart and at the same elevation. Also, Spring 433 is a developed spring and has been designated by the Forest Service as Spring 749, and it is included in the revised plan as 749. The PAP text on page 784-81 has been changed to reflect the new monitoring points.

Recommendation

The stipulation has been adequately addressed.

STIPULATION #2B

PMC has proposed to drop certain parameters from their surface and ground water quality sampling program. The Division does not concur with elimination of the baseline parameters spelled out on pages 784-82 through 784-85 for baseline data collection. If at the end of one year's baseline data collection for new sites (four water quality samples, including high and low flow), certain parameters (those mentioned on pages 784-82 through 784-85 of the PAP) are not found in significant concentrations, then the Division would consider approving an amendment to the plan for the second year of baseline monitoring. The complete division guideline baseline parameter list will be sampled every fifth year for all sites.

The applicant will be responsible to keep the Division informed of mining sequence changes on a yearly basis so that spring monitoring sites can be revised according to mining sequence changes and adequate baseline data can be collected prior to any mining impacts being realized.

Recommendation

1. By March 11, 1988, Plateau Mining Company will revise Table 81 and 82 to reflect the Division's Water Monitoring Guidelines' Parameter list for Postmining, Operational and Baseline Monitoring.

STIPULATION #3

PMC has installed a wier at Station M-8 and a measurement of flow was obtained in the fall of 1987. Water quality monitoring will be conducted at this location monthly from June through September for a two-year baseline period ending in September 1989.

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Recommendation

This stipulation has been adequately addressed.

STIPULATION #4

PMC will conduct a stream survey of the NFRF of Miller Creek in June and September of each year mining is conducted in Section 18 or until subsidence stabilizes. The results of this survey will be contained in their annual water monitoring report.

Recommendation

This stipulation has been adequately addressed.

Stipulation UMC 817.57-(2)-(TM)

1. Plateau Mining Company will amend the PAP by October 31, 1987 to commit to notify the Division immediately upon discovery of a crack or subsidence related impact to the NFRF Miller Creek. PMC will undertake the most appropriate approved mitigation plan to restore the integrity and flow of the NFRF Miller Creek channel and have this measure in place within seven (7) days of discovery of a crack or subsidence related impact.
2. Plateau Mining Company shall provide by October 31, 1987, for insertion into the PAP, design detail for the cutoff walls to be used in the event of a temporary diversion of North Fork of the Right Fork of Miller Creek.

Compliance

STIPULATION #1

PMC has committed to notify the Division as soon as possible upon discovery of a crack or subsidence related impact to the NFRF Miller Creek. Mitigation measures will be in place or a plan of action to initiate mitigation with seven (7) days of discovery of a crack or subsidence related impact. This commitment will be added to Section 817 of the PAP.

Recommendation

This stipulation has been adequately addressed.

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STIPULATION #2

PMC has submitted Figure 43, Typical Stream Diversion Structure, which shows how a crack or subsidence feature will be dealt with when the NFRF of Miller Creek is diverted around this crack or subsidence feature. This figure will be included in the PAP.

Recommendation

This stipulation has been adequately addressed.

djh
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