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STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

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April 15, 1985

CERTIFIED RETURN RECEIPT REQUESTED
(P 402 457 118)

Mr. Wendell Owen
Co-op Mining Company
P. O. Box 1245
Huntington, Utah 84528

Dear Mr. Owen:

RE: Draft Technical Analysis, Bear Canyon Mine, ACT/015/025, #2, Emery County, Utah

Enclosed please find the Division's Draft Technical Analysis (DTA) for the Bear Canyon Mine.

As it presently stands, the Bear Canyon Mining and Reclamation Plan (MRP) cannot be approved. Information presented in the MRP is frequently incomplete, inconsistent and equivocal and precludes synthesis of a suitable Final Technical Analysis (FTA). Specifically, information submitted as appendices during the past year is often in conflict with information given in Chapter 3 and elsewhere in the MRP. Additionally, some of the appendices (see 7-D) are extremely confusing in their organization. There are also two different Appendix 7-Ds. These discrepancies and confusing sections must be clarified and resubmitted.

For your convenience, the technical deficiencies and concerns are identified in the "Compliance" and "Stipulation" sections of each UMC 800 regulation. Each stipulation identifies what needs to be changed or added to the MRP in order to achieve compliance with that regulation.

In formulating your response, please assure that the information submitted is in a format which can be logically included into the existing Bear Canyon Mine plan (i.e., replacement pages with updated information).

Approval of the Bear Canyon MRP and issuance of a permit within the time framework established by the Board of Oil, Gas and Mining Order dated July 31, 1984, will require an expedient response submittal that addresses all of the stipulations given in the attached DTA. The Division requests that your response be submitted by May 17, 1985.

Should you have any questions on this matter, please do not hesitate to contact me or John Whitehead of my staff.

Sincerely,

Lowell P. Braxton
Administrator
Mineral Resource Development
and Reclamation Program

JW/btb
Enclosures
cc: Mel Coonrod
Allen Klein
Walt Swain
Barbara Roberts
John Whitehead
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9294R-7 & 8

DRAFT TECHNICAL ANALYSIS

Co-Op Mining Company
Bear Canyon Mine
ACT/015/025, Emery County, Utah

April 15, 1985

UMC 785.19 Alluvial Valley Floors - RVS

Existing Environment and Applicant's Proposal

Bear Creek Canyon encompasses limited unconsolidated streamlaid deposits (Plate 3.4-1). Although Bear Creek sustains sufficient water for limited agricultural activities, the applicant states that the "area has no history of agricultural attempts" (MRP, page 3-112). DOGM determines that the lack of "agricultural attempts" also precludes past utilization of flood irrigation. Moreover, technical staff inspections of the mine site have not identified the presence of flood irrigation. Limited streamflow, poor soil conditions (Plate 8-1) and steep topography (Plate 3.4-1) indicate a low capability for the area to be flood irrigated. Finally, the applicant states that there is "no evidence for suberrainian irrigation" (MRP, page 3-112).

Compliance

Sufficient information about alluvial deposits and irrigation are available for DOGM to determine as required by UMC 785.19(c)(2) that no alluvial valley floors exist.

The applicant is in compliance with this section.

Stipulations

None.

UMC 805.11 Bond Estimate - PGL

Existing Environment and Applicant's Proposal

The applicant proposes a bond amount of $79,608.00 (page 3-111) that does not include certain detailed information.

Compliance

The applicant is not in compliance at this time.

The bond reclamation cost estimate does not include all of the costs for all of the reclamation.

Stipulation 805.11-(1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13)-PGL

Prior to permit approval:

1. All of the cost of removal of all surface facilities must be included in the reclamation cost estimate.

2. The costs of the equipment, efficiency, production rates per hour and length of hauls must be given for each item. The cost of material moved must be included in the bond estimate.

3. Costs are based upon the Rental Rate Blue Book, Cat Performance Handbook and Means Costs. All of the unit prices and respective sources must be identified.

4. The cost of backfilling the portals must be included.

5. Different acreages are given for each reclamation activity: seedbed material handling (9.5 ac); reseeding and fertilizing (9.6 ac); mulching (9.6 ac); protective fencing (9.2 ac). These discrepancies must be corrected and reestimated as needed.

6. Monitoring costs including subsidence, vegetation, hydrologic and erosion costs must be detailed and included in the bond estimate.

7. An escalation factor must be included as well as a contingency factor in the reclamation cost estimate.

8. The baseball diamond reclamation costs must be submitted.

9. The new pad disturbance below the substation must be included in the reclamation cost estimate.

10. The removal of the retaining wall adjacent to the portal access road must be included in the reclamation cost estimate.

11. The costs to remove solid wastes to an approved landfill (as described on page 3-91) must be included in the reclamation cost estimate.

12. The applicant must include the cost of plugging boreholes with five feet of cement in the reclamation cost estimate.

13. The applicant must include the cost of seeding or planting any disturbed area, as contemporaneously as practicable with the completion of backfilling and grading, with a temporary cover until a permanent cover is established in the reclamation cost estimate.

UMC 817.11 Signs and Markers - PGL

Existing Environment and Applicant's Proposal

Page 3-25 states that signs used on the property are constructed of suitable material, employ uniform and standard designs and conform to local ordinances and codes. They will be maintained during the conduct of all activities to which they pertain. The gate at the main entrance will be posted with a sign containing the company name, address, telephone number and identification number.

The applicant indicates surface blasting will occur at this underground mine (MRP, page 3-30). Upon initiation of blasting, "Blasting Area" signs will be posted on access roads and on public roads within 200 feet (MRP, pages 3-25 and 3-5E). In addition, the blasting area will be conspicuously flagged in the vicinity of charged holes and the entrance to the property from the public road will be posted with a sign stating, "Warning! Explosives in Use" and explaining the blast warning and all-clear signals and the marking of blast areas.

Topsoil stockpile areas are marked with "Topsoil" signs and access roads will be posted with speed, direction and traffic information signs (MRP, page 3-26).

Page 3-119 commits to properly post a sign for stream buffer zones.

Compliance

The applicant is not in compliance at this time.

The applicant partially addresses as noted below the specific regulations for signs and markers.

Stipulation 817.11-(1)-PGL

Prior to permit approval:

1. The applicant must address the length of time that signs and markers will be retained and maintained (c)(3) and include a discussion of perimeter markers (d).

UMC 817.13-.15 Casing and Sealing of Underground Openings - RVS

Existing Environment and Applicant's Proposal

Boreholes. Seven of twelve scheduled boreholes have been drilled for the purpose of initially evaluating the permit and adjacent area ground-water system (Appendix 7-D). These borehole

locations have been identified (Appendix 7-D and Update Appendix 7-D). Additional ground water boreholes will be drilled at 1,300 foot intervals as mining advances into undeveloped reserves (Appendix 7-D).

The applicant indicates that, upon abandonment, all boreholes will be plugged from T.D to within three feet of the collar with cement (MRP, page 3-86). Conversely, the applicant states that only the top three feet of boreholes will be plugged with cement grout (Update Appendix 7-D).

Boreholes utilized for ground-water monitoring will be temporarily sealed by installing PVC surface casing with a threaded cap for access.

Entries. The applicant has committed to sealing all mine entries upon completion of mining (MRP, pages 3-43 and 3-87). Seals will be constructed of solid concrete blocks in a double wall thickness (16 inches) and located a minimum of 25 feet from the entryway (MRP, pages 3-43, 3-87 and 3-88). Installation will include recessing the seals 16 inches and 12 inches into the rib and floor, respectively. Seals will not be recessed into the roof. Structural integrity will be enhanced by incorporating interlaced pilasters in the central portion of the seals.

Figure 3-1 indicates entries will be backfilled to the seal (not less than 25 feet) with noncombustible material. The entryway and adjacent highwall (including the exposed seam) area will be filled with noncombustible material, graded, covered with suitable topsoil material and revegetated.

The applicant proposes to install temporary seals for entryways that will not be utilized during temporary cessation of operations (MRP, page 3-113). Temporary seals will be constructed of woven wire and posted.

Compliance

Boreholes. The applicant is not in compliance at this time. A consistent methodology for final abandonment of boreholes must be submitted before the applicant will meet the requirements of UMC 817.15.

Entries. The applicant is not in compliance at this time. The commitment to install temporary seals at unused entryways during temporary cessation of operations does not meet the requirements of UMC 817.14.

Stipulation 817.13-.15-(1, 2)-RVS

Prior to permit approval:

1. The applicant must commit to plugging boreholes with five feet of cement as required by Rule M-3(5), Utah Mined Land Reclamation Act of 1975.

2. The applicant must commit to installing temporary seals for each mine entry that is temporarily inactive.

UMC 817.21-.25 Topsoil - EH

Existing Environment and Applicant's Proposal

The Bear Canyon Mine is located within the Wasatch Plateau at an elevation of approximately 7,100-7,600 feet. The mean annual air temperature ranges from 42° to 45° F and frost-free days from 80 to 130. The mean annual precipitation ranges from 12 to 16 inches, with approximately 35-40 percent of this moisture falling during the summer months.

Native vegetation in the permit area consists mainly of sagebrush-grassland, pinyon-juniper with a few conifer trees.

The Soil Conservation Service (SCS) conducted a soil survey during the 1980 season. Two soil series were found to exist within the area of disturbance. Datino Bouldery fine sandy loam--5 to 20 percent slopes, and a Datino-Rock Outcrop Complex--55 to 70 percent slope. Both soil series are classified as typic haploboralls.

The Datino Bouldery fine sandy loam is a very deep, well-drained soil that forms on alluvial fans and floodplain from the weathering of sandstone and shale. The Datino-Rock Outcrop Complex is a very deep, well-drained soil that formed on steep side slopes from the weathering of colluvium of sandstone and shale.

Soil profiles have an A horizon ranging from 10-16 inches deep with a well defined B horizon ranging in thickness from 16 to 18 inches.

The Bear Canyon Mine was developed in an area of pre-Law disturbance and had no topsoil removed from the majority of present disturbance. The scalehouse area, however, was developed in 1982 in an area where topsoil and subsoil could be removed and stockpiled. Approximately 2,600 yd^3 of soil material was removed and stockpiled for reclamation (Plate 2-2).

The volume of soil material needed during final reclamation to cover the 10 acres of disturbance with six inches of soil is approximately 8,100 yd^3. The additional topsoil material needed, approximately 5,500 yd^3, has been purchased and will be stockpiled on a location included into the permit area (Section 8.6 MRP).

Chemical and physical analysis of all soil material that will be used for reclamation have been conducted and are present in the mine plan (Appendix 8-A).

Storage of the 5,500 yd^3 of topsoil substitute material will be accomplished by spreading the soil material to a uniform depth over a baseball diamond, seeding as per seed list on page 8-16B and not disturbed before, removal and use as topsoil during final reclamation.

Topsoil redistribution will be accomplished by first ripping the regraded areas to a depth of 14 inches. Steep slope areas will receive special ripping to create ledges, crevices, pockets and screes. Topsoil will then be redistributed during the fall of the year. Following topsoil placement, it will be harrowed to a depth of four inches in preparation for seeding as per the revegetation plan.

Compliance

The applicant is not in compliance at this time.

The applicant has presented several different methods throughout the MRP for removal, storage and redistribution of the topsoil material.

Chapter 3, pages 3-79, 3-83, 3-84, 3-85, 3-91A, 3-93, 3-94, 3-96 and Appendix 3-D all have statements that conflict with the latest submittal (Chapter 8, pages 22, 23, 24, February 2, 1985). The Chapter 8 proposals were used to prepare the applicant's proposal for the topsoil section of this TA.

Stipulation 817.21-.25-(1)-EH

Prior to permit approval:

1. The applicant must edit the MRP to include only one proposal to meet the requirements of UMC 817.21-.25.

UMC 817.41 Hydrologic Balance: General Requirements - TM, RVS

Existing Environment and Applicant's Proposal

Surface Water - TM

Co-Op Mining proposes to conduct all mine site operations in such a way as to minimize potential impacts to surface and ground-water quality.

The following quotes discuss the existing environment and surface water quality and quantity collected to date by Co-Op Mining Company.

"The channel of Bear Creek is straddled by the mine plan area with the vast majority of the area, disturbed and undisturbed, west of the creek. Bear Creek is an intermittent stream with flows often frozen during the winter. An intermittent tributary flows into Bear Creek from the east in the mine plan area, but this tributary does not pass through any disturbed area" (Section 7.2.2, MRP). Bear Creek flows into Huntington Creek approximately one mile south of the mine site.

The applicant has included the following flow data on Bear Creek from Danielson's report (1981) (Open File Report 81-539, U. S. Geological Survey [USGS]).

Bear Creek (Site No. 81)

Date	Discharge (cfs)
August 10, 1978	.09
October 25, 1978	.08
November 8, 1978	.06
December 13, 1978	.04
June 27, 1979	.34
July 16, 1979	.21
November 30, 1979	.05

The applicant also shows data collected by Co-Op Mining from November 15, 1982 to April 11, 1984. These data included the following parameters: flow (gpm), temperature (^{o}C); pH; iron (mg/l); manganese (mg/l); and, solids (mg/l) (Table 7-8, MRP).

The applicant states in the MRP that the effects of the mining operation on the surface water system will be analyzed through the surface water monitoring plan. In the unlikely event that monitoring shows that the surface water system is being adversely affected by mining activities, additional steps will be taken to rectify the situation in consultation with state and federal regulatory agencies (MRP, page 3-49).

The applicant makes these commitments regarding reclamation:

> "Water diversion structures will be maintained until revegetated areas are well established and stable. Unless an accepted and approved use for these is established after mining, they will be removed as above, graded and revegetated" (MRP, page 3-4).
>
> "This facility will be maintained as long as it is required to meet the effluent limitations of applicable federal or state laws for runoff or drainage. When their usefulness is ended, they will be removed and the sites reclaimed as described previously" (MRP, page 3-4).

"After the disturbed areas are stabilized and runoff is comparable to the area's premining conditions without detention time, the site drainage system will be removed. The site drainage system areas will be backfilled and revegetated. All ponds will be drained and allowed to dry; thereafter they will be backfilled and revegetated" (MRP, page 3-90).

"Natural drainage patterns will be returned to a horizontal drainage pattern similar to the original" (MRP, page 3-90).

"In conjunction with the recontouring, all drainage areas will reestablish to approximate original configuration. In order to minimize the loss of soil, all drainages will be lined with hygronomy blankets for approximately 10 feet above and below the areas of disturbance. In addition, where conditions warrant, rock riprap may also be utilized to add yet another parameter of stability" (MRP, page 3-119).

Ground Water - RVS

The applicant describes ground-water recharge as derived from snowmelt that infiltrates on Gentry Mountain and Gentry Ridge (MRP, Chapter 7, Section 7.1, page 3). The basal limit for vertical migration is considered to be the Mancos Shale (MRP, Section 7.1, page 4). Springs and seeps above the Bear Canyon seam appear to be locally controlled by discontinuous impermeable shales within the North Horn Formation, Price River Formation and Blackhawk Formation (MRP, Section 7.1, page 3).

The Star Point-Blackhawk aquifer is described as the only regional ground-water resource in the mine plan and adjacent area (MRP, Sect. 7.1, page 5). Other aquifers are believed to be limited and develop where water collects under localized perched conditions (MRP, Section 7.1, page 6). The applicant initiated an underground drilling program (12 boreholes) to identify aquifers within the mine plan area (Appendix 7-D). Hole 1 Up and Hole 2 Up penetrated 200 feet of overburden and did not encounter water (Figure 2A and 2B). Hole 1 Down penetrated over 170 feet into rocks underlying the coal seam and was also dry (Figure 2C). The remaining down holes (6, 7 and 9) were terminated at 100 feet or less upon the loss of circulation (Figures 2D, 2E and 2F). The applicant states that "the rapid loss of drilling water [in] some holes, particularly those near the fault, indicated the presence of highly permeable zones such as fractures" (Appendix 7-D). Furthermore, the applicant concludes that there "is a potential for impact of mining on ground water, if a water bearing fracture zone is encountered during mining" (Appendix 7-D). The MRP includes a commitment to acquire

data from three boreholes outside the mine to ascertain the ground-water source for Bear Canyon Spring (Appendix 7-D). These data are not included in the MRP. The applicant commits to acquiring additional underground borehole data at 1,300 foot spacing, as mining progresses and completing boreholes, within one year of permit approval, to characterize the Castlegate Sandstone (Appendix 7-D).

Three springs have been identified in the area adjacent to the mine plan (Plate 3.4-1 and Plate 7-4). Bear Canyon Spring and Birch Spring have been developed as municipal water resources and occur immediately to the northwest of faults (Plate 3.4-1). COP Development Spring is characterized as intermittent and occurs 300 feet northeast of Bear Canyon Spring (MRP, Section 7.1, page 9), apparently on the northeast side of a fault (Plate 3.4-1).

The applicant states that the Star Point-Blackhawk aquifer is the "source for the Bear Canyon Spring" (MRP, Section 7.1, page 5) and conversely, that "spring discharge and ground-water hydrology are controlled by faulting and fractures" (Appendix 7-D). The geologic source and/or controls for Birch Spring and COP Development Spring are not specifically discussed in the MRP.

Table 7-4 indicates Bear Canyon Spring flowed at approximately 140 gpm between April 1978 and March 1979. Average flow for Birch Spring was 17 gpm between May 1978 and October 1979 (Table 7-4). No data are given in the MRP to confirm whether COP Development Spring flows intermittently.

One year of water quality data for Bear Canyon Spring and Birch Spring are given in Table 7.5. These data indicate spring water quality is within state and federal standards. No water quality data are provided for COP Development Spring.

The applicant states that "water is encountered at the working face" (MRP, page 3-45) and that flows are generally less than "10 gal/mine per active face" (MRP, page 3-45). The "water area" indicated on Plate 3-4 near the mine access portal is described by the applicant as "underground storage water" (MRP, Section 7.1, page 9). DOGM technical staff inspected the mine workings on September 18, 1984 and noted standing water and roof drips in the following areas (Memorandum to Coal File, dated September 20, 1984):

1. adjacent to "water area;"

2. at approximately cross-cut #25 along the First North Section;

3. at cross-cut #40 (working face) of the First North Section.

The applicant has not provided a survey of mine inflows or identified the above-noted areas of standing water and roof drips. Baseline water quantity and quality data have not been provided for mine inflows and discharge or the ground-water storage area.

Compliance

Surface Water - TM

The applicant is not in compliance at this time.

The surface water data collected to date is not adequate to characterize the baseline surface water quality and quantity and thereby allow a determination of minimal changes to the prevailing hydrologic balance. The Division requests that the applicant refer to Table 2 and Table 3 of the attached Surface Water Guidelines for perennial streams. The applicant has submitted water quality data previous to this determination and this was taken into consideration.

The applicant indicates that Bear Creek is an intermittent stream. The data available indicate that Bear Creek is a perennial stream. The applicant must make the appropriate changes in the mine plan.

The applicant has not adequately discussed, in detail, reclamation of the natural drainage areas found on-site. To determine if the approved postmining land use of the permit area is not adversely affected is impossible at this time (see UMC 817.44 for specific analysis).

Ground Water - RVS

The applicant is not in compliance at this time.

The MRP presents a variety of incomplete and frequently, contradictory information that disallow delineation of the prevailing subsurface hydrologic balance within and adjacent to the mine plan area. For example, the MRP does not include data that:

1. Identify the geologic mechanism(s) providing recharge to Bear Canyon Spring, Birch Spring and COP Development Spring.

2. Characterize the quantity and quality of mine inflow and discharge.

3. Allow seasonal variation in spring and mine inflow to be identified.

4. Substantiate the depth to ground water.

Moreover, the applicant committed to drilling and submitting data from 12 boreholes by mid-November 1984 for the purpose of delineating the subsurface hydrologic regime (Appendix 7-D). Data from five of the boreholes are not presented in the MRP.

Accordingly, the assessment of whether mine activities have been planned and conducted to minimize changes to the prevailing ground-water hydrologic balance, in order to prevent long-term adverse changes in that balance cannot be achieved. Furthermore, the evaluation of whether changes in subsurface water quality and quantity and in depth to ground water shall be minimized so that the approved postmining land use of the permit area is not adversely affected also cannot be achieved.

Surface Water Stipulations 817.41-(1, 2,)-TM

Prior to permit approval:

1. The applicant must change any statements in the mine plan that refer to Bear Creek as an "intermittent" stream to "perennial" stream.

2. The applicant must commit to sample the complete list of baseline parameters spelled out in the attached Table 2, once in each of the last two quarters in 1985 and each quarter (four times) in 1986 to adequately characterize baseline conditions for Bear Creek. The ongoing monitoring program which Co-Op has undertaken (i.e., monthly sampling) should continue concurrently with baseline data acquisition.

Ground Water Stipulations 817.41-(1, 2, 3, 4)-RVS

Prior to permit approval, the applicant must:

1. Provide the entire suite of data from the 12 boreholes described in Appendix 7-D.

2. Provide data that characterize the quantity and quality of mine inflow and discharge.

3. Commit to acquiring additional water quantity and quality data as described in the attached guidelines for the three springs.

4. Provide data to substantiate the depth to ground water (Star Point-Blackhawk aquifer) and identify the geologic mechanism(s) operating to recharge Bear Canyon Spring.

UMC 817.42 Water Quality Standards and Effluent Limitations - TM

Existing Environment and Applicant's Proposal

The applicant proposes the following water treatment measures for the mine plan area.

"Runoff from all disturbed areas will be passed through sediment treatment facilities. Any discharge from facilities will be monitored in accordance with NPDES permit standards and state and federal regulations."

"As required, water quality data collected from surface water monitoring stations will be submitted within 60 days of the end of each quarter, depending upon the speed of the laboratory analyses" (MRP, pages 3-46, 3-47).

Compliance

The applicant is not in compliance at this time.

The applicant proposed plans showing all disturbed area drainage being passed through treatment facilities. The applicant must implement adequate designs for these treatment facilities. Sedimentation Ponds "A" and "B" have not been constructed adequately to meet regulatory requirements. Until the applicant completes this task, the treatment facilities are not in compliance (see UMC 817.46 for specific analysis).

Stipulations

None.

UMC 817.43 Hydrologic Balance: Diversions and Conveyance of Overland Flow, Shallow Ground Water Flow and Ephemeral Streams - TM

Existing Environment and Applicant's Proposal

The following drainage plan has been implemented at the Bear Canyon Mine.

"The vast majority of the disturbed area of the Bear Canyon Mine is on the west side of Bear Canyon (same side as the mine portal and to the south). All runoff from the west side disturbed area is collected and channeled to Sedimentation Pond "A." The small amount of runoff from the disturbed area east of Bear Creek is channeled to Sedimentation Pond "B." In order to minimize the amount of water crossing the disturbed area, runoff from the undisturbed area above is diverted around or channeled through the disturbed area and into Bear Creek" (MRP, Section 7.2.5, no page number).

Computer programs and printouts were used in sizing the ditches and culverts. Refer to Plate 7-1 for locations of the various structures and Plate 7-5 for areas used in calculations.

Compliance

The applicant is not in compliance at this time.

The Division has analyzed the design calculations proposed by the applicant for the disturbed and undisturbed surface water drainage plan. The applicant has used an extended basin lag time in the MRP for all ditch and culvert calculations based on the conclusion that "different methods, different rainfall distributions, different computer programs will all generate different numbers and that too short a time of concentration or lag for generated hydrographs will give you an erroneously high indication of peak flow because of the difference between the theoretical computations and the actual channel and ground surface conditions found in nature" (Appendix 7-D, MRP).

The Division does not concur on the issue of using an artificially lengthened basin lag time in design calculations. However, the results produced by the applicant are not significantly different from the Division's calculations. Thus, the designs proposed by the applicant are deemed acceptable, especially in light of the fact that the structures (i.e., culverts, ditches, etc.) are already in place. The structures associated with the surface water drainage plan will be monitored monthly by Division Inspection and Enforcement Staff. Should problems become evident, Co-Op will be required to replace or modify existing structures.

Stipulations

None.

UMC 817.44 Stream Channel Diversions - TM

Existing Environment and Applicant's Proposal

The applicant has not included information on the Bear Creek diversion north of the scalehouse facilities. Reclamation plans have been discussed in vague, general terms, as follows:

"Natural drainage patterns will be returned to a horizontal drainage pattern similar to the original" (MRP, page 3-90).

"In conjunction with the recontouring, all drainage areas will reestablish to approximate original configuration. In order to minimize the loss of soil, all drainages will be lined with hygronomy blankets for approximately 10 feet above and below areas

of disturbance. In addition, where conditions warrant, rock riprap may also be utilized to add yet another parameter of stability" (MRP, page 3-119).

Compliance

The applicant is not in compliance at this time.

The MRP does not include specific plans for postmining drainage. The applicant has not included design specifications for the existing 60-inch concrete culvert in Bear Creek and plans for its removal. The applicant must include cross-sections of the stream channel and floodplain taken prior to placement of the 60-inch culvert in the creek, as well as specific plans (cross-sections, riprap sizes, filter blankets and placement) for channel restoration.

The applicant must also submit all of the necessary calculations, cross-sections and specific plans for any other disturbed drainages on site. They must meet the criteria given under UMC 817.44(d)(1)(2)(3). Reclaimed channels must have the same geomorphic characteristics and a capacity equivalent to that of the unmodified stream channel immediately upstream and downstream from the diversion.

The Postmining Topography map, Plate 3-2, shows restored drainages associated with Bear Creek located on the south side of the Bear Canyon Road across from the scalehouse facility. This is not an accurate representation of where the natural creek channel is currently located.

Stipulation 817.44-(1)-TM

Prior to permit approval:

1. The applicant must submit the necessary cross-sections, plans, calculations for restoration of postmining drainage. This must include:

   A. the longitudinal profile and cross-section of all postmining drainages;

   B. accurate location of channels;

   C. predicted flows and velocities;

   D. protective measure for restored channels (i.e., riprap, vegetation, energy dissipators, etc.);

   E. measures to restore a pattern of riffles, pools and drops rather than uniform depth that approximate natural stream channel characteristics.

UMC 817.45 Sediment Control Measures - TM

Existing Environment and Applicant's Proposal

The applicant proposes the following for sediment control.

"Mulching to reduce and limit rainfall impact will be a widely used erosion control practice" (MRP, page 3-92).

During revegetation, hydromulch will be used to "supplement revegetation and control runoff until stabilization is complete and to prepare a site which will be stable enough to allow vegetation to become established" (MRP, page 3-118).

"In order to minimize the loss of soil, all drainages will be lined with hygronomy blankets for approximately 10 feet above and below the areas of disturbance. In addition, where conditions warrant, rock riprap may also be utilized to add yet another parameter of stability" (MRP, page 3-119).

"The hydroseeding, mulching, fertilizing and tackifying will virtually assure rapid establishment, thus minimizing wind and water erosion" (MRP, page 3-120).

Bear Canyon Road erosion control is proposed as follows by the applicant. "In areas where velocities of runoff exceed five fps, erosion protection such as straw bales at 100 foot intervals or six inches median diameter riprap on a bed of two inch gravel/sand six inches thick shall be maintained. Culvert spacing conforms with the requirements of UMC 817.153(c)(2)(i). Rock or concrete headwalls shall be provided at the inlet to all culverts and riprap or other erosion protection shall be provided at the outlet" (MRP, page 3-5C).

Compliance

The applicant is not in compliance at this time.

The applicant has presented several sediment control methodologies to benefit erosion control during reclamation. The applicant needs to present specific plans for the placement of straw bales, silt fences, hygronomy blankets in channels, etc.

The applicant has certain methods of sediment control in place on-site which have not been specifically detailed in the MRP or on Plate 7-1. These measures must be included in the MRP and Plate 7-1. This must include a typical cross-section or drawing of the structure (i.e., silt fence, energy dissipator) and installation procedure.

The applicant uses silt fences in many of the ditches on the property. Frequently they are installed improperly and, therefore, are not effective in enhancing sediment control. The applicant also proposes the use of hygronomy blankets in reclaimed stream channels. Although they work well for the area they cover, head cuts form at the downstream end and can cause extensive damage to channel integrity. The Division recommends that hygronomy blankets not be used in lieu of riprap of more permanent measures during reclamation.

Stipulation 817.45-(1)-TM

Prior to permit approval:

1. The applicant must present specific plans for sediment control measures used during operation and postmining, including cross-sections, installation procedures and drawings for all sediment control measures to be implemented on-site (i.e., silt fences, straw bales, hygronomy blankets, riprap placement, check dams, vegetative sediment filters, dugout ponds, etc.).

UMC 817.46 Hydrologic Balance: Sedimentation Ponds - TM

The applicant includes the following proposal for sediment ponds in the MRP.

"The vast majority of the disturbed area of the Bear Canyon Mine is on the west side of Bear Canyon (same side as the mine portal and to the south). The all runoff from this west side disturbed area is collected and channeled to Sedimentation Pond "A." The small amount of runoff from the disturbed area east of Bear Creek is channeled to Sedimentation Pond "B." In order to minimize the amount of water crossing the disturbed area, runoff from the undisturbed area above is diverted around or channeled through the disturbed area and into Bear Creek" (MRP, Section 7.2.5, no page number).

The disturbed area west of Bear Creek was split into three sections to facilitate calculations. The design calculations for both Pond "A" and "B" are found in Section 7.2.5.1 of the MRP.

The applicant chose to accept calculations derived by Division technical staff for sediment pond "A" and "B." The calculations are as follows:

Design Criteria Pond "A"

Drainage Area: 14.35 Acres
SCS Curve #82
3-Year Sediment Storage: 41,444 ft^3

10-Year, 24-Hour Runoff Storage: 42,714 ft^3
Total Storage Volume: 84,158 ft^3
Use Existing Spillway: 10 Foot Wide
Broad Crested Weir
Rainfall Data Base: Hiawatha Data by
E. Arlo Richardson

Design Criteria Pond "B"

Drainage Area: 1.82 Acres
SCS Curve #82
3-Year Sediment Storage: 2,156 ft^3
10-Year, 24-Hour Runoff Storage: 8,182 ft^3
Total Storage Volume: 10,338 ft^3
Use Existing Spillway: 4 Foot Wide
Broad Crested Weir
Rainfall Data Base: Hiawatha Data by
E. Arlo Richardson

Plates 7-2 and 7-3 shows the required plan and sections of Sedimentation Pond "A" and "B," respectively.

Compliance

The applicant is not in compliance at this time.

The applicant has adequate plans for the design of pond "A" and, therefore, needs to implement this design as soon as possible during the 1985 construction season. The applicant currently does not have complete plans for Pond "B" which address Division concerns. The size requirements for riprap to be implemented at the road drainage culvert into the pond and an accurate description of protection for the spillway must be provided.

The applicant has currently encroached upon Bear Creek with pond "B." When reconstructing Pond "B," the applicant must move this an adequate distance from the creek based on flood flow calculations for this reach of Bear Creek. Adequate protection must be provided for the outslope of Pond "B" to withstand velocities expected from flood flows associated with Bear Creek.

The applicant has not provided detailed plans for removal of the sedimentation ponds. The applicant has not provided detailed plans for diverting disturbed area flows going to the sedimentation ponds during reclamation to Bear Creek when the ponds are being removed and when drainages are being established in all ephemeral drainages.

Stipulation 817.46-(1, 2)-TM

Prior to permit approval:

1. The applicant must provide detailed plans for removal of the sedimentation ponds. The applicant must provide plans to divert flows going to and around the sedimentation ponds during reclamation and submit plans as to how this will be carried out.

2. The applicant must provide adequate plans for sediment pond "B" that address the concerns identified in the compliance portion of this regulation. These concerns are as follows:

   A. location in relation to Bear Creek, including flood flow calculations (25-year, 24-hour event) for this reach of Bear Creek and outslope protection measures, if necessary, to withstand velocities expected from these flood flows;

   B. a decant pipe placed in the embankment with oil skimmer to provide decant capabilities;

   C. an adequately sized embankment to meet the requirements of UMC 817.46(1);

   D. protection from erosion for all inlets and spillways. Calculations show no outflow from the pond during the 25-year, 24-hour event, but minimal protection must be provided to protect bare soils from erosion.

UMC 817.47 Hydrologic Balance: Discharge Structures - TM

Existing Environment and Applicant's Proposal

The applicant addresses certain specific methods for reducing discharge related erosion from sedimentation ponds and diversions by installing energy dissipators, riprap channels and other devices where necessary to reduce erosion to control flows.

In Co-Op's technical deficiency response of February 15, 1985 (Appendix 7-D, MRP), the following was given. Various energy dissipating devices are available. "Co-Op is presently investigating several types and does commit to use one that will work in those area where it is required" (MRP, Appendix 7-D).

The applicant also discusses that the outlet from the "A" pond flows through an existing natural drainage course which is heavily "riprapped" by nature's own hand with large rocks and boulders (Appendix 7-3, MRP).

Compliance

The applicant is not in compliance at this time.

The applicant must identify what energy dissipators will be used, how they will be installed and where it will be located on Plate 7-1.

In order to resolve issues related to energy dissipation and achieve compliance with this regulation, the applicant has agreed to an on-site visit by Division staff in the spring of 1985 (Appendix 7-D). The Division has identified several potential problem areas. These areas as well as other areas will be addressed during this site visit verification.

Stipulation 817.47-(1, 2)-TM

Prior to permit approval:

1. The applicant must identify what energy dissipators will be used and where they will be located on Plate 7-1.

2. The applicant must also provide the riprap size and installation method to be used for each area and the calculations supporting the size proposed.

UMC 817.49 Hydrologic Balance: Permanent and Temporary Impoundments - TM

Existing Environment and Applicant's Proposal

The applicant states that all embankments of temporary impoundments, the surrounding areas and diversion ditches, disturbed or created by construction shall be graded, fertilized, seeded and mulched to comply with the requirements of UMC 817.111-.117 immediately following embankment construction (MRP, Appendix 7-D). Areas where vegetation is not successful, or where rills and gullies develop shall be repaired and revegetated.

Co-Op also agrees that all dams and embankments shall be routinely maintained during the mining operation. Any vegetative growth will be cut where necessary to facilitate inspection and repairs. Ditches and spillways shall be cleaned at least annually. Any combustible materials present on the surface shall be removed and all other appropriate maintenance procedures followed.

Compliance

The applicant is not in compliance at this time.

The applicant has not proposed any permanent impoundments to be left on-site, therefore, does not need to meet the requirements associated with permanent impoundments. The applicant needs to specifically address certain requirements of UMC 817.46(e) - (u) as is stated in UMC 817.49(b) (see Compliance, UMC 817.46).

Stipulations

See UMC 817.46.

UMC 817.50 Hydrologic Balance: Underground Mine Entry and Access Discharges - RVS

Existing Environment and Applicant's Proposal

The applicant states that "strata in the Wasatch Plateau generally dip southerly (slightly southeast or southwest) at angles of one to three degrees" (MRP, page 6-9). Plate 3.4-1 indicates the dip within the mine plan and adjacent area ranges from one to two degrees in an overall southerly direction. Elevations shown on Plate 3-4 show the access portal, conveyor belt portal and fan portal to be lower than all other portions of the mine workings.

DOGM technical staff have noted, while inspecting the mine site, the presence of a concrete retaining wall installed along the portal access road in close proximity to the "wet area" shown on Plate 3-4. Apparently, the retaining wall was installed to reduce unplanned mine discharge and control associated highwall slumping.

The Technical Deficiency Document dated January 11, 1985 stated that the "applicant must address potential mine flooding and associated build-up of hydraulic head and unplanned gravity discharges of water as required by UMC 817.50" (page 7). The applicant has not provided this information in either the MRP or Technical Deficiency Response dated February 11, 1985.

Compliance

The applicant is not in compliance at this time.

Information presented in the MRP and observed at the mine site suggest underground mine entry and access discharges are possible. Accordingly, the applicant must address the requirements of UMC 817.50.

Stipulation 817.50-(1, 2)-RVS

Prior to permit approval, the applicant must:

1. Submit information that demonstrates entries and accesses to underground workings are located, designed, constructed and utilized to prevent or control gravity discharge of water from the mine.

2. Commit to:

   A. sampling on a quarterly basis until bond release any discharges from the underground workings which occur after mining. Sampling will assess if discharges are in compliance with the effluent standards of UMC 817.42 and all other applicable state and federal regulations;

   b. provide treatment, if necessary, to any discharges to achieve compliance with applicable standards during the period of discharge.

UMC 817.52 Surface and Ground Water Monitoring - TM, RVS

Existing Environment and Applicant's Proposal

Surface Water - TM

The following parameters are currently being measured for water samples at the Bear Canyon Mine site.

TABLE 3-6

Parameters Included in Surface Water and Ground Water Monitoring Plan

1. Flow (gpm)
2. pH
3. Temperature (^{o}C)
4. Total Dissolved Solids (mg/l)
5. Dissolved Calcium (mg/l)
6. Dissolved Iron (mg/l)
7. Dissolved Magnesium (mg/l)
8. Dissolved Potassium (mg/l)
9. Dissolved Sodium (mg/l)
10. Dissolved Bicarbonate (mg/l)
11. Dissolved Carbonate (mg/l)
12. Dissolved Chloride (mg/l)
13. Dissolved Nitrate (mg/l)
14. Dissolved Sulfate (mg/l)
15. Total Suspended Solids (mg/l)

Note: See Figure 7-4 for reporting format.

Sampling is being conducted monthly at the monitoring sites given below.

"In the past, Co-Op Mining Mining Company has monitored two stations on Bear Creek, one above (north) of the mine plan area and one below (southwest). The monitoring location above the mining area is approximately 3,000 feet upstream from where the mine road crosses Bear Creek in the mine plan area. The monitoring location downstream is a Weir W-4. In addition to these, a third monitoring location is being added. In the future, the right-hand tributary of Bear Creek will be monitored just above its confluence with Bear Creek" (see Plate 7-4).

Flows will be determined by direct measurement (depth times width times 2/3 velocity) or, whenever feasible, by timed filling of a unit volume container. Chemical analyses will be performed by a certified laboratory. Reporting format will be as shown in Figure 7-4.

Ground Water - RVS

The applicant commits to monitoring point source mine inflows that sustain a flow of one gpm or greater over 30 days (MRP, Chapter 7, Section 7.1, page 9). Monitoring will encompass monthly sampling or water quality and quantity for one year or until the area becomes inaccessible (MRP, Section 7.1, page 9).

The applicant states that "underground storage water will be monitored, and in the event discharging from the mine becomes necessary; discharged water will be monitored for quality and quantity" (MRP, Section 7.1, page 9).

A quarterly report that summarizes mine inflow and discharge will be submitted to DOGM (MRP, Section 7.1, page 9).

COP Development Spring will be monitored according to Figure 7-4.

The applicant commits to monthly "collection of data" for borehole monitoring stations (Appendix 7-D).

Compliance

Surface Water - TM

The applicant is not in compliance at this time.

The operational monitoring plan proposal needs additional constituents to adequately address this regulation. Specific conductivity, total settleable solids, total hardness as $CaCo_3$, manganese, oil and grease and a cation anion mass balance should be added to the current monitoring proposal.

Ground Water - RVS

The applicant is not in compliance at this time.

The ground water monitoring plans proposed in the MRP are incomplete with respect to identifying and selecting monitoring sites and the water quality parameters being derived. Furthermore, monitoring schedules are not consistent.

Surface Water Stipulation 817.52-(1)-TM

Prior to permit approval:

1. The applicant must add the following constituents to the surface water monitoring program:

   A. specific conductivity;

   B. total settleable solids;

   C. total hardness as $CaCo_3$;

   D. manganese;

   E. oil and grease;

   F. a cation anion balance for each sample.

Ground Water Stipulations 817.52-(1, 2, 3, 4)-RVS

Prior to permit approval, the applicant must:

1. Submit baseline water quality and quantity data for mine inflows and discharges greater than one gpm, all three springs and boreholes that encountered water (see attached Ground Water Baseline and Operational Water Quality Parameter List). Moreover, the applicant must commit to acquiring and submitting a total of two years of baseline water quality and quantity data for the above-noted monitoring sites. Mine inflows and discharges must be monitored quarterly, whereas springs and boreholes must be monitored four times per annum at not less than monthly increments.

2. Provide a mine inflow survey that identifies wet areas on a mine workings map; including roof drips, wall weeps, seeps, sumps and flowing factures and/or faults.

3. Commit to initiating an operational monitoring program that acquires water quality and quantity data as described in the attached guidelines. The operational monitoring schedule shall include quarterly sampling of mine inflows and discharges and four spring and borehole samples per annum at not less than monthly increments.

4. Commit to providing DOGM with an Annual Hydrologic Monitoring Report that incorporates yearly water quality and quantity data and includes a yearly update of the mine inflow survey.

UMC 817.53 Hydrologic Balance: Transfer of Wells - RVS

Existing Environment and Applicant's Proposal

The applicant states on page 3-86 of the MRP that "upon abandonment of drilling operations, all drill holes are to be cemented with an approved slurry."

Compliance

The applicant has indicated that no boreholes will be transferred for further use as a water well.

The applicant is in compliance with this section.

Stipulations

None.

UMC 817.54 Water Rights and Replacement - TM

Existing Environment and Applicant's Proposal

The applicant shows on page 3-115 of the MRP that Mr. C. W. Kingston owns 333 and 77/100 shares of Capital Stock in the Huntington-Cleveland Irrigation Company (MRP, Appendix 3.3.6).

In Appendix 3.3.6.A, a letter from Mark Page, Area Engineer for the Division of Water Rights, Department of Natural Resources, state of Utah, states that Co-Op Mining has filed Change Application No. a-12921 (93-1067) requesting the right to withdraw up to 0.25 sec-ft of water from a mine tunnel in Bear Canyon at a point North 79 feet and East 75 feet from the Southwest Corridor of Section 26, Township 16 South, Range 7 East, SLB&M.

The applicant states the following with regard to water replacement.

"State and federal regulations (30 CFR 817.54 and UMC 817.54) require that an alternate water supply be provided to replace any water supplies in the area, Co-Op Mining Company will provide this alternate supply if needed. Several alternate sources of supply exist:

1. Water from springs could be piped to the affected site.

2. Water rights could be purchased for springs damaged by Co-Op Mining Company, or, alternate water shares could be substituted (see Appendix 3.3.6, Proof of Ownership).

3. A well could be drilled at the affected site to provide an alternate supply (since artesian conditions do not exist).

4. Water produced in the mine could be piped to the affected site.

5. Water shares presently owned could be transferred.

Alternative 4 may mean treating of poorer quality water and pumping to overcome elevation differences.

In the unlikely event that mining adversely affects a water source, the Co-Op Mining Company will select an alternative after considering all possibilities of each site-specific circumstance" (MRP, pages 3-46 and 3-47).

Compliance

The applicant is not in compliance at this time.

The applicant applied for underground water rights at the Bear Canyon Mine and received approval from the Division of Water Rights on September 28, 1984 to transfer water rights from the Co-op Trail Canyon Mine. No other water rights have been applied for culinary water to be used on-site. Mr. C. W. Kingston is shown as owning 344 and 77/100 shares of Capitol Stock in the Huntington-Cleveland Irrigation Company. However, Mr. Kingston is not listed as the applicant or a representative of Co-Op Mining Company. The applicant must confirm ownership of appropriate water rights, to replace water supplies that may be affected by contamination, diminution or interruption resulting from coal mining activities. In order to assess the applicant's ability to replace water, an accounting of existing water rights in and adjacent to the mine plan area must be included in the MRP. This will include identification of each water right in and adjacent to the lease area showing location of each right, owners' names, quantity in acre-feet of the right, and approved use. Locations must be shown on a map pursuant to UMC 784.14.

Stipulation 817.54-(1, 2, 3)-TM

Prior to permit approval:

1. The applicant must demonstrate ownership of water rights to replace water supplies affected by coal mining activities. Moreover, the applicant must identify the existing appropriated water rights as detailed in the compliance section above.

2. The applicant must indicate whether water resources associated with COP Development Spring will be developed for the mine and if so, demonstrate that the water rights for the spring have been acquired.

3. The applicant must indicate the source for surface facility culinary water and document that the water rights for this source have been acquired.

UMC 817.55 Discharge of Water into an Underground Mine - TM

Existing Environment and Applicant's Proposal

The applicant has not discussed discharge of water into the mine.

Compliance

The applicant is not in compliance at this time.

The applicant must incorporate a statement in the MRP about discharge of water into the mine. A negative determination will satisfy the requirements of this regulation.

Stipulation 817.55-(1)-TM

Prior to permit approval:

1. The applicant must state whether surface or ground water will be discharged into the mine.

UMC 817.56 Hydrologic Balance: Postmining Rehabilitation of Sedimentation Ponds, Diversions, Impoundments and Treatment Facilities - TM

Existing Environment and Applicant's Proposal

The applicant provides the following information about restoration of the surface water drainage system.

"After the disturbed areas are stabilized and runoff is comparable to the area's premining conditions without detention time, the site drainage system will be removed. The site drainage system areas will be backfilled and revegetated. All ponds will be drained and allowed to dry; thereafter, they will be backfilled and revegetated" (MRP, page 3-90).

Compliance

According to the above statement, the applicant does not propose to retain any impoundments or drainage systems on-site. Therefore, the applicant is in compliance with this section.

Stipulations

None.

UMC 817.57 Hydrologic Balance: Stream Buffer Zones - TM

Existing Environment and Applicant's Proposal

Co-Op has attempted to protect Bear Creek in all areas where existing structure and disturbance preclude the establishment of a buffer zone. This has been accomplished by earthen berms along roads adjacent to the stream, culverting in the area of the scalehouse, silt fences and straw filters on all tributaries which pass disturbed runoff from haul roads. In addition, all disturbed area runoff other than haul roads pass through a sediment pond prior to discharge into Bear Creek. The buffer zone that does exist will be properly posted and signed.

No additional disturbance is anticipated in the Bear Canyon drainage however, if in the future expansion is required, Co-Op is committed in taking all necessary safeguards to ensure the integrity of Bear Creek and establishing an adequate buffer zone (MRP, page 3-119).

Compliance

The applicant is not in compliance at this time.

A map showing stream buffer zones and sign placement has not been incorporated into the MRP.

Stipulation 817.57-(1)-TM

Prior to permit approval:

1. The applicant must submit a map showing stream buffer zones and stream buffer zone sign placement.

UMC 817.59 Coal Recovery - RVS

Existing Environment and Applicant's Proposal

The Bear Canyon coal seam averages 10 feet in thickness over the proposed workings and is the current extraction target (MRP, page 3-20B). Recoverable coal reserves were "conservatively" estimated to be 50 percent of the in-place coal reserves (MRP, page 3-20C). Alternatively, the applicant states that recovery is projected to be 60 percent of the in place reserves (MRP, page 3-21).

Under Section 3.4.1.2 entitled Mining Methods, the applicant explicitly states that room and pillar mining methods will be employed (MRP, page 3-9). Conversely, the applicant indicates under Section 3.4.1.4, that longwall mining methods will be utilized (MRP, page 3-11).

The applicant states that the Hiawatha (lower) coal seam will be mined later and commits to providing the Division with "complete plans for entering the lower seam prior to taking such action (MRP, page 3-20C)." Plans for entering the Hiawatha seam will be submitted as a modification to this MRP and subject to Division approval.

Compliance

The applicant is not in compliance at this time.

Equivocation with regard to the method(s) of mining and associated coal recovery estimates precludes an assessment of the maximum utilization and conservation of the coal resource.

The applicant is hereby advised that approval of this MRP does not constitute approval for accessing or mining Hiawatha coal seam reserves.

Stipulation 817.59-(1)-RVS

Prior to permit approval:

1. The applicant must provide an explicit description of the mining method(s) to be employed and an anticipated coal recovery value for each mining method.

UMC 817.61-.68 Use of Explosives - RVS

Existing Environment and Applicant's Proposal

The applicant states that site preparation work may require surface blasting (MRP, page 3-30). Conversely, on page 3-5E the applicant "does not anticipate the use of explosives . . ." and furthermore, states in the following paragraph that "there are no surface blasting activities incident to this underground operation."

The MRP notes that explosives may be used in the underground operation (page 3-5E) and the applicant commits to complying with all applicable state and federal laws, including utilizing trained, examined and certified personnel as described under UMC 816.61(b) (page 3-5E).

Explosives will be stored in fire and bulletproof magazines and located in a clearly designated "Explosives Storage Area," as required by state and federal laws (MRP, page 3-5E).

Compliance

The applicant is not in compliance at this time.

The applicant has complied with UMC 817.61, but has not addressed UMC 817.62-.68.

Inasmuch as the operator indicates surface blasting may occur, the specific requirements of UMC 817.62, 817.65, 817.67 and 817.68 must be separately addressed.

Stipulation 817.62-.68-(1)-RVS

Prior to permit approval:

1. The applicant must separately address each of the regulatory requirements encompassed by UMC 817.62-.68.

UMC 817.71 Disposal of Excess Spoil and Underground Development Waste - EH

Existing Environment and Applicant's Proposal

Co-Op does not anticipate the handling of development waste rock in its mining operation although a contingency plan has been developed if the need were to become critical in the effort to maximize coal removal. Co-Op has designated a waste rock storage site in Trail Canyon. This area was used historically in this capacity and has the necessary hydrologic safeguards presently

implemented. The waste would be handled in the same manner as coal and trucked to Trail Canyon. This area would be addressed as a permit modification or New Permit Application (pages 3-73, 3-74).

Compliance

The applicant is not in compliance at this time.

The applicant has committed to addressing the use of an underground development waste disposal site as a permit modification or New Permit Application, but does not commit to a specific time frame for submittal of the disposal site plans.

Stipulation 817.71-(1)-EH

Prior to permit approval:

1. The applicant must commit in the MRP to submit plans for the underground waste disposal site at least 90 days prior to requiring surface disposal of underground development waste. Further, the applicant must commit in the MRP that the site will not be used until fully permitted.

UMC 817.81-.88 Coal Processing Waste Banks - PGL

Existing Environment and Applicant's Proposal

The applicant does not process any coal on-site, therefore, this regulation is not applicable. The coal is transported from the mine by conveyor belt to a receiver bin, conveyed to the sizing and crushing plant, and from there, to the truck loadout bins or to the stockpile area. It is stated on page 3-4 that the applicant does not generate coal refuse.

UMC 817.89 Disposal of Noncoal Waste - PGL

Existing Environment and Applicant's Proposal

The applicant states on page 3-74 that "salvageable equipment is stored in the designated area." The noncoal waste (other than rock refuse) generated in the operation of the mine will be placed in metal dumpsters. A local contractor empties these bins when they are 80 percent full.

Page 3-125 describes the noncoal storage yard and a schematic (Figure 3.8.1) outlines the yard.

Compliance

The applicant is not in compliance at this time.

The applicant has not addressed the upper pad area near the substation where nonoal waste is stored presently. The applicant must describe all noncoal waste storage areas and delineate these noncoal waste storage areas on the surface facilities map (Plate 2-2).

Stipulation 817.89-(1)-PGL

Prior to permit approval:

1. The applicant must describe and delineate on the surface facilities map all noncoal waste storage areas.

UMC 817.91-.93 Coal Processing Waste: Dams and Embankments - PGL

This section is not applicable because coal is not processed at the mine and, therefore, coal refuse is not generated (see UMC 817.81-.88).

UMC 817.95 Air Resources Protection - PGL

Existing Environment and Applicant's Proposal

The applicant states on page 3-69 that the mining operation would not be a "major source" under the PSD regulations because total annual controlled emissions of particulate matter are expected to be less and 250 tons/year (Chapter 11, page 3-130, includes a stipulated approval letter from the Division of Environmental Health, dated December 20, 1983).

Compliance

The applicant is not in compliance at this time.

The conditional approval needs a follow-up letter from the Division of Environmental Health (DEH) stating that all of the conditions outlined in the approval letter of December 20, 1983 have been met. DEH Condition #2 states that an excess production of 200,000 TYP cannot be sought without prior approval from the Executive Secretary in accordance with Section 3.1 UAR. The applicant states on page 3-33 of the MRP that the annual production will be in excess of the 200,000 TPY.

Stipulation 817.95-(1)-PGL

Prior to permit approval:

1. The applicant must submit a follow-up letter from the DEH confirming compliance with all of the conditions outlined in the December 20, 1983 approval letter.

UMC 817.97 Fish and Wildlife Information - SC

Existing Environment and Applicant's Proposal

The Fish and Wildlife Resources Information for the Bear Creek Canyon Mine area is discussed in Chapter 10 of the MRP.

A wide variety of wildlife species use the highly variable habitats within and adjacent to the permit area (Appendix 10-A). Five major vegetation habitat types are present. They are pinyon-juniper, sagebrush, conifer, grass and riparian.

Economically important and high interest mammals which are most likely impacted by mining operations and associated disturbance include mule deer and elk. According to the Utah Division of Wildlife Resources (DWR), the permit and adjacent area contains critical winter range for elk and deer, high priority summer range for elk and deer and high priority winter range for deer (Figure 10-1). Other high interest mammals present in the area include the cougar, black bear, bobcat and snowshoe hare. The major impact to these species is the loss of habitat which has already occurred (Section 10.4.2).

Two species of birds on the endangered list may occur on or near the permit area. These are the bald eagle (winter resident) and peregrine falcon (thought to be a year-round resident in southeastern Utah). Neither species has been observed and there are no known roosting trees or nesting sites within the permit area (page 10-22). No other threatened or endangered species are known to occur in the mine plan area (Section 10.3.3.1 and Section 9.4).

Golden eagle nests have been found on and near the permit area (Appendix 10-6). From surveys conducted the last thee years, only one nest has shown evidence of activity, and it is believed to be a buteo rather than a golden eagle nest (Appendix 10-C). No disturbance to nests are expected to occur.

Although the applicant has stated that no perennial streams exist on the permit area (page 10-6), the Division considers Bear Creek to be perennial (see UMC 817.41, Compliance). Bear Creek is straddled by the mine plan area with the vast majority of the disturbed area west of it (Section 7.22). The quality of Bear Creek is poor before passing through the mine plan area (Section 7.2.3). Bear Creek drains into Huntington Creek, determined to be a Class 3 (adjacent to the project area) fishery by the DWR. It supports natural reproduction of self-sustaining cutthroat and brown trout populations (Appendix 10-A). All drainage from the disturbed areas is passed through sedimentation ponds before discharge into lower Bear Creek and subsequently Huntington Creek.

Existing disturbance precludes establishment of a buffer zone next to Bear Creek in several areas. However, a commitment has been made to post and maintain buffer zones in all other undisturbed areas adjacent to the stream (page 3-119).

A commitment to notify the Division in the event that any threatened or endangered species or their critical habitats are observed on the permit area has been made (page 10-22).

The potential raptor electrocution hazard posted by existing powerline pole configurations on site has been determined by the U. S. Fish and Wildlife Service (USFWS) to not require corrective modification as long as raptor mortality continues not to occur (letter from USFWS to DOGM dated July 6, 1983). All new poles and power transmission facilities will be designed as raptor protected (page 10-37).

A minimum of either 100 or 200 foot barrier pillars to the outcrop (see UMC 817.121-.126) will be maintained to minimize potential detrimental impacts to nesting raptors from subsidence and possible escarpment failure (page 3-16).

The mine produces no acid-forming or toxic-forming materials. Any toxic materials stored on site will be in sealed containers and placed inside a berm (page 3-27) No pesticides will be used unless approved by the regulatory authority (page 10-35).

All water sources necessary to wildlife will be protected or an alternative source will be provided (page 3-64). In addition, riparian habitat on Bear Creek will be enhanced by installing velocity dissipators, and planting of species valuable for wildlife along the stream channels (Appendix 10-D).

All employees will be required to view the film "Coal Mining and Wildlife" produced by the DWR as a tool to educate mine personnel in safeguarding wildlife.

During the first suitable planting season following mining, the applicant will implement permanent revegetation methods designed to restore and enhance wildlife habitat on disturbed areas. The revegetation planting mixture includes herbaceous and woody species that are adapted to on-site conditions and are of known value to wildlife for cover, forage or both (MRP, Section 9.5).

Compliance

The applicant is not in compliance at this time.

In an effort to characterize the fish and wildlife resources and assess potential impacts, the applicant has conducted surveys on the permit area as well as a literature search of the DWR files and other publications on the distribution and status of vertebrates in the study region (Appendix 10-A).

Surveys to determine the presence of any critical habitat of a threatened or endangered species, any plant or animal listed as threatened or endangered or any bald or golden eagle have been conducted. Only one nest, thought to be that of a buteo, was active in 1983 (Appendix 10-C). The Company has committed to mitigate possible impacts to nests from subsidence using measures agreed upon between the USFWS and DWR (Appendix 10-D).

A commitment to report any threatened and endangered species or their critical habitat observed on the permit area during operations has been made (page 22). A commitment to report any golden eagles observed has not been made.

The potential raptor electrocution hazard posed by existing powerline pole configurations on-site has been determined by USFWS to not require corrective modification as long as raptor mortality continues not to occur (letter from USFWS to DOGM dated July 6, 1983) and all additional powerlines will be constructed to be raptor protected (page 10-37).

If water sources are adversely impacted by mining, an alternative source will be provided (page 3-64). Adequate plans for permanent revegetation of the site have been provided (Section 9.5; see TA, Section UMC 817.111-.117). Species to be used for revegetation will provide nutritional value and cover for fish and wildlife and support and enhance fish and wildlife habitat after bond release. Plants will be grouped in a manner which optimizes edge effect (page 9-24).

The Bear Canyon Mine has intermittently been in operation since 1896. The majority of surface disturbance and associated loss of wildlife habitat has already occurred. Little additional surface disturbance is planned. Therefore, the mitigation and management plans focus on minimizing impacts related to continued mining activities and returning the site to suitable habitat after decommissioning (MRP, Section 10.5).

Stipulation 817.97-(1)-SC

Prior to permit approval:

1. A commitment to promptly report to the Division the presence of any golden eagle not previously reported on the permit area must be made.

UMC 817.99 Slides and Other Damage - PGL

Existing Environment and Applicant's Proposal

The applicant commits to take all necessary steps to remedy any adverse impacts from slides and notify the Division by the fastest available means to safeguard human and environmental values as stated on page 3-42 (Section 3.5.2.2).

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.100 Contemporaneous Reclamation - SC

Existing Environment and Applicant's Proposal

Land reclamation will take place as soon as possible after surface disturbance (page 3-78). Appendix 3-6 details procedures to be used for backfilling, grading and revegetation of any area which becomes available during the life of the mine. Reclamation and revegetation will be implemented during the first available favorable planting season (Section 3.6.1).

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.101 Backfilling and Grading - PGL

Existing Environment and Applicant's Proposal

The applicant addresses backfilling as follows.

According to page 3-91, "backfilling operations will be conducted in the portal and treatment facility areas. Compaction operations utilizing equipment such as sheeps-foot tampers, will be conducted to stabilize all filled holes and depressions. The portal fill material will be put in place with a LHD."

A backhoe and dozer will work in conjunction to remove the outer edge of the operational benches and compact it against the highwall. This will be accomplished by the backhoe reaching over the edge of the bank approximately 20 feet pulling the material back. The dozer will then push and compact this material from the highwall outward to reach a bench slope of approximately 33h:1v for drainage purposes.

The procedure will continue from the upper benches down the canyon reshaping the mine yard and disturbed area to the configuration shown on Plate 3-2, Postmining Topography.

As backfilling and grading is completed, operational areas will be scarified by ripping to a depth of 18 inches with a dozer where possible.

Topsoil will be spread over the disturbed areas after the grading and ripping is complete.

With regard to recontouring, the applicant states "The cut slopes will be constructed in a manner which will achieve the necessary physical stability." Steep slopes and highwalls, the applicant states, are inaccessible to conventional equipment, and thus, cannot be reduced or flattened appreciably during reclamation. Stability analyses on these areas have confirmed that they have a factor of safety greater than 1.3 as they presently exist" (MRP, page 3-91C).

The applicant proposes to reduce or retain highwalls as follows, "The highwalls will be reduced along the pad and road areas where feasible. This will be accomplished by recovering material from the edge of pad and road fill areas with a backhoe and placing it against the base of the highwall. The material will be compacted with a cat to promote stability of the backfill. Erosion controls, such as straw dikes or water bars, will be placed below the backfilled areas to minimize washing of the fill material" (MRP, unnumbered page entitled Removal or Reduction of Highwalls).

The applicant proposes to leave highwalls in some areas. The rationale for leaving or reducing highwalls offered by the applicant is given on an unnumbered page entitled "Removal or Reduction of Highwalls" (also see Plate 3-20).

Compliance

The applicant is not in compliance at this time.

The applicant described the backfilling procedures and presented a stability analysis. There are details in the procedure and analysis that need clarification:

1. (b)(1) How the embankment stability will meet 90 percent compaction was not identified.

2. (b)(8) The highwalls to be retained are alluded to on Plate 3-20, but the plate was not found in the MRP.

3. (b)(5) Parameters of the stability analyses were not verified:

   (a) The results of compaction tests to indicate a density value of 108 lb/ft^3 were missing.

   (b) The source of the soil cohesion value @ 90 percent compaction was not identified.

   (c) The determination of the rock compressive strengths were not included in the MRP.

   (d) The major and minor jointing trends for the highwalls were not identified.

   (e) Site-specific lithologic sections with descriptions and highwall design were not included.

   (f) The relative proportions of sandstones and shales in the exposed highwalls were not clearly identified for each highwall.

4. The illustration of recontouring on page 3-121 (Attachment #2) accompanied the description on page 3-118 of the "reasonable configuration of the road system." The illustration lacks a scale, a legend, identification generally.

5. The typical cross-section of the road on page 91-A lacks slopes, scales, a legend or identification symbols.

6. The changes in topography during reclamation are not clearly shown on Plage 3-2 nor are appropriate cross-sections included.

7. The areas slated for special ripping techniques, described on page 3-91A, were not delineated on a map.

8. The backfilling and grading of the pad area above the coal bins was not included in the MRP.

9. The methods for removing or isolating any materials that might be considered toxic from the backfill material were not described in the MRP.

10. The applicant stated on page 3-91 that the bench will reach a slope of approximately 33h:1v.

Stipulation 817.101-(1, 2, 3, 4, 5, 6, 7, 8, 9, 10)-PGL, EH

Prior to permit approval:

1. The identification of embankment stability compaction at 90 percent must be stated in the MRP.

2. (b)(8) The area of retained highwalls must be outlined on a map and a specific proposal to describe what is meant by "The highwalls will be redued along the pad and road areas where feasible."

3. (b)(5) Parameters of the stability analyses were not verified:

   (a) The results of compaction tests to indicate a density value of 108 lb/ft^3 must be included.

   (b) The source of the soil cohesion value @ 90 percent compaction was not identified.

   (c) The results of rock compressive strengths determinations must be enclosed for site-specific areas.

   (d) The major and minor jointing trends for the highwalls were not identified.

   (e) Lithologic sections with descriptions and highwall design must be included. The geologic log source must be identified.

   (f) The relative proportions of sandstones and shales in the exposed highwalls must be identified for each highwall.

4. The figure on page 3-121 must be redrawn in detail and resubmitted with a scale, slope values, a legend and identification symbols.

5. The figure on page 91-A must be redrawn in detail and resubmitted with a scale, slope values, a legend and identification symbols.

6. Cross-sections of each profile, at cross-sections specified by the Division of the anticipated final surface configuration to be achieved for the affected area must be submitted in accordance with UMC 784.23(b)(1). Plate 3-2, Postmining Topography, must be resubmitted and clearly delineate the change in topography during relamation.

7. Areas that will have special ripping techniques employed, as described on page 3-91A, must be outlined on the map.

8. The recent pad area disturbance must be addressed in the Backfilling and Grading section of the MRP.

9. The applicant must submit a plan that describes the methods for removing or isolating any materials that might be considered toxic from the backfill material.

10. The applicant must correct the approximate slope to be achieved.

UMC 817.103 Backfilling and Grading and Covering Coal and Acid- and Toxic-forming Materials - EH

Existing Environment and Applicant's Proposal

The applicant indicates on page 3-27 of the MRP that the mine produces no acid- or toxic-forming materials. Samples of the roof and floor were taken and presented in Chapter 6, Appendix 6-C.

Small amounts of toxic materials are contained on-site within bermed areas in steel containers. Diesel fuel trucks are positioned so any spillage runs directly into the sediment pond (page 3-2).

Compliance

The applicant is not in compliance at this time.

No plan for removal and disposal of coal fines from the stockpile and conveyor are presented. Plans are also lacking for the removal of all soils that have been contaminated by fuel oil and, toxic materials found in the noncoal waste storage area and the area used to store the "small amount of toxic material."

The applicant has proposed to berm the diesel storage area, the noncoal storage area and the toxic materials storage area, but does not commit to a timetable for doing so.

Although the applicant claims no toxic materials are present due to coal extraction, the laboratory data of the roof rock indicate a high SAR value.

Stipulation 817.103-(1, 2, 3)-EH

Prior to permit approval:

1. The applicant must provide a plan for the removal of all coal fines and soils that have been contaminated during mining operations.

2. The applicant must provide a timetable for the construction of all berms and any other environmental safeguards used to contain toxic materials.

3. The applicant must submit plans for identifying and disposing of high SAR material in accordance with UMC 817.103 should the necessity arise.

UMC 817.106 Regrading or Stabilizing Rills and Gullies - EH

Existing Environment and Applicant's Proposal

The applicant notes on page 4-14 that "erosion that develops in completed areas will be minimized by repeated grading and seeding." This is interpreted to mean previously graded and seeded areas which develop rills and gullies will be regraded and reseeded.

Compliance

The applicant is not in compliance with this section. No specific plan to regrade or stabilize rills and gullies has been proposed in the MRP. Additional, specific detail is required.

Stipulation 817.106-(1)-EH

Prior to permit approval:

1. The applicant must submit a specific plan for regrading. The plan must include the criteria used to determine when regrading is necessary and the method employed to achieve stabilization.

UMC 817.111-.117 Revegetation - SC

Existing Environment and Applicant's Proposal

Five major vegetation types are delineated on the permit area (Plate 9-1). These include conifer forest, grassland, riparian, pinyon-juniper woodland and sagebrush shrubland. The riparian and pinyon-juniper types are the only ones affected by the disturbance (Section 9.3.3, Table 9-1).

As described in Appendix 9-A of the MRP, a reference area was selected as representative of the topography, soils, aspect and species composition of the disturbed area. It was selected in cooperation with Lynn Kunzler, Division Reclamation Biologist.

The reference area is approximately .47 acres in size and is located off the permit area but within the fee property of the mine's parent company. It contains both vegetation types which were previously present in the disturbed area. The productivity of the pinyon-juniper area is classified as good and the riparian area fair by the SCS (Appendix 9-B). An existing road separates the two vegetation types in the reference area.

The revegetation plan for disturbed areas is outlined in Section 9.5 of the MRP. It describes the time schedule for revegetation, species and amounts per acre of seeds and seedlings to be used, methods to be used in planting and seeding, mulching techniques and measures to be used to determine the success of revegetation.

Compliance

817.112 Revegetation: Use of Introduced Species

The applicant is not in compliance at this time.

Three introduced species are proposed for use in final reclamation of the riparian area. These are Bromus inermis (smooth brome), Trifolium pratense (red clover) and Trifolium repens (white clover). A discussion of the use of these species as required under Section (a)-(d) of this regulation must be presented before these species can be approved as part of the final seed mixture. The discussion must include any references, results of field trials, desirable characteristics, etc., that the applicant is aware of.

Another forb species, Astragalus altus has been included in the riparian seed mixture. According to the National List of Scientific Plant Names, U. S. Department of Agriculture (1982), no such species exists. This must be clarified.

817.113 Revegetation: Timing

The applicant is not in compliance at this time.

The entire area of disturbance will be drilled or hydroseeded during the first fall (September through November) following complete abandonment and earthwork (Section 9.5). This is the normal period for favorable planting of the materials selected for revegetation. The applicant must expand this discussion to include timing of planting for seedlings. Typically, spring time planting is generally accepted as the most favorable for the plant species to be used.

No plans have been given for spring time seeding of disturbed areas. There is a possiblity that a disturbed area could remain unseeded for an extended period of time. This could contribute to excessive erosion. A commitment must be made to seed or plant any disturbed area, as contemporaneously as practicable with the completion of backfilling and grading, with a temporary cover of small grains, grasses or legumes until a permanent cover is established (UMC 817.113[b]).

817.114 Revegetation: Mulching

The applicant is not in compliance at this time.

Following seeding, areas will be hydromulched and fertilized (page 9-17). The rate of application will be 1,200 to 1,500 pounds of wood fiber per acre on 1:1 slopes to 2,000 to 2,500 pounds of wood fiber mulch per acre on 3:1 slopes. The mulch will be fortified with a tackifying agent. On areas with slopes greater than 2:1, terraces will be created along the contour of the slope (Section 9.5). Those areas to be terraced must be shown on a postmining topography map.

817.116 Revegetation: Standards for Success

The applicant is not in compliance at this time.

The success of reclamation will be evaluated by detailed sampling and comparison of vegetative cover and production on the reclaimed and reference areas (page 3-104). To be in compliance, ground cover and productivity of the revegetated area shall be considered equal if they are at least 90 percent of the ground cover and productivity of the reference area with 90 percent statistical confidence (UMC 817.116[b][3]). The applicant has opted to use a somewhat higher standard of success (equal at 95 percent confidence) for their own purposes (page 3-104). This is acceptable, however, the regulatory authority can only judge if bond release criteria have been met using the standards set forth in the regulations.

Cover on both the reclaimed area and the reference area will be estimated using randomly located 1 m^2 quadrats, a method acceptable to the regulatory authority. No specific sampling techniques are proposed for production sampling (Section 3.6.6.2).

Plans for monitoring revegetation success are presented in Sections 3.6.5.6 and 3.6.6.2 of the MRP. Some discrepancy between the two sections exists. For example, it should be clearly stated whether sampling and comparison between the reference and reclaimed areas will begin in the third year or fifth year after reclamation and what sampling interval for following years is to be used. The applicant will be in compliance when these two sections are combined and the monitoring plan clarified.

817.117 Revegetation: Tree and Shrub Stocking

The applicant is not in compliance at this time.

The applicant in Chapter 9 has proposed to initially seed shrub species with no supplemental planting of seedlings. After two years, the seeding effort would be evaluated and planting would be initiated to bring the density up to the stocking level of the reference areas (page 9-24). This is an acceptable proposal, however, the shrub density value given as a standard appears to be a combination of both the pinyon-juniper reference area and the riparian reference area. This is not an acceptable value. In order to use the above method, each reference area would have to be sampled for woody plant density prior to seedling planting to establish a standard for each vegetation type.

An additional proposal (page 3-104) would set the standard for woody plant density on each area at 4,000 plants/ha. From the available data submitted in Chapter 9, this rate has no justification.

In order to comply with this regulation, the applicant must commit to using the first proposal which would include sampling woody plant density on each reference area prior to seedling planting; or provide justification for a stocking rate of 4,000 plants/ha for each vegetation type.

Stipulation 817.111-.117-(1, 2, 3, 4, 5, 6, 7, 8)-SC

Prior to permit approval, the applicant must:

1. Provide a discussion of the justification for use of the introduced species Bromus inermis, Trifolium pratense and Trifolium repens per UMC 817.112(a-d).

2. Include the correct name of the forb identified as (Astragalus altus) or substitute an acceptable forb species into the riparian seed mixture.

3. Provide a discussion of timing for planting of seedlings as required by UMC 817.113.

4. Commit to seed or plant any disturbed area, as contemporaneously as practicable with the completion of backfilling and grading, with a temporary cover of small grains, grasses or legumes until a permanent cover is established.

5. Include all areas which are to be terraced during final reclamation on a postmining topography map. Terraces must meet all requirements under UMC 817.101(b)(4).

6. Describe specific techniques to be used for vegetative production sampling during the bond release period.

7. Present one consolidated plan for monitoring revegetation success.

8. Clarify the method to be used for determining the woody plant density success standards.

UMC 817.121-.126 Subsidence Control - RVS

Existing Environment and Applicant's Proposal

The Bear Canyon coal seam is the primary mining target for this permit term (MRP, page 3-20B). The applicant states (MRP, page 3-9) that room and pillar methods will be used and then indicates (MRP, page 3-11) that longwall mining methods may be used to extract the Bear Canyon coal seam. Overburden, within and adjacent to the permit area, ranges from approximately 200 to 1,800 feet and encompasses the lower portion of the North Horn Formation, Price River Formation, Castlegate Sandstone and upper portion of the Blackhawk Formation (MRP, page 6-14 and Plate 3.4-1).

The applicant states on page 3-70 of the MRP that "Surface fractures on the permit area have been minimal" and "there are no known anticipated effects from subsidence due to the amount of overburden and the strata above the coal seam."

An aerial survey of renewable resource lands was conducted on June 13, 1984 and the applicant concludes that subsidence will not impact the hydrologic balance, timber, vegetation for grazing, fish and wildlife, paleontological and archeological resources, man-made structures and mineral and hydrocarbon resources (Appendix 3-5-8). A second renewable resource survey took place on June 18, 1984 in cooperation with a representative from the Division of Wildlife Resources (DWR). The applicant indicated DWR considers certain subsidence related impacts as benefiting wildlife and vegetation (Appendix 3-5-8). The applicant indicates no surface facilities or structures exist over mine areas (MRP, page 3-70 and 3-71) and, therefore, no man-made structures will be impacted by subsidence induced material damage.

The applicant commits, on page 3-16 of the MRP, to maintaining a minimum 100 foot outcrop barrier pillar. This figure is reiterated, on page 3-16 of the MRP, where the applicant states that outcrop

barrier pillars "will be 100 feet wide." Conversely, Plate 3-4 indicates a minimum 200 foot wide outcrop barrier will be established.

Appendix 3-5-8A includes a plan for installing two permanent subsidence monitoring stations. The stations are located in Sections 14 and 23 (Figure 3-3a) and will be monitored at "nominal" six month intervals until "a minimum of one year after mining ceases on the permit area" (Appendix 3-5-8A). The applicant commits to conducting a yearly field investigation for the purpose of identifying and recording surface manifestations of subsidence (Appendix 3-5-8A). Annual results of the field investigation and subsidence monitoring program will be submitted to DOGM.

The applicant commits to notifying all owners of property within the area that may be impacted by subsidence as per UMC 817.122 and mitigating for materially damaged structures and surface lands as described by UMC 817.124 (Appendix 3-5-8A).

The applicant identifies Bear Canyon Spring and COP Development Spring as occurring adjacent to the permit area (MRP, Chapter 7, Section 7.1, pages 5 and 9). COP Development Spring is characterized as intermittent (MRP, Section 7.1, page 9), whereas Bear Canyon Spring is identified as a water source for Huntington City (MRP, Section 7.1, page 8) that has an average flow of 140 gpm (MRP, Table 7-4). Birch Spring, another public water source adjacent to the permit area, is not discussed in the MRP text.

The Star Point-Blackhawk aquifer is identified as the "source for the Bear Canyon Spring" (MRP, Section 7.1, page 5). Alternatively, the applicant states that "the majority of water movement in the region is through faults and fractures . . ." (MRP, Section 7.1, page 6). Data generated by boreholes drilled from within the mine indicate the presence of highly permeable zones near the fault mapped along the eastern boundary of Section 23 (Appendix 7-D). This fault and Bear Canyon Spring are in close proximity (Plate 3.4-1) and the applicant observes that "spring discharge and ground water hydrology are controlled by faulting and fractures" (Appendix 7-D). Moreover, the applicant states that there "is a potential for impact of mining on ground water, if a water bearing facture zone is encountered during mining" (Appendix 7-D).

Compliance

The applicant presents a variety of inconsistent and inferred conclusions with regard to subsidence and related impacts. Until the applicant provides site-specific data that indicate otherwise, DOGM will presume that subsidence and associated impacts will occur and, therefore, must be addressed under appropriate sections of the underground coal mining regulations.

817.121 Subsidence Control: General Requirements

The applicant is not in compliance at this time.

(a) Equivocation with regard to the method(s) of mining and outcrop barrier widths preclude an assessment of whether coal mining activities have been planned and conducted in order to prevent subsidence from causing material damage to the surface.

(b) The applicant conducted a survey to show whether structures or renewable resource lands exist as described by UMC 784.20. Although no structures were identified above the mine, the applicant has identified an aquifer (Star Point- Blackhawk aquifer) and a potential area for the recharge of the aquifer (fault zone). DOGM concurs with the applicant's assessment and determines, per UMC 784.20, that subsidence could cause material damage to the above-noted renewable resource lands. Therefore, the applicant must incorporate a subsidence control plan into the MRP.

The applicant's proposed subsidence monitoring plan does not incorporate a commitment to continue monitoring until the completion of reclamation has occurred.

817.122 Subsidence Control: Public Notice

The applicant has committed to notifying owners as described under this regulation and is in compliance with this section.

817.124 Subsidence Control: Surface Owner Protection

The applicant has committed to mitigating material damage to structures and surface lands as described under this regulation and is in compliance with this section.

817.126 Subsidence Control: Buffer Zones

The applicant is not in compliance at this time.

(b) The applicant has not provided information pertinent to delineating the probable relationship(s) between Bear Canyon Spring and Birch Spring, both public water supply sources, and adjacent faults or the Star Point-Blackhawk aquifer. This lack of information precludes an assessment of whether underground activities will disrupt the aquifer and consequent exchange of ground water between the aquifer and other strata.

Stipulation 817.121-.126-(1, 2, 3)-RVS

Prior to permit approval:

1. 817.121(a). The applicant must provide an unambiguous description of the mining method(s) and outcrop barrier pillar widths to be employed.

2. 817.121(b). The applicant must provide a subsidence control plan which shall contain the following information:

(a) A detailed description of the mining method and other measures to be taken which may affect subsidence, including:

(1) The technique of coal removal, such as longwall mining, room and pillar with pillar removal, hydraulic mining or other methods; and

(2) The extent, if any, to which planned and controlled subsidence is intended.

(b) A detailed description of the measures to be taken to prevent subsidence from causing material damage or lessening the value or reasonably foreseeable use of the surface, including-

(1) The anticipated effects of planned subsidence, if any;

(2) Measures, if any, to be taken in the mine to reduce the likelihood of subsidence, including such measures as-

(i) backstowing or backfilling of voids;

(ii) leaving support pillars of coal; and

(iii) areas in which no coal removal is planned, including a description of the overlying area to be protected by leaving coal in place.

(3) Measures to be taken on the surface to prevent material damage or lessening of the value or reasonably foreseeable use of the surface including such measures as-

(1) reinforcement of sensitive structures or features;

(2) Installation of footers designed to reduce damage caused by movement;

(iii) Change of location of pipeline, utility lines or other features;

(iv) Relocation of movable improvements to sites outside the angle-of-draw; and

(v) Monitoring to determine the commencement and degree of subsidence so that measures consistent with known technology may be adopted in order to present subsidence from causing material damage to the extent technologically and economically feasible, maximize mine stability, and in order to maintain the value and reasonably foreseeable use of such surface lands, except in those instances where the mining technology requires planned subsidence in a predictable and controlled manner: provided, that nothing in this subsection shall be construed to prohibit the standard methods of mining. The monitoring, if any, will continue until the final cessation of mining and the completion of reclamation has occurred or until such shorter time as may be approved by the Division.

3. 817.126(b). The applicant must provide information relevant to assessing whether underground activities will disrupt the aquifer and consequent exchange of ground water between the aquifer and other strata.

UMC 817.131 Cessation of Operations: Temporary - PGL

Existing Environment and Applicant's Proposal

The MRP states on page 3-112 that in the event of a temporary cessation of operation, Co-Op will notify the Division within 48 hours of pending shut down and will submit all information regarding exact number of surface acres and the horizontal and vertical extent of subsurface strata in the permit area prior to cessation or abandonment, extent and kind of surface reclamation, and identification of backfilling, regrading, revegetation, environmental monitoring, underground opening closures and water treatment activities that will continue during temporary cessation.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.132 Cessation of Operations: Permanent - EH

Existing Environment and Applicant's Proposal

The applicant has proposed portions of the data and material necessary for cessation of operations throughout the MRP (Chapter 3).

Compliance

The applicant is not in compliance at this time.

The applicant has not completely addressed reclamation to be initiated upon cessation of operations. Outstanding stipulations dealing with final reclamation in the TA must be fully addressed to comply with this section.

Stipulations

See stipulations associated with final reclamation measures.

UMC 817.133 Postmining Land-Use - SC

Existing Environment and Applicant's Proposal

The land on which the Bear Canyon Mine is located has long been used for mining. The mine was started in 1896 and was worked until 1906. It reopened in 1938 and worked intermittently until 1957. The mine was then abandoned until Co-Op reentered it in 1981 (Section 4.4.2.5).

Premining uses of the permit area included livestock grazing, wildlife habitat and various types of recreation. Present management emphasizes livestock grazing, wildlife habitat and watershed management. A variety of land managing agencies including the U. S. Forest Service (USFS), state of Utah, and Emery County administer the permit and adjacent areas (Section 4.3.1.2).

The applicant intends to return the disturbed portions of the Bear Creek Canyon Mine permit area to the premining land uses of wildlife habitat, livestock grazing and recreation. Following cessation of mining, the disturbed areas will be reclaimed by regrading the yards, reclaiming the roads and portal areas to a practical degree, planting all disturbed areas and monitoring the revegetation effort to achieve the appropriate success standards, as discussed under UMC 817.111-.117 of this document.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.150-.156 Roads: Class I - PGL

Existing Environment and Applicant's Proposal

The applicant states that the Bear Canyon Road is approximately 1,800 feet long (page 3-5). The road is constructed 30 feet wide and surfaced with six inches of 3/4 inch gravel. Drainage is provided along the road by ditches at least 1.8 feet deep. Culverts are installed as shown on Plate 3-5. They will be protected by rock lining or concrete headwalls. Culverts are installed with a trash racks and rock headwalls at inlets and riprap at outlets to prevent erosion. The road is maintained and will be maintained throughout the life of the operation. This road will be reclaimed at the end of the operation and all culverts will be removed.

Compliance

The applicant is not in compliance at this time.

The applicant's proposal failed to delineate the portion of Bear Canyon Road from the blue gate to the mine entrance sign as part of the proposed permit area (described as item 3[b] in the Board Order dated October 27, 1983). The applicant's proposal with the exception noted previously adequately addresses this regulation.

Stipulation 817.150-.156-(1, 2)-PGL

Prior to permit approval:

1. The entire Class I road must be incorporated into the proposed permit area. This road extends from the blue gate to the loadout. The applicant must edit all maps to include this portion of the Class I road in the permit area and commit to drainage, maintenance and reclamation for all of the Class I road.

UMC 817.160-.166 Roads: Class II - PGL

Existing Environment and Applicant's Proposal

The mine area and portal access road is described on pages 3-5A and B of the MRP as being approximately 2,112 feet long. The road is used primarily for access to the mine portals and other facilities. The overall grade as described in the MRP does not exceed 10 percent. The horizontal alignment is consistent with existing topography. The road is surfaced with 4" of 3/4" gravel, and is maintained. The road shall be removed upon completion of the mining operation.

The MRP states (page 3-5C) that culvert spacing conforms with requirements. Ditches are maintained. Rock or concrete headwalls will be provided at inlets to all culverts, and riprap or other erosion protection will be installed.

Compliance

The applicant is not in compliance at this time.

The applicant describes the mine area and portal access road. Surfacing, drainage, maintenance and removal are adequately addressed for this road. However, there are Class II roads that have been omitted in discussion and must be included.

Stipulation 817.160-.166-(1)-PGL

Prior to permit approval:

1. The applicant must address the road to the sediment pond A (430 feet long), the mine area road to the coal bin and the road to the bathhouse. All location, design, drainage, surfacing, maintenance and removal regulations must be addressed for all Class II roads in the proposed permit area.

UMC 817.170-.176 Roads: Class III

Existing Environment and Applicant's Proposal

A small unauthorized jeep trail is mentioned in Appendix 3-5-8.

Compliance

The applicant is not in compliance at this time.

The applicant must describe and show the jeep trail adjacent to the portals.

Stipulation 817.170-.176-(1)-PGL

Prior to permit approval:

1. The applicant must describe and show the jeep trail within the permit area. This Class III road must be addressed in accordance with regulations UMC 817.170-.176.

UMC 817.180 Other Transportation Facilities - PGL

Existing Environment and Applicant's Proposal

The coal storage yard is equipped with a system of conveyors whereby coal can be segregated according to size. The truck loadout is a conveyor system designed to load tractor-trailer trucks. Coal exits the mine via the conveyor. Page 3-5D of the MRP states that all conveyors and other facilities, will be maintained in such a manner to prevent damage to fish, wildlife and related environmental values by:

1. maintaining hydrologic controls, such as ditches, culverts, diversions and sedimentation ponds to assure that disturbed drainage is conveyed away from undisturbed drainages and either held or cleaned before release;

2. watering of roads as necessary to reduce fugitive dust;

3. protection of wildlife within the permit area and reporting of sightings of threatened and endangered species;

4. contemporaneous reclamation;

5. advocating good-housekeeping practices to reduce the possibility of contamination of surface waters in the area.

Compliance

The applicant is not in compliance at this time.

The operator stated how prevention of damage to fish, wildlife and other related environmental values would be undertaken. However, the applicant on page 3-88 does not commit that the area will be restored to prevent damage to fish, wildlife and related environmental values.

Stipulation 817.180-(1)-PGL

Prior to permit approval:

1. The applicant must commit that the transportation facility area will be restored to prevent damage to fish, wildlife and related environmental values, as well as controlling and minimizing degradation of water quality and quantity, controlling and minimizing erosion and siltation and pollution, and prevent damage to public or private property.

UMC 817.181 Support Facilities and Utility Installations - PGL

Existing Environment and Applicant's Proposal

The Bear Canyon Mine has the following support facilities as described on page 3-123:

temporary scalehouse;
coal storage facilities;
crusher facility;
fuel storage tank;
shop;
power transformer.

The list of support facilities given on page 3-2 are:

single building complex containing shops, parts warehouse, bathhouse and mine offices;
truck scales;
weighman office;
caretaker dwelling;
mine run coal receiver bin.

The applicant states on page 3-50 that all conveyors and other facilities will be maintained in such a manner to prevent damage to fish, wildlife and related environmental values (as referenced in UMC 817.180 Applicant's Proposal of this TA).

The applicant states on page 3-126 that the transformer substation is the concern of Utah Power & Light Company (UP&L), but Co-Op does maintain the fence, and enforces health and enviromental safeguards.

Compliance

The applicant is not in compliance at this time.

The applicant does not include as support facilities all of the tanks located in the permit area. In addition, the restoration of the facilities with regards to: prevention of damage to fish, wildlife and related environmental values; and, the possibility of additional contributions of suspended solids to streamflow or runoff outside the permit area was not addressed.

Stipulation 817.181-(1, 2)-PGL

Prior to permit approval:

1. The applicant must include all support facilities located in the permit area.

2. The applicant must commit that the all support facilities will be restored to prevent damage to fish, wildlife and related environmental values and the possiblity of additional contributions of suspended solids to streamflow or runoff outside the permit area.

ADDENDUM

ADDITIONAL TECHNICAL DEFICIENCIES

The following sections cannot be presented under the 800 section, but must be addressed before permit approval.

UMC 782.14 Compliance Information

The applicant must submit information for both Trail Canyon and Bear Creek Canyon that pertains to suspension or revocation of mining permits.

UMC 782.15 Right of Entry and Operation Information

The applicant did not include the proper documentation for the Utah Power & Light Company (UP&L) easement on the Bear Canyon Road and the Huntington Spring right-of-way in the baseball diamond/ topsoil pile area.

Page 3-17, Section 3.4.2.4.2 states that "access beyond the gate entrance to the mine is controlled by the Company." According to Plate 7-4, UP&L has an easement on the Bear Canyon Road beyond the blue gate. Approval to transfer this easement must be clarified by appropriate documentation from UP&L.

The Huntington Spring right-of-way and baseball diamond/topsoil stockpile appear to be in conflict (Plate 7-4 and Figure No. 8.6-2). The applicant must provide documentation with respect to the legal right-to-enter for the baseball diamond/topsoil stockpile.

UMC 784.11-.26 Underground Coal Mining Permit Application: Requirements for Reclamation - EH

In the reclamation timetable portion of the MRP, the applicant proposes reclamation of cut and fill slopes due to construction of road and railroad. The applicant must submit all information required under the Act and this part pertaining to transportation facilities associated with the proposed railroad spur (page 3-78, MRP).

UMC 784.11 Operation Plan: General Requirements - PGL

Permit area means the area of land and water within the boundaries of the permit which are designated on the permit application maps, as approved by the Division. This area shall include, at a minimum, all areas which are or will be affected by the underground coal mining activities during the term of the permit.

(b)(4) The Mining and Reclamation Plan (MRP) does not delineate the total area that should be included in the permit area. The proposed permit area for the Bear Canyon Mine must include the main

access road from the blue gate and beyond. The proposed permit area must also include the caretaker dwelling by the blue gate. The caretaker dwelling was included in the listing of surface structures on page 3-2, but not included in Addendum 3.3.4-A. Water lines associated with COP Development Spring (Plate 7-4) must also be included in the permit area (from the spring to the mine area).

UMC 784.23 Operation Plan: Maps and Plans - PGL

In accordance with this section, all of the proposed permit area maps must be updated to include the entire road from the blue gate continuous to the operations for the Bear Canyon Mine (including the caretaker's dwellings) and COP Development Spring area.

(b)(1) There are contradictions (or omissions) in the mine plan and on the surface facilities map that must be resolved.

Plate 3-2 (Section 3.3.3) states that the surface structures consist of:

1. parts warehouse, bathhouse and mine offices;
2. truck scales;
3. weighman office;
4. caretaker dwelling;
5. mine run coal receiver bin;
6. crushing and sizing structure;
7. truck loadout bins;
8. stockpile towers;
9. conveyors to carry coal to storage and loadout sites (see Plate 2-21).

Page 3-127, Table 3.3.4-1 outlines the structures as:

1. bathhouse, shop;
2. new scalehouse;
3. crusher facility;
4. truck loadout-oil slack loadout;
5. coal storage and stacking;

6. crusher facility;

7. fuel storage tanks;

8. transformer substation;

9. noncoal storage area.

The fuel storage tanks, transformer substation and noncoal storage area were not described on page 3-2. The upper storage pad and a tank by the ventilation fan must also be included.

Page 3-108 includes in removal of structures:

1. fan;

2. structures and conveyor;

3. substation;

4. bathhouse;

5. water system;

6. bathhouse water tank and water system.

Obviously, all of the structures described on page 3-2 and page 3-127 have not been identified in the bond estimate.

All of the inconsistencies, omissions or contradictions in surface facilities must be resolved in the MRP.

(b)(3) The map delineating the proposed permit area must include each area of land for which a performance bond will be posted under Subchapter J of this chapter.

(b)(2) The map delineating the proposed permit area must include all land to be affected within the proposed mine plan area, according to the sequence of mining and reclamation. Plate 3.4-1, 1" = 500', is at an appropriate scale for a permit area map. The acreage in each scheduled sequence on page 3-35 is described as 11 acres until 1987, then 13 acres in 1988 and then 65 acres. Page 4-23 describes a 6.4 acre disturbance. The tentative acreages to be disturbed are 9.92 acres (page 3-36). These values are contradictory. The MRP must state how many acres will be disturbed in the proposed permit area (including the acreage for the mine access road and caretaker's dwelling). This value must remain consistent throughout the mine plan.

(b)(9) Section 3.3.1.3 (page 3-5E), Explosive Storage and Handling, explicitly states that "Co-Op does not have an explosive storage facility within the permit area." However, two small magazines (marked as such) are located on the upper storage pad. This explosive storage facility must be located on the surface facilities map, Plate 2-2. The contradiction in the mine plan must be resolved.

UMC 784.24 Transportation Facilities - PGL

The mine access road from the blue gate and beyond must be included in the proposed permit area with attendant maps and appropriate cross-sections.

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ATACHMENTS

Division of Oil, Gas and Mining

Water Monitoring Guidelines

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TABLE 1

GROUND WATER BASELINE AND OPERATIONAL
WATER QUALITY PARAMETER LIST

Field Measurements:

*	-	Water Levels or Flow
*	-	pH
*	-	Specific Conductivity (umhos/cm)
*	-	Temperature (C^{o})

Laboratory Measurements: (mg/l)

*	-	Total Dissolved Solids
*	-	Total Hardness (as $CaCO_3$)
	-	Aluminum (Al)
	-	Arsenic (As)
	-	Barium (Ba)
	-	Boron (B)
*	-	Carbonate (CO_3^{-2})
*	-	Bicarbonate (HCO_3^{-})
	-	Cadmium (Cd)
*	-	Calcium (Ca)
*	-	Chloride (CL^{-})
	-	Chromium (Cr)
	-	Copper (Cu)
	-	Fluoride (F^{-})
*	-	Dissolved Iron (Fe)
	-	Lead (Pb)
*	-	Magnesium (Mg)
*	-	Manganese (Mn)
	-	Mercury (Hg)
	-	Molybdenum (Mo)
	-	Nickel (Ni)
	-	Nitrogen: Ammonia (NH_3)
	-	Nitrate (NO_3^{-})
	-	Nitrate (NO_2)
*	-	Potassium (K)
	-	Phosphate (PO_4^{-3})
	-	Selenium (Se)
*	-	Sodium (Na)
*	-	Sulfate (SO_4^{-2})
	-	Sulfide (S^{-})
	-	Zinc (Zn)

-Baseline
*Operational

GROUND WATER SAMPLING DRAFT

	Baseline	Operational	Postmining
Type of Sampling Site	Spring, In-Mine, Borehole, Observation Well	Spring, In-Mine, Borehole, Observation Well	Spring, Observation Well
Field Measurements (See Table 1)	Yes	Yes	Yes
Sampling Frequency Each Site	Four Total at Monthly Increments Per Annum	Quarterly for In-Mine; Four Total at Monthly Increments Per Annum for Other Sites	One Per Annum; Springs at Low Flow
Sampling Duration	Two years (One Complete Year of Data Before Submission of PAP)	Yearly Until Reclamation Initiated	Yearly Until Termination of Bonding
Type of Data Collected and Reported	Water Levels and/or Flow and Water Quality	Water Levels and/or Flow; One Water Quality Sample at Low Flow	Water Levels and/or Flow and Water Quality Per Operational Parameters
Comments	Spring and Seep Inventory Taken First Year and Every Fifth Year Year Preceding Re-permitting	Every Fifth Year Preceding Re-permitting; One Water Quality Sample at Low Flow Per Baseline Parameters	

TABLE 2

SURFACE WATER BASELINE AND OPERATIONAL
WATER QUALITY PARAMETER LIST

Field Measurements:

*	-	Water Levels or Flow
*	-	pH
*	-	Specific Conductivity (umhos/cm)
*	-	Temperature (C^o)
*	-	Dissolved Oxygen (ppm)

Laboratory Measurements: (mg/l)

*	-	Total Settleable Solids
*	-	Total Suspended Solids
*	-	Total Dissolved Solids
*	-	Total Hardness (as $CaCO_3$)
	-	Aluminum (Al)
	-	Arsenic (As)
	-	Barium (Ba)
	-	Boron (B)
*	-	Carbonate (CO_3^{-2})
*	-	Bicarbonate (HCO_3^-)
	-	Cadmium (Cd)
*	-	Calcium (Ca)
*	-	Chloride (Cl^-)
	-	Chromium (Cr)
	-	Copper (Cu)
	-	Fluoride (F^-)
*	-	Dissolved Iron (Fe)
	-	Lead (Pb)
*	-	Magnesium (Mg)
*	-	Manganese (Mn)
	-	Mercury (Hg)
	-	Molybdenum (Mo)
	-	Nickel (Ni)
	-	Nitrogen: Ammonia (NH_3)
	-	Nitrate (NO_3^-)
	-	Nitrate (NO_2)
*	-	Potassium (K)
	-	Phosphate (PO_4^{-3})
	-	Selenium (Se)
*	-	Sodium (Na)
*	-	Sulfate (SO_4^{-2})
	-	Sulfide (S^-)
	-	Zinc (Zn)
*	-	Oil and Grease
*	-	Cation-Anion Balance

-Baseline
*Operational

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Surface Water Sampling

	Baseline	Operational	Postmining
Type of Sampling Site	Surface Water Bodies	Surface Water Bodies	Surface Water Bodies
Field Measurements (See Table 1)	Performed during water level/flow measurements	Performed during water level/flow measurements	Performed during water level/flow measurements
Sample Frequency	Quarterly for lakes, reservoirs and impoundments (water level and quality); monthly flow measurements and quarterly water quality measurements (one sample at low flow and high flow each) for perennial streams. Monthly flow and water quality measurements during period of flow for intermittent streams. Sampling for ephemeral streams determined at pre-design conference.	Quarterly for lakes, reservoirs and impoundments (water level and quality); monthly flow measurements and quarterly water quality measurements (one sample at low flow and high flow each) for perennial streams. Monthly flow and water quality measurements during period of flow for intermittent streams. Sampling for ephemeral streams determined at pre-design conference.	Two per annum for perennial streams (high & low flow); two per annum during snowmelt and rainfall for intermittent streams.
Sampling Duration	Two years (one complete year of data before submission of PAP.	Yearly until two years after surface reclamation activities have ceased.	Until termination of bonding.
Type of Data Collected and Reported	Flow and/or water levels and water quality.	Flow and/or water levels and water quality.	Flow and/or water levels and water quality per operational parameters.
Comments	All field measurements should be performed concurrently with water level/flow measurements.	All field measurements should be performed concurrently with water level/flow measurements.	All field measurements should be performed concurrently with water level/flow measurements

(continued)

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	Baseline	Operational	Postmining
Comments		For every fifth year preceding repermitting, one sample at low flow and high flow each should be taken for baseline water quality parameters.	