



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor
Kathleen Clarke
Executive Director
Lowell P. Braxton
Division Director

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

January 24, 2000

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

Re: Wild Horse Ridge Lease Addition, Co-Op Mining Company, Bear Canyon Mine, ACT/015/025-SR98-1, Outgoing File

Dear Mr. Owen:

Enclosed is a copy of the Division's review of the significant revision to the Bear Canyon Mine permit area. The attached technical analysis outlines that deficiencies that need to be addressed.

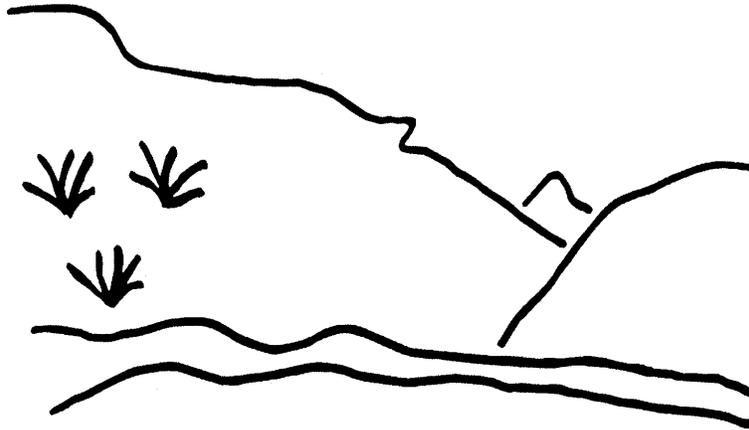
Please feel free to contact me if you would like to arrange a meeting to discuss these deficiencies. As you are aware, you need to respond to these deficiencies within 90 days, or the Division will return this application to you.

Sincerely,

Pamela Grubaugh-Littig
Permit Supervisor

sm
Enclosure
cc: Ranvir Singh (OSM) w/enclosure
PFO

State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Bear Canyon Mine
Wild Horse Ridge Lease Addition
ACT/015/025 - SR98-1
Technical Analysis
January 24, 2000

TABLE OF CONTENTS

| | |
|--|----|
| TECHNICAL ANALYSIS | 7 |
| INTRODUCTION | 7 |
| SUMMARY OF OUTSTANDING DEFICIENCIES (Draft TA Only) | 7 |
| ADMINISTRATIVE INFORMATION | 17 |
| OWNERSHIP AND CONTROL | 17 |
| VIOLATION INFORMATION | 18 |
| RIGHT OF ENTRY | 18 |
| UNSUITABILITY CLAIMS | 19 |
| PERMIT TERM, INSURANCE, PROOF OF PUBLICATION, AND FACILITIES OR STRUCTURES USED IN COMMON | 19 |
| ENVIRONMENTAL RESOURCE INFORMATION | 21 |
| GENERAL | 21 |
| PERMIT AREA | 21 |
| HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION | 22 |
| CLIMATOLOGICAL RESOURCE INFORMATION | 23 |
| VEGETATION RESOURCE INFORMATION | 23 |
| FISH AND WILDLIFE RESOURCE INFORMATION | 24 |
| Wildlife Information | 24 |
| Threatened and Endangered Species | 24 |
| SOILS RESOURCE INFORMATION | 25 |
| LAND-USE RESOURCE INFORMATION | 29 |
| ALLUVIAL VALLEY FLOORS | 29 |
| PRIME FARMLAND | 30 |
| GEOLOGIC RESOURCE INFORMATION | 30 |
| HYDROLOGIC RESOURCE INFORMATION | 32 |
| Sampling and analysis. | 32 |
| Baseline information. | 33 |
| Ground-water information. | 33 |
| Surface-water information. | 37 |
| Baseline cumulative impact area information. | 38 |
| Modeling. | 38 |
| Alternative water source information. | 38 |
| Probable hydrologic consequences determination. | 38 |
| MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION | 39 |
| Affected Area Boundary Maps | 39 |
| Archeological Site and Cultural Resource Maps | 39 |
| Coal Resource and Geologic Information Maps | 39 |
| Existing Structures and Facilities Maps | 40 |
| Existing Surface Configuration Maps | 40 |
| Mine Workings Maps | 40 |
| Monitoring Sampling Location Maps | 40 |
| Permit Area Boundary Maps | 40 |
| Subsurface Water Resource Maps | 40 |
| Surface Water Resource Maps | 40 |

| | |
|---|-----------|
| Vegetation Reference Area Maps | 40 |
| Well Maps | 41 |
| Contour Maps | 41 |
| OPERATION PLAN | 42 |
| MINING OPERATIONS AND FACILITIES | 42 |
| General | 42 |
| Type and Method of Mining Operations | 42 |
| Facilities and Structures | 42 |
| EXISTING STRUCTURES: | 42 |
| PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES | 43 |
| RELOCATION OR USE OF PUBLIC ROADS | 43 |
| AIR POLLUTION CONTROL PLAN | 44 |
| COAL RECOVERY | 44 |
| SUBSIDENCE CONTROL PLAN | 45 |
| Renewable resources survey. | 45 |
| Subsidence control plan. | 45 |
| Performance standards for subsidence control. | 46 |
| SLIDES AND OTHER DAMAGE | 47 |
| FISH AND WILDLIFE PROTECTION PLAN | 47 |
| Protection and enhancement plan. | 48 |
| Endangered and Threatened Species | 49 |
| TOPSOIL AND SUBSOIL | 49 |
| Topsoil and Subsoil Removal | 49 |
| Topsoil Substitutes and Supplements | 52 |
| Topsoil Storage | 52 |
| INTERIM REVEGETATION | 54 |
| ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES | 54 |
| Road Systems | 54 |
| Other Transportation Facilities | 57 |
| SPOIL AND WASTE MATERIALS | 58 |
| Disposal of noncoal waste. | 58 |
| Coal mine waste. | 58 |
| Refuse piles. | 58 |
| Impounding structures. | 58 |
| Burning and burned waste utilization. | 58 |
| Return of coal processing waste to abandoned underground workings. | 58 |
| Excess spoil. | 58 |
| HYDROLOGIC INFORMATION | 59 |
| Ground-water monitoring. | 59 |
| Surface-water monitoring | 60 |
| Acid and toxic-forming materials. | 60 |
| Transfer of wells | 60 |
| Discharges into an underground mine. | 60 |
| Gravity discharges. | 60 |
| Water quality standards and effluent limitations. | 60 |
| Diversions. | 60 |
| Stream buffer zones. | 61 |
| Sediment control measures. | 61 |
| Siltation structures. | 62 |

| | |
|---|----|
| Sedimentation ponds | 62 |
| Other treatment facilities | 62 |
| Exemptions for siltation structures. | 62 |
| Discharge structures. | 62 |
| Impoundments. | 63 |
| Casing and sealing of wells | 63 |
| SUPPORT FACILITIES AND UTILITY INSTALLATIONS | 64 |
| SIGNS AND MARKERS | 65 |
| USE OF EXPLOSIVES | 65 |
| MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS | 67 |
| Affected area maps | 67 |
| Mining facilities maps | 67 |
| Mine workings maps | 67 |
| RECLAMATION PLAN | 69 |
| GENERAL REQUIREMENTS | 69 |
| POSTMINING LAND USES | 69 |
| APPROXIMATE ORIGINAL CONTOUR RESTORATION | 70 |
| BACKFILLING AND GRADING | 70 |
| MINE OPENINGS | 72 |
| TOPSOIL AND SUBSOIL | 72 |
| ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES | 75 |
| HYDROLOGIC INFORMATION | 76 |
| Ground-water monitoring. | 76 |
| Surface-water monitoring. | 76 |
| Acid and toxic-forming materials. | 76 |
| Transfer of wells. | 76 |
| Discharges into an underground mine. | 76 |
| Gravity discharges. | 76 |
| Water quality standards and effluent limitations. | 77 |
| Diversions. | 77 |
| Stream buffer zones. | 77 |
| Sediment control measures. | 77 |
| Siltation structures. | 77 |
| Sedimentation ponds. | 77 |
| Other treatment facilities. | 77 |
| Exemptions for siltation structures. | 78 |
| Discharges into an underground mine. | 78 |
| Gravity discharges. | 78 |
| Impoundments. | 78 |
| Casing and sealing of wells. | 78 |
| CONTEMPORANEOUS RECLAMATION | 79 |
| REVEGETATION | 79 |
| Revegetation Methods | 79 |
| Standards for Success | 81 |
| STABILIZATION OF SURFACE AREAS | 82 |
| CESSATION OF OPERATIONS | 82 |
| MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS | 82 |
| Affected area boundary maps. | 82 |
| Bonded area map. | 82 |

| | |
|---|----|
| Reclamation backfilling and grading maps. | 83 |
| Reclamation facilities maps. | 83 |
| Final surface configuration maps. | 83 |
| Reclamation monitoring and sampling location maps. | 83 |
| Reclamation surface and subsurface manmade features maps. | 83 |
| Reclamation treatments maps. | 83 |
| BONDING AND INSURANCE REQUIREMENTS | 83 |
| Form of bond. (Reclamation Agreement) | 83 |
| Determination of bond amount. | 84 |
| Terms and conditions for liability insurance | 84 |
| REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING | 85 |
| INTRODUCTION | 85 |
| EXPERIMENTAL PRACTICES MINING | 85 |
| MOUNTAINTOP REMOVAL MINING | 85 |
| STEEP SLOPE MINING | 86 |
| PRIME FARMLAND | 86 |
| COAL PREPARATION PLANTS NOT LOCATED WITHIN THE PERMIT AREA OF A MINE | 86 |
| OPERATIONS IN ALLUVIAL VALLEY FLOORS | 87 |
| IN SITU PROCESSING | 87 |
| AUGER MINING | 87 |
| CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT | 87 |
| INDEX | 89 |

TECHNICAL ANALYSIS

TECHNICAL ANALYSIS

INTRODUCTION

The proposed Wild Horse Ridge amendment to the Bear Canyon Mine MRP was received by the Division on 28 September, 1999. This significant revision is for the addition of Federal Leases U-020668 and U-38727 and fee coal owned by C.O.P. Development to the permit area. The proposed leases are east of the Bear Canyon Fault and the proposal includes new surface facilities in the Bear Canyon Right Fork. A letter was sent to the Permittee November 16, 1999 indicating the Division had determined the amendment to be Administratively Complete.

SUMMARY OF OUTSTANDING DEFICIENCIES (Draft TA Only)

The Technical Analysis (TA) regarding the proposed permit changes is not complete at this time. A summary of those outstanding deficiencies is provided below. Additional comments, concerns and deficiencies may also be found within this TA document.

Accordingly, the permitte must address those deficiencies listed below by providing the following in accordance with the requirements of:

- R645-301-521**, The amendment must specifically address the signs and markers requirements as listed in this section. 65
- R645-301-524.230 and 240**, The amendment needs to: 1) Include a drawing of the blasting pattern, demonstrate that a satchel type directional charge is appropriate for the blasting holes, 2) provide the correct diameter hole to be used for a 1-¼" charge, 3) prepare the blast design by a certified blaster, and 4) us a powder factor adequate to achieve breakage (without residential or public dwellings within ½ mile of the blast area the blast does not need to stay under the 5-pound limit). 66
- R645-301-524.230**, The amendment needs to state that no public buildings, schools, churches, dwellings or community or institutional buildings exist within one thousand feet of the blasting area, and that there are no underground mines within 500 feet of the blasting area. The amendment must include the distance from the potential blasting zone to the access road and hunting cabin 66
- R645-300-742.312.4**. The amendment needs to include the approved Stream Alteration Permit obtained with the State Division of Water Rights for the proposed stream channel alteration to make buffer zone findings. 64
- R645-301-100-121.200** - 1)Correct the places in the proposed amendment, Plate 7J-2, Plate 7-9, and pages 7-6, 7-34, for example, where bore-holes have two different names. MW-116 appears to be the same as M91-16, MW-117 the same as M91-

TECHNICAL ANALYSIS

17, and MW-114 the same as M91-14, 2) Include the locations for bore-holes MW-114 (M91-14), MW 116 (M91-16) and MW 117 (M91-17) on Plate 6-2 as referenced in the text. 32

R645-301-100-121.200 - Correct the statement, on page 6-13, indicating the drill-hole logs and well completion diagrams for DH-4 are in Appendix 6-A . They were found in Appendix 7N-G. 32

R645-301-100-624-210 - 1) Provide logs for drill-holes WHR-1, WHR-2, WHR-3, WHR-5, WHR-8, F-76-1, F-76-2A, 77-3B, F-76-4, F-77-5, F-76-6, and F-77-11-A. Describe or explain source for the thickness and depth information for the bore-holes used in making Plates 6-2 through 6-12. There are no cross-sections showing this information for these bore-holes. 32

R645-301-100-624-210 - Correct the following inconsistencies 1) On page 7-34 completion diagrams for SDH-1, SDH-2, and SDH-3 are referenced to be in Appendix 7-A, but they are not there, 2) It states on page 7-34 that a discussion of baseline data for the “SDH” borings is in Appendices 7-J and 7-N, but 7-N covers the “DH” borings only. 32

R645-301-100-724-100 - Instead of deleting SBC-6 from the table on page 7-29, SBC-6 should remain in the table with an explanatory note as to why it is no longer monitored. 39

R645-301-100-724-100 - There is no ground-water information from bore-holes MW-114, MW-115, and MW-116 in the current MRP or the proposed amendment. 39

R645-301-112.100, The application needs to contain a statement indicating whether the applicant is a corporation, partnership, single proprietorship, association, or other business entity. 17

R645-301-112.210, The application needs to include the applicant’s employer identification number. 17

R645-301-112.230, The application needs to show who will pay the abandoned mine reclamation fee. 17

R645-301-112.330, The application needs to include company officials positions and the date the position was assumed. 17

R645-301-112.500, The legal description at the end of Section 2.2.2 needs to be updated. 18

R645-301-112.700, MSHA numbers need to be included in the application as soon as they become available. 18

R645-301-113.100, The application needs to contain a statement indicating whether the applicant or any subsidiary, affiliate, or persons controlled by or under common

TECHNICAL ANALYSIS

control with the applicant has had a federal or state permit to conduct coal mining and reclamation operations suspended or revoked in the five years preceding the date of submission of the application; or forfeited a performance bond or similar security deposited in lieu of bond. The application needs to contain explanatory information if either of these situations applies. 18

R645-301-113.300, The applicant needs to update violation information. 18

R645-301-117.200, The application needs to include a copy of the proof of publication. 20

R645-301-120, Correct or add the following information: 1) list proposed disturbed acreage within each soil mapping unit, 2) correct the proposed topsoil salvage volumes so that Table 8.9-3 agrees with Table 3O-1, located in Appendix 3-O, Blind Canyon Seam Pad and Conveyor Access Roads. 53

R645-301-120, R645-301-222 and R645-301-223, Chapter 8 needs to: 1) Include the 1998 soil survey and associated soil analysis data in Appendix 8-B, 2). Discuss and reference Appendix 8-F, 1999 Order I soil survey, in Chapter 8, Sections 8.1, 8.2, 8.7, and 8.7.1, 3) Clarify which soil surveys (1980, 1990, 1996?, 1998, and 1999) is being discussed and referenced., and 4) Reference Plate 8-1A in Chapter 8. 29

R645-301-121.200. Correct or add the following within the amendment: 1) The statement made on pg 3-16 “Water generated is historically used within the mine with no discharge to surface waters” is no longer an accurate statement and should be re-stated or removed, 2) Lab sheets for all sites where data was collected in July 1991 need to be provided, 3) The notation for springs and drill logs labeled WHR- may be confused. Unique labels should be used, 4) The notation used for geologic structure in Table 1 of the Mayo report should include a legend and geologic formation should be noted on the should also be noted on the spring hydrographs, 5) The references for some water monitoring sites need clarification: water monitoring references differ between the Mayo report, the text in the plan, and information presented to Ken Wyatt by e-mail for input into the database, 6) Wells MW-114, 116 and 117 should all be monitored prior to mining the Wild Horse Ridge to verify current water elevations so, the pre-mining status at these wells will not be in question. Water dating and stiff diagrams should also be conducted to verify the information found west of the Bear Canyon Fault can be applied to the Star Point Sandstone Formation east of the Bear Canyon fault, 7) According to the PHC, there are not adequate data presented to date to determine whether Fish Creek is perennial or intermittent. The applicant should monitor flow monthly, for the year 2000, at the Left Fork and Right Fork to determine the status as perennial or intermittent, 8) All pages with text changes should be dated according to the date the changes are made, and 9) On page 7-50 a tributary is described as “intermittent and ephemeral”: this is unclear and confusing. 38

TECHNICAL ANALYSIS

R645-301-121.200, The amendment must consistently refer to the main access road to the Wild Horse pad area. Either refer to it as the Wild Horse Ridge Access Road or the No. 3 Mine Access Road. 57

R645-301-121.200, The application must clarify where full extraction mining will occur. On Plate 3-4A all panels are identified as development and on Plate 3-4C all panels are identified as development/retreat. It is not clear if development means first mining and retreat means second mining. 46

R645-301-121.200, The application must clarify whether the stream channels exist within or near the Wild Horse Ridge subsidence zone. 46

R645-301-121.200, The application must clarify why areas of first mining only will remain stable over time. 46

R645-301-121.200, The application must explain why the disturbed area was decreased from 17 acres to 12 acres, on Page 3-10 of the amendment, without a proposed change in the disturbed area. 22

R645-301-121.200, The application must include a statement indicating whether there will be gravity discharge from the mine, or discharge into the mine during or following reclamation. 78

R645-301-121.200, The application must include Plate 3-3 at a scale of 1" equals 500' so the Division can evaluate the potential affects of subsidence. 46

R645-301-121.200, The application must indicate whether any contemporaneous reclamation will be associated with the Wild Horse Ridge project. 79

R645-301-121.200, The application should include additional information on who uses the access road and how often. The Division needs this information to determine if the access road should be classified as a private or public road. 44

R645-301-121.200, The application should include the subsidence protection zones on Plate 3-3. 46

R645-301-130, The application must commit to complete all sampling, testing and interpretation by a qualified soil scientist and allow the soil scientist's qualifications to be reviewed prior to sampling and testing of the topsoil material. . . . 75

R645-301-141, The application must include a revised mine plan so that subsidence occurs within the permit area, or expand the permit area to include the NW1/4 SE1/4 of Section 19, see Plate 3-3. 47

R645-301-224, The application needs to commit to analyze all soil samples for parameters according to the Division Guidelines for Topsoil and Overburden. 74

TECHNICAL ANALYSIS

Revised -January 24, 2000

- R645-301-232.100 and R645-301-232.200**, Commit to provide a non-biased, soils specialist to supervise and document topsoil salvage operations including salvage history, soil salvage areas, soil salvage volumes, and soil placement in the stockpile. 53
- R645-301-232.700 and R645-301-232.710**, Commit to salvage topsoil in all areas considered accessible to construction machinery, including bouldery and steep hillside areas. 53
- R645-301-234.200 and R645-301-234.220**, The amendment must indicate how compaction will be alleviated during topsoil pile construction from earth moving machinery and vehicle traffic. 54
- R645-301-242.110**, Correct the following 1) The application needs to commit to replace topsoil on the 0.91 acres that will be reclaimed in area TS-12, Wild Horse Ridge Access Road., 2) Correct the plan to show that average topsoil replacement thickness for the Wild Horse Ridge disturbed area should be around 13 to 14 inches. 74
- R645-301-321**, The application needs to contain vegetation productivity information. 24
- R645-301-331**, The application needs to contain a plan for interim stabilization of disturbed areas. 54
- R645-301-333**, The applicant needs to commit to develop and implement a mitigation plan in cooperation with Wildlife Resources and the Division for losses in raptor nest utilization near the proposed surface facilities. 49
- R645-301-333**, The applicant needs to show how it will use the best technology currently available to protect and enhance critical big game habitat in the proposed surface facilities area. The applicant should work with the Division of Wildlife Resources to devise a mitigation plan. For the present, a commitment to develop this plan and to implement it as soon as possible would be adequate. 49
- R645-301-333**, The application needs to contain more design information about the conveyor and how the design may affects wintering deer and elk movement. 49
- R645-301-341**, Section 9.5.5.1 contains a list of noxious weeds which should be updated if it is included. 81
- R645-301-341**, The application needs to be modified to show acceptable means of seeding small-seeded species. The Division recommends the applicant broad cast seed the small- seeded species. 81
- R645-301-341**, The application needs to show the woody plant density success standard, equal to 1010 trees and shrubs per acre, on the Wild Horse Ridge area. 81

TECHNICAL ANALYSIS

R645-301-341, The plan for planting willow cuttings needs to be modified. The applicant should plan to plant at least one cutting every foot in areas of suitable habitat. 81

R645-301-355, Grouser marks are not deep enough to make much difference in vegetation establishment and should be eliminated from the plan. The Division recommends the applicant plan to gouge the surfaces of all reclaimed areas. 81

R645-301-411.140, The application needs to contain all available information about cultural resources in the area including existing information about areas that would be undermined. 22

R645-301-411.140, The statement in Section 5.2.1, suggesting there are no sites within the permit area considered to be candidates for the National Register of Historic Places, needs to be modified since the Bear Creek Shelter is considered eligible for listing. 22

R645-301-512.240. Current prudent engineering practices need to be followed: 1) Controls for an oil skimmer should be provided for the single open channel spillway on sedimentation pond 'D'(runoff exceeding the 10 year - 24 hour event would allow oil contained in the pond to discharge out the spillway), 2) Catch basins need an outlet, so flow from the basin is controlled under situations that may exceed the storage volume, and 3) The proposed minimum embankment height is 7651 ft. and the maximum flowline elevation is 7650.5 retaining 0.5 ft for freeboard. Standard engineering practices for freeboard of 1 ft should be provided in the design. 64

R645-301-515.100, The application must describe how slides and other emergencies will be reported. 47

R645-301-521.150, The application must include detailed maps that show the existing surface configuration (topographic maps) for the proposed disturbed and adjacent area. The topographic map should be of a scale no smaller than 1 inch equals 50 feet and contour intervals of 2 feet. 41

R645-301-521.151, The application must include contours extending at least 100 feet beyond the permit boundary on Plate 2-4G. 67

R645-301-521.160 and R645-301-521.165, Provide, in the amendment, engineered drawings for the projected stockpile, showing size, final configuration and cross sections. 54

R645-301-521.190, The application must include a legal description of the permit area and list the permitted acreage. 22

TECHNICAL ANALYSIS

Revised -January 24, 2000

| | |
|--|----|
| R645-301-522 , The application must include more details about the coal recovery plan. The type of information the Division needs should be contained in an approved R2P2. | 45 |
| R645-301-525.120 , The application must describe all renewable resources within the permit area with emphasis on the Wild Horse Ridge subsidence zone, for resources such as state appropriated water, grazing and timber. | 47 |
| R645-301-525.120 , The application must identify all manmade structures such as roads, the Wild Horse Ridge mine facilities, and the hunting cabin, on the Plate 3-3 or other subsidence maps. | 47 |
| R645-301-525.213 , The amendment must address how the pond will be protected from subsidence. | 63 |
| R645-301-525.450 , The application must identify the areas where first and full extraction mining will occur on the mine maps and identify those areas that need to be protected from subsidence on Plate 3-3. The application must include the angle-of-draw used to determine the subsidence zones and describe why the angle used is appropriate. | 47 |
| R645-301-525.480 , The application must describe how subsidence damage will be mitigated. | 47 |
| R645-301-527.200 , The amendment must provide a detailed cross section showing the operational and reclaimed cuts and fills. | 57 |
| R645-301-527.200 , The amendment needs to include detailed plans for the main access road after final reclamation. | 76 |
| R645-301-527.240 , The amendment must include a commitment to repair any road damage as soon as possible. | 57 |
| R645-301-527.250 , The amendment must include information on cut slopes that will not be fully reclaimed. | 57 |
| R645-301-528.323 , The amendment must describe how burning and burned waste material will be handled. | 59 |
| R645-301-533.300 , The amendment must show that Pond D will not fail during sudden drawdown. | 63 |
| R645-301-534.120 and R645-301-534.320 , The amendment must describe the road surfacing materials acid or toxic forming characteristics. | 57 |
| R645-301-534.140 , The amendment must provide detailed reclamation plans for all roads and sections of roads to be reclaimed. | 57 |

TECHNICAL ANALYSIS

R645-301-534.320, The amendment must describe the type of traffic that will be on the roads. 57

R645-301-536, The amendment must provide a contingency plan for handling coal processing waste if the material must be brought to the surface and cannot be returned underground. 59

R645-301-541.200, The application needs to address the following: 1)Table 8.9-1 shows that only 1.24 acres will be reclaimed from the 1.47 acres of increased disturbance for area TS-13. The entire 1.47 acres of increased disturbance needs to be reclaimed, 2) Table 8.9-1 shows that only 0.68 acres will be reclaimed from the 0.92 acres of increased disturbance for area TS-14. The entire 0.92 acres of increased disturbance needs to be reclaimed. 74

R645-301-542.100, The amendment must provide information on when pond D will be removed within the reclamation time table. 64

R645-301-542.200, 1)The amendment must provide detailed cross sections that show how the coal seams will be backfilled, and the location and extent of any proposed terracing, and 2) Clarify which reclamation activities will be applied at locations east and west of the Bear Canyon Creek. 72

R645-301-542.200, The amendment must include detailed maps and cross sections that show the anticipated final surface configuration. The maps and cross section must contain enough information so that reclamation costs can be calculated. 83

R645-301-542.500, The application must include the removal of the sedimentation pond in the reclamation timetable. 78

R645-301-542.620, The amendment needs to describe how road culverts will be reclaimed. 75

R645-301-542.630, The amendment needs to describe how the road beds will be scarified or ripped during reclamation. 75

R645-301-542.640, The amendment needs to describe how the road surface material will be disposed. 76

R645-301-542.730, The amendment must include a contingency plan for disposal of coal mine waste brought to the surface. 72

R645-301-553.100 and R645-301-542.200, The amendment must provide detailed cross sections that show the reclamation for each highwall and cut slope to be retained. 72

R645-301-553.110, The amendment must show that the reclamation plan will comply with the approximate original contours and include description of any highwall or cut slopes to be retained. 70

TECHNICAL ANALYSIS

R645-301-553.130, The amendment must show that all reclaimed slopes will have a safety factor of at least 1.3. 72

R645-301-553.250, Incorporate discussions addressing the handling of coal waste and underground development waste, including face-up material waste. If surface disposal is proposed for coal refuse and underground development, commit to a minimum cover of 48 inches using the best available material. 53

R645-301-728. The 1997 SPCC plan is not provided; a determination can not be made as to whether the proposed operation plan minimizes potential for hydrocarbon impacts. 64

R645-301-730. 1) Site WHR-7 , WHR-8 and WHR-9 require further site specific description to justify excluding these springs from baseline and long term monitoring needs, or include them in the monitoring program. A discussion on multiple seam removal should be included in the subsidence portion in the PHC, 2) MW-117, should be monitored in conjunction with MW-114 (this well would most likely show effects, if fault water is encountered during mining and discharge/recharge occurs from the Spring Canyon Member), 3) Surface water monitoring at Fish Creek, WHR-1, was added to the monitoring plan. WHR-1 was indicated to be monitored in Fish Creek in some locations in the plan, but the information was not clearly presented in the text or tables under section 7-53, and 4) Construction sequence information for roads and pad areas constructed in drainages needs to be provided. 64

R645-301-730. More information needs to be provided showing the location and proposed extent of terracing on the reclamation maps and in areas where the cut slope may not be completely eliminated. Clarification for reclamation activities applied at locations east and west of the Bear Canyon Creek need to be made. 69

R645-301-730. The application should provide specific information as to how water quality standards and effluent limitations will be determined to be met prior to bond release. 78

R645-301-731. Appendix 7-K needs to provide a reclamation construction sequence for Sedimentation pond ‘D’ including the methods used during pad area reclamation to minimize sediment contributions to the drainage, the sequences in the culvert and fill removal, fill placement, and the grading and proposed erosion control measures. 78

R645-301-742.221.36. The sedimentation pond must maintain adequate sediment storage capacity. The section in text proposing the clean out level occurs “before 100 % of the clean out level has accumulated” should be removed from the plan, or otherwise be re-worded. 64

R645-301-742.314. Standard engineering practices generally use a minium of 0.3 ft. Ditch capacities should meet common minium design standards. Along the roads

TECHNICAL ANALYSIS

additional culvert cross drains may be advantageous in meeting the ditch requirements without requiring changes in the road surface slope. 64

R645-301-742.412. Road culverts crossing the creek are required to be sized for the 100-year, 6-hour event, and must meet all other requirements of R645-301-742.320, since Bear Creek is a perennial stream. 58

R645-542.610, The amendment needs to state that all roads to be reclaimed will be closed to the public during reclamation. 75

ADMINISTRATIVE INFORMATION**ADMINISTRATIVE INFORMATION****OWNERSHIP AND CONTROL**

Regulatory Reference: R645-301-112

Analysis:

Ownership and control information is presented in Chapter 2. The applicant is Co-Op Mining Company, and the mining and reclamation plan includes Co-Op's address, telephone number, resident agent, officers and directors. Neither the plan nor the application says who will pay the abandoned mine reclamation fee or gives the applicant's employer identification number. Also, the plan does not say whether the applicant is a corporation, partnership, single proprietorship, association, or other business entity.

Although the plan shows the names and addresses of company officials, the positions these officials hold and when the positions were acquired were not provided as required under R645-301-112.330.

Table 2-1 shows property ownership in and contiguous to the current and proposed permit area. This information and the legal description in Section 2.2.2 correspond with the information on Plates 2-1 and 2-2 and appear to be correct; however, the applicant needs to update the acreage figure shown at the end of Section 2.2.2.

The current plan includes MSHA numbers for the Bear Canyon No. 1 and No. 2 Mines, but the application does not show an MSHA number for the proposed facilities. Instead, it says the number will be included in the application when it becomes available.

Findings:

Information provided in the proposal is not adequate to meet the requirements of this section of the regulations. Prior to approval, the applicant must supply the following in accordance with:

R645-301-112.100, The application needs to contain a statement indicating whether the applicant is a corporation, partnership, single proprietorship, association, or other business entity.

R645-301-112.210, The application needs to include the applicant's employer identification number.

R645-301-112.230, The application needs to show who will pay the abandoned mine reclamation fee.

R645-301-112.330, The application needs to include company officials positions and the date the position was assumed.

R645-301-112.500, The legal description at the end of Section 2.2.2 needs to be updated.

R645-301-112.700, MSHA numbers need to be included in the application as soon as they become available.

VIOLATION INFORMATION

Regulatory Reference: R645-301-113

Analysis:

Appendix 2-A of the current mining and reclamation plan has a list of notices of violation and other enforcement actions taken by the Division, the Office of Surface Mining, and the Division of Air Quality. The Division requires violation information to be updated for significant revisions, so the applicant needs to supply information on enforcement actions taken in the past three years.

The plan is required to contain a statement indicating whether the applicant or any subsidiary, affiliate, or persons controlled by or under common control with the applicant has had a federal or state permit to conduct coal mining and reclamation operations suspended or revoked in the five years preceding the date of submission of the application; or forfeited a performance bond or similar security deposited in lieu of bond. This information is not in the plan. If either of these situations applies, the application must include explanatory information.

Findings:

Information provided in the proposal is not adequate to meet the requirements of this section of the regulations. Prior to approval, the applicant must supply the following in accordance with:

R645-301-113.100, The application needs to contain a statement indicating whether the applicant or any subsidiary, affiliate, or persons controlled by or under common control with the applicant has had a federal or state permit to conduct coal mining and reclamation operations suspended or revoked in the five years preceding the date of submission of the application; or forfeited a performance bond or similar security deposited in lieu of bond. The application needs to contain explanatory information if either of these situations applies.

R645-301-113.300, The applicant needs to update violation information.

RIGHT OF ENTRY

Regulatory Reference: R645-301-114

ADMINISTRATIVE INFORMATION

Revised - January 24, 2000

Analysis:

The application includes copies of the leases for the areas proposed to be added to the permit area, and the legal descriptions in these leases match the areas shown on the permit area maps and in Section 2.2.2. These leases indicate the applicant has the required right of entry.

Findings:

Information provided in the proposal is adequate to meet the regulatory requirements of this section.

UNSUITABILITY CLAIMS

Regulatory Reference: R645-301-115

Analysis:

The proposed operations will not be within 100 feet of a public road or within 300 feet of an occupied dwelling. The existing mine is within 300 feet of occupied dwellings, but the plan contains approval letters from the owners and renters of these buildings.

According to the current mining and reclamation plan, no portion of the area to be permitted is within an area designated as unsuitable for mining, several paragraphs in the plan describe why the area should not be considered unsuitable. The Division is not aware of a studies conducted or being conducted that designate the proposed permit area as unsuitable.

Findings:

Information provided in the proposal is adequate to meet the regulatory requirements of this section.

PERMIT TERM, INSURANCE, PROOF OF PUBLICATION, AND FACILITIES OR STRUCTURES USED IN COMMON

Regulatory Reference: R645-301-116, R645-301-117

Analysis:

Most of this information has not been changed. The projected termination date for mining operations was changed from 2007 to 2023.

A copy of the applicant's insurance policy, on file at the Division's SLC office, meets the minimum regulatory requirements.

ADMINISTRATIVE INFORMATION

The applicant needs to supply a copy of the proof of publication.

No facilities would be used in common with any other permitted operation.

Findings:

Information provided in the proposal is not adequate to meet the regulatory requirements of this section. Prior to approval, the applicant must supply the following in accordance with:

R645-301-117.200, The application needs to include a copy of the proof of publication.

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR Sec. 783., et. al.

GENERAL

Regulatory Reference: 30 CFR Sec. 783.12; R645-301-411, -301-521, -301-721.

Analysis:

Analyses of the existing, pre-mining environmental resources within the permit and adjacent area that may be affected or impacted by the proposed underground mining activities are discussed under other headings in this TA

Findings:

A determination of adequacy for this section will be determined to meet the regulatory requirements when all other information in this TA are determined adequate.

PERMIT AREA

Regulatory Requirements: 30 CFR Sec. 783.12; R645-301-521.

Analysis:

The disturbed area boundaries are shown on Plate 2-4. The disturbed acreages are listed in Section 3.3.14 on Table 3.3-1, Surface Disturbance Summary. The Permittee will increase the disturbed area from 29.10 acres to 35.99 acres. None of the new disturbed acreages contains lands disturbed by mining activities prior to 1977. The new disturbed areas include: 1) the Wild Horse Ridge access road, 2) the conveyor belt access/topsoil stockpile, 3) the upper conveyor belt access roads No. 1 and No. 2, and 3) the Wild Horse Ridge Blind Canyon seam portal area.

Plate 2-1 shows the permit boundaries. The Permittee listed their leases Section 2.2.2. Since the permit boundaries and the lease boundaries may not be the same the Permittee needs to give the Division a legal description of the permit boundaries.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-521.190, The application must include a legal description of the permit area and list the permitted acreage.

R645-301-121.200, The application must explain why the disturbed area was decreased from 17 acres to 12 acres, on Page 3-10 of the amendment, without a proposed change in the disturbed area.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.12; R645-301-411.

Analysis:

The current mining and reclamation plan contains information about one cultural resource site, the Bear Creek Shelter, in the area of the lower part of the conveyor. The application contains a report discussing the significance of this site and also showing results of a survey of the proposed disturbed area. No other sites were found. The Bear Creek Shelter is considered eligible for listing in the National Register of Historic Places.

Section 5.2.1 of the application contains a statement that there are no sites within the permit area that would be considered candidates for the National Register of Historic Places. This statement needs to be modified since the Bear Creek Shelter is considered eligible for listing.

The application contains no cultural resources information about areas in federal leases U-38727 and U-20668. A thorough survey of the area is probably not necessary, but the application is required to contain all available information about cultural resources in the area. Based on a conversation with the applicant's representative, some survey work is completed for this area, and this information should be included in the application.

Findings:

Information in the application is not adequate to meet the regulatory requirements of this section. Prior to approval, the applicant must supply the following in accordance with:

R645-301-411.140, The statement in Section 5.2.1, suggesting there are no sites within the permit area considered to be candidates for the National Register of Historic Places, needs to be modified since the Bear Creek Shelter is considered eligible for listing.

R645-301-411.140, The application needs to contain all available information about cultural resources in the area including existing information about areas that would be undermined.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.18; R645-301-724.

Analysis:

The Mayo and Associates PHC, August 1999 incorporates current climatic information into the plan. Average annual precipitation are recorded between 10 and 15 inches from lower elevation gauging stations within the permit and adjacent area. Average annual precipitation is recorded as 29 and 33 inches in the high elevation gauging stations. The Palmer Hydrologic Drought Index for Utah Division 4 and Division 5 climatic regions are presented and discussed.

Findings:

The application meets the minimum requirements for this section.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.19; R645-301-320.

Analysis:

Appendix 9-G contains a vegetation report for the proposed disturbed area. It includes quantitative measurements of vegetative cover and woody plant density for the proposed disturbed area and a reference area. The application needs to contain vegetation productivity information.

A variety of vegetation communities exists over the proposed disturbed area, associated with the various aspects and soils crossed by the proposed conveyor and road. Except for the facilities area, disturbances would be fairly narrow and small for each community; therefore, the different communities were not sampled separately. This did not, however, lead to a large sample size.

The vegetation communities within the Wild Horse Ridge disturbed area include varying proportions of riparian, Salina wild rye, pinyon/juniper, Ponderosa pine, mountain brush, and sagebrush/grass communities. Dominant species were Salina wild rye, needle and thread grass, Utah juniper, and smooth brome, but several other species were also present. Vegetative cover was 42.50%, and woody plant density was 1010 per acre.

The reference area was chosen because it is transitional between the lower drainage area and the pinyon/juniper/grass areas on the upper slopes. Dominant species were Salina wild rye, corymbed buckwheat, rubber rabbitbrush, Kentucky bluegrass, and hoary aster. While the Wild Horse Ridge proposed disturbed area is strongly dominated by grasses, the proposed reference area cover has a closer balance of grasses and shrubs. Vegetative cover was 46.25%, and woody plant density was 1405 per acre.

Findings:

Information in the proposal is not adequate to meet the regulatory requirements of this section. Prior to approval, the applicant must provide the following in accordance with:

R645-301-321, The application needs to contain vegetation productivity information.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21; R645-301-322.

Analysis:

Wildlife Information

Plates 3-3 and 10-1 are revised to include the proposed addition to the permit area. These maps show raptor nests and big game habitat. The entire Wild Horse Ridge addition is either critical elk or deer winter range. Several raptor nests are in the area including two within about 2000 feet of the proposed surface facilities. The right fork of Bear Creek consistently has water in a few places, but it is not a fishery.

The Division has consulted with the Division of Wildlife Resources concerning the adequacy of wildlife information in the application and in the current mining and reclamation plan, and no additional information is needed at this time. The applicant should plan to update raptor nesting information in the spring of 2000.

Threatened and Endangered Species

The proposed permit area contains habitat for threatened or endangered plant species. Most threatened or endangered species in Emery County occur at elevations below the mine. These are Barneby reed-mustard, Jones cycladenia, last chance Townsendia, Maguire daisy, Despain footcactus, Wright fishhook cactus, and the Winkler cactus.

Canyon sweetvetch (*Hedysarum occidentale* Var. *canone*) is listed by Region 4 of the Forest Service as a sensitive species. This species has been found in the proposed disturbed area, and locations are documented in the vegetation report in Appendix 9-G.

The proposed disturbed area does not contain habitat for the southwestern willow flycatcher, but it is not known whether suitable habitat exists in other parts of the Wild Horse Ridge addition. The proposed disturbed area has some willows and riparian vegetation, but it was not enough that it was encountered in vegetation cover samples or that it would provide habitat for southwestern willow flycatchers. Woody plant density measurements included coyote willow at a density of 25 per acre.

Bald eagles are common in the area during the winter and could occasionally fly through or roost in the proposed addition to the permit area. Mining would have negligible effects on these birds.

ENVIRONMENTAL RESOURCE INFORMATION Revised -January 24, 2000

The only other known potential for threatened or endangered species includes the black-footed ferret. There have been no confirmed sightings of black-footed ferrets in Emery County in several years.

Findings:

The application meets the minimum requirements for this section. Raptor nesting information should be updated in the spring of 2000.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.21, 817.200(c); R645-301-411, -301-220.

Analysis:

Chapter 8, Soil Resources, Sections 8.1 through 8.7, discusses the soil resources within the proposed Wild Horse Ridge project for the Bear Canyon Mine. Relevant soils information includes current and past soil surveys, soil characterizations, and substitute topsoil identification. The Analysis section discusses resource information as follows:

- Soil Survey Information
- Soil Characterization
- Substitute Topsoil

Soil Survey Information

Chapter 8 supplies soil resource information by referencing two different soil surveys located in Appendix 8-B, 1998 Order II Soil Survey, USDA, NRCS and Appendix 8-F, 1999 Order I Soil Survey, Environmental Industrial Services.

The current amendment states that Appendix 8-B contains a 1998 soil survey which was conducted for the proposed Wild Horse Ridge disturbance by the USDA NRCS. The 1998 soil survey and associated soil analysis data could not be located either within the current amendment or in the approved MRP, Appendix 8-B. Section 8.1 states that Plate 8-1 is based on the 1998 survey. A copy of the 1998 soil survey and data need to be included in Appendix 8-B.

Sections 8.1, 8.2, 8.7, and 8.7.1 do not reference or discuss the 1999 Order I soil survey. Since these sections refer to past soil surveys, discussion of the 1999 soil survey needs to be added for clarification. Further clarification needs to be given to identify which soil survey is being referenced and discussed in each of the sections.

In May 1999, a site specific Order 1 soil survey for the proposed Wild Horse Ridge project area was performed and prepared by Mr. Daniel Larsen, Soil Scientist, Environmental Industrial Services (Appendix 8-F). The detailed survey contains soil descriptions, soil pedon descriptions, soil salvage suitability analysis, laboratory soil testing data, field soil profile descriptions, soil and landscape photographs, soils map, soil data collection map and salvageable soils map. The Wild Horse Ridge site contains seven soil mapping units as follows:

- A Pathhead-Cabba Complex, 30 to 70 % slopes
- B Winetti, High Elevation, 5 to 30 % slopes
- C Winetti, High Elevation-Rock Outcrop, 10 to 30 % slopes
- D Doney, Deep, 10 to 30 % slopes
- E Datino-Guben Complex, 30 to 80 % slopes
- F Guben-Pathead Complex, 30 to 80 % slopes
- G Doney-Cabba-Podo Complex, 30 to 80 % slopes

All mapping and soil survey work were performed according to the standards of the National Cooperative Soil Survey. Based on the site-specific soil descriptions, and laboratory data, each of the soils were classified according to current NRCS soil taxonomy, and correlated with NRCS's Order II soil survey. Documentation of field data is presented in Map B-Soil Data Collection Map; Appendix C-Field Soil Profile Descriptions and Transect Data; and Appendix D-Soil Profile and Landscape Photographs. Appendix F contains information comparing soil mapping units between the 1999 Order I soil survey to NRCS's Order II soil survey. Adjustment summarizations were given for each specific change used for identifying and renaming soils within the Wild Horse Ridge area.

Chapter 8 does not reference Plate 8-1A, which continues the soils mapping for the Wild Horse Ridge area. The soil maps (Plate 8-1 and Plate 8-1A) are scaled at 1-inch equals 200-feet, with 5-foot contour intervals. A total of 10 different soil mapping units are identified. Plate 8-1 shows three soil mapping units as DZE, PDR, and TR, with "D" identified as disturbed area soils. These three mapping units are in the existing Bear Canyon Mine disturbance area. Plate 8-1A identifies the 7 soil mapping units as contained in the 1999 Order I soil survey as PC, WIN, WR, DON, DG, GP, and DCP. These seven soil units are identified in the proposed disturbance area for Wild Horse Ridge.

Soil Characterization

Soil pedons were characterized by the soil horizons at each sampling location. All profile descriptions were recorded on standard NRCS forms and are provided in Appendix C within Appendix 8-F. Field parameters for each soil pedon description includes horizon information, soil color, texture, rock fragment, soil structure, roots, clay films, and effervescence with 0.1N hydrochloric acid. In addition, general site descriptions include vegetation, climate regimes, land form physiography, relief, elevation, slope, aspect, erosion condition, permeability, drainage class, depth to saturation (ground water) if encountered, salts or alkali if present, and surface rock. Generalized soil properties are summarized as follows for each soil type:

ENVIRONMENTAL RESOURCE INFORMATION

Revised -January 24, 2000

| Map Unit | Soil Map Symbol | Land Form | % Slope | Parent Material | Soil Depth | Texture | Rock Fragment Class | General Vegetation |
|----------|-----------------|----------------------------------|---------|-----------------------------------|--------------------------|-----------|-------------------------|---|
| A | PC | foothills | 30-70 | colluvium and shale | shallow to deep | sl, l, cl | stony to very cobbly | Pinion-Juniper |
| B | WIN | narrow canyon bottoms | 5-30 | alluvium and colluvium | deep | sl, l, ls | gravelly to bouldery | Cottonwood Douglas-fir Dogwood Wildrose |
| C | WR | narrow canyon bottoms | 5-30 | alluvium, colluvium and sandstone | shallow to deep | sl, l, ls | gravelly to bouldery | Cottonwood Douglas-fir Dogwood Wildrose |
| D | DON | toe slope, slight bench | 10-30 | colluvium, slope wash | deep | sl, l, ls | non-stony to stony | Ponderosa Pine Juniper Douglas-fir |
| E | DG | steep canyon slope, north aspect | 30-80 | colluvium and shale | moderate deep to deep | sl, l, cl | very stony to non-stony | Douglas-fir Pinion Mt. Mahogany Serviceberry |
| F | GP | canyon side slope | 30-80 | colluvium, sandstone and shale | shallow to moderate deep | sl, l, cl | very stony to bouldery | Douglas-fir Pinion Mt. Mahogany |
| G | DCP | steep canyon slope, south aspect | 30-80 | sandstone, shale and colluvium | shallow to moderate deep | sl, l, cl | very stony to non-stony | Pinion-Juniper Grass |

Seven soil samples were selected from representative soil layers during soil inventory and were characterized according to the State of Utah Division of Oil, Gas and Mining (DOGM) guidelines for topsoil and overburden¹. Sampled parameters include: pH; electrical conductivity; saturation percent; SAR includes Ca, Mg, and Na; texture includes % very fine sand, sand, silt and clay; TOC includes organic matter percent; CaCO₃; Boron (CaCl₂ extraction); Selenium (AB-DPTA extraction); AWC includes 1/3 and 15 bar analyses; and ESP.

Soil samples were sent to Inter-Mountain Laboratories, Inc. for analysis. Appendix B contains the laboratory data sheets for all analysis on the 7 samples. A summary of soil laboratory results are noted below, excluding sample CW10-1 which is discussed in the following table:

¹Leatherwood, J., and Duce, D., 1988. Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining. State of Utah Department of Natural Resources, Division of Oil, Gas and Mining.

ENVIRONMENTAL RESOURCE INFORMATION

| Parameter | Results (Range) | DOGM Rating * |
|--------------------------|-----------------|---------------|
| pH | 7.4 - 7.8 | Good |
| EC (mmhos/cm) | 0.33 - 0.64 | Good to Poor |
| Saturation % | 30 - 48 | Good |
| SAR | 0.3 - 0.7 | Good |
| Texture | SIL, SL, L | Good |
| Boron (mg/Kg) | 0.5 - 1.6 | Good |
| Selenium (mg/Kg) | <0.02 | Good |
| Avail Water Cap. (in/in) | 0.06 - 0.14 | Fair to Good |

* State of Utah Division of Oil, Gas and Mining (DOGM) guidelines for topsoil and overburden.

For all soils, except CW10-1, soil tests indicate that the soils generally rate fair to good for reclamation use. Sample CW10-1, was obtained to document properties of a calcic horizon in a Guben soil from a light colored soil layer at about 20 to 30 inches in depth on a road cut in Soil Map Unit F. Soil test results indicate an unacceptable level of selenium (0.26 mg/Kg) and a poor rating for electrical conductivity (10.2 mmhos/cm). The sample was also higher in boron (2.5 mg/Kg), calcium (7.5 meq/L), magnesium (160 meq/L), sodium (35 meq/L), SAR (3.7) and pH (8.3) than the other soil samples. The CW10-1 sample site is at the edge of the existing road accessing the future portal site. The soil survey states that Co-Op Mining does not anticipate that this soil would be involved in site disturbance for portal development and that further assessment may be required if disturbance along this section of road is proposed. Every effort should be made to minimize disturbing and/or mixing the deeper subsoils (20 to 30 inches) of this section of road cut.

The **percent rock content** within the mine site disturbance or proposed facilities area is the main deterrent for soil suitability based on the current DOGM guidelines. Although DOGM suitability criteria considers >30% (by volume) rock fragments (for both gravels <3" in size and cobbles 3 to 10" in size) to be unacceptable, and >10% stones and boulders >10" in size to also be unacceptable, the recent trend by DOGM is to salvage **native soils with intrinsic or indigenous rock content**. Using indigenous rocky soils should enhance reclamation success by providing an environment similar to native conditions. However, higher rock content greater than is present in the surface soils needs to be avoided. Natural, intrinsic rock content provides for a more stable reclaimed surface, aids in water harvesting and water holding capacity of interstitial soils, and creates wildlife habitat and niches on the surface were surface boulders and larger cobble sized rocks are placed.

Substitute Topsoil

The PAP does not propose any borrow as a source for substitute topsoil.

Findings:

Information provided in the application is not considered adequate to meet the regulatory requirements for this section. The applicant must provide the following in accordance with:

R645-301-120, R645-301-222 and R645-301-223, Chapter 8 needs to: 1) Include the 1998 soil survey and associated soil analysis data in Appendix 8-B, 2). Discuss and reference Appendix 8-F, 1999 Order I soil survey, in Chapter 8, Sections 8.1, 8.2, 8.7, and 8.7.1, 3) Clarify which soil surveys (1980, 1990, 1996?, 1998, and 1999) is being discussed and referenced., and 4) Reference Plate 8-1A in Chapter 8.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.22; R645-301-411.

Analysis:

According to the application, the current permit area and the proposed addition are zoned by Emery County as Mining, Grazing and Critical Environmental. The land is used for mining, cattle grazing, timber, recreation, and wildlife. Parts of the area are posted "Hunting Unit", and the access road to the Wild Horse Ridge surface facilities also provides access to a hunting cabin. This road will be maintained during the mining operations.

The application discusses previous mining activity in the area. Various entities have operated mines in the area since 1885.

According to the application there are no public parks, cemeteries, or units of the Wild and Scenic Rivers system or the National System of Trails.

Findings:

The application meets the regulatory requirements of this section.

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR Sec. 785.19; R645-302-320.

Analysis:

The Natural Resources Conservation Service (NRCS) reported that there are alluvial soils in the bottoms of Fish Creek Canyon and the right fork of Bear Creek in sections 24 or 25 T.16S. R. 7E. and sections 19 and 30 T. 16S. R. 8E (see Prime Farmland Letter, dated July 9, 1999, Appendix 8C-5).

The Wild Horse Ridge amendment is situated near alluvial valley floors and the following and the following findings are made based on the proposed operators:

- Unconsolidated streamlaid deposits holding a stream are present in Bear Creek, the right fork of Bear Creek, Fish Creek and Huntington Creek.

ENVIRONMENTAL RESOURCE INFORMATION

- Steep slopes and limited flat areas preclude cultivation and irrigation within the permit area and agricultural activities in the adjacent area associated with Huntington Creek.
- The proposed operation is not expected to materially damage adjacent area AVF water supplies primarily because water from the proposed Wild Horse Ridge area contributes a very small portion of water contributed to the Huntington Creek basin. Although adjacent area farmlands were not identified by the applicant, this information was obtained from the Water Resource data base updated in 1998. Undeveloped range in the permit and adjacent area is not significant to farming primarily because the alluvial grazing is conducted in narrow canyons that preclude farming.

Based on the above analysis, the Division concludes the proposed Wild Horse Ridge operations occurs adjacent to alluvial valley floors but will not preclude farming on an Alluvial Valley Floor and any undeveloped range in the permit and adjacent area is not significant to farming.

Findings:

Additional information relative to R645-302-321 is not required. The information provided meets the regulatory requirements of this section.

PRIME FARMLAND

Regulatory Reference: 30 CFR Sec. 785.16, 823; R645-301-221, -302-270.

Analysis:

A Prime Farmland site investigation was performed by the Natural Resources Conservation Service (NRCS). A negative determination was made for Prime Farmland or farmland of statewide importance within the proposed Wild Horse Ridge area (sections 24 and 25 T.16S. R. 7E. and sections 19 and 30 T.16S. R. 8E). The determination letter from the NRCS is dated July 9, 1999, and is included in Appendix 8-C.

Findings:

The application meets the minimum requirements for this section.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.22; R645-301-623, -301-724.

Analysis:

Changes to the text, mostly minor, have been made on pages 6-3, 6-6, 6-10, 6-11, 6-13, 6-16, 6-18, and 6-19 of Chapter 6. The proposed permit boundary as shown on revised Plates 6-1 through 6-12 includes federal leases U-020668 and U-38727 and fee coal owned by C.O.P. Development. Plate 6-1 is

the Geology Map. Plates 6-2, 6-6, and 6-10 are overburden maps, Plates 6-3, 6-7, and 6-11 are isopach thickness maps, Plates 6-4, 6-8, 6-12 are structure contour maps, and Plates 6-5 and 6-9 are interseam isopach maps.

Drill-hole DH-3 was abandoned in 1993 and replaced by DH-4. Drill-hole logs and well completion diagrams for DH-4 are stated (p. 6-13) to be in Appendix 6-A, but they are in Appendix 7N-G rather than Appendix 6-A.

The well completion diagram for MW91-14 (MW-114) is included in Appendix 7-A. The location of this well is not shown on the maps in Chapter 6.

Plate 7-9 in the current MRP is a stratigraphic cross-section, and the locations of the bore-holes are to be found on Plate 6-2; however, Plate 6-2 does not show the locations for bore-holes M91-16 and M-91-17. Plates 6-2 through 6-12 show thickness or depth information for drill-holes WHR-1, WHR-2, WHR-3, WHR-5, WHR-8, F-76-1, F-77-5, F-76-6, 77-3A, and F-77-11-A: there are no logs for these bore-holes in the MRP or the proposed amendment and the source of the values used to make the maps is not described or explained. There is no hydrology information for the WHR bore-holes (p. 7-20).

The current MRP includes a description of the areal and structural geology of the proposed permit and adjacent areas, including federal leases U-020668 and U-38727 and fee coal tract owned by C.O.P. Development. The description is based on maps and plans required as resource information for the plan, detailed site specific information, and geologic literature and practices. Additional geologic information has been submitted as part of Appendix 7J-I, Investigation of Groundwater and Surface Water Systems and Probable Hydrologic Consequences, a report by Mayo and Associates, LC. This information describes how areal and structural geology may affect the occurrence, availability, movement, quantity, and quality of potentially impacted surface and ground water.

Subsidence is discussed in Appendix 3-C. Total calculated subsidence in the Wild Horse Ridge area is 7.3 feet, based on an average total thickness of 16.5 feet for the Tank and Blind Canyon seams; in the existing permit area, the calculated maximum subsidence is 14.1 feet based on an average total thickness of 22 feet for the Tank, Hiawatha, and Blind Canyon seams (Table 3C-1). Average thickness of the Blind Canyon seam is 9 feet and average depth is 1,200 feet, and for the Tank seam the averages are 7.5 feet thickness and 950 feet depth.

Except as noted below, the application includes geologic information in sufficient detail to assist in determining the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface and ground water monitoring is necessary, and determining whether reclamation as required by the Utah Coal Mining Rules can be accomplished and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

At this time the Division does not require the collection, analysis, and description of additional geologic information to protect the hydrologic balance, to minimize or prevent subsidence, or to meet the performance standards. The permittee has made no request the Division to waive in whole or in part the requirements of the bore hole information or analysis required of this section.

Findings:

Information on geologic resources is not considered adequate to meet the requirements of this section. Prior to approval the permittee must provide the following in accordance with:

R645-301-100-121.200 - Correct the statement, on page 6-13, indicating the drill-hole logs and well completion diagrams for DH-4 are in Appendix 6-A . They were found in Appendix 7N-G.

R645-301-100-121.200 - 1)Correct the places in the proposed amendment, Plate 7J-2, Plate 7-9, and pages 7-6, 7-34, for example, where bore-holes have two different names. MW-116 appears to be the same as M91-16, MW-117 the same as M91-17, and MW-114 the same as M91-14, 2) Include the locations for bore-holes MW-114 (M91-14), MW 116 (M91-16) and MW 117 (M91-17) on Plate 6-2 as referenced in the text.

R645-301-100-624-210 - 1) Provide logs for drill-holes WHR-1, WHR-2, WHR-3, WHR-5, WHR-8, F-76-1, F-76-2A, 77-3B, F-76-4, F-77-5, F-76-6, and F-77-11-A. Describe or explain source for the thickness and depth information for the bore-holes used in making Plates 6-2 through 6-12. There are no cross-sections showing this information for these bore-holes.

R645-301-100-624-210 - Correct the following inconsistencies 1) On page 7-34 completion diagrams for SDH-1, SDH-2, and SDH-3 are referenced to be in Appendix 7-A, but they are not there, 2) It states on page 7-34 that a discussion of baseline data for the "SDH" borings is in Appendices 7-J and 7-N, but 7-N covers the "DH" borings only.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and analysis.

Holding time and sample analyses problems occurred at some baseline sites and that information is presented in Tables 2b and 3 in this TA under comments. For surface water site WHR-1, fluoride was not distilled for baseline data on June and August 1993; however, fluoride is no longer considered a required baseline parameter. Holding time expired on Sulfate on 10/93. For all samples dissolved metals, which were filtered at lab, were received within one day. This is considered acceptable, as long as the cation anion balance is reasonable. Lab sheets for all sites where data was collected on July 1991 were missing from the amendment and need to be submitted. Holding time and sample analyses problems also occurred at sites 16-7-13-1, 16-18-14 and 16-8-20-1 contained as baseline information within the Cumulative Impact Area.

Baseline information.

Table 7M-4 lists the proposed baseline monitoring points, and baseline sampling will be implemented one year prior to the start of mining for new Federal Lease Areas. Text describing the sampling period for site WHR-1 does not match information presented in appendix 7M-A. Although included, adjacent area sampling associated with the Mc Cadden Hollow area were not reviewed. This information was not considered to be directly related to the proposed Wild Horse permit area, but will be considered applicable to the Cumulative Impact Area (CIA) information.

Ground-water information.

The baseline information relative to groundwater, seeps, and springs in the proposed Wild Horse Ridge permit is presented in Tables 1, 2 and, 2b in this TA. Data for groundwater well information, identified in Table 1, were collected in 1996 and 1997.

The Wells MW-114, 116 and 117 should all be monitored for water level prior to mining the Wild Horse Ridge to verify that existing water elevations recorded at these wells are consistent with the elevations obtained during 1996 and 1997. That way, should mining in the Wild Horse Ridge intercept water from a sand channel or other significant in mine flow, the pre-mining status at these wells will not be in question. Water dating and stiff diagrams should also be conducted to verify the information found west of the Bear Canyon Fault can be applied to the Star Point Sandstone Formation east of the Fault.

The statement made on pg 3-16 "Water generated is historically used within the mine with no discharge to surface waters" is no longer an accurate statement and should be re-stated or removed.

Table-1: Wild Horse Ridge Monitoring Wells*

| Well Number | Formation Monitored & Relative Location | Screen Intervals | General Observations |
|--------------------|---|---|--|
| MW-114 | Spring Canyon Sandstone - East of the Bear Canyon Fault. | Upper screen interval 1795-1805 ft. Lower screen interval 1819-1829 ft. | Water elevation measured on 8/22/96, 09-24-96 and 10-23-97 varied from 7649.5 to 7650.5 feet. Potentiometric water level - approximately 26 ft below Hiawatha Seam. |
| MW-116 | Spring Canyon - East of the Bear Canyon Fault | Upper screen interval 1720-1730 ft. Lower screen interval 1743.3-1753.3 ft. | Water elevation measured on 10/18/95, 7/19/96, 09/24/96 and 10/23/97 varied from 7743.9 to 7744.5 feet. Potentiometric water level - approximately 71.2 ft below Hiawatha Seam. |
| MW-117 | Spring Canyon - near fault line - East of the Bear Canyon Fault Section 12, T. 16 S. R.7 E. | Upper screen interval 1720-1730 ft. Lower screen interval 1743.3-1759.7 ft. | At 1720 ft. fault gouge and fractured material encountered. Caving continued with out a defined Star Point Formation. Water elevation measured on 10/18/95, 07/19/96, 9/24/96 and 10/23/97 varied from 7746.2 to 7746.5 feet. Hiawatha Seam not identified on log. |

*Data obtained from Cyprus-Mohrland Project Drill Report.

Plates 6-2 through 6-12 also show locations for WHR-1, WHR-2, WHR-3, WHR-5, and WHR-8. These five drill-holes fall within the adjacent area and the Cumulative Impact Area (CIA) and may be confused because the same notation is use for springs.

Spring Data

Spring sampling was conducted for the Wild Horse Ridge lease addition and adjacent area as summarized in Table 2 below. Information on springs within and adjacent to the Wild Horse Ridge area include springs WHR-2, WHR-3 and WHR-4. Spring WHR-4A was included in the Probable Hydrologic Consequence document and on a map, but there was no flow recorded for that location (Figure 1, Mayo and Associate Report, August 1999). Spring identification labels and descriptive identification do not match for some locations. Inconsistencies exist between the plan, the PHC, and information provided in an e-mail to Ken Wyatt for the Divisions Water Quality database Electronic Data Input. Although the notation used for geologic structure in Table 1 of the Mayo report, follows sandard geologic notatio, the general public may not be familiar with the notation. Table 1 should include a legend, and the stiff diagrams stated to be specific to geologic structure should identify that structure on the diagrams as well.

Table 2: Baseline Spring Sampling Wild Horse Ridge Mayo Report

| Site/Location | No. Data Samples sampling period | Geology | Flow rate (gpm) Min/Max |
|-----------------------------|---|----------------|--------------------------------|
| WHR-2 Fish Creek LF-East | 7 7/31/91 - 8/30/94 | Tf-TKnh | 0.2/20 |

ENVIRONMENTAL RESOURCE INFORMATION Revised -January 24, 2000

Table 2: Baseline Spring Sampling Wild Horse Ridge Mayo Report

| Site/Location | No. Data Samples sampling period | Geology | Flow rate (gpm) Min/Max |
|---|---|----------------|---|
| WHR-3 Head Fish Creek | 8 7/30/91 - 10/31/94 | Tf | 0.5/70 |
| WHR-4/SBC-13/SBC-16 Fish Creek LF-West | 8 7/30/91 - 10/31/94 | Tf-TKnh | 0/65 |
| WHR-5/SBC-15 Bear Canyon RF (above coal outcrop) | 8 7/31/91 - 10/30/94 | Tf-TKnh | 0.0/17 |
| WHR-6/SBC-14 Bear Canyon RF (near disturbed area) | 8 10/26/93 - 6/24/97 | Kbh | 0.5/15 |
| WHR-7 Fish Creek LF- West | 1 7/30/91 | Kbh | 40 |
| WHR-8 Wild Horse Ridge | 1 7/31/91 | Kbh | 5 |
| 16-7-24-3 Bear Canyon Cliff Face | 1 3/17/99 | Kbh | no flow reported- chemical analyses obtained |
| 16-7-24-4/SBC-17 Bear Canyon Fault | 1 3/17/99 | Kbh | no flow reported- chemical analyses obtained |

Tf- Flagstaff Formation

TF-TKnh- at the contact between the Flagstaff and North Horn Formation

Kbh-Black Hawk Formation

ENVIROMENTAL RESOURCE INFORMATION

Table 2b: Baseline Spring Sampling Wild Horse Ridge

| Site/Location | Date | | | | Comments |
|--|----------------------|-------------------------------|--------------------------------|----------------------------------|--|
| | 1st Q | 2nd Q | 3rd Q | 4th Q | |
| WHR-2 1991 1992 1993 1994 1997 | | | 7/31/91 | 10/28/92 | Left Fork Fish Creek east side dry 10/31/94 |
| | | 6/24/93 5/30/94 6/25/97 | 8/15/93 8/30/94 9/10/97 | 10/13/93 10/31/94 10/20/97 | |
| WHR-3 1991 1992 1993 1994 1997 | | | 7/30/91 | 10/27/92 | Head waters of Fish Creek Fluoride not distilled 10/92, 6/93, 8/93. Holding time expired on Ortho Phosphate 10/13/93. Dissolved metals filtered at lab received within a day. Sample > 6 deg C on 10/94. |
| | | 6/24/93 5/30/94 6/25/97 | 8/15/93 8/30/94 9/10/97 | 10/13/93 10/31/94 10/20/97 | |
| WHR-4 1991 1992 1993 1994 1997 | | | 7/30/91 | 10/28/92 | Left Fork Fish Creek west side. 03/93, 03/94 not accessible. Fluoride not distilled 10/92, 6/93, 8/93. Holding time expired on Ortho Phosphate 10/13/93. Dissolved metals filtered at lab received within a day. Sample > 6 deg C on 10/94. |
| | 03/22/93 03/30/94 | 6/24/93 5/30/94 6/24/97 | 8/15/93 8/29/94 9/10/97 | 10/13/93 10/31/94 | |
| WHR-5 1991 1992 1993 1994 1997 | | | 7/30/91 | 10/28/92 | Right Fork - Left Fork Bear Canyon 03/93, 03/94 not accessible. Fluoride not distilled 10/92, 6/93, 8/93. Holding time expired on Ortho Phosphate 10/13/93. Dissolved metals filtered at lab received within a day. Sample > 6 deg C, on 10/94. |
| | | 6/24/93 5/30/94 6/24/97 | 8/15/93 8/29/94 9/10/97 | 10/13/93 10/31/94 10/20/97 | |
| WHR-6 1993 1994 1995 1997 | 3/23/94 | 6/01/94 5/24/95 6/24/97 | 8/28/94 8/22/95 09/18/97 | 10/26/93 10/26/94 10/28/97 | Right Fork - Right Fork Bear Canyon 03/94 not accessible. Holding time expired on Sulfate 10/93. Possible matrix interference with Cl-6/94. Possible matrix interference with Nitrite- 10/94. Possible matrix interference with Selenium- 5/95. Dissolved metals filtered at lab received within a day. Sample > 6 deg C, on 8/95. |

The Mayo Report discusses spring discharge rates by formation using a calculated R-value which is the sum of the minimum flows, over the sum of the maximum flows for all springs issuing from the formation. This analyses provides a generalized description for the formation while individual R-values for springs within the formation may vary from the generalized description. Data used for the springs do not have a continuous record; therefore, high and low flow data are not represented for each year within the period of record (1991 to 1999). The climate, from 1991 to 1999, consisted of the end of a 4 year

ENVIRONMENTAL RESOURCE INFORMATION Revised -January 24, 2000

long dry spell, moving into short periods of moderately to severely wet climate disrupted by intermittent dry periods (Region 4 and 5 drought index). Some data used in the analyses may be influenced by historic mining activities. Although the Mayo Report states that Figure 6a and 6b represent the maximum and minimum discharge rates from each formation, the data record is not continuous enough to support this statement. However, the general high and low flow pattern for these formations is probably representative.

Surface-water information.

The Mayo Report identifies Trail Creek, Bear Creek, and Lower Cedar Creek as perennial. The upper Trail Creek, Mc Cadden Hollow, Blind Canyon, Left and Right Forks of Fish Creek and Upper Cedar Creek are intermittent or ephemeral.

Baseflow to Lower Trail Creek was attributed to be sustained by flow from springs in the area, especially TS-1. Baseflow appears to be about 25 gpm for the period of record until mid 1995, when baseflow appears to increase. Baseflow to Bear Canyon Creek is estimated to be about 30 to 50 gpm and is attributed to be sustained from springs such as FBC-12, emerging from the North Horn Formation.

According to the PHC, there are not adequate data presented to date to determine whether Fish Creek is perennial or intermittent. During 1996 and 1997 low flow was 15 gpm in Fish Creek in both the Left and Right Forks. It is recommended the applicant monitor flow monthly at these sites for the year 2000, at the Left Fork and Right Fork to determine their status as perennial or intermittent. It is suspected that these drainages may become intermittent during periods of prolonged drought.

Table 3: Baseline Stream Sampling Wild Horse Ridge

| Site/Location | | Date | | | | Site Flow Rates (gpm) | Comments |
|-------------------|--------------------------------------|----------------------|----------------------------------|--|----------------------------------|------------------------------------|--|
| | | 1st Q | 2 nd Q | 3rd Q | 4th Q | | |
| CK-1 (not on Map) | | | 06/94 06/95 07/96 | | 10/94 10/95 10/96 | Max 1104 Min 103 Average 666 | Field data only. No sample date. |
| CK-2 (not on Map) | | | 06/94 06/95 07/96 | | 10/94 10/95 10/96 | Max 950 Min 4 Average 241 | Field data only. No sample date. |
| LF-1 | 1994 1995 1996 | | 06/09/94 | 07/10/95 07/16/96 | 10/27/94 10/18/95 10/15/96 | Max 266 Min 15 Average 68.5 | |
| RF-1 | 1994 1995 1996 | | 06/09/94 | 07/10/95 07/16/96 | 10/27/94 10/18/95 10/15/96 | Max 191 Min 15 Average 66.5 | |
| WHR-1 | 1991 1992 1993 1994 1997 | 03/29/93 03/23/94 | 06/24/93 06/01/94 06/29/97 | 07/31/91 08/15/93 08/29/94 09/17/97 | 10/28/92 10/26/93 10/30/94 | Max 650 Min 0 Average 89.0 | No access on 03/93. Dry 08/94. No flow recorded 10/28. |

Baseline cumulative impact area information.

Adjacent area information is included within this permit application package for areas where future mining is likely to occur.

Modeling.

Modeling is not proposed to be used instead of data acquisition.

Alternative water source information.

No additional information on alternative water source information was presented in this amendment.

Probable hydrologic consequences determination.

The probable hydrologic consequences determination is provided in Mayo and Associates, LC "Investigation of Groundwater and Surface - Water Systems in the C.W. Mining Company Federal Coal Leases and Fee Lands, Southern Gentry Mountain, Emery and Carbon Counties, Utah: Probable Hydrologic Consequences of Coal Mining in the Bear Canyon Mine Permit Area and Recommendations for Surface Water and Ground Water Monitoring" August 1999. Pertinent portions from this determination will be used to update the CHIA and complete technical directive process at Birch Spring and Big Bear Spring.

Findings:

The information provided in the amendment is not considered adequate to meet the regulatory requirements of this section. Prior to approval the applicant must provide the following in accordance with:

R645-301-121.200. Correct or add the following within the amendment: 1) The statement made on pg 3-16 "Water generated is historically used within the mine with no discharge to surface waters" is no longer an accurate statement and should be re-stated or removed, 2) Lab sheets for all sites where data was collected in July 1991 need to be provided, 3) The notation for springs and drill logs labeled WHR- may be confused. Unique labels should be used, 4) The notation used for geologic structure in Table 1 of the Mayo report should include a legend and geologic formation should be noted on the should also be noted on the spring hydrographs, 5) The references for some water monitoring sites need clarification: water monitoring references differ between the Mayo report, the text in the plan, and information presented to Ken Wyatt by e-mail for input into the database, 6) Wells MW-114, 116 and 117 should all be monitored prior to mining the Wild Horse Ridge to verify current water elevations so, the pre-mining status at these wells will not be in question. Water dating and stiff diagrams should also be conducted to verify the information found west of the Bear Canyon Fault can be applied to the Star Point Sandstone

Formation east of the Bear Canyon fault, 7) According to the PHC, there are not adequate data presented to date to determine whether Fish Creek is perennial or intermittent. The applicant should monitor flow monthly, for the year 2000, at the Left Fork and Right Fork to determine the status as perennial or intermittent, 8) All pages with text changes should be dated according to the date the changes are made, and 9) On page 7-50 a tributary is described as "intermittent and ephemeral": this is unclear and confusing.

R645-301-100-724-100 - There is no ground-water information from bore-holes MW-114, MW-115, and MW-116 in the current MRP or the proposed amendment.

R645-301-100-724-100 - Instead of deleting SBC-6 from the table on page 7-29, SBC-6 should remain in the table with an explanatory note as to why it is no longer monitored.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Affected Area Boundary Maps

The application does not include an affected area boundary map. The application does include Division a permit boundary map, Plate 2-1, a subsidence map Plate 3-3 and a mine map Plate 3-4. The information on those maps is enough for the Division to determine the affected area boundaries.

Archeological Site and Cultural Resource Maps

The application includes a map showing the cultural resource site within the proposed disturbed area. Additional cultural resource information is needed, but the Division understands there are no other known significant cultural resource sites in the proposed addition to the permit area.

Coal Resource and Geologic Information Maps

Plate 6-1 is the Geology Map. Plates 6-2, 6-6, and 6-10 are overburden maps, Plates 6-3, 6-7, and 6-11 are isopach thickness maps, Plates 6-4, 6-8, 6-12 are structure contour maps, and Plates 6-5 and 6-9 are interseam isopach maps. Coal isopach thickness maps indicate the Blind Canyon and Tank seams, but not the Hiawatha seam, are of minable thickness in portions of the Wild Horse Ridge area. The Hiawatha seam was previously thought to be continuous and of minable thickness, but recent drilling revealed several sandstone channels that render the seam unminable in the vicinity of Bear and Fish Creeks (pp. 6-18 and 6-19 and Plate 6-7). This seam is described as not minable in Table 3C-1. Revised Plates 3-4A and 3-4C show projected mining in the Blind Canyon and Tank seams, respectively, in the Wild Horse Ridge addition.

Existing Structures and Facilities Maps

The only existing structure in the Wild Horse Ridge area mentioned by the Permittee is a hunting cabin shown on Plate 2-4G.

Existing Surface Configuration Maps

The application did not include a map showing the existing surface configuration for the Wild Horse Ridge amendment.

Mine Workings Maps

The application included a map showing the mine workings in the Blind Canyon Seam and Tank Seam.

Monitoring Sampling Location Maps

Plate 7-4, entitled Water Monitoring, should be re-labeled as Baseline Water Map because it is referenced to contain baseline seep and spring information and water rights. This would minimize confusion between baseline information and proposed Operational Monitoring Stations. Springs WHR-7 and WHR-8 were not found on the map. Surface water monitoring location maps did not include sites CK-1 and CK-2.

Permit Area Boundary Maps

Plate 2-1, Permit Area, and other maps show the permit boundaries.

Surface and Subsurface Ownership Maps

Plate 2-2 shows surface ownership information and Plate 2-3 shows sub-surface ownership information.

Subsurface Water Resource Maps

Plate 7-4A shows a potentiometric surface for the Spring Canyon member of the Star Point Formation.

Surface Water Resource Maps

Water rights do not appear to be updated on Plate 7-4. There are some stock watering ponds that have water rights according to information in the Utah Division of Water Rights Internet page that are not on the map. The adjacent area for this map has expanded and the areal extent for this map should be adjusted.

Vegetation Reference Area Maps

The revegetation reference area is shown on Plate 9-1.

Well Maps

See "Environmental Resources - Geologic Information" in this TA.

Contour Maps

The Permittee did not give the Division detailed contour maps for the proposed premining disturbed area. The Division needs premining contour maps to evaluate the proposed operational and reclamation plans.

Findings:

Information provided in the proposed amendment is not adequate to meet the requirements of this section. Prior to approval, the applicant must provide the following in accordance with:

R645-301-521.150, The application must include detailed maps that show the existing surface configuration (topographic maps) for the proposed disturbed and adjacent area. The topographic map should be of a scale no smaller than 1 inch equals 50 feet and contour intervals of 2 feet.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR Sec. 784.2, 784.11; R645-301-231, -301-526, -301-528.

Analysis:

General

In Section 3.4 the application states "Co-Op started its mining operating through an existing mine in the Blind Canyon Seam and later extended into the Hiawatha seam below. Access to the Hiawatha Seam was made in the summer of 1986 through two new portals in the outcrop, and through a rock slope tunnel from the Blind Canyon seam. In 1995, Co-Op extended operations into the Tank Seam, located above the Blind Canyon seam. In 1999, Co-Op plans to extend operations into the Blind Canyon and Tank Seams East of the Bear Canyon Fault. The four main seams in the Bear Canyon property are, the Tank Seam, the Bear Canyon seam, Blind Canyon seam and Hiawatha seam. The Permittee does not plan to mine the upper Bear Canyon seam due to the proximity of the seam to the Blind Canyon Seam (0.30 feet interburden). Nor do they plan to mine the Hiawatha Seam in Wild Horse Ridge due to the thinning of the seam. Mining plan, sequence and projected development for the Bear Canyon, Hiawatha and Tank seams are shown on Plate 3-4A, 3-4B and 3-4C respectively."

Type and Method of Mining Operations

In Section 3.4.1.2 the application states "The mining at the Bear Canyon complex is done by continuous miners. The miners discharge into shuttle cars (diesel or electric) which carry the coal to a feeder breaker. The feeder breaker discharges the coal onto the belt conveyor where it is taken out of the mine."

Facilities and Structures

A list of new structures associated with the Wild Horse Ridge is given in Appendix 3A. The new structures are shown on Table 3A-1, in Appendix 3A. The new structures include a conveyor belt, substation, shop building, water tank and fuel tank.

Findings:

Information provided in the proposal is adequate to meet the regulatory requirements for this section.

EXISTING STRUCTURES:

Regulatory Reference: 30 CFR Sec. 784.12; R645-301-526.

OPERATION PLAN

The application states that the only existing structure in the minable portion of the permit area consists of a hunting lodge that exists in the Wild Horse Ridge area. The hunting cabin is shown on Plate 2-4G.

Findings:

Information provided in the amendment is adequate to meet the regulatory requirements for this section.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR Sec. 784.17; R645-301-411.

Analysis:

The Bear Creek Shelter is the only known cultural resource in the proposed addition to the permit area eligible for listing in the National Register of Historic Places. This site is not within the proposed disturbed area. In the lower part of the canyon where this shelter is, the conveyor is on the other side of a ridge and the road is on the other side of the canyon. For these reasons, there is little likelihood for accidental disturbance.

A letter from the State Historic Preservation Office concurs with the Division's determination that no historic properties would be affected because the plan avoids the Bear Creek Shelter.

Findings:

Information in the application is adequate to meet the regulatory requirements of this section.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR Sec. 784.18; R645-301-521, -301-526.

Analysis:

On Page 3-9 the application states that no public roads are within the permit area. However, on Page 3-19 the application states:

No public owned roads exist in the Wild Horse Ridge area. However, the access road through the mine site is used by private land owners and USFS patrons for access. The lease agreement between Co-Op and C.O.P. Coal Development requires Co-Op to allow access through the mine site for representatives of the property owners and USFS access.

The application must be consistent when describing the Wild Horse Ridge access road. A public road is defined in Section R645-301-521.123 and R645-301-521.133 as all roads for which there is

OPERATION PLAN

substantial (more than incidental) public use. If the public has substantial use of the access road then it could be considered public.

Findings:

Information provided in the proposed amendment is not adequate to meet the requirements of this section. Prior to approval, the applicant must provide the following in accordance with:

R645-301-121.200, The application should include additional information on who uses the access road and how often. The Division needs this information to determine if the access road should be classified as a private or public road.

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR Sec. 784.26, 817.95; R645-301-244.

Analysis:

The regulations require the applicant to show its coordination efforts with the Division of Air Quality, and the application contains copies of the Notice of Intent and of Air Quality's Intent to Approve. Therefore, the application contains information required in R645-301-420, but, before beginning operations, the applicant will need to obtain final approval from Air Quality.

Findings:

Information in the application is adequate to meet the regulatory requirements for this section; however, before beginning construction, the applicant will need to provide proof of the final Air Quality Approval Order.

COAL RECOVERY

Regulatory Reference: 30 CFR Sec. 817.59; R645-301-522.

Analysis:

The application contains a general commitment to maximize coal recovery but, the Division needs additional information. Since federal coal is involved, the operator needs to have an approved R2P2 (Resource Recovery Protection Plan). The information in an approved R2P2 will be used in determining the adequacy of the coal recovery plan.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the regulatory requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

OPERATION PLAN

Revised -January 24, 2000

R645-301-522, The application must include more details about the coal recovery plan. The type of information the Division needs should be contained in an approved R2P2.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR Sec. 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Renewable resources survey.

The application indicates, in Section 3.4.2.3, that no retreat mining will occur under escarpment areas or within the protection zones as shown on Plate 3-3. However, Plate 3-3 does not identify the escarpment areas or protection areas. Renewable resources that could be affected by subsidence include escarpments that if failed could result in detrimental impacts for down stream water quality or raptor nests.

The application states that no stream channels lie over the minable portion of the permit area and then states that barrier zones will be left to protect adjacent stream channels. The application needs to clearly present these statements.

The application must provide the following information related to subsidence issues: 1) Identify whether state appropriated water supplies exist within the permit area and specifically within the Wild Horse Ridge subsidence zone, 2) Identify the renewable resources, such as timber or grazing, that exist within the subsidence zone, and 3) Identify the manmade structures, such as the hunting cabin and roads, which exist within the subsidence zones.

Subsidence control plan.

The operator proposes to use room-and-pillar mining to extract all the coal in the Bear Canyon complex. The expected recovery is 75% of the coal in full extraction areas, and 50% in first mining areas. The sequence and timing of mining is shown on the mine maps 3-4A, Blind Canyon Seam (lower), and 3-4C, Tank Seam (upper). Note: no mining is scheduled for the Hiawatha Seam in the Wild Horse Ridge project.

The application shows the underground workings for the Blind Canyon Seam (lower) on Plate 3-4A and the Tank Seam (upper) on Plate 3-4C. Plate 3-3 shows the projected subsidence for the Wild Horse Ridge project; however, the following need clarification:

- Plate 3-3 needs to be at the same scale as the mine maps so the data can be easily analyzed.
- The subsidence and buffer zones need to be clearly labeled.
- The subsidence and buffer zones markings need to be included on the map legend.
- Subsidence is not allowed to occur outside the permit boundary as shown on Plate 3-3 (NW1/4 SE1/4 Section 19). The permit area or mine plan should be changed.

OPERATION PLAN

- Areas where full extraction mining will occur need to be clear. On Plate 3-4A all panels are listed as development and on Plate 3-4C all panels are listed development/retreat. The plan does not make it clear whether development means first mining and retreat means second mining.

The physical conditions that affect the likelihood or extent of subsidence are provided in the geologic section of this TA. The monitoring program described in Appendix 3C in Section 5 of the amendment includes installing 26 monitoring points to the Wild Horse Ridge area. The stations will be monitored yearly with an annual ground survey to look for subsidence effects. The estimated amount of subsidence in the Blind Canyon Seam is 3.2 feet and subsidence in the Tank Seam is 4.1 feet. The maximum amount of subsidence in the Wild Horse Ridge area is 7.3 feet. The subsidence monitoring program appears adequate but the following information is needed:

- The application needs to explain why the areas where first mining only occurs will be stable indefinitely.
- The application needs to clarify the anticipated effects of planned subsidence. Those effects include the maximum amount of subsidence and the areas where subsidence will occur.
- The application needs to describe the measures that will be taken to mitigate or remedy any subsidence-related damage.

Performance standards for subsidence control.

The Permittee is required to meet the performance standards for subsidence control.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the application must include the following in accordance with:

R645-301-121.200, The application should include the subsidence protection zones on Plate 3-3.

R645-301-121.200, The application must clarify whether the stream channels exist within or near the Wild Horse Ridge subsidence zone.

R645-301-121.200, The application must include Plate 3-3 at a scale of 1" equals 500' so the Division can evaluate the potential affects of subsidence.

R645-301-121.200, The application must clarify where full extraction mining will occur. On Plate 3-4A all panels are identified as development and on Plate 3-4C all panels are identified as development/retreat. It is not clear if development means first mining and retreat means second mining.

R645-301-121.200, The application must clarify why areas of first mining only will remain stable over time.

OPERATION PLAN

Revised -January 24, 2000

R645-301-141, The application must include a revised mine plan so that subsidence occurs within the permit area, or expand the permit area to include the NW1/4 SE1/4 of Section 19, see Plate 3-3.

R645-301-525.120, The application must describe all renewable resources within the permit area with emphasis on the Wild Horse Ridge subsidence zone, for resources such as state appropriated water, grazing and timber.

R645-301-525.120, The application must identify all manmade structures such as roads, the Wild Horse Ridge mine facilities, and the hunting cabin, on the Plate 3-3 or other subsidence maps.

R645-301-525.450, The application must identify the areas where first and full extraction mining will occur on the mine maps and identify those areas that need to be protected from subsidence on Plate 3-3. The application must include the angle-of-draw used to determine the subsidence zones and describe why the angle used is appropriate.

R645-301-525.480, The application must describe how subsidence damage will be mitigated.

SLIDES AND OTHER DAMAGE

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

Analysis:

The application does not incorporate a description of the procedure for reporting a slide or other emergencies. The information in the MRP is inadequate to address this requirement.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-515.100, The application must describe how slides and other emergencies will be reported.

FISH AND WILDLIFE PROTECTION PLAN

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

Analysis:

Protection and enhancement plan.

Subsidence is not likely to adversely affect critical big game habitat, but big game utilization in the disturbed areas would be lost during the life of the mine. Also, the mine plan has been designed so planned mining subsidence will not occur under known raptor nests. The applicant is required to use the best technology currently available to protect and enhance wildlife habitat, and the application needs to show how adverse effects to big game would be mitigated and develop a mitigation plan for lost utilization of raptor nests near the proposed surface facilities.

Big Game Habitat

The Division of Wildlife Resources commonly accepts mitigation at a ratio of three acres of enhanced habitat for each acre disturbed. A Wildlife Resources representative has visited the site and is considering ways the disturbance could be mitigated. Until a mitigation method is determined, the applicant should commit to working closely with Wildlife Resources and the Division to plan and implement the best technology currently available.

Because the surface disturbance is in critical winter range, construction should not begin during the winter months from about November 1 until April 15. The application needs to contain a commitment to this effect.

The application needs to contain more design information about the conveyor. Conveyors can inhibit big game movements, and although deer and elk are known to cross under conveyors, they usually need at least three feet of clearance. The most common deer and elk movements in the winter are along ridges, but there is some movement through canyon bottoms and up and down the sides of canyons. The conveyor design should not restrict these movements.

Bald and Golden Eagles

On December 21, 1999, two Division representatives met with Chris Colt, Division of Wildlife Resources, and with the applicant's representative to discuss eagle nests in the area. It was decided nesting birds could be adversely affected if construction begins during the nesting season and if the nearby nests are active. Therefore, unless monitoring shows the nests are not active, construction must not commence during the nesting season, February 1-August 15. If construction or mining begins prior to the nesting season, the birds would have the opportunity to judge whether they can accept the disturbance and nest, or relocate.

The Fish and Wildlife Service recommended constructing two or three nearby alternate nests at least one-half mile from human disturbance areas. A Wildlife Resources representative suggested another alternative: manipulating habitat to increase the prey base, mainly jackrabbits and cottontail rabbits. Habitat enhancement in a degraded pinyon/juniper area could be conducted in conjunction with mitigation plans for loss of big game habitat. A Fish and Wildlife Service representative agreed in a telephone conversation that habitat enhancement would be acceptable but suggested the applicant could do a combination of artificial nest sites and habitat manipulation. The applicant needs to commit to work with the Division of Wildlife Resources and the Division to develop and implement a plan.

OPERATION PLAN

Endangered and Threatened Species

As discussed in the wildlife information section of this TA, no proposed, or listed threatened or endangered species habitat is known in the proposed Wild Horse Ridge addition; however, through water depletions the mine could adversely affect four listed threatened and endangered fish species of the upper Colorado River drainage. The Fish and Wildlife Service requires mitigation when water depletions exceed 100 acre-feet annually. Section 3-3.6 in the amendment estimated water requirements to be 0.05 cubic feet per second or 36.2 acre-feet annually. A depletion exceeding 100 acre-feet annually is not identified as a potential in the PHC, and current mining increases the flow to the creek. No mitigation is required at this time.

Findings:

Information in the application is not adequate to meet the regulatory requirements of this section. Prior to approval, the applicant must supply the following in accordance with:

R645-301-333, The applicant needs to show how it will use the best technology currently available to protect and enhance critical big game habitat in the proposed surface facilities area. The applicant should work with the Division of Wildlife Resources to devise a mitigation plan. For the present, a commitment to develop this plan and to implement it as soon as possible would be adequate.

R645-301-333, The application needs to contain more design information about the conveyor and how the design may affects wintering deer and elk movement.

R645-301-333, The applicant needs to commit to develop and implement a mitigation plan in cooperation with Wildlife Resources and the Division for losses in raptor nest utilization near the proposed surface facilities.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Topsoil and Subsoil Removal

Chapter 8, Soil Resources, Section 8.8, Removal, Storage and Protection of Soils, and Section 8.9, Selected Overburden Materials or Substitutes, discuss operation plan for soils in the proposed Wild Horse Ridge area. For topsoil protection, Co-Op uses traditional methods of salvaging and stockpiling. The Analysis section discusses operation information as follows:

- Topsoil and Subsoil Removal
- Topsoil Substitutes and Supplements
- Topsoil Storage

Topsoil Salvage Volumes

Based on DOGM guidelines and the Order 1 soil survey, Appendix 8-F identifies the approximate range and average soil salvage depth for each soil map unit. Potential salvage depths were generated for each map unit based on evaluations of all field and laboratory data, plant rooting depth and soil rock content. Topsoil salvage, according to soil map unit, are identified on the Soil Suitability Map C, Appendix 8-F, Order 1 Soil Survey. The following table lists the map unit depth of salvage along with root and subsurface rock information:

| Map Unit | Salvage Layer (inches) | | Fine Roots Rooting Depth (inches) | Subsurface Rock Within Soil Salvage Layer (percent) |
|----------|------------------------|---------------|-----------------------------------|---|
| | Approximate Range | Average Depth | | |
| PC | 8 - 15 | 12 | 15 | <5 to 45 |
| WIN | 10 -30 | 15 | no pit | no pit information |
| WR | 0 - 20 | 10 | 24 | 50 to 60 |
| DON | 30 -60 | 40 | 60 | 7 to 15 |
| DG | 20 - 40 | 30 | 20 | 45 |
| GP | 0 - 30 | 10 | 36 | 60 |
| DCP | 6 - 30 | 15 | 34 | 12 to 40 |

Based on the Order I soil survey in Appendix 8-F and the projected average soil salvage depth, Co-Op Mining identified an approximate 8,493 cubic yards available for soil salvage. The new Wild Horse Ridge will add 6.89 disturbed acres; however, the Wild Horse Ridge access road is already disturbed and will remain after reclamation (~ 2.07 acres). Therefore, soil salvage will occur from the remaining 4.83 acres at an average soil salvage depth of 13 inches and topsoil will be recovered from isolated areas of new disturbance along upgraded portions of the Wild Horse Ridge Access road.

Proposed topsoil salvage volumes do not agree between Table 8.9-3 and Table 3O-1. Table 8.9-3 lists 8,493 CY while Table 3O-1 shows 6,161 CY of soil. Table 3O-1, Cut and Fill Volumes, is located in Appendix 3-O, Blind Canyon Seam Pad and Conveyor Access Roads. The Division is unable to verify soil salvage volumes because the plan does not list proposed disturbance acreage within each soil mapping unit.

OPERATION PLAN

| Topsoil Areas and Available Salvage Volumes | | | |
|--|---------------------------------|--------------------------|--------------------------------|
| Soil Map Unit | Average Salvage (inches) | Disturbance Acres | Volume (yd³) |
| PC | 12 | ? | ? |
| WIN | 15 | ? | ? |
| WR | 10 | ? | ? |
| DON | 40 | ? | ? |
| DG | 30 | ? | ? |
| GP | 10 | ? | ? |
| DCP | 15 | ? | ? |
| Total | | ? | ? |

The actual soil salvage depth and resulting volumes may vary according to conditions encountered in the field during construction. State regulation R645-301-232.100 is specific in requiring that all topsoil be removed within the disturbed area. The plan states that adequate supervisory personnel will be present during topsoil salvage to instruct equipment operators in the proper techniques of salvage and to ensure that required horizons are removed. However, a non-biased, soils specialist should supervise and document the topsoil salvage operations to ensure optimum topsoil salvage. In addition, the applicant needs to document topsoil history, soil salvage areas, soil salvage volumes, and soil placement in the stockpile.

Subsoil Segregation and Soil Salvage Practices

In several soil mapping units the topsoil depth is less than six inches. State regulations state that if topsoil is less than six inches, the operator may remove the topsoil and the unconsolidated materials immediately below the topsoil and treat the mixture as topsoil. Therefore, the Order I soil survey, Appendix 8-F, shows that topsoil salvage will include the topsoil and the underlying horizon. Suitable subsoils salvage within the topsoil is based on rooting depth and soil suitability criteria established in the Order 1 soil survey.

Adverse Conditions

Section 8.9.6, Wild Horse Ridge Disturbance, states that topsoil salvage will vary where bouldery material precludes complete salvage to the specified depths. If bouldery surface areas and otherwise steep areas are accessible by construction machinery, then soils in these same areas are expected to be salvaged. Either steep, rocky surface slopes are safe for constructing cut slopes and likewise soil salvage, or they're not safe for either activity. Likewise, if steep, rocky slopes and extremely bouldery surface materials render themselves suitable for construction and as construction fill

using conventional construction equipment, then these same areas and indigenous materials can be rendered suitable for topsoil salvage.

Rocks - Boulders and Large Stones

Reference to Robert Davidson's discussion with Jim Nyenhuis (Nyenhuis 1997) concerning salvaging soils with higher rock content is misrepresented in the Appendix 8-F, Section 2.5, Soil Suitability For Salvage. The general idea is salvaging suitable soil containing indigenous amounts of rock, typical within the soil salvage area, with a greater intrinsic rock content than identified in the Division guideline is acceptable, and offers a greater potential for reclamation success by:

- allowing a greater potential for moisture infiltration into the interstitial soils
- providing increased reclaimed surface stability
- providing additional surface cover in sparsely vegetated areas, thus helping protect against rain drop impact and resulting soil surface erosion
- creating wildlife habitat niches
- creating micro-climates for plant establishment and vegetation survival.

Topsoil Substitutes and Supplements

The amendment does not propose the use of any substitute topsoil for the Wild Horse Ridge project area.

Coal Waste, Underground Development Waste and Refuse Piles

The amendment states that Co-Op does not have any permanent refuse piles. The amendment needs to address the handling of coal waste and underground development waste for the Wild Horse Ridge mining project. Discussion needs to focus on disposal and handling of waste face-up material and underground development waste produced during mine entry and development. Surface disposal of coal refuse and underground development waste requires a minimum cover of 48 inches using the best available material, R645-301-533.252.

Topsoil Storage

The Section 8.9.6 states that the Wild Horse Ridge topsoil stockpile will be located in the lower section of the right fork of Bear Canyon in the area of soil map unit "DON" (Plate 8-1A). The topsoil stockpile is shown on Plate 2-4F in the lower convergence section between the primary No. 3 mine access road and the primary conveyor access road No. 1.

The application further states that the topsoil stockpile will be surrounded with a containment berm and protected as discussed in Section 8.8.1.3. Prior to stockpiling salvaged topsoil, permeable fabric strips will be placed over the original soil surface to preserve the location of the contact zone between the native topsoil and the stockpile.

Additional information concerning compaction and topsoil pile size and dimension is needed as follows:

OPERATION PLAN

Revised -January 24, 2000

- During topsoil pile construction, soil compaction is induced from earth moving machinery and vehicle traffic. State how compaction will be alleviated.
- Provide engineered drawings of projected stockpile, showing size, exact placement, final configuration and cross sections.

Shower House Topsoil Stockpile

Prior to construction on the shower house pad, topsoil was salvaged and stockpiled. The final topsoil stockpile consisted of 1200 cubic yards. The Wild Horse Ridge amendment states that Co-Op proposes to relocate this topsoil stockpile to the Wild Horse Ridge topsoil stockpile. Following relocation, As-builts will be submitted updating the MRP.

Tank Seam Access Road Topsoil Stockpile

Topsoil was salvaged and stockpiled from the Bear Canyon Mine Tank Seam access road during construction. The topsoil volume contained in this stockpile is approximately 1000 cubic yards. During construction of the Wild Horse Ridge area, Co-Op proposes to relocate this topsoil stockpile from the upper storage pad to the Wild Horse Ridge topsoil stockpile. Following relocation, As-builts will be submitted updating the MRP.

Findings:

Information provided in the application is not considered adequate to meet the regulatory requirements of this section. The applicant must provide the following in accordance with:

R645-301-120, Correct or add the following information: 1) list proposed disturbed acreage within each soil mapping unit, 2) correct the proposed topsoil salvage volumes so that Table 8.9-3 agrees with Table 3O-1, located in Appendix 3-O, Blind Canyon Seam Pad and Conveyor Access Roads.

R645-301-232.100 and R645-301-232.200, Commit to provide a non-biased, soils specialist to supervise and document topsoil salvage operations including salvage history, soil salvage areas, soil salvage volumes, and soil placement in the stockpile.

R645-301-232.700 and R645-301-232.710, Commit to salvage topsoil in all areas considered accessible to construction machinery, including bouldery and steep hillside areas.

R645-301-553.250, Incorporate discussions addressing the handling of coal waste and underground development waste, including face-up material waste. If surface disposal is proposed for coal refuse and underground development, commit to a minimum cover of 48 inches using the best available material.

OPERATION PLAN

R645-301-521.160 and R645-301-521.165, Provide, in the amendment, engineered drawings for the projected stockpile, showing size, final configuration and cross sections.

R645-301-234.200 and R645-301-234.220, The amendment must indicate how compaction will be alleviated during topsoil pile construction from earth moving machinery and vehicle traffic.

INTERIM REVEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

Analysis:

The current mining and reclamation plan contains a commitment to reclaim the unused disturbed areas to the natural vegetation cover levels in the mine plan area; however, the plan does not show how this will be done. The revegetation plans are designed for final reclamation. R645-301-331 requires that the application include a description of the measures taken to minimize surface erosion through prompt establishment and maintenance of vegetation for interim stabilization of disturbed areas and may include the plan for final revegetation, R645-301-341.100 and R645-301-341.200.

Findings:

Information provided in the proposal is not adequate to meet the regulatory requirements of this section. Prior to final approval, the applicant must supply the following in accordance with:

R645-301-331, The application needs to contain a plan for interim stabilization of disturbed areas.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Road Systems

All new and modified roads associated with the Wild Horse project were classified as primary roads. The Division agrees with those classifications.

The application is inconsistent in referring to the roads within the Wild Horse project. On Plate 3-5D the application refers to the main access road as No. 3 Mine Access Road. On Page 3-6 of the amendment the application refers to the same road as the Wild Horse Ridge Access Road. Note: the Division did not list all the inconsistency regarding the main access road name.

OPERATION PLAN

Revised -January 24, 2000

- (1) The cross sections show the road width and drainage. The roads slope at 2% and ditches parallel the roads to direct runoff. The cross sections are insufficient to show cut and fill requirements needed to determine reclaimability. The application needs to include detailed cross sections of the roads showing the operational and reclamational cuts and fills or demonstrate the retention of cut areas meet the requirements of R645-301-527.250.
- (2) Since the road is an existing road the drawings and specifications for using this existing road stream crossing are considered adequate.
- (3) No ford in a perennial or intermittent streams is proposed to be used as a temporary route.
- (4) See deficiencies outlined and discussed under "Operational Hydrologic Information" in this TA.
- (5) No low-water crossing in a perennial or intermittent stream channels is proposed within the Wild Horse Ridge permit area addition.
- (6) In Section 3.6.12 the amendment provides a general reclamation plan for the main access road. The reclamation plan is inadequate because it does not have sufficient details. The specific details will be addressed in the reclamation section of the TA.

Performance standards

- (1) The determination that the proposed amendment for road systems includes methods adequate to controls or prevent erosion, siltation, and the air pollution attendant to erosion, including road dust and dust occurring on other exposed surfaces, by measures such as vegetating, watering, using chemical or other dust suppressants, or otherwise stabilizing all exposed surfaces in accordance with current, prudent engineering practices will be determined following resolution of all other outstanding deficiencies.
- (2) The determination that the proposed amendment for road systems includes methods adequate to control or prevent damage to fish, wildlife, or other habitat and related environmental values will be determined following resolution of all other outstanding deficiencies.
- (3) The determination that the proposed amendment for road systems includes methods adequate to control or prevent additional contributions of suspended solids to streamflow or runoff outside the permit area will be determined following resolution of all other outstanding deficiencies.
- (4) The determination that the proposed amendment for road systems is adequate to neither cause nor contribute to, directly or indirectly, the violation of State or Federal water quality standards applicable to receiving waters will be determined following resolution of all other outstanding deficiencies.

OPERATION PLAN

- (5) The proposed amendment for road systems is considered to refrain from seriously altering the normal flow of water in streambeds or drainage channels.
- (6) The determination for specific approval to allow the road in the channel of an intermittent or perennial stream will be determined following resolution of all other outstanding deficiencies.
- (7) The determination for specific finding that the road prevents or control damage to public or private property, including the prevention or mitigation of adverse effects on lands within the boundaries of units of the National Park System, the National Wildlife Refuge System, the National System of Trails, the National Wilderness Preservation System, the Wild and Scenic Rivers System, including designated study rivers, and National Recreation Areas designated by Act of Congress will be determined following resolution of all other outstanding deficiencies.
- (8) The application needs to describe the road surface material in terms of the acidic and toxic nature of the material.
- (9) The application must include commitments to repair any road damage as soon as possible.

In addition to the above, primary roads will meet the following requirements:

- (1) Primary No.3 Mine Access Road is the main road to the portal area. Certified maps showing the road are Plate 3-5D Road-Details and Plate 2-4G, 2-4F Surface Facilities.

Primary Conveyor Access Road No.1 is the lower conveyor access road and is shown on Plate 3-5D Road-Details and Plate 2-4F Surface Facilities.

Primary Conveyor Access Road No.2 is the upper conveyor access road and is shown on Plate 3-5D Road-Details and Plate 2-4G Surface Facilities.

The cross sections are insufficient to show cut and fill requirements. That information is needed to determine reclaimability.

- (2) Appendix 3O-6 contains the slope stability study conducted by Dames & Moore. The consultant outlined the soil and rock sampling, procedures and testing. The stability analysis was described. All slopes had a minimum safety factor of 1.6, and the minimum required safety factor is 1.3.
- (3) Most of Primary No.3 Mine Access Road will be constructed on an existing dirt road. By upgrading the existing dirt road the Permittee will be minimizing erosion. Since the roads must be constructed in a narrow canyon, there are limited options about where to place the road. The Division concludes methods to minimize erosion are employed and the roads are located on the most stable available surface.

OPERATION PLAN

- (4) The application does not include a proposal to construct fords in any perennial or intermittent streams.
- (5) Since Bear Creek is a perennial stream, culverts are required to be sized for the 100- year, 6-hour event.
- (6) The application does not describe how the roads will be surfaced and what type of traffic is expected. See R645-301-534.320

Primary road certification.

The designs submitted in the application were certified.

Other Transportation Facilities

The application did not include detailed descriptions of the conveyor system. See the requirements of R645-301-527.200 and R645-301-521.170.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the regulatory requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-121.200, The amendment must consistently refer to the main access road to the Wild Horse pad area. Either refer to it as the Wild Horse Ridge Access Road or the No. 3 Mine Access Road.

R645-301-527.200, The amendment must provide a detailed cross section showing the operational and reclaimed cuts and fills.

R645-301-527.250, The amendment must include information on cut slopes that will not be fully reclaimed.

R645-301-534.140, The amendment must provide detailed reclamation plans for all roads and sections of roads to be reclaimed.

R645-301-534.120 and R645-301-534.320, The amendment must describe the road surfacing materials acid or toxic forming characteristics.

R645-301-527.240, The amendment must include a commitment to repair any road damage as soon as possible.

R645-301-534.320, The amendment must describe the type of traffic that will be on the roads.

R645-301-742.412. Road culverts crossing the creek are required to be sized for the 100- year, 6-hour event, and must meet all other requirements of R645-301-742.320, since Bear Creek is a perennial stream.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal of noncoal waste.

Noncoal waste will be placed in metal dumpsters that are on the property. A local trash collector is contracted to replace these bins when they are near capacity.

Coal mine waste.

The application must describe how coal mine waste will be disposed. Problems involving mines that did not have disposal plans arose from the assumption that no coal mine waste would be brought to the surface. Often that assumption is wrong and there is no plan for coal mine waste disposal. To avoid such problems the application needs to contain a contingency plan for handling coal processing waste.

Refuse piles.

The application does not include a proposal to construct a refuse pile.

Impounding structures.

The application does not contain a proposal to construct an impoundment out of coal mine waste.

Burning and burned waste utilization.

The application did not address burning and burned waste utilization. See R645-301-528.323

Return of coal processing waste to abandoned underground workings.

The application does not propose to return coal processing waste to abandoned underground workings at the Wild Horse Ridge.

Excess spoil.

The application does identify or anticipate excess spoil production.

OPERATION PLAN

Findings:

Information provided in the proposed amendment is not considered adequate to meet the regulatory requirements of this section. Prior to approval, the applicant must provide the following in accordance with:

R645-301-528.323, The amendment must describe how burning and burned waste material will be handled.

R645-301-536, The amendment must provide a contingency plan for handling coal processing waste if the material must be brought to the surface and cannot be returned underground.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Ground-water monitoring.

The plan references a recommended water monitoring plan, included in Appendix 7-J, section 10.0. The proposed monitoring plan is contained in section 7.1.7.

One flow measurement was obtained at springs WHR-7 and WHR-8. No information was provided for WHR-9. The plan indicates that these springs will not be monitored because WHR-4 will represent these springs. The PHC indicates that subsidence occurs about 300 ft above the coal for 10 ft of coal removal but, there was no discussion on multiple seam removal in the subsidence portion in the PHC. Site WHR-7 was estimated to be approximately 400 ft above the Tank Seam while WHR-9 and WHR-8 are close to drill logs void of coal in the tank seam. Greater justification for excluding these springs from baseline and long term monitoring needs to be presented in the plan, or the sites should be included in the monitoring program.

The PHC indicates it is unknown whether water may be encountered along the Bear Canyon Fault from the east, but that this water is suspected to have antiquity. The well closest the fault, MW-117, should be monitored in conjunction with MW-114. This well would most likely show effects if waters with antiquity are encountered during mining and discharge/recharge along the fault occurs from the Spring Canyon member in the Star Point formation.

Surface-water monitoring

The Upper Right Fork Bear Creek, BC-4 above the proposed disturbed area will be added to the monitoring plan. Surface water monitoring at Fish Creek, WHR-1, and McCadden Hollow, MH-1, were added to the monitoring plan. WHR-1 was indicated to be monitored in Fish Creek but was not in the list of surface water monitoring sites. The proposed monitoring schedule needs to be clearly presented.

Acid and toxic-forming materials.

Information is contained in Appendix 6-C of the MRP. According to the PHC, strata in the proposed permit area are expected to be identical to the existing permit area. Acid from pyrite oxidation is readily consumed by dissolution of carbonate minerals available in the mine area.

Transfer of wells

No discussion on transfer of wells in the new permit area is provided. It is assumed all wells will be properly abandoned when no longer needed for mining.

Discharges into an underground mine.

It was estimated that 0.05 cfs water will be required for mining associated with the Wild Horse Ridge. A water line from #1 Mine to the #3 and #4 Mine is located along the conveyor. This water is to be used for a bath-house, drinking water and for spray on the working face, at coal belt heads, at transfer points and at the tipple for dust suppression.

Gravity discharges.

No gravity discharges are proposed for the Wild Horse Ridge mines.

Water quality standards and effluent limitations.

Water quality standards and effluent limitations must be conducted according to State Standards and the approved UPDES permit. A copy of the current permit, which includes a discharge point for Pond D, is included in Appendix 7-B.

Diversions.

Diversion designs are provided for the 10 year- 6 hour event. The applicant committed to maintain the minimum required cross sectional area. Freeboard was presented to be 0.10 ft (less than an inch), in some cases, to 0.48 ft. Standard engineering practices generally use a minimum of 0.3 ft (.28 is acceptable). Ditch capacities should meet the common minimum design standards. Along the roads, additional culverted cross drains may be advantageous in meeting the ditch requirements without requiring changes in the road surface slope. See also road

OPERATION PLAN

Road Drainage

The applicant should consider placing a culvert at the approximate location of label D-21U. The primary no. 3 road retains this drainage along the inslope for a significant distance in this region. Also the slope breaks from a steep section to a low gradient area at this location, which may result in maintenance problems.

Stream buffer zones.

The Division will need to grant approval for construction in a buffer zone. This will be completed when all deficiencies for the proposed mine application are addressed. Currently a road and road culvert exist where the proposed portal access road is located. Portions of the access road existing prior to mining will require minimal upgrading (Appendix 3O). The two conveyor access roads will be used to construct the Bear Creek Culvert Crossing along segment C, Upper Access Road, and will be conducted in accordance with the approved Stream Alteration Permit obtained from the State Division of Water Rights (Appendix 3O-pg 4). A copy of the permit is needed to complete the stream buffer zone section.

Sediment control measures.

Construction - Sediment Control Methods

A berm will be created on the downslope side of a cut. Road cuts will be made into the slope rather than parallel to the slope. Blasts will be designed to drop material into the cut area behind the berm, pg. 3O-3. Along the Blind Canyon Seam Portal Pad temporary and permanent silt fences will be placed to treat all runoff from the disturbed area not contained by a berm. Fences will remain in place until all runoff is directed to the sedimentation pond and erosion control matting will be used on the outslope of the Blind Canyon Seam Portal pad fill, pg. 3O-5.

Discussions related to culvert placement and pad and operational construction in the drainages are not detailed. The applicant does state that "Following initial pad and pad contouring the sediment pond will be constructed followed by road crowning and ditch and culvert placement, pg. 3O-6; however, this does not illustrate water and drainage is being routed to the sedimentation during the first feasible opportunity: additional detail is needed.

Operational - Sediment Control Methods

Sediment control measures include using a sedimentation pond and BTCA erosion control areas "V" and "W". The BTCA area "V" includes the outslope along the conveyor access road and the Blind Canyon portal pad outslope area. These areas are mapped on Plate 7-1G. Erosion control matting will be used on the outslope and a berm will be placed on the outside edge to prevent water from flowing onto the slopes.

The BTCA areas "W" include the conveyor belt areas. A silt fence will be placed down slope during construction and be evaluated for removal following construction. During operations, coal fines will be captured in a metal pan below the belt and will be cleaned off the pan. In area one, the pan will be cleaned with water draining to a disturbed area ditch D-3D while area two will report to a catch basin.

The Wild Horse Ridge Coal Storage Bin area will also include a catch basin. A dust cover will be placed over the pan to prevent fine coal wind transport. These areas are mapped on Plates 7-1C, 7-1F and 7-1G. The designs, calculations and certification for these basins are provided in Appendix 7-K. Capacity was based on a 10 year 6hr storm peak. Catch basins will be inspected and cleaned as necessary to maintain capacity. The catch basins need an outlet, so flow from the basin is controlled under situations that exceed the storage volume.

Siltation structures.

See: Sedimentation Ponds.

Sedimentation ponds.

The proposed Wild Horse Ridge area includes designs for sedimentation pond 'D'. All runoff from the portal pad area will report to this pond. At pond 'D, the decant structure is located above the 60% clean out level. The 60 % clean out elevation is 0.55 ft below the decant elevation. Other information in the plan conflicts with this statement. The proposed clean out level "before 100 % of the clean out level has accumulated" does not meet this requirement and should be removed from the plan, or otherwise re-worded.

A single open channel spillway is proposed for discharge from the pond. No controls for an oil skimmer are provided for the sedimentation pond should the runoff exceed the 10 year - 24 hour event. A fuel tank is located on the pad draining to this pond; however, no volume or discussion on the containment structure was found. Since the runoff from this pond eventually makes it's way to Huntington Creek and fuel is used in this location, this does not provide adequate protection for fish and wildlife. The 1997 SPCC plan is not provided; so, a determination can not be made as to whether the proposed plan minimizes potential for hydrocarbons to be released off the permit area.

Dames and Moore conducted a stability analyses for the Portal Staging Area sedimentation pond, July 23, 1999. This analyses for steady state seepage assumes a 7 foot deep pond is full and two seepage conditions exist: 1) A straight line condition through the fill, and 2) Seepage controlled by the native sandstone and colluvium interface. Results suggest that during a pseudo-static loading condition, shallow surface slide and sloughing from the structural fill and native slopes could be expected with strong ground movement. Proposed embankments have a minimum safety factor of 1.46.

Other treatment facilities

No "other treatment facilities" are proposed.

Exemptions for siltation structures.

No exemption from siltation structures is proposed.

Discharge structures.

Discharge structures are designed to minimize erosion.

OPERATION PLAN

Impoundments.

- (1) Pond D is not an MSHA pond, therefore special MSHA requirements do not apply to the pond.
- (2) The plans for the pond have been certified by a professional engineer, see Plate 7-11 and Appendix 3O.
- (3) The pond has a static safety factor of at least 1.44. The minimum standard is a safety factor of 1.3.
- (4) Impoundments shall have adequate freeboard to resist overtopping by waves and sudden increases in storage volume. The proposed minimum embankment height is 7651 ft. and the maximum flowline elevation is 7650.5 retaining 0.5 ft for freeboard. Standard engineering practices for freeboard volumes are 1 ft.
- (6) The application did not address how the slopes will be protected against sudden drawdown. Sudden drawdown failure happens when pore pressure in the embankment causes failure.
- (7) No highwalls are associated with the Pond D.

The plans for sediment Pond D were prepared by a professional engineer. Plate 7-11 and Appendix 3O show the plans and the cross sections for Pond D. The location of Pond D is not shown on Plate 3-3 Subsidence Map. However, the Wild Horse Ridge structures are shown on Plate 3-3. So we can evaluate subsidence effects. See R645-301-525.213. Information contained in the reclamation timetable on Page 3-60 does not show when the pond will be removed. See Sedimentation Ponds in the Reclamation Section.

Casing and sealing of wells

No changes to the casing and sealing of wells is proposed. The existing plan is assumed to be adequate to handle this regulatory requirement.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the application must include the following in accordance with:

R645-301-533.300, The amendment must show that Pond D will not fail during sudden drawdown.

R645-301-525.213, The amendment must address how the pond will be protected from subsidence.

OPERATION PLAN

R645-301-542.100. The amendment must provide information on when pond D will be removed within the reclamation time table.

R645-301-512.240. Current prudent engineering practices need to be followed: 1) Controls for an oil skimmer should be provided for the single open channel spillway on sedimentation pond 'D'(runoff exceeding the 10 year - 24 hour event would allow oil contained in the pond to discharge out the spillway), 2) Catch basins need an outlet, so flow from the basin is controlled under situations that may exceed the storage volume, and 3) The proposed minimum embankment height is 7651 ft. and the maximum flowline elevation is 7650.5 retaining 0.5 ft for freeboard. Standard engineering practices for freeboard of 1 ft should be provided in the design.

R645-301-742.221.36. The sedimentation pond must maintain adequate sediment storage capacity. The section in text proposing the clean out level occurs "before 100 % of the clean out level has accumulated" should be removed from the plan, or otherwise be reworded.

R645-301-742.314. Standard engineering practices generally use a minimum of 0.3 ft. Ditch capacities should meet common minimum design standards. Along the roads additional culvert cross drains may be advantageous in meeting the ditch requirements without requiring changes in the road surface slope.

R645-301-730. 1) Site WHR-7 , WHR-8 and WHR-9 require further site specific description to justify excluding these springs from baseline and long term monitoring needs, or include them in the monitoring program. A discussion on multiple seam removal should be included in the subsidence portion in the PHC, 2) MW-117, should be monitored in conjunction with MW-114 (this well would most likely show effects, if fault water is encountered during mining and discharge/recharge occurs from the Spring Canyon Member), 3) Surface water monitoring at Fish Creek, WHR-1, was added to the monitoring plan. WHR-1 was indicated to be monitored in Fish Creek in some locations in the plan, but the information was not clearly presented in the text or tables under section 7-53, and 4) Construction sequence information for roads and pad areas constructed in drainages needs to be provided.

R645-301-728. The 1997 SPCC plan is not provided; a determination can not be made as to whether the proposed operation plan minimizes potential for hydrocarbon impacts.

R645-300-742.312.4. The amendment needs to include the approved Stream Alteration Permit obtained with the State Division of Water Rights for the proposed stream channel alteration to make buffer zone findings.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

OPERATION PLAN

Analysis:

The amendment did not address the requirements of R645-301-526.200 through R645-301-526.222. Those requirements state that the Permittee will comply with State and Federal regulations.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-526.200 through R645-301-526.222, The amendment must include a section describing how support facilities will be installed, operated and comply with State and Federal regulations.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

The current MRP and the Wild Horse Ridge Amendment do not specifically address the signs and markers requirements.

Findings:

R645-301-521, The amendment must specifically address the signs and markers requirements as listed in this section.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

A blast design submitted as Appendix 3-M describes one design for two different types of shots. The purpose of the submitted design is to address the requirements of 524.210, which involve shooting within 1,000 feet of a public building, church, school, dwelling, or community or institutional building, or within 500 feet of an active or abandoned underground mine.

Concerning road construction for the Wild Horse Ridge conveyor access road, the application must state that no public buildings, schools, dwellings, etc. are within 1,000 feet of the proposed blasting area and that the Bear Canyon #1 and #2 Mines are outside the 500 foot distance requirement. The submittal does state that no buildings of any type are within one thousand feet of the blasting area.

OPERATION PLAN

Appendix 3-M is submitted for blasting used to break large rocks that are too large for machinery to handle and to break bedrock encountered during road construction. No sketches have been provided showing a drilling pattern. The breaking agent used is Irecoal D378, The satchel type directional charge is what the applicant has used to break massive boulders on other jobs. This is not an explosive to be used where drilled patterns have been established. A non permissible rock powder that would provide better breakage should be considered. Other problems with the blasting plan include the following:

1) "Holes to be used will be 1 and 1/4" diameter, 4' deep and will be spaced 4' apart." Dynamite cartridges are 1 and 1/4" in diameter and eight inches long. A 1 and 1/4" cartridge will not go in a 1 and 1/4" hole.

2) Although the four foot burden and four-foot spacing is assumed for the bed rock removal, (indicative of bench blasting), 0.6 pounds of explosive per each hole (assuming standard 1 and 1/4" X eight inch sticks) equates to 1.2 sticks per hole. If a four-foot hole depth is used with a four-foot burden, assuming yellow to white sandstone is the medium being fractured, it is felt that the powder factor is much too low to achieve adequate breakage of the medium. The design could use up to three standard sticks of powder and retain two feet of stemming per hole. The submitted design should also show that burden and spacing may be varied to achieve adequate breakage of the medium. If three sticks of powder are used per hole, the shot would only initiate three holes per round to stay under the five-pound limit.

Staying under the five-pound limit is not necessary because no residents or public dwellings are within one half mile of the blasting area. The blast design should be prepared by the certified blaster at the Mine. It is recommended that no more than ten holes be shot per round during bed rock fracturing and removal as determined by a certified state blaster.

3) If the permittee intends to use four foot holes with four foot spacing on boulders, this needs to be stated. As noted above, it is assumed that the explosive to be used is the Irecoal D 378, which is a satchel type directional charge is to be used for boulder fracturing. No explosive type is mentioned for any bench blasting.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the application must include the following in accordance with:

R645-301-524.230, The amendment needs to state that no public buildings, schools, churches, dwellings or community or institutional buildings exist within one thousand feet of the blasting area, and that there are no underground mines within 500 feet of the blasting area. The amendment must include the distance from the potential blasting zone to the access road and hunting cabin

R645-301-524.230 and 240, The amendment needs to: 1) Include a drawing of the blasting pattern, demonstrate that a satchel type directional charge is appropriate for the blasting holes, 2) provide the correct diameter hole to be used for a 1-1/4" charge, 3) prepare the blast design by a certified blaster, and 4) us a powder factor

OPERATION PLAN

adequate to achieve breakage (without residential or public dwellings within ½ mile of the blast area the blast does not need to stay under the 5-pound limit).

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Affected area maps

Several maps show the permit boundaries and proposed mining areas. Those maps are considered adequate to serve as the affected area map.

Mining facilities maps

Plate 2-4G does not show the contour 100 feet outside the disturbed area. See R645-301-521.151

Mine workings maps

The mine maps for the two seams in the Wild Horse Ridge project are Plate 3-4A Bear Canyon seam (lower) and Plate 3-4C Tank seam (upper).

Findings:

Information provided in the proposed amendment is not considered adequate to meet the regulatory requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-521.151, The application must include contours extending at least 100 feet beyond the permit boundary on Plate 2-4G.

RECLAMATION PLAN

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

Terracing is provided as a method for reclamation as described on page 3-75. The areas proposed to be terraced should be provided on the reclamation map. Although terracing may be appropriate in some locations it is found to be less effective than simple slope changes in many locations in Utah. Slope form or slope brakes that decrease the gradient and retain the overland flow are best technology available for erosion control. In steep sections slope faces steepened at the top and concave towards the base integrated with low angle slopes are know to be successful.

Portals will be sealed with backfill beginning at the Blind Canyon portal and backfilling the cut slope as it is excavated from down slope side. A narrow access road will be retained for topsoil access. Topsoil will be placed on excavated areas and then the access road will be reclaimed (3-117 to 3-118). Since there will be a Blind Canyon portal east and west of Bear Creek the plan needs to be more descriptive at to the area referenced in this case.

The plan states "since a cut slope existed along portions of this area prior to mining there may not be enough material to completely eliminate the entire cut" (pg. 3-118). Detailed maps identifying the extent and longitudinal form proposed for backfilling these areas should be provided. If complete backfill is not demonstrated to be available, other land-form methods can be used to provide reshaping to complement the drainage pattern of the surrounding terrain.

Findings:

R645-301-730. More information needs to be provided showing the location and proposed extent of terracing on the reclamation maps and in areas where the cut slope may not be completely eliminated. Clarification for reclamation activities applied at locations east and west of the Bear Canyon Creek need to be made.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

RECLAMATION PLAN

Analysis:

The applicant has proposed no changes to the postmining land use, and information in the current mining and reclamation plan is considered adequate.

Findings:

Information in the application is adequate to meet the requirements of this section of the regulations.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

The amendment does not provide a detailed contour maps and cross sections that show the pre-existing, operational and reclaimed topography. The approximate original contour issues associated with the Wild Horse Ridge project are highwall elimination and cut slope retention.

The amendment did not include a variance from the approximate original contour requirements; therefore, the Division assumes that the plan is to restore the site to AOC.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-553.110, The amendment must show that the reclamation plan will comply with the approximate original contours and include description of any highwall or cut slopes to be retained.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233

Analysis:

The application must include detailed cross sections that show how the highwalls will be eliminated and what cut slopes will be left. The application did not include stability analysis for the

RECLAMATION PLAN

Revised -January 24, 2000

reclaimed slopes. A slope stability analysis showing the reclaimed slopes will meet the minimum safety factor of 1.3 need to be provided.

The application indicates no spoil will be generated in the Wild Horse Ridge project. Therefore, the application does not have to address spoil disposal.

The application indicates no coal mine waste will be brought to the surface from the Wild Horse Ridge project. The application must include a contingency plan to handle coal processing waste.

The application needs to provide a detailed cross sections that show how the coal seams will be backfilled.

The application states that terraces will not be used except in steep slope areas. A detailed cross sections that shows the terraces is needed. Terracing is provided as a method for reclamation as described on page 3-75. The areas proposed to be terraced should be provided on the reclamation map. Although terracing may be appropriate in some locations it is found to be less effective than simple slope changes in many locations in Utah. Slope form or slope brakes that decrease the gradient and retain the overland flow are best technology available for erosion control. In steep sections slope faces steepened at the top and concave towards the base integrated with low angle slopes are know to be successful.

Portals will be sealed with backfill beginning at the Blind Canyon portal and backfilling the cut slope as it is excavated from down slope side. A narrow access road will be retained for topsoil access. Topsoil will be placed on excavated areas and then the access road will be reclaimed (3-117 to 3-118). Since there will be a Blind Canyon portal east and west of Bear Creek the plan needs to be more descriptive at to the area referenced in this case.

The plan states "since a cut slope existed along portions of this area prior to mining there may not be enough material to completely eliminate the entire cut" (pg. 3-118). Detailed maps identifying the extent and longitudinal form proposed for backfilling these areas should be provided. If complete backfill is not demonstrated to be available, other land-form methods can be used to provide reshaping to complement the drainage pattern of the surrounding terrain.

Previously mined areas.

No previously mined areas exist in the Wild Horse Ridge project.

Backfilling and grading on steep slopes.

The application needs to provide a detailed cross section of all steep cut areas.

Special provisions for steep slope mining.

This section deals mostly with mountain top removal which is not proposed ne at the Wild Horse Ridge site.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-553.100 and R645-301-542.200, The amendment must provide detailed cross sections that show the reclamation for each highwall and cut slope to be retained.

R645-301-553.130, The amendment must show that all reclaimed slopes will have a safety factor of at least 1.3.

R645-301-542.730, The amendment must include a contingency plan for disposal of coal mine waste brought to the surface.

R645-301-542.200, 1)The amendment must provide detailed cross sections that show how the coal seams will be backfilled, and the location and extent of any proposed terracing, and 2) Clarify which reclamation activities will be applied at locations east and west of the Bear Canyon Creek.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

The mine opening closure plan is given in Section 3.6.3.1 of the approved MRP. The plan is adequate for the mine openings at the Wild Horse Ridge.

Findings:

The amendment meets the minimum requirements of this section.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Chapter 8, Soil Resources, Section 8.10, Redistribution of Soils, and Section 8.11, Nutrients and Soil Amendments, discuss the soil's reclamation plan for the proposed Wild Horse Ridge area. The Analysis section discusses reclamation information as follows:

- Soil Redistribution
- Soil Nutrients and Amendments

RECLAMATION PLAN

- Soil Stabilization

Soil Redistribution

The MRP divides the mining area up into different reclamation areas. The Wild Horse Ridge area is divided up as follows:

TS-12, Wild Horse Ridge Access Road

This road already exists and will remain after mining. Some upgrading and widening of the road will be required, so some topsoil will be recovered from isolated areas of new disturbance. The application states that additional plant growth material will not be required during reclamation. Topsoil will be needed for 0.91 acres that will be reclaimed from the 2.98 acres of disturbance.

TS-13, Conveyor Belt Access Road/ Topsoil Stockpile Area

Following re-contouring, topsoil will be redistributed to obtain an approximate depth of 6 inches. However, from calculations based on reclaimed disturbed acreage and salvaged topsoil volumes, the average topsoil replacement thickness for the Wild Horse Ridge disturbed area should be around 13 to 14 inches. Table 8.9-1 shows that only 1.24 acres will be reclaimed from the 1.47 acres of increased disturbance. The plan does not explain why the entire 1.47 acres of increased disturbance will not be reclaimed.

TS-14, Upper Conveyor belt/Access Road

The amendment states that topsoil will be redistributed at an approximate 6 inch depth. However, from calculations based on reclaimed disturbed acreage and salvaged topsoil volumes, the average topsoil replacement thickness for the Wild Horse Ridge disturbed area should be around 13 to 14 inches. Table 8.9-1 shows that only 0.68 acres will be reclaimed from the 0.92 acres of increased disturbance. The plan does not explain why the entire 0.92 acres of increased disturbance will not be reclaimed.

TS-15, WHR Blind Canyon Seam Portal

Topsoil removed from this area will be redistributed at an approximate 6 inch depth. Table 8.9-1 shows that 1.52 acres will be reclaimed in this area. Calculations based on reclaimed disturbed acreage and salvaged topsoil volumes, show that the average topsoil replacement thickness for the Wild Horse Ridge disturbed area should be around 13 to 14 inches.

Soil Nutrients and Amendments

Section 8.11, Nutrients and Amendments, states that following final grading, each reclamation area will be sampled (see Table 8.11-1 for Sample Density) and the collected soil samples analyzed. The plan states that additional samples will be taken in the event that the initial sample indicates unsuitable material. Composite samples will be taken from 0 to 2 feet and from 2 to 4 feet at each sample location. The section concludes that all necessary fertilization and chemical treatments will be applied according to the results of the soil sampling and analysis program approved by the Division. Other than making

RECLAMATION PLAN

the comment that the samples will be analyzed for micro nutrients, the section does not state what other analyses will be performed. The amendment must contain the following:

- All samples must be analyzed according to the Division Guidelines for Topsoil and Overburden.
- All sampling, testing and result interpretation must be done by a qualified soil scientist. The soil scientist must be qualified to sample, test and interpret data results. Prior to sampling and testing of the topsoil material, the soil scientist's qualifications must be reviewed by the Division.

Soil Stabilization

Following backfilling and regrading, the regraded surface will be scarified by a ripper to a depth of 14 inches to help reduce surface compaction, provide a roughened surface to help topsoil adherence, and help promote root penetration. Steep slope areas will be roughened by ripping to create ledges, crevices, pockets, and screes (talus slopes at the base of cliffs) to allow better soil retention and vegetation establishment.

To minimize compaction of replaced topsoil, travel on reclaimed areas will not be allowed. Co-Op will guard against erosion by using mulch, tackifier, and erosion control matting. Topsoil will be redistributed in the fall to help promote vegetation establishment. In all cases, a very rough seed bed will be prepared.

Findings:

Information provided in the application is not considered adequate to meet the requirements of this section of the regulations. The applicant must provide the following in accordance with:

R645-301-242.110, Correct the following 1) The application needs to commit to replace topsoil on the 0.91 acres that will be reclaimed in area TS-12, Wild Horse Ridge Access Road., 2) Correct the plan to show that average topsoil replacement thickness for the Wild Horse Ridge disturbed area should be around 13 to 14 inches.

R645-301-541.200, The application needs to address the following: 1) Table 8.9-1 shows that only 1.24 acres will be reclaimed from the 1.47 acres of increased disturbance for area TS-13. The entire 1.47 acres of increased disturbance needs to be reclaimed, 2) Table 8.9-1 shows that only 0.68 acres will be reclaimed from the 0.92 acres of increased disturbance for area TS-14. The entire 0.92 acres of increased disturbance needs to be reclaimed.

R645-301-224, The application needs to commit to analyze all soil samples for parameters according to the Division Guidelines for Topsoil and Overburden.

RECLAMATION PLAN

R645-301-130, The application must commit to complete all sampling, testing and interpretation by a qualified soil scientist and allow the soil scientist's qualifications to be reviewed prior to sampling and testing of the topsoil material.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:*Reclamation*

In Section 3.6.12 of the Wild Horse Ridge amendment, it states that the portal pad access road will be backfilled. As fill material is placed on the access road, it will result in narrowing the road width, while backfilling the cut slope. Large diameter rocks will be incorporated into the outslope created by filling to aid in surface stability. This procedure will be followed until most of the cuts are backfilled and the road has been narrowed to a "pilot cut" which will still allow the equipment access to the area. The pilot cut will then be reclaimed in the same manner as the Tank Seam Access Road described in Section 3.6.11.

The application did not address road closure during reclamation, or how the roads that provide access to the conveyors would be reclaimed, or the condition that the main access road will be left in and how the road surface material will be disposed.

Retention

The application must also give detailed information about the condition of the main access road after reclamation.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-542.610, The amendment needs to state that all roads to be reclaimed will be closed to the public during reclamation.

R645-301-542.620, The amendment needs to describe how road culverts will be reclaimed.

R645-301-542.630, The amendment needs to describe how the road beds will be scarified or ripped during reclamation.

R645-301-542.640, The amendment needs to describe how the road surface material will be disposed.

R645-301-527.200, The amendment needs to include detailed plans for the main access road after final reclamation.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Ground-water monitoring.

No additional specifics are provided regarding ground-water monitoring for the Wild Horse Ridge. It is assumed the current plan identifies the operational monitoring continues through bond release.

Surface-water monitoring.

No additional specifics are provided regarding surface-water monitoring for the Wild Horse Ridge. It is assumed the current plan identifies the operational monitoring continues through bond release.

Acid and toxic-forming materials.

See the operations section of this TA.

Transfer of wells.

No discussion on transfer of wells in the new permit area is provided. It is assumed the current plan indicates all wells will be properly abandoned when no longer needed for mining.

Discharges into an underground mine.

No discharges into an underground mine are proposed for reclamation purposes.

Gravity discharges.

No discussion indicating gravity discharges is expected in relation to the Wild Horse Ridge reclamation.

RECLAMATION PLAN

Water quality standards and effluent limitations.

No specific information is presented indicating how water quality standards and effluent limitations will be determined prior to bond release.

Diversions.

Roads to be retained in place will be re-graded to the proposed post-mining configuration and fitted with diversions. A typical cross section is in 3.6.4, pg. 3-60. To maintain the road as a post-mining land use, 11 culverts will be retained. Construction of the Wild Horse Ridge Access Road is proposed for retention for post-mining land use. The conveyor Access roads No.1(lower road) and No.2 (upper road) are described in App.3-O and will be reclaimed the same as described in section 3.6.11 and 3.6.12 (3D-7A). Stream channel reclamation uses a riprapped channel design as presented in Appendix 7H.

Stream buffer zones.

No findings on buffer zone disruption during reclamation procedures will be made by the Division until all other outstanding issues are resolved.

Sediment control measures.

All re-graded and top soiled areas will be mulched or otherwise treated to retain moisture and control sediment (page 4-13). Related surfaces will be ripped and scarified using a trackhoe, and include roughening to 8-12 inch deep pockets. See sedimentation ponds.

Siltation structures.

See sedimentation ponds.

Sedimentation ponds.

Sediment pond 'D' is proposed to be removed during reclamation of the portal pad as described in Appendix 7-K. This amendment needs to provide a reclamation construction sequence describing the methods used during pad area reclamation to minimize sediment contributions to the drainage. Discussions should include sequences in the culvert removal, fill removal and placement in conjunction with the grading and proposed erosion control measures.

The Permittee did not include the sediment pond removal in the detailed reclamation timetable. The Division needs this information to ensure adequate sediment controls will be kept during reclamation, R645-301-542.500.

Other treatment facilities.

No other treatment facilities are proposed in conjunction with the Wild Horse Ridge amendment.

Exemptions for siltation structures.

No exemptions for siltation structures are requested in association with the Wild Horse Ridge amendment.

Discharges into an underground mine.

The application needs to state if any discharges into the underground mine will occur during or after final reclamation.

Gravity discharges.

The application needs indicate whether if there will be any gravity discharges from the mine after final reclamation.

Impoundments.

See sedimentation ponds.

Casing and sealing of wells.

No changes are made to the existing plan in conjunction with casing and sealing of wells. It is assumed the existing plan adequately addresses this requirement.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-542.500, The application must include the removal of the sedimentation pond in the reclamation timetable.

R645-301-121.200, The application must include a statement indicating whether there will be gravity discharge from the mine, or discharge into the mine during or following reclamation.

R645-301-731. Appendix 7-K needs to provide a reclamation construction sequence for Sedimentation pond 'D' including the methods used during pad area reclamation to minimize sediment contributions to the drainage, the sequences in the culvert and fill removal, fill placement, and the grading and proposed erosion control measures.

R645-301-730. The application should provide specific information as to how water quality standards and effluent limitations will be determined to be met prior to bond release.

RECLAMATION PLAN

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

The Permittee did not state if there will be any contemporaneous reclamation associated with the Wild Horse Ridge Project.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-121.200, The application must indicate whether any contemporaneous reclamation will be associated with the Wild Horse Ridge project.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-341, -301,342, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Revegetation Methods

Table 9.5-1 presents a revegetation schedule. According to this schedule, seeding would be done in October and November with seedlings planted in March and April of the subsequent year. While this schedule is adequate, other operators in the area have had good success planting containerized seedlings in the fall. Bareroot plants or cuttings should be planted in the spring.

Chapters 3 and 8 discuss surface preparation. As backfilling and grading are completed, operational areas will be scarified by ripping about 14 inches deep unless the slopes are too steep. Accessible steep slopes will be roughened and/or ripped to create ledges, crevices, pockets, and screens. The area will be walked over to created grouser marks perpendicular to the slope.

The commitment to roughen and/or rip steep slopes to make certain features is good, but grouser marks are not deep enough to make much difference in vegetation establishment. This should be eliminated from the plan. The Division recommends the applicant plan to gouge the surfaces of all reclaimed areas.

RECLAMATION PLAN

Following surface preparation, the site would be drill seeded or hydroseeded. It might be necessary to hand broadcast seed in a few areas. All hydroseeded or hand seeded areas will be raked lightly to ensure adequate seed-soil contact.

Drill seeding tends to decrease surface roughness and to favor grasses over shrubs and broadleaf forbs. In addition, some seeds in the seed mixture might be buried too deeply. The Division recommends the applicant broadcast seed (hydroseed or hand broadcast) the entire area. Some species in the seed mix, such as sagebrush, yarrow, rabbitbrush, yarrow, and Pacific aster, need to be broadcast seeded or, minimally, drilled at a different depth than the other species. It is common to find a broadcast seeder attached to the back of a drill.

The applicant has added canyon sweetvetch to the seed mix. This species will be planted on the topsoil pile. The applicant will obtain seed for final reclamation by harvesting seed from the topsoil pile and from nearby undisturbed areas.

The applicant has proposed to reduce the number of rose seedlings and willow cuttings to be planted in riparian areas. The reduction in number of rose seedlings is acceptable, but the plan for establishing willows needs to be changed. Rather than committing to plant a certain number per acre, the applicant should commit to plant about one willow cutting per foot in suitable habitat, such as those areas with water near the surface and with soil. Reconstructed stream channels often have a great deal of rock, and it is difficult or impossible to plant cuttings in this kind of area. Other operators have had to wait a few years for the areas around rocks to silt in so there was something in which to place a cutting.

The plan gives detailed descriptions on handling and planting seedlings and about the quality of seed that would be used. Following these commitments should help ensure successful revegetation.

A minimum of 120 pounds per acre of fiber will be used when hydroseeding. It is a standard practice to add some hydromulch when hydroseeding, but adding all the mulch when seeding reduces seed contact with the soil.

All broadcast seeded areas with slopes steeper than 3h:1v will be mulched with 2000 to 2500 pounds per acre of wood fiber hydromulch and varying amounts of tackifier depending on the slope. Erosion control matting will be used on slopes steeper than 2h:1v. Drill seeded areas will be mulched with two tons per acre of certified noxious weed free alfalfa, straw, or grass hay, and this will either be incorporated into the top six inches of topsoil or crimped to anchor it to the surface.

Another effective mulching method that might be used is to apply alfalfa or grass hay followed by application of tackifier and wood fiber mulch at about 500 pounds per acre. The tackifier and wood fiber mulch tend to anchor hay better than crimping, but the methods in the mining and reclamation plan are acceptable.

Section 9.5.5.1 contains a list of noxious weeds. It is not necessary to have this list in the plan, but if it is included, it should be updated. Several species have been added to the list.

The current mining and reclamation plan includes a revegetation monitoring schedule. The performance standards in R645-301-356 require that for lands with a postmining land use of wildlife habitat, at least 80% of woody plants must have been in place for at least 60% of the extended

RECLAMATION PLAN

responsibility period, and no trees or shrubs in place for less than two years may be counted toward the success standard. To show this standard has been met, it would be necessary to monitor for woody plant density in the fourth and eighth years after reclamation, and the monitoring schedule in the plan does not show monitoring would be done in these years. This is not considered a deficiency since the regulations do not require a monitoring schedule.

The proposed revegetation methods, with modifications required by this TA, should provide vegetation that complies with the requirements of R645-301-342 for wildlife habitat and with the performance standards in R645-301-353 and R645-301-356.

Standards for Success

The proposed reference area has more vegetative cover than the proposed disturbed area, but the difference was not significant. The reference area has significantly more woody plants than the proposed disturbed area, but this is not critical because the success standard is a technical standard established in consultation between the Division and Wildlife Resources (see below). While there are some differences in species composition between the reference area and proposed disturbed area, the reference area is similar enough that it is considered an acceptable standard.

The reference area had 1405 woody plants per acre, and the proposed disturbed area had 1010. Considering the plant communities and the topography, 1010 is considered an attainable and acceptable standard for success for woody plant density, and this needs to be included in the application.

Findings:

Information in the application is not adequate to meet the regulatory requirements of this section. Prior to final approval, the applicant must supply the following in accordance with:

R645-301-341, The plan for planting willow cuttings needs to be modified. The applicant should plan to plant at least one cutting every foot in areas of suitable habitat.

R645-301-341, The application needs to be modified to show acceptable means of seeding small-seeded species. The Division recommends the applicant broadcast seed the small-seeded species.

R645-301-341, Section 9.5.5.1 contains a list of noxious weeds which should be updated if it is included.

R645-301-341, The application needs to show the woody plant density success standard, equal to 1010 trees and shrubs per acre, on the Wild Horse Ridge area.

R645-301-355, Grouser marks are not deep enough to make much difference in vegetation establishment and should be eliminated from the plan. The Division recommends the applicant plan to gouge the surfaces of all reclaimed areas.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

This section will be addressed when other deficiencies outlined in this TA under Reclamation Plan are determined complete.

Findings:

This section will be addressed when other deficiencies outlined in this TA under Reclamation Plan are determined complete.

CESSATION OF OPERATIONS

Regulatory Reference: 30 CFR Sec. 817.131, 817.132; R645-301-515, -301-541.

Analysis:

The plan for cessation of the operation is part of the approved MRP.

Findings:

The amendment meets the minimum requirements of this section.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Affected area boundary maps.

See analyses under the operations and environmental section in this TA.

Bonded area map.

Determination on the bonded area map will be made following resolution of deficiencies outlined in this TA.

RECLAMATION PLAN

Reclamation backfilling and grading maps.

The application must include detailed maps that show how the backfilling and grading requirements will be met.

Reclamation facilities maps.

The application include detailed maps of all reclaimed facilities including but not limited to the access road.

Final surface configuration maps.

The application must include detailed maps and cross sections that show the final surface configuration.

Reclamation monitoring and sampling location maps.

See the environmental resource and operations section of this TA.

Reclamation surface and subsurface manmade features maps.

See the environmental resource and operations section of this TA.

Reclamation treatments maps.

See the deficiencies under the reclamation section of this TA.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-542.200, The amendment must include detailed maps and cross sections that show the anticipated final surface configuration. The maps and cross section must contain enough information so that reclamation costs can be calculated.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Form of bond. (Reclamation Agreement)

The Division will evaluate the form of bond the reclamation plan is approved.

Determination of bond amount.

The Division will evaluate the bond amount when the reclamation plan is approved.

Terms and conditions for liability insurance

The Division will evaluate the terms and conditions for liability insurance when the reclamation is approved.

Findings:

The Division will evaluate these bond requirements when the reclamation plan is approved.

SPECIAL CATEGORIES OF MINING

REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING

INTRODUCTION

Regulatory Reference: 30 CFR Sec. 785; R645-302, et seq.

Analysis:

The permittee is not required nor applied for variances or special conditions which require additional information in response to any special categories of mining.

Findings:

This requirements does not apply to this application.

EXPERIMENTAL PRACTICES MINING

Regulatory Reference: 30 CFR Sec. 785.13; R645-302-210, -302-211, -302-212, -302-213, -302-214, -302-215, -302-216, -302-217, -302-218.

Analysis:

The application does not include Experimental Practices Mining.

Findings:

This section is not required to be addressed under the proposed plan.

MOUNTAINTOP REMOVAL MINING

Regulatory Reference: 30 CFR Sec. 785.14, 824; R645-302-220, et. seq.

Analysis:

This application does not include mountaintop removal .

Findings:

This section is not required to be addressed under the proposed plan.

STEEP SLOPE MINING

Regulatory Reference: 30 CFR Sec. 785.15; R645-302-230 et. seq.

Analysis:

Steep slope surface mining is not proposed in this amendment.

Findings:

This section is not required to be addressed under the proposed plan.

PRIME FARMLAND

Regulatory Reference: 30 CFR Sec. 785.16, 823; R645-301-221, -302-300 et seq.

Analysis:

The Prime Farmland analyses described in the Environmental Resource section in this TA states that the area does not meet the criteria of either prime or important farmlands.

Findings:

This section is not required to be addressed under the proposed plan.

COAL PREPARATION PLANTS NOT LOCATED WITHIN THE PERMIT AREA OF A MINE

Regulatory Reference: 30 CFR Sec. 785.21, 827; R645-302-260, et seq.

Analysis:

The coal loading facilities are within this permit area. These facilities are used to size and sort coal materials. Mining in the permit area

Findings:

The coal loading and handling for this facility is conducted in conjunction with the permitted area for this mine; therefore, this section is not required to be addressed under the proposed plan.

SPECIAL CATEGORIES OF MINING

OPERATIONS IN ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR Sec. 822; R645-302-324.

Analysis:

Refer to the Analyses under the "Environmental Resource Information - Alluvial Valley Floors" in this TA.

Findings:

This section is not required to be addressed under the proposed plan.

IN SITU PROCESSING

Regulatory Reference: 30 CFR Sec. 828; R645-302-254.

Analysis:

The application does not propose to conduct insitu processing as part in this amendment.

Findings:

This section is not required to be addressed under the proposed plan.

AUGER MINING

Regulatory Reference: 30 CFR Sec. 785.20, 819; R645-302-240 et. seq.

Analysis:

The application does not propose auger mining within the permit area.

Findings:

This section is not required to be addressed according to the proposed plan.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

The Cumulative Hydrologic Impact Assessment will be updated to include assess hydrologic impacts from the proposed mining on Wild Horse Ridge.

Findings:

This section will be completed prior to permit approval.

sm

O:\015025.BCN\FINAL\TA\wildhorseSR98-1.wpd

RULES INDEX

- RULES INDEX -

30 CFR

| | |
|---------------|--------------------|
| 701.5 | 32, 58, 75 |
| 773.17 | 59 |
| 774.13 | 59 |
| 783 | 21 |
| 783.12 | 21, 22 |
| 783.18 | 23 |
| 783.19 | 23 |
| 783.21 | 25 |
| 783.22 | 29 |
| 783.24 | 39 |
| 783.25 | 39 |
| 784.11 | 42 |
| 784.12 | 42 |
| 784.13 | 69 |
| 784.14 | 32, 59, 69, 76, 87 |
| 784.15 | 69, 70 |
| 784.16 | 59, 69 |
| 784.17 | 43, 69 |
| 784.18 | 43, 69 |
| 784.19 | 58, 69 |
| 784.2 | 42 |
| 784.20 | 45, 69 |
| 784.200 | 69 |
| 784.21 | 24, 47, 69 |
| 784.22 | 30, 69 |
| 784.23 | 67, 69, 82 |
| 784.24 | 54, 69, 75 |
| 784.25 | 58, 69 |
| 784.26 | 44, 69 |
| 784.29 | 59, 76 |
| 784.30 | 64 |
| 785 | 85 |
| 785.13 | 85 |
| 785.14 | 85 |
| 785.15 | 70, 86 |
| 785.16 | 30, 69, 70, 86 |
| 785.18 | 79 |
| 785.19 | 29 |
| 785.20 | 87 |
| 785.21 | 86 |
| 800 | 83 |
| 817.100 | 79 |
| 817.102 | 70 |
| 817.107 | 70 |
| 817.11 | 65 |
| 817.111 | 79 |
| 817.113 | 79 |
| 817.114 | 79 |
| 817.116 | 79 |
| 817.121 | 45 |
| 817.122 | 45 |
| 817.13 | 72 |
| 817.131 | 82 |
| 817.132 | 82 |

| | |
|---------|--------|
| 817.133 | 69, 70 |
| 817.14 | 72 |
| 817.15 | 72 |
| 817.150 | 54, 75 |
| 817.151 | 54, 75 |
| 817.180 | 64 |
| 817.181 | 64 |
| 817.200 | 25 |
| 817.22 | 49, 72 |
| 817.41 | 59, 76 |
| 817.42 | 59, 76 |
| 817.43 | 59, 76 |
| 817.45 | 59, 76 |
| 817.49 | 59, 76 |
| 817.56 | 59, 76 |
| 817.57 | 59, 76 |
| 817.59 | 44 |
| 817.61 | 65 |
| 817.62 | 65 |
| 817.64 | 65 |
| 817.66 | 65 |
| 817.67 | 65 |
| 817.68 | 65 |
| 817.71 | 58 |
| 817.72 | 58 |
| 817.73 | 58 |
| 817.74 | 58 |
| 817.81 | 58 |
| 817.83 | 58 |
| 817.84 | 58 |
| 817.87 | 58 |
| 817.89 | 58 |
| 817.95 | 44, 82 |
| 817.97 | 47 |
| 817.99 | 47 |
| 819 | 87 |
| 822 | 87 |
| 823 | 30, 86 |
| 824 | 85 |
| 827 | 86 |
| 828 | 87 |

R645

| | |
|----------|------------|
| -100-200 | 32, 58, 75 |
| -300-140 | 59 |
| -300-141 | 59 |
| -300-142 | 59 |
| -300-143 | 59 |
| -300-144 | 59 |
| -300-145 | 59 |
| -300-146 | 59 |
| -300-147 | 59 |
| -300-148 | 59 |
| -301-210 | 58 |
| -301-211 | 58 |
| -301-212 | 58 |
| -301-220 | 25 |

RULES INDEX

Revised -January 24, 2000

| | |
|----------------|--|
| -301-221 | 30, 86 |
| -301-230 | 49 |
| -301-231 | 42, 69 |
| -301-233 | 69 |
| -301-234 | 70 |
| -301-240 | 72 |
| -301-244 | 44, 79, 82 |
| -301-270 | 70 |
| -301-271 | 70 |
| -301-320 | 23 |
| -301-322 | 24, 47, 69 |
| -301-323 | 39, 69, 82 |
| -301-331 | 69 |
| -301-333 | 47, 69 |
| -301-341 | 69 |
| -301-342 | 47, 69 |
| -301-352 | 79 |
| -301-353 | 79 |
| -301-354 | 79 |
| -301-355 | 79 |
| -301-356 | 79 |
| -301-358 | 47 |
| -301-411 | 21, 22, 25, 29, 39, 43, 69 |
| -301-412 | 58, 69, 70 |
| -301-413 | 69, 70 |
| -301-414 | 69 |
| -301-422 | 69 |
| -301-512 | 58, 59, 67, 69, 70, 76, 82 |
| -301-513 | 58, 69, 72, 75, 76 |
| -301-514 | 58, 59, 76 |
| -301-515 | 47, 76, 82 |
| -301-521 | 21, 39, 43, 45, 54, 58, 59, 65, 67, 69, 75, 82 |
| -301-522 | 44, 69 |
| -301-524 | 65 |
| -301-525 | 45, 69 |
| -301-526 | 42, 43, 58, 64, 69 |
| -301-527 | 54, 69, 75 |
| -301-528 | 42, 58, 69 |
| -301-529 | 69, 72 |
| -301-531 | 59, 69, 70 |
| -301-532 | 59, 76 |
| -301-533 | 59, 69, 70, 76 |
| -301-534 | 54, 69, 75 |
| -301-535 | 58 |
| -301-536 | 58, 59, 69, 70 |
| -301-537 | 69, 70, 75 |
| -301-541 | 82 |
| -301-542 | 58, 59, 67, 69, 70, 76, 82 |
| -301-551 | 72 |
| -301-552 | 70 |
| -301-553 | 58, 70, 79 |
| -301-622 | 39 |
| -301-623 | 30, 69 |
| -301-624 | 69 |
| -301-625 | 69 |
| -301-626 | 69 |

| | |
|----------|----------------------------|
| -301-631 | 69, 72 |
| -301-632 | 67, 69, 82 |
| -301-720 | 59 |
| -301-721 | 21 |
| -301-722 | 39 |
| -301-723 | 69, 76 |
| -301-724 | 23, 30, 32, 45, 69, 76 |
| -301-725 | 69, 76 |
| -301-726 | 69, 76 |
| -301-728 | 69, 76 |
| -301-729 | 69, 76 |
| -301-730 | 87 |
| -301-731 | 39, 59, 67, 69, 70, 76, 82 |
| -301-732 | 54, 59, 69, 70, 75 |
| -301-733 | 59, 69, 70, 76 |
| -301-742 | 59, 76 |
| -301-743 | 59, 76 |
| -301-745 | 58 |
| -301-746 | 58, 69 |
| -301-747 | 58 |
| -301-748 | 72 |
| -301-750 | 59, 76 |
| -301-751 | 76 |
| -301-760 | 76 |
| -301-761 | 59, 76 |
| -301-764 | 59, 69, 70 |
| -301-765 | 72 |
| -301-800 | 83 |
| -301-830 | 69 |
| -302 | 85 |
| -302-210 | 85 |
| -302-211 | 85 |
| -302-212 | 85 |
| -302-213 | 85 |
| -302-214 | 85 |
| -302-215 | 85 |
| -302-216 | 85 |
| -302-217 | 85 |
| -302-218 | 85 |
| -302-220 | 85 |
| -302-230 | 70, 86 |
| -302-231 | 70 |
| -302-232 | 70 |
| -302-233 | 70 |
| -302-240 | 87 |
| -302-254 | 87 |
| -302-260 | 86 |
| -302-270 | 30, 69 |
| -302-271 | 69 |
| -302-272 | 69 |
| -302-273 | 69 |
| -302-274 | 69 |
| -302-275 | 69 |
| -302-280 | 79 |
| -302-281 | 79 |
| -302-282 | 79 |

RULES INDEX

| | |
|----------------|----|
| -302-283 | 79 |
| -302-284 | 79 |
| -302-300 | 86 |
| -302-320 | 29 |
| -302-323 | 67 |
| -302-324 | 87 |