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DIVISION OF OIL, GAS AND MINING

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September 20, 1995

Mike Glasson, Sr. Geologist
Andalex Resources, Inc.
P. O. Box 902
Price, Utah 84501

Re: Midterm Review Outstanding Deficiencies, Andalex Resources, Inc., Centennial, ACT/007/019, Folder #3, Carbon County, Utah

Dear Mr. Glasson:

The Division has completed a review of your June 15, 1995 submittal intended to satisfy requirements of the Mid-Term review. The enclosed technical analysis discusses the results of that review. While it appears that some of the Mid-Term requirements have been satisfied there still remain a number that have not been adequately addressed. The requirement sections, beginning on page 42, describes the outstanding deficiencies. The Division is somewhat anxious to complete the Mid-Term review process and is concerned about the number of items that remain outstanding. Andalex must correct the deficiencies by no later than November 17, 1995.

If you have any questions, please call me or Steven Johnson.

Sincerely,

Daron R. Haddock

Daron R. Haddock
Permit Supervisor

Enclosure
cc: S. Johnson
P. Baker (w/o enclosure)
S. Demczak
P. Grubaugh-Littig (w/o enclosure)
MIDTERM2.CEN

State of Utah
Division of Oil, Gas and Mining
Utah Coal Regulatory Program

ACT/007/019
Centennial Mine
Midterm Review Analysis and Findings
Final Draft
September 18, 1995

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TECHNICAL ANALYSIS
PERMIT APPLICATION REQUIREMENTS

Regulatory Reference: UCA R645-301-100

LEGAL, FINANCIAL, COMPLIANCE AND INFORMATION

IDENTIFICATION OF INTERESTS, VIOLATION INFORMATION, AND RIGHT OF ENTRY INFORMATION

Regulatory Reference: UCA R645-301-112; R645-301-113; R645-301-114

Analysis:

Identification of Interests

The applicant, Andalex Resources, Inc., (Andalex) is a corporation organized under Delaware laws and qualified to do business in Utah. AMCA Coal Leasing, Inc., is Andalex's land acquisition and development branch. The plan includes Andalex's address and telephone number. The resident agent is Michael W. Glasson. Andalex resources, Inc., will pay the abandoned mine reclamation fee.

The plan lists Andalex's employer identification number, its officers and directors, their titles, dates their positions were assumed, and their address. The capital stock of Andalex Resources, Inc., is 100% owned by Andalex Resources, B. V., a Netherlands company. The response letter for the mid-term review says the officers and directors of Andalex Resources, B. V., are the same as the officers and directors of Andalex Resources, Inc. The plan should contain this information.

Additional ownership and control information was submitted for insertion into Appendix B. This information includes two directors of Andalex Resources, B. V., not shown in the main part of the plan. It also shows an additional parent company, Andalex Resources, S. A., that owns 100% of Andalex Resources, B. V. The Smoky Hollow mining and reclamation plan application, also submitted by Andalex Resources, Inc., contains information about Andalex Resources, S. A., and other parent entities, Andalex Holdings, Ltd., and the Andrew Trust. These entities and their officers and directors also need to be identified in the Centennial mining and reclamation plan.

Appendix B of the current mining and reclamation plan contains lists of several operations owned or controlled by Andalex or its affiliates.

In Section R645-301-112.500, the plan says the names and addresses of all owners of record for all surface and subsurface areas contiguous to the permit area are shown in this section and indicated on Plates 2 and 3. The text of the plan does not delineate between entities that own property within and those owning property contiguous to the permit area, and the way the text is worded, it sounds as if the subsurface owners shown near the beginning of Section R645-301-112.500 only own

coal rights contiguous to the permit area. With the exception of D. Mathis, these entities appear to own subsurface rights both within and contiguous to the permit area.

In addition, the list of subsurface owners does not include Sunedco or Zion Security Corporation. It does not appear that D. Mathis owns subsurface rights within or contiguous to the permit area. This entity should be included in the list of surface owners.

Plate 2 shows Dave Cave et al. as owners of surface land within and contiguous to the permit area. The plan does not show an address for these owners. Also, the State owns surface land contiguous to the permit area, but it is not listed as a surface owner in Section R645-301-112.500. J & S Critchlow are shown in this section as owning land within the permit area, but no property they own is not shown on Plate 2.

The plan lists MSHA numbers for all mine-associated structures.

Violation Information

The plan says Andalex Resources, Inc., affiliates, or persons controlled by or under common control with Andalex have not had a mining permit suspended or revoked within the last five years, and have not forfeited a mining bond or similar security in lieu of bond.

Lists of violations received by affiliated coal mining and reclamation operations are in Attachment I-6 of Appendix B. This information was last updated in November 1994.

Right of Entry Information

Right of Entry information is in Section R645-301-114. Federal and fee coal leases and modifications are described. The leases, and BLM Rights-of-Way U-62045 and U-641158 for the mine portals and fan portal, are identified on Plate 4.

Andalex bases its right to enter and begin operations on language, quoted in the plan, in federal and fee lease agreements. Andalex Resources, Inc., subleases seven federal and two fee leases from AMCA Coal Leasing. In addition, Andalex has two rights of way from the Bureau of Land Management and one private land easement from Gladys Artman.

Total acreage figures given in the plan for the leases do not match. On page 19, Section R645-301-114, the plan says Andalex holds approximately 4920 acres of federal and private coal leases. On pages 3 and 34, Sections R645-301-111 and R645-301-142, the plan says there are 5063 acres of leases, and if one adds acreage figures for all of the leases listed in Section R645-301-114, it comes to 5092.48 acres less 120 acres for relinquished lease U-52341. The reason for these discrepancies is unknown, and the response letter for the 1995 mid-term review says acreage figures in various parts of the plan are correct. Although the amount of acreage is not critical, the information in the plan needs to be accurate.

Legal descriptions of the leases correspond with Plate 4, the map showing Centennial Project leases, and with the permit. Under lease UTU-69600, the plan and Plate 3 say this lease is for the Centennial seam only. Andalex has acquired rights for all seams in this lease.

Findings:

This portion of the mining and reclamation plan is complete and accurate with the following exceptions:

1. The plan needs to show any companies that own or control Andalex Resources, Inc., or Andalex Resources, B. V., together with these companies' employer identification numbers and their officers and directors.

2. Land ownership information in the text of the plan needs to agree with what is show on the maps. The plan needs to contain the names and addresses of all entities owning land within and contiguous to the permit area. Those entities owning subsurface and surface land within and contiguous to the permit area should be clearly shown in the text.

3. Acreage figures shown in various parts of the plan need to correspond.

4. There are statements in the plan and on Plate 3 that lease UTU-69600 is for the Centennial Seam only. These need to be corrected.

UNSUITABILITY CLAIMS

Regulatory Reference: UCA R645-301-115

Analysis:

The mining and reclamation plan says the permit area is not within an area designated unsuitable for the surface effects of underground mining activities or under study for designation in an administrative proceeding. It says there are no occupied dwellings within 300 feet of the permit area.

Under the heading, "MINING AND RECLAMATION OPERATIONS WITHIN 300 FEET OF AN OCCUPIED DWELLING OR WITHIN 100 FEET OF A PUBLIC ROAD," the plan says, "None." However, Appendix B contains a letter from the Board of Carbon County Commissioners saying they are aware Tower Resources is conducting mining activities within 100 feet of County Road 299. The letter says they grant permission for Tower Resources use the road in connection with mining activity and coal hauling. In this section, rather than saying "none," the plan should reference this letter in Appendix B.

Findings:

This portion of the mining and reclamation plan is complete and accurate with the following exception:

1. The text of the plan should reference the letter from Carbon County in Appendix B giving approval for mining and reclamation activities within 100 feet of County Road 299.

PERMIT TERM, INSURANCE, PROOF OF PUBLICATION, FACILITIES OR STRUCTURES USED IN COMMON, CLEAR AND CONCISE, NOTARIZED SIGNATURE, PREVIOUSLY MINED AREAS

Regulatory Reference: UCA R645-301-116; R645-301-117; R645-301-121; R645-301-123; R645-301-142

Analysis:

The plan says the requested term of the permit is for five years. The permit was renewed in 1992 and expires in 1997.

Appendix B has copies of the certificate of liability insurance and the certificate of insurance. The certificate of insurance expired July 1, 1992, but the Division's files have a copy of an insurance certificate that expires July 1, 1995. The company affording coverage is Federal Insurance Co., and the policy number is 3710-25-94.

The plan includes a copy of the affidavit of publication for the 1992 permit renewal.

The Centennial Project includes development of three mines, but the facilities are not used by another company for mining operations.

The plan needs to contain a signed and notarized statement from a responsible official of the permittee that the information in the plan is true and correct to the best of the official's information and belief. Page 7 of the current plan has a signed and notarized statement from Mike Glasson that could be included in the reformatted mining and reclamation plan.

In Sections R645-301-142.100 through R645-301-142.210, the plan indicates there were no disturbances prior to August 3, 1977, or May 3, 1978. Information elsewhere in the plan indicates there were previously disturbed areas when Andalex began its operations in 1980. The soil and vegetation report in Appendix M describes "piles of waste rock and coal from abandoned coal mines." The land use section of the plan discusses various coal mining operations in Deadman Canyon that began in the 1920's. It is clear from this information there were disturbances originating before 1977.

The reason for identifying previously disturbed areas is to show where certain variances from the performance standards can be applied. For example, the revegetation success standard can be less stringent in previously disturbed areas compared to areas not disturbed before 1978. The Permittee

may choose to not apply these less stringent standards, but this portion of the plan should at least acknowledge that there were previously disturbed areas when Andalex began operating.

The Permittee could use the soil survey map to show areas disturbed before 1977. The information on this map would need to be clarified. The indications in Sections R645-301-142.100 through R645-301-142.210 that there were no disturbances before 1977 or 1978 should be modified.

Findings:

The plan is complete and accurate with the following exceptions:

1. The plan needs to contain the notarized statement of a responsible official of the permittee that the information in the plan is complete and accurate to the best of the official's information and belief.

2. Indications that there were no coal mining and reclamation disturbances prior to 1978 need to be removed. The plan needs to show which areas were disturbed prior to August 3, 1977, after August 3, 1977, and prior to May 3, 1978.

ENVIRONMENTAL RESOURCE INFORMATION

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

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: UCA R645-301-411.140 (30 CFR Sec. 783.12)

Analysis:

The application contains the results of two archeological surveys in Appendix C. The first was performed in 1976, and the second study was performed in 1980 under the direction of the Assistant Utah State Archeologist. No prehistoric sites were identified; nearly all sites identified were associated with historic mining operations. Two sites were identified that should be protected, and these were both in Straight Canyon. One was the ruins of a log cabin, and the other was a rock with "J A Peterson May 11, 1901" pecked in.

Correspondence from the Division of State History to the Bureau of Land Management says that necessary BLM forms have been distributed to the Price area office and to the Utah State office. This correspondence also states that an Historic Archeologist determined the sites would not impede development. June 15, 1988, correspondence from the Division of State History indicates there is a potential of finding rock shelters and rock art. If found, these must be reported to the Division of State History.

The two historic sites identified in the 1980 archeological survey are not in areas that are likely to be disturbed, but if disturbance is to occur in the area, these sites must be avoided or appropriate mitigative actions taken after consultation with the Division of State History. This area is not proposed for surface disturbance. The historic petroglyph is outside the permit area, and the log cabin ruins are outside the area that could be subsided. No commitment to protect these sites or to mitigate for disturbance is presently required.

There are no cemeteries, no lands within the boundaries of the National System of Trails or the Wild and Scenic Rivers System, no public parks, and no cultural or historical sites eligible for listing in the National Register of Historic Places within the permit area.

The two historic sites identified in the 1980 archeological survey are not in areas that are likely to be disturbed, but if disturbance is to occur in the area, these sites must be avoided or appropriate mitigative actions taken after consultation with the Division of State History. This area is not proposed for surface disturbance. The historic petroglyph is outside the permit area, and the log cabin ruins are outside the area that could be subsided. No commitment to protect these sites or to mitigate for disturbance is presently required.

There are no cemeteries, no lands within the boundaries of the National System of Trails or the Wild and Scenic Rivers System, no public parks, and no cultural or historical sites eligible for listing in the National Register of Historic Places within the permit area.

Findings:

The plan contains adequate archeological, historic, and cultural resources information.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: UCA R645-301-724.400 (30 CFR Sec. 783.18)

Analysis:

Climatological resource information is found in Section R645-301-724.400 on page 351 of the mining and reclamation plan. Precipitation data is found on pages 351 through 356. Temperature data is on page 358 through 361, and a climatological summary is on page 357.

Findings:

The Climatological Resource information is complete and accurate in the current mining and reclamation plan.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: UCA R645-301-724.400 (30 CFR Sec. 783.18)

Analysis:

Vegetation resource information is in section R645-301-310 of the reformatted plan and in Appendix M. Appendix M contains detailed information about the disturbed area, and the plan text has broad vegetation community information for the permit area.

Vegetative types in the permit area are mountain brush, desert shrub, pinyon-juniper woodland, sagebrush-grass, conifer-aspen, and minor stream side components. Mountain brush is the predominant type over most of the permit area.

Vegetation in the disturbed area was classified into two range sites, mountain stony loam (oak) and upland stony loam (pinyon-juniper). Parameters measured included woody plant density, production, and cover. The point-quarter method was used to measure woody plant density. Production from oak, maple, juniper, and pinyon was estimated from tables that correlate stem diameter and canopy size with production. Production of other species was estimated using paired plots: sample weight units were taken from outside the actual sample plots and were correlated with the productivity of each species within the plots. Belt transects were used to measure vegetative cover within each plot. Cover values were separated into cover by species, bare ground, litter, and rock.

Minimum sample sizes were achieved in all sampling except vegetative cover for the upland stony loam (pinyon-juniper) areas. For these areas, the minimum vegetative cover sample size was

46, and 40 samples were taken. When this study was done, the Division's policy was to allow maximum sample sizes. This policy has since been changed, but, since the site has been disturbed and since the sampling was approved for baseline information requirements, it is both impossible and unnecessary to try to obtain more samples from adjacent areas.

Not all of the disturbed area was included in original sampling. The south end of the disturbed area, including the Aberdeen Mine site, and the fan portal in the Left Fork of Deadman Canyon were excluded. These areas both have vegetation very similar to the area that was measured. For the Left Fork of Deadman Canyon, this is documented in a soil and vegetation survey of the area. Because vegetation communities were very similar to the areas where the vegetation was measured and because final revegetation standards for success will be based on reference area comparisons, additional sampling was not needed.

Mountain stony loam (oak) range sites occur on alluvial fans at elevations near 7100 feet. Slopes are 15-25% and face east. Production on this range site in the disturbed area was estimated to be 795 pounds per acre air dry, and the vegetation was 61% of potential. With this percentage of potential, the area is considered in good ecological condition. Total vegetative cover was 58% of which 54% was from shrubs, 3% was from grasses and grass-like plants, and 1% was from broadleaf forbs. Predominant species were Gambel oak, bigtooth maple, and snowberry. Woody plant density was measured at 2530 individuals per acre.

Upland stony loam (pinyon-juniper) range sites are on alluvial fans and steep mountain slopes at elevations ranging from 7100 to 7300 feet. Production in the disturbed areas that contained this range site was estimated to be 1252 pounds per acre air dry. Present vegetation was estimated to be 32% of potential which places this area in a fair ecological condition classification. Total vegetative cover was 20%. Of this, 12% was from shrubs, 7% from grasses, and 1% from broadleaf forbs. Dominant species were Utah juniper and salina wild rye. Woody plant density was measured at 716 per acre.

The vegetation information in the plan contains necessary information on which to base the reclamation plan and, if necessary, standards for success. It also has adequate information for judging premining productivity.

The plan does not specifically discuss revegetation feasibility. Some of the site was previously disturbed by mining, but these areas were not sampled in the vegetation studies. Therefore, it is impossible to know how well vegetation has naturally reestablished. Useful information is in the 1992 annual report. Two substitute topsoil piles were measured for vegetative cover in 1992. These piles contain soil material that will probably be needed for final reclamation. It is unknown what seed mixture was used on them, but it was probably a mixture including intermediate wheatgrass, crested wheatgrass, cicer milkvetch, and western wheatgrass. Other species might also have been in the mix. These substitute topsoil piles have 36.0% and 46.2% vegetative cover. Most of the cover is from introduced species, but a significant portion is from mountain brome, Basin wild rye, and western wheatgrass.

The plan also says that the Permittee established a test plot on topsoil pile F near the Apex Mine. This plot was done for the Permittee's benefit and not at the Division request. Specific

information about the vegetation on this pile is not available, but Division personnel have made some observations about it. Vegetative cover is probably about 50-60% and consists mostly of grasses with few shrubs and broadleaf forbs. In about May 1994, several shrubs were transplanted onto the pile in an effort to test transplanting methods and timing. Probably as a result of poor handling and planting procedures, all of them died. Further efforts to show the feasibility of transplanting shrubs is warranted and is discussed under "Revegetation" below.

Based on information in annual reports, Division personnel observations of interim revegetation success on topsoil piles, and comparing the site with nearby areas that have similar reclamation conditions, the Centennial Project site is reclaimable.

Findings:

The plan includes adequate vegetation resource information.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: UCA R645-301-322 (30 CFR Sec. 784.21)

Analysis:

Appendix A contains a wildlife report from the Division of Wildlife Resources. Most of this information is not site-specific but is about wildlife in the region.

The mine plan area is located in the West Tavaputs Plateau, an area that supports about 360 vertebrate wildlife species. The main game species in the mine plan area are mule deer, mountain lions, black bears, elk, and cottontail rabbits. No threatened, endangered, or sensitive species have been found on or near the lease area.

Several golden eagle and a few other raptor nests are in the permit area. The locations of these nests are shown on Plate 34. This plate has been updated since a raptor survey performed in May 1994. Plate 34 also shows certain areas of high priority elk winter range, critical deer winter range, and high priority sage grouse summer range within the permit area.

The information in Appendix A is mostly not site-specific and is now somewhat outdated. However, the plan includes enough information in this appendix and on Plate 34 to design a wildlife protection, mitigation, and habitat enhancement plan. This is further discussed under the "Fish and Wildlife Protection Plan" and in the "Revegetation" section.

No threatened, endangered, or sensitive species are known to inhabit the permit area. Canyon sweetvetch (*Hedysarum occidentale* var. *canone*) grows in the vicinity, but it has not been found in the permit area. Deadman Canyon probably contains suitable habitat, however, and any plans for additional surface disturbance should include a survey for this species. Other sensitive plant species may be in the region, but they are believed to be confined to lower elevations.

Findings:

The wildlife information section of the mining and reclamation plan is complete and accurate.

SOILS RESOURCE INFORMATION

Regulatory Reference: UCA R645-301-220 (30 CFR Sec. 783.21)

Analysis:

Soil descriptions are found in Appendix M, while the soils are mapped on Plate 18. Substitute topsoil information is found in Section R645-301-224 beginning on page 39 of the mining and reclamation plan.

The shop pad is has 5,240 yards of material once designated as substitute topsoil. The Permittee does not believe that this storage location will effect that suitability of the material; however, material near the Apex truck loadout is similar and has been designated as substitute soil. The Permittee will test this material's suitability by using the approved seed mix on the soil. Both substitute soil locations have been tested and results will be included in the permit when they are available.

Quantities of stockpiled topsoil and pile locations are found on page 40 and Plates 6 and 37 in the mining and reclamation plan. Allowing for 6 inches of topsoil spread over the surface in reclamation, there is a deficit of about 8,000 cubic yards. This deficit will be made up for in by the two substitute sites. Topsoil Pile B has been eliminated and the material from that pile has been placed with Pile G.

Findings:

Topsoil resources have been characterized in Appendix M, and quantities are accounted for in Section R645-301.224; therefore, the soil resource information is complete and accurate.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: UCA R645-301-411.100, 411.200 (30 CFR Sec. 783.22)

Analysis:

The historic use of the land has been for coal mining, grazing, and for recreation and wildlife. Grazing has been limited primarily to the canyon bottoms and the tops of plateaus because of the roughness of the terrain.

Coal mines were begun in the area in the 1920's. There were three mines in the lease area in Deadman Canyon. These were the Zion, Olsen, and Sutton (Blue Flame) Mines which produced

240,000, 18,000, and between 216,000 and 720,000 tons of coal, respectively. Production was from the Gilson and Aberdeen seams. In addition, the Knight-Ideal Mine in Hoffman Canyon produced about 1,680,000 tons of coal from the Gilson Seam. One mine prospect produced about 1400 tons from the Lower Sunnyside Seam.

The permit and adjacent areas are zoned by Carbon County for mining and grazing.

Findings:

This section of the mining and reclamation plan is complete and accurate.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: UCA R645-301-620 (30 CFR Sec. 784.22)

Analysis:

R645-301-611.200 requires descriptions of proposed operations given under R645-301-630, which covers "Casing and Sealing of Exploration Holes and Boreholes" and "Subsidence Monitoring". For casing and sealing of exploration holes and Boreholes the reader is referred to R645-301-529.100 and R645-301-551, which cover casing and sealing of underground openings and in which casing and sealing of bore holes has been included. For subsidence monitoring the reader is referred to R645-301-525, which covers subsidence, including a determination of the commencement and degree of subsidence and refers to maps showing the locations of subsidence monitoring points within and adjacent to the permit area. See the discussion under Section R645-301-630 below.

R645-301-623 requires geologic information in sufficient detail to assist in determining potentially acid- or toxic-forming strata; determining whether reclamation can be accomplished; and preparing the subsidence control plan. The reader is referred to R645-301-611.100, which includes the required geologic information or refers to other locations in the plan where the information can be found.

Pages 340 to 345 contain information on the drill holes in the Centennial Project. The five holes drilled by Centennial Coal Assoc. in 1971 are described on page 340. Pertinent information including elevations is in Table III-1. Locations are mapped on Plates 22, 26, 27, 28, and 29. Lithologic logs of each drill hole are described as being in Appendix E, but logs of only four are actually located there: the log for DH-1 is missing. A letter from Andalex (June 15, 1995) concerning previously identified deficiencies indicated this log was being added to Appendix L, but the log was not included with the submitted information.

On page 342, the first paragraph discusses seven holes bored by Andalex. Locations are on Plates 22, 26, 27, 28, and 29. Lithologic logs are in Appendix E. Information on these seven holes is summarized in Table III-2.

The Permittee also bored six holes from underground and one from the surface in 1989 and information on these seven holes is summarized in Table III-2. The text does not mention lithologic logs for these bore holes and there are no logs in Appendix E. Locations are on Plates 26, 27, 28, and 29. Only one of these bore holes, 89-1 AP, is shown on Plate 22.

The second paragraph on page 342 reports on three bore hole lithologic logs acquired by the Permittee from North American Coal Corp. and Pacific Gas & Electric. Pertinent information including elevations is summarized in Table III-3. Lithologic logs of the two holes drilled by North American Coal Corp. in 1948 are in Appendix E, and logs of the coal bearing intervals for the hole drilled by Pacific Gas & Electric in 1980 (CC-9 or DH PG&E-1) are in Appendix E. Locations are on Plates 22, 26, 27, 28 , and 29.

Drill holes MC-32, MC-191, MC-193, DH-8, and DH-10 are shown on Plate 22. Three of them lie west of the Centennial permit area. There is no other information on these bore holes in the plan, but Andalex states in a letter to UDOGM dated June 15, 1995 that information on these five bore holes is proprietary to Cyprus/AMAX.

Under R645-301-623 the reader is referred to Sections R645-301-611.100, R645-301-240, and R645-301-525 and to Appendix E. Geologic information in sufficient detail to assist in determining all potentially acid- or toxic-forming strata down to and including the stratum immediately below the coal seam to be mined is found in Section R645-301-611.100 and Appendix E, except that the locations from which samples were taken in 1992 are not identified and most analyses reported in Appendix E did not include determination of acid-base potential or analysis for selenium or boron. One coal sample from the Sunnyside seam had acid-base potential that exceeded UDOGM guideline limits, and one sample of floor rock from DH-1 had a SAR value in excess of the UDOGM guideline limits.

Section R645-301-240 contains the reclamation plan. The reclamation plan does not mention any geologic factors such as acid- or toxic-forming materials that need to be considered in reclaiming the site.

The subsidence control plan described under R645-301-525 includes a discussion of geologic factors.

Under R645-301-624 the reader is referred to Sections R645-301-611.100, R645-301-510, and R645-301-513.300 and to Appendix E. Section R645-301-611.100 includes the description of the geology of the proposed permit and adjacent areas down to and including the aquifer below the lowest coal seam to be mined which may be adversely impacted by mining. The description includes areal and structural geology of the permit and adjacent areas; acid-, toxic-, and alkaline-forming materials and other parameters that may influence the required reclamation; and it shows how the areal and structural geology may affect the occurrence, availability, movement, quantity and quality of potentially impacted surface and ground water. Section R645-301-510 contains references to maps and cross sections that portray the geology of the area but little information on the geology of the permit or adjacent areas. The bore hole and drill core information obtained for R645-301-624.300 is in Appendix E. The relationship between the information in Section R645-301-513.300 - Waste Disposed in Underground Mine Workings - and the requirements of R645-301-624.230 - Acid or

Toxic Forming Materials - is not evident. Alternative water supply information has been supplied in Section R645-301-624.120.

Section R645-301-513.300 discusses the underground disposal of rock waste from the Centennial seam rock tunnel. There is no processing waste from these mines, and if waste is generated in the future it will be hauled to an approved refuse disposal site.

Clay or clay-like rock is rarely encountered in the Centennial mines. Samples of the floor and roof of each seam have been sampled using conventional core drilling equipment. Clay in the floor of the Aberdeen seam is of local extent only and is identified when floor material becomes soft after contact with water. To date there has been no clay or clay-like material found in the immediate roof of any of the coal seams.

The overburden section (R645-301-627) of the revised plan is marked "N/A". The required minimum description of overburden thickness and lithology is, however, actually in Appendix E and Sections R645-301-512.150 and R645-301-611.100.

Findings:

Geologic resource information is complete and accurate except for the following deficiencies:

1) The lithologic log for DH-1 is not in Appendix E, contrary to the statement on page 340. A letter from Andalex (June 15, 1995) concerning previously identified deficiencies indicated this log was being added to Appendix L, but the log was not included with the submitted information.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: UCA R645-301-720, 731.200 (30 CFR Sec. 701.5, 784.14)

Analysis:

Sampling and analysis

In R645-301-720 reference is made to Appendix L, "Surface and Ground Water Hydrologic Inventory Including Baseline Quality Information and Operational Water Monitoring Data", prepared by Vaughn Hansen Associates in 1989. Appendix L contains statements that water quality samples will be analyzed by a certified laboratory. Attachment A of this appendix contains Table 7 that lists the parameters for which analyses are to be done and the methods to be used, referenced to the 14th edition of Standard Methods and EPA Methods from 1974. The commitments are made on pages 359-360 of the reformatted plan that collection and preservation of samples will be in accordance with EPA standards and that analyses will be done within the recommended holding times as given in 40 CFR Parts 136 and 434: methods of analysis are not mentioned. Some of the analytical methods from 1974 EPA methods and the 14th edition of Standard Methods have been updated or replaced with

better methods. Even though methods actually being used to analyze water samples for the Centennial Project are undoubtedly better than those listed in Appendix L, they may be, technically speaking, in compliance with the approved plan. If analyses are actually being done with the older methods, an update of methods is needed. The revised plan needs a clear commitment that water quality sampling (when feasible) and analyses will be conducted according to the methodology in the current edition of "Standard Methods for the Examination of Water and Wastewater" or the current methodology in 40 CFR Parts 136 and 434.

Baseline information

Reference is made to Appendix L that contains several items including "Surface and Ground Water Hydrologic Inventory Including Baseline Quality Information and Operational Water Monitoring Data", prepared by Vaughn Hansen Associates in 1981 and revised in 1984. Figure 4 of this report shows seeps and springs originally identified within and adjacent to the mine. It also shows baseline ground and surface water monitoring points. This appendix also contains a supplementary spring and seep inventory done in 1989 for the Graves Lease area, basically Sec's. 35 and 36, T. 13 S., R. 10 E. and Sec's. 1 and 2, T. 14 S., R. 10 E, which includes the AEP lease area that was later added to the permit. A seep in Mathis Canyon was located and sampled in 1989. No seeps or springs have been found within the permit boundaries. The two water supply wells bored by the Permittee are the only wells in the area. Water rights are shown on Figure 5 and rights and seasonal usage are listed in Table 5 and at the end of Appendix L. Data on discharge from the seeps or springs, depths to water in the two wells, and pump tests of the wells are in Appendix L. Baseline ground and surface water quality data are in Appendix L. Names and locations of surface water bodies are on Figure 4 and on numerous other maps in the plan. UPDES discharge points are shown on Figure VII-11.

Baseline cumulative impact area information

Information from the permit applicant is in Appendix L. A CHIA was prepared December 4, 1990 and a brief update made on April 20, 1993.

Probable hydrologic consequences determination

The report "Surface and Ground Water Hydrologic Inventory Including Baseline Quality Information and Operational Water Monitoring Data" (Vaughn Hansen Associates, 1981, revised 1984) in Appendix L contains determinations of the effects of mining operations on the ground water and surface water hydrologic balances. This determination was based upon baseline hydrologic and geologic information for the proposed permit and adjacent areas, including the quality and quantity of surface and ground water under seasonal flow conditions. An additional PHC determination was added to the appendix in 1990 to include the "Graves" lease. Findings were that no adverse impacts are expected to the hydrologic balance; that there are no acid-forming or toxic-forming materials present that could result in the contamination of surface or ground water supplies; and that proposed operation should have no impact on sediment yield, acidity, total suspended and dissolved solids , flooding or streamflow alteration, and on ground water and surface water availability. Within the area of the "AEP" lease the geology and other factors are consistent with those in the areas covered by the PHC, there are no seeps or springs, and streams flow only in direct response to precipitation. The

area of the "AEP" has also been covered by another new PHC prepared by Andalex and added to Appendix L. Within the AEP lease impacts to surface and ground water are anticipated to be negligible and acid- and toxic-forming materials will not be encountered.

Ground-water and Surface-water monitoring plans

The ground and surface water monitoring plans are based upon the PHC determination and the analysis of all baseline hydrologic, geologic, and other information in the permit application. The plan provides for the monitoring of parameters that relate to the suitability of the ground and surface water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance. Quantity and quality parameters to be monitored are on pages 360 and 361. Sampling frequency is discussed on page 361. Surface and ground water monitoring points are shown on Figure IV-11, which is on page 363. Data will be interpreted as needed to observe unusual flows or chemical anomalies that might indicate influence from mining activity. The Permittee commits in the plan to submit data to the Division within 45 days of the end of each quarter.

Findings:

Hydrologic resource information is complete and accurate. The baseline surface and ground water hydrologic resource information in the revised plan is complete and accurate. The hydrologic and geologic resource information on the cumulative impact area has been provided from federal and state agencies and from the Permittee is complete and accurate.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: UCA R645-301-512.100 and 521.100 (30 CFR Sec. 783.24, 783.25)

Analysis:

The Permittee references to Section R645-301-510, Volume II for map and cross section information. The references are too general and does not contain information on where some maps are located. In Section R645-301-521.111 LOCATION AND EXTENT OF KNOW WORKINGS the Operator reference the reader to R645-301-510 for information on that subject. Know workings include active, inactive and abandoned underground workings. There is no specific mention of a map(s) that show the location of active mine workings in Section R645-301-510. A better reference for map is on page 241 entitled Volume II Table of Contents. Clear and concise reference are needed so that the Division and the public can quickly locate information.

The Permittee should list the specific maps as he did in Section R645-301-521.121 the Permittee states there area no buildings within 1,000 feet of the permit area except those used as part of the mining operation. They are shown on Plates 6 and 7.

In Section R645-301-521.122 the Permittee states that there are no surface or subsurface man-made features within, passing through, or passing over the permit area except the powerline,

telephone cables, culverts and etc., installed for the operation of this mine. See Plates 6 and 7 for their locations.

Section R645-301-521.124 states that there are no surface or subsurface man-made features within, passing through, or passing over the permit area except the powerline, telephone cables, culverts and etc., installed for the operation of this mine. See Plates 6 and 7 for their locations.

The Permittee did not address the location of existing facilities in the permit area such as impoundments and noncoal waste.

Nature, depth, and thickness of the coal seams to be mined, any coal or rider seams above the seam to be mined, each stratum of the overburden, and the stratum immediately below the lowest coal seam to be mined are shown on cross sections on Plates 23 and 24 and Figure III-1 (page 124), which are certified. For the seams that are to be mined, coal thicknesses are described or mapped as isopachs on certified Plates 26, 27, 28, and 29. Coal crop lines are shown on Plates 26, 27, 28, and 29. Strike and dip of the coal to be mined within the proposed permit area are also shown on Plates 26, 27, 28, and 29.

Plates 26, 27, 28, and 29 show drill hole locations. Drill hole locations and elevations for the bore holes in Tables III-1 and III-3 are on certified Plate 22. Plate 22 also shows the locations of the seven holes bored in 1977 listed in Table III-2 and of bore hole 89-1 Apex but not of the other six holes bored in 1989 and listed in Table III-2. However, locations of those six bore holes are on Plates 26, 27, 28, and 29. Plate 22 also shows locations for MC-32, MC-192, MC-193, DH-8, and DH-10 that are not listed in the tables or described in the text. Three of theses holes lie west of the Centennial permit area. There is no other information on these bore holes in the plan, but Andalex states in a letter to UDOGM dated June 15, 1995 that information on these five bore holes is proprietary to Cyprus/AMAX: for clarity, the proprietary nature of the information from these bore holes should be stated in the plan.

Locations and elevations of baseline surface and ground water monitoring points are shown on Figure 4 of Appendix L. This map is not certified: it should have been certified at the time baseline work was done. Because it shows information that was applicable at the time baseline work was done but not to current mine operations it would not be appropriate to certify it retroactively. Locations and elevations of operational surface and ground water monitoring points, including UPDES discharge points, are shown in Figure IV-11 (page 363), which is certified.

Plates 14 and 15 (sheets 1-18) show sufficient slope measurements or contours to adequately represent the pre-disturbance land surface configuration of disturbed areas for UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES, measured and recorded to take into account natural variations in slope, to provide accurate representation of the range of natural slopes and reflect geomorphic differences of the area to be disturbed. Plates 14 and 15 are certified.

On page 367 the plan refers to Appendix L for cross sections and maps showing location and extent of subsurface water, including areal and vertical distribution of aquifers and portrayal of seasonal differences of head in different aquifers. Geology is the major factor in the distribution of ground water in the Book Cliffs, and the geologic map (Plate 21, not certified) indicates the areal

distribution of strata that have the potential to contain aquifers and to act as recharge areas. Vertical distribution of these strata is indicated on cross sections on Plates 23 and 24, which are certified. In the Book Cliffs region ground water exists under water table, artesian, and perched conditions, but perched aquifers are the only aquifers known to exist in the permit and surrounding areas. Water table conditions in the Book Cliffs primarily occur in shallow alluvial deposits along larger perennial streams and in relatively flat lying sedimentary rocks with no overlying impermeable strata. Ground water in water table conditions is not known to exist within the permit or adjacent areas because these conditions do not exist. Two water supply wells drilled into the Aberdeen Sandstone at the base of the Blackhawk Formation, the potential regional aquifer, have produced limited amounts of water and indicate that ground water in this sandstone is perched. No seeps and springs are known to exist within the permit area. Seeps and springs in the adjacent areas are shown on Figure 4 (not certified) of Appendix L. The geologic map and cross sections along with the locations and elevations of the seeps and springs that issue from these perched aquifers present a reasonable representation of the areal and vertical distribution of the perched aquifers.

On page 367 the plan refers to Appendix L for maps or cross sections showing location and extent of surface water bodies. Streams, stock ponds, springs, diversion points, and reservoirs within the permit and adjacent areas are shown on uncertified Figures 4 and 5 in Appendix L, but they are also on certified Figure IV-11 and the topographic base for certified Plate 22. The UPDES permitted discharge points are shown on Figure IV-11 on page 363. There are no water-supply intakes in the permit and adjacent areas.

There are no oil or gas wells within the permit area or adjacent areas. Locations of the two water supply wells are on Figure 4 (uncertified) in Appendix L.

Findings:

Maps, plans, and cross sections of hydrology resource information are complete and accurate.

OPERATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: UCA R645-301 (30 CFR Sec. 784.2, 784.11)

Analysis:

In Section R645-301-523 to R645-301-532.220 the Permittee states that there are four minable seams in the permit area. They are the Aberdeen, Gilson, Centennial and Lower Sunnyside, in ascending order. All mining will be conducted underground, using continuous miners and longwall equipment. The Permittee states that the requirements for surface mining within 500 feet of an underground mine are N/A. Approval to conduct surface mining operations within 500 feet of an underground mine are shown in Appendix B and J.

The Permittee has given a brief description of the mining operation that includes a description of type and method of coal mining.

The Permittee states that R645-301-523.100, R645-301-532.200 and R645-301-523.210 are N/A. The reason why those regulations are N/A is not stated, but assumed to be because there is no surface mining in the permit area. The Permittee states in Section R645-301-523.220 that approval for surface mining within 500 feet of an underground mine opening has been granted by the Division.

The references in response to R645-301-512.240, Water Pollution Controls, are too general (Appendices G & I).. Each appendices contains approximately 40 pages. The Permittee must give a specific reference.

As raw coal is hauled from the permit area, there will be no processing waste and non return of processing waste to underground workings. Underground development waste rock generated by the Centennial Seam rock tunnels was disposed of underground in the existing Pinnacle Mine workings.

Coal is discharged from the conveyor onto a coal stockpile in the raw coal stockpile area as indicated on Plate 6. The coal is then set to the Wildcat Loadout for processing. Upon completion of mining activities, all surface facilities will be removed. The coal pile area will be filled, the slope contoured, compacted, topsoil replaced, regraded, and revegetated.

There has been no development waste or excess spoil to date excepting sedimentation pond material. Sediment pond waste is non-toxic and non-acid forming. It is stockpiled on site and will be used as fill during reclamation.

Noncoal waste consists of lubricants, paints, garbage, timber, and other waste generated during mining. Noncoal waste is deposited into dumpsters for temporary storage. Final disposal of the noncoal waste is in commercial landfills.

The Permittee has adequately described the handling of spoil, coal processing waste, mine development waste and noncoal waste.

There is no acid or toxic forming materials generated at the mine. Therefore, the Permittee does not need to address how such materials will be disposed of.

From R645-301-630 the reader is referred to R645-301-511.100, R645-301-551, and R645-301-525. Section R645-301-511.100 simply references R645-310-510, which contains no information on the casing and sealing of wells or on subsidence monitoring, so the reference to Section R645-301-511.100 is of no value. However, R645-301-525 includes discussions of subsidence monitoring as it relates to R645-301-630, and casing and sealing of drill holes are discussed in R645-301-551.

EXISTING STRUCTURES:

Regulatory Reference: UCA R645-301-526.110 (30 CFR Sec. 784.12)

Analysis:

Support structures and buildings are shown on Plates 6 and 7. Parking areas have been covered with gravel and magnesium chloride and will be maintained. There are several storage areas at the site. These include the Material Storage Area No. 1, Raw Coal Pile Area, Material Storage Area No. 2 and the Topsoil Storage Area. All areas are shown on Plate 6.

This section deals with general requirements for mine facilities. Information on mine structures and facilities should be addressed in Section R645-301-526.100

Information on structures that the Permittee has constructed or modified after the permit was issued should be presented in this section. Section R645-301-526.110 (Existing Structures) addresses those structures that were present on the site prior to permit issuance. Since there were no existing structures on the site prior to the permit issuance Section R645-301-526.110 is not applicable.

Findings:

The Permittee failed to address the structures that were constructed on the site after the permit was issued. The other issues have been addressed.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: UCA R645-301-411.142 (30 CFR Sec. 784.17)

Analysis:

The two historic sites identified in the 1980 archeological survey are not in areas that are likely to be disturbed, but if disturbance is to occur in the area, these sites must be avoided or appropriate

mitigative actions taken after consultation with the Division of State History. This area is not proposed for surface disturbance. The historic petroglyph is outside the permit area, and the log cabin ruins are outside the area that could be subsided. No commitment to protect these sites or to mitigate for disturbance is presently required.

There are no cemeteries, no lands within the boundaries of the National System of Trails or the Wild and Scenic Rivers System, no public parks, and no cultural or historical sites eligible for listing in the National Register of Historic Places within the permit area.

Findings:

The Permittee has complied with the requirements of this regulation.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: UCA R645-301-521.133, 526.116 (30 CFR Sec. 784.18)

Analysis:

In Section R645-301-521.123 the Permittee states that County Road 299 starts at Highway 6 in Price and terminates at the Permittee's mine site (Plate 1). The Permittee has identified the maps that show the location of each public road in, or within, 100 feet of the proposed permit area.

Findings:

The Permittee addressed the requirement under Section R645-301-521.123.

AIR POLLUTION CONTROL PLAN

Regulatory Reference: UCA R645-301-420 (30 CFR Sec. 784.26, 817.95)

Analysis:

Appendix F contains an emissions inventory which has been reviewed and approved by the Utah Bureau of Air Quality. The Permittee has been issued an approval order for the mines and the Wildcat loadout which allows for production of up to 1.5 million tons per year. These were inspected and met compliance during the summers of 1989-1992.

Findings:

The Permittee has complied with the requirements of this regulation.

COAL RECOVERY

Regulatory Reference: UCA R645-301-522 (30 CFR Sec. 817.59)

Analysis:

There are four coal seams of minable thickness on the leases, a systematic plan of mining will be followed to assure maximum recovery of coal reserves. When mining is progressing concurrently in two seams, the room and pillar design and layout will be columnized to assure maximum roof support.

The Permittee states that a systematic mining plan will be followed to assure maximum coal recovery. There is no reference to such a plan. One solution would be to place a copy of the Resource Recovery and Reclamation Plan (R2P2) in the mining and reclamation plan.

Findings:

The Permittee needs to show that maximum coal recovery will occur. One way to do that is enclose a copy of the R2P2 in the mining and reclamation plan.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: UCA R645-301-332, 525 (30 CFR Sec. 784.20, 817.121, 817.122)

Analysis:

The area has been surveyed. There are no structures present besides those constructed for the mining operation. The land is used primarily for grazing and wildlife habitat. Most of the area is not suited for grazing or production of food or fiber products. The Permittee has described the subsidence survey. The survey shows that renewal resources exist on the land and that a subsidence control plan is needed.

Mining will consist of underground methods of coal extraction using the longwall method, continuous miners on fringe areas, and conveyor haulage. Continuous miners will be employed for longwall development with longwall extraction completing the operation. For more information on the mining method, see Part B, Section 2.

The Permittee has described the mining methods. Reference is made to Part B, Section 2, however there is no Part B Section 2 in the mining and reclamation plan. The information about mining methods should be placed under Section R645-301-525.120.

The stratigraphic column in the permit area is described. To date subsidence has not been detected at any monitoring location at the Permittee. The Bureau of Mines has conducted subsidence studies in the area and determined the maximum angle of draw to be 20 degrees. Neighboring mine has angle of draws between -7.4 degrees and +15.2 degrees.

The Permittee has described the physical condition, such as depth of cover, seam thickness, and lithology, which affect the likelihood or extent of subsidence and subsidence-related damage.

There is only one spring located in the permit area (Hoffman Creek), that is stratigraphically well below the lowest coal to be mined. The Permittee has committed to replace water were it proven that mining has disrupted water flow at any location.

Small cracks, should they occur, heal themselves quickly and thoroughly. Broad subsidence troughs do not have any negative effect on surface use.

If it can be proven that subsidence damaged a spring then the Permittee has committed to mitigate the problem. The Permittee believes that any surface cracks will be minor and self-healing. The commitment to mitigate subsidence damage must be enlarged to include all renewable resources. The proposal should also be placed under section R645-301-525.130

There are no structures or surface features which could be affected adversely by subsidence. Monitoring stations, however, have been set up at locations shown on Plate 25. The purpose of the detailed monitoring program over the initial longwall mining is to establish baseline information which is useful in the long term operation of the Permittee mines. In addition, the Permittee is committed to establishing subsidence monitoring programs over successive longwall panels which will consist of up to two monuments per panel and will also include visual inspections annually on the active panels.

The Permittee has committed to conduct a monitoring program that the Division believes is adequate. Most of the damage will involve surface cracks that can only be detected by surface surveys.

The Permittee has committed to replace any water should it be proven that a disruption in flow was mining related. There is no discussion on other type of subsidence damage such as cracks and landslides.

The Permittee has committed to replace any water should it be proven that a disruption in flow was mining related. There is no discussion on other type of subsidence damage such as cracks and landslides.

The Permittee states that Section R645-301-525.240 to R645-301-525.244 are N/A. A brief explanation of why these sections are N/A should be state in the mining and reclamation plan. While the reasons may be obvious to the Permittee and Division personnel familiar with the site they may not be to others.

The Permittee has described the mining plan that include maps and a detailed description of significant features such as; size, configuration and approximate location of pillars and entries and extraction ratios.

A copy of the newspaper advertisement of this Mining and Reclamation Plan and proof of publication of the advertisement is filed with the Division and made part of the complete application.

Also, please refer to this chapter for the public notice and proof of publication for the newly acquired Sunedco Lease. The Permittee showed that the public notices have been made concerning subsidence

The mining and reclamation plan says that, except the facilities associated with the mine, there are no structures within the permit area. The land is presently used for grazing and wildlife habitat which makes it a renewable resource area. Geographic areas above the Permittee's five year mine plan do not include any areas suitable for grazing. They also do not contribute significantly to the long-range productivity of water, food or fiber products. The Permittee commits to mitigate all subsidence-related damage to renewable resources, including, but not limited to, water, grazing, and wildlife habitat, including raptor nests.

These commitments meet the requirements for R645-301-332. The subsidence control plan should be reviewed from the standpoint of R645-301-525.

Findings:

The subsidence control plan is complete and accurate except for the following deficiencies:

1) The Permittee needs to expand the mitigation clause to include to repair or replace damage all renewable resources not just water.

SLIDES AND OTHER DAMAGE

Regulatory Reference: R645-301-515.100 (30 CFR Sec. 817.99)

Analysis:

R645-301-515.100 requires that the permit describe the procedure for reporting slides. The information in this section is subtitled Schedule of Construction, Mine Development, Mining and Reclamation. There is no information on slides and other damage in this section.

Findings:

The Slide and Other Damage information is complete and accurate except for the following deficiency:

1) The Permittee must describe the procedure for reporting a slide.

FISH AND WILDLIFE PROTECTION

Regulatory Reference: UCA R645-301-322, 358 (30 CFR Sec. 784.21, 817.97)

Analysis:

Section R645-301-333 of the plan references Appendix A for the operational fish and wildlife protection plan. Appendix A is a report from the Division of Wildlife Resources that includes protection recommendations. Section R645-301-310 includes a statement that all new employees will receive wildlife education training. In section R645-301-330, the plan says that specific facilities are not used to protect or enhance wildlife with the exception of the powerline which was built according to strict guidelines issued by Wildlife Resources and the Fish and Wildlife Service. Speed limits are posted in the permit area.

Section R645-301-310 discusses applicability of the Wildlife Resources recommendations to the mine's operations. This discussion clarifies what recommendations the Permittee plans to use.

Wildlife habitat enhancement is discussed under the "Revegetation" section of this review.

Findings:

This portion of the mining and reclamation plan is complete and accurate.

MAPS, PLANS, AND CROSS SECTIONS

Regulatory Reference: UCA R645-301-512 and 521.100 (30 CFR Sec. 784.23)

Analysis:

The certification section begins on page 103 and continues through page 212. Information in the certification section deals mostly with operational and reclamation plans. There is no information on map certification in this section. The placement of 110 pages of unrelated material in this section make the mining and reclamation plan confusing.

In Section R645-301-521.125, Sedimentation Ponds and Impoundments, the Permittee says to see R645-301-512.240. There are 78 pages in R645-301-512.240 which makes the reference too general.

In Section R645-301-521.131, Surface and Subsurface Owners, the names and addresses of all owners of record for all surface and subsurface areas continuous to the permit area are listed below and indicated on Plates 2 and 3. The leases for which the Permittee has the legal right of entry are shown on Plate 4.

In Section R645-301-521.132, Right to Enter and Conduct Mining Activities, is referenced to Appendix J. That reference is not adequate because if refers to another reference. The Permittee should use the correct reference.

In Section R645-301-521.140, Mine and Permit Area Maps, the Permittee makes reference to R645-301-510 Volume II. The Division does not know what Volume II is. The Permittee needs to provide a more specific reference to the Division. Reference to Volume II is also made for other sections.

Upon completion of mining activities, and following removal of surface structures, the earthwork portion of the reclamation plan will begin as described in Part F, section 3. The hydrologic portion of reclamation will take place in two phases. First the main and side drainage channels will be restored. Second, once revegetation and water quality standards have been met pond E-PM will be removed and reclaimed.

Locations for surface and ground water monitoring during mine operation are shown on Figure IV-11, which is on page 363. This map.is certified.

Findings:

The maps, plans and cross sections operation plan is complete and accurate.

INTERIM STABILIZATION

Regulatory Reference: R645-301-331

Analysis:

Section R645-301-331 contains the plan for final revegetation. The revegetation plans in this section might be considered for interim use except that the plan discusses the seeding that will follow shutdown and abandonment. The mining and reclamation plan does not contain an interim stabilization plan except for the Left Fork fan installation.

Section R645-301-515.100 has discussion about interim stabilization, but there is little detail. This section says the Permittee has agreed to interim stabilization of all slopes and embankments within the disturbed area.

R645-301-331 requires a description of the measures taken to stabilize disturbed areas to minimize surface erosion. This description may include all or part of the plan for final revegetation. The interim revegetation plan should contain the same basic components as the plan for final revegetation, such as the species that would be used, seeding methods, and mulching methods. The plan could simply refer to the final revegetation plan and specify a seed mixture that would be used.

As discussed under "Vegetation Information," it appears that a seed mixture containing a combination of introduced and native grasses has been used for interim stabilization in the past. This

sort of a combination would be acceptable, but it would be more desirable to use native species so introduced species would not be carried over into final reclamation from topsoil piles and other areas.

Findings:

This portion of the mining and reclamation plan will be complete and accurate when the Permittee includes a plan for interim stabilization of disturbed areas.

TOPSOIL AND SUBSOIL

Regulatory Reference: UCA R645-301-230 and 250 (30 CFR Sec. 817.22)

Analysis:

Information on the removal and storage of topsoil and subsoil can be found in Section R645-301-230 on Page 41 and Section R645-301-212 on Page 37 of the mining and reclamation plan. Topsoil has been removed from 32.34 acres, part of which was poorly developed soils. Soil was removed by dozer and front end loaders, then stored in nearby location. The location are show on Plate 6. The soil surveys, represented by plans and profiles are found in Volume II, Plates 36 and 37.

Findings:

The topsoil and subsoil operational plan is found to be complete and accurate.

ROAD SYSTEMS

Regulatory Reference: UCA R645-301-527, 534, 732.400, 742.400, and 752.200 (30 CFR Sec. 784.24, 817.150, 817.151)

Analysis:

All roads within the permit area have been classified as either primary or ancillary roads. Roads on the site are of two typical designs. Either they are single lane roads 12' to 15' wide or double lane roads 26' wide. A list of roads and their classification is listed in the mining and reclamation plan.

Although all roads on site are not used for coal hauling, each primary road is constructed to the respective typical design and dimensions shown on Plate 35. The conveyors are 42 inches wide. No rail system exists in the permit area.

The Permittee is required to present a commitment in the mining and reclamation plan that if a road is damaged by a catastrophic event that the road will be repaired as soon as practical. Such a commitment is lacking from the mining and reclamation plan.

The Permittee stated that R645-301-527.250, Geotechnical Analysis, is N/A but did not state why. This rule needs to be addressed.

Primary roads will be located, in so far as practical, on the most stable available surfaces. The roads are surface with rock, gravel or asphalt. They will be routinely maintained, and have culverts which are designed and installed as necessary.

The Permittee commits to repair roads damaged by a catastrophic event according to R645-301-527.240. According to R645-301-534.100 the Permittee has located, designed, constructed, used and maintained primary roads so as to prevent or control damage to private and public property. The Permittee has used non-acid or non-toxic forming materials in road surfacing. Roads have, at a minimum, a static safety factor of 1.3 on embankments. The Permittee has a schedule and a plan to remove roads that will not be retained as part of the approved post mining land use. The Permittee has complied with the requirement of R645-301-534.100 to R645-301-534.150.

With regard to alternative specifications for steep cut slopes the Permittee refers to Section R645-301-532.200. That section does not address what slopes require alternate specifications or are steep cut slopes.

The Permittee has not identified what slopes with stable and revegetated fill would be exempt from the regrading requirements to meet approximate original contours. There is no information in Section R645-301-532.200 on stability and other requirements. There is not enough information in this section to determine if the Permittee is in compliance with the regulations.

The Permittee has failed to address the reclamation procedures for roads.

Findings:

The Road System information within the mining and reclamation plan is complete and accurate except for the following deficiencies:

1) There are no designs for the ancillary roads or conveyor belts.

2) The Permittee failed to state in the mining and reclamation plan his commitment to repair any road damaged by a catastrophic event as soon as possible.

3) The Permittee failed to address the geotechnical analysis are required by R645-301-527.250.

4) The Permittee did not address steep slope cuts or reclamation of the roads.

SPOIL AND WASTE MATERIALS

Regulatory Reference: UCA R645-301-528, 535, 536, 735, 645, and 754 (30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 917.73, 817,74, 817.81, 817.83, 817.84, 817.87, 817.89)

Analysis:

As raw coal is hauled from the permit area, there will be no processing waste and no return of processing waste to underground workings. If, in the future, it is decided that a processing facility is to be incorporated, waste or reject would be taken to an approved refuse disposal site. Please note that underground development waste rock generated by the Centennial Seam rock tunnels was disposed of underground in the existing Pinnacle Mine workings.

Underground development waste from the rock tunnels constructed to the Centennial coal seam was stored underground. The Permittee needs to reference the MSHA and Division approval to store development waste in abandoned mine workings.

The Permittee often defines sediment pond clean-out material as coal mine waste. If coal mine waste exists on the site then a plan for extinguishing a coal mine waste fires approved by the Division and MSHA.

With the exception of R645-301-514.220 the Permittee states that Section R645-301-514.100 to R645-301-514.220 are not applicable. The Permittee states R645-301-514.220 will be observed by limiting construction of the left fork break-out and fan to the off nesting period for golden eagles.

R645-301-514.100 refers to inspection of excess spoil pile, while R645-301-514.200 deals with refuse piles. Sediment pond clean out material is classified by the Division as spoil.

The statement about construction of the left fork break-out and fan pad, to be constructed only when golden eagles are not nesting, is confusing. The critical period in R645-301-514.220 refers to foundation preparation and the installation of drainage systems. Since the break-out and fan pad have not been approved reference to them is confusing and should be removed.

Section R645-301-528.330 to R634-301-528.332 deal with noncoal mine was. However the information is presented in Section R645-301-528.300. Noncoal waste consists of lubricants, paints, garbage, timber and other waste generated during mining. The location on noncoal waste dumpsters is shown on Plate 6.

The Permittee has met the minimum requirements for describing the disposal of noncoal waste. The information should be presented in this section.

There is no discussion of mine openings in Section R645-301-528.300.

Mine openings consist of portals and drill hole. The Division does not require the portals to be lined or cased. All drill holes will be cased or sealed. The Permittee has met the requirement of R645-301-529.100.

Section R645-301-515.300 deals with disposing waste in underground mine workings not managing inactive mine openings. The Permittee must address the issue.

Section R645-301-515.300 deals with disposing waste in underground mine workings not managing inactive mine openings that will be used for waste disposal. The Permittee must address the issue.

As raw coal is hauled from the permit area, there will be no processing waste and no return of processing waste to underground workings. If, in the future, it is decided that a processing facility is to be incorporated, waste or reject would be taken to an approved refuse disposal site. Please note that underground development waste rock generated by the Centennial Seam rock tunnels was disposed of underground in the existing Pinnacle Mine workings.

The Permittee states that there has bee no excess spoil except for sedimentation pond material. Later the Permittee states that the lump coal is manually processed at the mine site.

The Permittee states that many of the regulations pertaining to spoil piles are N/A but gives no reason.

Spoil is defined as overburden that has been removed during coal mining and reclamation activities. Coal processing waste is not spoil material. Details on handling coal processing waste should no be included in this section. The Permittee refers to lump coal processing on site, but in a telephone conversation he informed the Division that no coal processing occurs at the mine.

All regulations in the R645-301-536 are either referred to in Section R645-301-528.300 or are N/A. Section R645-301-536 states that the only that there has been no development waste or excess spoil to date excepting sediment pond clean-out material. Then the Permittee goes on to describe the coal processing waste from the manually sorted lump coal. The sediment pond clean-out material is described as non-toxic and non-acid forming.

The Permittee address R645-301-536.400 (New and Existing Impoundment Structures Constructed of Coal Mine Waste) by referring to Section R645-301-528.300. There are no impounding structures constructed from coal mine waste at the mine site nor is there any information about impounding structures in Section R645-301-528.300. There are several other examples of the Permittee not addressing the regulations. The Permittee has failed to adequately address this section.

Findings:

Spoil and waste information is complete and accurate except for the following deficiencies:

1) The Permittee has not referenced the approval granted by MSHA and the Division to store mine development waste underground.

2) The Permittee failed to address having plan to extinguish coal mine waste fires.

HYDROLOGIC INFORMATION

Regulatory Reference: UCA R645-301-730, 740, 750 (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)

Analysis:

General

General information on operational hydrology is included in the mining and reclamation plan in section R645-301-510. Section R645-301-730 and 731 refer to section 511.100 which then refer to section 510. This section states that the Permittee is the only surface water user in the immediate area of the mine. Water rights are listed in Appendix L, Tables 1 and 5.

Chapter 7 says that there have been no well transfers, and there are no discharges into the mine. Gravitational discharges from mines workings will be sampled when they occur and portal sealing details are in Figures IV-1 and IV-2. Section R645-301-751 says that all discharges from disturbed areas will be made in compliance with all Utah and federal effluent limitations and with those set in 40 CFR 434.

Groundwater and Surface-Water Monitoring

Groundwater and Surface-water monitoring is found in section R645-301-711.300. The locations of monitoring sites are found on Figure IV-11. There is not underground flow monitored, because the mines are relatively dry. There are no flows greater that 3 gpm. The Permittee commits to prioritize monitoring storm runoff events. Quarterly surface-water samples will be taken and the parameter analyzed can be found on page 342 of the mining and reclamation plan.

The revised plan includes surface and ground water monitoring plans in Section R645-301-711.300 that provide for quarterly monitoring within the permit and adjacent areas. Monitoring results are to be reported to the Division within 45 days of the end of the quarter. Water analysis results will be reported for each site that was accessible and had flow. All disturbed diversions and sediment ponds except for pond E will be removed during reclamation. All monitoring stations will be maintained during reclamation, pond E will be enlarged to become E-PM, and an additional monitoring point will be placed at the entry to sedimentation pond E-PM. Once revegetation and water quality standards are met, pond E will be removed and the area reclaimed. Other than sediment ponds and diversions, no equipment or structures are described that are used for monitoring.

Water from the mine is discharged directly to the surface drainage through UPDES point 002, where it is monitored. There is discharge from this point approximately 50% of the time, but there have been no individual flows within the mine that warrant monitoring. Underground flows of 3 gpm or more that persist for 30 days will be monitored, but monitoring will be discontinued after 60 days if flow decreases below 3 gpm. Most surface drainage from the disturbed area passes through two sedimentation ponds and is discharged through UPDES permitted discharge points 001 and 003, where it is monitored.

Acid- and toxic-forming materials and underground development waste

For Sections R645-301-731.111 and R645-301-731.112 of the revised mining plan the reader is referred to Appendix L. The PHC for the Graves Lease in Appendix L states that it is not anticipated that acid- or toxic-forming materials will be encountered based on analysis of roof and floor materials from the existing mines. No mine waste will originate from the Graves lease area.

R645-301-730 is supposed to discuss prevention of drainage from acid- and toxic-forming materials and underground development waste into surface water and ground water during mine operation by identifying, burying, treating, and storing materials that may adversely affect water quality or be detrimental to vegetation or to public health and safety. Section R645-301-731.300 refers to Section R645-301-711.300 that discusses water monitoring and the hydrologic. In R645-301-731.310 reclamation of the drainage channels, diversions, and sediment ponds and monitoring during reclamation are discussed.

Discharges into an underground mine

Over fifteen acres of disturbed and undisturbed surface area drains into the mines. The Permittee has approval from the State Engineer, Division of Water Rights, to collect the surface runoff from the disturbed area and discharge into the mine. This water is used for dust suppression underground. Water collected is a direct result of precipitation within the disturbed area (Sections R645-301-512.240, page 173 and R645-301-731.510). This information broadly meets the requirements for discussion of quantity and quality of water the diverted, minimizing disturbance to the hydrologic balance on the permit area, off-site impacts, preventing material damage outside the permit area, disturbance to the hydrologic balance. MSHA approval still needs to be discussed.

Gravity discharges from underground mines

Surface entries and accesses to underground workings are located and managed to prevent or control gravity discharge of water from the mine. Water drains into rather than out of several of the portals with the current surface configuration. If discharge occurs from the portals after they have been sealed, the water will be sampled quarterly and treated if necessary to meet effluent standards during the liability period.

Water-quality standards and effluent limitations: Performance Standards

The revised plan contains a commitment in Section R645-301-751 that discharges of water from areas disturbed by underground mining activities shall be made in compliance with all applicable State and Federal water quality laws and regulations and with the effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR Part 434.

Sediment Ponds and Diversion Designs

Sediment pond and diversion designs are found in section R645-301-512.240. Diversion information begins on page 161 of the mining and reclamation plan and Plate 8 shows the locations of the ditches. Disturbed diversions DD-1 and DD-8 through DD-11 are designed to carry the 2-year, 6-

hour storm event, while the remaining diversions are designed for the 10-year, 24-hour storm runoff event. The 2-year, 6-hour event was used for area that qualified as miscellaneous flows. Peak flows were calculated using the SCS TR55 flow model.

Sediment pond design information begins on page 133 of the mining and reclamation plan. The designs for two sediment ponds (Ponds C and E) and a settling basin (Basin B) are found on Plates 11, 12, and 13. Pond E is designed to hold the 10-year, 24-hour storm runoff while Pond C is designed for both the 10-year, 24-hour and the 100-year, 6-hour storm volumes. Settling Basin B is a secondary sediment control measure rather that a primary pond. Spillway designs for ponds C and E begin on page 148 of the mining and reclamation plan. Pond E has a open notch spillway and a culverted spillway. The two are designed to convey the 25-year, 6-hour and 10-year, 24-hour storms peaks, respectively. Pond C has only a 36 inch pipe spillway which will discharge the 100-year, 6-hour event. A decant plan is located in this section of the mining and reclamation plan and Pond C is exempt from the need to have an open spillway. This section of the mining and reclamation plan includes engineers' certifications for pond and spillway designs.

Findings:

The required hydrologic information on operational plan in the revised plan is complete and accurate except for the following deficiencies:

1) MSHA approval for discharges into the mine needs to be discussed in Section R645-301-731.510.

SIGNS AND MARKERS

Regulatory Reference: UCA R645-301-521.200 (30 CFR Sec. 817.11)

Analysis:

Information on placement of signs and markers is found in Section R645-301-521.200 on page 235 of the mining and reclamation plan. There will be signs placed at access points to the mine containing the companies name, business address, telephone number, and identification number. Blasting signs will be placed in conspicuous locations when blasting is in use. No stream buffer zone signs are required, but all disturbed areas are marked.

Findings:

The requirements of the operation signs and markers section are complete and accurate.

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13-784.26

Analysis:

Measures to be employed to ensure that all debris, acid-forming and toxic-forming materials, and materials constituting a fire hazard are disposed of accordingly and a description of the contingency plans which have been developed to preclude sustained combustion of such materials are described in Section 528.350.

Section R645-301-631 refers to Section R645-301-551, which contains the description of methods to be used to plug, case, cap, seal, or otherwise manage exploration bore holes and wells. From Section R645-301-551, Section R645-301-529.100 is referenced for information on the permanent casing, sealing, backfilling, or other proper management of shafts, drifts, adits, and tunnels.

Findings:

The information in the reclamation plan on disposal of debris, acid-forming and toxic-forming materials, and materials constituting a fire hazard; and on plugging, casing, capping, sealing, backfilling, or other proper management of exploration bore holes, wells, shafts, drifts, adits, and tunnels is complete and accurate.

POSTMINING LAND USES

Regulatory Reference: UCA R645-301-412, 413 (30 CFR Sec. 784.15, 784.200, 785.16, 817.133)

Analysis:

The plan proposes no changes to the postmining land use compared to the use that existed prior to any mining. After reclamation, the land will be used for grazing, wildlife, and recreation.

Land owner and manager comments are in Appendix R. None of the land owners or managers expressed concern about the postmining land use.

Findings:

This portion of the plan is complete and accurate.

PROTECTION OF FISH, WILDLIFE, AND RELATED TOPSOIL AND SUBSOIL

Regulatory Reference: UCA R645-301-240 and 250 (30 CFR Sec. 817.22)

Analysis:

Topsoil redistribution is discussed as part of Sections R645-301-240 through R645-301-244.320, on pages 45 to 58. This section also contains general reclamation information such as time tables, bonding information and mass balance information. Topsoil specific information is found in Sections R645-301-241 through R645-301-244.320.

Job 6, on page 47, of the Phase I time table is the redistribution of topsoil where it says that topsoil will be spread over 33.5 acres, previously disturbed. Section R645-301-242 on page 57 says that topsoil will be redistributed over 34.2 acres to a depth of 6 inches. Topsoil will be redistributed uniformly and consistent over the contours and unnecessary compaction will be avoided. Mulch will protect the soil from wind and water erosion. Soil may be protected by excelsior matting on steep slopes and a sediment pond will be maintained to avoid degradation of water quality. Revegetation practices are included in Section R645-301-331.

Findings:

The topsoil redistribution plan is complete and accurate except for the following deficiencies:

1) Information between Page 49 and 50 has been deleted in error and must be replaced to show the complete topsoil redistribution plan.

GEOLOGIC PERFORMANCE STANDARDS

Regulatory Reference: UCA R645-301-640, 641, 642

Analysis:

The reader is referred to R645-301-525, R645-301-611.100, and Appendix E. Casing and sealing of drill holes is discussed in R645-301-551 and R645-301-529.100 but not in R645-301-525, R645-301-611.100, or Appendix E.

Reclamation of monuments and surface markers used as subsidence monitoring points is marked "N/A" under R645-301-642. However, in R645-301-525.170 a commitment is made to remove all subsidence monitoring stations, which consist of cemented rebar.

Finding:

Geologic information for the reclamation plan is complete and accurate except for the following deficiencies:

1) Cross references from R645-301-640 and R645-301-641 to R645-301-525, R645-301-611.100, and Appendix E do not provide the needed information on casing and sealing of exploration holes and boreholes. The needed information is in the plan, but at other locations.

2) The discrepancy between R645-301-525.170 and R645-301-642 over reclamation of monuments and surface markers used as subsidence monitoring points needs to be resolved.

HYDROLOGIC INFORMATION

Regulatory Reference: UCA R645-301-750, 760 (30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57)

Analysis:

Information on hydrologic reclamation can be found throughout the mining and reclamation plan. Information on structure removal is found in sections R645-301-240. This section includes information on the reclamation time table, and reclamation cost and bonding for the proposed reclamation work. The mining and reclamation plan refers to section R645-301-512.250 where the Permittee commits to remove roads that will not be retained as part of the post mining land use. The regrading plan is located in R645-301-532.200, and removal of siltation structures is in R645-301-512.240. All water wells are sealed with cement and cased.

Findings:

The hydrologic reclamation information is complete and accurate.

REVEGETATION

Regulatory Reference: UCA R645-301-341, 352 through 357 (30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116)

Analysis:

Revegetation Methods

Revegetation methodologies are in section R645-301-331. According to the mining and reclamation plan, seeding of native flora will commence as soon as practical following shutdown and abandonment to stabilize erosion. Planting will be done in the first normal season following structure removal and regrading. The normal seeding time is between October 1 and snowfall. Shrubs are normally planted in the spring after the ground has thawed while there is still adequate moisture. The planting times given in the plan are the normal period for favorable planting conditions in this area and meet regulatory requirements.

Where possible, the soil will be distributed along the contour. Soils will be tested according to the most advanced technology to determine any deficiencies that might affect plant growth. Deficiencies will be corrected by adding chemical fertilizers, organic mulch, or any other substances recommended by the regulatory authority. Preparation techniques, such as disking, will be incorporated. In Section R645-301-535.410, the Permittee commits to mix one ton per acre of alfalfa with topsoil material to aid in aeration, enhance microbiological activity, and increase water holding capacity.

Although traditional disking is not normally recommended as a surface preparation technique for mine reclamation, The Permittee has committed to make every effort to leave surfaces as rough as possible. Surface roughness tends to increase the amount of water available for seed germinating and seedling establishment.

Section R645-301-341.210 includes two seed mixtures and a list of tree transplants. Except for yellow sweet clover, all of the species are native to the area. Yellow sweet clover increases microbial activity in soil and improves vegetation establishment. It meets the requirements of R645-301-353.120.

Shrub clumps will be planted as shown on Plate 20. The areas that will receive shrub transplants total 2.15 acres. The Permittee will plant 1000 containerized plants per acre. The drainage area seed mix will be used around the clumps. The areas will be mulched with straw and fertilized.

The plan needs to indicate which seed mixture is the "drainage area seed mix." If the Permittee desires, it would be possible to simplify the revegetation plan and use just one diverse seed mixture.

Seed will be spread using a rangeland drill where possible. A footnote to one of the seed mixes says big sage, Louisiana sage, rabbitbrush, and bluegrass will broadcast behind the drill wherever possible. Areas that cannot be seeded mechanically will be hand seeded or broadcast seeded. Steeper slopes will be raked to provide a slight soil cover for the seed. Steep slopes may also be hydroseeded and hydromulched. Where hydromulch cannot be used, straw mulch will be crimped, either mechanically or by hand. The Permittee would plan on using wood fiber mulch on 32.05 acres. It will be used at the rate of one ton per acre wherever seeds are planted. The rest of the area will receive the shrub transplants where straw mulch will be used.

The plan needs to specify how much straw mulch would be used. One and one-half to two tons per acre is recommended. This mulch is not considered the same as the organic material soil amendment discussed in Section R645-301-535.410.

Several studies have shown hydromulch to be less effective in controlling erosion and assisting vegetation establishment compared to straw and some other mulches. Also, straw and similar mulches more effectively add organic material to the soil and improve soil structure. Another permittee's experience is that straw and hay are less expensive than wood fiber hydromulch. Although straw or a similar mulch is recommended over hydromulch, revegetation is feasible using the techniques in the mining and reclamation plan.

Irrigation is included in the plan as a contingency if revegetation of the transplants is unsuccessful. Vegetation will be protected from both wildlife and livestock using drift fences until the reclaimed areas have been adequately reestablished. Pesticides and herbicides will be used as necessary, but use of persistent pesticides would need to be approved.

The management practices section of the plan is acceptable. The Permittee should be aware that, under current (September 1995) regulations, drift fences, pesticides, and irrigation would prolong the period of responsibility for revegetation success and bond liability. The Division has proposed changes to the section of the rules dealing with accepted husbandry practices, but the rules have not been approved.

Success Standards

Revegetation monitoring parameters to be measured are growth rate, plant density, and percent cover. Monitoring will take place during years 1, 2, 4, 5, 8, 9, and 10. Section R645-301-240 says woody plants will be quantitatively monitored in years 4 and 8. Estimates of cover, wood density, productivity, and composition, both on reclaimed areas and on reference areas, will be done in years 9, and 10. Parameters sampled on reclaimed areas will meet or exceed 90% of the reference area standard with 90% confidence. The Permittee will use approved sampling methods.

Reference areas to be used to demonstrate revegetation success are shown on Plate 9. Reference area R-1 will be used in conjunction with the seed mixture for drainage areas. Areas R-3 and R-4 will be used in conjunction with the seed mixture for slopes and will also be used in conjunction with drainage areas to establish the success of Gambel oak. Although the plan also does not specify which areas would be compared to reference areas R-3 and R-4, it is assumed that east-facing slopes would be compared with R-4 and west-facing slopes would be compared with reference area R-3.

R645-301-356.231 requires the Division to consult with and obtain approval from the Division of Wildlife Resources for woody plant density standards. These standards were developed based on premining conditions and the anticipated postmining landscape. Stream bottom areas and east-facing slopes will have a standard of 2000 woody plants per acre, and west-facing slopes will have a standard of 1500 woody plants per acre. These standards have been included in Section R645-301-240 of the mining and reclamation plan.

Section R645-301-353 of the plan contains commitments to achieve the revegetation general requirements stated in this regulation. With the exceptions of woody plant density, vegetative cover, and production, these commitments do not give the information required in this regulation and R645-301-341.250. The reestablished vegetation must be in accordance with the approved permit and mining and reclamation plan. The mining and reclamation plan does not show what standards will be used to measure such items as diversity, erosion control, seasonality, and utility for the postmining land use.

To establish these standards, a comparison to the reference areas or to Soil Conservation Service range sites is preferred, but the Permittee could also use baseline information or another

technical standard. The Permittee is referred to the Permittee's Smoky Hollow mining and reclamation plan application for examples of acceptable standards.

Field Trials

In 1983, the Permittee planted several shrub species which are part of the approved transplant mixture on topsoil pile F. These plantings were not performed under the direction of the Division and were merely for the Permittee's reference. The plan commits to try a new test plot with the approved transplant mixture in 1992 in the same area. The area would be monitored for periodically for ten years.

The Permittee was not able to plant the shrubs on the topsoil pile until 1994. The transplants were examined in the late summer of 1994, and they all appeared to be dead. Since topsoil pile F already has well-established vegetation, it is recommended that the Permittee use the topsoil pile created for the fan portal in the Left Fork of Deadman Canyon for the test plot. The pile should be left in a roughened condition and seeded with the drainage area seed mixture in the fall. It is recommended that the Permittee mulch with one and one-half to two tons per acre of straw or hay and crimp it in with a trackhoe or similar equipment to leave a very rough surface. The following spring, the Permittee should plant shrubs from the list shown on page 74. Future monitoring could follow the schedule in the plan for the test plot on topsoil pile F.

Wildlife

The section of the plan covering R645-301-342 refers to Appendix A. This appendix contains two recommendations from Wildlife Resources concerning reclamation habitat enhancement. It says that greater vegetation diversity benefits reptiles and amphibians. It also recommends that reclamation meet all the life requirements for target species. Animals need water, thermal cover, escape and hiding cover, loafing areas, and travel ways between the different types of vegetation.

The revegetation plan was designed to meet wildlife requisites for forage, migration, diversity, and cover. It meets the requirements of R645-301-342.200.

R645-301-342 and R645-301-358 require the Permittee to enhance wildlife habitat using the best technology currently available. Where the plan does not include enhancement measures, a statement will be given explaining why enhancement is not practicable. Revegetation to approximate premining conditions is required under all but alternate postmining land use circumstances, and the species are required to have forage value for wildlife. Therefore, unless the site was in a degraded condition prior to mining, returning the area to premining conditions does not constitute "enhancement."

Some areas within the disturbed area were previously disturbed by mining, and the vegetation may have been in a degraded condition. However, the plan does not demonstrate this, and most of the area appears to have been in reasonably good condition for wildlife habitat before the Permittee's mining operations began.

Water may be a limiting factor for wildlife in this area, and a water development might enhance the habitat value. The Permittee might also be able to modify existing utility poles to make bird perches or cavity nesting sites. However, these suggestions may not be useful. The Permittee should consult with Wildlife Resources to see what factors are limiting in the area of their disturbance and to see how they might be able to enhance wildlife habitat. If habitat enhancement is not practicable, the plan needs to include a statement explaining why.

Findings:

The revegetation section of the mining and reclamation plan will be complete and accurate when the Permittee makes the following changes to its mining and reclamation plan:

1. The plan needs to specify how much straw mulch would be used. One and one-half to two tons per acre is recommended.

2. The plan needs to show which seed mixture is for drainage areas.

3. The plan needs to include success standards for the revegetation general requirements in R645-301-353, including erosion control, diversity, utility for the postmining land use, and seasonality.

4. The Permittee needs to include the best technology currently available to enhance wildlife habitat during the reclamation phase of its operation. If enhancement is not practicable, the plan needs to include a statement explaining why.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: R645-301-800 (30 CFR Sec. 800)

Analysis:

The current reclamation bond is for $699,000 and cover the 34.2 acres in the disturbed area. The bond calculations were done in 1991 and have been adjusted for inflation. The Division did not have time to thoroughly review the bond calculation during the midterm review. A complete bond review will be performed in the future. At that time the Division may require a bond adjustment. At this time the Division has no reason to believe that the mines in the Centennial Project are no adequately bonded.

The Permittee is insured by the Federal Insurance Company. Currently the policy limits are:

General Aggregate	$2,000,000
Products-Comp/Op. Agg.	$2,000,000
Personal & Adv. Injury	$1,000,000
Each Occurrence	$1,000,000
Fire Damage (any one fire)	$100,000

Medical Expense (any one person) $10,000

The policy contains a rider requiring the insurer to notify the Division whenever substantive changes are made in the policy including termination or failure to renew. The policy meets or exceeds all regulatory requirements.

Findings:

The Permittee has adequate insurance and reclamation bond for the Centennial Project. The insurance policy meets or exceeds all regulatory requirements. The reclamation bond amount has been calculated by the Division and adjusted for inflation. Based on the Division current reclamation cost estimate the bond amount is adequate.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: UCA R645-301-729 (30 CFR Sec. 784.14, UCA R645-301-729)

Analysis:

A CHIA was prepared December 4, 1990 and a brief update made on April 20, 1993. The probable cumulative impacts of all anticipated coal mining and reclamation operations on the hydrologic balance in the cumulative impact area has been assessed and it has been determined that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the proposed permit area.

Finding:

The Division has determined that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the proposed permit area.

REQUIREMENTS

PERMIT APPLICATION:

The Identification of Interests, Violation Information, and Right of Entry Information portions of the mining and reclamation plan are complete and accurate with the following exceptions:

1) The plan needs to show any companies that own or control Andalex Resources, Inc., or Andalex Resources, B. V., together with these companies' employer identification numbers and their officers and directors.

2) Land ownership information in the text of the plan needs to agree with what is show on the maps. The plan needs to contain the names and addresses of all entities owning land within and contiguous to the permit area. Those entities owning subsurface and surface land within and contiguous to the permit area should be clearly shown in the text.

3) Acreage figures shown in various parts of the plan need to correspond.

4) There are statements in the plan and on Plate 3 that lease UTU-69600 is for the Centennial Seam only. These need to be corrected.

The Unsuitability Claims information of the mining and reclamation plan is complete and accurate with the following exception:

1) The text of the plan should reference the letter from Carbon County in Appendix B giving approval for mining and reclamation activities within 100 feet of County Road 299.

The Permit Term, Insurance, Proof of Publication, Facilities or Structures Used in Common, Clear and Concise, Notarized Signature, Previously Mined Areas information in the mining and reclamation plan is complete and accurate with the following exceptions:

1) The plan needs to contain the notarized statement of a responsible official of the permittee that the information in the plan is complete and accurate to the best of the official's information and belief.

2) Indications that there were no coal mining and reclamation disturbances prior to 1978 need to be removed. The plan needs to show which areas were disturbed prior to August 3, 1977, after August 3, 1977, and prior to May 3, 1978.

RESOURCE INFORMATION:

Based on the findings, the Geologic Resource information will be complete and accurate when the Permittee makes the following changes:

1) The lithologic log for DH-1 is not in Appendix E, contrary to the statement on page 340. A letter from Andalex (June 15, 1995) concerning previous deficiencies indicated this log was being added to Appendix L, but the log was not included with the submitted information.

OPERATIONAL PLAN:

Based on the findings, the Permittee must make the following changes to the Coal Recovery information.

1) The Permittee must show how that maximum coal recovery will occur to meet the requirements of Coal Recovery information. One way to do that is enclose a copy of the R2P2 in the mining and reclamation plan.

Based on the findings, the Permittee needs to make the following changes to the Subsidence Control plan:

1) The Permittee must expand the mitigation clause to include to repair or replace damage all renewable resources not just water.

The following changes are needed to make the Slide and Other Damage information in compliance with the Utah Coal Rules:

1) The Permittee must describe the procedure for reporting a slide.

Based on the findings, the Permittee must make the following change to the Interim Stabilization information:

1) The Permittee must to include in the mining and reclamation plan a plan for Interim Stabilization of disturbed areas.

Based on the findings, the follow information is require to make the mining and reclamation plan in compliance with the Road Systems information:

1) The Permittee must supply information on how road maintenance will be performed.

2) The Permittee must supply designs for ancillary roads.

3) The Permittee must commit to performing road repairs when catastrophic damage occurs.

4) The Permittee must address the geotechnical analysis required by R645-301-527.250.

5) The Permittee must address steep slope cuts and reclamation of roads.

Based on the findings, the following changes are needed to make the Spoil and Waste information complete and accurate:

1) The Permittee must reference the approval granted by MSHA and the Division to store mine development waste underground.

2) The Permittee must address their plan to extinguish coal mine waste fires.

3) The Permittee must remove the reference to processing lump coal by hand at the mine site. This operation does not occur at the mine.

Based on the findings, the Hydrologic Information on operational plan will be complete and accurate when the Permittee makes the following changes:

1) MSHA approval for discharges, or potential discharges, into the mine needs to be discussed in Section R645-301-731.510.

RECLAMATION PLAN:

Based on the findings, Topsoil Redistribution information will be complete and accurate when the Permittee makes the following changes:

1) Information between pages 49 and 50 must be replaced to clarify the topsoil redistribution plan.

Based on the findings, Geologic Information for the reclamation plan will be complete and accurate when the Permittee makes the following changes:

1) The discrepancy between R645-301-525.170 and R645-301-642 over reclamation of monuments and surface markers used as subsidence monitoring points needs to be resolved.

2) Cross references from R645-301-640 and -641 to R645-301-525, R645-301-611.100, and Appendix E do not provide the needed information on casing and sealing of exploration holes and boreholes. The needed information is in the plan, but at other locations such as R645-301-551 and R645-301-529.100.

Based on the findings, the Reclamation Hydrology will be complete and accurate when:

1) The Permittee includes Part F, Section 3 and Sections 3.1-1.1 and 3.1-1.2 in the mining and reclamation plan.

Based on the findings for Revegetation, the Permittee needs to make the following changes to the mining and reclamation plan:

1) The plan needs to specify how much straw mulch would be used. One and one-half to two tons per acre is recommended.

2) The plan needs to show which seed mixture is for drainage areas.

3) The plan needs to include success standards for the revegetation general requirements in R645-301-353, including erosion control, diversity, utility for the postmining land use, and seasonality.

4) The Permittee needs to include the best technology currently available to enhance wildlife habitat during the reclamation phase of its operation. If enhancement is not practicable, the plan needs to include a statement explaining why.

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