T E C H N I C A L M E M O R A N D U M

Utah Coal Regulatory Program

August 29, 2005

TO: Internal File

THRU: Pamela Grubaugh-Littig, Permit Supervisor

THRU: Dana Dean, Co-Lead

FROM: Wayne H. Western, Environmental Scientist III, Co-Lead

RE: Lila Canyon Extension, UtahAmerican Energy, Inc., Horse Canyon Mine, C/007/0013, Task ID #2304

SUMMARY:

UtahAmerican Energy (UEI, the Permittee) proposes to increase the permit area to 5,992.07 acres with the disturbed area will contain 42.6 acres with 25.3 acres of actual disturbance and 17.3 acres of undisturbed islands. The project is in T16S R14E Sections 10, 11, 12, 15, 14, 13, 22, 23, 24, 26, and 25, and in T16S R15E Sections 19 and 30.

UEI proposes to develop new surface facilities near the mouth of Lila Canyon in order to mine coal in six federal leases. The federal leases are contained within the "North Block Logical Mining Unit" as approved by the United States Bureau of Land Management (BLM) January 1, 1994.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

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

GENERAL

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

Analysis:

UEI meet the requirements of this section of the R645 – Rules. Those rules require that UEI include a description of the existing, pre-mining environmental resources within the proposed permit area and adjacent areas that may be affected or impacted by the proposed underground mining activities.

The PAP includes a general description of the existing, pre-mining environmental resources within the proposed permit area and adjacent areas that UEI may affect or impact by underground mining activities. The Division addresses the specific requirements for Environmental Resource Information in other sections of the TA. The three main general areas of concern are:

- The lands subject to surface coal mining operations over the estimated life of those operations and the size, sequence, and timing of the subareas or which it is anticipated that individual permits for mining will be sought.
- The nature of cultural historic and archeological resources listed or eligible for listing on the National Register of Historic Places and known archeological sites within the proposed permit and adjacent areas.
- A description of the existing, premining hydrologic resources within the permit area and adjacent areas.

In Section 521 of the permit and on Plate 1-1 and Plate 1-2, UEI described the lands subject to coal mining and reclamation. The Horse Canyon Mine is in the Book Cliffs coalfield in Emery County near East Carbon and Sunnyside, Utah on the western slope of the Tavaputs Plateau. The 7.5 Minute Quadrangle maps that cover the permit area are Cedar and Lila Point, produced by the Geological Survey of the U.S. Department of the Interior. The Lila Canyon Project facilities site is five miles east of State Highway 6.

The existing Mining and Reclamation Plan (MRP) for Horse Canyon is referred to as Part A and the application for Lila Canyon Extension is referred to as Part B. The permit area for Horse Canyon Part A contains 1,327.75 acres and the proposed permit area for Lila Canyon Extension Part B consists of 4,664.32 acres. The combination of Horse Canyon Part A and Lila Canyon Extension Part B would bring the total new permit area to 5,992.07 acres.

UEI discussed the cultural and historical resources in Section 411.140 of the PAP. UEI gave the Division enough information to analysis those resources. The Division's detailed analysis of those resources is in the Historic and Archeological Resource Information section of Environmental Resource Information section of the TA.

UEI gave a general description of the existing hydrologic resources in Section 720 of the PAP. The information contained in Section 720 is adequate for the Division to evaluate the existing hydrological resources. In the Hydrologic Resource Information section of the Environmental Resource section of the TA, the Division discusses the premining hydrologic resources in detail.

Findings:

Information provided in the application meets the minimum General Environmental Resource Information requirements of the Regulations.

PERMIT AREA

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

Analysis:

UEI met the minimum requirements for this section of the R645 – Rules. Those rules require that UEI describe and identify the lands subject to surface coal mining operations over the estimated life of those operations and the size, sequence, and timing of the subareas for which it is anticipated that individual permits for mining will be sought.

The permit area is divided in two parts: the Horse Canyon Mine (Part A) and the Lila Canyon Extension (Part B). Total acreage for the two parts is 5,992.07 acres. The permit area for Part A, is 1,327.75 acres and the area for Part B, is 4,664.32 acres. UEI shows the permit boundary on several maps including Plate 1-1, Permit Area Map.

Table 1-1 shows federal coal leases encompass 5,544.01 acres. The permit area (5,992 acres) is not the same as the federal lease boundaries. Table 4-2 breaks out the acreage of

private, state and federal ownership within Parts A and B of the permit area. Table 4-2A breaks out the private, state and federal acres of coal ownership within Parts A and B of the permit area.

Plate 5-5, Mine Map, shows mining of reserves from 2005 to 2019, a 14-year life-of-mine. Table 3-3 shows that reclamation will begin in 2020.

The surface facilities for MRP- Part B Lila Canyon will be located in SE¼SW ¼, Sec 15, T.16 S., R.14 E. The area is located upon an alluvial/colluvial bench at an elevation of 5,800 to 6,500 ft., where the two forks of Lila Canyon converge. The perimeter of the disturbed area contains approximately 42.6 acres. The actual disturbance for construction of pads, silos, coal processing structures, and parking will take approximately 25.3 acres, leaving 17.3 acres of undisturbed islands within the disturbed area. UEI illustrates the disturbed area boundary on several maps including Plate 1-2, Disturbed Area Map.

Findings:

The information in this section of the PAP is adequate to meet the requirements of this section of the R645 –Rules.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

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

Analysis:

Affected Area Boundary Maps

UEI met the minimum requirements of this section of the R645 – Rules. Those rules require that UEI include a map that shows the boundaries of all areas proposed to be affected over the estimated total life of the underground mining activities, with a description of size, sequence, and timing of the mining of subareas for which it is anticipated that additional permits will be sought. The affected area boundaries are shown on several maps including Map 1-1, Permit Area Map.

Existing Structures and Facilities Maps

UEI met the requirements for this section of the R645 – Rules. Those rules require that the UEI show the location and dimensions of existing areas of spoil, waste, coal development waste, and noncoal waste disposal, dams, embankments, other impoundments, and water treatment and air pollution control facilities within the proposed permit area.

Existing structure means a structure or facility used in connection with or to facilitate coal mining and reclamation operations for which construction began before January 21, 1981. UEI met the requirement for showing the existing structures and facilities by showing:

- The location of all buildings in and within 1000 feet of the proposed permit area. No such structures exist within the Lila Canyon area.

- The location of surface and subsurface man-made features within, passing through, or passing over the proposed permit area. The only man-made features within the Lila Canyon area are a 60" culvert, and 48" culvert and Little Park road. The culverts are located in or near the disturbed area. See Plate 5-1A, Pre Mining Contours. The existing roads, powerlines and railroads in and around the Lila Canyon area are shown on Plate 5-1

- The location and size of existing areas of spoil, waste, coal development waste, and noncoal waste disposal, dams, embankments, other impoundments, and water treatment and air pollution control facilities within the proposed permit area. No such structures exist.

- The location of each sedimentation pond, permanent water impoundment, coal processing waste bank and coal processing waste dam and embankment. No such structures exist.

Existing Surface Configuration Maps

UEI met the minimum requirements for supplying the Division with existing surface topographic maps and cross sections. Those requirements are that UEI show sufficient slope measurements to adequately represent the existing land surface configuration of the area affected by surface operations and facilities, measured and recorded according to the following: each measurement shall consist of an angle of inclination along the prevailing slope extending 100 linear feet above and below or beyond the coal outcrop or the area to be disturbed or, where this is impractical, at locations specified by the Division; where the area has been previously mined, the measurements shall extend at least 100 feet beyond the limits of mining disturbances, or any other distance determined by the Division to be representative of the premining configuration of the land; and, slope measurements shall 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. Plate 5-1A shows the existing surface configuration for the Lila Canyon disturbed area. The map is at a scale of 1-inch equals 100 feet and the contour lines are on 5-foot intervals. The contour lines extend more than 100 feet beyond the disturbed area boundaries.

UEI gave the Division a series of cross sections and profiles that show the pre-disturbed topography at the Lila Canyon Mine site. The series consists of Plate5-7-A-1 through 5-7-A-4,

Plate 5-7-B-1 through 5-7-B-3 and Plate 5-7C. Those cross-sections and profiles show 5-foot evaluation intervals.

Plate 5-3, Subsidence Control Map, shows the existing topography of the Lila Canyon Extension area. The contour lines appear to be taken off a USGS topographic map. The Division considers the contours on Plate 5-3 adequate to show the pre-mining topography in the Lila Canyon Extension.

Mine Workings Maps

UEI met the minimum requirements for showing previously mined areas in and around the proposed permit boundaries at the Horse Canyon Mine. Those requirements are that UEI show the location and extent of know workings of active, inactive, or abandoned underground mines, including mine openings to the surface within the proposed permit and adjacent areas. Location and extent of existing or previously surface-mined areas within the proposed permit area.

Plate 5-1, Previously Mined Areas, shows the location of the known mine workings in the Horse Canyon permit area. The old mine workings include the Horse Canyon project and the old Book Cliffs Mine. UEI shows the approximate dates when each of the subareas of the Horse Canyon Mine and adjacent areas were worked. The area had mining activities from the 1940s to the 1980s

In section 521.111 UEI gives a narrative of mining activity that occurred in the area. The Book Cliff Mine engulfed many small mines. The exact locations of the small mines are not known so UEI showed previously mined area associated with the Book Cliff Mine. So the exact location of each prospect was not shown

On Plate 5-1, UEI shows the location of exploration entries in permit area "B," Lila Canyon. Those exploration entries are most likely a breakout for the Geneva Mine. A fan was located at the breakout to assist in ventilation.

Jay Marshall, who is a registered professional engineer in the State of Utah, certified Plate 5-1.

See Plate II-2 in the Horse Canyon section of the mine plan for a detailed mine map of the Horse Canyon project. The exploration entries are shown on Plate II-2.

Permit Area Boundary Maps

UEI met the minimum requirements for this section of the R645 – Rules. Those rules require that the UEI show the boundaries of land within the proposed permit area upon which the applicant has the legal right to enter and begin underground mining activities.

Plate 1-1, Permit Area Map shows the permit boundaries as Permit Area A- the Horse Canyon project, and Permit Area B- the Lila Canyon Extension.

On Plate 1-2 UEI shows the disturbed area boundaries. The plate also has UTM coordinates to help the Division locate the disturbed area in relationship to the permit boundaries.

Surface and Subsurface Manmade Features Maps

UEI met the minimum requirements of this section of the R645 – Rules. Those rules require that UEI show the location of all buildings in and within 1,000 feet of the proposed permit area, with identification of the current use of the buildings. The location of surface and subsurface manmade features within, passing through, or passing over the proposed permit area, including, but not limited to, major electric transmission lines, pipelines, and agricultural drainage tile fields. Each public road located in or within 100 feet of the proposed permit area.

UEI meet the requirement as follows:

- The locations of all buildings in and within 1,000 feet of the proposed permit area, with identification of the current use of the buildings. There are no such buildings.

- The location of surface and subsurface manmade features within, passing through, or passing over the proposed permit area, including, but not limited to, major electric transmission lines, pipelines, and agricultural drainage tile fields. Those features are shown on Plate 5-1 and Plate 5-1A.

- Each public road located in or within 100 feet of the permit area. Those features are shown on Plate 5-1 and Plate 5-1A.

Contour Maps

UEI met the minimum requirements for this section of the R645 –Rules. UEI is required to show UEI submitted several plates showing the contour of the land on and adjacent to the proposed permit area.

Plate 5-1A shows the pre-mining contours for the disturbed area. Several maps, including Plate 5-3 show contours for the entire Lila Canyon area. The contours for Plate 5-3 are

based on contours from USGS topographic maps and accurately represent the pre-mining contours for the Lila Canyon Extension.

A qualified, registered, professional engineer prepared, or directed the preparation of, Plates 5-1A and 5-3 and certified them.

Findings:

The information in this section of the PAP is adequate to meet the requirements of this section of the Regulations.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

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

Analysis:

The objectives of this section is to ensure that the Division is provided with comprehensive and reliable information on proposed underground mining activities, and to ensure that those activities are allowed to be conducted only in compliance with the regulatory program.

UEI chose to develop the new mine facilities at the Lila Canyon site rather than use the existing facilities at the Horse Canyon site for the following reasons:

- Development of the Horse Canyon site would entail disturbance of reclaimed ground.

  UEI partially reclaimed the Horse Canyon mine site and received Phase II bond release (Section 528.110). Division records indicate that UEI did the reclamation in 1990 and 1991, with Phase I bond release granted on February 5, 1997. The Division sent a decision document for Phase II bond release of 51.56 acres to the Office of Surface Mining for their concurrence on October 19, 1999. UEI still has 22.7 acres to reclaim for a total of 74.26 acres within the permit area. On November 10, 1999, the Division granted Phase II bond release on the condition that UEI remove a sediment pond and culvert. The Division granted final approval of the Phase II bond release on September 6, 2002. Within the 22.7 acres, several buildings at the site remain standing and negotiations are underway for post-mining use of the buildings by a second party. At

Phase II bond release, all the backfilling, grading, topsoil placement, drainage controls and vegetation have been completed. The only remaining items are that the site meets the vegetation success standards and complies with the general performance standards.

- The existing Horse Canyon facilities are not suitable for a large-scale longwall operation.

  The Horse Canyon Mine was not originally designed to produce 4,500,000 tons of coal per year (Section 520). The Division was not able to obtain complete annual production figures for the Horse Canyon Mine, but in 1969, the mine produced 843,362 tons of coal. The information on Plate 5-1 suggests that coal production between 1970 and 1980 was on a similar scale.

- The Horse Canyon Mine workings are not in operational condition.

  Some of the main pillars were pulled during retreat mining and other areas are underwater. While reopening portals and shoring up old mine workings may be an option, such an alternative would be expensive. In addition, the travel time from the Horse Canyon portals to the Lila Canyon Expansion area would result in long travel times for both miners and equipment.

The Division does not have the resources to independently verify that using the Horse Canyon facilities would be uneconomical nor has UEI given the Division detailed economic data to support the claim. UEI has offered some good reasons why they should develop the Lila Canyon facility. The Division does not have a compelling reason to deny the development of Lila Canyon facility.

The average gradient of the Lila Canyon Extension site is 10%. The gentle slope of the area reduces many of the problems of reclaiming mine sites developed in steep canyon areas.

Access to the lower Sunnyside seam at this location requires tunneling from the base of the cliffs upwards at 12% through a sandstone rock-slope for a distance of approximately 1,200 feet. UEI refers to these inclined portals as rock-slopes in the PAP. They will drive the ventilation portal from the underground workings to the surface. See Plate 5-2 for the locations.

While UEI could construct a road to the outcrop, reclamation of the road to the standards in the R645 rules would be difficult if not impossible. Development of the rock slope tunnels increases UEI's ability to reclaim the site.

UEI will use the rock material from the two access tunnels and the portal face-up areas to create a pad for surface facilities. UEI will construct other cut/fill pads from subsoils. The amount of bank rock material that UEI will remove to construct the rock slopes is 16,650 bank

cubic yards. UEI assumes a swell factor of 1.5; therefore, the loose cubic yards of material would be 25,000 cubic yards. See Appendix 5-7 for information about the volume calculations.

The material from the rock slopes is by definition underground development waste and coal mine development waste. Coal mine waste is defined as coal processing waste and underground development waste. R645-301-536 requires that all coal mine waste be placed within approved portions of the permit area. UEI will place the material from the rock slopes in a refuse pile.

Because the material from the rock slope will not contain coal, or material that is combustible or acid or toxic forming, the Division will allow UEI to use that material as structural fill. Fill for other areas of the disturbed area will come from subsoils.

UEI will initially conduct mining by room-and-pillar methods in the Lower Sunnyside Coal Seam. They estimate production in the first year to be 200,000 tons, increasing to 1,000,000 to 1,500,000 tons per year in the second through the fifth year. If demand increases, UEI will install longwall equipment and production could peak at 4,500,000 tons per year.

In the PAP, UEI proposed to construct mine access portals, a ventilation portal, an elevated conveyor, a coal storage pile and reclaim system, a crusher, a truck loop and truck loadout, a warehouse and storage yard, an office, parking and bathhouse facilities, a substation, water storage and water treatment facilities (leach field), a topsoil storage pile and a sediment pond.

To support the new center of activity at Lila Canyon, Emery County will upgrade the existing County Road #126 from State Highway 6 to a corral and from this point will upgrade unimproved roadway RS 2477 from the corral to the Lila Canyon Extension surface facilities (Appendix 1-4).

Findings:

The information in this section of the PAP is adequate to meet the requirements of this section of the Regulations.

EXISTING STRUCTURES:

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

Analysis:

An existing structure means a structure or facility used in connection with, or to facilitate, coal mining and reclamation operations, for which construction began before January 21, 1981. A structure constructed before January 21, 1981 does not have to meet the design criteria of structures constructed after that date. However, existing structures do have to meet the performance standards. Note: in the Environmental Section of this TA, existing structures in the Lila Canyon Extension refers to structures that exist before the Division issues a permit.

In Section 526.110 of the PAP, UEI describes three existing structures, which are:

- A 60" CMP culvert. The 60"" culvert is poor shape and located mostly outside of the permit area. The culvert will be replaced by the County. URI will tie into the culvert with the sediment pond overflow pipes.

- A 48" CMP culvert. The 48" culvert is in poor shape and located mostly outside of the permit area. The grading plan for the disturbed area will eliminate the need for the culvert because flow will be diverted to the sediment pond area. The County will most likely remove or replace the culvert.

- The Little Park Road. The road is a public road and does not have to be permitted.

Findings:

Information provided in the PAP is adequate to meet the requirements of this section of the Regulations.

RELOCATION OR USE OF PUBLIC ROADS

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

Analysis:

UEI met the minimum requirements of the R645 –Rules for this section. Those rules require that UEI describe, with appropriate maps and cross sections, the measures to be used to ensure that the interests of the public and landowners affected are protected if, the applicant seeks to have the Division approve conducting the proposed underground mining activities within 100 feet of the right-of-way line of any public road, except where mine access or haul roads join that right-of-way, or relocating a public road.

There is only one public road in the Lila Canyon Extension area, the Little Park Road. UEI will not relocate Little Park Road. They will use the road for access to subsidence and water monitoring points. UEI has no plans to relocate or upgrade Little Park Road.

There are several Jeep trails and wheel tracks within the Lila Canyon Extension area. The Division does not consider the Jeep trails and wheel tracks to be roads because they were not engineered and do not receive maintenance.

Emery County will upgrade and pave the existing County Road #126 (2.63 miles) and RS2477 roadway from State Highway 6 to the Lila Canyon Extension surface facilities (Appendix 1-4, Agreement between Emery County and UEI dated October 19, 1999).

The permitting status of the road was questioned by the Division when an article entitled " Utah DOGM Office Clears Way to Process Lila Canyon Permit," was published in the Sun Advocate, Thursday February 28, 2002. The press release stated that UEI planned to build a 4.7-mile road from the mine site to a Union Pacific rail line. A public notice placed in both the Sun Advocate and the Emery County Progress in April 2002, subsequently clarified that Emery County would construct and improve the 4.7-mile road from the mine site to U.S. Highway 6.

UEI does plan to tie the bypass culvert into Emery County's culvert under the County Road 126. Emery County will install the culvert under the road and has consented to allow mining operations within 100 feet of the public road. To protect the public, Emery County requires a 6-foot chain link fence between the disturbed area and the Lila Canyon Road (see Appendix 1-4, letter from the Emery County Road Department dated January 10, 2001). The Division believes that the fence will offer the public protection from the hazards associated with the mining and reclamation facilities that are located within 100 feet of County road.

Findings:

The information provided in the PAP meet the minimum regulatory requirements for this section of the regulations.

COAL RECOVERY

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

Analysis:

UEI met the minimum requirements of this section of the R645 – Rules. Those rules require that UEI conduct underground mining activities so as to maximize the utilization and conservation of the coal, while utilizing the best technology currently available to maintain environmental integrity, so that re-affecting the land in the future through surface coal mining operations is minimized.

As part of the federal mine plan approval process, and to meet the requirements of the federal leases, the BLM required UEI to submit a resource recovery and protection plan (R2P2). The BLM staff analyzed the R2P2 for maximum economic recovery and found that UEI met that requirement.

The BLM based the R2P2 determination on the assumption that UEI will mine within a logical mining unit (LMU). UEI shows the location of the LMU on Plate 5-4.

UEI based the mine plan on the assumption that all the coal in the LMU is marketable. The coal in the Lila Canyon Expansion is higher in sulfur than coal in the surrounding area. If the sulfur value exceeds contract specification, UEI may be unable to market the coal. Should that occur UEI would have to modify the mine plan and some coal would not be mined.

Expansion of the mine to the west is impossible because the coal outcrops on the western escarpments. To the north are the old Horse Canyon Mine workings. UEI has looked at the potential for reworking the area and determined that there are no recoverable resources. Deep cover limits expansion to the east. The economic cut off to coal based on depth of cover varies within the area from 2,500 feet to 3,000 feet of cover. Therefore, significant expansion to the east is limited at this time due to economics and technology.

Expansion to the south could be possible. UEI has a lease by application for reserves south of the permit area.

The Division staff reviewed the mine plan and found that all significant coal reserves within the permit area LMU that could be recovered, will be recovered. The Division bases their findings on several factors including technical analysis from other agencies, such as the BLM.

Coal will be recovered using a continuous miner during the first five years. If conditions warrant, longwall methods could be employed.

Section 522 discusses the use of barrier pillars to isolate the Horse Canyon Mine from the new Lila Canyon Extension, to ventilate, to provide independent escape routes, to protect escarpments, and to possibly retain large quantities of mine water.

Federal leases cover 5,544 acres of coal reserves (Table 1.1, page 11, Chapter 1), but Horse Canyon Parts A and B will mine through 5,163 Federal lease acres according to Table 4.2A, Chapter 4.

UEI estimated the first year's production to be 200,000 tons, increasing in the second through fifth years to between 1,000,000 and 1,500,000 tons. Plans project the utilization of longwall mining to generate as much as 4,500,000 tons a year (Section 523). An increase of this size would require modification of the MRP.

Findings:

Information provided in the PAP is adequate to meet the requirements of this section of the Regulations.

SUBSIDENCE CONTROL PLAN

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

Analysis:

General

Plate 5-3, Subsidence Control Map, shows the location of renewable resources that subsidence could damage such as water rights, seeps and springs. The map also shows the location of the underground mine workings, and the angle-of-draw. Plate 5-5, Mine Map, shows the projected mine workings in the Lila Canyon Extension. Both Plate 5-3 and Plate 5-5 have a scale of 1:12,000 and UEI had professional engineer certify the maps.

In Section 525.110 of the PAP, UEI stated that the location of eagle nests could is shown on Plate 5-3 Confidential.

UEI stated that the angle-of-draw in the permit area would be 21.5 degrees. In the MRP, UEI listed U.S. Geologic Survey Professional Paper 332, Some Engineering Geologic Factors Controlling Coal Mine Subsidence in Utah and Colorado, as a reference. The author's findings were that in Utah and Colorado the average angle of draw is 21.5 degrees. The Division and other government agencies usually accept a 21.5 angle-of-draw until information from the subsidence monitoring program can be used to determine the actual angle-of-draw.

Plate 5-5, Mine Map, shows the schedule for mining and the location of first mining areas, partially mined area, full extraction areas, and main entries that UEI will protect. The R2P2 contains additional information on locations of pillars, entries, extraction ratios, and measures taken to prevent or minimize subsidence and related damage.

Renewable Resources Survey

UEI met the minimum requirements for the section of the R645 – Rules. Those rules require that UEI include a survey, which shall show whether structures or renewable resource lands exist within the proposed permit area and adjacent area and whether subsidence, if it occurred, could cause material damage or diminution of reasonably foreseeable use of such

structures or renewable resource lands. If the survey shows that no such structures or renewable resource lands exist, or no such material damage or diminution could be caused in the event of mine subsidence, and if the Division agrees with such conclusion, no further information need be provided in the application under this section.

UEI conducted a survey and found that no structures, except the Little Park Road, exist within the area of projected subsidence. UEI did find that some renewable resources including seeps and springs exist in the area of projected subsidence.

Plate 5-3, Subsidence Control Map is at a scale of 1:12,000. The map shows the location of the springs and water rights. The location of the water rights came from the water right descriptions, which lists the locations to the nearest quarter section. Plate 5-3 shows the maximum extent of subsidence at a 21.5 degree angle-of-draw.

UEI showed the location of the Little Park Road and some Jeep trails that branch off the main road on Plate 5-3. Part of Little Park Road lies within the subsidence zone.

The Division has observed that subsidence usually does not cause damage to dirt roads. The damage to dirt roads is usually minor and mostly consists of tension cracks. In the past, UEIs in Utah have easily repaired roads damaged by subsidence.

R645-301-525.200 lists those areas where underground coal mining and reclamation activities cannot be conducted beneath or adjacent to. The protected areas include public buildings and facilities, churches, schools, and hospitals. In addition, areas with impoundments of 20 acre-feet or more of water are included unless UEI can prove that subsidence will not damage the structure. Aquifers that are an important source of a public water supply are also included. The subsidence survey found that no public buildings, public facilities, churches, schools, hospitals, impoundments, bodies of water with 20 acre-feet or more storage capacity, or aquifers that are a significant source of a public water system are located within the potential subsidence area.

The Division can suspend underground mining as stipulated in R645-301-525.220, which regulates damage to urbanized areas, major impoundments, and perennial streams. None of those items are located in the proposed subsidence zone.

In Chapter 7 of the PAP, UEI lists the location of each State appropriated water right, the amount of water associated with the right, and the water use. The Division will rely on this information to resolve any problems involving water replacement issues.

In Section 727 of the PAP, UEI states the following:

> Any State-Appropriated water supply that may be damaged by mining operations will either be repaired or replaced. As soon as practical, after proof of damage by mining in Lila Canyon, of any State-Appropriated water supply, UEI will replace the water. Water replacement may include sealing surface fractures, piping, trucking water, transferring water rights, or construction of wells. The preferable method of replacement will be sealing of surface fractures effecting the water supply. As a last resort UEI will replace the water by transferring water rights or construction of wells.

The Division concurs with the water replacement program. The first option should be to restore any water lost. UEI proposes to do that by sealing cracks, piping, or trucking water. When repairs are not possible, UEI commits to replacing water either by drilling wells or, as a final option, transferring water rights.

In Chapter 3 of the PAP, UEI stated that the two threatened or endangered species in or around the Lila Canyon Extension are the bald eagle and black-footed ferret. While there have been no sightings of bald eagles within the Lila Canyon Extension within the past three years the area has the potential for supporting bald eagles.

There is one active and one tended nest within a ¼ mile of the surface facilities. The close proximity of the surface facilities to the nests makes their future use unlikely. Mitigation will consist of a prey base off-site vegetation treatment project approved by the USFWS, UDWR, and BLM. However, if either of these nests or any future nest is lost because of mining activities (subsidence), UEI is committed to working with the Division, who will then consult with USFWS and UDWR for mitigation requirements.

The Division has received some public comments about the potential for subsidence to damage snake dens. DWR and BLM wildlife biologists, in consultation with the Division, have determined than any loss of snake dens to subsidence would be random and a minor impact to the population of snakes. For all wildlife issues, see the Operation Plan, Fish and Wildlife Information section of this TA.

R645-301-525.130 requires UEI to provide copies of the water rights survey and any technical assessment or engineering evaluation to the property owner, the water conservancy district, if any, where the mine is located and to the Division. The State Water Rights Division told UEI that there are no water conservancy districts in or around the Lila Canyon Extension.

UEI stated in Section 525.130 of the PAP that all State appropriated water rights are owned either by the BLM or the Operator (Permittee.) Appendix 1-5 contains a copy of the notification letter that UEI sent to the BLM.

Subsidence Control Plan

Description of Coal Mining Method

UEI is required to describe method of coal removal, such as longwall mining, room-and-pillar removal, hydraulic mining, or other extraction methods, including the size, sequence, and timing for the development of underground workings. UEI meet the minimum requirements of rules with the following description.

Coal mining will begin in Section 15, T. 16 S., R. 14 E., in the Lower Sunnyside Coal Seam. Development of the Lower Sunnyside Coal Seam will be down dip toward the east. Two 1,200-foot tunnels will access the coal seam. UEI will drive the tunnels upward from the cliffs at a 12% grade. UEI will develop the ventilation fan portal from the underground workings to the surface. See Plate 5-2 for the location of the portals and Plate 5-5 for the mine workings.

UEI will conduct initial mining by the room-and-pillar method. Production in the first year will be around 200,000 tons, and around 1,000,000 to 1,500,000 tons per year during the second to fifth year. If demand increases, UEI will install longwall equipment and production could peak at 4,500,000 tons per year. The estimated life-of-mine is 20 years.

Plate 5-3 shows the areas where subsidence could occur, while Plate 5-5 shows the timing and sequence of mining.

Mine Map

UEI met the minimum requirements of the R645 –Rules for subsidence related maps. Those rules require that UEI provide A map of underground workings which describes the location and extent of areas in which planned-subsidence mining methods will be used and which includes all areas where measures will be taken to prevent or minimize subsidence and subsidence related damage and where appropriate, to correct subsidence-related material damage. Plate 5-5, Mine Map, shows the schedule for mining, and the location of first mining areas, full extraction areas, and main entries that will be protected.

Plate 5-5 shows the underground workings and the areas where first mining only will be utilized to protect escarpments and the raptor nests that may exist on the escarpments. Partial mining will also be used to prevent subsidence from occurring outside the permit boundary.

*Physical Condition*s

UEI met the minimum requirements of the R645 – Rules for this section. Those rules require that UEI describe the physical conditions, such as depth of cover, seam thickness, and lithology, which affect the likelihood or extent of subsidence and subsidence-related damage.

In Sections 525.120 and 525.430 of the PAP, UEI list the following physical conditions:

- The coal seam is approximately 12.5 feet thick.
- Coal extraction will be 10.5 feet.
- Depth of cover ranges from 1,500 feet to 2,300 feet.
- The rocks overlaying the coal seam are sandstones and mudstones with some thin bands of coal.
- The Little Park Wash has areas with less than 1,000 of cover.

Subsidence Monitoring

UEI met the minimum requirements of this section of the R645 – Rules. Those rules require that UEI describe the monitoring needed to determine the commencement and degree of subsidence so that, when appropriate, other measures can be taken to prevent, reduce, or correct material damage.

UEI will initiate subsidence monitoring in an area before any second mining begins in that area. The subsidence-monitoring plan will consist of the following:

- Aerial subsidence monitoring
- A 200-foot grid
- 12-16 control points
- Six of these points outside the subsidence zone
- Accuracy of plus or minus 6 inches horizontally and vertically
- A map of subsided areas
- Annual surveys in active subsidence areas

Subsidence monitoring will continue for five years after mining stops, or until subsidence is complete. If, for three years in a row, the subsidence is measured to be less than 10 percent of the highest subsidence year, subsidence will be determined to be complete, and no additional monitoring for that area will be required.

UEI will conduct a ground for each panel no earlier than six months after mining in the panel ceased but no more than twelve months. They will note any cracks observed and report them to the Division.

The two main objectives of the subsidence monitoring program are to determine 1) when subsidence starts and stops, and 2) if any damage has occurred. The aerial monitoring program, which measures ground movement, is the best way to determine when subsidence begins and ends. Ground surveys are useful to determine if any subsidence damage has occurred. UEI should pay particular attention to any stream channels with less than 1000 feet of cover to the coal.

Subsidence Control Measures

UEI met the requirements of the R645 – Rules for this section. UEI is required except for those areas where planned subsidence is projected to be used, a detailed description of the subsidence control measures that will be taken to prevent or minimize subsidence and subsidence-related damage, including, but not limited to: backstowing or backfilling of voids; leaving support pillars of coal; leaving areas in which no coal is removed, including a description of the overlying area to be protected by leaving the coal in place; and, taking measures on the surface to prevent material damage or lessening of the value or reasonably foreseeable use of the surface.

In Section 525.420 UEI states:

> Plate 5-5 shows the underground workings and depicts areas where first mining and will be utilized to protect the escarpment and raptor nests that may exist on the escarpment and to insure that subsidence remains within the permit area. State-appropriated water rights are shown on Plates 5-3, 5-5 as well as Plate 7-1.

In Section 525.452. UEI states:

> Support pillars as a subsidence control measure is not anticipated at this time. However, an area of partial mining where an unmined coal block will be left for subsidence control is shown on Plate 5-5. First mining indicates an area where a block of coal is roomed leaving pillars for support with no mining of the remaining pillars. Partial mining as shown on Plate 5-5 indicates an area where a block of coal has been isolated without the rooms being developed. Both first mining and partial mining will leave support that can be used to control subsidence. If the partially mined area shown on Plate 5-5 is ever roomed out, the area now defined as partially mined would become an area defined as being first mined.

Anticipated Subsidence Effects

UEI met the minimum requirements for this section of the R645 – Rules. Those rules require that UEI describe the anticipated effects of planned subsidence, if any.

The main panels of the Horse Canyon Mine (Permit Area A), in which past operators have conducted retreat mining, have dimensions of approximately 1,200 feet wide by 4,000 feet long. The cover (h) in these areas is approximately 2,000 feet. Using the methods described in the National Coal Board's *Subsidence Engineers' Handbook* the S/m ratio for this geometry would be 0.55 where "S" is the maximum subsidence and "m" is the seam extraction thickness.

For an average seam extraction thickness of 12 feet, the total subsidence would be 6.6 feet. However, as described on page V-12 of the Horse Canyon MRP (Part A), the major impacts of subsidence are due to extension strains and not to total vertical subsidence. The prediction of average extension strain is accomplished with the use of the formula:

$$+E = 0.75\ S/h$$ where S = Subsidence and h= depth of cover

The solution of this equation for the Horse Canyon Mine configuration discussed above produces a predicted, average extension strain of 2.5×10^{-3} which is less than that the limiting strain of 5×10^{-3} for protecting surface waters and groundwater resources. Thus, it is unlikely that the gradual compression expected over much of the subsidence area will have any deleterious effects on the overlying renewable surface resources. As reported in Chapter V of the Horse Canyon MRP (Part A), the cover thickness of over 2,000 feet is also much greater than the limiting thickness of 450 feet.

A cantilever effect of symmetrical subsidence on either side of thick pillars can greatly enhance the amount of extensive strain. The Horse Canyon MRP (Part A) indicates in Chapter V that Dunrud demonstrated this effect at the Geneva (Horse Canyon) mine over the barrier pillar separating the Geneva and Book Cliff mines. A nearly vertical break line occurred over the pillar with the appearance of large surface fissures hundreds of feet long and as much as 3 feet wide. The cover thickness in this area was about 900 feet. Such features would obviously have the greatest effect on the surface and groundwater resources in the area.

The pace at which subsidence occurs depends on many controls including the type and speed of coal extraction, the width, length and thickness of the coal removed, and the strength and thickness of the overburden. Observations of subsidence by Dunrud over the Geneva and Somerset Mines indicate that the subsidence effects on the surface occurred within months after mining was completed, and the maximum subsidence was essentially completed within 2 years of the finishing of retreat mining as reported in Chapter V of the Horse Canyon MRP (Part A).

In the 1992 annual subsidence report for the Horse Canyon Mine, UEI reported subsidence features outside of the Horse Canyon permit area, but within the area underlain by workings of both the Book Cliffs Coal Mine and the Geneva Coal Mine. The surface subsidence features were observed in Sections 9, 10, 15 and 16, T. 16 S. R.14 E. Those areas have cover averaging 800 feet but do not exceed 1,000 feet of cover. UEI noted a number of the subsidence features including:

- Open jointing and fissuring related to cliff face retreat and spalling.
- Swarms of fissures related to extensional ground movements above, or adjacent to, the property-boundary barrier pillar between the Book Cliffs and Geneva Mines. The

fissures are generally parallel to sub-parallel to the barrier pillar and are developed primarily along existing regional joint sets. Individual fissures can reach hundreds of feet in length and as much as three feet in width. Vertical displacement on the order of a few inches has been observed at some localities.

- Modifications in vegetation and soil structure were often associated with fissure development. Fallen trees were observed along several fissures and cryptogamic soil communities had been disrupted locally.
- At one or two locations, cool air was felt emanating from the larger fissures.

The 1992 annual subsidence survey showed that the only subsidence related activity noted within the Horse Canyon permit area was cliff spalling that occurred in 1958. Close examination of the outcrop areas and soil covered slopes directly above, and to the north of, the area of cliff failure did not reveal any evidence of mine subsidence features.

Most of the area UEI plans to subside in the Lila Canyon Extension has greater than 1,000 feet of cover. In areas with more than 1,000 feet of cover, no surface subsidence features are anticipated with the exception of ground lowering.

In areas with less than 1,000 feet of cover, subsidence features could include tension cracks, fissures, sinkholes, and ground lowering. In the southwest part of the permit area, the cover drops to less than 500 feet. Parts of Little Park Wash, an ephemeral stream, are located in the shallow cover area.

Should subsidence damage Little Park Wash the most likely causes would be cracks, fissures, or sinkholes. Should Little Park Wash be damaged UEI could most likely make repairs by hand. If equipment is needed, UEI could access most areas by Jeep trails.

Subsidence Mitigation

UEI met the minimum requirements for this section of the R645 – Rules. Those rules require that UEI d*escribe the measures to be taken to mitigate or remedy any subsidence-related material damage to, or diminution in value or reasonably foreseeable use of the land, or structures or facilities to the extent required under State law*

There are no non-commercial or occupied buildings exist within the proposed subsidence zone.

UEI states in Section 727 of the PAP, the methods that they will use to replace any lose of State appropriate water. The methods include:

- Repairing subsidence damage.
- Hauling/piping water to effected area.

- Transfer of water rights
- Drill additional wells.

Those methods are similar to those used by other mines to replace water loses. Therefore, the Division considers those methods acceptable.

UEI committed to restore surface lands to the extent technologically and economically feasible. While the use of heavy equipment in some areas is not practical, there are alternatives that others have used to reclaim mines in Utah and that have been quite successful. Those methods include manual labor and the use of explosives. The Utah Abandoned Mine Lands (AML) Program has used explosives in wilderness areas to eliminate hazards caused by mining.

Since no structures exist within the subsidence zone, UEI does not have to address how they will repair damage to buildings and other related structures.

Two items that are of concern to the Division are roads and streams. All dirt roads in the Lila Canyon tract are in areas with over 1,000 feet of cover or where mining will not take place. If subsidence damage should occur to the roads, UEI has committed to repair the damage by regrading the road. Since the roads will be accessible to earthmoving equipment, the Division finds the commitment adequate.

The Division is concerned that subsidence could damage the ephemeral streams located in areas of less than 1,000 feet of cover. Part of Little Park Wash, an ephemeral stream, has less than 1,000 feet of cover. Based on experience in the area, subsidence could cause cracks, fissures, or sinkholes to form. Should those features occur, UEI would most likely be able to repair the damage using hand methods. If hand methods prove to be impractical, UEI could have the option of moving equipment into the area. Jeep trails, which cover most of the area, could be used to move equipment in if necessary.

In Section 727 of the PAP, UEI stated:

> Any State-Appropriated water supply that may be damaged by mining operations will either be repaired or replaced. As soon as practical, after proof of damage by mining in Lila Canyon, of any State-Appropriated water supply, UEI will replace the water. Water replacement may include sealing surface fractures, piping, trucking water, transferring water rights, or construction of wells. The preferable method of replacement will be sealing of surface fractures effecting the water supply. As a last resort UEI will replace the water by transferring water rights or construction of wells.

UEI has used an angle of draw of 21.5° in its subsidence calculations. The rebuttable presumption of causation for damage within the angle-of-draw, means that if damage to non-commercial buildings or occupied residential dwellings occurs as a result of earthen movement,

the assumption exists that the mining caused the damage, unless UEI can prove otherwise. R645-301-525.541 assumes an angle-of-draw of 30° unless UEI can demonstrate that another angle-of-draw is more appropriate. Since there are no non-commercial buildings or occupied residential dwellings in the area the 30° angle-of-draw, rebuttable presumption does not apply.

The Division does not bond for subsidence damage that has not yet occurred, except for conditions outlined in R645-301-525.550. The general practice to protect buildings and other structures is for UEI to purchase liability insurance, see R645-301-525.520, R645-301-525.530, and R645-301-830.500. Additional bond will be required, when subsidence-related material damage has occurred to land, structures, or facilities or where contamination, diminution, or interruption to a water supply has occurred.

UEI has 90 days to repair the damage before the Division can require additional bond. The Division may increase the 90-day period up to one year if subsidence is not completed within 90 days.

Performance Standards For Subsidence Control

UEI will comply with all provisions of the approved subsidence control plan.

Notification

UEI is required to notify the water conservancy district, if any, and the owners and all occupants of surface properties and structures above the underground workings. The notification will include the specific areas where mining will occur and the location or locations where UEI's subsidence control plan may be examined

Findings:

Information provided in the PAP is adequate to meet the requirements of this section of the Regulations.

SLIDES AND OTHER DAMAGE

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

Analysis:

UEI met the minimum requirements for this section of the R645 – Rules. Those rules require that at any time a slide occurs which may have a potential adverse effect on public, property, health, safety, or the environment, the person who conducts the underground mining

activities UEI shall notify the Division by the fastest available means and comply with any remedial measures required by the Division.

The requirements for slides and other damage consist of two parts. The first part requires that at any time a slide occurs, which may have a potential adverse effect on public, property, health, safety, or the environment, the person who conducts the underground mining activities shall notify the Division by the fastest available means and comply with any remedial measures required by the Division. In section 515.100 of the PAP, UEI commits to phone the Division if a slide occurs (Section 515) and inform them of the slide and proposed remedial plan. The Division will then determine the adequacy of the remediation plan. UEI has also committed to report any potential hazards found during impoundment inspections.

The second requirement is that the PAP will incorporate a description of notification when potential impoundment hazards exist. The requirements for the description are: If any examination or inspection discloses that a potential hazard exists, the person who examined the impoundment will promptly inform the Division of the finding and of the emergency procedures formulated for public protection and remedial action. If UEI cannot formulate or implement adequate procedures, the Division will be notified immediately. The Division will then notify the appropriate agencies that other emergency procedures are required to protect the public. In section 515.200 of the PAP, UEI commits to notify the Division of any impoundment hazards they discover during an inspection and the methods that will be used to remedy the situation.

Findings:

UEI meets the minimum regulatory requirements for slides and other damage.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

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

Analysis:

Road Classification System

EUI met the minimum requirements for this section of the R645 –Rules. Those rules require that UEI classify each road as either a primary road or an ancillary road. A primary road is any road which is: used for transporting coal or spoil; frequently used for access or other purposes for a period in excess of six months; or, to be retained for an approved postmining land use. An ancillary road is any road not classified as a primary road.

Plate 5-2 shows the location of all roads that UEI will use for coal mining and reclamation activities within the disturbed Lila Canyon area. The roads within the disturbed area boundary include the Mine Facilities Road/Truck Loadout Road, the Slope Access Road/Portal Access Road and the Coal Pile Road. The Division classifies all of the roads in the disturbed area as primary roads, except for the Coal Pile Road. The Division classified the Mine Facilities Road/Truck Loadout Road, the Slope Access Road/Portal Access Road as primary roads because UEI will use the roads to transport coal and/or they will be used frequently for more than six months.

The Coal Pile Road is an ancillary road because it was built for one purpose, to provide equipment access to the pile and will be used infrequently.

Plans and Drawings

Roads

UEI met the minimum requirements for this section of the R645 –Rules. Those rules require that UEI must give the Division adequate plans and drawings for each road that they will construct in the disturbed area. There are three roads in the disturbed area the Division descusses the roads as follows:

Mine Facilities Road/Truck Loadout Road

- A registered professional engineer must certify all maps, cross sections, and profiles.
- In Section 542.600 of the PAP, UEI gave the reclamation plan for the roads. All roads within the disturbed area boundary will be reclaimed during final reclamation.
- In Appendix 5-4, UEI shows the main facilities road. .

Portal Access Road

- A registered professional engineer must certify all maps, cross sections, and profiles. In Appendix 5-4 Section New Slope Access/Portal Access Road Main Mine Road, UEI shows cross sections and a profile for what appears to be the Portal Access Road.
- UEI showed the location of each cross section on a plat map in Appendix 5-4.
- In Section 542.600 of the PAP, UEI gave the reclamation plan for the roads. All roads within the disturbed area boundary will be reclaimed during final reclamation.

Coal Pile Road

Because the Coal Pile Road is an ancillary road, the designs do not have to be certified. The road's location is shown on the surface facilities map and the typical cross sections are included.

Performance Standards

UEI met the minimum requirements for this section of the R645 Rules. UEI met those rules by providing the following:

- Appendix 5-5 has information about slope stability for the roads. UEI states that they performed a slope stability analysis for the worst-case scenario for the embankments and cut slopes. UEI must show the location of the cut slope and embankment that they analyzed and explain why those cross sections represent the worst-case scenario.

- UEI must show the ditches and drainage system for each road. In addition UEI must show how they will prevent or minimize erosion

- Primary roads have been located in the pad area. UEI has designed the pad area to minimize erosion, insofar as is practicable. In addition, the roads are located on stable surfaces.

- UEI does not propose to have any temporary fords in perennial or intermittent streams.

- The primary roads will have adequate drainage controls.

- The road base shown for the primary roads in Appendix 5-4 will be 8-inch road base gravel. Other mines have used that type of material and the Division considers it adequate.

Primary Road Certification

UEI met the minimum requirements of this section of the R645 Rules. Those rules require UEI to provide plans and drawings for each primary road shall be prepared by, or under the direction of, and certified by a qualified registered professional engineer, or in any State which authorizes land surveyors to certify the design of primary roads a qualified registered professional land surveyor, experienced in the design and construction of roads, as meeting the requirements of this chapter; current, prudent engineering practices; and any design criteria established by the Division.

The road plans and cross-sections are located in Appendix 5-4 and on Plate 5-2. A registered professional engineer must certify the plans according to the Division's standards. Those standards include each map, cross section and profile must be certified along with the text.

A qualified registered professional engineer shall also certify the actual construction or reconstruction of primary roads in a report to the Division. UEI must provide those reports, called as-builts, to the Division upon completion of the road.

Other Transportation Facilities

In section 520 of the PAP and on Plate 5-4, UEI describes and shows the conveyors they will use at the Lila Canyon facility. The main conveyor will transport coal to the surface. The main conveyor belt is 60 inches wide, extends 320 feet from the portal, and has a belt speed of 700 feet per minute. Since UEI plans to leave the ground beneath the conveyor as undisturbed, due to the steepness and remoteness of the area, UEI will totally enclose the conveyor.

The coal will move from the main conveyor to the stacking tube. From there, the coal will feed into a reclaim tunnel and load onto the reclaim tunnel conveyor (48 inches wide and 280 feet long, covered where above ground). Next, the coal will go to the crusher.

From the crusher the loadout conveyor will transport the coal to the loadout bin. The loadout conveyor is 48 inches wide, 210 feet long and has a belt speed of 500 feet per minute. UEI will cover the aboveground portion of the conveyor.

From the loadout bin, the truck conveyor will transport the coal to trucks for over-the-road transport. The truck conveyor is 48 inches wide, 50 feet long and UEI will cover all aboveground sections.

Findings:

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

SPOIL AND WASTE MATERIALS

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

Analysis:

Disposal Of Noncoal Mine Wastes

UEI met the minimum requirements for this section of the R645 – Rules. Those rules require that noncoal mine wastes including, but not limited to, grease, lubricants, paints, flammable liquids, garbage, abandoned mining machinery, lumber, and other combustible materials generated during mining activities shall be placed and stored in a controlled manner in a designated portion of the permit area. Placement and storage shall ensure that leachate and surface runoff do not degrade surface or ground water, that fires are prevented, and that the area remains stable and suitable for reclamation and revegetation compatible with the natural surroundings.

Noncoal waste can be classified as non-hazardous or hazardous and includes recyclable materials, asphalt and concrete. Non-hazardous waste consists of garbage that UEI will dispose of by placing in dumpsters. UEI will have the non-hazardous waste shipped to a state licensed disposal site, most likely East Carbon Development Corporation (ECDC.) UEI will send hazardous waste, as defined by Resource Conservation and Recovery Act (RCRA), to a state licensed disposal site - most likely ECDC. See Section 528.330 of the PAP for more details about hazardous waste disposal.

The Division will allow UEI to dispose of concrete debris on site. The on-site disposal of concrete will be done by placing the concrete in areas that will be backfilled and graded, as shown on Plate 5-6.

The PAP indicates in Section 542.640 that a minimum of two feet of cover will be placed over sand and gravel road surfacing materials and asphalt will be disposed off-site. Concrete will be buried by four feet of cover.

In Section 528.334 of the PAP UEI commits to ship all hazardous waste as defined by 3001 of the Resource Conservation and Recovery Act to a facility approved to accept such waste.

Coal Mine Waste

UEI met the minimum requirements for this section of the R645 – Rules. The rules require that UEI submit a plan that describes with appropriate maps and cross-section drawings of the proposed disposal methods and sites for placing underground development waste and excess spoil generated at surface areas affected by surface operations and facilities. Each plan shall describe the geotechnical investigation, design, construction, operation, maintenance, and removal, if appropriate, of the structures.

Appendix 5.7 describes 25,000 loose cubic yards of underground development waste generated from portal development. Additional refuse will come from the operation of the

screening plant and the mine itself. Appendix 5.7 indicates that there is room at the refuse disposal facility for storage of an additional 19,500 cubic yards of mine waste.

In section 528.320 of the PAP, UEI states that coal mine waste will consist of coal processing waste, and underground development waste. The underground development waste consists of three subcategories: rock slope material, underground development waste that contains coal, and reject material from the coal crushing operation. The location of the coal mine waste storage facilities (refuse pile) is shown on many maps and cross sections including: Map 5-2, Surface Area; Figure 1, Appendix 5-7; and Figure 2, Appendix 5-7. The location of the coal mine waste is cross-hatched on the cross-sections and labeled.

UEI will construct the coal mine waste disposal site (refuse pile) as follows:

- Ground Preparation: UEI will remove vegetation and topsoil from the site and store it in the designated topsoil piles. Next, they will remove the subsoil and fill the site with coal mine waste. UEI will divide the refuse pile into two sections, the first one will be used for rock slope material, and the second section will be used for underground coal mine waste and reject material from the crusher.
- Placement of Coal Mine Waste (Refuse): UEI states in Appendix 5-7 that coal mine waste will be placed into the cells. UEI will construct the section of the refuse pile that contains only structural fill by placing the material in the cell, compacting it and then covering the area with four feet of non acid-, non toxic-forming material.
- Coal Processing Waste Testing: UEI will test the material from the rock slopes during the initial startup, at the ¼, ½ and ¾ marks, and at the end of the project. Material from the crusher or coal sections of the mine will be tested every 6,000 tons.
- Spreading and Compaction: UEI states that compaction will take place using a wheeled loader during the filling operation. They will place the material in lifts with a maximum thickness of 12 inches.
- Drainage: UEI will grade the subsoil to allow proper drainage and to prevent the impoundment of water.

The main design criterion for coal mine waste disposal areas are as follows:

The coal mine waste must be disposed of in a way that minimizes the adverse effects of leachate and surface-water runoff on surface and ground water quality and quantity. The Division does not anticipate that UEI will encounter significant amounts of acid or toxic-forming material. If UEI does encounter significant amounts of acid or toxic-forming materials, the 4 feet of material placed over the coal mine waste will limit any leachate from coming in contact with surface water. There are no water resources underneath the coal mine waste. Therefore, groundwater resources will not be damaged from leachate from the coal mine waste disposal site.

UEI must construct the coal mine waste disposal facility (refuse pile) to ensure mass stability and prevent mass movement during and after construction. The coal mine waste disposal facility has a static safety factor of 16.19. The minimum required static safety factor is 1.5. UEI based the stability calculations on cross section 8+00 (Figures 1 and 2, Appendix 5-7).

After final grading, UEI will cover the coal mine waste disposal area (refuse pile) with 4 feet of non acid-, non toxic-forming material. The 4-foot cover will be adequate to protect vegetation from any acid or toxic materials.

The coal mine waste storage facility will be located within the disturbed area of the Lila Canyon Extension. Access to the site will be restricted to mine personnel during normal mining operations. In the event of the mine going into temporary cessation, the 4 feet of cover, and cell construction methods will protect the public from hazards associated with the site.

UEI does not anticipate that any coal mine waste will be disposed of outside the permit area, nor do they anticipate placing coal mine waste from another operation in the Horse Canyon Permit area. If the need arises, UEI must modify the MRP.

A registered professional engineer (P.E.) designed the coal mine waste disposal facility. The Division will require P.E. certified as-built drawings when UEI finishes construction of the site.

UEI has committed to notify the Division in the event of a potential hazard at the coal mine waste disposal site. See the section on slides and other damage in this TA for details on how UEI will handle emergencies.

In Appendix 5-7, UEI estimates that there will be 25,000 loose cubic yards of underground development waste generated from portal construction. UEI expects an insignificant amount of additional refuse to come from the operation of the screening plant and the mine itself. Appendix 5-7 indicates that there is room at the refuse disposal facility for storage of an additional 19,500 cu yards of mine waste.

Refuse Piles

UEI met the minimum requirements for this section of the R645 – Rules.

The Coal Mine Rules' definition of terms are found in R645-100-200 as follows:

- A refuse pile is a surface deposit of coal mine waste that does not impound water.
- Coal mine waste means coal processing waste and underground development waste.
- Coal processing waste means earth materials that are separated from the product coal during cleaning, concentrating, or the processing or preparation of coal.

- Underground development waste means waste-rock mixtures of coal, shale, claystone, siltstone, sandstone, limestone, or related materials that are excavated, moved, and disposed of from underground workings in connection with underground coal mining and reclamation activities.

Coal processing waste will be limited to materials from the crusher. UEI will not dispose of material separated from the coal during the crushing process underground. The coal processing waste will be disposed of in the refuse pile shown on Plate 5-2 and described in Appendix 5-7.

UEI plans to generate 16,650 bank cubic yards of material during the construction of the rock slopes that lead from the surface facilities area to the coal seam. UEI assumes that the loose material will take up 1.3 times the in-place volume. Therefore, a disposal site with the capacity for approximately 25,000 cubic yards of coal mine waste is necessary. Because the material from the rock slopes is not expected to contain coal or acid- or toxic- forming materials, UEI proposes to use the 25,000 cubic yards of material for structural fill.

UEI will not use refuse material from the crushing process or from material taken from within the section of the mine that has coal as structural fill. To distinguish the two types of refuse, UEI refers to one as rock slope material. See Section 536.300 in the PAP for details.

The Utah coal rules do not have any specific requirements for the use of refuse as structural fill. The rules do specifically state that refuse can be used for structural backfill in underground mines (R645-301-536.700) and to construct dams and embankments (R645-301-536.800.) The Utah coal rules (R645-301-536.900) also state that refuse piles must meet the requirements of 30 CFR 77.214 and 30 CFR 77.215.

The Division received comments that the use of coal mine waste for structural fill would violate the regulations. While the regulations do not specifically state that coal mine waste can be used for structural fill the material can be used in the construction of dams and embankments. Therefore, the Division determined that coal mine waste can be used for structural fill as long as all other regulations are fulfilled.

The Division received some public comments that placement of coal mine waste with dump trucks would violate R645-301-528.320 because of the prohibition of placement of coal mine waste by end or side dumping. In *A Dictionary of Mining, Mineral, and Related Terms* compiled and edited by Paul W. Thrush and Staff of the Bureau of Mine published 1968 the term end dumping is defined as:

Process in which earth is pushed over the edge of a deep fill and allowed to roll down the slope.

The placement of coal mine waste in the refuse pile will be do in a controlled manner and the material would not roll down the slope. The use of dump truck is common in Utah for the transportation and placement of coal mine waste in refuse piles. Neither the OSM nor the Division has ever had any concerns about the use of dump trucks for moving and placing coal mine waste.

UEI shows the location of the refuse pile on Plate 5-2. UEI labeled the material from the rock slopes that they will use for structural fill, and marked it differently than the coal processing waste. In Appendix 5-7, UEI states that they will place 25,000 cubic yards of rock slope material in the refuse pile as structural fill and that up to 19,473 cubic yards of coal processing waste can be disposed of in the refuse pile. Section 520 (Refuse Piles) gives the refuse- pile capacity as 44,400 yd3.

UEI needs to list the amounts of rock slope material and coal processing waste material separately in Table 1, Appendix 5-7. Note that all structural fill will be place between cross sections 4+00 and 8+00 on Figure 1 Appendix 5-7.

Appendix 5-7 contains detailed information on the construction of the refuse pile/coal mine waste disposal facility. Figure 1, Appendix 5-7 shows the location of the refuse pile and the division between the rock slope material and coal waste in plan view. The profiles show the pre-mining, operational, and reclaimed stages of the refuse pile. Figure 2, Appendix 5-7 shows the cross-sections for the refuse pile.

The profiles and cross-sections show how UEI will construct the refuse pile. UEI will salvage the top 18 inches of pre-disturbed ground as topsoil, then remove the subsoil.

On Figure 1, Appendix 5-7, UEI shows that they will place coal mine waste in the refuse pile. However, on Figure 2, Appendix 5-7, UEI shows that they will place slope rock material in the entire refuse pile. Because UEI will handle the rock slope material differently than the material with coal, UEI must distinguish between the two types of materials in the cross-sections and profiles.

On Figure 2, Appendix 5-7, UEI shows that they will cover the slope rock (coal mine waste) with 18 inches of topsoil and 30 inches of fill material, totaling 48 inches of cover. .

Section 528.320 distinguishes the coal-free coal mine waste, which UEI will use as structural fill, from the material that will go into an apparently separate refuse pile. However, the PAP makes it clear that these two areas are adjacent and conjoining and will be treated as one area or structure, especially during reclamation.

Figure 1, Appendix 5-7 shows that UEI will divide the refuse pile into two sections. The western section will be rock slope material, used to create a structural fill. The eastern section

has the capacity for 19,437 cubic yards of coal mine waste (see Appendix 5-7).
UEI outlines the testing of coal mine waste in Appendix 5-7. UEI will test all rock slope material five times. UEI will only use rock slope material as structural fill. The testing will take place during the initial start up, at the ¼ mark, the ½ mark, the ¾ mark, and near completion. UEI will test other coal mine waste, generated during operations from the crusher and underground development, containing coal every 6,000 cubic yards.

UEI will treat and dispose of all coal mine waste as if the material were acid- or toxic-forming. All coal mine waste will be disposed of under four feet of material.

Impounding Structures

UEI will not construct any impoundments from coal mine waste. The only impoundment structure at the Lila Canyon site is the incised sediment pond.

Burning And Burned Waste Utilization

UEI met the minimum requirements for this section of the R645 –Rules. Those rules require that coal mine waste fires shall be extinguished by the person who conducts the surface mining activities, in accordance with a plan approved by the Division and the Mine Safety and Health Administration. The plan shall contain, at a minimum, provisions to ensure that only those persons authorized by the operator, and who have an understanding of the procedures to be used, shall be involved in the extinguishing operations. No burning or unburned coal mine waste shall be removed from a permitted disposal area without a removal plan approved by the Division. Consideration shall be given to potential hazards to persons working or living in the vicinity of the structure. Appendix 5-3 contains the coal mine waste fire extinguishing plan.

Return of Coal Processing Waste to Abandoned Underground Workings

UEI does not propose to dispose of coal mine waste underground.

Excess Spoil:

UEI does not anticipate the generation of any excess spoil.

Findings:

The information provided does meet the minimum acceptable requirements of the Regulations.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

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

Analysis:

UEI met the minimum requirements for this section of the R645 – Rules. Those rules require Each applicant for an underground coal mining and reclamation permit shall submit a description, plans, and drawings for each support facility to be constructed, used, or maintained within the proposed permit area. The plans and drawings shall include a map, appropriate cross sections, design drawings, and specifications sufficient to demonstrate compliance.

Support facilities shall be operated in accordance with a permit issued for the mine or coal preparation plant to which it is incident or from which its operation results. In addition to the other provisions of this part, support facilities shall be located, maintained, and used in a manner that: prevents or controls erosion and siltation, water pollution, and damage to public or private property; and, to the extent possible using the best technology currently available, minimizes damage to fish, wildlife, and related environmental values and minimizes additional contributions of suspended solids to streamflow or runoff outside the permit area. Any such contributions shall not be in excess of limitations of State or Federal law.

All surface and underground mining activities shall be conducted in a manner which minimizes damage, destruction, or disruption of services provided by oil, gas, and water wells; oil, gas, and coal-slurry pipelines, railroads; electric and telephone lines; and water and sewage lines which pass over, under, or through the permit area, unless otherwise approved by the owner of those facilities and the Division.

Support facilities shall be operated in accordance with a permit issued for the mine or coal preparation plant to which it is incident or from which its operation results. In addition to the other provisions of this part, support facilities shall be located, maintained, and used in a manner that prevents or controls erosion and siltation, water pollution, and damage to public or private property. Support facilities shall, to the extent possible using the best technology currently available, minimizes damage to fish, wildlife, and related environmental values; and, minimizes additional contributions of suspended solids to streamflow or runoff outside the permit area. Any such contributions shall not be in excess of limitations of State or Federal law.

UEI refers to the new support facilities in the following sections of the PAP: Section 520, Plate 5-2, the appendices of Chapter 5, and in the bond calculations. Appendix 5-4, New Facility Design, shows the design for the roads. Appendix 5-7 has the designs for the refuse pile. UEI showed the location of the structures on Plate 5-2.

Plate 5-8 is a detailed map with cross-sections that shows the coal handling facilities. Those facilities consist of a truck loadout, a scale, a 48-inch conveyor from the loadout bin to the truck loadout, a 48-inch conveyor from the loadout bin to the crusher, a 48-inch reclaim conveyor, a stacking tube, and a 60-inch conveyor from the mine.

UEI will construct the buildings, support structures, and mine facilities using standard building materials such as steel, wood and concrete and will use standard construction techniques for the construction and demolition of the facilities. UEI will accomplish reclamation of the surface facilities by removing the structures. When possible, they will salvage machinery and steel building components. UEI will ship all building debris, with the exception of concrete, off site

UEI is required to construct and maintain support facilities to:

- Control or prevent erosion, siltation, water pollution, and damage to public or private property. On Plate 5-2, UEI shows undisturbed diversion ditch UC-1. The ditch is to transport flow from the South Fork of Lila Wash underneath the sediment pond and to prevent materials within the disturbed area from entering the flow.

- Minimize damage to fish, wildlife, and related environmental issues such as minimizing additional contributions of suspended solids to streamflows.

- Minimize damage to oil, gas, and water wells; oil, gas, and coal-slurry pipelines; railroads, and other utilities.

All support facilities will be located within the disturbed area. Runoff from the disturbed area will report to the sedimentation pond for treatment before being discharged. For additional details on erosion, siltation, and water pollution see the Hydrology section of this TA. Fish and wildlife issues are discussed in detail in the Fish and Wildlife Protection Plan section of this TA.

In Appendix 7-4, UEI describes the construction methods for the sediment pond. In section 3.1 e of Appendix 7-4 (page 25), UEI states that fill will be placed in lifts not to exceed 6” and compacted before placement of next left. Compaction of all fill materials shall be at least 95%.

Findings:

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

SIGNS AND MARKERS

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

Analysis:

UEI met the minimum requirements for this section of the R645 – Rules. Those rules require that signs and markers shall: be posted, maintained, and removed by the person who conducts the underground mining activities; be of a uniform design throughout the activities that can be easily seen and read; be made of durable material; and, conform to local laws and regulations. Signs and markers shall be maintained during all activities to which they pertain.

Mine and permit identification signs shall be displayed at each point of access from public roads to areas of surface operations and facilities on permit areas for underground mining activities. Signs will show the name, business address, and telephone number of the person who conducts underground mining activities and the identification number of the current regulatory program permit authorizing underground mining activities. Signs shall be retained and maintained until after the release of all bonds for the permit area.

Perimeter markers shall clearly mark the perimeter of all areas affected by surface operations or facilities before beginning mining activities.

Buffer zones shall be clearly marked to prevent disturbance by surface operations and facilities.

Topsoil markers shall be used where topsoil or other vegetation-supporting material is segregated and stockpiled.

UEI committed to place signs and markers as required by the Utah Coal Rules. Those Rules require that signs and markers for underground coal mines:

- Be posted, maintained, and removed by the person who conducts the coal mining and reclamation operations.
- Be of a uniform design that can be easily seen and read, be made of durable material, and conform to local laws and regulations.
- Be maintained during all activities to which they pertain.
- Be displayed at each point of access from public roads to areas of surface operations and facilities on permit areas.
- Show the name, business address, and telephone number of UEI who conducts coal mining and reclamation operations and the identification number of the permanent program permit authorizing coal mining and reclamation operations.
- Be maintained until after the release of all bonds for the permit area.

- Clearly mark the perimeter of all areas affected by surface operations or facilities before beginning mining activities.
- Be erected to mark buffer zones as required under R645-301-731.600 and be clearly marked to prevent disturbance by surface operations and facilities.
- Be erected to mark where topsoil or other vegetation-supporting material is physically segregated and stockpiled as required under R645-301-234.

Findings:

UEI has met the minimum requirements of the signs and markers section of the regulations.

USE OF EXPLOSIVES

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

Analysis:

R645-301-524.220 allows UEI to submit a specific blasting plan separate from the PAP. UEI has opted to submit a detailed blasting plan if and when they propose to blast.

Findings:

UEI has met the minimum regulatory requirements for the use of explosives.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

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

Analysis:

Affected Area Maps

UEI met the minimum requirements for this section of the R645 – rules. Those rules require that UEI show the boundaries of all areas proposed to be affected over the estimated total life of all mining activities and reclamation activities, with a description of size, sequence, and timing of phased reclamation activities and treatments. All maps and cross sections used for mining design and mining operations shall clearly show the affected and permit area boundaries in reference to the reclamation work being accomplished.

Plate 1-1, Permit Area Map, shows the location of the entire Horse Canyon Permit area. The area includes permit area A, which is the Horse Canyon project, and permit area B, which is the Lila Canyon Extension. The map does not show any areas of potential future expansion. In the past, UEI has indicated that they might seek additional reserves to the south. The permit section of the environmental part of this TA addresses those deficiencies.

Mining Facilities Maps

UEI met the minimum requirements of this section of the R645 – Rules. Those rules require that UEI show the location of each facility used in conjunction with mining operations. Such structures and facilities shall include, but not be limited to: buildings, utility corridors, roads, and facilities to be used in mining and reclamation operations or by others within the permit area; each coal storage, cleaning, and loading area; each topsoil, spoil, coal preparation waste, underground development waste, and noncoal waste storage area; each water diversion, collection, conveyance, treatment, storage and discharge facility; each source of waste and each waste disposal facility relating to coal processing or pollution control; each facility to be used to protect and enhance fish and wildlife related environmental values; each explosives storage and handling facility; location of each sedimentation pond, permanent water impoundment, coal processing waste bank, and coal processing water dam and embankment, and disposal areas for underground development waste and excess spoil; and, each plan or profile, at cross sections specified by the Division, of the anticipated surface configuration to be achieved for the affected areas during mining operations.

Plate 5-2 shows the surface facilities for the Lila Canyon Extension. The map shows the required information.

Mine Workings Maps

UEI met the minimum requirements of this section of the R645 –Rules. Those rules require that UEI show the location and extent of known workings of proposed, active, inactive, or abandoned underground mines, including mine openings to the surface within the proposed permit and adjacent areas. Location and extent of existing or previously surface-mined areas within the proposed permit area.

Plate 5-5 shows the projected mine workings for the Lila Canyon Extension. The only openings are the two rock tunnels and the ventilation portal.

Certification Requirements

UEI met the minimum requirements of this section of the R645 – Rules. Those rules require that cross sections, maps, and plans required to show the design, location, elevation, or

horizontal or vertical extent of the land surface or of a structure or facility used to conduct mining and reclamation operations shall be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, a professional geologist, or in any State which authorizes land surveyors to prepare and certify such cross sections, maps, and plans, a qualified, registered, professional land surveyor, with assistance from experts in related fields such as landscape architecture.

Each detailed design plan for an impounding structure that meets or exceeds the size or other criteria of the Mine Safety and Health Administration, 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified registered professional engineer with assistance from experts in related fields such as geology, land surveying, and landscape architecture; include any geotechnical investigation, design, and construction requirements for the structure; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

Each detailed design plan for an impounding structure that does not meet the size or other criteria of 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, or in any State which authorizes land surveyors to prepare and certify such plans, a qualified, registered, professional land surveyor, except that all coal processing waste dams and embankments shall be certified by a qualified, registered, professional engineer; include any design and construction requirements for the structure, including any required geotechnical information; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

UEI had all appropriate maps and cross section certified.

Findings:

The information in the proposed amendment is considered adequate to meet the requirements of this section.

RECLAMATION PLAN

APPROXIMATE ORIGINAL CONTOUR RESTORATION

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

Analysis:

The definitions of Approximate Original Contour (AOC) are contained in the Surface Mining Control and Reclamation Act (SMCRA) and the Utah coal rules. The objectives of post-mining backfilling and grading is to return the site to a configuration resembling the topography of the land prior to mining, and to blend the site into the drainage pattern of the surrounding terrain. At the same time, UEI must meet reclamation performance standards including: controlling erosion; establishing mass stability; and establishing permanent, diverse, and effective vegetative cover.

The Division intended Technical Directive 002 to reconcile the specific performance standard requirements of the regulatory program with the general definitions of AOC in a way that accomplishes the objectives of SMCRA.

Final Surface Configuration

UEI did not request a variance from AOC. The Division reviewed all the pre-mining and post-mining topographic maps and cross sections to determine if the post-mining topography, excluding elevation, closely resembles its pre-mining configuration. The Division's finding were as follows:

- UEI showed the pre-mining topography shown on Plate 5-1A and the post-mining topography on Plate 5-6. One difference between the pre-mining and post-mining topography is that the post-mining contours were usually smoother. However, pocking and other surface roughening techniques tend to make the post-mining surface look more natural after a few years.

- The cross-sections shown on Plate 5-7A-1 through Plate 5-7A-4 show that pre-mining and post-mining contours will be similar between cross section 0+00 and 14+00. The major changes will occur in the area of the main mine facilities. The area in and around the reclaimed refuse pile will be higher than the pre-mining topography. The reason for the increase in elevation is that coal mine waste will be disposed of in that area. The increase in elevation is minor and will not interfere with surface flows.

- UEI showed pre-mining and post-mining cross-sections on Plate 5-7B-1 through Plate 5-7B-3 for cross sections 16+00 to 26+00. The concrete disposal area will have an elevation slightly lower than the pre-mining elevation as shown on cross-section 18+00. The reason for the elevation decrease is the pre-mining slopes do not meet the minimum safety factor requirements (safety factor of 1.3) therefore; the area cannot be restored to the pre-mining contours. The post-mining contours do meet the minimum safety factor requirements and blend into the surrounding area. UEI will leave cut slopes from the road embankment as shown in cross-section 16+00.

- Figure 2 of Appendix 5-7 shows detailed cross-sections of the pre-mining, operational and post-mining refuse-pile area. The reclaimed refuse pile will be a slight mound. The mound will not impound any water. See the profile on Figure 1 of Appendix 5-7 for details.

All Highwalls to be Eliminated

UEI states the following in Section 553.120:

"Minor highwalls may be created with the development of the rock slope portals. Upon completion of mining, these entries will be sealed as per Closure for Mine Openings Appendix 5-6, and highwalls will be eliminated during the reclamation phase of the operation. During reclamation, suitable materials will be placed against the portals. This material will be shaped to eliminate the highwall and to bring the slope back to the approximate original contour."

Plate 5-9 shows the pre-mining, operational and post-mining cross sections for all portals. The two portals that provide access to the mine via the rock tunnel will have highwalls or face-ups that are approximately the same height as the openings, which is 6 feet. The highwalls may be slightly taller because UEI may need to remove loose rock. Since the portal face up areas are in a nearly vertical cliff, UEI will eliminate the highwall by backfilling against the portal face-up.

The fan portal will have a 17-foot highwall. UEI will have to remove some of the cliff when they construct the fan facility, because it will be in a high cliff. Equipment access to the fan portal will be limited. Therefore, UEI will airlift equipment to and from the site to reclaim the highwall.

Safety is a major concern with highwalls. Since the Lila Canyon highwalls are in an existing cliff, the existence and reclamation of the highwalls will not create additional safety hazards. The steep cliffs above the two lower reclaimed portals will prevent people, livestock, and wildlife from traveling over the highwall areas. People, livestock, and wildlife traveling over the upper reclaimed highwall will face the same hazards as found on any other slope in the area.

Because UEI will restore the highwall areas to approximate pre-mining topography, the Division finds that the highwall elimination plans meets the minimum requirements of R645-301-553.120.

Hydrology

General concerns with hydrology are that UEI restore drainages, control sediment, and prevent hazardous and toxic discharges. The Division considers that UEI will meet those conditions when they meet the hydrologic reclamation requirements.

Findings:

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

BACKFILLING AND GRADING

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

Analysis:

General

UEI met the minimum requirements for backfilling and grading. Those requirements are that disturbed areas shall be backfilled and graded to: achieve the approximate original contour; eliminate all highwalls, spoil piles, and depressions; achieve a postmining slope that does not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long term static safety factor of 1.3 and to prevent slides; minimize erosion and water pollution both on and off the site; and, support the approved postmining land use.

The postmining slope may vary from the approximate original contour when approval is obtained from the Division for a variance from approximate original contour requirements, or when incomplete elimination of highwalls in previously mined areas is allowed under the regulatory requirements. Small depressions may be constructed if they are needed to retain moisture, minimize erosion, create and enhance wildlife habitat, or assist revegetation.

If it is determined by the Division that disturbance of the existing spoil or underground development waste would increase environmental harm or adversely affect the health and safety of the public, the Division may allow the existing spoil or underground development waste pile to remain in place. Accordingly, regrading of settled and revegetated fills to achieve approximate original contour at the conclusion of underground mining activities shall not be required if: the settled and revegetated fills are composed of spoil or nonacid- or nontoxic-forming underground development waste; the spoil or underground development waste is not located so as to be detrimental to the environment, to the health and safety of the public, or to the approved postmining land use; stability of the spoil or underground development waste must be demonstrated through standard geotechnical analysis to be consistent with backfilling and

grading requirements for material on the solid bench (1.3 static safety factor) or excess spoil requirements for material not placed on a solid bench (1.5 static safety factor); and, the surface of the spoil or underground development waste shall be vegetated in accordance with the revegetation standards for success, and surface runoff shall be controlled in accordance with the regulatory requirements for diversions.

Spoil shall be returned to the mined-out surface area. Spoil and waste materials shall be compacted where advisable to ensure stability or to prevent leaching of toxic materials. Spoil may be placed on the area outside the mined-out surface area in nonsteep slope areas to restore the approximate original contour by blending the spoil into the surrounding terrain if the following requirements are met: all vegetative and organic materials shall be removed from the area; the topsoil on the area shall be removed, segregated, stored, and redistributed in accordance with regulatory requirements; the spoil shall be backfilled and graded on the area in accordance with the general requirements for backfilling and grading.

Disposal of coal processing waste and underground development waste in the mined-out surface area shall be in accordance with the requirements for the disposal of spoil and waste materials except that a long-term static safety factor of 1.3 shall be achieved.

Exposed coal seams, acid- and toxic-forming materials, and combustible materials exposed, used, or produced during mining shall be adequately covered with nontoxic and noncombustible materials, or treated, to control the impact on surface and ground water, to prevent sustained combustion, and to minimize adverse effects on plant growth and the approved postmining land use.

Cut-and-fill terraces may be allowed by the Division where: needed to conserve soil moisture, ensure stability, and control erosion on final-graded slopes, if the terraces are compatible with the approved postmining land use; or, specialized grading, foundation conditions, or roads are required for the approved postmining land use, in which case the final grading may include a terrace of adequate width to ensure the safety, stability, and erosion control necessary to implement the postmining land-use plan.

Preparation of final-graded surfaces shall be conducted in a manner that minimizes erosion and provides a surface for replacement of topsoil that will minimize slippage.

Achieve the Approximate Original Contour

Due to the overlay between the backfilling and grading requirements and the AOC requirements, the Division addressed all AOC regulations in the AOC section of the TA.

Eliminate All Highwalls, Spoil Piles, and Depressions

Due to the overlay between the requirements to eliminate all highwalls, spoil piles and depressions under AOC and under the backfilling and grading, the Division addressed all those regulations in the AOC section of the TA.

Achieve a Postmining Slope That Does Not Exceed Either the Angle of Repose or Such Lesser Slope as is Necessary to Achieve a Minimum Long Term Static Safety Factor of 1.3 and to Prevent Slides

UEI met the minimum the slope stability requirements. The slope stability requirements are in R645-301-553.130, which states that the post-mining slope will not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long-term static safety factor of 1.3 and prevent slides.

In Appendix 5-5 UEI discusses slope stability for the Lila Canyon Extension. In Table 1 they list the summary of the laboratory test results. The laboratory reports are included at the end of the appendix.

The results of the slope stability analysis are shown in the summary of Appendix 5.5. The slopes will meet or exceed the minimum safety factor requirement of 1.3.

Minimize Erosion and Water Pollution both on and off the Site

The Division considers that UEI has met those requirements if the general hydrology requirements have been met.

Post-Mining Land Use:

The Division considers that UEI has met those requirements if the general post mining land use requirements have been met.

Settled and Revegetated Fills:

The variances from AOC and other requirements for existing spoil or underground development waste do not apply to the Lila Canyon Extension since those materials are not present on the site before permit issuance.

Spoil Disposal:

Spoil is overburden removed during coal mining and reclamation. Overburden is all of the material that overlies a coal deposit, with the exception of topsoil. The only spoil that UEI will generate at the Lila Canyon Extension will be at the fan portal. UEI will use that spoil as

backfill at the fan portal site. The proper compaction of spoil is a performance standard that UEI must meet during reclamation.

Disposal of Coal Mine Waste and Underground Development Waste:

The Division and UEI consider the material from the rock slope tunnels to be coal mine waste; therefore, that material must be disposed of in a refuse pile. In addition to the rock slope material, mine development waste and reject material from the crushing process are also potential sources of coal mine waste.

The reclamation plan for the refuse pile is in Appendix 5-7. The refuse pile will meet the requirements of R645-301-553.250 because:

- The reclaimed slopes will meet the AOC requirements and will support the post-mining land use. UEI will construct no terraces on the outslopes of the refuse pile. The grade of the outslopes will not be steeper than 3H: 1V; see Figure 2 of Appendix 5-7 for details.
- UEI will cover all refuse material with a minimum of 4 feet of material; see Figure 2 of Appendix 5-7 for details.
- The slopes in and around the reclaimed refuse pile will have very gentle slopes with a stability factor greater than 16.19 (see Appendix 5-7). The minimum safety-factor requirement is 1.3. Thus, the slopes of the reclaimed refuse pile are considered stable.

Exposed Coal Seams and Acid- and Toxic-Forming Materials and Combustible Materials:

The only exposed coal will be at the fan portal area. The cross section of the reclaimed fan portal on Plate 5-9 shows that the coal seam will be backfilled by more than 4 feet of fill materials.

Previously Mined Areas

There are no known previously mined areas in the disturbed area boundaries for the Lila Canyon site.

Special Provisions for Steep Slope Mining

Neither backfilling and grading on steep slopes, nor special provisions for steep slope mining are considered for this TA because Lila Canyon Extension area is not considered a steep slope mine. Special provisions for steep slope mining would apply if UEI planned to get a variance from AOC requirements. Since UEI did not apply for an AOC variance, they are not required to address these requirements.

Findings:

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

MINE OPENINGS

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

Analysis:

UEI met the minimum requirements for this section of the R645 – Rules. Those rules require that each exploration hole, other drillhole or borehole, shaft, well, or other exposed underground opening shall be cased, lined, or otherwise managed as approved by the Division to prevent acid or other toxic drainage from entering ground and surface waters, to minimize disturbance to the prevailing hydrologic balance and to ensure the safety of people, livestock, fish and wildlife, and machinery in the permit area and adjacent area. Each exploration hole, drill hole or borehole or well that is uncovered or exposed by mining activities within the permit area shall be permanently closed, unless approved for water monitoring or otherwise managed in a manner approved by the Division. Use of a drilled hole or monitoring well as a water well must meet the provisions required to protect the hydrologic balance. This section does not apply to holes drilled and used for blasting, in the area affected by surface operations.

Each mine entry which is temporarily inactive, but has a further projected useful service under the approved permit application, shall be protected by barricades or other covering devices, fenced, and posted with signs, to prevent access into the entry and to identify the hazardous nature of the opening. These devices shall be periodically inspected and maintained in good operating condition by the person who conducts the underground mining activities.

Each exploration hole, other drill hole or borehole, shaft, well, and other exposed underground opening which has been identified in the approved permit application for use to return underground development waste, coal processing waste or water to underground workings, or to be used to monitor ground water conditions, shall be temporarily sealed until actual use.

When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well, each shaft, drift, adit, tunnel, exploratory hole, entry way or other opening to the

surface from underground shall be capped, sealed, backfilled, or otherwise properly managed, as required by the Division and consistent with the requirements of 30 CFR Section 75.1711. Permanent closure measures shall be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.

UEI commits in Section 529 of the PAP to seal all underground openings when no longer needed. See Appendix 5-6 for the portal-sealing plan. The portal-sealing plan meets Division and MSHA requirements. In addition, UEI will seal all wells when no longer needed.

As part of the performance standards, the Division will require UEI to barricade and fence mine entries that are temporarily inactive in the permit area. UEI must post warning signs around the entries and periodically inspect and maintain the barricades.

Findings:

UEI meets the minimum mine openings requirements of the regulations.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

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

Analysis:

Reclamation

UEI met the mimimum requirements for this section of the R645 –Rules. Those rules require that a road not to be retained under an approved postmining land use shall be reclaimed in accordance with the approved reclamation plan as soon as practicable after it is no longer needed for mining and reclamation operations. This reclamation shall include: closing the road to traffic; removing all bridges and culverts unless approved as part of the postmining land use; removing or otherwise disposing of road-surfacing materials that are incompatible with the postmining land use and revegetation requirements; reshaping cut and fill slopes as necessary to be compatible with the postmining land use and to complement the natural drainage pattern of the surrounding terrain; protecting the natural drainage patterns by installing dikes or cross drains as necessary to control surface runoff and erosion; and, scarifying or ripping the roadbed, replacing topsoil or substitute material and revegetating disturbed surfacesUEI has committed to reclaim all roads within the disturbed area boundaries.

UEI will remove and bury the road surfaces (road base gravel) on site and cover it with a minimum of two feet of material. UEI will bury concrete under four feet of material. UEI stated that they would dispose of the asphalt off site, see 542.640 of the PAP

Retention

UEI met the minimum requirements for this section of the R645 –Rules. Those rules require that a road to be retained for an approved postmining land use shall be classified as a primary road and designed constructed and maintained in accordance with the requirements for primary roads and in consideration of the approved postmining land use.

UEI states in section 642.600 of the PAP that there will be no roads left in the disturbed area after reclamation.

Findings:

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

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

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

Analysis:

Affected Area Boundary Maps

UEI met the minimum requirements of this section of the R645 –Rules. Those rules require that UEI show the boundaries of all areas proposed to be affected over the estimated total life of all mining activities and reclamation activities, with a description of size, sequence, and timing of phased reclamation activities and treatments. All maps and cross sections used for reclamation design purposes shall clearly show the affected and permit area boundaries in reference to the reclamation work being accomplished.

Plate 1-1, Permit Area Map, shows the affected areas for the Horse Canyon Mine. The areas include Part A, the Horse Canyon Project and Part B, the Lila Canyon Extension.

Bonded Area Map

UEI met the minimum requirements of this section of the R645 –Rules. Those rules require that UEI shall identify the initial and successive areas or increments for bonding on the permit application map and shall specify the bond amount to be provided for each area or increment. The bond or bonds shall cover the entire permit area, or an identified increment of land within the permit area upon which the operator will initiate and conduct surface coal mining and reclamation operations during the initial term of the permit. As surface coal mining and reclamation operations on succeeding increments are initiated and conducted within the permit area, UEI shall file with the Division an additional bond or bonds to cover such increments. Independent increments shall be of sufficient size and configuration to provide for efficient reclamation operations should reclamation by the Division become necessary.

The Division bonds for activities that will occur within the disturbed area boundaries. Several maps show the disturbed area boundaries, including Plate 1-2 Disturbed Area Map and Plate 5-2, Surface Area

Reclamation Backfilling And Grading Maps

UEI met the minimum requirements of this section of the R645 –Rules. Those rules require that contour maps and cross sections to adequately show detail and design for backfilling and grading operations during reclamation. Where possible, cross sections shall include profiles of the pre-mining, operations, and post-reclamation topography. Contour maps shall be at a suitable scale and contour interval so as to adequately detail the final surface configuration. When used in the formulation of mass balance calculations, cross sections shall be at adequate scale and intervals to support the mass balance calculations. Mass balance calculations derived from contour information must demonstrate that map scale and contour accuracy are adequate to support the methods used in such earthwork calculations. Detailed cross sections shall be provided when required to accurately depict reclamation designs which include, but are not limited to: terracing and benching, retained roads, highwall remnants, slopes requiring geotechnical analysis, and embankments of permanent impoundments.

Several maps and cross-sections will be used during backfilling and grading. The general cross-sections are on Plate 5-7A-1 through Plate 5-7A-4 and Plate 5-7B-1 through Plate 5-7B-3. Cross-sections on Figure 1 and Figure 2 in Appendix 5-7 show the final backfilling and grading plan for the refuse pile. Plate 5-6 shows the post-mining contours.

Reclamation Facilities Maps

UEI met the minimum requirements of this section of the R645 –Rules. Those rules require that UEI show the location of each facility that will remain on the proposed permit area as a permanent feature, after the completion of underground mining activities. Location and final disposition of each sedimentation pond, permanent water impoundment, coal processing waste bank, and coal processing water dam and embankment, disposal areas for underground

development waste and excess spoil, and water treatment and air pollution control facilities within the proposed permit area to be used in conjunction with phased reclamation activities or to remain as part of reclamation.

In Section 542.320 of the PAP, UEI states that there will not be any surface facilities left after final bond release.

Final Surface Configuration Maps

UEI met the minimum requirements of this section of the R645 –Rules. Those rules require that UEI show sufficient slope measurements to adequately delineate the final surface configuration of the area affected by surface operations and facilities, measured and recorded according to the following: each measurement shall consist of an angle of inclination along the prevailing slope extending 100 linear feet above and below or beyond the coal outcrop or the area disturbed or, where this is impractical, at locations specified by the Division; where the area has been previously mined, the measurements shall extend at least 100 feet beyond the limits of mining disturbances, or any other distance determined by the Division to be representative of the post-reclamation configuration of the land; and, slope measurements shall take into account variations in slope, to provide accurate representation of the range of slopes and reflect geomorphic differences of the area disturbed through reclamation activities.

Plate 5-6 shows the contours within and for at least 100 feet outside the disturbed area boundaries. The contour intervals are 5-foot. In addition, the cross sections are on 200 foot intervals. The Division considers the Plate 5-6 adequate to show the final surface configuration.

Reclamation Surface And Subsurface Manmade Features Maps

UEI met the minimum requirements of this section of the R645 –Rules. Those rules require that the location of all buildings in and within 1,000 feet of the proposed permit area, with identification of the current or proposed use of the buildings at the time of final reclamation. The location of surface and subsurface manmade features within, passing through, or passing over the proposed permit area, including, but not limited to, major electric transmission lines, pipelines, fences, and agricultural drainage tile fields. Each public road located in or within 100 feet of the proposed permit area and all roads within the permit area which are to be left as part of the post-mining land use. Buildings, utility corridors, and facilities to be used in conjunction with reclamation or to remain for final reclamation.

The reclamation surface and subsurface manmade features map, Plate 5-3, show the following:

- Plate 1-1 shows that there are no buildings within 1,000 feet of the proposed permit area.

- Plate 1-1 shows the location of each public road with in 100 feet of the proposed permit area. Plate 5-6 show the location of the public roads with in 100 feet of the Lila Canyon Project disturbed area.

- With the exception of the culvert under the County road no other surface or subsurface manmade feature as scheduled to remain after final reclamation. See Plate 5-6.

Certification Requirements.

UEI met the minimum requirements of this section of the R645 –Rules. Those rules require that cross sections, maps, and plans required to show the design, location, elevation, or horizontal or vertical extent of the land surface or of a structure or facility used to conduct mining and reclamation operations shall be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, a professional geologist, or in any State which authorizes land surveyors to prepare and certify such cross sections, maps, and plans, a qualified, registered, professional land surveyor, with assistance from experts in related fields such as landscape architecture.

Each detailed design plan for an impounding structure that meets or exceeds the size or other criteria of the Mine Safety and Health Administration, 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified registered professional engineer with assistance from experts in related fields such as geology, land surveying, and landscape architecture; include any geotechnical investigation, design, and construction requirements for the structure; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

Each detailed design plan for an impounding structure that does not meet the size or other criteria of 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, or in any State which authorizes land surveyors to prepare and certify such plans, a qualified, registered, professional land surveyor, except that all coal processing waste dams and embankments shall be certified by a qualified, registered, professional engineer; include any design and construction requirements for the structure, including any required geotechnical information; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

All maps and cross sections that needed certification was certified.

Findings:

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

BONDING AND INSURANCE REQUIREMENTS

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

Analysis:

General

Form of Bond

The Division will allow UEI to submit a bond after the Division approves the Lila Canyon submittal but before the Division issues the permit. Before the Division issues a permit, UEI must post a bond; see the requirements of R645-301-820. Upon receipt of the bond, the Division then makes a finding about whether or not the bond is in the proper form; see R645-301-860 for the requirements for the proper form of the bond. The Division cannot issue the permit until UEI has posted an adequate bond.

Determination of Bond Amount

UEI met the requirements of this section of the R645 –Rules. Those rules require that the amount of the bond required for each bonded area shall: be determined by the Division; depend upon the requirements of the approved permit and reclamation plan; reflect the probable difficulty of reclamation, giving consideration to such factors as topography, geology, hydrology, and revegetation potential; and, be based on, but not limited to, the estimated cost submitted by the permit applicant.

The amount of the bond shall be sufficient to assure the completion of the reclamation plan if the work has to be performed by the Division in the event of forfeiture, and in no case shall the total bond initially posted for the entire area under 1 permit be less than $10,000.

An operator's financial responsibility for repairing material damage resulting from subsidence may be satisfied by the liability insurance policy required in this section.

Based on the information that UEI provided, the Division determined that the reclamation cost must be a minimum of $1,686,000 in 2008 dollars. See Appendix 8-1 for detailed reclamation costs.

UEI did not bond for subsidence. The regulations do not require a Permittee to bond for subsidence unless damage occurs to either structures or facilities protected under R645-301-525.500 or when contamination, diminution or interruption to a water supply protected under R645-301-731.530 occurs. UEI did obtain subsidence insurance.

Terms and Conditions for Liability Insurance

UEI is required to submit a certificate issued by an insurance company authorized to do business in Utah to demonstrate that UEI has a public liability policy in force for the coal mining and reclamation activities in the permit area. The policy will provide a minimum insurance coverage for bodily injury and property damage of $300,000 for each occurrence and $500,000 aggregate.

UEI has an ACCORD form in Appendix 8-2 and 8-3 from the Federal Insurance Company stating the policy limits.

Since the Horse Canyon Mine has a valid permit, UEI is required to have insurance at all times. The amounts of the policy are as follows:

- General aggregate limit $3,000,000
- Products/completed operations aggregate limit $1,000,000
- Advertising injury and personal limit $1,000,000
- Each occurrence $1,000,000
- Medical expense limit $10,000

The policy amounts are adequate to meet the minimum regulatory requirements.

UEI must maintain the policy in full force during the life of the permit or any renewal thereof, including the liability period necessary to complete all reclamation operations. The policy will include a rider requiring that the insurer notify the Division whenever substantive changes are made in the policy, including any termination or failure to renew. The ACCORD form, in Appendix 8-2 and Appendix 8-3, states that the issuing company will notify the Division at least 45 days before cancellation.

UEI also has subsidence coverage included with $250,000 property damage deductible under the general liability policy.

Findings:

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

RECOMMENDATIONS:

The Division should approve the application but not issue the permit until the reclamation bond has been posted.

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