

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

October 20, 2009

TO: Internal File

THRU: Dave Darby, En Sci III / Geology / Hydrology / Team Lead *DS*
James D. Smith, En Sci III / Permit Supervisor / Task Manager *DS 9/12/09*

FROM: Peter Hess, En Sci III / Engineering / Bonding *PHH by SRS*

RE: SURFACE DESIGN CHANGES, UtahAmerican Energy, Inc., Lila Canyon Mine, C/007/013 Permit Area "B", Task ID # 3351

SUMMARY:

The Division issued the permit for the Lila Canyon Extension of the Horse Canyon Mine on May 18, 2007.

On May 2, 2008, the Permittee submitted an application to the Division to permit design changes (Detailed Design Changes, Task ID # 2969) to the approved Mine plan. Task ID # 2969 was returned as deficient, and the Permittee was instructed to re-submit the entire application on July 8, 2008.

On July 22, 2008, the Permittee re-submitted "Detailed Design Changes" to the DOGM; this submittal was identified as Task ID # 3017. The Division initiated processing of this application, and technical memos were generated relative to bonding, biology, engineering, soils, and hydrology. These memos contained deficiencies, and the application was returned to the Permittee on January 26, 2009.

The Permittee responded to the deficiencies aired by the Division review of Task ID # 3017 on July 15, 2009.

This memo will address the adequacy of the Task ID # 3351 application as it relates to deficiencies aired relative to R645-301, Coal Mine Permitting, R645-500, Engineering and R645-800, Bonding and Insurance.

TECHNICAL ANALYSIS:

OPERATION PLAN

Coal Mine Permitting Requirements

In the review of Task ID # 3017, the Division identified the following deficiencies;

1) **“R645-301-121-200 –PHH, the discussion for disposal of mine development waste and coal processing waste must be re-written such that it is clear and concise”.**

Analysis:

The Permittee response, submitted July 15, 2009, (Task ID # 3351) states the following; “Sections discussing disposal of mine development waste and coal processing waste have been clarified.”

The submitted Task ID # 3351 continues to lack clarity as to where final disposal of coal processing waste from Lila Canyon will be accomplished. The Permittee references disposal at:

- 1) ECDC (a solid waste landfill) near East Carbon, Utah, and
- 2) The Wildcat Loadout in Consumers Wash / Wildcat Canyon, and
- 3) “or other approved facility”.

(Please refer to Appendix 5-7, and Section 528.321, Chapter 5 of Task ID # 3351).

The deficiency remains. The Permittee must do the following in order to meet the requirements of the R645 Coal Mining Rules;

- a) remove all references to coal processing waste disposal at the ECDC facility;
- b) Identify a facility permitted under the R645 Coal Mining Rules for the permanent disposal of coal mine waste or
- c) Permit a final disposal facility within the Lila Canyon permit area or

2) **“Plate 5-2 shows the powder and cap magazine storage site (as being located/PHH) on the topsoil storage pile.” “Please correct the Plate to show the storage location for the explosives magazine adjacent to, but not on the topsoil storage pile.”**

The Permittee's response of July 15, 2009, (Task ID # 3351) states that *"the Powder and Cap magazine location has been changed to the water tank pad"*.

A review of Plate 5-2 Surface Area / Official Disturbed Area Boundary Map indicates that the explosive and detonator storage magazines (identified as item # 35 in the Mine Facility List) are located on the south end of the water tank pad. Field inspections conducted at the site confirm that the water tank pad location for these storage magazines is correct. Plate 5-2 is P.E. certified by Mr. R. Jay Marshall, P.E., in accordance with the requirement R645-301-512.120 (521.167).

The Permittee has adequately addressed the deficiency relating to the location of explosive and detonator storage magazines, by relocating them to a safer site. They are depicted on a P.E. certified surface facility map which shows their location.

3) "Section 520 (Refuse Piles) and Appendix 5-7 refer to a Temporary Refuse Pile. Please provide the location of the Temporary Refuse Pile on Plate 5-2".

The Permittee's response states *"Plate 5-2 has been revised to show location of the mine development waste material. Appendix 5-7 and Section 520 has been re-written for clarity"*.

Plate 5-2, Surface Area shows Item # 27 on the Mine Facility List as the "temporary mine development waste" storage pile. Discussions with Mr. Marshall prior to the submittal of the Task ID # 3351 response determined that this temporary waste storage facility is for development waste which must be shipped outside of the Lila Canyon underground workings because of insufficient storage availability underground for waste material developed from the construction of ventilation overcasts, belt drive boom holes, sumps, etc. This temporary storage pile IS NOT A PERMANENT DISPOSAL FACILITY FOR COAL MINE WASTE and therefore does not need to meet the requirements relative to lift thickness, compaction, or outslope configuration. The geometric configuration of this pile in its temporary storage status would be a cone. Any failure of this type of structure would be small and the failed material volume would not leave the run-of-mine coal pile pad area. As is stated above, Plate 5-2 is P.E. certified, and meets the requirement for certification relative to R645-301-512.120 and 512.200.

Findings:

Task ID # 3351 is deficient. In accordance with the requirements of

R645-301-536, Coal Mine Waste;

The Permittee must clearly state where the coal mine waste generated by the screening plant at Lila Canyon will see final deposition. The material must be disposed of at a R645 permitted site, either within the C/007/013 permit area, or within an off-site

area approved by the Division for that purpose. The off-site area must be permitted under the R-645 Coal Mining Rules.

TOPSOIL AND SUBSOIL

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

In the review of Task ID # 3017, the Division identified the following deficiencies;

Topsoil Removal and Storage

R645-301-232.100-PHH, Topsoil Removal

R645-301-232.600-PHH, Timing

The Design Change submittal designated as Task ID # 3017 contained text in Appendix 5-7 Rock Slope Material / Refuse, on Page 2, Placement of Rock Slope Material (Refuse) which stated the following;

“Rock slope material (refuse) will be dumped into the hole created from the removal of the subsoil. The refuse will be placed in the hole in 12” lifts and compacted using a front end loader. Once the hole is filled to the planned level the subsoil will be placed over the top of the refuse in 12” lifts and compacted with a front end loader, then another hole will be constructed by removing subsoil adjacent to the previous hole. The topsoil removal and storage, subsoil removal, hole being filled with refuse, and subsoil replacement, procedure will be repeated as additional refuse disposal area is needed”.

Analysis:

The Division identified the Permittee’s proposed procedure for placement of the rock tunnel development waste as being deficient, in that R645-301-232.100 requires that “all topsoil will be removed as a separate layer from the area to be disturbed and segregated.” The Division interprets this process as meaning all topsoil must be removed and segregated by a single process or single operation, before other mining related activities can occur.

The Permittee’s proposed method did not describe removing all topsoil and segregating and storing this material, prior to removal of all subsoil and segregating that volume as single processes, but included other mining activities (i.e., burying rock tunnel material). This proposed method allows for contamination of topsoil and subsoil volumes and is too complicated of a process to monitor the recovery of required topsoil / subsoil volumes.

The Permittee responded to this deficiency by stating the following; *“the subsoil is considered growth media and is treated as topsoil”*.

This response is listed in “Response to Surface Deficiencies / July 15, 2009, on Page 4. However, the Permittee does not state where this commitment has been placed in the MRP.

In reviewing the deficiency aired under **R645-301-232.600-PHH, Timing**, the Division determined that the Permittee stated on Page 5 of the “Response to Surface Deficiencies “ dated July 15, 2009 that “Appendix 7-4 has been re-written using defined terms”, (i.e., terms defined within the R645 Coal Mining Rules). The Division determined that the reference to Appendix 7-4 is a typographical error, and the statement should reference Appendix 5-7.

The Task ID # 3351 submittal contains a revised Appendix 5-7, Rock Slope Material Mine Development Waste which contains the commitment previously made under Ground Preparation (Page 2) as follows; *“Vegetation and topsoil (subsoil is treated as topsoil) will be removed from the proposed rock slope storage area and stored in the topsoil pile as shown on Plate 5-2”*.

The Permittee has committed to removal of all topsoil as one process, and committed to a second removal process for the subsoil in the shop / warehouse pad where the rock tunnel development waste is to be placed.

Findings:

The commitments made in the revised Appendix 5-7 meet the regulatory requirements in R645301-232.100 and 232.600.

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:

Coal Mine Waste

Refuse Piles

The Division identified the following deficiencies during the review of the previous Detailed Design Changes submittal, Task ID # 3017;

1) **R645-301-513.400, R645-301-528.320, PHH, Refuse Piles;** *“the Division believes the Task ID # 3017 application lacks clarity as far as the disposal of (coal/PHH) mine wastes within the Mine’s permit area. If the Permittee intends to place coal processing waste in any of the fill areas at the Lila Canyon Mine, those areas must meet the R645 and 30 CFR requirements for refuse piles. The Permittee must realize that areas designated for permanent disposal of coal processing waste cannot be used for other mining related activities / facility construction”.*

2) **R645-301-536, R645-301-121.200, and R645-100,WHW, Refuse Piles;**

“The Permittee must use defined terms when referring to underground development waste. The term rock slope material is not defined and therefore can be confusing to the reader. In addition, the final disposal site for the underground development waste must be referred to as a refuse pile and not rock slope material”.

3) **R645-301-536, and R645-301-536.110, and R645-301-121.200-WHW, Refuse Piles;**

“The Permittee must update Appendix 5-7 and the MRP. At a minimum, the Permittee must provide new slope stability calculations to demonstrate that the refuse pile will have a minimum safety factor of 1.3. In addition, the Permittee must also update all other sections of Appendix 5-7 that have changed because of the new location.”

4) **R645-301-553.250, Refuse Piles – WHW;** *“The Permittee must show on the cross sections and profiles the final configuration of the site on cross sections 13+00 and 14+00. The current cross sections show that underground development waste will be stored on the site during the operational phase but the cross sections show that the underground development waste will be removed at reclamation.”*

Analysis:

The material generated from the development of the Lila rock tunnels is being permanently stored in the pad construction for the shop / warehouse. This has already been approved within the original mine plan application, prior to issuance of the DOGM permit for the Lila Canyon Mine / permit area “B”. The rock tunnel material is mainly sandstone, and is of the same chemical characteristics as the sandstone talus resting on the undisturbed slopes in the area. The material will generally not be backstowed into the rock tunnels or otherwise removed. However, as is required under the R645 Coal Mining Rules for permanent closure of underground mine openings, a minimum of 25 feet of backfill must be placed out by permanent concrete block seals. Appendix 5-6, Closures for Mine Openings, Figure 4.6.2-1 “Typical Final Reclamation Portal Seal” indicates that

all of the fill material which will be used for backing the Lila Canyon Mine entries is to be non-toxic and non-combustible”. Not all of the rock slope material to be stored in the Shop / warehouse pad area, will be acceptable to meet this “non-toxic” criteria.

The Division’s analysis of the reported soil sample chemistry of the mudstone sample taken (date of sample July 30, 2009 / 450 tunnel depth) is that the SAR values are extreme and the selenium values are unsuitable within the surface four feet. Upon completion of the Lila Canyon rock slopes, approximately 28,000 LCY of material will be buried within the Shop / Warehouse pad, and the coal storage pad. It is important to note that the rock tunnel development material will more than likely be re-shaped by re-grading the shop / warehouse pad and the coal storage pad to the final surface configurations.

Section 553.300, Chapter 5, Page 66 of the approved Lila Canyon MRP states that four feet of cover will be placed over any acid or toxic waste produced during mining at the Lila Canyon site. The meeting of this requirement will ensure that any toxic materials will be buried to the point that they should have no effect on plants or grazing animals in the area.

The Permittee’s response adequately addresses the previous deficiency aired under **R645-301-553.250** for refuse piles.

5) **R645-301-553.350, and R645-301-121.200 – WHW**; *“the Permittee must provide information about how materials at the coal seam and the fan portal will be tested and handled for acid and toxic forming materials”*.

Analysis:

Chapter 6, GEOLOGY, Page 34 of the APPROVED mining and reclamation plan contains the following statement; “Analysis of the strata immediately above and below the seam being mined at the Lila Canyon fan portal (only the lower Sunnyside seam was developed by the Geneva Mine), collected by BXG, and an analysis of the Horse Canyon refuse pile (Geneva Mine roadside waste rock site/PHH) have been included in Appendix 6-2. None of the analysis have an acid-base potential that would indicate an acid-toxic problem.”

The revised Appendix 5-7, Rock Slope Material Mine Development Waste, as submitted within Task ID # 3351, commits the Permittee to sampling the rock slope material five times. The last sample, which is to be taken “near the completion of the rock slopes” will be representative of the strata adjacent to the Sunnyside “main seam”. Chapter 6, page 20 of the approved Lila Canyon MRP states that the true relationship of the lower seam and the Sunnyside main seam is not clear.

The analyses of the BXG samples, the Geneva Mine road side waste rock disposal area, and the fifth sample taken during the development of the Lila Canyon rock tunnels should provide comparable chemical analyses for the strata adjacent to the coal seam

being developed at the Lila Canyon Mine. All samples are from strata adjacent to the lower Sunnyside coal seam.

Findings:

The information contained in Chapter 6, Page 34 of the approved MRP for the Lila Canyon Mine, permit area "B" along with the commitment to sample and analyze the rock slope development material adjacent to the intercept of the Sunnyside coal seam is adequate to address the deficiency aired under **R645-301-553.350 and 121.200**.

6) **R645-301-553.350 and R645-301-121.200-WHW**; *"The Permittee must specifically state in Appendix 5-7 that the material in the temporary refuse pile will be stored on site not longer than a specific amount of time and in addition, once the specific amount of material has been placed in the refuse pile the Permittee will ship the material off site"*.

The response received from the Permittee, submitted as part of the Task ID # 3351 application is as follows;

"Appendix 5-7 has been revised. Lila Canyon does not have a temporary refuse pile. The material in the pile on the coal pad is underground development waste or coal processing waste generated by the Lila Canyon Mine screening plant. The temporary pile has been addressed in the revised Appendix 5-7."

The revised Appendix 5-7, Rock Slope Material / Mine Development Waste submitted with the Task ID # 3351 application states that Plate 5-2 shows the location of both a "temporary" mine development waste (rock pile) and the location of where the rock slope material will be buried.

"Although washing of coal is not proposed, it is likely that some coal processing waste will be generated by the operation of the screening plant and from the Mine itself. It is difficult to predict an exact amount but the anticipated volume is expected to be very insignificant".

As of the date of the Task ID #3351 submittal, the Permittee anticipates that the amounts of coal processing waste being generated at the Lila screening plant will come from

- 1) the interception of geologic anomalies within the coal seam by the coal extraction process,
- 2) small caves of roof rock immediately above the Sunnyside coal seam,
- 3) excess material volume from the construction of ventilation overcasts, conveyor belt transfers, or other areas where additional clearance is required above or below the coal seam,
- 4) non-saleable rock encountered during the development of Mine entries through faulted areas.

The Division anticipates that the Permittee may want to dispose of underground development waste within the Mine. However, the Task ID # 3351 application does not address this activity, (See R645-301-536.520, 513.300, 528.321, 536.700, and 746.400).

It is impossible for the Permittee to predict how much coal processing waste will be generated by the crushing and screening of the mined seam. It is also impossible to predict how much mine development waste will require shipment out of the Mine for permanent storage. At the present time, the Permittee has stated that:

- a) the temporary waste storage pile which will be located on the ROM coal pad will contain a "few hundred tons" of material at maximum capacity.
- b) This material will then be shipped off of the Lila Canyon Mine site on an as needed basis by truck to either Wildcat Loadout or other approved site.

To date, the Permittee has not received a Division approval to ship the material off of the Lila Canyon site.

The Permittee's response as contained in "Response to Surface Deficiencies-July 15, 2009" states the following; "Appendix 5-4 has been re-written using defined terms. No coal processing waste generated at Lila will be stored in pad areas."

The deficiency identified above which states that the refuse pile must have a minimum safety factor of 1.5 is not required, as the new Mine will not have a refuse pile whose intended purpose is permanent disposal of coal mine waste (as of August 18, 2009).

The Permittee anticipates that the coal volumes which will be produced from the Lila Canyon Mine will only contain a small percentage of coal mine waste. The waste will be generated from the dry screening and crushing of the ROM product. Transfer gates installed in by the coal stacking tube will allow shipment of coal waste generated at the screening plant to a location on the main stockpile pad. This is only a temporary storage facility and the stored volume will only consist of a few hundred tons of material (Refer to Chapter 5, section 520, Operation Plan, Page 16, Mine Development Waste Pile). The few hundred tons will develop into a conical shape; this material will not be spread or compacted into lifts, as is required under R645-301-536.200, 210, 220, 230.

This same section states that when the temporary pile reaches capacity (a few hundred tons) the material will be hauled to an approved disposal site. Page 1 of Appendix 5-7 states that "permanent disposal of coal mine waste will be at the ECDC site". **These statements not only conflict, but disposal of this material cannot occur at ECDC.** ECDC is not a site permitted under the R645 Coal Mining Rules.

The Permittee must dispose of Lila Canyon Mine coal processing waste within a permit area which is approved by the Division for permanent waste disposal purposes (R645-301-528.320). This can either be a currently existing / DOGM approved site, or a new permanent disposal site can be permitted. However, both of these sites would

require permitting through the Division prior to receiving coal mine waste for permanent disposal.

The landfill known as East Carbon Development Corporation is not a DOGM permitted facility under R645 jurisdiction and UAE can not ship coal processing waste to that facility for disposal.

The Division recommends that UtahAmerican consider permitting a permanent waste rock disposal site close to the Mine, or consider disposing of this material by some other method at a facility which is also under the State of Utah R645 Coal Mining Rules regulation (i.e., COVOL, Sunnyside Co-generation Associates, etc.).

A deficiency aired during the review of Task ID # 3017 stated that the Permittee must clarify the wording relative to “rock slope material” by using terms which are identified in the R645 Coal Mining Rules definitions.

In the definitions, “coal mine waste” is defined as either consisting of either coal processing waste or mine development waste. As is stated in Appendix 5-7, Page #1, “the rock slope material does not contain any coal and consists of siltstone, mudstone, and sandstone. Coal and carbonaceous shale are not found in the rock slope material” (See appendix 5-7, Task ID # 3351). The rock slope material is “mine development waste”, but it does not have the same characteristics as most mine development waste which comes from removal of the strata immediately adjacent to a coal seam. The rock tunnel development material is in reality, underburden.

The APPROVED Mine plan for the Lila Canyon Mine (Task ID # 2741) clearly states in Appendix 5-7, Page 1 that “the shop / warehouse will be constructed on the material removed from the rock slopes...” The volume of material is expected to vary from 25,000 to 28,000 cubic yards.

The material coming from the development of the rock slopes is not carbonaceous material, which is the type of material associated with coal mine roof conditions, coal seam “splits”, bony coal and other types of non-saleable rock. Personal observations of the rock tunnel material coming from the Lila Canyon portals indicates that the material is more than 90% sandstone. Carbonaceous waste and sandstone have different strength characteristics as well as different chemical characteristics.

As of the date of this document, two samples of rock slope material have been taken and analyzed for the parameters identified on TABLE 1, page #4 (See Task ID # 3351 application). Five samples have been required by the Division; the first two show that SAR values are extreme and that selenium values under unsuitable for use within four feet of the surface. The high SAR values could affect revegetation potential. The high selenium values have the potential to build up in plants and be toxic to grazing animals. The current post-mining land use for the Lila Canyon Mine site disturbed area is wildlife, grazing and recreational use. Thus the covering of the rock slope material to adequate depths is important in the Mine’s rock slope material area of deposition.

In accordance with the requirements of

R645-301-528.320, Coal Mine Waste, the Permittee must

- 1) revise Appendix 5-7 and /or Chapter 5, Page 16, Mine Development Waste Pile such that both areas of text say the same thing relative to where permanent disposal of coal processing waste from the Lila Canyon Mine will occur.
- 2) The Permittee must clearly state in the application that **it is the intent of UAE** to permanently dispose of coal processing waste which will be generated at Lila Canyon at the Wildcat Loadout, or some other coal mine waste disposal facility (pending Division approval) which is permitted under the R645 Coal Mining Rules.
- 3) The Permittee must remove all references in the application which mention disposal of coal processing waste at the East Carbon Development Corporation facility near East Carbon, Utah. ECDC is not a permitted facility under the R645 Coal Mining Rules.

Impounding Structures

Plate 5-2, revised June 2009 shows two constructed sediment ponds within the Lila Canyon Mine surface facilities. The smaller pond is identified on this Plate as the "Secondary Storm Drain Pond". The main Mine pond (#1), is identified within the "Mine Facility List". **Pond #2 must be identified** in the Mine Facility List.

Burning And Burned Waste Utilization

The requirements of this section are addressed in Chapter 5, section 528.323.1, .2, page 52. The commitments made in this permit application are adequate to meet the requirements of the R645 Coal Mining Rules.

Return of Coal Processing Waste to Abandoned Underground Workings

Section 528.321, Page 51 states that coal processing waste produced from the crusher / screening plant will not be returned to abandoned underground workings. The requirements of this regulation are not applicable to this permit amendment.

Excess Spoil

The Lila Canyon Extension of the Horse Canyon Mine is an underground coal extraction project which will utilize room and pillar secondary extraction as well as longwall secondary extraction measures. Spoil will not be generated at this operation.

Findings:

The application is deficient. Information relative to the disposal of coal processing waste generated by the crushing and screening of Lila Canyon ROM product must be clarified and amended. In accordance with the requirements of;

R645-301-528.320, Coal Mine Waste, the Permittee must

- 1) revise Appendix 5-7 and /or Chapter 5, Page 16, Mine Development Waste Pile such that both areas of text say the same thing relative to where permanent disposal of coal processing waste from the Lila Canyon Mine will occur.
- 2) The Permittee must clearly state in the application that **it is the intent of UAE** to permanently dispose of coal processing waste which will be generated at Lila Canyon at the Wildcat Loadout, or another permitted site approved by the Division for that purpose.
- 3) The Permittee must remove all references in the application which mention disposal of coal processing waste at the East Carbon Development Corporation land fill facility near East Carbon, Utah. ECDC is not a permitted facility under the R645 Coal Mining Rules.

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

Mining Facilities Maps

The Task ID # 3017 submittal identified the following deficiency;

R645-301-512.250-WHW; *“The Permittee must have each map and cross-section in Appendix 5-4 certified by a (Utah) registered professional engineer”.*

The response submitted by the Permittee, Task ID # 3351 on July 15, 2009, contains a new Appendix 5-4, New Facility Design, with the following verbiage; *“maps and cross sections in Appendix 5-4 have been certified.”*

Division review of the new Appendix 5-4 confirms that all Plates containing plan views of the surface facilities, plan view and cross-sections of certain facilities, plates

with cross-sections only (mine portal road, truck loading loop road, pond #1), rock slope material disposal plan, pond #1 undisturbed bypass culvert, and detailed design drawings for the main mine conveyor installation, the truck loadout, the coal pad reclaim facility, the crusher building and the electrical conduit trench plans.

Plates which contain multiple cross-sections do not have each individual cross-section certified. The Division feels that the certification of the aforementioned plates is adequate to meet the requirements of R645-301-512.

The Permittee has met the requirement of **R645-301-512.250**.

Mine Workings Maps

The Task ID # 3017 submittal identified the following deficiency;

R645-301-511.100-PHH, Proposed Coal Mining Operations ; *“The Permittee must provide a current 5 year Mine projection (the proposed coal mining operation), as part of the Subsidence Monitoring Plan”*.

The Permittee responded in Task ID # 3351 submittal in the following manner;
“Plate 5-5 with new 5 year projections has been updated and submitted”.

A review of Plate 5-5 has determined the following;

a) the Permittee anticipates initiation of coal production by beginning development mining where, what the Division will refer to as First East Mains, will begin in the second quarter 2010.

b) The First East Mains will be developed a distance of approximately six hundred feet, and then stopped.

c) Continuous mining will be turned toward the SSE for the remainder of third quarter 2010 such that the Permittee can determine the geologic characteristics of the “Entry Fault” which must be crossed to access two-thirds of the longwall reserves at Lila Canyon.

d) Fourth quarter 2010 is projected for the Mains to cross the Entry Fault and be developed an additional 1250 feet to the SSE.

e) While the Entry Fault crossing is being developed and driven 1250 feet to the SSE, continuous mining will resume in First East submains and will continue through 2011 with **the first** room and pillar continuous miner **secondary extraction area** projected to be driven and retreated (1st South off 1st East).

f) During 2012, Second East Mains and 1st, 2nd and 3rd South off 2nd East longwall panels will be developed, with 1st and 2nd South being extracted. 1st and 2nd south will have to cross two smaller faults in Section 23.

g) Room and pillar development and retreat is projected to occur in four panels through 2012. These mining areas are

- i. Second South off 1st East
- ii. 1st North off 1st East

-
- iii. 3rd South off First East
 - iv. 2nd North off 1st East

Plate 5-2 shows the anticipated mine projection through 2019, which exceeds the requested five year mine projection.

The burden at the portals is depicted at 500 feet; the burden at the bottom of 2nd East Mains is depicted as varying from 2,000 to 2,500 feet on the north side of the Entry Fault.

The 1st South off 1st East Main room and pillar retreat section will have a projected width of 500 feet, 11 to 12 feet of coal thickness, and cover varying from 1,000 to 1,500 feet (See Plates 5-2 and 5-3).

Certification Requirements

The Plate 5-2, Lila Canyon Mine 5 Year Projection Mine Map is P.E. certified by Mr. R. Jay Marshall, Utah registered professional engineer (certification date July 13, 2009).

Findings:

The Permittee has fulfilled the requirements of **R645-301-511.100, Proposed Coal Mining Operations**. The proposed 5 year mine projection is P.E. certified according to R645-301-512.110.

MINING OPERATIONS AND FACILITIES

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

The Division identified the following deficiency during the review of Task ID # 3017;

R645-301-521, PHH, General

“The Task ID # 3017 plan must clearly state where the fill volume for the ROM coal stockpile pad will come from. Estimated cut and fill volumes (mass balance) must be provided for the entire Mine site.”

The Permittee responded in the Task ID # 3351 application with the following:

“ A spreadsheet titled “*Estimate*” contains the cut / fill volumes and locations. It will be placed at the end of Appendix 5-4”.

Analysis:

The "Estimate" submitted contains 13 pages of information. Sheet 7 of 13 provides the soil volume estimate for the run-of-mine stockpile pad. 28, 756 cubic yards of soil were cut after removing the topsoil from the area; 77, 460 cubic yards of fill will be required to bring this surface facility to its final configuration / elevation.

Other information contained in the "Estimate" is relative to the following Lila Canyon facilities;

- 1) Cut / fill pond #1 (main sediment pond)
- 2) Cut / fill truck loadout loop
- 3) Cut / fill office and parking lot pad area
- 4) Cut / fill Secondary pond (pond #2 inside truck loading loop)
- 5) Cut / fill Mine road (portals access road, X-sections 0+00 to 26+81)
Total Cut Estimate, 46,380 cubic yards; Total Fill Estimate, 10,462 cubic yards
- 6) Cut / fill warehouse shop pad
- 7) Cut / fill water tank pad

Review of the submitted "Estimate" sheets provides participating soil volumes used to construct the ROM coal stockpile pad, which is the information requested in the deficiency.

The following soil volume estimates were used in the construction of the ROM coal stockpile pad;

- | | |
|---|-----------|
| 1) Pond #1 Cut..... | 25,140 CY |
| 2) Truck Loadout Loop..... | 17,656 CY |
| 3) Parking / Office Area..... | 11,559 CY |
| 4) Pond #2 Cut..... | 1,461 CY |
| 5) Mine (portal) Road 12+00 to 18+00..... | 4,625 CY |

Total.....60,441 CY

Findings:

The information provided by the Permittee meets the requirement relative to the construction of the ROM stockpile. Other provided soil volumes and their points of origin and final destination can be determined from the information submitted as part of Task ID # 3351.

The Permittee has met the requirement of **R645-301-521, Permit Applications, General / Calculations.**

SUBSIDENCE CONTROL PLAN

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

Analysis:

Renewable Resources Survey

Subsidence Control Plan

Plate 5-5, Mine Map shows how the Lila Canyon Mine will be developed in order to implement both room and pillar and longwall secondary extraction methods.

Plate 5-3, Subsidence Control Map shows the location of State appropriated water rights and private ownership rights both within and adjacent to the Lila Canyon mining area.

The renewable resource survey, as contained in Section 5.4 page V-11 of the permit area "A" mining and reclamation plan indicates that the following renewable resources exist within the Lila Canyon permit area;

- 1) ground water rights
- 2) grazing for domestic animals
- 3) timber
- 4) re-charge areas related to ground water storage.

This information has been inserted into the permit area "B" / Lila Canyon Mine plan in section **525.120, SUBSIDENCE POTENTIAL**, Chapter 5, page 34. 525.120 references 525.400, **Subsidence Control Plan**.

Page 35, Chapter 5 states that the Lila Canyon Mine will be a longwall operation. However, the review of Plate 5-5, Mine Map indicates that during the first five years of coal production, room and pillar secondary extraction methods will be implemented in panels off of First East. Thus, Lila Canyon will implement both continuous mining and longwall mining to produce the coal volumes necessary to meet production requirements.

The fifteen longwall panels projected will be mined by the shearer running up and down the dip of the Sunnyside seam. Overburden depths vary from 500 feet to over 2500 feet. Face widths are projected at approximately 950 feet (See page 36, paragraph 2). Longwall panel lengths are projected to vary from 3,800 to 7,000 feet.

The Permittee anticipates that subsidence will vary from 9.5 feet over panels having a 500 foot burden depth, and less than 3 feet over panels where the burden is 2500 feet.

Plate 5-3, Subsidence Control Map depicts the Mine workings (both longwall panels and room and pillar continuous mining extraction areas), the overburden contour depths, faults through the area, surface contours, water monitoring areas, and predicted deformation contours which will be the result of mining.

Plates 5-5 and 5-6 and the text contained in Chapter 5 on Pages 35 and 36 meet the following requirements established within the R645 Coal Mining Rules;

- 1) a description of the method of coal removal;
- 2) size, sequence, and timing of the development of the underground mine workings, (525.410).
- 3) map of the underground workings that describes the location and the extent of the areas in which planned subsidence mining methods will be utilized (these are the projected longwall panel recovery areas, (and the associated gate road entries)) and the room and pillar recovery areas.
- 4) areas where measures have been taken to minimize and / or prevent subsidence at the Lila Canyon Mine are identified as the main and submain entries, ventilation bleeders, and escarpment areas.

The measures which the Permittee will implement are described in the Task ID # 3351 application, Chapter 5, Page 41, section **525.310**;

“No attempt will be made to prevent any subsidence in any area, except where the escarpment near the outcrop is to be protected and to insure that subsidence remains within the permit area.

The anticipated deflection contours shown on Plate 5-3, Subsidence Control Map show that it is the intent of UAE to conduct mining activities in a fashion which would keep the mining related surface deformation within the Mine permit “B” boundary, (See section **525.420**, Page 42, Chapter 5).

Plate 5-5 shows the outline of the Sunnyside coal seam (thin blue line) and the location of the “extent of 2nd Mining” along the coal outcrop. Section **525.453** states that only first mining will be allowed within 200 feet of the outcrop (per the BLM approved R2P2).

The Permittee has not identified any specific escarpments which must be protected in Chapter 5, Engineering.

The Division has several concerns relative to this provided information;

- 1) although only first mining is to be allowed within the area adjacent to, but 200 feet from the outcrop, the Permittee does not state what extraction ratio is to be implemented to provide structural stability within the area.

- 2) The Permittee must identify on the appropriate map, what escarpments need to be protected, and what reason has been determined for requiring protection. The Permittee must discuss the extraction ration to be implemented in the zones underlying the escarpments to be protected. During the discussion of the extraction ratio to be implemented (in the first mining / escarpment area), the Permittee must describe what engineering methods were used to determine the size of the coal pillars to be left, and the dimensions of those pillars.
- 3) The Mine Map (Plate 5-5) and Subsidence Map (Plate 5-3) must identify that only first mining is to be implemented in the zones providing escarpment protection.
- 4) A two hundred foot barrier at the elevation of the coal seam may not provide support for an escarpment, depending on the vertical angle which would define the location of the rock buttress above (i.e., the escarpment may actually be behind the two hundred foot barrier). The Permittee must show that each escarpment requiring protection will have enough coal left directly beneath it to adequately protect it.

R645-301-525.440 Description of the Proposed Subsidence Monitoring Method

Chapter 5, Page 43, section **525.440** contains the following information relative to the method to be used to determine commencement and degree of subsidence in order to provide data to prevent possible future material damage; *“aerial subsidence monitoring will be done annually while the significant subsidence is taking place”*.

- 1) *Subsidence monitoring will be initiated prior to any 2nd mining being done within that area. A 200 foot grid, along with baseline photography, will be established prior to any 2nd mining in the area.*
- 2) *Six subsidence monitoring control points will be established outside of the subsidence zone. 6 to 10 additional control points will be implemented within the total mining area.*
- 3) *Data collected and analyzed from the annual aerial flyovers will be used to determine the extent and degree of active subsidence.*
- 4) *After mining ceases in an area, subsidence monitoring will continue for a minimum of five years.*
- 5) *Monitoring in an area will be terminated, if it is determined that the measured subsidence for a year is < 10 % of the maximum amount measured in the same area for at least three years in a row.*
- 6) *A ground survey of the general mine permit area will be performed in conjunction with the quarterly water monitoring program. Any cracks observed will be noted and reported to DOGM.*
- 7) *Intermittent or perennial streams which are undermined by retreat extraction will be surveyed on the surface every two weeks to identify water loss. These two*

week surveys will be continued for a period of three months following second mining."

The Division requires the following at this time;

Commitment #6 must be revised to state that

"a ground survey of the mine permit area 'where secondary extraction has occurred over the last year' will be conducted in conjunction with the quarterly water monitoring program. Identified features will be monitored until they are repaired, or self-healed. The survey will be conducted on roads, adjacent to stock watering ponds, and in drainage channels where they cross tension areas relative to the underground extraction areas."

"The results of this survey will be documented quarterly in a written report which provide global positioning co-ordinates as well as the following information;

- a) a description of the identified subsidence related feature,*
- b) length, and width measurements, and compass bearing,*
- c) dated photographic documentation,*
- d) located on a topographic overlay map of the underground disturbed area.*
- e) If the feature is determined as significant, the Division will be notified within a 48 hour period of discovery. Where water loss has been determined as occurring due to subsidence, the Permittee will provide a similar quantity of water to the down stream users, and take immediate action to repair the stream channel damage, based upon a plan approved by the Division and the surface landowner.*
- f) A written report, compiling the four quarterly reports for the monitoring year, and describing the status of all identified features related to mining subsidence, will be submitted as part of the Annual Report required by the Division.*
- g) The commitment "to restore the land where subsidence damage has affected the use of the surface" must be revised to read "to restore the land where subsidence damage has been determined as significant enough to require repair, as determined by the Division".*

Plate 5-3 is certified by Mr. R. Jay Marshall, P.E., Utah registered professional engineer.

The subsidence control plan submitted as part of Task ID # 3351 does not meet the requirements of R645-301-525.420.

Performance Standards For Subsidence Control

Notification

The Division identified the following deficiency in the Task ID # 3017 review;

R645-301-525.600, Compliance – PHH;

“The Permittee must address the requirements of this regulation in the application. The Permittee must commit to notifying all surface landowners at least six months (June 2010) in advance of mining (April 2010 is projected coal extraction initiation date / notification should be sent by by September 1, 2009/ PHH) in order to meet the requirements of R645-301-525.600. This includes all government agencies regardless of the agency interaction with the Mine’s permitting process.”

Analysis:

The response submitted by the Permittee as Task ID # 3351 on July 15, 2009 contains the following commitment;

“Section **R645-301-525.600**, Public Notice has been added to the submittal. This section makes the appropriate commitments.”

Section **R645-301-525.600** in the Task ID # 3351 application makes the commitment to notify all owners and occupants of surface property and structures above the underground workings at least six months prior to initiation of mining. This notification will include identification of specific areas where mining will take place, dates when these specific areas will be undermined, and the location(s) where the Permittee’s subsidence control plan may be examined.

This commitment meets the requirement established under **R645-301-525.700, Public Notice**.

The Permittee’s application meets the requirements for surface and structure owner notification prior to initiation of mining activities.

Plate 1-1, Permit Area Map depicts the permit area for both Horse Canyon “A” and Horse Canyon “B” (Lila Canyon Extension) mining areas.

Plate 4-1, Surface Ownership, shows all surface land ownership in the area adjacent to and including the projected mine workings associated with the Lila Canyon Mine. All initial mining will occur in T16S, R14E, sections 15, 14 and 23.

The US Department of the Interior / Bureau of Land Management / Utah State Office is the land managing agency of this surface.

Findings:

The Permittee's application meets the requirements for surface and structure owner notification prior to initiation of mining activities.

The application is deficient. In accordance with the requirements of

R645-301-525.420, Measures to Prevent Subsidence / Escarpments Requiring Protection / Repair of Damaged Surface Lands

The Permittee must provide additional information relative to escarpment protection, including escarpments to be protected, why those escarpments require protection, and the engineering methods implemented to provide protection in those specific areas.

The Permittee must clarify the measures which are to be taken to repair lands which have been determined as having been damaged by mining activities.

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

Plans and Drawings

Performance Standards

The Division identified the following two deficiencies during earlier reviews of material relating to "Surface Design Changes", Task ID # 3351;

1) **R645-301-534.130, 534.300 – PHH**; *"The Safety Factor Analyses for the rock slope access road and the Mine facilities road (Appendix 5-5, Chapter 5) needs to be inserted into the Task ID # 3017 application"*.

2) **R645-301-534.130-WHW**; *"the Permittee must show that all road embankments have a minimum safety factor of 1.3"*.

The Permittee's response to both of these deficiencies is the same; *"the Safety Factor Analyses can be found in Appendix 5-5, Chapter 5."* The location referred to as

Chapter 5, Appendix 5-5 is the approved version of the Lila Canyon MRP (date of incorporation, May 18, 2007, (date of Lila Canyon / DOGM permit approval).

A review of Appendix 5-5, Chapter 5 (approved MRP) reveals the following;

- a) the soils information used in the analyses was provided by EarthFax Engineering, who determined the shear strengths, cohesion values and internal friction angle, of the material, which is assumed as being homogenous.
- b) Appendix 5-5 is the Safety Factor Analyses for the Mine portal access road, the #1 sediment pond impounding embankment, and the Mine Facilities Access road.
- c) The Mine portal access road is the access from the Mine's office facilities up to the three Mine portals.

The longitudinal cross-section depicted from cross-section 3+70.80 to 26+50 (See drawings C-110-01, 02, and 03) (Task ID # 3351 submittal) indicates an approximate 2200 foot roadway length (maximum grade 12.5 %). Cross sections along the profile are provided on Drawing # C-111-02 through C-111-20.

As stated in Chapter 5, Appendix 5-5 in the approved MRP, the portal access road was the access whose design was used for the Slope stability analysis and the determination of the Factor of Safety. Fill slopes were designed to not exceed 2H:1V.

Input parameters for the computer analysis of the stability of the road embankment are described on Page 2, Appendix 5-5, Chapter 5.

The analysis contained in Chapter 5, Appendix 5-5 is the worst case scenario, as the design depicted / contained in Task ID # 3351 has a longer gradient to achieve the same amount of climb to the portal face-up, (i.e., a 1600 foot length versus a 2200 foot length). With the elevation change being identical for both the safety factor analysis, and the design submitted in Task ID # 3351, the longer gradient (or hypotenuse) translates to a lesser vertical angle (or gradient).

According to the computed analysis, a safety factor of 2.45 exists for the soil parameters utilized under dry conditions. Saturated soil conditions generated a safety factor of 1.63. Both safety factors exceed the minimum safety factor required under R645-301-534.130.

Appendix 5-5 also determines the safety factors and stability for the portal access road cut-slopes. The parameters used for the cut-slope stability analysis are contained on Page 5. The calculated factor of safety for the portal access road cut slope has been determined at 1.83 for dry conditions and 1.46 for saturated conditions. Once again, the minimum static safety requirement has been exceeded.

The other road described in the approved MRP is the Mine facilities access road. Cross sections showing how the now constructed road was developed are shown on drawing #'s C-111-01 and C-111-02. The plan view of this road (380 foot length) is shown on Drawing # C-110-01.

According to information provided on Page 2, Appendix 5-5, the cut slopes for this road were constructed at 1H:1V, with a maximum height of 5 feet. Fill slopes were constructed at a 2H:1V with a maximum height of 5 feet. The Permittee did not determine safety factors for this road because

- 1) this road is relatively flat, and
- 2) the same soil parameters which were used to determine the safety factors for the portal access road for both saturated and unsaturated conditions are applicable here. A much lesser slope gradient is implemented to construct the Mine facilities access road, and therefore the minimum required 1.3 static safety factor is easily met.

The second deficiency was addressed by the Permittee by making a reference in the Task ID # 3351 application to the Chapter 5, Appendix 5-5, Safety Factor Analysis which is contained in the APPROVED Horse Canyon Mine permit area "B" / Lila Canyon Mine application.

Primary Road Certification

All longitudinal profiles and road cross-section plates are P.E. certified by Mr. R. Jay Marshall, Utah registered professional engineer.

Upon completion of the Lila construction activities, the Permittee will be required to submit "as-built" information and certifications for roads, impoundments, and coal mine waste piles associated with the Lila Canyon Mine / permit area "B". See R645-301-512.200 for other coal mine facilities requiring designs approved by a registered professional engineer.

Other Transportation Facilities

The Mine Facilities Road / Truck Loadout Road is described on Page 18 of the Task ID 3351 application. Coal trucks, vendors and UAE employees will access the Mine property via a 240 foot "common" road, from whence the outbound lane of the truck loading loop will intersect the mine facilities roads. The truck loadout road or loading loop is a uni-directional road for loading and weighing of double trailer coal trucks; this road is an extension of the Mine facilities road, and is depicted on the road profiles and all surface facility maps.

Findings:

The Permittee's response meets the minimum regulatory requirements of R645-301-534.130, and 534.300.

BONDING AND INSURANCE REQUIREMENTS

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

The Division identified the following deficiency during the review of the Task ID # 3017 application;

“The Permittee must increase the bond for the Lila Canyon Extension Project by a minimum of \$ 2,306,000. In addition, the Permittee must include updated reclamation cost estimates into the MRP.”

The Permittee responded to this deficiency in the following manner, within the response identified as Task ID # 3351;

“The Old Horse Canyon Portals (Lila Canyon portals located on surface of Level 1, Geneva Mine / PHH) have been included in the bond calculations. The increase in the bond due to the surface changes is less than 10% of the total bond and is covered in contingencies. Should the Division decide that the bond needs to be increased the increase should only be \$ 176,000 which makes the total bond amount for the Lila Canyon Mine \$ 1, 862,000.”

Analysis:

General

The Division currently holds two surety bonds for the permit area “B” / Lila Canyon Mine in the Total amount of \$ 1,686,000. The larger bond, (\$ 1,556,000) is provided through XL Specialty Insurance Company which has an AM Best rating of “A”. The remaining amount (\$ 130,000) is provided through Rockwood Casualty Insurance Company, which has an AM Best rating of “A”, as well.

The Division does not increase bond amounts in such large increments as what has previously been mentioned. The Permittee states that *“the increase in the bond due to the surface changes (changes submitted as Task ID # 3351) is less than 10 % of the total bond and is covered in contingencies”*.

Appendix 8-1, Reclamation Cost Estimates, of the Task ID # 3351 application contains detailed cost estimate sheets for the following reclamation activities;

- 1) demolition of facility structures including monitoring / repairs to the USDOJ / BLM and DOGM approved seal barricades associated with the Level One / fan portals at Geneva Mine located in Lila Canyon for the life of the Permit Area B Mine (pages 1-31).

- 2) Earthwork costs are provided on Pages 1-4 (32 of 36 total pages).
- 3) Revegetation costs for the 34 acres of disturbance associated with the Lila Canyon Mine are provided on page 36 of thirty-six pages of bond information.

Form of Bond

The two bonds provided for the Lila Canyon Mine are surety bonds issued by companys having an A.M. Best rating of "A". These sureties meet the requirement of **R645-301-860.110**.

Determination of Bond Amount

R645-301-812.700, the Bond summation provided as Page 1 of Appendix 8-1 indicates that the currently posted bond amount is \$ 176,000 short of the required amount.

This would be true if all of the proposed surface facilities were currently constructed. A review of the demolition cost sheet indicates that of the \$530,849 associated with the listed direct demolition cost, \$415,908 of this direct cost remains to be built at this site.

The \$ 415,908 can be broken down further into structure demolition (\$ 246,908) and asphalt pavement removal / shipping / final disposal (\$ 169,000). Therefore, the Permittee has adequate bond coverage in place at this time.

The Permittee provided a summation of the direct and indirect costs, escalating them to the year 2011 (3 years) at a 0.0444 rate.

The demolition costs provided by the Permittee do not include reclamation costs for

- 1) underground power lines
- 2) the sewage drain field
- 3) underground pipes.

The OSM Handbook for Calculation of Reclamation Bond Amounts states on Page 11 (04/05/00 edition), I. Structure Demolition and Disposal, "*buried utilities may be left in place when compatible with the approved post-mining land use*".

The approved mining and reclamation plan for the Horse Canyon Mine / Lila Canyon Extension, **Chapter 4, Section 400, LAND USE AND AIR QUALITY**, sub-section **410, Premining and Postmining Land Use** states the following:

“Post-mining land use will not differ from land use as defined prior to construction of the mine.”

“Post-mining land use will include grazing, wildlife habitat, and recreational activities.”

The listed utilities above are not compatible with the approved post-mining land use, therefore removal costs for the underground power lines, the sewage drain field and underground pipes must be included in the demolition costs.

In accordance with the requirements of

R645-301-830.140, Detailed Estimated Cost, the Permittee must provide removal costs for buried underground power lines, the sewage leach field and other underground pipes which are or are to be installed at the Lila Canyon facilities area.

Terms and Conditions for Liability Insurance

The general liability insurance coverage which is currently in place meets the requirements of the R645 Coal Mining Rules, as confirmed during the complete inspection conducted on July 29, 2009 (# 2078).

Findings:

The application is deficient. In accordance with the requirements of:

R645-301-830.140, Detailed Estimated Cost; the Permittee must provide detailed cost estimates to remove the following buried underground utilities;

- 1) AC power transmission lines / conduits;
- 2) the sewage leach field;
- 3) all other buried pipelines.

The direct (demolition) and indirect costs for this site must be adjusted accordingly and resubmitted to the Division.

RECOMMENDATION:

The identified deficiencies must be addressed prior to receipt of a recommendation for approval.