

# TECHNICAL MEMORANDUM

## Utah Coal Regulatory Program

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May 19, 2005

TO: Internal File

THRU: Pamela Grubaugh-Littig, Permit Supervisor *page*

THRU: Wayne Western, Senior Reclamation Specialist/Team Lead *W*  
Dana Dean, P.E., Senior Reclamation Specialist/ Team Lead

FROM: David Darby, Senior Reclamation Specialist/Hydrology and *[Signature]*

RE: Lila Canyon Extension, Utah American Energy, Inc., Horse Canyon Mine, C/007/0013, Task #2159

### SUMMARY:

The Division received the latest technical response for the Lila Canyon Extension to the Horse Canyon Mine on February 25, 2005. This review evaluates the geological and hydrologic sections of that submittal.

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**TECHNICAL ANALYSIS:**

**ENVIRONMENTAL RESOURCE INFORMATION**

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

**CLIMATOLOGICAL RESOURCE INFORMATION**

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

**Analysis:**

Precipitation is a factor that controls recharge to streams and springs. The Permittee should describe the types of precipitation events that are typical of the minesite, and support the descriptions with data.

The Permittee has provided some precipitation information in Section 724.410, Volume 6 of 7. They have used the information to identify the minesite and surrounding area as a low precipitation area. The data was collected from a weather station at Sunnyside, Utah and the period of record was from 1971 to 2000, showing an annual average precipitation of 14.74 inches.

The Permittee also provided the direction and speed of the prevailing winds. Their major trend was measured from west to east with an average velocity of 2.74 knots. Average monthly temperatures were generated from data during the 1971-2000 annual period. The mean high and low temperatures were provided. They are 58.0 degrees F and 33.4 degrees F. The information is shown in Table 7-1a.

The Permittee did state in Section 724.411 that they would install a rain gauge at the site to comply with reporting requirement of the air quality permit.

The Permittee has committed to supplying a installing a rain gauge once construction and operations start.

**Findings:**

The Permittee has addressed the minimal requirements for this section.

## HYDROLOGIC RESOURCE INFORMATION

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

### Analysis:

#### General Information

There are specific monitoring requirements for different stream types: monthly sampling for all perennial sources, monthly sampling during periods of flow for intermittent streams, and quarterly surveys for all ephemeral streams.

**Ephemeral Stream**" means a stream which flows only in direct response to precipitation in the immediate watershed, or in response to the melting of a cover of snow and ice, and which has a channel bottom that is always above the local water table.

**Intermittent Stream**" means (a) a stream, or reach of a stream, that drains a watershed of at least one square mile, or (b) a stream, or reach of a stream, that is below the local water table for at least some part of the year and obtains its flow from both surface runoff and groundwater discharge.

**Perennial Stream**" means a stream or part of a stream that flows continuously during all of the calendar year as a result of groundwater discharge or surface runoff. The term does not include intermittent stream or ephemeral stream.

The Division has received comments in the past that seasonal variation of Lila and Little Park Wash must be shown, and remote samplers and crest-stage gauges should be used to monitor the intermittent channels. Thus, the Permittee had failed to collect the required amount of information on intermittent streams on and adjacent to the permit area, siting the requirements of Rule R645-100, which identifies an intermittent stream, R645-301-724.200 and the Coal Regulatory Directive, Tech 004 (July 1, 1997).

The Board of Oil, Gas and Mining expressed concerns that surface water quality and quantity information has not been met to demonstrate seasonal variation of flow and water quality in accordance with the guidelines in the Coal Regulatory Program Directive, Tech-004, Water Monitoring Programs for Coal Mines. The Board directed the Permittee to collect quantitative and qualitative data for all surface water sources before a permit can be issued. Thus, the Permittee was required to submit a surface monitoring plan to survey all streams and channels in and adjacent to the permit area.

Rule R645-100, which identifies an intermittent stream " (a) a stream, or reach of a stream that drains a watershed of at least one square mile, or (b) a stream or reach of a stream that is below the local water table for at least some part of the year and obtains its flow from both surface and runoff and groundwater drainage.

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Channels that drain more than one square mile, but have ephemeral flow are included in the intermittent stream definition, because the potential flood volumes necessitate application of the stream channel diversion criteria of the Coal Mining Rules (Fed. Reg., vol. 44, no. 50, p. 14932). Classification is to be made at the time of permit application, based on collected data and probable conditions, which helps eliminate skewing by data from unusually wet or dry periods (Preamble to the Federal Rules).

According to R645-100 Horse Canyon, Little Park Wash, Lila Canyon, and several other channels in the Horse - Lila Canyon area are intermittent by definition under the Coal Mining Rules, because, even though flow is sporadic and typically flashy and characteristically ephemeral, they drain an area greater than one square-mile. No facilities are planned for these intermittent drainages, and there will be no diversions. The sedimentation pond and bypass culvert are to be built in the Right Fork of Lila Wash, the section of the Right Fork above these structures being an ephemeral drainage.

The Division determined that an assessment of surface waters and associated channels was needed to characterize the true nature of stream segments for monitoring requirements. The Permittee has provided data and channel characterizations based the survey, including channel composition and biologic (plant and aquatic) communities present.

The survey established that most segments of the streams on and adjacent to the permit area are ephemeral according to the definitions under R645-301-100. The assessment can be found in Appendix 7-7. If the operator is held to the monitoring requirements of Tech 004, then there are no specific requirements for ephemeral streams. The operator is required to establish seasonal variation as required by R645-301-724.200 and identify down stream uses of the water.

The Permittee has collected flow data on the stream reaches when they are accessible. Springs that sustain the perennial sections of the channel are monitored quarterly. The Permittee continues to collect the data according to the schedule (Table 7-3) in the MRP. The operator has established baseline and seasonal data sets for the monitoring sites to identify the hydrologic system and seasonal variation of the water resources. Establishing seasonal variation for ephemeral stream channels using remote samplers and crest-stage gauges is not necessary, because the stream channels have been characterized by the scientific assessment. Using the samplers and gauges would not provide useful information, since there are no downstream water rights or exceptional uses. Ephemeral stream produce flow in proportion to the amount of the precipitation event or snowmelt event.

The operator has identified that there are no water rights associated with Little Park Wash within the permit area, or downstream, all the way to the confluence with the Price River (Appendix 7-7), which is over 30 miles away. Water rights in the area (above the minesite) are shown to be for stockwatering or mining.

The permittee has supplied water monitoring information and submitted it into the Division's Water Quality database as per Table 7-3, and in accordance with the DOGM Water Monitoring Guidelines.

Surface water information is presented in Chapter 7 for undisturbed and disturbed drainage areas. Springs are generally considered groundwater, because they present the water quality characteristics of the underground resources. As spring water flows down channel away from the source, the quality and flow can change. After some distance the flow is considered surface flow. The surface water flow type is taken from the Utah Coal Mining Rules, R645-301-100 for perennial, intermittent and ephemeral.

The Permittee has established surface monitoring site locations on the proposed permit area (see Plate 7-4). The Permittee lists the monitoring sites in Table 7-3, indicating which are associated with water rights. The Permittee lists and describes the water rights in Table 7-2. The Permittee has been collecting water quality and flow data on most of the sites since 2000, and all of the sites since June 2002. The Permittee continues to collect the data according to the schedule (Table 7-3) in the MRP.

There are three surface monitoring sites associated with the Lila Canyon Wash: L-1-S; L-2-S in the Right Fork of Lila Canyon; and L-3-S, below the disturbed area in Lila Canyon Wash. The Permittee identifies these on Plate 7-4. The Permittee provides baseline monitoring information in Appendix 7-1 for these sites, and further information on the Division's Coal Mining Water Quality Database found at <http://linux1.ogm.utah.gov/cgi-bin/appx-ogm.cgi>.

The Permittee provided information in Appendix 7-7 that describes the newly named Stinky Spring Wash (12-6-03). This area drains southward through the permit area. There is no water monitoring information or site location in the Stinky Spring Wash in Sections 14 and 23, T.16S., R.14E.

#### Sampling and Analysis

The Permittee presents monthly monitoring information from July 2000 to October 2002 for sites L-1-S, L-2-S, L-3-S in Appendix 7-1. Further information for those and all sites can be found on the Division's Coal Water Quality Database.

The Permittee has also established sites L-4-S (sedimentation pond discharge), and L-5-G (a potential mine water discharge site). Both L-4-S and L-5-G are UPDES sites and are currently non-functional. Both UPDES sites are planned to discharge into the Right Fork of Lila Canyon Wash (Coleman Wash). The Permittee obtained the UPDES Permit on October 1, 1994. Appendix 7-5 shows the application paperwork, and the approved UPDES Permit.

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### Surface Water Information

Surface water flow for the permit area can be divided into disturbed and undisturbed drainages. They are discussed separately below.

#### Undisturbed Drainage

The undisturbed drainages originate in the canyons high above the mine pad where precipitation, in the form of rain or snow, supplies the water resources. There are four drainages that carry surface flows away from the permit area. They are: Lila Canyon Wash (North Fork of Coleman Wash), the South Fork of Coleman Wash, Little Park Wash, and the newly named Stinky Spring Wash.

Range Creek Canyon lies over the drainage divide to the east. No surface flows from the permit area reach Range Creek.

The Permittee describes the regional surface-water flow pattern of the permit and adjacent areas under Section 724.200 of the PAP. They show the locations of known seeps, springs, and watering ponds on Plate 7-1. The Permittee indicates that there are five drainages within the permit area, Horse Canyon Creek, Little Park Wash, Lila Canyon Wash, Stinky Springs Wash (named by the Permittee), and the Right Fork of Lila Canyon Wash (also named by the Permittee). By the definitions in the Regulations, all but the Right Fork of Lila Canyon Wash are at least intermittent channels. All drainages on the proposed permit eventually flow to the Price River drainage.

The Horse Canyon Creek drainage is adjacent to the proposed permit, however the area of Horse Canyon that lies closest to the proposed permit has already been undermined and would not likely be further impacted from the proposed mine area. Much of the area above Lila Canyon Wash has also been undermined.

The Permittee describes Surface Water again in Section 722.200 of the PAP. The statement, "There are no streams, lakes or ponds or irrigation ditches known to exist within the proposed permit or adjacent areas," indicates that the area is dry and void of perennial or intermittent surface flows. A review of the surface water data in Appendix 7-1 and in the Division's Coal Water Quality Database substantiates that most channels are dry. Monitoring has not detected flow in the channels near the proposed minesite, or the channel of Little Park Wash in the mountainous region above the mine. The Permittee has collected some surface water information on Lila Canyon Wash and Little Park Wash (see Appendix 7-1). The Permittee states that the Lila Canyon drainage is normally dry, flowing only in response to precipitation runoff or snowmelt. However as stated above, it appears that other sites need to be evaluated to determine what surface water resources exist, and what impacts could occur from mining.

The Permittee has not assessed or collected flow or quality data from Stinky Springs Wash. This drainage is over a square mile in area, and therefore (by Coal Rules definition) is at least an intermittent stream channel that the Permittee should monitor monthly during periods of flow. Without monitoring data it cannot be determined what characteristics this channel exhibits. There are springs in the lower part of the canyon used by wildlife. These are drought years and it is not known what type of stream flow could occur from these springs, especially without monitoring data.

### **Disturbed Drainage**

Disturbed area drainage from construction areas can contribute many times higher concentrations of sediments to downstream sources than undisturbed area runoff. Pollution from sediment is produced as precipitation falls on unprotected ground soils eroding away the softer soils and carrying them away downstream, causing sediment loading in stream channels. The Permittee proposes to control disturbed area drainage by using silt fencing, culverts, ditches, and a sedimentation pond to contain and control sediment on the disturbed area and prevent downstream contamination.

SUWA expressed concern that downstream impacts could occur to the channel if the UPDES sites discharge in large quantities. The Permittee quantifies a potential discharge of 500 gpm from the UPDES sites in Appendix 7-9. For this review the UPDES sites will be considered as disturbed area drainage, because they are the anthropogenic in nature.

The report in Appendix 7-9 assumed a continuous discharge of 500 gpm and looked at both the possibility of the discharge reaching the Price River, and whether a continuous flow will cause negative impacts to the channel. During the study, the Permittee discovered that the BLM has diverted the flow from Lila Canyon Wash into a stock-watering pond about 1.5 miles downstream from the discharge point. The stock pond has a capacity of 5-7 acre-feet, and if it were to overflow, the water would proceed downstream to the Grassy Wash.

The report used the methods found in the US Soil Conservation Service's (SCS, now Natural Resource Conservation Service, NRCS) National Engineering Handbook (NEH, 1985) to determine how far the 500-gpm flow would reach. NRCS soil maps were used to model soil types in the channel at various reaches. The calculations revealed that the flow would only reach 3.4 miles from the mine. The Price River is 9.5 miles from the mine.

The report also concluded that there would be no impacts to the geomorphology of the wash since the 500 gpm is much less than the calculated 2-year flood of 16,600 gpm.

The Permittee used 500 gpm in the calculations to be conservative. Other mines in the area (Soldier Canyon, Sunnyside, West Ridge, and Dugout Canyon) have generally recorded

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mine discharges of less than 250 gpm.

### **Baseline Cumulative Impact area Information**

The Permittee has evaluated the probability of hydrologic impacts east of the permit area to Range Creek. The overlying strata above the planned mining zone is well over 1000 feet in the eastern half of the permit, and in most eastern areas of the permit the overlying strata above the coal seam is near 2000 feet thick. Due to the extensive thickness, it is likely that no subsidence impacts will occur in those areas. The Permittee explains that there are two zones where groundwater can be found. The upper zone is in the Wasatch Group associated with the base of the Colton Formation, the Flagstaff Limestone and North Horn Formation. The lower zone is in the Mesa Verde Group (Price River Formation, Castlegate Sandstone, and the Blackhawk Formation).

SUWA has expressed concerns that discharges from UPDES sites will pick up salts from the channel and carry them down to the Price River, in conflict with Colorado River Basin Salinity. Appendix 7-9 shows that discharge water will not reach the Price River, let alone the Colorado River. In addition, the PHC identifies that all mine water discharge will meet UPDES discharge standards, which take into account the Colorado River Salinity Control Program. The Permittee proposes to meet those standards by controlling and containing disturbed area runoff and any mine water that they may have to discharge. If the quality parameters of the discharge water do not meet UPDES discharge standards, the Permittee proposes to hold/settle the water or chemically treat any water to meet UPDES standards before discharging it. The PHC indicates that the water in the Blackhawk formation that the Permittee may encounter while mining has an average total dissolved solids (TDS) concentration of 2000 mg/l. The UPDES permit limits TDS discharge to 1 ton per day therefore; without treating the water, the Permittee could only discharge about 83 gpm to stay within the UPDES limits.

SUWA has expressed concerns that subsidence will impact stream channels above the mine and surface flows will be interrupted. The Permittee points out in the PHC that there are no perennial or intermittent flows within the permit area. The Permittee has conducted studies on all the stream channels in the permit area to characterize the stream channels. The information has been presented in Appendix 7-3.

The Permittee has identified in the PHC that subsidence impacts could take place, but it doesn't mean that it will occur. There is substantial stratigraphic cover between the coal seam to be mined and the surface. The overlying stratigraphy contains a high percent of clays, silts and mudstones that are elastic and tend to bend instead of fracture. They also contain a healing potential by expanding if they become wet. If fracturing does take place in a stream channel the fracture could fill with filling as sediments are washed down the stream. If natural healing does not happen the operator needs to step in and mitigate any interceptions by implementing a reclamation and mitigation plan. The Permittee does have to provide a reclamation and

mitigation plan for this situation.

### **Modeling**

Runoff flows from some disturbed area drainage areas were calculated using Storm Version 6.20, a program used to calculate runoff flows from disturbed areas based on the SCS-TR55 Method for Type II storms. In Section 726 of the MRP, the Permittee proposes to model the potential impacts from mine water discharge prior to mining. They have already done this modeling and they provide the information in Appendix 7-9.

### **Alternative Water Source Information**

The Permittee states that they conducted a water rights search for a mile outside the proposed permit area. They show the locations of those water rights on Plate 7-3, and provide descriptions of the rights in Table 7-2. The Permittee indicates that UEI owns the rights to approximately 1.5 cfs in the area, and if any adverse effects on water resources result from the operation, UEI may replace from their rights. Other options for water replacement that the Permittee has committed to include: sealing of cracks, piping, trucking water in, or constructing wells.

### **Probable Hydrologic Consequences Determination**

The PHC determination is submitted in Appendix 7-3. It now contains information describing the potential of impacts from mining to receiving streams. Potential impacts include "the displacement of fines on the channel bottom, and minor widening of the channel." The Permittee does point out that the "degree of widening will likely be minimized by the increased vigor and quantity of vegetation which will be sustained along the stream channel." As stated above, the report in Appendix 7-9 indicates that the maximum anticipated mine water discharge (500 gpm) is approximately 3% of the 2-year flood of 16,600 gpm. Therefore, natural flows in the channel would be more likely to cause changes to the channel than any mine water discharge.

The PHC does not completely contain descriptive information that characterizes the types of surface water resources and potential impacts. The Permittee needs to update the PHC with descriptive information to describe potential impacts from subsidence to all surface water channels, including ephemeral acting ones.

The PHC does not describe the stream morphology of the stream channels on or adjacent to the permit area, or any impacts to those channels from mine water and disturbed surface discharges.

The PHC identifies that there will be no impacts to Range Creek, because it is several miles away, the overlying strata (above the coal seam) is very thick (2000)' in the eastern part of

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the permit area. Subsidence should not impact Range Creek or its tributaries.

The question of increased salinity in the Colorado River system has been raised by a SUWA. Appendix 7-9 shows that discharge water from the mine will not reach the Price River, let alone the Colorado River. However, the PHC should address the probability of increasing salinity in the Colorado River by discharging water from the mine by referencing Appendix 7-9.

**Findings:**

The information found in the PAP is inadequate. Before approval, the Permittee must provide the following in accordance with:

**R645-301-722**, The applicant will submit a map identifying where mining will take place within 100 feet (horizontal) of a stream channel.

**R645-301-525.300, R645-301-525.490**, The Permittee must provide a detailed description how they will mitigate subsidence fractures to the surface water channels, even those that act ephemerally. Information should include a monitoring plan to identify cracks and other effects on channels, as well as what type of equipment and methods they plan to use in mitigation

**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**

The Permittee submits hydrologic resource information on maps in Chapter 7 that illustrate locations of surface water sources and their flow routes. Plates 7-1, 7-3 and 7-4 show the mine permit and adjacent areas. They are scaled at 1 inch = 2000 feet. The Permittee states that all surface water bodies are identified on Plate 7-1. The Permittee has identified all drainages by name (for this report).

The Permittee will identify all perennial, intermittent, and ephemeral stream sections in the channels on the permit and adjacent areas. The Permittee proposes to mine within 100 feet of intermittent stream channels (by the definitions in the Rules Little Park Wash and the Stinky Springs Wash). The Permittee has indicated that these channels act ephemerally and that no aquatic life or riparian vegetation depends on them. This may reduce the amount of mitigation they are required to undertake, but it does not release them from responsibility in regard to the

channels. The Permittee will provide a map showing where mining will occur within 100 feet (horizontal) of a perennial or intermittent stream channel and will describe any methods they plan to use to mitigate impacts to those sources. The Division recommends that the mitigation plan provide for the best technology currently available (BTCA) at the time of the mitigation.

### **Existing Structures and Facilities Maps**

There are two pre-existing structures on the Lila Canyon Extension area, a 24-inch culvert, and a 48-inch culvert. The 24-inch culvert directs flows from the proposed surface area under the county road, and the 48-inch culvert lies in the Right Fork of Lila Canyon Wash. The Permittee shows plans to extend this culvert, and then construct a sedimentation pond over the culvert, Plate 7-6.

### **Monitoring Sampling Location Maps**

Plate 7-1 identifies the surface water monitoring sites associated with the original Horse Canyon Mine. It also identifies the inventories spring sites on and adjacent the permit area.

### **Permit Area Boundary Maps**

Several plates depict the permit area boundary. The Permittee has submitted Plate 7-1A, Geology Map, showing all drainages from the permit area to the first perennial streams outside the permit area. The map identifies the drainages of the permit area to the Price River on the south. The map also shows the drainages of the permit area and how they relate to the drainages of Range Creek.

### **Surface Water Resource Maps**

Surface water resource maps have been provided.

### **Contour Maps**

Several plates have been submitted showing the contour of the land on and adjacent to the proposed permit area. The area sloping desert floor to steep cliffs and moderate to steep mountainous slopes. Stream channels are noticeable. There are no large water bodies on or adjacent to the permit area.

### **Findings:**

The information found in the PAP is inadequate. Before approval, the Permittee must provide information address under the operation section.

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**R645-301-731**, The applicant shall update maps for the sedimentation pond showing how runoff from the small drainage east of the pond will be routed into the undisturbed channel or into the pond.

## **OPERATION PLAN**

### **HYDROLOGIC INFORMATION**

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

#### **Analysis:**

##### **General**

The Permittee has submitted an updated version of the MRP on February 26, 2004 the updated version of the Lila Canyon Extension in a seven-volume binder set. Three volumes, Volume 5 of 7, 6 of 7 and 7 of 7 were used in the evaluation of surface water sources, monitoring and potential impacts to those sources as a result of mining. In its review, the Division found that the Permittee has addressed several issues, however they still need to clarify some information.

##### **Surface-water monitoring**

Drainage from disturbed areas will likely show increased sediment loading and poorer water quality than pre-mining runoff. The Permittee plans to mitigate discharges of disturbed runoff by constructing diversion ditches, culverts, berms, a sedimentation pond, and other siltation structures. The Permittee discusses mitigation for disturbed area drainage in Chapter 7.

Surface water monitoring is presented in, Chapter 7. The Permittee proposes to monitor the significant surface water sources. Seeps and springs are treated as groundwater discharge sources for this application. Mine water discharge will be monitored under the UPDES program.

Surface water monitoring parameters are listed in Table 7-4.

##### **Gravity discharges**

There should be no gravity discharges from the mine, since all formations (strata) dip eastward and the identified potentiometric surface identified in the piezometers lies well below

the level of the mine portal.

### **Water quality standards and effluent limitations**

The application indicates that the only discharges from the site would be planned and consists of discharge water from the sediment pond or underground mine workings after treatment. Mine water will be treated by the use of sumps prior to discharge. The sumps would remove sediments and oil/grease from the water.

The Permittee states that if it becomes necessary to discharge mine water, the mine water will meet UPDES Permit requirements as identified in Appendix 7-5.

### **Diversions**

Plate 7-2 identifies all of the undisturbed and disturbed area diversion ditches. All disturbed area drainage will be diverted to the sedimentation pond (see Plate 7-6). The undisturbed areas, UA-2, UA-3, UA-4 and UA-6 will also be directed to the sedimentation pond Table 5, Appendix 7-4. It was pointed out to Jay Marshall that UA-4 could be diverted to the channel above the proposed sedimentation pond. He stated that he may consider that option in the future if the volume is needed in the sedimentation pond. The pond is sized to handle the runoff volume.

### **Undisturbed Diversion**

The plans indicate one undisturbed diversion is planned for the minesite, Section 732.300, Plates 7-2 and 7-5, shows the undisturbed culvert UC-1 will be placed in the Right Fork of Lila Creek to divert undisturbed drainage under the sedimentation pond.

### **Disturbed Diversion**

Disturbed diversions will consist of berms, culverts and ditches and will be used to direct flows over the disturbed area.

### **Stream Buffer Zone**

The Permittee has addressed mining activity in stream buffer zones by indicating that all surface water channels within 100 feet of mining act ephemerally. The Permittee states in Sections 731.600 and 731.612 of the PAP that no mining activities will take place within 100 feet of a perennial or intermittent stream.

The Permittee has characterized all stream channels using monitoring and other classification methods (Appendix 7-7) to substantiate that the streams are ephemerally acting.

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### **Sediment control measures**

The Division previously discussed the placement of the sedimentation pond, and asked the Permittee to discuss the possibility of moving it out of the channel. The Permittee has indicated verbally to the Division that they cannot move the pond from the planned location due to space requirements for other surface facilities. Their planned pond location may not be exactly what the Division would have desired, but it does meet the regulations.

### **Siltation structures.**

The Permittee proposes to use siltation structures and silt fences below the fan portal to control and treat runoff from the site.

### **Sedimentation ponds**

The Permittee plans to use a sedimentation pond to treat runoff from the disturbed mine site. The sedimentation pond location, design plans, and cross-sections are on Plates 7-5 and 7-6. Design calculations are in Appendix 7-4.

The Division previously discussed the placement of the sedimentation pond, and asked the Permittee to discuss the possibility of moving it out of the channel. The Permittee has indicated verbally to the Division that they cannot move the pond from the planned location due to space requirements for other surface facilities. Their planned pond location may not be exactly what the Division would have desired, but it does meet the regulations.

The Permittee has modified the truck turn-around increasing the radius of the turn for safety, and removing the need to place the road next to the stream channel

The Permittee previously showed the undisturbed drainage area, UA-4, which drains into the sedimentation pond. The pond is designed to treat the volume of runoff from the area. Plate 7-2 shows the drainage area and Plate 7-6 shows the design of the sedimentation pond. Evidently some of the old plates were used and the plates submitted do not now show the changes to route flow from UA-4 into the pond. Neither plate identifies the discharge point from UA-4 or erosion protection for flows entering the pond. The Permittee will be required to submit this information, along with erosion design plans.

### **Exemptions for siltation structures**

The Permittee has not asked for any exemptions for siltation structures, nor has the Division granted any.

### **Discharge structures**

The Permittee plans two discharge structures are planned for the mine. A sedimentation pond will contain and treat disturbed area sediment. The Permittee has identified that mine water would be discharged to Lila Canyon Wash, Section 731.513. The Permittee calls Lila Canyon Wash the North Fork of Coleman Wash. Plate 7-5 also indicates that mine water will be discharged to Lila Canyon Wash. The Division has assessed groundwater information from what has been presented in the PAP and other mines in the Book Cliffs. The Division has determined there is a good probability that water will be intercepted and pumped from the mine. The Permittee has addressed the Division's concern about the consolidation of discharge points to lessen the impacts to receiving stream channels. The analysis in Appendix 7-9 indicates that the maximum discharge conceived for the mine would amount to only 3% of the total 2-year flood volume. Therefore any mine discharge will have much less effect on the channels than natural flows have.

### **Findings:**

Information provided in the PAP does not meet the minimum requirements of the Hydrologic Operation Plan section of the regulations.

The applicant shall update maps for the sedimentation pond showing how runoff from the small drainage east of the pond will routed into the undisturbed channel or into the pond.

## **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**

To depict areas of potential impacts from surface water discharges via the sedimentation pond and mine water discharges the Permittee has submitted affected area maps showing the named drainages and monitoring sites of the Price River drainage from the permit area to the Price River. To depict the area of any potential impacts from mining to Range Creek, maps should also show the surface water features of the permit area and Range Creek drainage.

#### **Mining facilities maps**

Since the Permittee is not required to change the sedimentation pond location, no changes

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are required for the facilities plans.

**Monitoring and sample location maps**

The Permittee has submitted maps showing all water monitoring sites.

**Findings:**

Information provided in the PAP does not meet the minimum requirements of the Maps, Plans, and Cross Sections of Mining Operations section of the regulations. The following information must be submitted before the PAP is approved.

**R645-301-731**, The applicant shall update maps for the sedimentation pond showing how runoff from the small drainage east of the pond will be routed into the undisturbed channel or into the pond

**RECLAMATION PLAN**

**HYDROLOGIC INFORMATION**

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

**Analysis:**

**General**

The Permittee has submitted reclamation plans for the current PAP. Since design changes hydrologic structures will not change, the reclamation plans are adequate.

**Findings:**

Information provided in the PAP meets the minimum requirements of the Hydrologic Reclamation Information 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:**

**Reclamation backfilling and grading maps**

Plate 7-7 shows the post-mining hydrology at Phase I bond release. The notes on the map indicate that the Permittee will remove the sedimentation pond, RD-1, RD-2, and the upper portion of UC-1 at Phase II bond release. They will leave the portion of UC-1 that lies beneath the County Road in place.

**Findings:**

Information provided in the PAP meets the minimum requirements of the Maps, Plans, and Cross Sections of Reclamation Operations section of the regulations.

**CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT**

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

The Division will complete the Cumulative Hydrologic Impact Assessment (CHIA) once the Permittee has supplied sufficient information to identify the probable hydrologic consequences.

**RECOMENDATIONS:**

The permit application package is deficient concerning the findings above. It is not recommended for approval.