State of Utah

Department of Natural Resources

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August 31, 2005

Henry Maddux, Field Supervisor
U. S. Fish and Wildlife Service
2369 West Orton Circle
West Valley City, Utah 84119

Subject: USFWS 1996 Biological Opinion Coordinated Review on Lila Canyon Extension, UtahAmerican Energy Inc., Horse Canyon Mine, C/007/0013, #2275, Outgoing File

Dear Mr. Maddux:

Thank you for providing us with the listing of threatened, endangered, and candidate species for Emery County on September 9, 2004. The Division of Oil, Gas and Mining is currently reviewing the Horse Canyon Mine – Lila Canyon expansion project for the UtahAmerican Energy Company. The proposed expansion area is 5,992.07 acres with 40.77 acres of surface disturbance for the facilities site. Subsidence caused from undermining operations would also cause surface disturbances.

The Lila Canyon expansion project is in Emery County, Utah. The 7.5 Minute Quadrangle maps that cover the permit area are Cedar and Lila Point (Geological Survey of the U.S. Department of the Interior) - T16S R14E Sections 10, 11, 12, 15, 14, 13, 22, 23, 24, 26, and 25, and in T16S R15E Sections 19 and 30. The acreage and section numbers do not include transportation or power line corridors.

The Division, acting through the authority of the Office of Surface Mining (DOI), is initiating an informal consultation for the permitting of this application. The USFWS may recall that the Division initiated communications with the USFWS on May 9, 2002 on this same project. However, because the Permittee submitted a new application with more current surveys, we are re-initiating communications with the USFWS. The Division requests concurrence from the USFWS with our determinations that the Lila Canyon expansion project "may affect", but "is not likely to adversely affect" the Mexican spotted owl or its critical habitat. Furthermore, that there will be "no effect" on the threatened or endangered species listed below by the project. The following paragraphs may provide pertinent information that may be useful during this informal consultation process.

TE Species

The proposed plan (MRP) includes a list of TE species for Emery County issued from the USFWS in 2003. This list includes Barneby reed-mustard, Jones cycladenia, last chance townsendia, Maguire daisy, San Rafael cactus, Winkler cactus, Wright fishhook cactus, bonytail chub, Colorado pikeminnow, humpback chub, razorback sucker, Mexican spotted owl (MSO), black-footed ferret, bald eagle, and western yellow-billed cuckoo. Although not on the 2003 list, the MRP provides discussion on the southwestern willow flycatcher (now listed on the USFWS 2004 list).

The supporting documents in the MRP show there have been no observations of TE plant or animal species, but there may be suitable habitat for certain species. The MRPs supporting documents include the following: Plant and Animal Inventory, EIS May 1999, April 2002, May 2002; BA of 1999 Inventory, EIS August 2000; Plant Inventory, Division September 2002; Mexican Spotted Owl Final Report, Willey 2002.

The 2000 EIS Biological Assessment showed that there may be suitable habitat for San Rafael cactus, Winkler cactus, and Wright fishhook cactus. The Utah Heritage Program (DWR), however, supports that there have been no observations and there is no suitable habitat for this species within the permit area (Ben Franklin, June 2004).

There is also suitable habitat for the bald eagle, black-footed ferret, and MSO. The DWR overflight surveys have not shown bald eagle nests within or adjacent to the permit area. This species may use the area during the winter months, but the area is not considered critical habitat even as wintering range (DWR 8/16/05). For the black-footed ferret, there have been no confirmed sightings within or adjacent to the project area.

For the MSO, the Permittee will conduct MSO calling surveys two years prior to reaching potential MSO habitat. The Permittee will survey areas with the following description: 1) areas identified by the 2000 model and supported by the Willey flyover results and 2) areas classified as subsidence zones.

Sensitive and Other Species of Concern

The MRP supporting TE documents also provide survey results for the following fourteen sensitive species: tufted cryptantha, creutzfeldt-flower, canyon sweetvetch, low hymenoxys, helenium hymenoxys, Bicknell milkvetch, basalt milkvetch, sedge fescue, Mussentuchit gilia, entrada rushpink, Book Cliff's blazing star, Jones indigo-bush, psoralea globemallow, and Thompson talinum. The results were positive for Cliff's blazing star, canyon sweetvetch, and creutzfeldt-flower. The 2004 vegetation survey (King), however, did not show observations for these

three species within the proposed facilities site. The Permittee will survey these species at least the year construction begins or one year prior to construction. If the results are positive for these species, the Permittee will immediately submit and implement a protection/mitigation plan prior to disturbance.

There are five Golden eagle nests within the 0.5-mile (2640') buffer zone for the proposed facility area as well as potential raptor habitat within the subsidence zone. Agencies (USFWS, DWR, and BLM) participating in the EA (UT-070-99-22; 2000) determined that there is a high probability that eagles will abandon all nests near the proposed surface facilities site. The Permittee and BLM will implement a prey base enhancement/mitigation plan following mine plan approval.

To help prevent loss of future nests, the Permittee will conduct first seam mining (pillars remain) and conduct annual raptor surveys. The Permittee will submit a protection/enhancement plan, separate from the EA mitigation plan, if future flyover results show nests that could be lost because of subsidence.

To help prevent loss of raptors feeding along the roadways, the Permittee will instruct employees to move road kill to the sides of the road and contact DWR when road kills are reported.

The Permittee provided the mass balance equation-parameters and total expected water loss from mining operations as 70.63 acre-feet. This volume of water is below the 100-acre foot guideline that initiates mitigation.

The USFWS commented that there should be an evaluation of the effects on the Colorado pikeminnow (squawfish) from a water discharge line to the Price River. This discharge line was apparently proposed earlier in the planning process for the mine, but it is no longer planned.

There was a concern that discharged mine water could increase in salinity as it flows through the Mancos Shale before draining into the Price River. The USFWS stated that selenium deposition from this proposed mining operation is a concern, but not salinity. The Permittee's modeling, along with Division calculations, shows that mine discharge will not reach the Price River. Appendix 7-9 provides the calculations and results of the model. If the USFWS has any questions concerning the model, please contact Dave Darby at (801) 538-5341.

The Division considers that the Lila Canyon expansion project "may affect", but "is not likely to adversely affect" the MSO or its critical habitat, and that there will be "no effect" on the other TE species listed for Emery County. Final decision concerning TE species and the proposed project will come after the Division receives a response from USFWS.

The Permittee plans to start construction sometime before the end of this year. We would appreciate your response by September 30, 2005 so we may proceed with the review process. If you have any questions about this project, please call me at (801) 538-5268 or Jerriann Ernstsen at (801) 538-5214.

Sincerely,

/S/

Pamela Grubaugh-Littig
Permit Supervisor

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APPENDIX 7-9

Right Fork of Lila Canyon Flow and Geomorphic Evaluation

Hydrologic Design

Thomas J. Suchoski

INTRODUCTION:

On January 31, 2004 a stream evaluation was conducted of the Right Fork of Lila Canyon downstream of the proposed mine facilities toward the Price River. The purpose of the study was to determine the impact of a continuous discharge of 500 gpm from the mine would have on the downstream channel. A series of cross-section measurements were taken to characterize the channel configuration and the channel bed and bank materials. Photographs were taken of each cros-section location looking upstream and downstream to help visualize the conditions at the cross-section. Also, a photograph of the bed and bank materials was taken to aid in classifying the material type. The photographs are presented in Attachment #1 to this Appendix.

Figure 1 shows the location of the cross-section sites. The original plan was to collect cross-sections at one-half mile spacings along the channel alignment between the mine site and the Price River. However, at the third cross-section location, a recent diversion structure was found which diverted the normal flow of the Right Fork of Lila Canyon. Previously the flow from the Right Fork joined with the flows from Grassy Wash. However, with the diversion, the entire flow of the Right Fork is diverted to a diversion channel. The location of the diversion dam and alignment of the diversion channel is presented in Figure 1. Ultimately, the diversion channel will convey the flow to a stock pond located in the SW/4, SW/4 of Section 28, T. 16 S., R. 14 E.

This stock pond is a BLM pond. The agency had implemented a range improvement program in the area of the pond. As part of this program, the embankment had been improved and raised, the outlet riprapped, and the diversion structure moved upstream and improved to collect additional flows.

The result of this range improvement project is that the flows from the Right Fork of Lila Canyon will be diverted to the stock pond. If the pond fills, any excess water will be released back to Grassy Wash. Based on the size of the pond, it appears that the pond will hold about 5 to 7 acre-feet.

Results:

Channel sections

The Right Fork of Lila Canyon is an ephemeral channel which is incised into the pediment surface below the Book Cliffs. At cross-section location 1, the channel is incised about 25 to 30 feet and has a top width of approximately 75 to 100 feet. The channel has a low-flow component that consists of a general

trapezoidal shape with 1V:1.5 to 2H slopes, a bottom width of about 5 feet, and a low flow channel depth of almost 1.5 feet. Channel material consists of fine to coarse gravels and fine sands and few silts.

At cross section location 2, the channel is transitioning from the incised section to a broader section at the confluence of the Right Fork with Grassy Wash. In this reach, the channel is incised about 10 to 15 feet and has a top width of approximately 250 to 300 feet. The channel has a low-flow component that consists of a swale shape with gentle sideslopes, a bottom width of about 7.5 to 10 feet, and a low flow channel depth of almost 1.0 foot. Channel material consists of fine to coarse gravels and fine sands and silts.

Upstream of the confluence, Grassy Wash consists of a braided channel with several flow channels. The predominant channel has a top width of 10 to 12 feet with a bottom width of 8 or 9 feet and steep side slopes. The depth of this channel is approximately 2.5 feet deep. The overall channel is approximately 50 to 75 feet wide. Channel material consists of fine to coarse gravels and fine sands and silts.

Downstream of the confluence with the Right Fork, Grassy Wash is again an incised channel. The channel is approximately 10 to 15 feet wide with a depth of 5 to 6 feet. The channel bends to the west and flow is directed against the outer bank. This results in a steep slope on the outer bank and a gentler slope on the inner bank. Channel material consists of fine to coarse gravels and fine sands and silts.

Stream Transmission Loss Modeling

Based on the DOGM estimate for mine discharge, an estimate was prepared to determine if flow would reach the Price River. This estimate is based on the concepts presented in the U.S. Soil Conservation Service National Engineering Handbook Chapter 19 - Transmission Losses (1985). The actual method is based on regression equations derived from Arizona and New Mexico conditions. While the current site is similar, the conditions are different. Therefore, the current site was modeled using similar concepts.

The estimated mine discharge was assumed to be introduced to the channel. The soil designations of the channel area were determined from preliminary soils maps developed by the NRCS Price Office for the Emery County Soil Survey (personnel communication, Leland Sasser, 2004). The length of channel crossing each different soil type was determined. Permeability estimates of the soils were determined from the SCS soil survey engineering properties table. Estimates of channel width and depth, valley fill width and depth, along with the length of soil

sections and permeability data were input into the spreadsheet presented in Table 1. No evaporation was assumed to provide a conservative estimate. Based on the discharge to the channel and the estimates of infiltration and permeability loss over the flow length, an estimate of the distance that the flow would be conveyed was determined.

Given the soils in the area the 500 gpm flow from the mine would be expected to flow a distance of approximately 18,300 feet or 3.4 miles. The distance to the Price River from the mine is about 9.5 miles. Therefore, the flow from the mine will not reach the Price River.

With the presence of the diversion and the anticipated collection of the flows from the Right Fork of Lila Canyon in the stock pond, it is likely that the flow will not reach the 3.4 mile distance estimated.

Flow Characteristics

Based on regresssion equations for ephemeral streams in Utah developed by Thomas and Lindskov (1983), two watersheds on the Right Fork of Lila Canyon were evaluated to determine the peakflow and flow depth of the various return period storms. The first was the drainage from the mine site upstream. The second was the entire drainage upstream from the confluence with Grassy Wash. Calculations are presented in Attachment #2.

The results of the calculations show that the 500 gpm mine discharge (1.1 cfs) is significantly less than the 37 cfs for the 2 year flood flow expected just below the mine site. Given that the regression equations are limited in accuracy, even if the estimated peak is off by a factor of 2, the mine discharge would still be less than 6 percent of the expected peakflow of 18.5 cfs.

The 2 year flow was selected for comparison as this is generally considered to be the bankfull stage or capacity of the low flow channel. Many reseachers consider the bankfull flow to be the major channel forming flow, due to its probability of occurrence and its channel forming energy. Given the fact that the mine water flow is significantly below this flow, its is not likely that the flow will have any significant negative impact on the channel conditions.

It is likely that the constant low flow condition will result in the establishment of a vegetative community adjacent to the channel for the short distance that flow will exist above ground. Additionally, the development of such a community, would increase the evapotranspiration along the flow corridor and ultimately result in a shorter flow distance below the mine.

- EVALUATION OF PEAKFLOWS FOR RIGHT FORK OF LILA CANYON VS MINE DISCHARGE.

- RIGHT FORK OF LILA CANYON IS AN UNGAGED, UN-DEVELOPED WATERSHED. NO FLOW RECORDS EXIST.

- ESTIMATE FLOWS USING REGRESSION EQUATIONS OF THOMAS & LINDSKOU (1983).
  - BASED ON FIGURE 1 (ATTACHED), SITE IS LOCATED IN REGION E - LOW PLATEAUS.
  - INPUTS FOR PEAKDISCHARGE ARE:
    - WATERSHED AREA (SQ MI)
    - MEAN WS ELEVATION (1000's OF FEET)

- TWO WATERSHED's ARE TO BE EVALUATED:

A - JUST BELOW SEDIMENT POND

B - @ CONFLUENCE OF GRASSY WASH & RIGHT FORK OF LILA CANYON.

- AREAS

WS A - 12751280 FT^2 = 0.457 Sq MI

WS B - 24207230 FT^2 = 0.868 Sq. MI.

- MEAN WS ELEV. - DETERMINED FROM 20 GRIDDED POINTS OVER WS

WS A - 6910 FT → 6.9

WS B - 6324 FT → 6.3

- REGRESSION EQUATIONS ARE PRESENTED IN TABLE 6 (ATTACHED)

- TABLE 1 PRESENTS THE CALCULATION RESULTS

- BASED ON RESULTS THE 500 GPM = 1.1 CFS, IT IS LESS THAN THE 2YR EVENT FOR THE DRAINAGE CHANNEL WITH A FLOW DEPTH LESS THAN 0.9 FT.

- BASED ON STANDARD CHANNEL MORPHOLOGY, THE 2-YR EVENT IS GENERALLY CONSIDERED TO BE BANK FULL FOR A CHANNEL. THE BANK FULL FLOW IS THE FLOW THAT WILL AFFECT CHANNEL MORPHOLOGY THE MOST FREQUENTLY. THEREFORE, IT WILL HAVE THE MOST SIGNIFICANT AFFECT ON CHANNEL SHAPE & CONDITION.

- FOR THE MINE DISCHARGE, THE 500 GPM FLOW WILL EASILY BE CARRIED WITHIN THE LOW FLOW CHANNEL & WILL NOT AFFECT CHANNEL MORPHOLOGY.