

0043

C/015/015 Incoming



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**COPY**

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#3411

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October 06, 2009

Daron Haddock  
Utah Division of Oil, Gas and Mining  
Coal Program  
1594 West North Temple, Suite 1210  
Box 145801  
Salt Lake City, Utah 84114-5801

Re: Emery Deep Mine Permit C/015/015  
Amendment to add Zero Zero North LBA (UTU-86038) to MRP deficiency response, task id 3405

Dear Mr. Haddock:

Please consider this a response to your deficiency list task id 3405. Enclosed please find three (3) copies of the submittal, and two (2) CD's with the submittal in pdf format. Also attached please find executed C1 and C-2 forms. The deficiencies with responses have been addressed on the attached page.

If you have any questions concerning this request, please call me at (618) 625-6850.

Sincerely,

John Geffert  
Environmental Engineer

CC: Karl Houskeeper – DOGM-Price Field Office  
Attachments  
JAG/jag emzznorthLBA def3405.doc

RECEIVED

OCT 06 2009

DIV. OF OIL, GAS & MINING

File in:

- Confidential
- Shelf
- Expandable

Refer to Record No 0043 Date 10062009  
In C/015/015/2009 Incoming  
For additional information

## Deficiency List

Task No. #3405

Add Zero Zero North LBA (UTU-86038)

The members of the review team include the following individuals:

Steve Christensen (SC)

Ingrid Wieser (IW)

**R645-301-120:** The Permittee must provide clarification language that makes it clear to the reader that the submitted information pertains directly to the Federal lease expansion of the Zero Zero North Panel. The clarification should be inserted in the following locations:

In section VI.2.4-Baseline Information on the top of Page VI-3 of the approved MRP.

*Refer to revised pages VI-2a and VI-3. Clarification has been added.*

Top of 1<sup>st</sup> page of Appendix VI-16, Selected Text from Miller Canyon Tract EA. (SC)

*Refer to Appendix VI-16 page 1. Clarification has been added.*

**R645-301-120:** The Permittee should provide additional figures within Appendix VI-16, *Selected Text from Miller Canyon Tract EA*. The baseline information contained within Appendix VI-16 cites Figures 3 and 4 from the Environmental Assessment. For clarification, Figures 3 and 4 should be included with the information submitted in Appendix VI-16. (SC)

*Figure 3(Site Map) and Figure 4 (Water Resources) from the Miller Canyon Tract Environmental Assessment have been included in Appendix VI-16*

**R645-301-728-** The Permittee must include further discussion as to the potential for probable hydrologic consequences (PHC) within section VI.2.8.3 of the MRP. The environmental assessment (EA) conducted by the Federal land regulatory agency identified hydrologic resources and riparian vegetation/habitat corridors that could be potentially impacted by subsidence within the ZZ North Panel expansion. These resources should be specifically addressed within the PHC section that begins on page VI-16 of the MRP. (SC)

*Refer to inserted pages VI-27b, VI-27c and VI-27d*

**R645-301-411.142:** According to the archaeological report MOAC 08-096, the determination “no adverse effect” is proposed *only* if the five eligible sites (42Em3964, 42Em3965, 42Em3966, 42Em3969 and 42Em3974) are periodically monitored for subsidence impacts by a qualified archaeologist. The report also states that additional mitigation may be required. Please provide a monitoring schedule to the Division for these five sites, and a commitment to conduct mitigation if significant impacts occur. (IW)

*Refer to Chapter X-A index page and Chapter X-A pg1 for a monitoring commitment.*

**R645-301-322, 301-333:** Please provide a protection plan for the active prairie dog town and burrowing owl nesting area located in the Miller tract. Undermining must occur outside of the buffer period (post August 31) to avoid disturbance. The habitat must also be monitored during and after subsidence to ensure that no adverse affects have occurred. A commitment to conduct mitigation if adverse affects from mining occur must be in the plan. (IW)

*Refer to Chapter IX Appendix IX-3 (Zero Zero North LBA UTU 603, Wildlife Protection and Enhancement Plan)*

## APPLICATION FOR COAL PERMIT PROCESSING

Permit Change  New Permit  Renewal  Exploration  Bond Release  Transfer  **COPY**

**Permittee:** Consolidation Coal Company  
**Mine:** Emery Mine **Permit Number:** 015/015  
**Title:** Zero Zero North LBA

**Description,** Include reason for application and timing required to implement:  
Amnd to add LBA UTU 86038 Zero Zero North area to MRP, deficiency response task id 3405 10/09

**Instructions:** If you answer yes to any of the first eight (gray) questions, this application may require Public Notice publication.

- Yes  No 1. Change in the size of the Permit Area? Acres: \_\_\_\_\_ Disturbed Area: \_\_\_\_\_  increase  decrease.
- Yes  No 2. Is the application submitted as a result of a Division Order? DO# \_\_\_\_\_
- Yes  No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
- Yes  No 4. Does the application include operations in hydrologic basins other than as currently approved?
- Yes  No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
- Yes  No 6. Does the application require or include public notice publication?
- Yes  No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
- Yes  No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
- Yes  No 9. Is the application submitted as a result of a Violation? NOV # \_\_\_\_\_
- Yes  No 10. Is the application submitted as a result of other laws or regulations or policies?  
*Explain:* \_\_\_\_\_
- Yes  No 11. Does the application affect the surface landowner or change the post mining land use?
- Yes  No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
- Yes  No 13. Does the application require or include collection and reporting of any baseline information?
- Yes  No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
- Yes  No 15. Does the application require or include soil removal, storage or placement?
- Yes  No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
- Yes  No 17. Does the application require or include construction, modification, or removal of surface facilities?
- Yes  No 18. Does the application require or include water monitoring, sediment or drainage control measures?
- Yes  No 19. Does the application require or include certified designs, maps or calculation?
- Yes  No 20. Does the application require or include subsidence control or monitoring?
- Yes  No 21. Have reclamation costs for bonding been provided?
- Yes  No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
- Yes  No 23. Does the application affect permits issued by other agencies or permits issued to other entities?

**Please attach four (4) review copies of the application. If the mine is on or adjacent to Forest Service land please submit five (5) copies, thank you.** (These numbers include a copy for the Price Field Office)

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

Jonathan M. Pachter  
 Print Name

Jonathan M. Pachter 10/2/09  
 Sign Name, Position, Date

Subscribed and sworn to before me this 5 day of OCTOBER, 2009

Jane M. Young  
 Notary Public

My commission Expires: \_\_\_\_\_, 20\_\_\_\_ }  
 Attest: State of PENNSYLVANIA } ss:  
 County of WASHINGTON

**COMMONWEALTH OF PENNSYLVANIA**

**Notarial Seal**

Jane M. Young, Notary Public

Cecil Twp., Washington County

My Commission Expires June 20, 2013

Member, Pennsylvania Association of Notaries

<b>For Office Use Only:</b>	<b>Assigned Tracking Number:</b>	<b>Received by Oil, Gas &amp; Mining</b>
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### **VI.2.2.5 Surface Topography**

Surface topographic features in the permit and adjacent areas are shown on the base maps used for many of the plates in this submittal.

### **VI.2.3 Sampling and Analysis**

All water samples collected under this MRP have been analyzed according to methods in either the "Standard Methods for the Examination of Water and Wastewater" or 40 CFR parts 136 and 434. Where feasible, these same references have been used as the basis for sample collection.

### **VI.2.4 Baseline Information**

Surface and groundwater resource information is presented in this section to assist in understanding hydrologic conditions in the mine area. This information provides a basis for determining if mining operations have had, or can be expected to have, a significant impact on the hydrologic balance of the area. [Additional information regarding the hydrology of the Miller Canyon Tract \(Zero Zero North mine panel\) is provided in Appendix VI-16.](#)

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#### VI.2.4.1 Groundwater Information

This section presents a discussion of baseline groundwater conditions in the permit and adjacent areas. The locations of wells and springs in the area are presented on Plates VI-3 and VI-4. Lithologic and completion logs for monitoring wells in the permit and adjacent areas are provided in Appendix VI-2.

Geologic conditions in the permit and adjacent areas are described in Volume V of this MRP. Groundwater in the permit and adjacent areas occurs predominantly in the Ferron Sandstone. However, perched aquifers of limited areal extent are present in overlying materials. Hydrogeologic conditions within the permit and adjacent areas are summarized below.

##### Quaternary Deposits (Qal)

Discontinuous, shallow perched zones are contained within Quaternary alluvial, mud and slope wash, and pediment deposits scattered throughout the Emery area (see Plate VI-5). These Quaternary deposits are generally less than 50 feet thick, with boundaries defined by the contact with the underlying Blue Gate Member of the Mancos Shale.

Recharge to Quaternary *alluvial deposits* in the area occurs primarily by streamflow seepage along adjacent water courses. During the spring and summer months, much of this water consists of irrigation return flow. Groundwater discharges from these Quaternary alluvial deposits primarily via evapotranspiration and horizontal, subsurface outflow to topographically lower areas. Given the relatively impermeable nature of the underlying Blue Gate Member, it is assumed that only minor quantities of alluvial groundwater discharge to the adjacent bedrock.

Most recharge to the Quaternary *mud and slope wash and pediment deposits* occurs via seepage of irrigation water applied to adjacent land. This water, which in the Emery area is diverted predominantly from Muddy Creek, is either evapotranspired or moves horizontally through these deposits and then discharges to the surface at the underlying contact with the relatively impervious Blue Gate Member. Several seepage points representing irrigation return flow from this subsurface mud and slope wash/pediment water are noted on Plate VI-5 (specifically SP-1 through SP-14). Water flowing from some of these seeps becomes trapped in swales which, coupled with the high salinity of the Blue Gate, creates areas of salt accumulation.

Consol conducted an inventory of seepage points within one mile of the permit area on October 24, 1979, and again on June 11, 1980. Each point was evaluated in the field for its geologic setting, and field data were collected to define the temperature, pH, specific conductance, dissolved oxygen, and discharge (where possible) of the seepage.

Within the study area, 16 seepage points were identified in 1979-1980. Locations and field measurements for each of the points are exhibited on Plate VI-5 and Table VI-3, respectively. All but two of the seepage points were observed to be issuing from pediment

Zero Zero North Panel. The probable hydrologic consequences of mining in the Zero Zero North panel were evaluated in an environmental assessment published by the U.S. Bureau of Land Management in 2009<sup>1</sup>. The following is extracted from Section 4.2.1.1 of that document and describes those probable hydrologic consequences:

No surface disturbances (other than indirect subsidence-caused settling) would occur under the proposed action, thus the accelerated runoff and erosion typical of disturbed areas would not occur. However, within the 55 acres of the Tract where full extraction would occur, planned subsidence may locally alter drainage patterns through slight but non-uniform settling and development of tension cracks. This could change infiltration, ponding, erosion/deposition, and runoff characteristics on a very small and local scale but would not be expected to have off-site impacts or otherwise affect either the Miller Canyon or Christiansen Wash streamflow or sediment regimes. Over time, tension cracks would be likely to fill and seal, particularly in the areas where soils have substantial clay components and overly shale parent materials (soil mapping units PCE2 and NME2 – Figure 5 [of the EA]). Similarly, as small depressions collect runoff, conveyed sediments would deposit and over time these depressions would fill, causing local topography to reach pre-subsidence uniformity.

Because the proposed action would simply be an extension of mining, there would be no change to the existing condition regarding other potential surface effects (off of the Tract) such as those related to coal transport, hydrocarbon spillage, surface infrastructure, discharge of intercepted groundwater, etc. Consol would continue to monitor surface and groundwater impacts related to its existing operations to ensure that there are no material damages to the hydrologic balance as per the Emery Mine's already approved MRP.

As mining expands into the Tract, groundwater contained in the Ferron Sandstone would continue to be intercepted. Given the small area (55 acres) of undermining associated with the Tract, as compared to the past, current, and already approved mining, the additional quantity of intercepted groundwater associated with the Emery Mine is not expected to substantially change. Similarly, the discharge of that intercepted groundwater water to Quitchupah Creek would continue, as allowed by the current UPDES Permit, at similar rates and water quality as if the Tract were not mined. In addition, there would be no change in the consumptive use of this groundwater (due to entrainment in the coal, dust control in-mine and on the surface, and evaporative losses due to mine ventilation).

Under existing approvals that are irrespective of the proposed action being evaluated here, it has been predicted that Christiansen Spring (also known as SP-15) will be within the cone of depression due to mining and resultant dewatering of the upper Ferron Sandstone aquifer. Groundwater modeling presented in Consol's approved MRP (Consolidation Coal Company 2008) suggests that the potentiometric surface in the vicinity of the spring will temporarily decline about 24 feet; this decline can be expected to affect the discharge of Ferron Sandstone groundwater at Christiansen Spring. As overall premining groundwater levels reestablish after mining is complete, the spring can be expected to again discharge this groundwater. Mining the

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<sup>1</sup> U.S. Bureau of Land Management. 2009. Environmental Assessment of the Consolidation Coal Company Emery Mine – Miller Canyon Tract Lease UTU-86038, Emery County, Utah. Environmental Assessment UT-070-2008-104. Price, Utah.

Tract would not alter either the diminishment or the reestablishment of the spring as it is already expected to occur under the existing mine plan.

Further, this spring is not within the footprint of the area that would be mined or subsided under the proposed action. As such, its physical setting would not be disturbed.

A reach of the Miller Canyon channel would be undermined and subsided as a result of the proposed action. The small earthen dam mentioned in Section 3.1.1 [of the EA] is within this reach, as is the noted zone of piping and interception of stream flows. As was previously discussed, the dominant source for water stored in the dam and conveyed through Miller Canyon is excess irrigation water that is released under the current flood-irrigation system. As this part of the Tract is mined and subsided, ground movements could occur and it would be possible that the already-compromised dam could fail further, perhaps ceasing to have any impoundment capacity, and that the already occurring piping and interception of flows could be exacerbated.

Because the dam is located on ground that Consol owns, they would have several options: (1) reconstruct the dam at that location for the lessee's use, (2) construct another dam further upstream outside of the Tract, (3) enlarge the excavated impoundments located on their property north of the Tract for the lessee's use, or (4) forego the ability to impound water at this location. The fact that the flood irrigation system may soon be converted to a pressurized sprinkler irrigation system and the fact that this structure is not a State Engineer-permitted structure reduce the level of impact associated with the potential loss of the dam's functionality.

The proposed action's potential exacerbation of the piping and interception of flows that are already occurring within this reach of Miller Canyon would represent a greater concern. Once the channel subsides, the intercepted water may not be able to make its way back into the channel as it currently does. In addition to the physical alteration of the existing piping and joint network, the overall lowering of the channel bed through this reach would locally change the channel gradient. These combined effects could result in less water continuing downstream to lower Miller Canyon and Muddy Creek. Because most Miller Canyon discharge is related to irrigation, and comprised of flow that is regulated but not measured, quantification of this potential water loss is not possible. However, as noted, flows may diminish in Miller Canyon in the near future, irrespective of the proposed action, due to the irrigation system conversion. Any loss of water in Miller Canyon due to the proposed action may simply cause this change to occur sooner than it would otherwise occur. Regardless, the BLM's stockwatering right in lower Miller Canyon, which apparently depends in large part upon irrigation releases, may be affected.

The fate of any Miller Canyon flow that may be lost from the surface within the subsided area cannot be predicted with certainty. It may, as it does currently, move laterally down gradient and reappear in the stream channel downstream of the mined area. Alternatively, its movement may have a greater vertical component, and be conveyed into the mine via tension cracks and/or natural joints. If the latter, it would require handling and subsequent discharge to Quitchupah Creek through Consol's UPDES permit.

## **VI.2.9 Cumulative Hydrologic Impact Assessment (CHIA)**

A Cumulative Hydrologic Impact Assessment to include the permit and adjacent areas has been prepared by the Division.

## **VI.3 OPERATION PLAN**

### **VI.3.1 General Requirements**

This permit application includes an operation plan which addresses the following:

- Groundwater and surface water protection and monitoring plans;
- Design criteria and plans;
- Performance standards; and
- A reclamation plan.

#### **VI.3.1.1 Hydrologic-Balance Protection**

**Groundwater Protection.** To protect the hydrologic balance, coal mining and reclamation operations will be conducted to handle earth materials and runoff in a manner that minimizes acidic, toxic, or other harmful infiltration to the groundwater system. Additionally, the mine will manage excavations and disturbances to prevent or control discharges of pollutants to the groundwater.

**APPENDIX VI-16**

Selected Text from  
Miller Canyon Tract EA

**The following is extracted from pages 18 through 20 of the Emery Mine-Miller Canyon Tract Lease Environmental Assessment<sup>1</sup> (the area of the Zero Zero North mine panel):**

### **3.3.1 Water Resources**

The Tract is bisected by the upper reaches of Miller Canyon (**Figure 4**). Miller Canyon joins Muddy Creek about one mile downstream of the Tract. Though most of the Tract is drained by Miller Canyon, runoff from the western part flows toward Christiansen Wash, which is also tributary to Muddy Creek via Quitchupah Creek. Muddy Creek and the Fremont River combine to form the Dirty Devil River before it joins the Colorado River.

Along a several-mile reach of Muddy Creek, beginning at the Emery Canal diversion (which often completely dewateres the channel) located about 15 miles northwest of the Tract, continuing downstream to include the reach of stream just east of the Tract, stream flows are generally supported by seepage and irrigation returns (Mundorff 1979). Within this reach of Muddy Creek, total dissolved solids (TDS) concentrations markedly increase. For example, TDS in samples collected by the US Geological Survey (USGS) during the 2005 and 2006 water years were consistently below 300 mg/L at the USGS Muddy Creek station upstream of Emery near the canal diversion, but were as high as 3,714 mg/L in Muddy Creek just below Miller Creek (USGS 2008). The increase is due to diversion of good quality water into the Emery Canal, interaction with the soluble marine deposits associated with Mancos Shale Formation outcrops, and contribution of irrigation-affected seepage and return flow. Miller Canyon itself conveys irrigation return flow, runoff from storms and snow melt, and discharge from a small spring. Each of these sources is discussed in more detail below.

Within the reach of Miller Canyon that flows through the Tract, irrigation return flow is seasonal, but of sufficient duration and volume to support a riparian corridor and to provide water for downstream stock uses. It appears to be the largest sustained contributor to Miller Canyon flow: a site visit on April 24, 2008, prior to the start of irrigation, documented an absence of stream flow in Miller Canyon upstream of contributions from a small spring (less than one gallon per minute) near the downstream end of the Tract; a repeat visit on June 4 documented irrigation flows (in excess of 100 gallons per minute) throughout the previously dry reach. Further, field notes from Consol personnel, who routinely visit the area to monitor flows at the spring, often indicate that the presence of irrigation water hinders their ability to measure spring discharge (personal communication, Peter Behling, Consol, April 28, 2008).

While the Emery area has been flood-irrigated for more than 100 years, the practice is likely to be modified in the near future, and this modification may have a direct bearing on future flows in Miller Canyon (unrelated to Consol's plan to mine the Tract). The Tract is within a larger area established by the USDA Natural Resource Conservation Service (NRCS) as the Muddy Creek Unit of the Colorado River Salinity Control Program. As with other salinity control units, this area was determined to be an area where salt load reduction was potentially economical. In October 2004, the NRCS (2004) finalized a plan to construct a new irrigation delivery system and implement an irrigation conversion project (from flood to sprinkler) on the Muddy Creek Unit. Once implemented, this project will result in more efficient water use, which in turn tends to improve water quality by reducing dissolved salts. Irrigation conversion also generally reduces deep percolation, seepage, and excess water in return ditches. Once implemented on the fields upstream of the Tract, stream flows through Miller Canyon are likely to diminish. Those reduced flows, in turn, may result in a diminished riparian corridor and associated habitat. In fact, the NRCS's EA (NRCS 2004) recognizes that at least some of the seeps, wetlands, and riparian areas that have been artificially

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<sup>1</sup> U.S. Bureau of Land Management. 2009. Environmental Assessment of the Consolidation Coal Company Emery Mine-Miller Canyon Tract Lease UTU-86038, Emery County, Utah. Environmental Assessment UT-070-2008-104. Price, Utah.

created over many years of inefficient irrigation practices in the Muddy Creek area are likely to be negatively impacted by the salinity control project.

Runoff from thunderstorms and seasonal snowmelt is another source that contributes stream flow to Miller Canyon. At Muddy Creek near I-70, the USGS (2008) attributed more than twice the amount of snowmelt runoff as compared to direct runoff during the 2005-2006 water years, but also notes the large temporal and spatial variability of flows in the Muddy Creek Basin. Snowmelt in Miller Canyon would likely peak in May or early June, and would typically contain very few dissolved solids. Late summer or fall thunderstorms produce most of the direct runoff, and this source is — by nature — infrequent and irregular. Channel morphology in Miller Canyon does not suggest that severe flash floods are common. As with most streams in the area, when the flow is comprised of high-intensity runoff from thunderstorms, sediment concentrations in Miller Canyon are likely to be elevated, and TDS concentrations are likely to be higher than during snowmelt-dominated flow events.

Due to a small, currently unmaintained earthen dike across the Miller Canyon channel at the upstream end of the Tract (**Figure 4**), both irrigation water and runoff are at least partially impounded. During the previously mentioned June 2008 site visit, seepage was occurring beneath the dam, and significant piping and interception of flows was occurring immediately downstream of it (which appears to be related to bedrock joints or fissures as the intercepted flows were observed to resurface well downstream of the dam). Several smaller impoundments have been excavated just upstream of the dam, within and north of the Tract on land owned by Consol but leased to an irrigator. These impoundments were apparently constructed to compensate for the dam's only partially functional ability to store water. The stored water is apparently used to supply drinking water for the lessee's livestock.

As mentioned above, a small spring discharges groundwater along the west bank of Miller Canyon near the downstream Tract boundary (**Figure 4**). This spring is not documented on USGS mapping or in other published sources, but was identified a number of years ago in association with the Emery Mine's baseline data gathering. Named Christiansen Spring (or SP-15), Consol monitors this source quarterly. According to Consol's MRP (Consolidation Coal Company 2008a), the spring discharges from the upper zone of the Ferron Sandstone Member of the Mancos Shale. Consol has a water right (#94-92) that was originally associated with this spring, and which now includes stockwatering rights for a reach upstream of the spring.

Downstream of the spring and the Tract, continuing through Miller Canyon to its confluence with Muddy Creek, BLM has an in-stream point-to-point water right (#94-1716) for stock watering and livestock uses (**Figure 3**). As with the upstream reach of Miller Canyon, flows in this segment of the canyon are most likely supported largely by irrigation return flows.

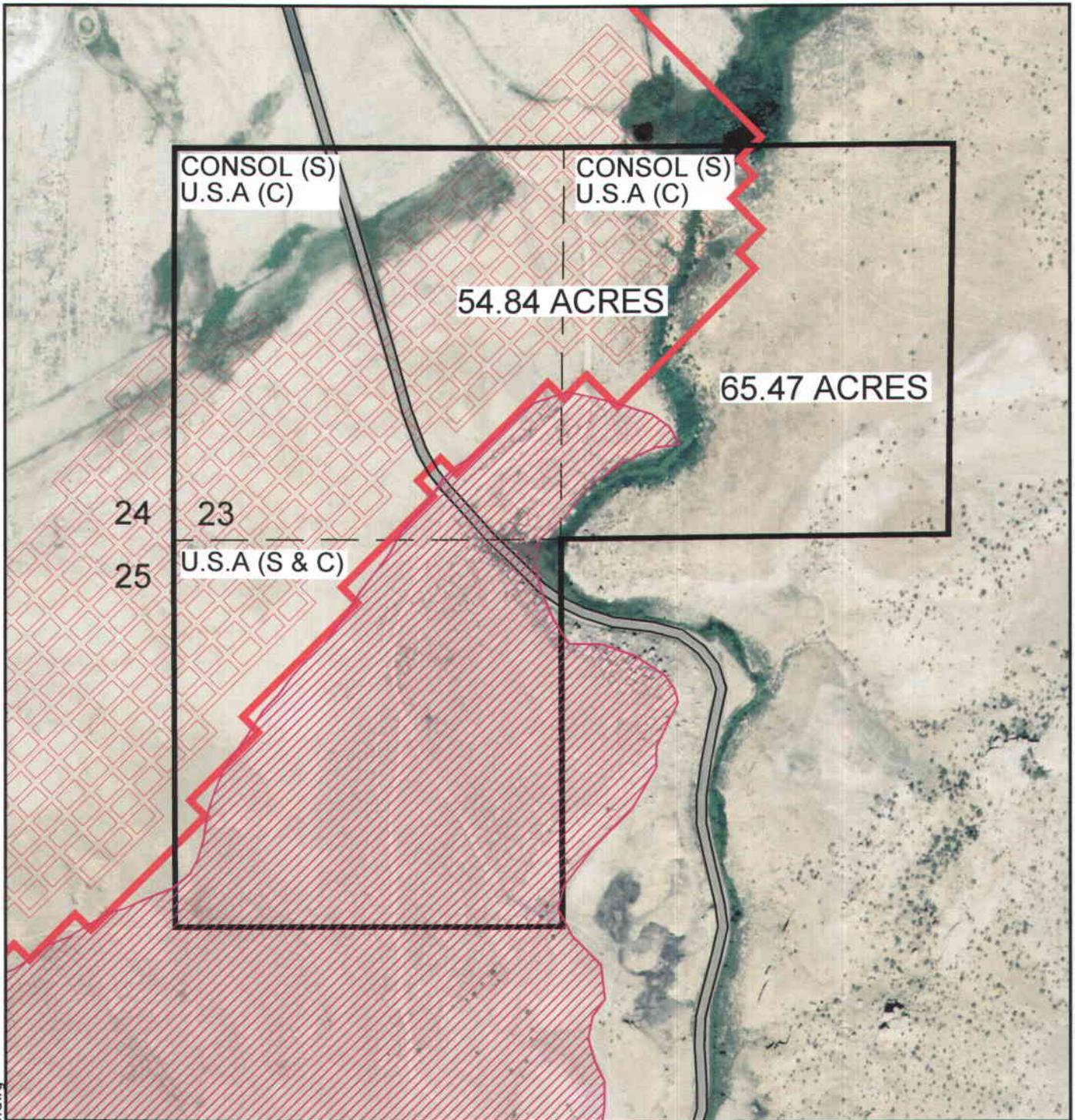
The Ferron Sandstone is considered to be the primary bedrock aquifer within the general area encompassing the Tract. Located between the more impermeable shales of the Blue Gate (overlying) and the Tununk (underlying) members of the Mancos Shale, the aquifer associated with the Ferron Sandstone is commonly divided into a lower, middle, and an upper aquifer unit. The minable coal seam is located between the middle and upper divisions. The Emery Mine intercepts groundwater from this aquifer, and continually discharges the majority of the intercepted water to Quitcupah Creek. In 2006, the mine discharged this water at an average rate of about 527 gallons per minute; its TDS averaged approximately 3,480 mg/L (EarthFax Engineering, Inc., 2008). The discharge is permitted by the Utah Division of Water Quality (UDWQ) under the Utah Pollutant Discharge Elimination System (UPDES) program. Consol owns several water rights for groundwater, and uses this water for industrial and agricultural purposes.

The Ferron Sandstone aquifer is primarily recharged from the high-elevation Wasatch Plateau to the west, and is under artesian pressure in the vicinity of the Emery Mine. Within the Tract, the Ferron Sandstone is the uppermost bedrock unit, and it is exposed as outcrop along portions of Miller Canyon, including at the location of the above-described spring. Generally though, within and near the outcrop

area the Ferron is not saturated. By intercepting and continually discharging the intercepted water, mining has lowered the potentiometric surface of the Ferron, (primarily the upper Ferron zone and to a lesser extent the middle and lower zones) (Consolidation Coal Company 2008b). Once mining ceases, the trough of depression caused by past and currently approved mining activities will gradually diminish and pre-mining groundwater levels will eventually be approximately reestablished.

The water quality of the Ferron varies with depth and with distance down gradient from the recharge area. The TDS concentration of groundwater in the upper Ferron Sandstone averages about 1,600 mg/L, though in the vicinity of the Emery Mine is locally higher, likely due to interaction between the Ferron and the overlying shales.

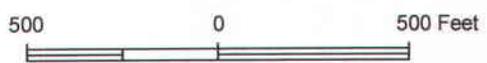
Neither the surface- nor groundwater resources in the vicinity of the Tract supply public or private drinking water systems. This is largely due to a lack of need in this sparsely populated area, but in part is due to high TDS concentrations.

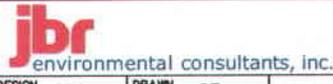


drawings\Consol Miller Canyon\Fig3 Site Map.dwg

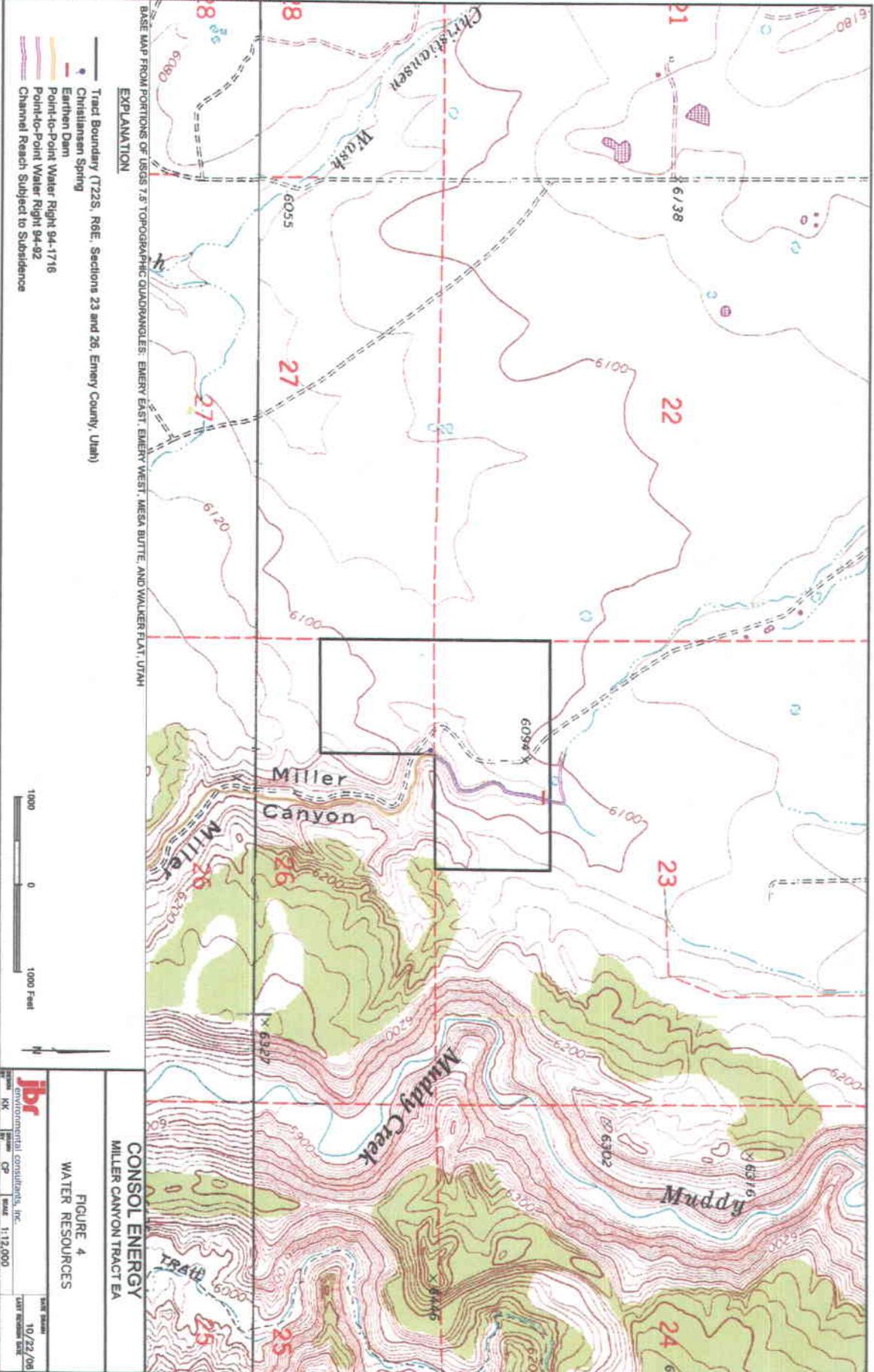
BASE USGS 7.5' TOPOGRAPHIC MAP: EMERY EAST, 1968 PHOTOREVISED 1978, UTAH

- EXPLANATION**
-  New Road
  -  Tract Boundary (T22S, R6E, Sections 23 and 26, Emery County, Utah)
  -  Non-subsidence Boudary
  -  Forecasted 00 North Panel
  -  Burn.Oxidized Area



<b>CONSOL ENERGY</b>									
MILLER CANYON TRACT EA									
FIGURE 3 SITE MAP									
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		12/18/08							
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BASE MAP FROM PORTIONS OF USGS 7.5' TOPOGRAPHIC QUADRANGLES: EMERY EAST, EMERY WEST, MESA BUTTE, AND WALKER FLAT, UTAH

EXPLANATION

- Tract Boundary (T22S, R6E, Sections 23 and 26, Emery County, Utah)
- Christiansen Spring
- Earthen Dam
- Point-to-Point Water Right 94-1718
- Point-to-Point Water Right 94-92
- Channel Reach Subject to Subsidence



**CONSOL ENERGY**  
MILLER CANYON TRACT EA

**FIGURE 4**  
WATER RESOURCES

**ibj**  
environmental consultants, inc.

DATE: 10/22/08  
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**CHAPTER IX**

**WILDLIFE**

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UMC 783.25 (b)	Cross-Section, Maps, and Plans-Fish and Wildlife . . . . . 2
UMC 817.97	Protection of Fish, Wildlife, and Related Environmental Values . . . . . 3

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IX-3                      Zero Zero North LBA UTU-86038 Wildlife protection and Enhancement Plan See CH VIII Appendix VIII-6 for wildlife discussion

See: Chapter XII, Appendix XII-2,  
Vegetation and Wildlife Report for 1<sup>st</sup> North IBC (348ac)

See: Chapter XIII, Appendix XIII-2,  
Vegetation and Wildlife Report for Federal Lease Area (160 ac)  
A current T&E species list for the permit area can be found at Chapter XIII,  
Appendix XIII-2, page 6 and 7.

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Revised 10/02  
Revised 05/07  
Revised 10/09

**CHAPTER IX**

**APPENDIX IX-3**

**Zero Zero North LBA UTU 86038  
Wildlife Protection and Enhancement Plan**

Zero Zero North LBA UTU-86036

Wildlife Protection and Enhancement Plan

Burrowing Owl

During the Environmental Assessment phase of this project a burrowing owl was noted using an active prairie dog colony. Refer to Burrowing Owl Survey in Chapter VIII Appendix VIII-6 titled Biological Resources of the Zero Zero North LBA UTU-86038, Mt. Nebo Scientific, Nov 2008.

Per consultation with DOGM, Utah Division of Wildlife Resources, and US Fish and Wildlife Service, Consol plans to implement a protection and enhancement plan for the burrowing owl prior to March 1, 2010. The prairie dog colony, as depicted in the above mentioned appendix at page 6 Figure 1, resides on private surface owned in fee by Consol that has been tilled in the past.

One recommendation from the USFWS that may be implemented is for Consol to work with DOGM to locate a remote area to add burrowing owl nesting dens provided by DWR. This enhancement project will be complete prior to the March 1, 2010 burrowing owl nesting period.

Consol will work with DOGM to prepare and submit a protection and enhancement plan prior to March 1, 2010.

Inserted 10/09

## CHAPTER X

### PART A: CULTURAL RESOURCES

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#### APPENDICES

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- 5-4 ARCHEOLOGICAL SITE FORMS SEE CONFIDENTIAL BINDER
- 5-5 ARCHEOLOGICAL EVALUATION - MONTGOMERY ARCHAEOLOGICAL CONSULTANTS, 4th EAST PORTAL SITE, MAY 2002 SEE CONFIDENTIAL BINDER
- 5-6 ARCHEOLOGICAL EVALUATION - MONTGOMERY ARCHAEOLOGICAL CONSULTANTS, 4th EAST POWERLINE, AUGUST 2002 SEE CONFIDENTIAL BINDER
- 5-7 ARCHEOLOGICAL EVALUATION - MONTGOMERY ARCHAEOLOGICAL CONSULTANTS, 4th EAST EXTENSION AREA, MARCH 2003 SEE CONFIDENTIAL BINDER

See: Chapter XII, Appendix XII-3, Cultural Resource Report (MOAC Report No. 05-177, May 23, 2005), for 1<sup>st</sup> North IBC Archeology SEE CONFIDENTIAL BINDER

See: Chapter XIII, Appendix XIII-3, Class 3 Cultural Resource Report (MOAC Report 07-33, February 13, 2007) for First Federal Lease IBC Archeology. SEE CONFIDENTIAL BINDER

- 5-8 ARCHEOLOGICAL EVALUATION- MONTGOMERY ARCHAEOLOGY CONSULTANTS, Zero North and Zero Zero North (MOAC 07-323) SEE CONFIDENTIAL BINDER

5-9 ARCHEOLOGICAL EVALUATION- MONTGOMERY ARCHAEOLOGY CONSULTANTS, Life of Mine Panels (MOAC 08-135) spring 2008, site treatment plan. The treatment plan for eligible site 42Em3924 will be completed at least 6 months prior to subsidence, with a follow up visit only to the site within 12 months after subsidence. SEE CONFIDENTIAL BINDER

5-10 ARCHEOLOGICAL EVALUATION- MONTGOMERY ARCHAEOLOGY CONSULTANTS, Zero Zero North 120 acre parcel LBA UTU-86038 (MOAC 08-096) Per Management Recommendations on page 19, a qualified archaeologist will periodically monitor the sites (post subsidence) for subsidence impacts. The results will be reported in the Annual report. If mitigation is necessary, a mitigation plan will be submitted to BLM. SEE CONFIDENTIAL BINDER

#### FIGURES

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#### PLATES

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## X.A CULTURAL RESOURCES

This part presents the archeological, historical, and paleontological information in and adjacent to the permit and adjacent area. This information is contained in four (4) survey reports which are appended to this part.

The first, referred to herein as "Chapter 5.0", was prepared by AERC in October of 1980. The second, referred to herein as "Appendix 5-1", was prepared by AERC in July of 1981. The third, referred to herein as "Appendix 5-2", was prepared by Michael S. Berry, Utah Division of State History, in March of 1975. The fourth survey report, Appendix 5-3, was completed by AERC in October, 1988. The site forms are attached in a fifth section, referred to as "Appendix 5-4". The fifth survey report, Appendix 5-5, was completed by Montgomery Archaeological Consultants in May of 2002. This report covers 40 acres surrounding and including the 4th East Portal Site. The sixth referenced survey report, Appendix 5-6, covers the 4th East Powerline Corridor and was completed by Montgomery Archaeological Consultants in August of 2002. One site identified as historically significant was marked in the field and will be avoided as recommended by Montgomery. The seventh survey, referred to as "Appendix 5-7" was conducted by Montgomery Archaeological Consultants in March 2003. This survey was conducted to extend the inventoried areas of the 4th East Portal site. The survey covered an additional 40 acres to the east of "Appendix 5-5" original survey area. This extended area identified one new archaeological site "42Em2961". This new site will be avoided and a fence has been erected by the consultant along the site boundary. .

Chapter XII covers the 1<sup>st</sup> North IBC area and Chapter XIII covers the 1<sup>st</sup> North Federal Lease IBC area. Appendix 5-8 covers Zero North And Zero Zero North panel. Appendix 5-9 covers the Life of Mine planned subsidence area and contains a site treatment plan for eligible site 42Em3924. Appendix 5-10 covers the Zero Zero North LBA area (Miller Canyon Lease). Per management recommendations on page 19 (MOAC-08-095) the five eligible sites (42Em3964, 42Em3965, 42Em3966, 42Em3969, and 42Em3974) will be monitored, post subsidence, for impacts by a qualified archeologist and detailed in the annual report. If mitigation is necessary, a mitigation plan will be submitted to BLM.

These survey reports have not been edited or revised for this repermit application; they were originally prepared for the March 23, 1981 permit application (approved as ACT/015/015 on January 7, 1986) and subsequent revisions and are included herein in their entirety.

### UMC 783.12(b)

The attached investigations describe all of the known archeological sites in the permit area. No cultural and historic resources listed on the National Register of Historic Plates occur in the permit area. A compendium is included which consolidates information on all of the sites.

Revised 10/2003  
Revised 5/09  
Revised 10/09