#3339
OK

TECHNICAL MEMORANDUM
Utah Coal Regulatory Program

June 23, 2009

TO: Internal File

THRU: James D. Smith, Permit Supervisor

FROM: Steve Christensen, Environmental Scientist II Steve C.

RE: Add Consol Controlled ZZ North Panel to MRP, Consolidation Coal Company, Emery Deep, C/015/0015, Task ID #3339 (Formerly) Task ID #3099

SUMMARY:

On June 16th, 2009, the Division of Oil, Gas and Mining (the Division) received an application from Consolidation Coal Company (the Permittee) to revise the approved mining and reclamation plan (MRP) for the Emery Deep Mine. The application represents the second submission from the Permittee for the addition of the Zero Zero North Panel (ZZ North Panel). The initial application was submitted to the Division on December 19th, 2008. The Division performed a technical analysis, identified deficiencies and returned the application on February 17th, 2009.

The application calls for the addition of the ZZ North Panel to the northeast boundary of the mining area. The additional area is approximately 74 acres. The proposed mining area is comprised of both fee surface and fee coal (owned and controlled by the Permittee). The Permittee proposes to utilize a pillar splitting plan that would fall into the planned subsidence category.

In addition, the application also proposes to redefine the permit and adjacent area within the approved Mining and Reclamation Plan (MRP). The Permittee proposes to reduce the permitted area to that of the bonded area only. The plates and text have been revised to reflect the change. In doing so, the Permittee has also established an' adjacent area' for natural resources. The 'adjacent area' is the old permit area with the exception of hydrologic resources. Plate VI-4 depicts a "hydrologic evaluation area". The hydrologic resources that could reasonably be expected to be impacted by underground mining activities extend beyond the "adjacent area" as defined/depicted in the application.

In May 2008, the Division provided final approval for a full-extraction pillar splitting plan for the Zero North Panel. As part of that application, the Permittee provided an updated hydrology section for the approved MRP. The update hydrologic information provided by the

Permittee examines and contains ground and surface water information for the area of the proposed Zero Zero North Pane as its located directly adjacent to the Zero North Panel. The following memo examines the application relative to the hydrologic regulations of the State of Utah R-645 Coal Mining Rules.

Finding:

The hydrologic information meets the hydrology requirements as provided for in the State of Utah R645-Coal Mining Rules and should be approved at this time.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

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

GENERAL

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

Analysis:

The application meets the requirements for General Environmental Resource Information requirements as provided for in R645-301-721. Beginning on page VI-1 of the application, the Permittee provides a brief discussion of the location and extent of subsurface water. Subsequent sections provide references within the application that provide additional information on: the location of surface water bodies, locations of monitoring stations, location and depth of water wells as well as surface topographic features. Water right information is provided in Appendix VI-4 and Table VI-1. Seasonal variations in groundwater levels are discussed in Section VI.2.4.1. Plate VI-3 provides the locations of surface water bodies both within and adjacent to the permit area. Water supply wells and ground water monitoring wells are shown on Plate VI-4. The depths of the wells (as well as other completion details of the wells) are provided in Table VI-2.

The general hydrologic information contained in chapter VI encompasses the proposed Zero Zero North panel.

Findings:

The application meets the General Environmental Resource Information requirements as provided for in R645-301-721.

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

Analysis:

Alluvial Valley Floor Determination

The application meets the Alluvial Valley Floor Determination requirements as provided for in R645-302-320. Chapter XI, *Alluvial Valley Floors*, of the approved MRP contains information regarding alluvial valley floors (AVF's) within and adjacent to the permit area. Plate V-5, "Subsidence Monitoring Points and Buffer Zones" depicts the locations of the alluvial valley buffer zones established by the Permittee. The proposed Zero Zero North Panel is not located within an identified AVF.

Findings:

The application meets the Alluvial Valley Floor Determination requirements as provided for in R645-302-320.

HYDROLOGIC RESOURCE INFORMATION

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

Analysis:

Baseline Information

The application meets the requirements for Baseline Information as required by R645-301-724. Beginning on page VI-3 of the approved MRP, the Permittee provides baseline information for the ground and surface water resources located in within and adjacent to the proposed Zero Zero North Panel.

Probable Hydrologic Consequences Determination

The application meets the requirements for Probable Hydrological Consequences (PHC) as required in R645-301-728. Beginning on page VI-16 of the application, the Permittee discusses the potential impacts from coal mining activities on the quality and quantity of surface and groundwater flow within and adjacent to the permit area. The approved PHC discussion

includes the area the area of the proposed Zero Zero North Panel. The following potential impacts were evaluated and could potentially occur with the mining of the Zero Zero North Panel:

- Contamination from acid- or toxic-forming materials;
- Impacts to groundwater availability;
- Impacts to surface water availability;
- Increased total dissolved solids concentrations in surface and groundwater;
- Flooding or streamflow alteration;
- Potential hydrocarbon contamination
- Coal spillage during hauling.

As part of the reduction in permit area, the Permittee has identified non-water adjacent areas as well as a hydrologic evaluation area. The hydrologic evaluation area is depicted on Plate VI-4, *Ground Water Monitoring Well and Surface Water Monitoring Site Location Map*. In Section VI.2.2.3 and Section VI.2.8.3 the Permittee provides a discussion and explanation as to how the area of hydrologic evaluation was delineated.

Recent ground water modeling (utilizing monitoring well data obtained from the mine site and surrounding vicinity) performed at the Emery Deep Mine provided the basis for determining the lateral extent of potential ground water impacts associated with mining activity at the site.

Findings:

The application meets the Hydrologic Resource requirements of the State of Utah R645-Coal Mining Rules.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

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

Analysis:

The application also proposes to redefine the permit and adjacent area terminology within the approved Mining and Reclamation Plan (MRP). The plates and text have been revised to reflect the change of the permit area to that of the area under bond (i.e. disturbed area). The application also delineates an 'adjacent area' on the affected maps. The 'adjacent area' is the old permit area. The Permittee now proposes to call it the "adjacent area". The Permittee has

submitted (either by hard-copy or by CD) all maps that have been revised to depict the newly defined permit area and accompanying "adjacent area".

Based upon meetings with Division representatives, it was agreed that the plates should clearly denote that the adjacent area is relative to "non-water resources". Each of the maps contains language that states identifies Plate VI-4, *Ground Water Monitoring Well and Surface Water Monitoring Site Location Map* is where the area of hydrologic evaluation is located. The Permittee is differentiating between the "adjacent area" and the "area of hydrologic evaluation". The Permittee and the Division agreed that hydrologic resources that could be affected by underground mining could be located well outside the angle of draw.

The "area of hydrologic evaluation" (as depicted on Plate VI-4), is discussed in Sections VI.2.2.3 and VI.2.8.3 of the MRP. The Permittee provides an explanation as to how the area was determined and ultimately delineated on Plate VI-4.

Monitoring and Sampling Location Maps

The MRP meets the requirements for Monitoring and Sampling Location Maps as required by R645-301-731. Plate VI-4, *Ground Water Monitoring Well and Surface Water Monitoring Site Locations*, depicts the locations of all surface and groundwater monitoring points both within and adjacent to the permit area. The addition of the Zero Zero North Panel does not warrant additional monitoring locations.

Subsurface Water Resource Maps

The MRP meets the requirements for Subsurface Water Resource Maps as required by R645-301-731. Plate VI-1 depicts the potentiometric surface of the Upper Ferron Sandstone aquifer as of 1979. Plate VI-2 depicts the potentiometric surface of the Lower Ferron Sandstone aquifer as of 1985. Plates VI-7 and VI-8 depict the potentiometric surface of the Upper and Lower Ferron Sandstone respectively for 2006. Plate VI-3 depicts the water rights located within and adjacent to the permit area (including the Zero Zero North Panel).

Surface and Subsurface Manmade Features Maps

The MRP meets the requirements for Surface and Subsurface Manmade Features Maps as required by R645-301-731. Plate VI-4 depicts all surface and subsurface manmade features located within and adjacent to the permit area (including the Zero Zero North Panel).

Surface Water Resource Maps

The MRP meets the requirements for Surface Water Resource Maps as required by R645-301-731. Plate VI-4 depicts all surface water located within and adjacent to the permit area (including the Zero Zero North Panel).

Well Maps

The MRP meets the requirements for Well Maps as required by R645-301-731. Plate VI-4 depicts all groundwater wells (including monitoring wells) located within and adjacent to the permit area (including the Zero Zero North Panel).

Findings:

The application meets the Maps, Plans and Cross Sections of Resource Information requirements of the State of Utah R645-Coal Mining Rules as outlined in R645-301-722, -731.

OPERATION PLAN

SUBSIDENCE CONTROL PLAN

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

Analysis:

Renewable Resources Survey

The application meets the requirements for Renewable Resources Survey as required in R645-301-724.

The initial technical review had identified a deficiency relative to the pre-subsidence survey information. It was unclear as to whether the most recent pre-subsidence survey information (Zero North Panel) had taken into account the Zero Zero North panel area. The

Permittee has revised Figure 1 of Appendix V-5 as well as the text of the pre-subsidence survey report to make it clear that the area of the Zero Zero North Panel was surveyed for features that could be potentially impacted by subsidence.

Subsidence Control Plan

The approved MRP meets the Operational Plan requirements for Subsidence Control Plan as provided in R645-301-525.120, -525.480

Section V.B of the MRP discusses subsidence monitoring. Page 36 of the MRP outlines the steps and elements of the proposed subsidence-monitoring plan. The plan calls for the establishment of a series of reference points to be established outside the theoretical angle of draw. Item 1A on page 36 calls for a mine representative to inspect monthly the areas designated as "full extraction" on Plate V-5. The monthly inspections will continue until the survey monitoring points below indicate that there is no subsidence occurring. A record of the monthly inspections will be produced and forwarded to the Division. A copy of the inspection will also be kept at the mine office.

In addition, the Permittee has committed to establish pre-mining elevations and gradients of any irrigation ditches and pond embankments within the angle of draw (See Item 11 in chapter V page 37). The Permittee will also monitor these areas by visual inspection and post-subsidence ground survey to establish the effects of subsidence. The Permittee has committed to providing the Division with a quarterly subsidence mitigation report that describes the surface mitigation projects and their status broke down by surface landowner.

Subsidence mitigation efforts are further discussed on pages 39-42 of Chapter V of the approved MRP. Pages 41 and 42 of the approved MRP generally discuss timetables and how the Permittee will work with landowners and the Division regarding mitigation efforts. On page 39 of Chapter V of the approved MRP, the Permittee discusses the mitigation process relative to subsidence damage to structures and State appropriated water supplies. The Permittee commits to "restore, rehabilitate or remove and replace, to the extent technologically and economically feasible, each materially damaged structure, feature or value".

Page 41 in Chapter V of the MRP discusses subsidence mitigation. The Permittee states, "If subsidence occurs which prevents flow through a ditch that is used each summer, then it will be necessary to repair the ditch as soon as practical even though future subsidence may necessitate further work".

In addition, the mine has been designed to preclude subsidence in areas occupied by perennial streams. The Permittee has produced a plan to prevent subsidence from affecting Quitchupah Creek, Christiansen Wash and the alluvial valley floor area on the west side of the

permit area by establishing buffer zones in these areas. Plate V-5, *Subsidence Monitoring Points and Buffer Zones*, depicts a stream buffer zone extending the full length of Christiansen Wash in the areas where full extraction mining will take place. Additionally, a buffer zone has been established in the alluvial valley floor area around Quitchupah Creek. The overburden depth and the angle of draw were used to determine the buffer zone dimensions. The buffer zone for Quitchupah Creek and Christiansen Wash includes an additional standoff distance of 100 ft. on either side.

The Permittee provides further clarification on subsidence mitigation on page 39 of the MRP. The Permittee commits to "mitigate the damage in accordance with R645-301-525.500" and that "the mitigation process will be performed in accordance with R645-301-731.530, R645-301-525.520 and R645-301-525.530". R645-301-731.530 calls for the prompt replacement of any state appropriated water supply that is contaminated, diminished or interrupted by underground coal mining and reclamation activities. R645-301-525.520 and R645-301-525.530 deal with the mitigation of any structures that are impacted by mining activity

The Permittee provides a commitment to "repair or replace any adversely affected State appropriated water supplies that are contaminated, diminished or interrupted" as required by R645-301-731.530 on page 41 of Chapter V of the MRP.

Per R645-301-731.530, the Permittee is required to promptly replace any State-appropriated water supply that is contaminated, diminished or interrupted by underground coal mining and reclamation activities. On page V-42 of the application, the Permittee outlines water replacement measures to be initiated in the event that mining activity was to impact the Emery Town Wells. If the town of Emery surface water system (Muddy Creek) becomes inoperable and the backup wells (Wells #1 and #2) have been impacted by mining activity, the Permittee provides a commitment to "hauling water to the Emery treatment facility until the towns surface system becomes operable, an alternative source is secured or the aquifer recharges".

Findings:

The application meets the hydrologic requirements for Renewable Resources Survey as required by the R645-Coal Mining Rules.

SPOIL AND WASTE MATERIALS

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

Analysis:

Refuse Piles

The approved MRP contains the design data, maps and hydrologic model runs used to design the drainage system at the existing refuse pile site. R645-301-746.212, as stated above, requires that runoff from a refuse pile must be diverted into stabilized diversion channels that are designed to safely pass the runoff from a 100-year, 6-hour event. Upon review of the submitted model, as well as the surface drainage map, the drainage network at the current refuse pile location meets this requirement.

In addition as part of the technical review associated with NOV #100015, the Permittee designed a permanent refuse disposal site. The site has been designed to safety pass the 100-year, 6-hour event. Storm water runoff generated from the site will be diverted in to Pond No. 8. The Permittee has demonstrated that Pond No. 8 has adequate storage capacity to safely contain the storm water runoff generated from the permanent refuse disposal site.

Findings:

The submittal meets the Refuse Pile requirements of R645-301-746.212.

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 application meets the Operational Plan requirements for General Hydrologic information as provided in R645-301-731.

Chapter VI of the approved MRP discusses the hydrologic resources within the 14th and 15th west panel areas as well as the Zero North, 4th East and 6th West panels; including ground and surface water information, water uses, water rights as well as the probable hydrologic consequences of full extraction mining within the permit area.

The coal to be mined is located within the upper portion of the Ferron Sandstone. The Permittee discusses the recharge and a discharge rate of the Upper Ferron Sandstone layer and indicates that the dewatering of the Emery Mine represents the largest anthropogenic discharge of groundwater from this geologic unit.

The MRP outlines the measures to be taken during the operational mining phase to minimize disturbance of the hydrologic balance within and adjacent to the permit area as well as prevent material damage to the hydrologic balance.

Groundwater Monitoring

The approved MRP meets the Operational Plan requirements for Groundwater monitoring as provided in R645-301-731.210. The Permittee does not propose any additional ground water monitoring within the 14th, 15th panels, Zero North, 4th East, 6th West and Zero Zero North panels. Emery Town Wells #1 and #2 will be monitored quarterly upon approval of this application. Plate VI-4 of the application depicts the current ground water monitoring wells within the permit area as well as adjacent to it.

Upon review of historical groundwater data as well as the continuing groundwater monitoring data supplied to the Division, it's clear that the Ferron Sandstone aquifer will continue to be dewatered as a result of the proposed mining activity at the Emery Deep facility. Emery Town wells #1 and #2 are completed within the Ferron Sandstone aquifer and serve as back up culinary water sources for the town. In order to determine what (if any) impact mining activity has on these wells, quarterly monitoring will begin with the approval of this application. Plate VI-4, *Ground Water Monitoring Well and Surface Water Monitoring Site Location Map*, depicts the Emery Town wells as slated for quarterly field and water quality monitoring. The Emery Town wells have also been added to Table VI-17 Emery Mine Hydrologic Monitoring Program. The wells are slated for quarterly field and water quality sampling. Table VI-17 provides a brief discussion as to the physical limitations to sampling the wells. The pump in Well #1 is functional, but there is no means to measure water levels in this well. The pump in Well #2 is not functional, but an airline exists by which water levels can be measured. As a result, water quality samples will be collected from Well #1 and water-level measurements will be collected from Well #2.

In order to insure that any potential mining impacts to the Emery Town Wells is detected as early as possible, the Permittee has committed to evaluate the collected data from the Emery Town wells and submit semiannual reports to the Division.

The Permittee provides comprehensive water monitoring information as to the specific ground and surface water sites and their respective monitoring protocols in Table VI-17, *Emery Mine Hydrologic Monitoring Program.*

Surface Water Monitoring

The MRP meets the Operational Plan requirements for Surface Water Monitoring as provided in R645-301-731.220. Additional surface water monitoring within the Zero Zero North panel is not necessary. Plate VI-4 of the application depicts the surface water monitoring points within the permit area as well as adjacent to it. Table VI-17, *Emery Mine Hydrologic Monitoring Program* provides the sampling protocols for all ground and surface water sites within the permit and adjacent area.

Water-Quality Standards And Effluent Limitations

The MRP meets the requirements for Water-Quality Standards and Effluent Limitations as outlined in R645-301-751. The Permittee operates under a UPDES discharge permit (#UT0022616) issued by the Utah Division of Water Quality (DWQ) and controls discharges from the mine to be consistent with that permit. The Emery Mine UPDES permit currently allows a maximum salt load of 12 tons/day to be discharged from the mine. If this load were discharged constantly throughout the year, the annual salt load from the mine to the Muddy Creek watershed would be 4,380 tons/year. Upon discussions with DWQ personnel, it's anticipated that the salt-load limit will change to approximately 3,839 tons/year. The addition of the Zero Zero North panel does not require additional UPDES effluent/discharge monitoring.

Diversions:

The application meets the requirements for Diversions as required in R645-301-732.300, 742.100, 742.200, 742.300, 742.320 and 742.330. No diversions are proposed with the addition of the Zero Zero North Panel.

Stream Buffer Zones

The application meets the Stream Buffer Zone requirements as provided in R645-301-731.600. Page VI-27 discusses stream buffer zones. Plate V-5, Subsidence Monitoring Points and Buffer Zones, depicts the location of stream buffer zones established on both Christiansen Wash and Quitchupah Creek. All perennial and intermittent streams in the permit area are protected by 100-foot stream buffer zones on either side of these streams. No perennial or intermittent streams are located within 100-feet of the proposed Zero Zero North Panel.

Sediment Control Measures

The application meets the Sediment Control Measure requirements as provided in R645-301-732. As no surface disturbance is proposed with the addition of the Zero Zero North Panel, no additional sediment control measures are required.

Siltation Structures: Sedimentation Ponds

The application meets the Siltation Structures: Sediment Ponds requirements as provided in R645-301-732.200 and –742.220. As no surface disturbance is proposed with the addition of the Zero Zero North Panel, additional siltation structures (i.e. sedimentation ponds) are not required.

Discharge Structures

The application meets the Discharge Structures requirements as provided in R645-301-734, -744. As no surface disturbance is proposed with the addition of the Zero Zero North Panel, no discharge structures are necessary.

Ponds, Impoundments, Banks, Dams, and Embankments

The application meets the requirements for Ponds, Impoundments, Banks, Dams and Embankments as required by R645-301-536.800 and-744.100. As no surface disturbance is proposed with the addition of the Zero Zero North Panel, no additional ponds, impoundments, banks, damns or embankments are required.

Findings:

The application meets the requirements for Hydrologic Information as required by the R645-Coal Mining Rules.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

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

Findings:

The application meets the Maps, Plans and Cross Sections of Mining Operations requirement as provided in the State of Utah R645-Coal Mining Rules. The previous technical analysis had identified a deficiency pertaining to how historic, active and projected mine

workings were depicted. The Permittee has revised the plates that depict underground mine workings so that it's clear as to what's historic and projected mine workings.

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

The application meets the General Requirements for Reclamation as provided in R645-301-760. No surface disturbance is proposed with the addition of the Zero Zero North Panel. As a result, reclamation requirements are not applicable to this application.

Findings:

The application meets the Reclamation requirements as provided in the R645-State of Utah Coal Mining Rules.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

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

Analysis:

Reclamation

The application meets the Road Systems and Other Transportation Facilities requirements as provided in R645-301-732. Roads are not proposed with the addition of the Zero Zero North Panel.

Findings:

The application meets the Road Systems and Other Transportation Facilities requirements as provided in R645-301-732.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

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

Analysis:

The application meets the Cumulative Hydrologic Impact Assessment requirements as provided in R645-301-730. The Permittee has provided sufficient information in order for the Division to prepare an updated Cumulative Hydrologic Impact Assessment (CHIA). The Zero Zero North Panel lies within the existing CHIA area.

RECOMMENDATIONS:

The application should be approved at this time.

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