

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

OK

January 11, 2007

TO: Internal File

THRU: Wayne Hedberg, Permit Supervisor, Task Manager *DWH*
Peter H. Hess, Environmental Scientist/Engineering, Team Lead *PHH/ryan*

FROM: *SKC* Steve K. Christensen, Environmental Scientist/Hydrology

RE: As-Built For Pace Canyon Fan Portal, Canyon Fuel Company, LLC, Dugout Canyon Mine, C/007/039, Task ID #2700

SUMMARY:

Canyon Fuel Company, LLC (the Permittee) submitted "As-Built" information for the Pace Canyon Fan Portal facility to the Division of Oil, Gas and Mining (the Division) on November 15, 2006. The submitted as-built information included revised text sections, updated hydrologic design information and calculations as well as updated maps and figures depicting the Pace Canyon Fan Facility as constructed.

The Division granted final approval for the construction of the Pace Canyon Fan Facility in May of 2005. Construction activities ensued and were subsequently completed in November 2005. On May 27th, 2006 a site inspection was conducted with the Permittee. At the time of the inspection, the facility was constructed and the sediment controls and drainage system had been completed.

The following technical memo will address the adequacy of the submitted as-built information as it relates to the hydrology regulations of the State of Utah R645-Coal Mining Rules. The Division has assigned Task ID #2700 for tracking purposes.

The as-built information submitted for the Pace Canyon Fan Portal should not be approved until the following deficiencies are addressed:

R645-301-121.200- The Permittee should address the pagination discrepancies with recently submitted Pages 7-79 and 7-89. Pages 7-79 and 7-89 of the submittal do not correspond with pages 7-79 and 7-89 of the approved MRP. In addition, the Permittee should insure that the text revisions brought about by this submittal do not affect the continuity or the pagination of the information presented before and after the submitted pages.

- The information contained on Page 7-79 of the submittal appears to be located on page 7-74 of the approved MRP.
- The information contained on Page 7-89 of the submittal appears to be located on page 7-90 of the MRP.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

The application does not meet the General Content requirements for Permit Application Format and Contents as provided in R645-301-120. R645-301-121.200 requires the submitted application to be "clear and concise". Pagination errors were identified during the review of the submittal.

The submitted C2 form calls for the replacement of pages 7-79 and 7-89 of the MRP. The recently submitted page 7-79 discusses siltation structures associated with the Pace Canyon Fan Portal Facility, however; this information appears to be located on Page 7-74 of the approved MRP. Page 7-74 of the approved MRP is marked as being incorporated on August 11, 2006 and dated May 26, 2006 in the upper right hand corner by the Permittee.

The submitted changes to page 7-89 discusses sediment control measures associated with the Pace Canyon Fan Portal Facility, however; this information appears on page 7-90 of the approved MRP. Page 7-90 is also marked as being incorporated on August 11, 2006.

Findings:

The information provided does not meet the hydrology requirements for Permit Application Format and Contents as provided in the R645-State of Utah Coal Mining Rules. The Permittee should address the following deficiencies prior to Division approval:

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R645-301-121.200- The Permittee should address the pagination discrepancies with recently submitted Pages 7-79 and 7-89. Pages 7-79 and 7-89 of the submittal do not correspond with pages 7-79 and 7-89 of the approved MRP. In addition, the Permittee should insure that the text revisions brought about by this submittal do not affect the continuity or the pagination of the information presented before and after the submitted page revisions.

- The information contained on Page 7-79 of the submittal appears to be located on page 7-74 of the approved MRP.
- The information contained on Page 7-89 of the submittal appears to be located on page 7-90 of the MRP.

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ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Plans and Drawings

The application meets the Operational Plan requirements for Road Systems and Other Transportation Facilities as provided in R645-301-732. Page 7-85 of the submitted information discusses the Pace Canyon Fan Portal Facility Road. Minor editorial changes were made to the text reflecting the as-constructed features of the facilities access road. Four water bars were placed approximately 200 feet apart on the road. In addition, a berm was constructed that runs parallel to the access road. The constructed berm and water bars were field verified by Division personnel in May 2006.

Findings:

The information provided meets the hydrology requirements for Road Systems and Other Transportation Facilities as provided in the R645-State of Utah Coal Mining Rules.

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 Hydrologic Information as provided in R645-301-731. The Permittee submitted a new Appendix 7-12. Appendix 7-12 addresses the hydrology regulations relative to the Pace Canyon Fan Portal facility. The appendix has been up-dated to reflect the Pace Canyon Fan Portal Facility as it was constructed. The Permittee has removed Plates PC7-4, PC7-5, PC7-5A, PC7-6, and PC7-7 and replaced them with Figures 7-12A, 7-12B, 7-12C, 7-12D, 7-12E, and 7-12F. The figures depict the disturbed area diversions, undisturbed watershed boundaries, sediment trap details and cross sections, sediment basin detail and cross sections, sediment control map and reclamation watershed boundaries respectively. Figure 7-12C provides detailed as-constructed cross sections of the sediment trap located at the southern end of the disturbed area. Figure 7-12D depicts the as-built cross sections of the sediment trap located on the northern end of the disturbed area. The drawings provide as constructed surface elevations of the sediment traps. Figure 7-12E depicts the additional sediment control measures that were constructed and not initially depicted in the original submittal for the Pace Canyon Fan Portal Facility. Figure 7-12 E depicts the four water bars that were constructed on the access road. The originally submitted plans called for three water bars. In addition, the figure shows the alignment and construction of the berm that runs directly adjacent to the access road. Figures 7-12A, 7-12C, 7-12D, and 7-12E all depict the energy dissipating rip rap that was installed at the three culver outlets as well as at the inlet for sediment trap PDC-1.

The submitted Appendix 7-12 provides the revised hydrologic calculations for the Pace Canyon Fan Portal Facility. In determining the design flow rates produced by the actual construction of the project, several hydrologic factors had to be revised. Page 7-12-8 of Appendix 7-12 provides revised area calculations for the four watersheds at the project site. In addition, the times of concentration were recalculated to reflect the change in the respective watershed areas. The areas of the four watersheds delineated at the project site slightly increased compared with the originally submitted plans. The increase in watershed areas produced a slight increase in times of concentration as well as an increase in the design storm runoff volumes. Upon review of the calculations, the sediment trap and basin as well as the drainage culverts on the site have been adequately sized to safely pass their respective design storms.

The Division finds that the curve numbers utilized in determining peak runoff volumes are reasonable. The Permittee arrived at their curve numbers by analyzing vegetation, hydrologic soil groups, vegetation densities and vegetation conditions, as well as field observations. The Permittee assumed a curve number of 80 for the undisturbed areas and for

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reclaimed areas. In the area of the southern soil stockpile (which was treated with a deep gouging method), a curve number of 60 was assumed. A lower curve number is reasonable in this area in that runoff generated from this deeply gouged area would be expected to be minimal. A curve number of 89 was assumed for the sites disturbed, un-reclaimed areas. A curve number of 89 is reasonable in light of the soil compaction associated with the construction and operation of the facility as well as for the lack of vegetation and gravel surface installed in the disturbed area.

Diversions: General

The application meets the Operational Plan requirements for Diversions: General as provided in R645-301-742.300. The diversions within the disturbed area consist of drainage ditches and culverts. Figure 7-12A accurately depicts the locations and orientation of the diversions in place at the site. Table 7-12E on page 7-12-14 of the submittal provides a summary of the diversion culverts constructed at the site. Three culverts are in place to divert undisturbed drainage around the site (PCUC-1, PCUC-2 and PCUC-3). Upon review of the calculations, the culverts were sized adequately to safely pass the 10 year 6 hour design storm event as required by R645-301-742.323.

Diversions ditches and culverts were utilized within the fan portal facilities disturbed area to divert miscellaneous flows from disturbed and undisturbed drainages. A summary of the diversion ditches constructed at the site are presented on page 7-12-14 in Table 7-12D. The table provides detailed information on the ditches minimum and maximum slopes, peak flow calculations as well as minimum freeboard calculations. Upon review of the submitted calculations, the drainage ditches were sized to safely pass the peak flow resulting from the 10 year 6 hour precipitation event as required by R645-301-742.423.1.

Sediment Control Measures

The application meets the Operational Plan requirements for Sediment Control Measures as provided in R645-301-742. In addition to the sediment trap and basin, alternative sediment control measures have been implemented including seeding, surface roughening/mulching and berms. Figure 7-12E, Pace Canyon Fan Sediment Control Map, provides a depiction of the various sediment control measures that have been constructed at the site. Areas that may be disturbed during operation, such as the sediment trap area and areas of very steep slopes, have been mulched and hydro seeded. During the field investigation performed in May 2006, vegetation growth was observed in the north stockpile area adjacent to the sediment basin. Operational areas that are prevented from being vegetated by MSHA requirements are covered by gravel and/or riprap.

Siltation Structures: General

The application meets the Operational Plan requirements for Siltation Structures: General as provided in R645-301-742.200. The sediment trap on the southwest end of the project area is the primary sediment control for the majority of the disturbed area associated with the facility. The sediment trap was designed according to the R645-State of Utah Coal Mining Rules by utilizing a 10 year 24 hour design storm event. The initial calculations submitted to the Division produced a maximum storm runoff volume of 4,624 cubic feet (0.11 acre feet). The revised calculations (taking into account the increase of the contributing watershed acreage) produced a maximum storm runoff volume of 5,530 cubic feet (0.13 acre feet). The capacity of the constructed sediment trap is 5,714 cubic feet, thus adequately sized to contain the design storm event. The spillway for the sediment trap consists of an 18-inch diameter riser and barrel CMP. The spillway has been designed to pass the 25 year 6 hour storm event as required by R645-301-742.223. Upon review of the submitted calculations, the maximum flow rate generated by the 25 year 6 hour storm is 0.97 cfs. The spillway has a maximum capacity of 5.5 cfs. In addition, the spillway has been constructed with 9 inch riprap to provide additional energy dissipation and erosion protection.

A sediment basin was constructed on the northeast corner of the site. The sediment basin was constructed primarily to prevent the migration of topsoil that is stockpiled in this area. The storm runoff volume reporting to the sediment basin from the 10 year 24 hour storm event was calculated to be 174 cubic feet (0.004 acre-feet). Given the small size of the drainage area (0.09 acres) reporting to the sediment basin, the runoff calculations are reasonable. The capacity of the sediment basin as constructed is 310 cubic feet. The Permittee has designed the sediment basin for total containment with no overflow device. Given the small size of the reporting drainage area, this is a reasonable design and should not produce adverse impacts to the sites drainage system. In the event that water were to discharge from the sediment basin, it would report to the sediment trap at the southern end of the site and thus still be contained and treated prior to leaving the site.

Findings:

The information provided meets the hydrology requirements for Hydrologic Information as provided in the R645-State of Utah Coal Mining Rules.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

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

Analysis:

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Mining Facilities Maps

The application meets the Operational Plan requirements for Mining Facilities Maps as provided in R645-301-731. Figures 7-12A, 7-12B, 7-12C, 7-12D and 7-12E accurately depict the as-built components and hydrologic features constructed at the site. Figure 7-12A depicts the disturbed area diversions associated with the site. In addition, the drainage areas are depicted on the figure for the disturbed drainage areas. Figure 7-12B depicts the undisturbed watershed boundaries. Figures 7-12C and 7-12D provide detailed cross sections and final elevations for the sediment trap and sediment basin respectively. 7-12E depicts the sediment control features of the site including the areas of seeding, gravel and water bar installation, berm placement and surface roughening/mulching areas, all of which were field verified by Division personnel in May 2006.

Certification Requirements

The application meets the Operational Plan requirements for Certification Requirements as provided by R645-301-512. Figures 7-12A thru 7-12E are stamped October 23, 2006 and signed by registered professional engineer Richard B. White.

Findings:

The information provided meets the hydrology requirements for Maps, Plans and Cross Sections of Mining Operations as provided in the R645-State of Utah Coal Mining Rules.

RECOMMENDATIONS:

The submitted as-built information for the Pace Canyon Fan Portal Facility should not be approved at this time. See aforementioned deficiencies.