C0150015

#6010

Bronco Utah Operations LLC
PO Box 527
Emery, Utah 84522
435-286-2447

December 6, 2019

VIA E-MAIL

Mr. Steve Christensen
Utah Division of Oil, Gas and Mining
Coal Program
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, UT 84114-5801

RE: Bronco Utah Operations LLC
Emery Mine
DOGM Permit No. C/015/0015 Midterm Review Clean Copies Task ID 6010

Mr. Christensen:

Per the Divisions memo dated November 6, 2019, please consider these clean copies to the above mentioned permit which includes an executed C1 form, C2 form, revised pages, and Plates.

If you have any questions concerning this request, please contact Kit Pappas at 435-286-2027.

Sincerely,

Kit Pappas
Environmental Manager

Attachment Two hard copies Application for Coal Permit Processing

RECEIVED
DEC 06 2019
DIV. OF OIL, GAS & MINING

APPLICATION FOR COAL PERMIT PROCESSING

Permit Change ☒ New Permit ☐ Renewal ☐ Exploration ☐ Bond Release ☐ Transfer ☐

Permittee: Bronco Utah Operations LLC (BUOLLC)
Mine: Emery Mine **Permit Number:** 015/0015
Title: Permit 015/0015 Midterm Review
Description, Include reason for application and timing required to implement:
Permit 015/0015 Midterm Review Deficiency Responses Task ID 6010 clean copies 11/19

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.

Richard Parkins
Print Name

Richard Parkins · PRESIDENT 11/20/19
Sign Name, Position, Date

Subscribed and sworn to before me this 20 day of NOVEMBER, 2019

J C Pappas
Notary Public

My commission Expires: MARCH 7, 2022
Attest: State of UTAH } ss:
County of CARBON

JOHN CHRISTOPHER PAPPAS
Notary Public - State of Utah
My Commission Expires
March 7, 2022
COMMISSION NUMBER 698870

For Office Use Only:	Assigned Tracking Number:	Received by Oil, Gas & Mining

APPLICATION FOR COAL PERMIT PROCESSING
Detailed Schedule Of Changes to the Mining And Reclamation Plan

Permittee: Bronco Utah Operations LLC (BUOLLC)
Mine: Emery Mine **Permit Number:** 015/0015
Title: Permit 015/0015 Midterm Review Deficiency Responses Task ID 6010 Clean Copies 11/19

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

			DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☐ Add	☒ Replace	☐ Remove	CH I pages 6 and 7
☐ Add	☐ Replace	☒ Remove	CH I page 7a
☐ Add	☒ Replace	☐ Remove	CH I, App I-1 (updated ownership and control)
☐ Add	☒ Replace	☐ Remove	CH II, pages 17, 17a, 17b, 17e - 17i
☐ Add	☒ Replace	☐ Remove	CH III, pages 2 & 15g
☐ Add	☒ Replace	☐ Remove	CH IV TOC pages 1 and 2
☒ Add	☒ Replace	☐ Remove	replace CH IV pages 8f,12,13, add CH IV App IV-10a place holder
☒ Add	☒ Replace	☐ Remove	CH IV Appendix IV-9 (Bond Support) contains ALL bond calcs, calc and deletion support
☐ Add	☐ Replace	☒ Remove	CH IV, Part IV.B, Bond Calculation Backup, pages 1 - 10 (moved to App IV-9)
☐ Add	☐ Replace	☒ Remove	CH IV, Part IV.B, Bond Calculation Backup, pages 11 - 17 (moved to App IV-9)
☐ Add	☐ Replace	☒ Remove	CH IV, Part IV.B, Demolition Bond Calculation Sheets (moved to App IV-9)
☐ Add	☐ Replace	☒ Remove	CH IV, Part IV.B, Earthwork Bond Calculation Sheets (moved to App IV-9)
☐ Add	☐ Replace	☒ Remove	CH IV, Part IV.B, Revegetation Bond Calculation Sheets (moved to App IV-9)
☐ Add	☒ Replace	☐ Remove	CH VI, App VI-21 (Emery 2 Surface Facility As-Built Hydro Design Report May 2019)
☐ Add	☒ Replace	☐ Remove	CH VI, page 69, Table VI-18
☐ Add	☒ Replace	☐ Remove	CH VII, pages 80, 83, 85
☐ Add	☒ Replace	☐ Remove	CH X-A page 1
☐ Add	☒ Replace	☐ Remove	
☐ Add	☒ Replace	☐ Remove	Plate II-1 (Structures and Facilities, Main Portal Area)
☐ Add	☒ Replace	☐ Remove	Plate III-9 (Permit Boundaries and Bonding Map)
☐ Add	☒ Replace	☐ Remove	Plate III-11 (Emery 2 Reclamation Hydrology)
☐ Add	☒ Replace	☐ Remove	Plate IV-8a (Emery 2 Phase I & II Expansion As-built, Roads - Plan View)
☐ Add	☒ Replace	☐ Remove	Plate IV-8b (Emery 2 Phase I & II Expansion As-built, Roads - Profiles/Cross Sections)
☐ Add	☒ Replace	☐ Remove	Plate IV-8c (Emery 2 Phase I & II Expansion As-built, Roads - Profile/Cross Sections)
☐ Add	☒ Replace	☐ Remove	Plate VI-10E (Surface Drainage Control Map As-Built)
☐ Add	☒ Replace	☐ Remove	Plate VI-11B (Emery 2 Drainage Detail As-Built)
☐ Add	☒ Replace	☐ Remove	Plate VI-15B (Pond 3 As-Built)
☐ Add	☒ Replace	☐ Remove	Plate VII-1 (Soil Map)

Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.	**Received by Oil, Gas & Mining**
Note: Bond Calculations, Bond Calculation Support, and Bond Deletion Support have been compiled and moved to Chapter IV-Appendis IV-9 (Bond Support). This Appendix previously held only Bond Deletion Support.	

Technical Analysis and Findings
Utah Coal Regulatory Program

Deficiency List
Task ID #5670
Emery Deep Mine
Midterm Permit Review

The members of the review team who have identified deficiencies include the following individuals:

Joe Helfrich (jhelfric)
Priscilla Burton (pburton)
Steve Christensen (schriste)
Justin Eatchel (jeatchel)

GENERAL CONTENTS

Identification of Interest

The MRP does not meet the State of Utah R645 requirements for Identification of Interests. The following deficiency must be addressed.

R645-301-112: The Permittee must provide revisions to the ownership and control information in Chapter 1 of the Emery Deep Mine Mining and Reclamation Plan (MRP) to reflect changes its officers and directors. (schriste)

Refer to CH I pages 6 & 7, and CH I, Appendix I-1 (Updated Ownership & Control)

Violation Information

The MRP does not meet the State of Utah R645 requirements for Violation Information. The following deficiency must be addressed.

R645-301-113: The Permittee must provide revised ownership and control information in order to review the adequacy of the violation information in the currently approved Emery Deep Mining and Reclamation Plan (MRP). (schriste)

Refer to CH I pages 6 & 7, and CH I, Appendix I-1 (Updated Ownership & Control)

Right of Entry

The application does not meet the R645-301-121.100, current information requirements. The following deficiency must be addressed prior to final approval:

R645-301-121.100: Please provide updated Right of Entry for the State Lease ML51745-OBA shown on Plate V-5 that was previously relinquished. (pburton)

Refer to Emery Right of Way additional adjacent area minor revision, Task #5859 for revised CH I, Plate I-1(Surface and Coal Ownership), and CH I Appendix I-2. The SITLA lease has been revised to depict current status.

Permit Application Format and Contents

The mining and reclamation plan does not meet the R645-301-123.300 and R645-301-121.100 requirements. In accordance with R645-301-123.300, the Division requests revision of the MRP to reference the R645 Rules over the next five years. The following deficiencies must be addressed prior to mid-term review completion:

Bronco will attempt to revise the MRP under R645 format by the Divisions deadline stated in the 2018 annual report

R645-301-121.100, Please make the following corrections. Chap II, p. 9. Coal Stockpile Area. Two static stockpile areas are in existence, yet third stockpile is described. Chap VII, p.80 should provide a reference to the Emery 2 box cut soil survey information (App. VII-5 and App VII-6). (pburton)

CH II page 9 correctly describes areas where coal is stockpiled. These areas are reflected on Plate II-1 as item 31. They are the main Emery 2 stockpile in the canyon, the surge coal stockpile area near the entrance road and the area around the original Emery tipple and stoker coal loadout.

Refer to CH VII, page 80 for Emery 2 boxcut soil references.

Permit Application Format and Contents

The MRP does not meet the State of Utah requirements for Format and Content. The following deficiency must be addressed:

R645-301-121.100: The Permittee must provide as-built drawings for the Emery No. 2 mine expansion area. (schriste)

Refer to Plate II-1 (Structures & Facilities, Main Portal Area), CH II pages 17e-17i, CH III page 2 & 15g, CH IV TOC (Bond was moved to Appendix IV-9), Plate III-9 (Permit Boundaries & Bonding Map), Plate III-11 (Emery 2 Reclamation & Hydrology), Plates IV-8a, 8b, 8c (Roads), Plates VI- 10E,11B,15B (ditches & pond), CH IV pages 8f,12,13, CH VI App VI-21 (AS-Built Hydro) plus additional support provided in this submittal.

Maps and Plans

The application does not meet the R645-301-121.100, current information requirements. The following deficiencies must be addressed prior to final approval:

R645-301-121.100: Please update Plate I-1 with current surface ownership. i.e. Robertson lands West of the County Rd in T22S were transferred to Stansfield. (pburton)

Refer to DOGM task 5859 submitted 2/08/2019 (Emery Right of Way, Additional Adjacent Area) CH I, Plate I-1 (Surface & Coal Ownership), and CH I, Appendix I-2 (Ownership & Leasehold Interests for surface & Coal)

ENVIRONMENTAL RESOURCE INFORMATION

Historic and Archeological Resource Information

The Division has determined that the MRP needs to be updated to reflect changes in the Utah Coal Regulatory Program which have occurred subsequent to permit approval or renewal in accordance with R645-303-220.

The section of the Emery mine, (Panel Zero, Zero North) was permanently closed in 2010. Only first or development mining had taken place at the time of closure. However, there is a commitment in the Mining and Reclamation Plan (MRP) to monitor the 5 eligible cultural resource sites annually that could be damaged as a result of subsidence in the zero zero north area after undermining until the Division determines subsidence is no longer an impact. They included sites 42Em3964, 42Em3965, 42Em3966, 42Em3969and 42Em3974.

Since undermining or full extraction did not take place and that section of the mine has been permanently sealed the permittee would no longer be required to monitor the 5 eligible sites.

An amendment to the MRP, (Confidential Binder, Chapter X, Part A, Page 1), needs to be submitted to the Division that reflects the current status, (permanent closure) of mining activities in panel zero zero North noting that the monitoring of sites 42Em3964, 42Em3965, 42Em3966, 42Em3969, and 42Em3974 is no longer required. (jhelfric)

Refer to CH X-A Page 1.

OPERATION PLAN

Topsoil and Subsoil

The application does not meet the R645-301-222 requirements. The following deficiency must be addressed prior to final approval:

R645-301-222:
Please update the soil analyses described in Chap VII.C.4 (p. 83) to include the field parameters outlined in Table 2 and all the laboratory parameters outlined in Table 3 of The Division's 2008 Guidelines for Management of Topsoil and Overburden.

Refer to revised CH VII, Page 83

Please update Plate VII-1 and Plate III-9 to include the appropriate shading for the Emery 2 disturbed area.

Plates VII-I and Plate III-9 have been revised to reflect the as-built disturbed area.

R645-301-234.230: The excess boxcut stockpile pile should be graded to lessen the slopes and be seeded in accordance with Section VIII.C.6.

If necessary to effectively control erosion on the excess boxcut spoil, Bronco may grade and seed in accordance with CH VIII C.6

R645-301-121.100: Please confirm as-built volumes of all stockpiles for the Emery 2 mine construction. (pburton)

As-built volumes are reflected in the earthmoving bond calculations.

Spoil Waste Coal Mine Waste

The application does not meet the R645-301-121.100, current information requirements. The following deficiency must be addressed prior to final approval:

R645-301-121.100: Please confirm the volume of boxcut development waste stored on the mine waste stockpile area (Chap II, p. 17) and modify Chap II. C. accordingly. (pburton)

CH II Page 17 refers to the 4th East portal. The material stored at that site was reported in the 4th East portal as-built designs found at CH IV, App IV-10a (4th East Portal As-built design).

RECLAMATION PLAN

Topsoil and Subsoil

The application does not meet the R645-301-121.100, current information requirements. The following deficiency must be addressed prior to final approval:

R645-301-121.100: As built excavation volumes must be provided in Chap IV, p. 8c and 8f and Section IV. B, Table III-1A, and Chap III pg 15g and 15h. Changes to the reclamation plan resulting from the as built volumes should be updated in the cut/fill balance provided in Chap III, Table III-1 and Chap III p. 15d-g and p. 21a. Changes to the bonding should be addressed accordingly. (pburton)

Refer to CH IV App IV-9 for revised bond calculations.

CH IV pg 8c were initial construction estimates and actual reclamation volumes are based on the survey of the Temporary Waste Disposal pile.

Refer to revised CH IV pg 8f.

There is no CH IV Section IV.B, Table III-1A

CH IV pg 8e were initial construction estimates and actual reclamation volumes are based on the survey of the Temporary Waste Disposal pile.

There is no CH IV pg 15h

Bonding Determination of Amount

The application does not meet the State of Utah R645 requirements for Determination of Bonding Amount. The following deficiency must be addressed prior to final approval:

R645-301-830: The reclamation cost estimate which is incorporated into the current Emery Deep Mining and Reclamation Plan needs to be updated. Direct unit costs used to calculate the bond estimate need to account for overhead and profit costs (O&P), and be escalated to 2023 dollars. (jeatchel)

Refer to Appendix IV-9 Bond support. All bond calculations and support data have been moved to Appendix IV-9

Deficiency List
Task ID #5864
Emery Deep Mine
Midterm Completion Permit Review

The members of the review team who have identified deficiencies include the following individuals:

Todd Miller (tmiller)
Priscilla Burton (pburton)
Steve Christensen (schriste)
Justin Eatchel (jeatchel)

ENVIRONMENTAL RESOURCE INFORMATION

Soils Resource Information

The application does not meet the R645-301-121.200, clear and concise requirements. The following deficiency must be addressed prior to final approval:

R645-301-121.200: Update the MRP Chap VII table of contents and include a reference to the 4th East portal soil survey on pg. 80 of Chap VII.

Refer to CH VII, Page 80

OPERATION PLAN

Topsoil and Subsoil

See response to Task ID 5966 below. While the regulation cited does not match that found in deficiency task ID 5966, the requirements are similar.

The application does not meet the R645-301-121.200, clear and concise requirements. The following deficiency must be addressed prior to final approval:

R645-301-121.200 and R645-301-231.400: The MRP must be updated with a narrative describing all topsoil and subsoil stockpile volumes, for those stockpiles shown on Plate II-1.

The 4th East portal volume presented in Chap II, p. 17 must be equivalent to that described in the Earthwork bonding sheet 17 of 21 in App IV-9-B.

The boxcut topsoil/subsoil stockpile volume should be equivalent to that described in Earthwork bonding sheet 18 of 21 in App IV-9-B (which is 18,500 CY).

Road System Other Transportation Facilities

The application does not meet the R645 requirements for Road Systems and Other Transportation Facilities. The following deficiency must be addressed prior to final approval:

R645-301-731, -740, -742.400: The Permittee must revise Plate VI-10E to depict disturbed drainage ditch DD-5.

Refer to CH VI, Plate VI-10E (Surface Drainage Control Map), Plate VI-11B (Emery 2 drainage Details, and Plate VI-15B (Pond 3 As Builts).

Spoil Waste Coal Mine Waste

See response to Task ID 5966 below. While the regulation cited does not match that found in deficiency task ID 5966, the requirements are similar.

The application does not meet the R645-301-121.200, clear and concise requirements. The following deficiency must be addressed prior to final approval:

R645-301-121.200: Update page 17 4th E portal excavated material volume and page 17i boxcut excess volume to reconcile with the as-built volumes that are reflected in the App. IV-9-B Earthwork bond costs.

Update Chap IV.C4 Figure 1 to illustrate the 108,800 CY stockpiled at the waste rock site.

Update Chap IV table of contents to locate the 4th East portal as-builts and Figure IV-15, which could not be found.

Hydrologic Diversion General

The MRP does not meet the State of Utah R645 requirements for Diversions. The following deficiencies must be addressed prior to final approval:

R645-301-731, -740 and -742.400: The Permittee must revise Table VI-18, Summary of Operational Diversion Ditches and Culverts. Based on the observations by Division on April 25th, 2019, there are features identified in Table VI-18 that were not constructed or are now labeled differently (e.g. undisturbed berm UB-3).

Refer to revised CH VI, page 69, Table VI-18

R645-301-731, -740 and -742.400: The Permittee must provide additional information for the inlet structure to disturbed culvert DC-1. The design detail for the catch basin inlet structure must be provided on Plate VI-11B. Plate VI-11B must clearly identify that the catch-basin structure applies to the inlet of DC-1.

Refer to the revised details for DC-1 on Plate VI-11B (Emery 2 Drainage Details).

R645-301-731, -740 and -742.400: The Permittee must provide the flared end culvert detail (as previously approved per Task #5362) on Plate VI-11B and call out on the plate what culverts this design detail applies to. During the field inspection on April 25th, 2019, the flared end culvert was observed in several locations. As such, it must be provided in the MRP and clearly identify the diversions it applies to.

This detail has been removed as it is not needed to prevent large rocks from entering the culvert or reduce erosion. Most rock in the area is small and a flared end section will not prevent entry of these rocks. Additionally, the pond 3 is composed of rocky material causing minimal erosion at eth outfall.

R645-301-731, -740 and -742.400: The Permittee must revise Appendix VI-21, Emery 2 Surface Facility As-Built Hydrology Design Report and provide a justification/narrative as to why the undisturbed berms (UB-1 and UB-2) were not riprapped as previously designed/approved for additional flood protection.

Refer to the second paragraph of Section 3.3 and comment below Table 2 of the revised Appendix VI-21.

Hydrologic Impoundments

The MRP does not meet the State of Utah R645 requirements for impoundments. The following deficiencies must be addressed prior to final approval:

R645-301-731, -740, -743: The Permittee must revise Plate 15-B to show the riprap detail for both inlets to sediment pond 3.

Refer to CH VI, Plate VI-11B (Emery 2 Drainage Details) and Plate VI-15B (Pond 3 As-Builts)

R645-301-731, -740, -743: The Permittee must revise Plate 15-B to show the installed sediment marker and provide sufficient detail as to how the sediment marker delineates the 60% accumulated sediment clean out level.

Refer to CH VI, Plate VI-15B (Pond 3 As-Builts)

R645-301-731, -740, -743: The Permittee must provide additional information for the impoundment/sediment basin located on the fan/water tank pad above the box-cut. The impoundment must be clearly depicted on Plate VI-10E, Surface Drainage Control Map. The design calculations for the impoundment must be provided in Appendix VI-21. Additionally, detailed design drawings of the impoundment must also be provided for incorporation into the MRP.

Refer to CH VI, Plate VI-10E (Surface Drainage Control Map), Plate VI-11B (Emery 2 Drainage Details). CH VI Appendix VI-21, Section 3.4 describes the ASCA (Alternative Sediment Control).

Deficiency List
Task ID #5966
Emery Deep Mine
Midterm Completion Response

The members of the review team who have identified deficiencies include the following individuals:

Priscilla Burton (pburton)
Steve Christensen (schriste)

ENVIRONMENTAL RESOURCE INFORMATION

Soils Resource Information

The application does not meet the R645-301-222 requirements. The following deficiency must be addressed prior to final approval:

R645-301-222.100, Soil Map Plate VII-1 must identify the Emery 2 boxcut disturbed surface as affected after 8/3/77. (Pburton)

The Emery 2 boxcut disturbed area is depicted with dashed lines on the submitted Plate VII-1 to reflect the revision. Once approved the shape will be filled with the color depicting surface affected after 8/3/77

OPERATION PLAN

Topsoil and Subsoil

The application does not meet the R645-301-231 general soil operation plan requirements. The following deficiency must be addressed prior to final approval:

R645-301-231.400,The MRP must be updated with the a narrative describing all topsoil and subsoil stockpile volumes, for those stockpiles shown on Plate II-1.

The 4th East portal volume presented in Chap II, p. 17 must be equivalent to that described in the Earthwork bonding sheet 17 of 21 in App IV-9-B.

Refer to CH II 17

The boxcut topsoil/subsoil stockpile volume should be equivalent to that described in Earthwork bonding sheet 18 of 21 in App IV-9-B (which is 18,500 CY). (Pburton)

Refer to CH II pg 17i

Spoil Waste Coal Mine Waste

The application does not meet the R645-301-528, handling of coal overburden, excess

spoil, and coal mine waste. The following deficiency must be addressed prior to final approval:

R645-301-528, Update App IV-9-B page 17 4th E portal excavated material volume and page 17i Emery 2 boxcut excess volume (stored at the waste disposal site) to reconcile with the as-built volumes that are reflected in the App. IV-9-B Earthwork bond costs.

Refer to CH II pg 17 and 17i

Update Chap IV.C4 Figure 1 to illustrate the 108,800 CY stockpiled at the waste rock site.

CH IV.C4, Fig 1 cannot be updated. Fig 1 was placed in the MRP to abate DOGM citation #10005 Task ID #2929 in March 2008.

Update Chap IV table of contents to locate the 4th East portal as-builts and Figure IV-15, which could not be found.(Pburton)

The 4th East as-built can be found after CH IV, App IV-10 (DOGM online pdf pages 481-486 of 570. Fig IV-15 is on PDF page 486.

CH IV TOC Page 2 has been revised to reflect the 4th East Portal as-built as CH IV App IV-10a and a place holder has been inserted.

Hydrologic Diversion General

The application does not meet the State of Utah R645 requirements for Hydrologic Diversions General. The following deficiency must be addressed prior to final approval:

R645-301-731, -740 and -742.400: The Permittee must revise Table VI-18, Summary of Operational Diversion Ditches and Culverts to reflect those features that were constructed and remove those drainage features that were not. Upon review of the amendment, it does not appear that Table VI-18 were not provided.

Refer to revised CH VI, page 69, Table VI-18

R645-301-731, -740 and -742.400: The Permittee must provide the flared end culvert detail (as previously approved per Task #5362) on Plate VI-11B and call out on the plate what culvert inlet/outlets this design detail applies to. During the field inspection on April 25th, 2019, the flared end culvert was observed (e.g. inlet to UC-1). As such, it must be provided in the MRP and clearly identify the diversions it applies to. (Schristensen)

Refer to Plate VI-11B

Technical Analysis and Findings
Utah Coal Regulatory Program

Deficiency List
Task ID #5987
Hidden Valley Mine
Midterm Permit Review

The members of the review team who have identified deficiencies include the following individuals:

Priscilla Burton (pburton)

OPERATIONS PLAN

Topsoil and Subsoil

The application does not meet the R645-301-230 Soil Operation Plans. The following deficiency must be addressed prior to final approval:

R645-301-231.400, The MRP must be updated with all topsoil and subsoil stockpile volumes, including those not connected with the 4th East Portal and Emery 2 construction (i.e. S1, T1, Pond 6 and Pond 1 stockpiles).

Refer to CH VII-Page 85 for a table referencing soil volumes with survey dates and Plate identification

Spoil Waste Coal Mine Waste

The application does not meet the R645-301-528, handling of coal overburden, excess spoil, and coal mine waste. The following deficiency must be addressed prior to final approval:

R645-301-52S and R645-301-121.200, Please update the Chap IV table of contents to locate the 4th East portal as-builts which are found after Ch IV, App IV-10 (ie-pg 481 486), and add a title page to the 4th East portal as-builts.

CH IV TOC Page 2 has been revised to reflect the 4th East Portal as-built as CH IV App IV-10a and a place holder has been inserted.

1.B Legal, Financial, and Compliance Information

The Emery Mine was owned by CONSOL Mining Company LLC (CMCLLC). CMCLLC was the operator and permittee of the Emery Mine. The Emery Mine was sold to Bronco Utah Operations LLC in 2015. Bronco Utah Operations LLC will be the operator and permittee of the mine. Refer to Appendix I-1 for BUOLLC's Ownership & Control structure.

UMC 782.13, UMC 782.19

Permit Applicant:	Bronco Utah Operations, LLC PO Box 527 Emery, UT 84522 435-286-2447
Mine Operator:	Bronco Utah Operations, LLC PO Box 527 Emery, UT 84522 435-286-2447
Mine Operation:	Emery Mine PO Box 527 Emery, UT 84522 435-286-2447
Resident Agent:	All-Search & Inspection, Inc. 1108 E South Union Ave Midvale, UT 84047 801-984-8160

Bronco Utah Operations, LLC has not jointly operated any coal mines in the United States under any other names within the previous five years. Bronco Utah Operations LLC is a Delaware limited liability company, which was formed on November 16, 2015.

The Mine Safety and Health Administration identification number for the Emery Mine is 42-00079.

INCORPORATED

DEC 06 2019

Div. of Oil, Gas & Mining

Ownership and leasehold interest information for both surface and coal within and adjacent to the permit area and adjacent area is contained in Appendix I-2, attached to this chapter. Plate III, as indicated previously in this chapter, shows ownership and lease boundary information at a scale of 1"=500'.

Appendix I-3 contains a detailed listing of current, previous and pending coal mining related permits in the United States held, or applied for, by Bronco Utah Operations LLC.

UMC 782.14

Bronco Utah Operations LLC, their subsidiaries and affiliates, and persons controlled by or under common control with Bronco Utah Operations LLC have not had any federal or state mining permits suspended or revoked nor any mining bonds or similar securities deposited in lieu of bond forfeited in the previous five (5) years.

Information on all violations received by the applicant or operator, during the past three (3) years, related to environmental requirements are contained in Appendix I-4.

UMC 782.15

Right of entry and operation is based on surface or subsurface ownership by Bronco Utah Operations LLC and Bronco Utah Reserves Inc. and/or on lease agreements. A detailed description of these documents is provided in Appendix I-2. These rights are not subject to pending litigation.

There will not be any surface mining of coal at the Emery Mine during the five (5) year term of this permit renewal.

UMC 782.16

The permit area and adjacent area, shown on Plate III-9 (Permit Boundaries and Bonding Map Exhibit D), including areas depicted as full extraction (planned subsidence) on Plate V-5 (Subsidence Monitoring Points and Buffer Zones) do not contain any of the following areas designated as unsuitable for mining:

National Park System
National Wildlife Refuge System
National System of Trails
National Wilderness Preservation System
Wild and Scenic Rivers System
National Recreation Areas
National Forests
Public Parks
Public places included on the National Register of Historic Places
Public Buildings, Schools, Churches, Cemeteries, Community or Institutional Buildings

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The adjacent area contains one dwelling that is occupied intermittently (located in Sec. 30, Twp. 225, R6E) and several public roads (shown on Plate III). These will not be affected by the underground mining operation. Surface operations will not be conducted within 300 feet of the dwelling. Protection of land surface features is discussed in Chapter V.

CHAPTER I, APPENDIX I-1

Ownership and Control

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Revised 11/2019

Bronco Ownership and Control Explanatory

The Bronco Utah Operations, LLC Ownership Chart sets forth the general ownership structure above Bronco Utah Operations, LLC. As set forth in the chart, Bronco Utah Operations is wholly owned and controlled by Bronco Coal Resources, LLC, which is in turn 99.99% owned and controlled by Sandton Credit Solutions Master Fund III, L.P. Sandton Credit Solutions Master Fund III, L.P. is completely controlled by its general partner, Sandton Credit Solutions III GP, LLC. Additional entities controlled by Sandton Credit Solutions III GP, LLC as general partner are included in the Ownership Chart for reference only to provide context to the Division of related entities controlled by the same general partner.

Please note that, for limited partnership entities above Sandton Credit Solutions Master Fund III, L.P. in the Bronco Utah Operations, LLC organizational chain, limited partnership interests do not imply control. Specifically, control over the business and operations of a limited partnership entity like Sandton Credit Solutions Master Fund III, L.P. is primarily—if not entirely—vested in the general partner. Even though the entity's limited partners may have the right to receive distributions from the entity, the limited partners nevertheless have no control over the limited partnership's activities unless such control is granted to them in the entity's limited partnership agreement. In the case of the limited partnerships above Bronco Utah Operations, LLC in the Ownership Chart, no such control is given to the limited partners; control over the business and affairs of each limited partnership (i.e., Sandton Credit Solutions Off-Shore III, L.P.; Sandton Credit Solutions Cayman Fund III, L.P.; Sandton Credit Solutions Onshore Fund III, L.P.; and Sandton Credit Solutions Master Fund III, L.P.) is vested completely in Sandton Credit Solutions III GP, LLC as general partner of each limited partnership.

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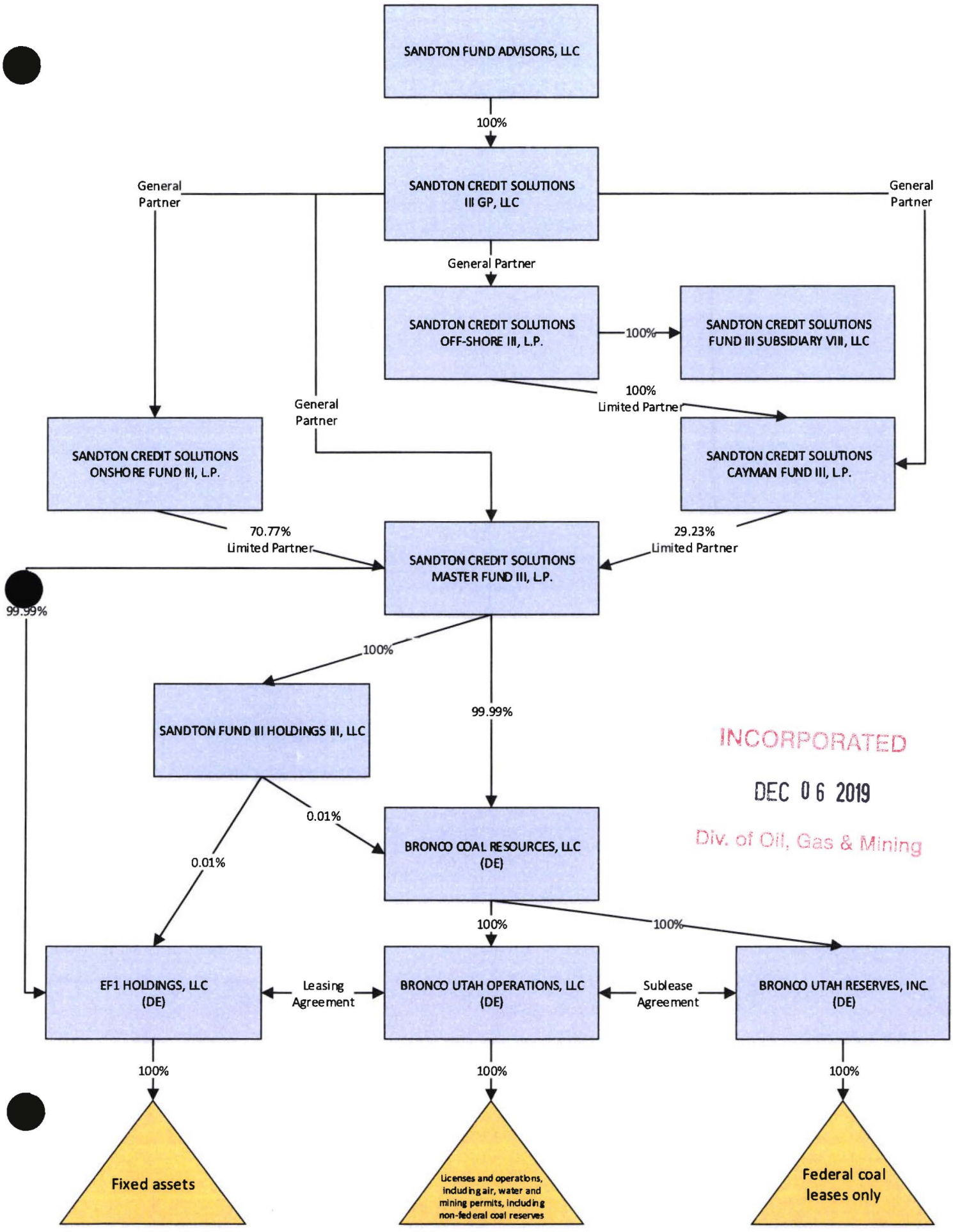
BRONCO COAL RESOURCES, LLC

Ownership Chart



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Ownership and Control Report

Company Bronco Utah Operations LLC **FEIN:** 81-0698226

Relationship Officer

NAME	TITLE	ADDRESS CITY STATE ZIP	PHONE NO	OWNERSHIP %	START DATE END DATE
Daniel R. Baker	Chief Executive Officer/President	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	December 16, 2015 May 7, 2018
Gary Takenaka	Chief Operating Officer/Secretary/Treasurer	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	December 16, 2015 May 18, 2018
David Petty	Chief Financial Officer	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	December 16, 2015 August 3, 2017
[illegible]nco Coal Resources, LLC	Owner	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	100%	N/A

*No individuals own a 10% or greater interest in Bronco Utah Operations LLC.

Bart Hyita	Chief Executive Officer/President	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	April 17, 2018 April 1, 2019
Harold Cunningham	Treasurer/Secretary/Controller	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	May 18, 2018
Rick Parkins	Chief Executive Officer/President	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	April 1, 2019

Date: 7/15/2019

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Ownership and Control Report

Company Bronco Utah Reserves Inc. **FEIN:** 81-0692203

Relationship	Officer

NAME	TITLE	ADDRESS CITY STATE ZIP	PHONE NO	OWNERSHIP %	START DATE END DATE
Daniel R. Baker	Chief Operating Officer/President	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	December 16, 2015 May 7, 2018
Gary Takenaka	Chief Operating Officer/Secretary/Treasurer	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	December 16, 2015 May 18, 2018
David Petty	Chief Financial Officer	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	December 16, 2015 August 3, 2017
co Coal Resources, LLC	Owner	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	100%	N/A

*No individuals own a 10% or greater interest in Bronco Utah Reserves Inc.

Bart Hyita	Chief Executive Officer/President	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	April 17, 2018 April 1, 2019
Harold Cunningham	Treasurer/Secretary/Controller	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	May 18, 2018
Rick Parkins	Chief Executive Officer/President	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	April 1, 2019

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Ownership and Control Report

Company EF1 Holdings, LLC **FEIN:** 81-0815107

Relationship	Officer

NAME	TITLE	ADDRESS CITY STATE ZIP	PHONE NO	OWNERSHIP %	START DATE END DATE
Jordan Levy	Manager	25 West 45th Street New York, NY 10036	212-444-7200	zero	December 16, 2015
Rael Nurick	Manager	25 West 45th Street New York, NY 10036	212-444-7200	zero	December 16, 2015
Thomas Wood	Manager	25 West 45th Street New York, NY 10036	212-444-7200	zero	December 16, 2015
itri Korvyakov	Manager	25 West 45th Street New York, NY 10036	212-444-7200	zero	December 16, 2015
Sandton Credit Solutions Master Fund III, L.P.	Owner	25 West 45th Street New York, NY 10036	212-444-7200	99.99%	N/A
Sandton Fund III Holdings III, L.P.	Owner	25 West 45th Street New York, NY 10036	212-444-7200	0.01%	N/A

*No individuals own a 10% or greater interest in EF1 Holdings, LLC.

Date: 2/24/2016

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Ownership and Control Report

Company Bronco Coal Resources LLC **FEIN:** 47-5158804

Relationship Officer

NAME	TITLE	ADDRESS CITY STATE ZIP	PHONE NO	OWNERSHIP %	START DATE END DATE
Daniel R. Baker	Chief Executive Officer/President	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	December 16, 2015 May 7, 2018
Gary Takenaka	Chief Operating Officer/Secretary/Treasurer	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	December 16, 2015 May 18, 2018
David Petty	Chief Financial Officer	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	December 16, 2015 August 3, 2017
[redacted]ton Credit Solutions Master Fund III, L.P.	Owner	25 West 45th Street New York, NY 10036	435-286-2447	99.99%	N/A
Sandton Fund III Holdings III, L.P.	Owner	25 West 45th Street New York, NY 10036	435-286-2447	0.01%	N/A

*No individuals own a 10% or greater interest in Bronco Coal Resources LLC.

Bart Hyita	Chief Executive Officer/President	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	April 17, 2018 April 1, 2019
Harold Cunningham	Treasurer/Secretary/Controller	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	May 18, 2018
Rick Parkins	Chief Executive Officer/President	Emery Mine, P.O. Box 527 Emery, UT 84522	435-286-2447	zero	April 1, 2019

Date: 7/15/2019

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Ownership and Control Report

Company Sandton Credit Solutions Master Fund III, L.P. **FEIN:** 98-1113530 **25 West 45th Street, New York, NY 10036**

Relationship Authorized Person

NAME	TITLE	ADDRESS CITY STATE ZIP	PHONE NO	OWNERSHIP %	START DATE END DATE
Rael Nurick	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	zero	August 9, 2010
Thomas Wood	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	zero	August 9, 2010
Sandton Credit Solutions Onshore Fund III, L.P.	Limited Partner	25 West 45th Street New York, NY 10036	212-444-7200	70.77% Limited Partner Interest	N/A
[redacted]on Credit Solutions Cayman Fund III, L.P.	Limited Partner	25 West 45th Street New York, NY 10036	212-444-7200	29.23% Limited Partner Interest	N/A
Sandton Credit Solutions III GP, LLC	General Partner	25 West 45th Street New York, NY 10036	212-444-7200	100% Control Interest (General Partner)	N/A

*No individuals own a 10% or greater control interest in Sandton Credit Solutions Master Fund III, L.P.

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Ownership and Control Report

Company Sandton Fund III Holdings III, LLC **FEIN:** 47-5678725 **25 West 45th Street, New York, NY 10036**

Relationship Authorized Person

NAME	TITLE	ADDRESS CITY STATE ZIP	PHONE NO	OWNERSHIP %	START DATE END DATE
Rael Nurick	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	zero	August 9, 2010
Thomas Wood	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	zero	August 9, 2010
Sandton Credit Solutions Master Fund III, L.P.	Owner	25 West 45th Street New York, NY 10036	212-444-7200	100%	N/A

*No individuals own a 10% or greater interest in Sandton Fund III Holdings III, LLC.

Date: 2/24/2016

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Ownership and Control Report

Company Sandton Credit Solutions Onshore Fund III, L.P. **FEIN:** 32-0413100 **25 West 45th Street, New York, NY 10036**

Relationship	Authorized Person

NAME	TITLE	ADDRESS CITY STATE ZIP	PHONE NO	OWNERSHIP %	START DATE END DATE
Rael Nurick	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	zero	August 9, 2010
Thomas Wood	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	zero	August 9, 2010
Sandton Credit Solutions III GP, LLC	General Partner	25 West 45th Street New York, NY 10036	212-444-7200	100% Control Interest (General Partner)	N/A

*No individuals own a 10% or greater control interest in Sandton Credit Solutions Onshore Fund III, L.P.

Date:2/24/2016

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Ownership and Control Report

Company Sandton Credit Solutions Cayman Fund III, L.P. **FEIN:** 98-1114113 **25 West 45th Street, New York, NY 10036**

Relationship Authorized Person

NAME	TITLE	ADDRESS CITY STATE ZIP	PHONE NO	OWNERSHIP %	START DATE END DATE
Rael Nurick	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	zero	August 9, 2010
Thomas Wood	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	zero	August 9, 2010
Sandton Credit Solutions Off-Shore III, L.P.	Limited Partner	25 West 45th Street New York, NY 10036	212-444-7200	100% Limited Partner Interest	N/A
dton Credit Solutions III GP, LLC	General Partner	25 West 45th Street New York, NY 10036	212-444-7200	100% Control Interest (General Partner)	N/A

*No individuals own a 10% or greater control interest in Sandton Credit Solutions Cayman Fund III, L.P.

Date2/24/2016:

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Ownership and Control Report

Company Sandton Credit Solutions Fund III Subsidiary VIII, LLC **FEIN:** 47-5678847 **25 West 45th Street, New York, NY 10036**

Relationship	Authorized Person

NAME	TITLE	ADDRESS CITY STATE ZIP	PHONE NO	OWNERSHIP %	START DATE END DATE
Rael Nurick	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	zero	August 9, 2010
Thomas Wood	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	zero	August 9, 2010
Sandton Credit Solutions Off-Shore III, L.P.	Owner	25 West 45th Street New York, NY 10036	212-444-7200	100%	N/A

*No individuals own a 10% or greater interest in Sandton Credit Solutions Fund III Subsidiary VIII, LLC.

Date:2/24/2016

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Ownership and Control Report

Company Sandton Credit Solutions Off-Shore III, L.P. **FEIN:** 98-1113555 **25 West 45th Street, New York, NY 10036**

Relationship Authorized Person

NAME	TITLE	ADDRESS CITY STATE ZIP	PHONE NO	OWNERSHIP %	START DATE END DATE
Rael Nurick	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	zero	August 9, 2010
Thomas Wood	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	zero	August 9, 2010
Sandton Credit Solutions III GP, LLC	General Partner	25 West 45th Street New York, NY 10036	212-444-7200	100% Control Interest (General Partner)	N/A

*No individuals own a 10% or greater control interest in Sandton Credit Solutions Off-Shore III, L.P.

Date:2/24/2016

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Ownership and Control Report

Company Sandton Credit Solutions III GP, LLC **FEIN:** 38-3910290 **25 West 45th Street, New York, NY 10036**

Relationship Authorized Person

NAME	TITLE	ADDRESS CITY STATE ZIP	PHONE NO	OWNERSHIP %	START DATE END DATE
Rael Nurick	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	zero	August 9, 2010
Thomas Wood	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	zero	August 9, 2010
Sandton Fund Advisors, LLC	Owner	25 West 45th Street New York, NY 10036	212-444-7200	100%	N/A

*No individuals own a 10% or greater interest in Sandton Credit Solutions III GP, LLC.

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Ownership and Control Report

Company Sandton Fund Advisors, LLC **FEIN:** 27-2999610 **25 West 45th Street, New York, NY 10036**

Relationship	Authorized Person

NAME	TITLE	ADDRESS CITY STATE ZIP	PHONE NO	OWNERSHIP %	START DATE END DATE
Rael Nurick	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	50%	August 9, 2010
Thomas Wood	Managing Member of Sandton Fund Advisors, LLC	25 West 45th Street New York, NY 10036	212-444-7200	50%	August 9, 2010

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4th East Portal Facilities

4 East Mine Access Portal
Map Code: 4E24 Plate II-3 (plan view)
Status: Sealed, some grading required

This 3-entry portal system has been sealed per MSHA requirements.

Excavated rock was stockpiled around the western perimeter of the open cut and will be used for boxcut backfilling during reclamation. Details of the excavation design and diversion are provided in Chapter IV. Drainage information for the site is covered in Chapter VI.

Topsoil Stockpile
Map Code: 4E09 Plate II-3
Status: Existing

This stockpile (located in the northwest corner of the proposed disturbance) will be fully bermed to contain a 100-year/24-hour rainfall event. The stockpile and berms are sized to contain approximately 10,440 cubic yards of topsoil material. Berms constructed with topsoil make up the north and west portion of the excavation stockpile and the west perimeter of the disturbance boundary. These berms contain approximately 1,400 cubic yards of topsoil.

Excavation Material Stockpile
Map Code: 4E08 Plate II-3
Status: Existing

This stockpile (located on the west edge of the portal excavation) is sized to contain approximately 113,711 cubic yards of material. Material placed in the pile will come from the portal and airshaft excavation. Additional material from the construction of the coal handling facilities may also be placed within the pile. Placement of a material berm will be constructed around the pile to assist in sediment control. The berm shall be constructed with an interior retention basin sized to fully contain a 100-year/24-hour rainfall event. The non-topsoil material will be utilized in the reclamation of the portal entries, backfilling the boxcut excavation and airshaft.

Sediment Pond No. 9
Map Code: 4E10 Plate II-3
Status: Existing

This sediment pond (located in the northeast corner of the 4 East disturbance site) will be partially incised (0.2 ac-ft) of sediment volume. An embankment will be constructed along the west and north sides to provide required storage volume for runoff. This pond is designed to fully contain a 10-year/24-hour storm event. The dewatering of the pond following 24 hours will be through a 15-inch PVC pipe equipped with a slide gate. An emergency spillway has been designed to handle events in excess of a 10-year/24-hour storm.

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Coal Handling Facilities & Stockpiles
Map Code: 4E01, 4E02, 4E05, 4E14, 4E15, 4E16, 4E17, and 4E29 Plate II-3
Status: Existing

The coal handling facility at 4 East Portal is being demolished and reclaimed. Conveyor belts and radial stacker have been dismantled and moved to the Main Portal for reuse. The Transfer Point, Crusher/Screening, Recessed Feeder, and Truck Scale structures are partially disassembled and in the process of being relocated. The travel pad for the Radial Stacker and Truck Loadout facility will be removed in the near future. All areas will then be graded and revegetated.

Surface runoff from the 4 East facility is conveyed by berms, pumps, and culverts to Sediment Pond No. 9.

Temporary Stream Diversion - Unaffected Drainage
Map Code: 4E21 Plate II-3
Status: Existing – 3rd quarter 2002

This diversion is proposed as a temporary diversion. The diversion will intercept and divert natural drainage from the upstream watershed around the site. The natural stream is ephemeral.

Supply Yard
Map Code: 4E27 Plate II-3
Status: Existing

This supply yards are located adjacent to the portal ramp adjacent to the radial stacker and adjacent to Sed Pond 9.Supply yards contains parts and bulk supply items used on a continual basis for either the surface or underground operation. The yard is used to store inventory parts, machinery, and bulk items in a consistent and easily accessible manner. The supply yard is located within the proposed surface drainage control area and reports to Sediment Pond No. 9.

Ventilation Fan
Map Code: 4E20 Plate II-3
Status: Existing

The airshaft located in the southwest portion of the disturbance area has been sealed with a concrete cap. The associated exhaust fan and housing has been disassembled and moved to Main Portal for Emery 2 expansion.

Rock Dust Bin
Map Code: 4E13 Plate II-3
Status: Existing

This structure is being moved to Main Portal for Emery 2 expansion. Surface drainage from the bin area reports to Sediment Pond No. 9.

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Replaced 7/2016
Revised 11/2019

Water Tank
Map Code: 4E19 Plate II-3
Status: Existing

The 100,000-gallon tank measures 25 feet high by 26 feet in diameter and sat upon a concrete base near the southwest corner of the topsoil stockpile. The tank has been moved to Emery 2 Expansion Area. The concrete pads remain at the original location.

Truck Scale
Map Code: 4E14 Plate II-3
Status: Existing

The truck scale and associated control building are being moved to Main Portal for Emery 2 expansion. Surface runoff from the scale area will report to Sediment Pond No. 9.

Silt Fence
Map Code: identified on Plate II-3
Status: Existing

To treat surface runoff leaving the disturbance area. Provides alternate sediment control for small areas which do not report through Sediment Pond No. 9 or full containment retention basins. The silt fence (located along the north and northwest corner of the disturbance area) controls untreated drainage between the topsoil stockpile and outside slope of Sediment Pond No. 9 and the fence line. The silt fence located in the northwest corner treats drainage off the primary road leading to the ventilation fan site. A small section of silt fence will also be installed along the southern berm to provide a discharge point for the small watershed collected along the berm.

Ventilation Fan Road
Map Code: Identified at CH IV, Appendix IV-7
Status: Existing

Classified as a primary roadway. Light truck traffic will use the road to access the ventilation fan.

Coal Loadout Road
Map Code: Identified at CH IV, Appendix IV-7
Status: Existing

Classified as a primary road. The roadway will enter the loadout along the east fence line from County Road No. 915. Coal trucks will load from the loadout bin and proceed across the scales located near the northeast corner of the permit area. Trucks and other vehicles will exit onto Emery County Road No. 915 (referred to locally as "Cowboy Mine Road"). Drainage off the road will be conveyed to Sediment Pond No. 9.

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Emery 2 Expansion Facilities

Mine Substation
Map Code: e1, Plate II-1
Status: Existing

Electric substation mounted on a concrete pad. The 20 MVA substation is located adjacent to the existing mine substation (Map Code 42). The pad contains 75 cubic yards of concrete. The substation area is within the approved surface drainage control area and disturbed area.

Conveyor 6/Truck Loadout
Map Code: e2, Plate II-1
Status: Existing

48-inch Conveyor from Screen/Crusher Building to Truck Loadout area. The conveyor is 217 feet long consisting of 122 feet of elevated structure and 95 feet on grade. Two concrete pads with dimensions 16'x12'x3' each and concrete piers (44 cubic yards total) along with metal frame structure support the elevated portion of the belt. Suspended solids contributions will be minimized by utilizing covered conveyors (Plate II-I, photo log P5) and water sprays. The conveyor and loadout area is within the approved surface drainage control area and disturbed area.

Screening & Crushing Facility
Map Code: e3, Plate II-1
Status: Existing

Screening and crushing equipment with metal support structure mounted on a 46'x26'x3' concrete pad and 10 piers (143 cubic yards total). Equipment structure will have approximate dimensions of 40'x20'x55' high. The facility will receive coal from Conveyor 5 and discharge to Conveyor 6. The Screening & Crushing Facility is within the approved surface drainage control area and disturbed area.

Conveyor 5
Map Code: e4, Plate II-1
Status: Existing

54-inch conveyor partially elevated and supported by metal frame structure mounted on concrete pads with the remaining conveyor length constructed on grade and within a reclaim tunnel. Four concrete pads and piers with varying dimensions for a total of 103 cubic yards.

Conveyor 5 will receive coal from feeders beneath the stockpile and discharge to the Screening and Crushing Facility. Suspended solids contributions will be minimized by utilizing covered conveyors (Plate II-I, photo log P5) and water sprays. Conveyor 5 is within the approved surface drainage control area and disturbed area.

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Reclaim Tunnel
Map Code: e5, Plate II-1
Status: Existing

Corrugated metal tunnel to house a portion of Conveyor 5. The tunnel will be 320 feet long and consist of a 12-foot diameter corrugated metal pipe buried in a backfilled trench. Concrete (141 cubic yards) will be poured to a thickness of 2.7 feet to form a floor surface within the pipe for mounting the conveyor structure. Approximately half the tunnel length will be utilized under the current mine plan. The full length will be utilized during future mine expansion. A 3-foot diameter, 120-foot long escape tunnel is also included with this structure. Coal from the stockpile will fall through feeders onto Conveyor 5. The Reclaim Tunnel is located within the approved surface drainage control area and disturbed area. Reclamation of the tunnels will consist of excavating cover soil, removing the tunnels, and backfilling the trenches. The cross sectional area of the excavation required for tunnel demolition is 666 square feet for the main tunnel and 232 square feet for the escape tunnel, resulting in 7,893 cubic yards and 1,031 cubic yards of excavation/backfill, respectively. Final surface reclamation costs are included in bond calculations for the entire portal area grading costs.

Conveyor 4/Radial Stacker
Map Code: e6, Plate II-1 (Removed)
Status: Not Constructed

Conveyor 2, Phase I
Map Code: e7p1 Plate II-1
Status: Existing

60-inch conveyor supported by metal frame structure. The 250-foot portion of Conveyor 2, Phase I will be located within the original permit area.

The conveyor is elevated and supported by metal framework anchored to 2 concrete pads with varying dimensions for a total concrete volume of 74 cubic yards. Suspended solids contributions will be minimized by utilizing covered conveyors (Plate II-I, photo log P5) and water sprays. Conveyor 2, Phase I is located within the approved surface drainage control area and disturbed area.

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Emery 2 Expansion Facilities (cont.)

Conveyor 2, Phase II
Map Code: e7p2 Plate II-1
Status: Existing

60-inch conveyor supported by metal frame structure. The remaining 630-foot portion of Conveyor 2, Phase II will be located within the expanded permit boundary.

Conveyor 2, Phase II is elevated and supported by metal framework anchored to 4 concrete pads with varying dimensions, for a total concrete volume of 93 cubic yards.

The transition pad (to Conveyor 1) contains a total concrete volume of 92 cubic yards. Suspended solids contributions will be minimized by utilizing covered conveyors (Plate II-I, photo log P5) and water sprays. Conveyor 2, Phase II will be located within an approved surface drainage control area and disturbed area.

Conveyor 1
Map Code: e8 Plate II-1
Status: Existing

60-inch conveyor supported by metal frame structure. The 825-foot conveyor system transports coal from the Emery 2 mine portal to Conveyor 2 (Map Code e8).

A 110-foot section of conveyor is elevated and supported by metal framework anchored to 2 concrete pads with varying dimensions for a total concrete volume of 5 cubic yards. The remaining 715-foot section is built on grade utilizing small, portable pads. The transition pad dimensions into the mine are 25'x16'x3', with a volume of 11 cubic yards. Conveyor 1 and the Mine Belt Conveyor each have counterweight towers separate from the belt structures. An additional 100-foot length was added to Conveyor 1 length in the bonding calculations to account for future demolition of the structures. Suspended solids contributions will be minimized by utilizing covered conveyors (Plate II-I, photo log P5) and water sprays. Conveyor 1 will be located within the approved surface drainage control area and disturbed area.

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Emery 2 Expansion Facilities (cont.)

Portals
Identified on Plate II-1
Status: Existing

This 3-entry portal is designed to provide access to the Emery 2 Expansion operating sections of the mine and for future reserve development. The entries will be established at the bottom of an open boxcut located at the southern edge of the permit area in Section 33. The majority of the excavated material will be used as fill to establish grade to support the conveyor system and mine access road. The excess material from the boxcut will be stockpiled and used in future reclamation. A ramp on a grade of approximately 10% will lead to the bottom of the portal boxcut. Each entry will be approximately 8 feet high by 14 feet wide and will be driven on 45-foot centers. Once established, the portal will be utilized for two purposes: 1) to allow access of rubber-tired vehicles for transportation of men and supplies into the mine and 2) to serve as a coal haulage portal.

Unaffected drainage will be diverted past the portal site to Quitchupah Creek. Affected drainage will collect in retention basin 1 and be pumped to Sediment Pond 3 (UPDES Outfall 005).

Culvert (UC-1)
Map Code: e10 Plate II-1
Status: Existing

Culvert (UC-1) is a 30-inch diameter CHDPE 800 feet in length. This culvert conveys unaffected drainage upstream of the portals to Quitchupah Creek.

Culvert (UC-2)
Map Code: e11 Plate II-1
Status: Existing

Culvert (UC-2) is 30-inch diameter CHDPE 760 feet in length. This culvert conveys unaffected drainage to Quitchupah Creek.

Water Tank
Map Code: e12 Plate II-1
Status: Existing

The 100,000-gallon tank was disassembled at 4th East Portal and reassembled at the current location above the mine entrance portal west of the boxcut. The tank measures 25 feet high by 26 feet in diameter, with the walls sitting upon a concrete footer. The interior of the tank rests on sand. The tank is equipped with an overflow, level indicator, and valves to direct flow.

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The water tank will serve as a surge tank for surface and underground water supplies. Water from underground is pumped to the tank through a bi-directional pipeline.

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Surface drainage from the tank area will be directed to Pond 3.

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Emery 2 Expansion Facilities (cont.)

Ventilation Shaft/Fan
Map Code: e13 Plate II-1
Status: Existing

A 16-foot diameter raise-bore shaft located west of the Emery 2 Portal boxcut is used for mine ventilation. Depth of the shaft is approximately 120 feet. The ventilation fan and housing previously utilized at 4th East Portal is constructed over the shaft.

Four 4-inch diameter boreholes are installed near the ventilation shaft to provide access for water and power to the mine.

Surface drainage from the ventilation shaft and fan area will be directed to Pond 3.

Powerline
Map Code: e14 Plate II-1
Status: Existing

An overhead electric powerline extends from the Mine Substation (Map Code e1) along the conveyor belt to Emery 2 Mine portal to provide power for the mine. A line also extends from the powerline in the boxcut to the Ventilation Fan (Map Code e13). The powerline will be 3600 feet in length and have 18 power poles.

Topsoil Stockpile
Identified on Plate II-1 as existing topsoil stockpile T-2
Status: Existing

This existing stockpile is located south of the coal mine waste pile and contains 18,500 cubic yards. Salvaged soil from the Emery 2 Expansion area will be stockpiled here. The stockpile will be fully bermed to contain a 100-yr/24-hr rainfall event.

Excess Boxcut Material
Identified on Plate II-1 as Coal Stockpile Area
Status: Existing

This existing coal stockpile area will be used to store excess boxcut material (108,800 cubic yards) not used for fill. The coal stockpile area reports to an approved drainage basin.

Rock Dust Bin
Map Code: e15 Plate II-1
Status: Existing

A Rock Dust Bin is installed in the Main Portal Area for use in Emery 2 Expansion. The bin has approximate dimensions of 15'x15'x40'h. Concrete piers anchor the structure and contain approximately 6 cubic yards of concrete.

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TABLE III-1

SURFACE OPERATIONS AREA
PRE- AND POST-MINING LAND USES

Land Use	Permit Acres Pre-Mining	Permit Acres Post-Mining
Grazing/Wildlife	419.5*	439.0
Grazing Wildlife (Emery 2 Expansion)	29.0	29.0
Industrial (Coal Mining)	19.5	0
Roads	5.8	5.8
TOTAL Permit Acres	473.8	473.8

**Minor permit boundary adjustment due to disturbed area survey*

TABLE III-2

EXISTING AND PROPOSED
SURFACE DISTURBANCE AREAS

	Acres
Prior to August 3, 1977 Area	23.4
Post August 3, 1977 Area	52.2
Proposed Surface Operations Area	375.8**
Emery 2 Expansion Disturbance Area	10.1
TOTAL Disturbed Acres	85.7

***Proposed Surface Operations Area not included in total*

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Refer to Plate III-9 (Permit Boundaries and Bonding Map-Exhibit D) for surveyed boundaries.

The Emery disturbed areas depicted on Plate III-9 were surveyed on September 12, 2016. The areas were initially outlined on an aerial photograph using the original permit maps as a reference. Field verification was accomplished by identifying, as close as possible, physically disturbed soils where invasive plant species begin to appear. Emery 2 Expansion disturbance outlined by aerial photography (09/2018).

Bronco utilized independent third party subject expert consultants to perform the field work.

Soils and vegetation support was provided by Patrick Collins, Ph.D., a botanist from Mt. Nebo Scientific, Inc. Dr. Collins has over 30 years experience with biological studies around the western U.S.

These areas were then surveyed by using a Trimble R8, survey grade, RTK,GPS/GNSS system with a TSC3 data collector.

Surveying was completed by a Utah registered Professional Engineer and registered Land Surveyor, license number 4940688. The coordinate system used is NAD 83, Utah Central Zone, US Survey feet.

Revised 10/2002, 10/2003, 01/2004
Replaced 02/2017
Revised 11/2019

Backfill Volumes

Assuming 30 percent swell on excavated boxcut material, reclamation backfill volumes are discussed below. Excess boxcut material not used as sit fill will be stored at the waste disposal site until reclamation.

Construction

Boxcut excavation bank cubic yards (Table III-1A)	149,000 cu.yd.
Total swelled yards (30%)	193,700 cu.yd.
Required site fill (Table III-1A)	79,350 cu.yd.
Actual site fill (as-built)	84,900 cu.yd.
Material stored at waste disposal site (WDS)	108,800 cu.yd.

Reclamation

Reclamation cubic yards required	149,000 cu.yd.
Haul site fill to boxcut	84,900 cu.yd.
Haul material from WDS required to fill boxcut	64,100 cu.yd.
Haul material from WDS to reclaim Switchback Road	3,630 cu.yd.
Material remaining at WDS	41,070 cu.yd.

This material will be used for reclamation at other locations or left as permanent disposal site.

To accommodate future additions to pile, an additional 12,900 cu.yd. was added to theWDS volume for a total of 121,700 cu.yd.

Reclamation costs reflect the additional volume.

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Revised 11/2019

CHAPTER IV

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Revised 10/2002, Revised 11/2003, Revised 02/2008
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CHAPTER IV

ENGINEERING DESIGNS

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Revised 10/2002, Revised 02/2008, Revised 07/2016, Revised 02/2017
Revised 11/2019

Boxcut Excavation Volumes

Assume 30 percent swell on excavated boxcut material.

Construction

Boxcut excavation bank cubic yards (Table IV-1A)	149,000 cu.yd.
Ventilation Shaft bank cubic yards	893 cu.yd.
Total swelled yards (30%)	193,700 cu.yd.
Required site fill (Table IV-1A)	79,350 cu.yd.
Actual site fill	84,900 cu.yd.
Material stored at waste disposal site (WDS)	108,800 cu.yd.

Note: Additional material volume has been added to WDS volume to accommodate any future addition of waste material. A total of 121,700 cu.yd. was used as the basis for reclamation cost calculation for bonding purposes.

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Bonding Calculations

Direct Costs

Subtotal Demolition and Removal	$569,223.00	
Subtotal Backfilling and Grading	$2,014,717.00	
Subtotal Revegetation	$734,953.00	
Direct Costs	$3,318,893.00	

Indirect Costs

Mob/Demob	$331,889.00	10.0%
Contingency	$165,945.00	5.0%
Engineering Redesign	$82,972.00	2.5%
Main Office Expense	$225,685.00	6.8%
Project Management Fee	$82,972.00	2.5%
Subtotal Indirect Costs	$889,463.00	26.8%

Total Cost	$4,208,356.00	
Escalation factor		0.0178
Number of years (Mid-Term Review 2018)		5
Escalation	$388,117.00	
Reclamation Cost Escalated	$4,596,473.00	
Bond Amount Required (rounded to nearest $1,000, 2018 Dollars)	$4,596,000.00	
Actual Bond Posted 2/17/17 per Task 5362	$4,596,000.00	
Difference Between Cost Estimate and New Posted Bond	$0.00	
Percent Difference	0.00%	

With Revised factors from Tech Directive 007 (Sept 2018)
With 2018 rates from RS Means, with O&P, Nationwide Average

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CHAPTER IV RECLAMATION COST ESTIMATES

Chapter IV Part IV pages 14 through 18 have been left blank due to the revised bond calculation.

The bond calculations and support documentation are found in Chapter IV, Appendix IV-9 which contains:

A – Demolition Costs

B – Earthwork Costs

C – Revegetation Costs

D – Calculation Support

E – Bond Deletion Support

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CHAPTER IV APPENDIX IV-10a

4th East as-built design

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CHAPTER IV

APPENDIX IV-9

BOND SUPPORT

A – DEMOLITION COSTS
B – EARTHWORK COSTS
C – REVEGETATION COSTS
D – CALCULATION SUPPORT
E – BOND DELETION SUPPORT

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CHAPTER IV

APPENDIX IV-9-A

BOND SUPPORT
DEMOLITION COSTS

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Map Ref.	Description	Cost
1	Tipple Stacker-Reclaim System 01	$ 32,440
3	Tipple Control Station 03	$ 384
4	Surface Storage Tank Containment Area 04	$ 1,741
6	Foreman's Bath House 06	$ 6,261
11	Warehouse/Office Building 11	$ 77,274
12	Bathhouses 12	$ 15,047
16	Tipple Transformer Building 16	$ 798
19	Foreman's/Shift Change Office 19	$ 2,409
20	Mine Fan Building 20	$ 6,329
23	Steam Cleaner Building 23	$ 564
27	Supply Yards 27	$ 2,496
28A	Truck Scale 28A	$ 4,297
33	Bridge On Quitchupah Creek 33	$ 2,072
37	Mine Rescue Storage Area 37	$ 2,585
41	Training Site Pad 41	$ 656
42	Existing Mine Substation 42	$ 7,815
43	Borehole Pump Facility 43	$ 24,718
44	Sewage Pumping Station 44	$ 463
45	Transformer Storage Pad 45	$ 603
46	Power Line 46	$ 6,557
4E01	Crusher/Screen Building 4E01	$ 2,153
4E05	Radial Stacker 4E05	$ 1,450
4E10	Sediment Basin #9_4E10	$ 616
4E13	Rock Dust Bin 4E13	$ 127
4E15	Truck Scale 4E14 & Truck Loadout 4E15	$ 9,761
4E16	Coal Feed Hopper_4E16	$ 1,887
4E17	Beltline Transfer Point_4E17	$ 1,258
4E18	Powerline_4E18	$ 9,089
4E19	Water Tank_4E19	$ 725
4E20	VentilationFan_4E20	$ 1,381
4E22	Corrugated Metal Pipe Culvert_4E22	$ 459
4E23	Corrugated Metal Pipe Culvert_4E23	$ 263
4E25	CattleGuard_4E25	$ 283
4E28	Oil Storage Building_4E28	$ 3,811
4E29	RecessedFeeder_4E29	$ 97
4E32	Wind Fence 4E32	$ 3,027
4E33	Perimeter Fence_4E33	$ 13,428
4E34	Substation Pad & Compressor Shed_4E34	$ 4,074
e1	e2 Mine Substation e1	$ 9,867
e2	e2 Conveyor6-Truck Loadout_e2	$ 5,914
e3	e2 Screening&CrushFacility_e3	$ 19,828
e4	e2 Conveyor 5_e4	$ 30,865
e5	e2 Reclaim Tunnel_e5	$ 48,824
e7p1	e2 Conveyor2 P1_e7p1	$ 16,552
e7p2	e2 Conveyor2 P2_e7p2	$ 41,663
e8	e2 Conveyor1_e8	$ 20,808
e9	e2 SealPortals_e9	$ 34,900
e10	e2 Culvert_e10	$ 11,492
e11	e2 Culvert_e11	$ 10,915
e12	e2_WaterTank_e12	$ 4,661
e13	e2_VentFan_e13	$ 53,512
e14	e2_Powerline_e14	$ 6,741
e15	Rock Dust Bin e15	$ 3,283
	Total	$ 569,223

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Work Description	Materials	Means Reference Number	Unit Cost	Unit	Comments
Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	Footnote 2
Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	Footnote 2
Dismantling Cost	Mechanical equipment heavy	23 05 05 10 3600	$ 1,250.00	/ton	Footnote 1
Dismantling Cost	Powerpole	02 41 13 80 0100	$ 312.50	EA	Footnote 1
Dismantling Cost	Wire Removal	26 05 05 10 1900	$ 31.00	CLF	Footnote 1
Demolition Cost	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%	Footnote 1
Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	Footnote 1
Structure's Demolition Cost	Wood Bldg Small	02 41 16 13 0700	$ 0.39	/CF	Footnote 1
Structure's Demolition Cost	Plug Well	Nevada Mine Cost Estimate	$ 8,200.00	EA.	Footnote 3
Structure's Demolition Cost	Plug Small Borehole	Nevada Mine Cost Estimate	$ 509.00	EA.	Footnote 3
Structure's Demolition Cost	Reclaim Tunnel Demolition	02 41 13 40 0200	$ 47.95	LF	Footnote 1
Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY	Footnote 1
Culvert Removal	CMP - 12-inch	02 41 13 40 0150	$ 2.60	/LF	Footnote 1
Culvert Removal	Plasic Pipe - 30-inch	02 41 13 38 1900	$ 9.67	/LF	Footnote 1
Culvert Removal Excavate & Backfill	Machine Excavation 3/4 CY	31 23 16 16 6035	$ 21.10	/BCY	Footnote 1
Tunnel Removal Excavate & Backfill	Machine Excavation 1.5 CY	31 23 16 42 0250	$ 2.14	/BCY	Footnote 1
Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY	Footnote 1
Transportation Cost Non Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	$ 780.04	/day	Not Used in Active Worksheets
Disposal Costs	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY	Footnote 3
Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY	Footnote 1
Pipe Removal	PVC Pipe 18 inch	33 31 11 25 2300	$ 27.36	LF	Footnote 1
Fill to Grade	Backfill structural 300 HP 300' Dirt	31 23 23 14 5420	$ 2.15	/CY	Footnote 1
Supply Yard Fence	Chain link remove 8'-10'	02 41 13 60 1700	$ 4.34	/LF	Footnote 1
Silt Fence	Silt fence	31 25 14 16 1000	$ 1.88	LF	Footnote 1
Seal 3 Portals	Seal Portals	Confidential Bid	$ 34,900.00	EA.	Footnote 2
Seal Shafts	Seal Shaft	Confidential Invoice	$ 40,000.00	EA.	Footnote 2

Look Up Table Limits

1) Using Total O&P rates from RS Means, 2018, Nationwide Average
2) Confidential Bid, see Chapter IV, Appendix IV-11
3) See Chapter IV, Part IV

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Ref. ORIG:	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Tipple Stacker Reclaim 01																			
	Tipple Stacker-Reclaim System 01																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF						996					CY		26892	CF	$ 6,777
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30%	%						697					CY		18824	CF	
	Rubble's Weight (exclude steel)															Ton/CY		0		
	Truck's Capacity															Ton				
	Haulage																			
	Transportation Cost Non Steel Truck															HR			Day	
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 2,531
	Steel's Weight															Ton/CY		0	Ton/CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck															HR				
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 9,308
	Equipment 's Disposal Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	754	5	3			419							11310	CF	$ 4,072
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30%	%						293					CY		7917	CF	
	Equipment 's Vol. Demolished																			
	Loading Costs															HR			DAY	
	Transport Costs	Truck dump 16 ton payload	01 54 33 20 5300	$ 780.04	/day											TON		0	TON	
	Disposal Costs	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 1,064
	Subtotal																			$ 5,136
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						305					CY		305	CY	$ 3,050
	Concrete's Vol. Demolished																1.3	397	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													397	CY	$ 846
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													397	CY	$ 1,362
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													397	CY	$ 4,343
	Subtotal																			$ 9,601
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						150					CY		150	CY	$ 1,500
	Concrete's Vol. Demolished																1.3	195	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													195	CY	$ 415
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													195	CY	$ 669
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													195	CY	$ 2,133
	Subtotal																			$ 4,717
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						117					CY		117	CY	$ 1,170
	Concrete's Vol. Demolished																1.3	152	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													152	CY	$ 324
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													152	CY	$ 521
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													152	CY	$ 1,663
	Subtotal																			$ 3,678
	Total																			$ 32,440

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Ref. ORIG:	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Tipple Control Station 03																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF						23					CY		621	CF	$ 157
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30%	%						16					CY		435	CF	
	Rubble's Weight (exclude steel)												1.4			TON/CY				
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck															HR			Day	
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY											CY				$ 58
	Steel's Weight																	0	0	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 215
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						5.25					CY		5.25	CY	$ 53
	Concrete's Vol. Demolished																1.3	7	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													7	CY	$ 15
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													7	CY	$ 24
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													7	CY	$ 77
	Subtotal																			$ 169
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 384

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Ref. ORIG:	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Storage Tank Containment Area 4																			
	Surface Storage Tank Containment Area 04																			
	Structure's Demolition Cost	Steel Bld, Large	02 41 16 13 0020	$ 0.36	/CF						106					CY		2862	CF	$ 721
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30%	%						74					CY		2003	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63																$ 269
	Steel's Weight															TON				
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck															HR				
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 990
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						24					CY		24	CY	$ 240
	Concrete's Vol. Demolished																1.3	31	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													31	CY	$ 66
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi, rnd, trip	31 23 23 20 1014	$ 3.43	/CY													31	CY	$ 106
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													31	CY	$ 339
	Subtotal																			$ 751
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 1,741

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Ref. ORIG:	Description No Spreadsheet	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Foreman's Bath House 06																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	48.375	24	9			387.0					CY		10449	CF	$ 3,762
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	0%	%						387					CY		10449	CF	
	Rubble's Weight (exclude steel)															TON/CY		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck															HR			Day	
	Transportation Cost Non Steel Drive																	0	TON	$ -
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63																$ 1,405
	Steel's Weight															TON		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck															HR				
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 5,167
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Light Floor's																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	48	28	0.33			16.4					CY		16.4	CY	$ 164
	Concrete's Vol. Demolished																1.3	21	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													21	CY	$ 45
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													21	CY	$ 72
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													21	CY	$ 230
	Subtotal																			$ 511
	Heavy Wall's																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	2.5	1.4	144			18.7					CY		18.7	CY	$ 187
	Concrete's Vol. Demolished																1.3	24	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													24	CY	$ 51
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													24	CY	$ 82
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													24	CY	$ 263
	Subtotal																			$ 583
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 8,261

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Ref. ORIG:	Description Warehouse Office Bld 11	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Warehouse/Office Building 11																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	120	60	20			5333					CY		144000	CF	$ 51,840
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	0.00%	%						5333					CY		144000	CF	
	Rubble's Weight (exclude steel)															TON/CY		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck													0		HR			Day	
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 19,360
	Steel's Weight															TON		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck													0		HR				
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 71,200
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Light Floor's																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	120	60	0.5			133.3					CY		133.3	CY	$ 1,333
	Concrete's Vol. Demolished																1.3	173	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													173	CY	$ 368
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													173	CY	$ 593
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													173	CY	$ 1,893
	Subtotal																			$ 4,187
	Heavy Wall's																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	360	1.5	3			60					CY		60	CY	$ 600
	Concrete's Vol. Demolished																1.3	78	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													78	CY	$ 166
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													78	CY	$ 268
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													78	CY	$ 853
	Subtotal																			$ 1,887
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 77,274

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Ref. ORIG:	Description Bathhouse 6 Trailers 12	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Bathhouses 12																			
	Structure's Demolition Cost	Steel Bld, Large	02 41 16 13 0020	$ 0.36	/CF	50	12	10			222				5	CF		30000	CF	$ 10,800
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	0.00%	%						222					CY		30000	CF	
	Rubble's Weight (exclude steel)															TON/CY		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck															HR			Day	
	Transportation Cost Non Steel Drive																	0	TON	$ -
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 4,033
	Steel's Weight															TON		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 14,833
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	60	9	0.33			6.6				1	CY		7	CY	$ 66
	Concrete's Vol. Demolished																1.3	9		
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													9	CY	$ 19
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													9	CY	$ 31
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													9	CY	$ 98
	Subtotal																			$ 214
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 15,047

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Ref. ORIG:	Description Tipple Transformer Bld 03	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Tipple Transformer Building 16																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	20	10	8			59.3					CY		1600	CF	$ 403
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						41					CY		1120	CF	
	Rubble's Weight (exclude steel)												1.4			TON/CY				
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck															HR			Day	
	Transportation Cost Non Steel Drive																		TON	$ -
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 151
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 554
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						8					CY		8	CY	$ 80
	Concrete's Vol. Demolished																1.3	10	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													10	CY	$ 21
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													10	CY	$ 34
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													10	CY	$ 109
	Subtotal																			$ 244
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 798

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Ref. ORIG:	Description Foreman Office Trailer 09	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Foreman's/Shift Change Office 19																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	58	12	10			258					CY		6960	CF	$ 1,754
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						180					CY		4872	CF	
	Rubble's Weight (exclude steel)															TON/CY			TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck															HR			Day	
	Transportation Cost Non Steel Drive																	0	TON	$ -
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 655
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 2,409
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 2,409

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Ref. ORIG:	Description Mine Fan Bld 08	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Mine Fan Building 20																			
	Structure's Demolition Cost	Steel Bld, Large	02 41 16 13 0020	$ 0.36	/CF						525					CY		14175	CF	$ 3,572
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						368					CY		9923	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 1,334
	Steel's Weight															TON				
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck															HR				
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 4,906
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						45					CY		45	CY	$ 450
	Concrete's Vol. Demolished																1.3	59	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													59	CY	$ 126
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													59	CY	$ 202
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													59	CY	$ 645
	Subtotal																			$ 1,423
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 6,329

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Ref. ORIG:	Description Steam Cleaner Bld 04	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Steam Cleaner Building 23																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.38	/CF	8	10	10			29.6					CY		800	CF	$ 202
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						21					CY		560	CF	
	Rubble's Weight (exclude steel)															TON/CY				
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck															HR				
	Transportation Cost Non Steel Drive																		TON	$ -
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 75
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 277
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	8	10	3			8.9					CY		8.9	CY	$ 89
	Concrete's Vol. Demolished																1.3	12	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													12	CY	$ 26
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													12	CY	$ 41
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													12	CY	$ 131
	Subtotal																			$ 287
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 564

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Ref. ORIG:	Description Fence 26	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Supply Yards 27																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Silt Fence Disposal Cost																			
	Silt Fence																			
	Supply Yard Fence	Chain link remove 8'-10'	02 41 13 60 1700	$ 4.34	/LF	575										FT		575	FT	$ 2,496
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 2,496
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 2,496

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Ref. ORIG:	Description Truck Scale New 15	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Truck Scale 28A																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	8	6	8			14.2					CY		384	CF	$ 97
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						10					CY		269	CF	
	Rubble's Weight (exclude steel)															TON/CY		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck															HR				
	Transportation Cost Non Steel Drive																	0	TON	$ -
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 36
	Steel's Weight															TON		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck															HR				
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 133
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	130	12	0.67			38.5					CY		38.5	CY	$ 385
	Concrete's Vol. Demolished																1.3	50	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													50	CY	$ 107
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													50	CY	$ 172
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													50	CY	$ 547
	Subtotal																			$ 1,211
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	12	12	0.33			1.8					CY		1.8	CY	$ 18
	Concrete's Vol. Demolished																1.3	2	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													2	CY	$ 4
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													2	CY	$ 7
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													2	CY	$ 22
	Subtotal																			$ 51
	Footer's Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY						70					CY		70.0	CY	$ 1,400
	Footer's Vol. Demolished																1.3	91	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													91	CY	$ 194
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													91	CY	$ 312
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													91	CY	$ 996
	Subtotal																			$ 2,902
	Total																			$ 4,297

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Ref. ORIG:	Description Bridge Quitchupah Creek 16	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Bridge On Quitchupah Creek 33																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY						50					CY		50	CY	$ 1,000
	Concrete's Vol. Demolished																1.3	65	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													65	CY	$ 138
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													65	CY	$ 223
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													85	CY	$ 711
	Subtotal																			$ 2,072
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 2,072

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Ref. ORIG:	Description No Spreadsheet	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Mine Rescue Storage Area 37																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	24	20	12			213					CY		5760	CF	$ 1,452
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						149					CY		4032	CF	
	Rubble's Weight (exclude steel)															TON/CY		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck															HR				
	Transportation Cost Non Steel Drive																	0	TON	$ -
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 542
	Steel's Weight															TON		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck															HR				
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 1,994
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Light Floor's																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	24	18	0.5			8.0					CY		8.0	CY	$ 80
	Concrete's Vol. Demolished																1.3	10	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													10	CY	$ 21
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													10	CY	$ 34
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													10	CY	$ 109
	Subtotal																			$ 244
	Heavy Wall's																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	64	1.5	2.33			8.3					CY		8.3	CY	$ 166
	Concrete's Vol. Demolished																1.3	11	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													11	CY	$ 23
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													11	CY	$ 38
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													11	CY	$ 120
	Subtotal																			$ 347
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 2,585

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Ref. ORIG:	Description Rescue Training Pad 47	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Training Site Pad 41																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	37	47	0.33								ft		21	CY	$ 210
	Concrete's Vol. Demolished																1.3	27	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													27	CY	$ 58
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													27	CY	$ 93
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													27	CY	$ 295
	Subtotal																			$ 656
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 656

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Ref. ORIG:	Description Mine Substation 06	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Existing Mine Substation 42																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Remove Substation																			
	Equipment 's Disposal Cost																			
	Dismantling Cost	Mechanical equipment heavy	23 05 05 10 3600	$ 1,250.00	/ton							2			3	TON		6	TON	$ 7,500
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 7,500
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						10					CY		10	CY	$ 100
	Footer's Vol. Demolished																1.3	13	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													13	CY	$ 28
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													13	CY	$ 45
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													13	CY	$ 142
	Subtotal																			$ 315
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 7,815

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Ref. ORIG:	Description Borehole Pump Facility 16	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Borehole Pump Facility 43																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost	Plug Well	Nevada Mine Cost E	$ 8,200	EA.										3	EA		3	EA	$ 24,600
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 24,600
	Footer's Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						3.5					CY		3.5	CY	$ 35
	Footer's Vol. Demolished																1.3	5	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													5	CY	$ 11
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													5	CY	$ 17
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													5	CY	$ 55
	Subtotal																			$ 118
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 24,718

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Ref. ORIG:	Description Sewage Pumping Station 17	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Sewage Pumping Station 44																			
	Structure's Demolition Cost	Steel Bld, Large	02 41 16 13 0020	$ 0.38	/CF	8	8	9			21.3					CY		576	CF	$ 145
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						15					CY		403	CF	
	Rubble's Weight (exclude steel)															TON/CY				
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck															HR				
	Transportation Cost Non Steel Drive																		TON	$ -
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 54
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 199
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	8	8	3.5			8.3					CY		8.3	CY	$ 83
	Concrete's Vol. Demolished																1.3	11	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													11	CY	$ 23
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													11	CY	$ 38
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													11	CY	$ 120
	Subtotal																			$ 264
	Wall's Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 463

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Ref. ORIG:	Description Transformer Storage Pad 05	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Transformer Storage Pad 45																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	32	32	0.5			19.0					CY		18.96296	CY	$ 190
	Concrete's Vol. Demolished																1.3	25	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													25	CY	$ 53
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													25	CY	$ 86
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													25	CY	$ 274
	Subtotal																			$ 603
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 603

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Ref. ORIG:	Description Power Line 19	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Power Line 46																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost	Powerpole	02 41 13 80 0100	$ 312.50	EA										17	EA		17	EA	$ 5,313
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 5,313
	Equipment 's Disposal Cost	Wire Removal	26 05 05 10 1900	$ 31.00	CLF	4012										feet		40.12	CLF	$ 1,244
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 1,244
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 6,557

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Ref. ORIG:	Description Crusher Screen Building 28	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
28	Crusher/Screen Building 4E01																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	10	12	10			44.4					CY		1200	CF	$ 302
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						31					CY		840	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 113
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 415
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						55					CY		55	CY	$ 550
	Concrete's Vol. Demolished																1.3	72	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													72	CY	$ 153
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													72	CY	$ 247
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													72	CY	$ 788
	Subtotal																			$ 1,738
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 2,153

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Ref. ORIG:	Description Radial Stacker 30	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Radial Stacker 4E05																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						46					CY		46	CY	$ 460
	Concrete's Vol. Demolished																1.3	60	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													60	CY	$ 128
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													60	CY	$ 206
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													60	CY	$ 656
	Subtotal																			$ 1,450
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 1,450

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Ref. ORIG:	Description NPDES Outfalls 24	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Sediment Basin #9_4E10																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost	PVC Pipe 18 inch	33 31 11 25 2300	$ 27.36	/LF	20												20	LF	$ 547
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 547
	Footer's Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						2					CY		2	CY	$ 20
	Footer's Vol. Demolished																1.3	3	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													3	CY	$ 6
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													3	CY	$ 10
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													3	CY	$ 33
	Subtotal																			$ 69
	Wall's Demolition																			
	Demolition Cost																			
	Wall's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			$ 616

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Ref. ORIG:	Description Rock Dust Bin 32	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Rock Dust Bin 4E13																			
	Structure's Demolition Cost															CF		0	CF	$ -
	Structure's Vol. Demolished																	0	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck															HR		0	Day	$ -
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ -
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY						3					CY		3	CY	$ 60
	Concrete's Vol. Demolished																1.3	4	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													4	CY	$ 9
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													4	CY	$ 14
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													4	CY	$ 44
	Subtotal																			$ 127
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 127

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Ref. ORIG:	Description Loadout 35	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Truck Scale 4E14 & Truck Loadout 4E15																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF						23660					CF		23660	CF	$ 5,962
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						613					CY		16562	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 2,227
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 8,189
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						50					CY		50	CY	$ 500
	Concrete's Vol. Demolished																1.3	65	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													65	CY	$ 138
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													65	CY	$ 223
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													65	CY	$ 711
	Subtotal																			$ 1,572
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 9,761

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Ref. ORIG:	Description Concrete Barriers 40	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Coal Feed Hopper_4E16																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ -
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						60.0					CY		60.0	CY	$ 600
	Concrete's Vol. Demolished																1.3	78	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													78	CY	$ 166
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													78	CY	$ 268
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													78	CY	$ 853
	Subtotal																			$ 1,887
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 1,887

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Ref. ORIG:	Description No Spreadsheet	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Beltline Transfer Point_4E17																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ -
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	10	8	1.5			4.4				9	CY		40.0	CY	$ 400
	Concrete's Vol. Demolished																1.3	52	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													52	CY	$ 111
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													52	CY	$ 178
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													52	CY	$ 569
	Subtotal																			$ 1,258
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 1,258

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Ref. ORIG:	Description Powerline 36	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Powerline_4E18																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost	Powerpole	02 41 13 80 0100	$ 312.50	EA										27	EA		27	EA	$ 8,438
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 8,438
	Equipment 's Disposal Cost																			
	Dismantling Cost	Wire Removal	26 05 05 10 1900	$ 31.00	CLF	2132										LF		21	CLF	$ 651
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 651
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 9,089

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Ref. ORIG:	Description Water Tank 31	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Water Tank_4E19																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF											CF		0	CF	$ -
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%													0	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ -
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ -
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						23					CY		23	CY	$ 230
	Concrete's Vol. Demolished																1.3	30	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													30	CY	$ 64
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi, rnd, trip	31 23 23 20 1014	$ 3.43	/CY													30	CY	$ 103
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													30	CY	$ 328
	Subtotal																			$ 725
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 725

Note: Water tank moved to Emery 2.

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Ref. ORIG:	Description Ventilation Fan 33	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	VentilationFan_4E20																			
	Structure's Demolition Cost	Steel Bld, Large	02 41 16 13 0020	$ 0.36	/CF											CF		0	CF	$ -
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						0							0	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ -
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ -
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						44					CY		44	CY	$ 440
	Concrete's Vol. Demolished																1.3	57	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													57	CY	$ 121
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													57	CY	$ 196
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													57	CY	$ 624
	Subtotal																			$ 1,381
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 1,381

Note: Ventilation Fan moved to Emery 2.

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Ref. ORIG:	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Corrugated Metal Pipe Culvert_4E22																			
	Corrugated Metal Pipe Culvert_4E22																			
	Structure's Demolition Cost	Machine Excavation 3/4 CY	31 23 16 16 6035	$ 21.10	/BCY	63	3	2			14					BCY		14	BCY	$ 295
	Structure's Vol. Demolished																	0	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 295
	Equipment 's Disposal Cost	CMP - 12-inch	02 41 13 40 0150	$ 2.60	/LF	63										LF		63	LF	$ 164
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 164
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 459

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Ref. ORIG:	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Corrugated Metal Pipe Culvert_4E23																			
	Corrugated Metal Pipe Culvert_4E23																			
	Structure's Demolition Cost	Machine Excavation 3/4 CY	31 23 16 16 6035	$ 21.10	/BCY	36	3	2			8					BCY		8	BCY	$ 169
	Structure's Vol. Demolished																	0	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 169
	Equipment 's Disposal Cost	CMP - 12-inch	02 41 13 40 0150	$ 2.60	/LF	36										LF		36	LF	$ 94
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 94
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 263

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Ref. ORIG:	Description Cattle Guard 39	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	CattleGuard_4E25																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF						96					CF		96	CF	$ 24
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						67					CF		2.00	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 7
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 31
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY						6					CY		6	CY	$ 120
	Concrete's Vol. Demolished																1.3	8	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													8	CY	$ 17
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													8	CY	$ 27
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													8	CY	$ 88
	Subtotal																			$ 252
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 283

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Ref. ORIG:	Description Oil Storage Building 42	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Oil Storage Building_4E28																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	60	18	8			320					CY		8640	CF	$ 2,177
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						224					CY		6048	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 813
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 2,990
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	60	18	0.66								CY		26	CY	$ 260
	Concrete's Vol. Demolished																1.3	34	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													34	CY	$ 72
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													34	CY	$ 117
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													34	CY	$ 372
	Subtotal																			$ 821
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 3,811

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Ref. ORIG:	Description Recessed Feeder 43	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	RecessedFeeder_4E29																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	8	1	8			2.4					CY		2.4	CY	$ 48
	Concrete's Vol. Demolished																1.3	3	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													3	CY	$ 6
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													3	CY	$ 10
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													3	CY	$ 33
	Subtotal																			$ 97
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 97

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Ref. ORIG:	Description Wind Fence 38	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Wind Fence 4E32																			
	Structure's Demolition Cost	Steel Bld, Large	02 41 16 13 0020	$ 0.36	/CF						48					CY		1300	CF	$ 328
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						34					CY		910	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 122
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 450
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY						62					CY		62	CY	$ 1,240
	Concrete's Vol. Demolished																1.3	81	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													81	CY	$ 173
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													81	CY	$ 278
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													81	CY	$ 886
	Subtotal																			$ 2,577
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 3,027

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Ref. ORIG:	Description Task2929 Forth East Fence 45	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Perimeter Fence_4E33																			
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost	Chain link remove 8'-10'	02 41 13 60 1700	$ 4.34	/LF	3068										FT		3068	FT	$ 13,315
	Dismantling Cost																			
	Equipment 's Vol. Demolished												100			FT/CY				
	Loading Costs																			
	Transport Costs																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY						31					CY		31	CY	$ 113
	Subtotal																			$ 13,428
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 13,428

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Ref. ORIG:	Description Task3103 Substation concrete and compressor shed 48	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Substation Pad & Compressor Shed_4E34																			
	Structure's Demolition Cost	Wood Bldg Small	02 41 16 13 0700	$ 0.39	/CF	12	16	8			57					CY		1536	CF	$ 599
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 207
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 806
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						104					CY		104	CY	$ 1,040
	Concrete's Vol. Demolished																1.3	135	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													135	CY	$ 288
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													135	CY	$ 463
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													135	CY	$ 1,477
	Subtotal																			$ 3,268
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 4,074

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Ref.	Description **e2 Mine Substation e1**	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost	Mechanical equipment heavy	23 05 05 10 3600	$ 1,250.00	/ton							2			3	TON		6	TON	$ 7,500
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 7,500
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						75					CY		75	CY	$ 750
	Concrete's Vol. Demolished																1.3	98	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													98	CY	$ 209
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													98	CY	$ 336
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													98	CY	$ 1,072
	Subtotal																			$ 2,367
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 9,867

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Ref.	Description e2 Conveyor6-Truck Loadout_e2	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	217	6	9			434.0					CY		11718	CF	$ 2,953
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						304							8203	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 1,103
	Steel's Weight															TON		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck															HR				
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 4,056
	Equipment 's Disposal Cost																	0	CF	$ -
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																		DY	
	Transport Costs																	0	0	$ -
	Disposal Costs																			
	Subtotal																			$ -
	Bent C6-1																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	16	12	3			21					CY		21	CY	$ 420
	Concrete's Vol. Demolished																1.3	27	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													27	CY	$ 58
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													27	CY	$ 93
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													27	CY	$ 295
	Subtotal																			$ 866
	Bent C6-2																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	16	12	3			21					CY		21	CY	$ 420
	Concrete's Vol. Demolished																1.3	27	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													27	CY	$ 58
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													27	CY	$ 93
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													27	CY	$ 295
	Subtotal																			$ 866
	Pier C6-3																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	16	1	1			0.6				5	CY		3	CY	$ 59
	Concrete's Vol. Demolished																1.3	4	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													4	CY	$ 9
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													4	CY	$ 14
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													4	CY	$ 44
	Subtotal																			$ 126
	Total																			$ 5,914

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Ref.	Description **e2 Screening&CrushFacility_e3**	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	40	20	55			1629.6					CY		44000	CF	$ 11,088
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						1141							30800		
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 4,141
	Steel's Weight															TON		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck															HR				
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 15,229
	Equipment 's Disposal Cost																	0	CF	$ -
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																		DY	
	Transport Costs																	0	0	$ -
	Disposal Costs																			
	Subtotal																			$ -
	Pad																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	46	26	3			133					CY		133	CY	$ 1,330
	Concrete's Vol. Demolished																1.3	173	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													173	CY	$ 368
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													173	CY	$ 593
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													173	CY	$ 1,893
	Subtotal																			$ 4,184
	Piers - 10																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	3	3	3			1				10	CY		10	CY	$ 200
	Concrete's Vol. Demolished																1.3	13	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													13	CY	$ 28
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													13	CY	$ 45
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													13	CY	$ 142
	Subtotal																			$ 415
	Concrete Demolition																			
	Demolition Cost				/CY											CY		0	CY	$ -
	Concrete's Vol. Demolished																	0	CY	
	Loading Cost				/CY													0	CY	$ -
	Transportation Cost				/CY													0	CY	$ -
	Disposal Costs				/CF													0	CY	$ -
	Subtotal																			$ -
	Total																			$ 19,828

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Ref.	Description e2 Conveyor 5_e4	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Elevated Belt																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	430	14	12			2675.6					CY		72240	CF	$ 18,204
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						1873							50568		
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 6,799
	Steel's Weight															TON		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck															HR				
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 25,003
	On-grade Belt																			
	Equipment 's Disposal Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	210	6	5			233.3					CY		6300	CF	$ 1,588
	Dismantling Cost	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						163							4410		
	Equipment 's Vol. Demolished																			
	Loading Costs															HR			DY	
	Transport Costs															TON		0	TON	$ -
	Disposal Costs																			
	Subtotal																			$ 1,588
	Bent C5-1 (Pad)																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	20	9	3			20					CY		20	CY	$ 400
	Concrete's Vol. Demolished										0				0		1.3	26	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													26	CY	$ 55
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													26	CY	$ 89
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													26	CY	$ 284
	Subtotal																			$ 828
	Bent C5-2 (Pad)																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	12	3	3			4					CY		4	CY	$ 80
	Concrete's Vol. Demolished																1.3	5	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													5	CY	$ 11
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													5	CY	$ 17
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													5	CY	$ 55
	Subtotal																			$ 163
	Bents C5-3 & C5-4 (Pad and 4 Piers)																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	35	19	3			74					CY		79	CY	$ 1,584
	Concrete's Vol. Demolished					3	3	4			1				4		1.3	103	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													103	CY	$ 219
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													103	CY	$ 353
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													103	CY	$ 1,127
	Subtotal																			$ 3,283
	Total																			$ 30,865

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Ref.	Description **e2 Reclaim Tunnel_e5**	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Structure's Demolition Cost	Reclaim Tunnel Demolition	02 41 13 40 0200	$ 47.95	LF	440			12		1842.1					LF		440	LF	$ 21,098
	Structure's Vol. Demolished	Reduction in Volume	Estimate	10%	%						184					CY		4974	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 669
	Steel's Weight															TON		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck															HR				
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 21,767
	Tunnel																			
	Equipment 's Disposal Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF						0.0							0	CF	$ -
	Dismantling Cost	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						0									
	Equipment 's Vol. Demolished																			
	Loading Costs															HR			DY	
	Transport Costs															TON		0	TON	$ -
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY	360				19	253					CY		253	CY	$ 2,530
	Concrete's Vol. Demolished																1.3	329	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													329	CY	$ 701
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													329	CY	$ 1,128
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													329	CY	$ 3,599
	Subtotal																			$ 7,958
	Tunnel Cover Excavation																			
	Main Tunnel Excavation Cost	Machine Excavation 1.5 CY	31 23 16 42 0250	$ 2.14	/BCY	320				666	7893					CY		7893	CY	$ 16,892
	Escape Tunnel Excavation Cost	Machine Excavation 1.5 CY	31 23 16 42 0250	$ 2.14	/BCY	120				232	1031					CY		1031	CY	$ 2,207
	Loading Cost																		CY	$ -
	Transportation Cost																		CY	$ -
	Disposal Costs																		CY	$ -
	Subtotal																			$ 19,099
	Concrete Demolition																			
	Demolition Cost															CY		0	CY	$ -
	Concrete's Vol. Demolished																	0	CY	
	Loading Cost																	0	CY	$ -
	Transportation Cost																	0	CY	$ -
	Disposal Costs																	0	CY	$ -
	Subtotal																			$ -
	Total																			$ 48,824

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Ref.	Description **e2 Conveyor2 P1_e7p1**	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Conveyor 2, Phase 1																			
	Structure's Demolition Cost	Steel Bld, Large	02 41 16 13 0020	$ 0.36	/CF	250	13	12			1444.4					CY		39000	CF	$ 9,828
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						1011							27300		
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 3,670
	Steel's Weight															TON		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck															HR				
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 13,498
	Equipment 's Disposal Cost																	0	CF	$ -
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs															HR			DY	
	Transport Costs															TON		0	TON	$ -
	Disposal Costs																			
	Subtotal																			$ -
	Pier C2-5																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	26	12	3			35					CY		37	CY	$ 735
	Concrete's Vol. Demolished					3.5	2	4			1				2		1.3	48	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													48	CY	$ 102
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													48	CY	$ 165
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													48	CY	$ 525
	Subtotal																			$ 1,527
	Pier C2-6																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	26	12	3			35					CY		37	CY	$ 735
	Concrete's Vol. Demolished					3.5	2	4			1				2		1.3	48	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													48	CY	$ 102
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													48	CY	$ 165
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													48	CY	$ 525
	Subtotal																			$ 1,527
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY											CY		0	CY	$ -
	Concrete's Vol. Demolished																1.3	0	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													0	CY	$ -
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													0	CY	$ -
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													0	CY	$ -
	Subtotal																			$ -
	Total																			$ 16,552

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Ref.	Description e2 Conveyor2 P2_e7p2	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Conveyor 2, Phase 2																			
	Structure's Demolition Cost	Steel Bld, Large	02 41 16 13 0020	$ 0.36	/CF	630	13	12			3640					CY		98280	CF	$ 24,767
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						2548							68796		
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 9,249
	Steel's Weight															TON		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck															HR				
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 34,016
	Bent C2-1 (Pad)																			
	Concrete Demolition																			
	Demolition Cost - Pad	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY						0					CY		0	CY	$ -
	Concrete's Vol. Demolished																1.3	0	CY	
	Loading Costs	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													0	CY	$ -
	Transport Costs	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													0	CY	$ -
	Disposal Cost, Non Steel & Steel	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													0	CY	$ -
	Subtotal																			$ -
	Bents C2-2 & C2-3 (Pads)																			
	Concrete Demolition																			
	Demolition Cost - Pad	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	16	9	3	*(C2-2)*		16					CY		56	CY	$ 1,120
	Concrete's Vol. Demolished					20	18	3	*(C2-3)*		40						1.3	73	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													73	CY	$ 155
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													73	CY	$ 250
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													73	CY	$ 799
	Subtotal																			$ 2,324
	Bent C2-4 (Pad)																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	26	12	3			35					CY		37	CY	$ 735
	Concrete's Vol. Demolished					3.5	2	4	*(Piers)*		1				2		1.3	48	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													48	CY	$ 102
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													48	CY	$ 165
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													48	CY	$ 525
	Subtotal																			$ 1,527
	Conv 1 - Conv 2 Transition																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	30	27.5	3			92					CY		92	CY	$ 1,833
	Concrete's Vol. Demolished																1.3	119	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													119	CY	$ 253
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													119	CY	$ 408
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													119	CY	$ 1,302
	Subtotal																			$ 3,796
	Total																			$ 41,663

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Ref.	Description e2 Conveyor1_e8	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Conveyor 1 - Elevated *																			
	Structure's Demolition Cost	Steel Bld, Large	02 41 16 13 0020	$ 0.36	/CF	210	13	12			1213					CY		32760	CF	$ 8,256
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						849							22932		
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 3,083
	Steel's Weight															TON		0	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck															HR				
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 11,339
	Conveyor 1 - On-grade																			
	Structure's Demolition Cost	Steel Bld, Large	02 41 16 13 0020	$ 0.36	/CF	715	6	5			794					CY		21450	CF	$ 5,405
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						556							15015		
	Equipment 's Vol. Demolished																			
	Loading Costs															HR			DY	
	Transport Costs															TON		0	TON	$ -
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 2,019
	Subtotal																			$ 7,424
	Bent C1-2 (Pier)																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	14	1	3			2					CY		2	CY	$ 31
	Concrete's Vol. Demolished																1.3	2	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													2	CY	$ 4
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													2	CY	$ 7
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													2	CY	$ 22
	Subtotal																			$ 64
	Bent C1-1 (Pad)																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	10	3	3			3					CY		3	CY	$ 67
	Concrete's Vol. Demolished																1.3	4	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													4	CY	$ 9
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													4	CY	$ 14
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													4	CY	$ 44
	Subtotal																			$ 134
	Mine Belt to Conveyor 1 Transition																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Footer/Foundation	Confidential Bid	$ 20.00	/CY	25	16	3			44					CY		44	CY	$ 889
	Concrete's Vol. Demolished																1.3	58	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													58	CY	$ 124
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													58	CY	$ 199
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													58	CY	$ 635
	Subtotal																			$ 1,847
	Total																			$ 20,808

** Added 100' to length for cost of demolition of Conveyor 1 and Mine Belt counterweight towers*

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Ref.	Description **e2 SealPortals_e9**	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Structure's Demolition Cost	Seal Portals	Confidential Bid	$ 34,900	/EA										1	EA		1	EA	$ 34,900
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 34,900
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Cost, Non Steel & Steel																			
	Subtotal																			$ -
	Abandon Borehole																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			$ 34,900

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Ref. ORIG:	Description **e2 Culvert_e10**	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Structure's Demolition Cost	Machine Excavation 3/4 CY	31 23 16 16 6035	$ 21.10	/BCY	800	3	2			178					BCY		178	LF	$ 3,756
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 3,756
	Equipment 's Disposal Cost	Plasic Pipe - 30-inch	02 41 13 38 1900	$ 9.67	/LF	800										LF		800	LF	$ 7,736
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 7,736
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 11,492

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Ref. ORIG:	Description **e2 Culvert_e11**	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Structure's Demolition Cost	Machine Excavation 3/4 CY	31 23 16 16 6035	$ 21.10	/BCY	760	3	2			169					BCY		169	LF	$ 3,566
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 3,566
	Equipment 's Disposal Cost	Plasic Pipe - 30-inch	02 41 13 38 1900	$ 9.67	/LF	760										LF		760	LF	$ 7,349
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 7,349
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 10,915

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Ref. ORIG:	Description **e2_WaterTank_e12**	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Structure's Demolition Cost	Steel Bld, Large	02 41 16 13 0020	$ 0.36	/CF			25	26		491					CY		13257	CF	$ 3,343
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						344					CY		9287	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 1,249
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck				/day															$ -
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 4,592
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY		0.5	1	26		1.5					CY		2	CY	$ 20
	Concrete's Vol. Demolished																1.3	3	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													3	CY	$ 6
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													3	CY	$ 10
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CY													3	CY	$ 33
	Subtotal																			$ 69
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 4,681

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Ref. ORIG:	Description e2_VentFan_e13	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF						29167					CF		29167	CF	$ 7,350
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						756					CY		20417	CF	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 2,745
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 10,095
	Equipment 's Disposal Cost	Seal Shaft	Confidential Invoice	$ 40,000	/EA										1					$ 40,000
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 40,000
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY						44					CY		44	CY	$ 440
	Concrete's Vol. Demolished																1.3	57	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													57	CY	$ 121
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													57	CY	$ 196
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													57	CY	$ 624
	Subtotal																			$ 1,381
	Borehole Abandonment	Plug Small Borehole	Nevada Mine Cost E	$ 509.00	/EA										4					$ 2,036
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			$ 2,036
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 53,512

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Ref. ORIG:	Description **e2_Powerline_e14**	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Structure's Demolition Cost																			
	Structure's Vol. Demolished																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			
	Equipment 's Disposal Cost																			
	Dismantling Cost	Powerpole	02 41 13 80 0100	$ 312.50	EA										18	EA		18	EA	$ 5,625
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 5,625
	Equipment 's Disposal Cost																			
	Dismantling Cost	Wire Removal	26 05 05 10 1900	$ 31.00	CLF	3600										LF		36	CLF	$ 1,116
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 1,116
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 6,741

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Ref. ORIG.	Description Rock Dust Bin e15	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Rock Dust Bin e15																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	$ 0.36	/CF	15	15	40			333.3					CY		9000	CF	$ 2,268
	Structure's Vol. Demolished	Reduction due to no interior walls	02 41 16 13 0750	30.00%	%						233					CY		6300	CF	
	Rubble's Weight (exclude steel)															TON/CY				
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck															HR				
	Transportation Cost Non Steel Drive																		TON	$ -
	Disposal Cost, Non Steel & Steel	Disposal at Landfill	Emery CO Landfill	$ 3.63	/CY															$ 847
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 3,115
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			
	Piers																			
	Concrete Demolition																			
	Demolition Cost	Concrete Demolition-Floor	Confidential Bid	$ 10.00	/CY			5	3		1.3				4	CY		5.2	CY	$ 52
	Concrete's Vol. Demolished																1.3	7	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1300	$ 2.13	/CY													7	CY	$ 15
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23 20 1014	$ 3.43	/CY													7	CY	$ 24
	Disposal Costs	Disposal on site	02 41 16 17 4200	$ 10.94	/CF													7	CY	$ 77
	Subtotal																			$ 168
	Wall's Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			
	Total																			$ 3,283

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CHAPTER IV

APPENDIX IV-9-B

BOND SUPPORT
EARTHWORK COSTS

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Inserted 11/2019

Map Ref.	Description	Cost
	Backfill and Grade Portal Area 01	$ 263,692
	Coal Fines Removal 02	$ 188,941
	Roadside Berms 04	$ 11,317
	Dike Improvements 05	$ 21,945
	Pond No One 06	$ 129,962
	Pond No Two 07	$ 21,945
	Pond No Three 08	$ 2,400
	Pond No Four 09	$ 25,375
	Pond No Five 10	$ 10,630
	Pond No Six 11	$ 63,437
	Pond No 1 Road 12	$ 1,030
	Pump No 1 Road 13	$ 1,371
	Tank Road 14	$ 1,371
	MineYardRoads15	$ 13,031
	The 4th East Portal 16	$ 560,143
	Emery 2 Boxcut_17	$ 663,640
	Pond No 3_18	$ 10,972
	Berms UB1-UB2_19	$ 1,330
	Switchback Road_20	$ 22,185
	Total	$ 2,014,717

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	Cost Reference		Equipment	Hourly Operating	Equipment	Operator's Hourly
description	Year	Page	Cost	Costs	Overhead	Wage Rate
627G EROPS	2018	RS Means, Union	24470	137.25	0.1	81.05
D7R DS Series II	2018	RS Means, Union	13930	61.65	0.1	81.05
D8R Semi	2018	RS Means, Union	19320	79.6	0.1	81.05
14M EROPS	2018	RS Means, Union	13455	54.75	0.1	81.05
5,000 gal H2O truck Diesel	2018	RS Means, Union	5440	39.4	0.1	65.25
Pickup Crew 4x4 1 ton 340 hp	2018	RS Means, Union	960	14	0.1	60.70
CLAB	2018	RS Means, Union				60.70
Foreman Average, Outside	2018	RS Means, Union				83.20
D6T XL Semi-U EROPS	2018	RS Means, Union	12385	53.55	0.1	81.05
Multi-Shank Ripper 190-259 P	2018	RS Means, Union	1970	6.9	0.1	81.05
988H EROPS	2018	RS Means, Union	18835	90.6	0.1	81.05
776d	2018	RS Means, Union	26090	125.6	0.1	81.05
450e	2018	RS Means, Union	1860	32.2	0.1	81.05
6X4 45,000lbs 8-10 CY	2018	RS Means, Union	3490	35.15	0.1	60.70

			Bare Rate			
Line Channel	RS Means 2017	334713531300	2.07			
			$/sq ft	*Used 2017 Rate, not in 2018 RS Means*		

Wage Rates: RS Means, 2018, National Average, Total O&P

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery Deep Mine Backfilling and Grading Backfill and Grade Portal Area 01															
627G EROPS	$ 24,470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	53,970	CY	702	CY/HR	76.9	HR	$ 177,622
D7R DS Series II	$ 13,930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					76.9	HR	$ 18,143
D8R Semi	$ 19,320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					76.9	HR	$ 22,252
14M EROPS	$ 13,455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					76.9	HR	$ 17,331
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					76.9	HR	$ 10,965
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					76.9	HR	$ 6,313
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					76.9	HR	$ 4,668
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					76.9	HR	$ 6,398
Subtotal															$ 263,692

Balance remaining in Temporary Waste Disposal Site after Emery 2 Boxcut and Switchback Road backfill = 41,070 cy
Extra volume included in bonding calculation for future additional material = 12,900 cy
Total capacity of Temporary WDS bonded under this revision = 108,800 + 12,900 = 121,700 cy

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery Deep Mine Backfilling and Grading Coal Fines Removal 02															
627G EROPS	$ 24.470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	38700	CY	702	CY/HR	55.1	HR	$ 127,269
D7R DS Series II	$ 13.930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					55.1	HR	$ 13,000
D8R Semi	$ 19.320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					55.1	HR	$ 15,944
14M EROPS	$ 13.455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					55.1	HR	$ 12,418
5,000 gal H2O truck Diesel	$ 5.440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					55.1	HR	$ 7,857
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					55.1	HR	$ 4,524
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					55.1	HR	$ 3,345
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					55.1	HR	$ 4,584
Subtotal															$ 188,941

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery Deep Mine Backfilling and Grading Roadside Berms 04															
627G EROPS	$ 24.470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	2300	CY	702	CY/HR	3.3	HR	$ 7,622
D7R DS Series II	$ 13,930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					3.3	HR	$ 779
D8R Semi	$ 19,320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					3.3	HR	$ 955
14M EROPS	$ 13,455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					3.3	HR	$ 744
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					3.3	HR	$ 471
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					3.3	HR	$ 271
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					3.3	HR	$ 200
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					3.3	HR	$ 275
Subtotal															$ 11,317

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery Deep Mine Backfilling and Grading Dike Improvements 05															
627G EROPS	$ 24,470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	4500	CY	702	CY/HR	6.4	HR	$ 14,783
D7R DS Series II	$ 13,930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					6.4	HR	$ 1,510
D8R Semi	$ 19,320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					6.4	HR	$ 1,852
14M EROPS	$ 13,455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					6.4	HR	$ 1,442
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					6.4	HR	$ 913
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					6.4	HR	$ 525
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					6.4	HR	$ 388
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					6.4	HR	$ 532
Subtotal															$ 21,945

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery Deep Mine Backfilling and Grading Pond No One 06															
627G EROPS	$ 24.470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	26600	CY	702	CY/HR	37.9	HR	$ 87,541
D7R DS Series II	$ 13,930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					37.9	HR	$ 8,942
D8R Semi	$ 19,320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					37.9	HR	$ 10,967
14M EROPS	$ 13,455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					37.9	HR	$ 8,542
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					37.9	HR	$ 5,404
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					37.9	HR	$ 3,112
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					37.9	HR	$ 2,301
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					37.9	HR	$ 3,153
Subtotal															$ 129,962

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery Deep Mine Backfilling and Grading Pond No Two 07															
627G EROPS	$ 24,470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	4500	CY	702	CY/HR	6.4	HR	$ 14,783
D7R DS Series II	$ 13,930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					6.4	HR	$ 1,510
D8R Semi	$ 19,320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					6.4	HR	$ 1,852
14M EROPS	$ 13,455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					6.4	HR	$ 1,442
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					6.4	HR	$ 913
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					6.4	HR	$ 525
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					6.4	HR	$ 388
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					6.4	HR	$ 532
Subtotal															$ 21,945

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery Deep Mine Backfilling and Grading Pond No Three 08															
627G EROPS	$ 24.470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	500	CY	702	CY/HR	0.7	HR	$ 1,617
D7R DS Series II	$ 13.930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					0.7	HR	$ 165
D8R Semi	$ 19.320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					0.7	HR	$ 203
14M EROPS	$ 13.455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					0.7	HR	$ 158
5,000 gal H2O truck Diesel	$ 5.440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					0.7	HR	$ 100
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					0.7	HR	$ 57
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					0.7	HR	$ 42
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					0.7	HR	$ 58
Subtotal															$ 2,400

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery Deep Mine Backfilling and Grading Pond No Four 09															
627G EROPS	$ 24,470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	5200	CY	702	CY/HR	7.4	HR	$ 17,092
D7R DS Series II	$ 13,930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					7.4	HR	$ 1,746
D8R Semi	$ 19,320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					7.4	HR	$ 2,141
14M EROPS	$ 13,455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					7.4	HR	$ 1,668
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					7.4	HR	$ 1,055
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					7.4	HR	$ 608
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					7.4	HR	$ 449
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					7.4	HR	$ 616
Subtotal															$ 25,375

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery Deep Mine Backfilling and Grading Pond No Five 10															
627G EROPS	$ 24,470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	2200	CY	702	CY/HR	3.1	HR	$ 7,160
D7R DS Series II	$ 13,930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					3.1	HR	$ 731
D8R Semi	$ 19,320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					3.1	HR	$ 897
14M EROPS	$ 13,455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					3.1	HR	$ 699
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					3.1	HR	$ 442
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					3.1	HR	$ 255
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					3.1	HR	$ 188
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					3.1	HR	$ 258
Subtotal															$ 10,630

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery Deep Mine Backfilling and Grading Pond No Six 11															
627G EROPS	$ 24,470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	13000	CY	702	CY/HR	18.5	HR	$ 42,731
D7R DS Series II	$ 13,930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					18.5	HR	$ 4,365
D8R Semi	$ 19,320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					18.5	HR	$ 5,353
14M EROPS	$ 13,455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					18.5	HR	$ 4,169
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					18.5	HR	$ 2,638
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					18.5	HR	$ 1,519
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					18.5	HR	$ 1,123
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					18.5	HR	$ 1,539
Subtotal															$ 63,437

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery Deep Mine Backfilling and Grading Pond No 1 Road 12															
627G EROPS	$ 24,470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	200	CY	702	CY/HR	0.3	HR	$ 693
D7R DS Series II	$ 13,930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					0.3	HR	$ 71
D8R Semi	$ 19,320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					0.3	HR	$ 87
14M EROPS	$ 13,455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					0.3	HR	$ 68
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					0.3	HR	$ 43
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					0.3	HR	$ 25
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					0.3	HR	$ 18
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					0.3	HR	$ 25
Subtotal															$ 1,030

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery Deep Mine Backfilling and Grading Pump No 1 Road 13															
627G EROPS	$ 24,470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	300	CY	702	CY/HR	0.4	HR	$ 924
D7R DS Series II	$ 13,930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					0.4	HR	$ 94
D8R Semi	$ 19,320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					0.4	HR	$ 116
14M EROPS	$ 13,455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					0.4	HR	$ 90
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					0.4	HR	$ 57
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					0.4	HR	$ 33
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					0.4	HR	$ 24
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					0.4	HR	$ 33
Subtotal															$ 1,371

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery Deep Mine Backfilling and Grading Tank Road 14															
627G EROPS	$ 24,470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	300	CY	702	CY/HR	0.4	HR	$ 924
D7R DS Series II	$ 13,930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					0.4	HR	$ 94
D8R Semi	$ 19,320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					0.4	HR	$ 116
14M EROPS	$ 13,455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					0.4	HR	$ 90
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					0.4	HR	$ 57
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					0.4	HR	$ 33
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					0.4	HR	$ 24
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					0.4	HR	$ 33
Subtotal															$ 1,371

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery Deep Mine Backfilling and Grading MineYardRoads15															
627G EROPS	$ 24,470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	2700	CY	702	CY/HR	3.8	HR	$ 8,777
D7R DS Series II	$ 13,930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					3.8	HR	$ 897
D8R Semi	$ 19,320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					3.8	HR	$ 1,100
14M EROPS	$ 13,455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					3.8	HR	$ 856
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					3.8	HR	$ 542
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					3.8	HR	$ 312
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					3.8	HR	$ 231
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					3.8	HR	$ 316
Subtotal															$ 13,031

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
The 4th East Portal 16															
Grade berm into surrounding area															
D6T XL Semi-U EROPS	$ 12,385	$ 53.55	10%	$ 81.05	$ 217.36	1	$ 217.36	$/HR	3721	CY	189	CY/HR	19.7	HR	$ 4,282
Partial Backfilling of Portal Boxcut															
D8R Semi	$ 19,320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR	34277	CY	287	CY/HR	119.4	HR	$ 34,550
Reclamation of In Place Topsoil															
D6T XL Semi-U EROPS	$ 12,385	$ 53.55	10%	$ 81.05	$ 217.36	1	$ 217.36	$/HR	12100	CY	1455	CY/HR	8.3	HR	$ 1,804
Multi-Shank Ripper 190-259 P	$ 1,970	$ 6.90	10%	$ 81.05	$ 100.95	1	$ 100.95	$/HR					8.3	HR	$ 838
Material Stock Pile															
988H EROPS	$ 18,835	$ 90.60	10%	$ 81.05	$ 298.43	1	$ 298.43	$/HR	113711	CY	349	CY/HR	325.8	HR	$ 97,228
776d	$ 26,090	$ 125.60	10%	$ 81.05	$ 382.27	2	$ 764.55	$/HR					325.8	HR	$ 249,090
Topsoil															
988H EROPS	$ 18,835	$ 90.60	10%	$ 81.05	$ 298.43	1	$ 298.43	$/HR	10440	CY	465	CY/HR	22.5	HR	$ 6,715
6X4 45,000lbs 8-10 CY	$ 3,490	$ 35.15	10%	$ 60.70	$ 121.18	3	$ 363.53	$/HR					22.5	HR	$ 8,179
Pocking															
450e	$ 1,860	$ 32.20	10%	$ 81.05	$ 128.10	1	$ 128.10	$/HR	8873	CY	192	CY/HR	46.2	HR	$ 5,918
Support Personel and Equipment															
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					353	HR	$ 29,370
CLAB				$ 60.70	$ 60.70	2	$ 121.40	$/HR					353	HR	$ 42,854
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					353	HR	$ 28,981
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					353	HR	$ 50,334
Subtotal															**$ 560,143**

Topsoil volume changed due to previous error. Actual volume in stockpile = 10,440 cy (Chapter IV,Page A-2a revised 1/2004 and Figure IV-15 dated 4-2003)

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Emery 2 Boxcut_17															
Trucked to Boxcut from Emery 2 Fill															
988H EROPS	$ 18,835	$ 90.60	10%	$ 81.05	$ 298.43	1	$ 298.43	$/HR	84,900	CY	349	CY/HR	243.3	HR	$ 72,608
776d	$ 26,090	$ 125.60	10%	$ 81.05	$ 382.27	2	$ 764.55	$/HR					243.3	HR	$ 186,015
Trucked to Vent Shaft from Waste Disposal Site															
988H EROPS	$ 18,835	$ 90.60	10%	$ 81.05	$ 298.43	1	$ 298.43	$/HR	900	CY	349	CY/HR	2.6	HR	$ 776
776d	$ 26,090	$ 125.60	10%	$ 81.05	$ 382.27	2	$ 764.55	$/HR					2.6	HR	$ 1,988
Trucked to Boxcut from Waste Disposal Site															
988H EROPS	$ 18,835	$ 90.60	10%	$ 81.05	$ 298.43	1	$ 298.43	$/HR	64,100	CY	349	CY/HR	183.7	HR	$ 54,822
776d	$ 26,090	$ 125.60	10%	$ 81.05	$ 382.27	2	$ 764.55	$/HR					183.7	HR	$ 140,448
Topsoil/Subsoil - Entire Permit															
988H EROPS	$ 18,835	$ 90.60	10%	$ 81.05	$ 298.43	1	$ 298.43	$/HR	18,500	CY	465	CY/HR	39.8	HR	$ 11,878
6X4 45,000lbs 8-10 CY	$ 3,490	$ 35.15	10%	$ 60.70	$ 121.18	3	$ 363.53	$/HR					39.8	HR	$ 14,468
Channel Lining Installation															
RS Means 33 47 13 53 1300							$ 2.07	$/SF	6,000	SF					$ 12,420
Pocking															
450e	$ 1,860	$ 32.20	10%	$ 81.05	$ 128.10	1	$ 128.10	$/HR	5,040	CY	192	CY/HR	26.3	HR	$ 3,369
Support Personel and Equipment															
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					384	HR	$ 31,949
CLAB				$ 60.70	$ 60.70	2	$ 121.40	$/HR					384	HR	$ 46,618
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					384	HR	$ 31,526
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					384	HR	$ 54,755
Subtotal															$ 663,640

Fill Volume Required for Development = 79,350 cy
Actual Fill Volume after Development = 84,900 cy
Current Total in WDS = 108,800 cy
Reclamation:
Boxcut Reclamation Backfill Required = 149,000 cy
From Development Fill to Boxcut = 84,900 cy
Fill Required to Complete Boxcut Backfill = 149,000 - 84,900 = 64,100 cy (Trucked from WDS)
Balance of Fill Remaining in WDS = 108,800 - 64,100 - 3,630 (to Swithcback Road) = 41,070 cy

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Pond No 3_18 Backfilling and Grading Pond 3 (Outfall 005)															
627G EROPS	$ 24.470	$ 137.25	10%	$ 81.05	$ 384.96	6	$ 2,309.78	$/HR	2250	CY	702	CY/HR	3.2	HR	$ 7,391
D7R DS Series II	$ 13.930	$ 61.65	10%	$ 81.05	$ 235.93	1	$ 235.93	$/HR					3.2	HR	$ 755
D8R Semi	$ 19.320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR					3.2	HR	$ 926
14M EROPS	$ 13.455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					3.2	HR	$ 721
5,000 gal H2O truck Diesel	$ 5.440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					3.2	HR	$ 456
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					3.2	HR	$ 263
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					3.2	HR	$ 194
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					3.2	HR	$ 266
Subtotal															$ 10,972

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Berms UB1-UB2_19 Backfilling and Grading Undisturbed Berms UB-1 & UB-2															
D6T XL Semi-U EROPS	$ 12,385	$ 53.55	10%	$ 81.05	$ 217.36	1	$ 217.36	$/HR	563	CY	189	CY/HR	3	HR	$ 652
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					3	HR	$ 246
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					3	HR	$ 182
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					3	HR	$ 250
Subtotal															$ 1,330

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	Equipment Cost	Hourly Operating Costs	Equipment Overhead	Operator's Hourly Wage Rate	Hourly Cost	Number of Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Units	Equip. + Labor Time/Dis.	Units	Cost
Switchback Road_20 Backfilling and Grading Switchback Road															
Trucked to Road from Stockpile															
988H EROPS	$ 18,835	$ 90.60	10%	$ 81.05	$ 298.43	1	$ 298.43	$/HR	3630	CY	349	CY/HR	10.4	HR	$ 3,104
776d	$ 26,090	$ 125.60	10%	$ 81.05	$ 382.27	2	$ 764.55	$/HR					10.4	HR	$ 7,951
D8R Semi	$ 19,320	$ 79.60	10%	$ 81.05	$ 289.36	1	$ 289.36	$/HR	3630	CY	287	CY/HR	12.6	HR	$ 3,646
14M EROPS	$ 13,455	$ 54.75	10%	$ 81.05	$ 225.37	1	$ 225.37	$/HR					12.6	HR	$ 2,840
5,000 gal H2O truck Diesel	$ 5,440	$ 39.40	10%	$ 65.25	$ 142.59	1	$ 142.59	$/HR					12.6	HR	$ 1,797
Pickup Crew 4x4 1 ton 340 hp	$ 960	$ 14.00	10%	$ 60.70	$ 82.10	1	$ 82.10	$/HR					12.6	HR	$ 1,034
CLAB				$ 60.70	$ 60.70	1	$ 60.70	$/HR					12.6	HR	$ 765
Foreman Average, Outside				$ 83.20	$ 83.20	1	$ 83.20	$/HR					12.6	HR	$ 1,048
Subtotal															$ 22,185

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CHAPTER IV

APPENDIX IV-9-C

BOND SUPPORT
REVEGETATION COSTS

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Inserted 11/2019

Ref.	Description	Cost
	Vegetation	
	Main Facilities 01	$ 560,971
	The 4th East Portals 02	$ 114,296
	Emery 2 03	$ 59,686
	Total	$ 734,953

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Ref.	Description **Main Facilities 01**	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Main Facilities 01																			
	Vegetation																			
	Spread Topsoil	Backfill structural 200 HP 300' Dirt	31 23 23 14 5420	$ 2.15	/CY						47800					CY		47800	CY	$ 102,770
	Till Soil	**75 HP Dozerw/scarifiers**	32 91 13 23 3100	$ 5.84	MSF						59.2					AC		2579	MSF	$ 15,061
	Seeding	Wildflower Seed Mix	32 92 19 14 5800	$ 40.40	MSF						59.2					AC		2579	MSF	$ 104,192
	Mulch	Hay 1 inch small power mulcher	32 91 13 16 0250	$ 62.70	/MSF						59.2					AC		2579	MSF	$ 161,703
	Fertilizer	**Fertilizer Hydro Spread**	32 01 90 13 0180	$ 5.00	/MSF						59.2					AC		2579	MSF	$ 12,895
	Erosion Control	Hay bale	31 25 14 16 1200	$ 884.00	/ton							59.2				Ton		59	TON	$ 52,156
	Subtotal																			$ 448,777
	Reseeding																			
	25% of Vegetation Cost																			$ 112,194
	Subtotal																			$ 112,194
	Total																			$ 560,971

Hay coverage based on Chapter III, page 4b.
*Unit Rates: RS Means, 2018, National Average, **Total O&P***

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Ref.	Description **The 4th East Portals 02**	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	The 4th East Portals 02																			
	Vegetation																			
	Seeding	Wildflower Seed Mix	32 92 19 14 5800	$ 40.40	MSF						16					AC		697	MSF	$ 28,159
	Mulch	Hay 1 inch small power mulcher	32 91 13 16 0250	$ 62.70	/MSF						16					AC		697	MSF	$ 43,702
	Fertilizer	Fetilizer Hydro Spread	32 01 90 13 0180	$ 5.00	/MSF						16					AC		697	MSF	$ 3,485
	Erosion Control	Hay bale	31 25 14 16 1200	$ 884.00	/ton							16				Ton		16	TON	$ 14,144
		Revegetation mat, webbed	31 25 14 16 0120	$ 4.17	SY	300	14									FT		467	SY	$ 1,947
	Subtotal																			$ 91,437
	Reseeding																			
	25% of Vegetation Cost																			$ 22,859
	Subtotal																			$ 22,859
	Total																			$ 114,296

Hay coverage based on Chapter III, page 4b.
Unit Rates: RS Means, 2018, National Average, Total O&P

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Ref.	Description **Emery 2 03**	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
	Main Facilities 01																			
	Vegetation																			
	Till Soil	75 HP Dozerw/scarifiers	32 91 13 23 3100	$ 5.84	MSF						8.2					AC		357	MSF	$ 2,085
	Seeding	Wildflower Seed Mix	32 92 19 14 5800	$ 40.40	MSF						8.2					AC		357	MSF	$ 14,423
	Mulch	Hay 1 inch small power mulcher	32 91 13 16 0250	$ 62.70	/MSF						8.2					AC		357	MSF	$ 22,384
	Fertilizer	Fetilizer Hydro Spread	32 01 90 13 0180	$ 5.00	/MSF						8.2					AC		357	MSF	$ 1,785
	Erosion Control	Hay bale	31 25 14 16 1200	$ 884.00	/ton							8.2				Ton		8	TON	$ 7,072
	Subtotal																			$ 47,749
	Reseeding																			
	25% of Vegetation Cost																			$ 11,937
	Subtotal																			$ 11,937
	Total																			$ 59,686

Hay coverage based on Chapter III, page 4b.
Unit Rates: RS Means, 2018, National Average, Total O&P

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CHAPTER IV

APPENDIX IV-9-D

BOND SUPPORT CALCULATION SUPPORT

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Bond Calculation Backup

The following are screenshots of NDEP Standardized Reclamation Cost Estimator v 1.4 used to calculate borehole abandonment costs in Demo bond calculations, Chapter IV, Part IV.B.

STANDARDIZED RECLAMATION COST ESTIMATOR

Version 1.4.1
Build 017a (revised to work with Excel 2013 - 01 Aug 2014)
Approved for use in Nevada, August 1, 2012

COST DATA FILE INFORMATION

File Name:	borehole Emery Mine__SRCE_Version_1_4_1_017_NV.xlsm
Cost Data File:	SRCE_Cost_Data_File_1_12_Std_2015.xlsm
Cost Data Date:	August 1, 2015
Cost Data Basis:	User Data — Data Cost Units: Imperial
Author/Source:	Nevada Division of Environmental Protection (NDEP) & NV BLM

PROJECT INFORMATION

Property/Mine Name:	Emery Mine — Property Code:
Project Name:	Emery Mine
Date of Submittal:	July 8, 2016 — Average Altitude: 5930 ft
Select One:	○ Notice or Sm Exploration Plan ○ Lg Exploration Plan ● Mine Operation
Select One:	○ Private Land ● Public or Public/Private
Cost Estimate Type:	Surety
Cost Basis Category:	S. Nevada Notice Level
Cost Basis Description:	Clark, Esmeralda, Lincoln and Nye Counties

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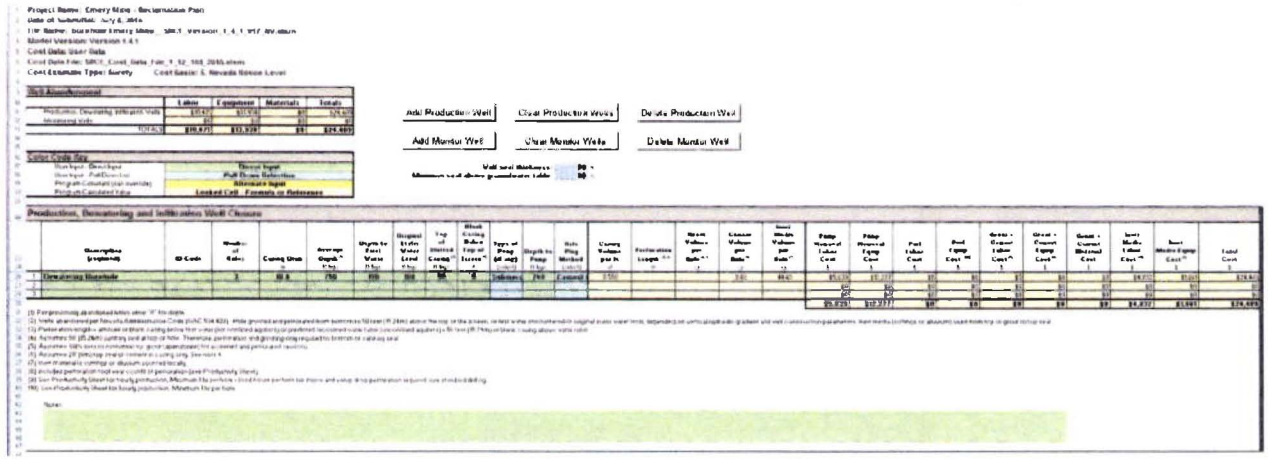

Project Name: Emery Mine
Project Date: July 8, 2016
Model Version: Version 1.4.1
File Name: borehole Emery Mine__SRCE_Version_1_4_1_017_NV.xlsm
Data Cost File: SRCE_Cost_Data_File_1_12_Std_2015.xlsm
Cost Basis: S. Nevada Notice Level

A. Earthwork/Recontouring	Labor [1]	Equipment [2]	Materials	Total
Exploration	$0	$0	$0	$0
Exploration Roads & Drill Pads	$0	$0	$0	$0
Roads	$0	$0	$0	$0
Well Abandonment	$10,471	$13,938	$0	$24,409
Pits	$0	$0	N/A	$0
Quarries & Borrow Areas	$0	$0	$0	$0
Underground Openings	$0	$0	$0	$0
Process Ponds	$0	$0	$0	$0
Heaps	$0	$0	$0	$0
Waste Rock Dumps	$0	$0	$0	$0
Landfills	$0	$0	$0	$0
Tailings	$0	$0	$0	$0
Foundation & Buildings Areas	$0	$0	$0	$0
Yards, Etc.	$0	$0	$0	$0
Drainage & Sediment Control	$0	$0	$0	$0
Generic Material Hauling	$0	$0	$0	$0
Other User Costs (from Other User sheet)	$0	$0	$0	$0
Other**				$0
Subtotal	**$10,471**	**$13,938**	**$0**	**$24,409**
Mob/Demob if included in Other User sheet	$0	$0	$0	$0
Mob/Demob				$0
Subtotal "A"	**$10,471**	**$13,938**	**$0**	**$24,409**

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Revised 11/2019

STANDARDIZED RECLAMATION COST ESTIMATOR

Version 1.4.1
Build 017a (revised to work with Excel 2013 - 01 Aug 2014)
Approved for use in Nevada, August 1, 2012

COST DATA FILE INFORMATION

File Name	Emery 2 Mine__SRCE_Version_1_4_1_017_NV.xlsm
Cost Data File	SRCE_Cost_Data_File_1_12_Std_2015.xlsm
Cost Data Date	August 1, 2015
Cost Data Basis	User Data — Data Cost Units: Imperial
Author/Source	Nevada Division of Environmental Protection (NDEP) & NV BLM

PROJECT INFORMATION

Property/Mine Name	Emery 2 Mine — Property Code:
Project Name	Emery 2 Mine Borehole Seal
Date of Submittal	September 14, 2016 — Average Altitude: 5930 ft
Select One	Notice or Sm Exploration Plan / Lg Exploration Plan / Mine Operation
Select One	Private Land / Public or Public/Private
Cost Estimate Type	Survey
Cost Basis Category	S. Nevada Notice Level
	Clark, Esmeralda, Lincoln and Nye Counties
Cost Basis Description	

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Project Name: Emery 2 Mine Borehole Seal
Project Date: September 14, 2016
Model Version: Version 1.4.1
File Name: Emery 2 Mine__SRCE_Version_1_4_1_017_NV.xlsm
Data Cost File: SRCE_Cost_Data_File_1_12_Std_2015.xlsm
Cost Basis: S. Nevada Notice Level

A. Earthwork/Recontouring	Labor [1]	Equipment [2]	Materials	Total
Exploration	$0	$0	$0	$0
Exploration Roads & Drill Pads	$0	$0	$0	$0
Roads	$0	$0	$0	$0
Well Abandonment	$379	$130	$0	$509
Pits	$0	$0	N/A	$0
Quarries & Borrow Areas	$0	$0	$0	$0
Underground Openings	$0	$0	$0	$0
Process Ponds	$0	$0	$0	$0
Heaps	$0	$0	$0	$0
Waste Rock Dumps	$0	$0	$0	$0
Landfills	$0	$0	$0	$0
Tailings	$0	$0	$0	$0
Foundation & Buildings Areas	$0	$0	$0	$0
Yards, Etc.	$0	$0	$0	$0
Drainage & Sediment Control	$0	$0	$0	$0
Generic Material Hauling	$0	$0	$0	$0
Other User Costs (from Other User sheet)	$0	$0	$0	$0
Other"				$0
Subtotal	**$379**	**$130**	**$0**	**$509**
Mob/Demob if included in Other User sheet	$0	$0	$0	$0
Mob/Demob				$0
Subtotal "A"	$379	$130	$0	$509

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Revised 11/2019

Project Name: Emery 2 Mine Borehole Seal - Reclamation Plan
Date of Submittal: September 14, 2016
File Name: Emery 2 Mine__SRCE_Version_1_4_1_017_HV.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: SRCE_Cost_Data_File_1_12_Std_2015.xlsm
Cost Estimate Type: Surety **Cost Basis:** S. Nevada Notice Level

Well Abandonment

	Labor	Equipment	Materials	Totals
Production, Dewatering, Infiltration Wells	$379	$130	$0	$509
Monitoring Wells	$0	$0	$0	$0
TOTALS	$379	$130	$0	$509

Add Production Well | Clear Production Wells | Delete Production Well

Add Monitor Well | Clear Monitor Wells | Delete Monitor Well

Color Code Key

User Input - Direct Input	**Direct Input**
User Input - Pull Down List	**Pull Down Selection**
Program Constant (can override)	**Alternate Input**
Program Calculated Value	**Locked Cell - Formula or Reference**

Well seal thickness: [ ] ft
Minimum seal above groundwater table: [ ] ft

Production, Dewatering and Infiltration Well Closure

	Description (required)	ID Code	Number of Holes	Casing Diam in	Average Depth[1] ft bgs	Depth to First Water ft bgs	Original Static Water Level ft bgs	Top of Slotted Casing[2] ft bgs	Blank Casing Below Top of Screen[3] ft	Type of Pump (if any) (select)	Depth to Pump ft bgs	Hole Plug Method (select)	Casing Volume per ft cf	Perforation Length[4,5] ft	Grout Volume per Hole[6,7] cy	Cement Volume per Hole[8] cy	Inert Media Volume per Hole[9] cy	Pump Removal Labor Cost $	Pump Removal Equip Cost $	Perf Labor Cost $	Perf Equip Cost[10] $	Grout + Cement Labor Cost[8] $	Grout + Cement Equip Cost[8] $	Grout + Cement Material Cost $	Inert Media Labor Cost[7,8] $	Inert Media Equip Cost[9] $	Total Cost $
1	Dewatering Borehole		1	4.0	150	0	0	0	0		150	Cement	0.090			0.10	0.43	$0	$0	$0	$0	$0	$0	$0	$0	$379	$130	$509
2																		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3																		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
																		$0	$0	$0	$0	$0	$0	$0	$0	$379	$130	$509

(1) For previously abandoned holes enter "0" for depth.
(2) Wells abandoned per Nevada Administrative Code (NAC 534.420). Hole grouted and perforated from bottom to 50 feet (15.24m) above the top of the screen, or first water encountered or original static water level, depending on vertical hydraulic gradient and well construction parameters. Inert media (cuttings or alluvium) used from top of grout to top seal.
(3) Perforation length = amount of blank casing below first water (for confined aquifers) or predicted recovered water table (unconfined aquifers) + 50 feet (15.24m) of blank casing above water table.
(4) Assumes 50' (15.24m) sanitary seal at top of hole. Therefore, perforation and grouting only required to bottom of sanitary seal.
(5) Assumes 100% loss to formation for grout (abandonite) for screened and perforated sections.
(6) Assumes 20' (6m) top seal of cement in casing only. See note 4.
(7) Inert material is cuttings or alluvium sourced locally.
(8) Includes perforation tool wear costs for perforation (see Productivity Sheet).
(9) See Productivity Sheet for hourly production. Minimum 1 hr per hole + fixed hours per hole for move and setup. If no perforation required, use standard drilling.
(10) See Productivity Sheet for hourly production. Minimum 1 hr per hole.

Notes:

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Revised 11/2019

The following documents the Emery County Landfill fees used to calculate construction debris disposal costs in Demo bond calculations, Chapter IV, Part IV.B.

RESOLUTION NO. 12-12-15 I

A RESOLUTION SETTING A TIPPAGE FEE FOR MATERIALS BROUGHT TO THE EMERY COUNTY LANDFILL

WHEREAS, the Emery County Commission finds it necessary to set a tippage fee for materials brought to the Emery County Landfill, and,

WHEREAS, Emery County Resolution No. 02-24-09 setting a tippage fee at the Emery County Landfill is difficult to regulate;

WHEREAS, the Emery County Commission held a public hearing to receive input from the citizens of Emery County on December 17, 2013 regarding landfill tippage fees; and

WHEREAS, public notice of the hearing was published according to law.

NOW, THEREFORE, BE IT RESOLVED by the Emery County Commission as follows:

1. Effective March 1, 2016, all loads in excess of 1,000 pounds, crossing the scales at the Emery County Landfill will be charged a fee of $10.00 per ton. Contaminated Soil will be charged a fee of $15.00 per ton. There will be no fee for the Emery County Cities and Towns roll-offs/container. See attached Exhibit

2. This fee may be waived ONLY by consent of the Emery County Commission in a regularly scheduled commission meeting if a hardship can be shown by those requesting such waiver.

3. Emery County Resolution No. 02-24-09 is hereby revoked in its entirety upon signing of this resolution.

DATED this 15th day of December, 2015.

Ethan Migliori, Chairman
Emery County Commission

ATTEST:

Brenda Tuttle, Emery County Clerk/Auditor

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Revised 11/2019

EXHIBIT

EMERY COUNTY LANDFILL TIPPAGE FEES

All loads crossing the scale 1,000 lbs. and under	No Charge
All load crossing the scale 1,001 lbs. and over	$10.00/ton
Contaminated soil	$15.00/ton
City/Town roll offs	No Charge

Effective date: March 1, 2016

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Revised 11/2019

A conversion rate of 0.24 tons/cubic yard is used to calculate tons of debris from known volumes.

Converting C&D Debris from Volume to Weight

A Fact Sheet for C&D Debris Facility Operators

Background: Florida regulations require that permitted C&D facilities in the State report to the Florida Department of Environmental Protection (FDEP), by April 1 of each year, the amounts and types of wastes managed during the previous year. This requirement for C&D facilities was developed, as with the certification of recyclers program, to help determine if Counties over a population of 75,000 will meet the 30 percent waste reduction goal set forth in the law.

Problem: The FDEP tracks the amount of waste managed by weight (in tons). Many C&D facilities do not have scales though and only measure their waste by volume (in cubic yards).

Solution: A simple equation can be used to convert the volume of C&D debris (in cubic yards or yd^3) to weight (in tons):

Weight of C&D Debris = Volume of C&D Debris X 0.24 tons/yd^3

Example Calculation:

A C&D disposal facility receives 100,000 cubic yards of C&D debris in one year. The number of tons of C&D debris is calculated as follows:

Weight of C&D Debris = 100,000 yd^3 X 0.24 tons/yd^3 of C&D

Weight of C&D Debris = 24,000 tons

How was the conversion factor calculated?

The conversion factor, or average bulk density, was calculated by measuring the actual weights of loads of mixed C&D from facilities in Florida and comparing those weights to the volumes of the loads. Specifically, researchers at the University of Florida measured the weights, in tons, of 171 different loads of C&D debris at 10 facilities in the State and recorded the volume, in cubic yards, of each truck or container weighed. The conversion factor was then calculated by dividing the total weight by the total volume. For mixed C&D loads in Florida, the average bulk density was measured to be 484 pounds per cubic yard or approximately 0.24 tons of C&D per cubic yard. The graph on the back shows the distribution of C&D bulk densities that were measured by the researchers.

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4th East Portal

WORKSHEET 1
DESCRIPTION OF THE WORST-CASE RECLAMATION SCENARIO

Worst Case - is at completion of mining when the coal reserve is exhausted, all facilities have been constructed and abandoned. Coal stockpile has been sold and removed from the site leaving the coal base. Coal handling facility were neglected the final years of maintenance and major parts for resale of salvage has already been removed. The site contains no valuable assets or mobile equipment.

The following discussion will present the tasks needed to be performed for returning the mine site to the original premining condition. See Plate III-1 of Chapter III of MRP.

I. Structure Demolition:

When returning site to post mining land use, all surface structures most be removed. This includes all man made items to include the following:

a. Crusher/Screen Facility - sized 25' x 30' x 40' constructed of metal sheeting, steel I-beams and reinforced concrete slab floor 25'x 30' x 2'. Cost of demolition includes removing floor and building.

b. Five structures included for the process coal transportation from the mine mouth to the loadout. Each structure is connected with the conveyor system. Two belts (740') transport the coal from the mine mouth to the crusher/screen processing building. The 200' section from the crusher to the coal stockpile is a radial stacker. The final 100' section of belt moves the coal from the stockpile to the loadout.

- 250' of 54" belt from the mine mouth to transfer point
- 490' of 48" belt from transfer point to the crusher/screen facility
- 200' of 48" belt on the radial stacker to the loadout.
- 100' of 48" from the pile to the loadout.
- Loadout structure 26' x 26' x 35'

c. 1.4 miles of powerline from the mine's main substation to the 4th East Portal. Powerline consists of 5 line hung on 32 overhead poles.

d. Water supply tank installed on concrete pad (37' dia x 1'). Cost of Demolition includes the cost of removing tank and concrete slab.

e. Rock dust tank - placed on concrete pad (8' x 10' x 1') - cost of demolition includes the cost of removing tank and concrete pad.

f. Ventilation Fan - concrete collar 16.5' diameter hole, fan and housing. Demolition cost includes fan housing, fan, and concrete collar. Backfilling included in earthwork.

g. Radial stacker - 10' x 75' x 1' - reinforced concrete.

h. Cattle Guard - 8' x 16' x 1' bottom + 2(2' x 16' x 1')sides - reinforced concrete

i. Wind Fence- 25 steel posts with concrete - posthole -7' depth by 24" dia

j. Concrete Barriers - prepored cast blocks - reusable, truck cost

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Revised 11/2019

Earthmoving Activity -

4th East development involved excavating a boxcut to ramp down to the coal seam. Ramp constructed 10% grade. with depth of approximately 70 ft. The boxcut is to be backfilled and restoration of an ephemeral stream channel through the backfilled boxcut. The portal consists of three entries which will require MSHA approved seals be constructed and backfilled in accordance with MRP (refer to page 16, chapter III). Site is to be returned to approximate original contour (AOC). Backfill material to come from the stored excavation material stockpile (see Plate IV-3, Chapter IV). Fill material is to be placed in three (3') foot lifts and compacted. The fill material primarily consists of blasted rock (sandstone) from the original excavation of the boxcut. The final three (3) foot lift is not to be compacted. Travel over the final lift should be limited and avoided by heavy rubber tired equipment.

In addition all waste coal material from the stockpile area is to be placed in the bottom of the boxcut. Sedimentation Pond #9 and the Diversion ditch are to be backfilled and graded into the surrounding topography.

Sedimentation pond is partially incised 0.3 ac-ft of sediment volume. The pod bottom to be sampled for toxicity and sediment placed in the mine's refuse pile if needed. Volume incised is 460 b.c.y.

Diversion ditch measures 500 feet in length with an average depth of 5 feet, bottom width of 6 ft and side slope of 2H:1V. Volume is 1,500 b.c.y.

Ventilation shaft to be backfilled with non toxic material from the excavation stockpile. Shaft measures 16.5 ft in diameter with a depth of 70 feet.

Non topsoil berms need to be graded back into the surrounding topography. This earthwork can be included with the final grading of the backfill prior to topsoiling. Rubber liner required (300' x 14') as part of stream restoration.

Topsoil Replacement

Topsoil stockpile is located adjacent to the excavation stockpile. The MRP requires for 7 to 8-inches of topsoil be spread over 10 acres of disturbed area where topsoil was originally salvaged. The plan notes the harvesting of cryptogams from the topsoil crust prior to disturbing for topsoiling activities. Refer to Plate III-1, Chapter III.

Revegetation

Under this MRP, topsoil was saved in-place underneath the excavation stockpile. The MRP requires that this in-place topsoil along with the original surface of the topsoil stockpile be ripped. The area involves 5 acres. The ripping of 12-inches with a spacing of 2-feet is required to decompress the soil horizons. These five acres will be roughened and seeded with a permanent seed mix and mulched. The 11 acres where topsoil is to be respread will be surface roughened prior to seeding and mulching with the seed mix. The surface roughening involves using a backhoe or excavator to develop shallow depressions randomly to the disturbed surface. Following mulching all cryptogam material shall be transplanted back into depressions formed from the roughening activity. Area of transplanting should be recorded and marked.

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CHAPTER IV

APPENDIX IV-9-E

BOND SUPPORT
BOND DELETION SUPPORT

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Bond Deletion Support
Facilities (Tabs) Removed From Bond Sheets

The following structures and areas have been removed from bond calculations due to demolition, relocation, reclamation, or duplication. Items that have been relocated have or will be added to the bond calculations under a different name. DEMO TAB refers to the bond calculation spreadsheet tab name for cross referencing purposes. These spreadsheets have been removed from the bond calculation excel file.

Earthwork and re-vegetation costs remain in the respective bond amounts where applicable.

Italicized text represents the test from the approved MRP or an older version of MRP to identify the structure or area. Photographs and portions of MRP maps are included to assist in locating the deleted items and documenting the removal of the structures.

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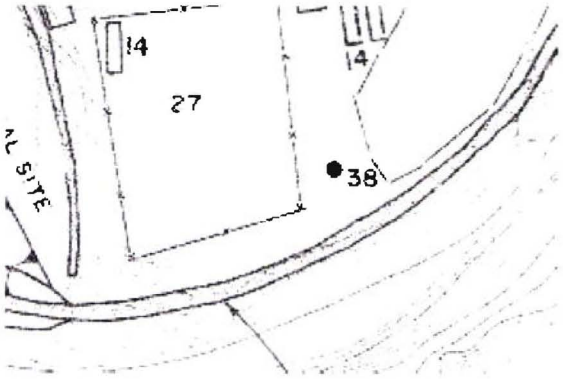
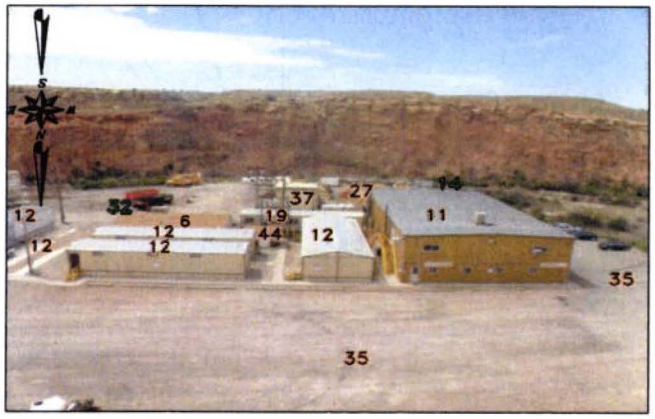
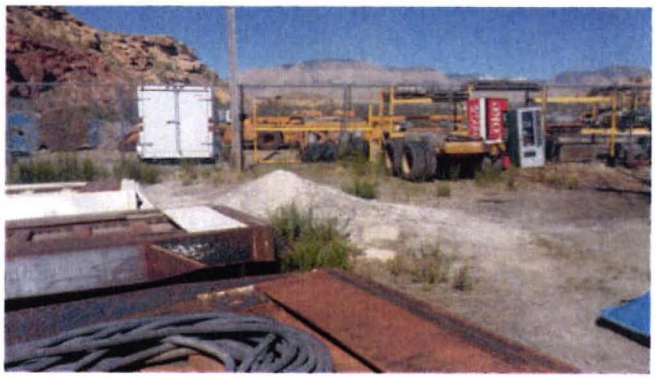
DEMO TAB: ROCK DUST SILO 07

This rock dust silo (*Map Code 38, Original Plate II-1, August 1990*) was originally located near the southeast corner of the main portal supply yard. The silo was moved to the 4th East Portal.

Original Plate II-1 8/90







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DEMO TAB: ROCK DUST SILO 07 (CONT.)

Rock Dust Silo (CH II, pg 12 Revised 7/91)

Map Code: 38, Plate II-1
Status: Existing – 3rd quarter 1982

This structure is a supported steel bin 11 ft. in diameter and 38 ft. high. It is used for bulk storage and delivery of rock dust and has a capacity of 100 tons. Located in the mine yard, it is within the approved drainage control system.

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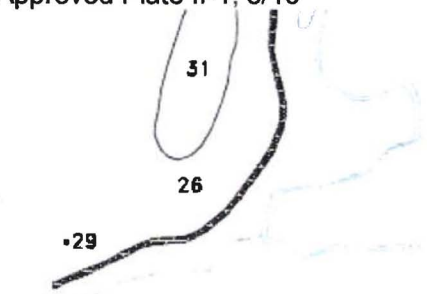
DEMO TAB: EXPLOSIVE STORAGE BUILDING 12

The Explosive storage building *(Map Code 29, Approved Plate II-1, May 2016)* was a portable container and has been removed for the permit.

Approved Plate II-1, 5/16



Explosives Storage (CH II, pg 9 Revised 2/08)
Map Code: 29, Plate II-1
Status: Existing – prior to 1975

The explosives storage consists of a prefabricated, skid-mounted sheet metal box measuring approximately 6 feet on a side. It is equipped with a heavy steel door and a lock guard. The explosives magazine is presently located near the scrap yard.

The Emery Mine does not currently use explosives for coal production: however, explosives are used from time to time for special projects. Therefore, only a minimal amount is in storage at a given time.

The explosives storage meets MSHA guidelines and is contained within the surface drainage control area.

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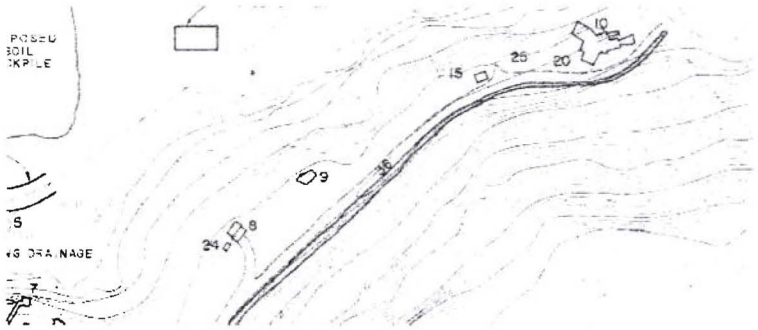
DEMO TAB: SEAL PORTALS 27

Seal Portals 27 bond calculation spreadsheet originally contained costs for 4 entries at the Main Portal as identified on Original Plate II-1, August 1990:

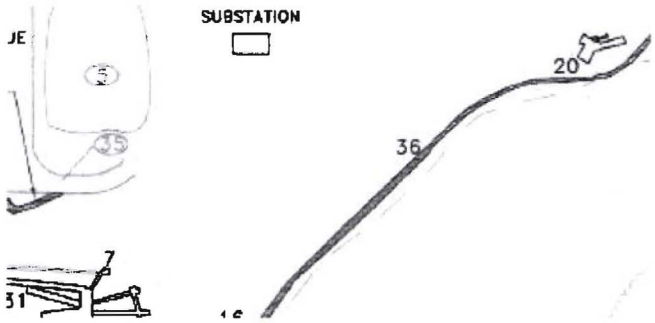
Map Code 7 – Coal Haulage Portal
Map Code 8 – Mine Access Portal
Map Code 9 – Auxiliary Intake Portal
Map Code 10 – Return Air Portal

All portals have been sealed. Final grading against the seals has been completed for all portals except Coal Haulage Portal. Demolition costs for all portals have been removed from bond calculations. Grading and re-vegetation costs remain in bond calculations. Return Air Portal was left off Approved Plate II-1, May 2016, but has been added to Plate II-1, July 2016.

Original Plate II-1 8/90



Approved Plate II-1, May 2016



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DEMO TAB: SEAL PORTALS 27 (CONT.)

Return Air Portal (CH II, pg 5 Revised November 2009)

Map Code 10, Plate II-1
Status: Existing – 3rd Quarter 1978

The return air portal is about 600 feet east of the mine access portal at the outcrop of the I zone. The opening is heavily supported with steel beams. Located at the return air portal is an 8-foot axial flow fan. The fan is slightly offset from the portal for explosion protection and provides the negative ventilating pressure for the mine. The ventilating air current is drawn into the mine through the intake portals and is discharged via the return air portal after circulating the required areas of the mine.

The fan and the immediate area around the portal are graded to provide drainage away from both structures.

Return Air portal

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Mine Access Portal, Main Facilities Area (CH II, pg 3, Revised August 1995)

Map Code 8, Plate II-1
Status: Existing – Prior to 1975

The mine access portal is approximately 300 feet east of the tipple at the outcrop of the I zone. The portal is equipped with a flood door to hold back possible flood waters and to protect the immediate opening from float rock which might fall from the canyon wall.

Inserted 07/2016
Revised 11/2019

DEMO TAB: SEAL PORTALS 27 (CONT.)

The mine access portal serves two purposes:
To allow access of rubber-tired vehicles for transportation of people and supplies into mine.
To serve as a primary intake airway.
Drainage around this portal is controlled by the approved drainage control system. Surface runoff from areas adjacent to the access portal flows into the mine portal.

Mine Access Portal

Coal Haulage Portal (CH II, pg 4, Revised October 2002)

Map Code 7, Plate II-1
Status: Existing – Prior to 1975

The coal haulage portal is located at the tipple and enters the canyon wall about 20 feet above the I zone. This portal and its associated entries are provided with box checks and man doors so the opening is isolated from the mine ventilation current. The coal haulage portal and mainline haulage entries are equipped with 48-inch conveyor systems, usually hung from the roof by chains. Coal is transported from the working sections by 42-inch conveyors and is transferred to the mainline conveyors at appropriate intersection. Coal leaving the haulage portal is dumped into the reclaim system and is then processed through the tipple.

The area around this opening is graded so the surface water flows away from the portal and is diverted to Sedimentation Pond 2.

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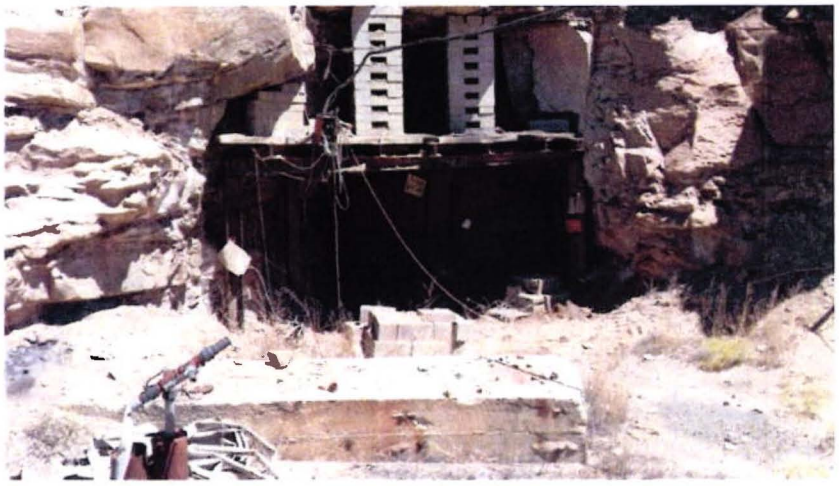
DEMO TAB: SEAL PORTALS 27 (CONT.)

Coal Haulage Portal



Auxiliary Intake Portal (CH II, pg 4, Revised October 2002)

Map Code 9, Plate II-1
Status: Existing – 3rd Quarter 1978

The auxiliary intake portal (about 100 feet east of the mine access portal at the outcrop of the I zone) is fenced in to prevent entrance of people or wildlife and is provided with warning signs. This portal serves as an additional intake airway for the mine and joins with mine access entries about 400 feet in by the surface.

Except for the area immediately surrounding this opening, the surface is graded away from the portal so surface drainage can be diverted to Pond 2.

Auxiliary Intake Portal

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DEMO TAB STORAGE TRAILERS THREE 25 (CH II, PG 6, REVISED JULY 1991)

The mobile storage trailers *(Map Code 14, Approved Plate II-1, May 2016)* originally located in the northwest corner of the main portal supply yard have been removed.

Approved Plate II-1, May 2016

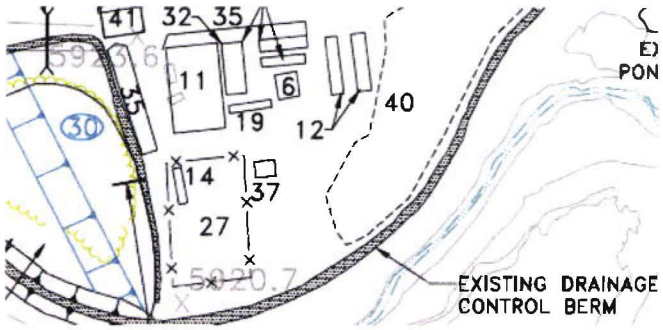

Photo looking north

Storage Trailers (CH II, pg 6, Revised July 1991)

Map Code 14, Plate II-1
Status: Existing – Prior to 1975

The 3 storage trailers are surplus highway units semi-permanently stationed near the warehouse. One unit is located within the fenced supply yard. These trailers provide covered storage for electric motors and large parts outside the warehouse and are located within the approved drainage control system.

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DEMO TAB METAL STORAGE BUILDING 20 (CH II, PG 6, REVISED JULY 1991)

The metal storage building *(Map Code 15, Original Plate II-1, 8/90)* previously located near the Return Air Portal has been removed.

Original Plate II-1 8/90

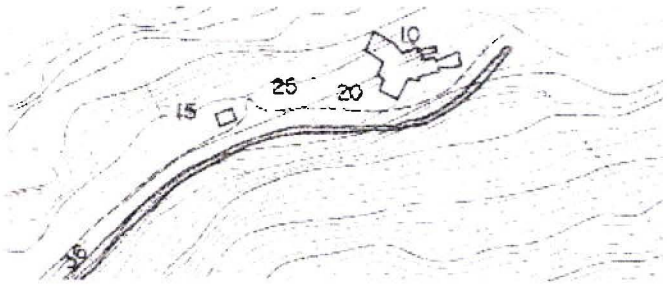

Photo looking NE

Google Earth 7/2016

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Revised 11/2019

DEMO TAB METAL STORAGE BUILDING 20 (CH II, PG 6, REVISED JULY 1991) (CONT.)

Storage Building (CH II, pg 6, Revised July 1991)

Map Code 15, Plate II-1
Status: Existing – Prior to 1975

The spare storage building constructed of cement block was once used as an explosives magazine. It is now used to store miscellaneous supplies, usually associated with mine safety (i.e., signs, reflectors, fire hose, etc.). This building is located within the approved drainage control area.

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Revised 11/2019

DEMO TAB TRUCK SCALE OLD 14 (CH II, PG 9, REVISED FEBRUARY 2008)

The old truck scale foundation *(Approved Plate II-1 Map Code 28 dated 5/16)* was located on the south side of the entrance road near Pond 8. It has been dismantled.

Approved Plate II-1, May 2016

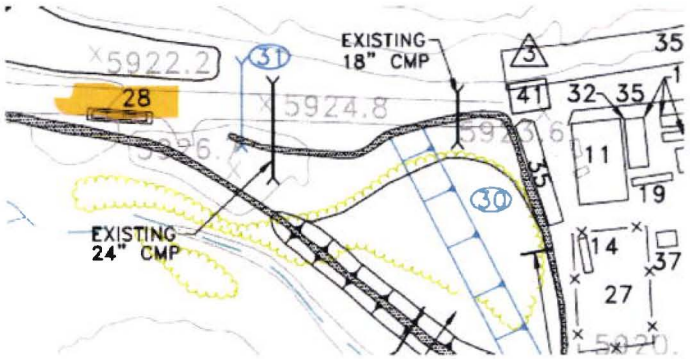

Photo looking East

Truck Scales (CH II, pg 9, Revised February 2008)

Map Codes 28 and 28A, Plate II-1
Status: Existing – Map Code 28: 3rd Quarter 1976
Map Code 28A: 4th Quarter 1989

Both truck scales consist of a standard highway scale unit of a size and capacity suitable for weighing medium duty highway coal trucks. Also associated with each scale is a small metal building in which the controls and read-out are located. The scales weigh the trucks before and after loading to determine the tonnage of coal being sold and are calibrated and certified by the State at least once each year. The truck scales are located within the approved surface drainage control area.

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Note: This language is referred to both the old and new truck scales. Cost remains in bond calculations for the new truck scale, Map Code 28A

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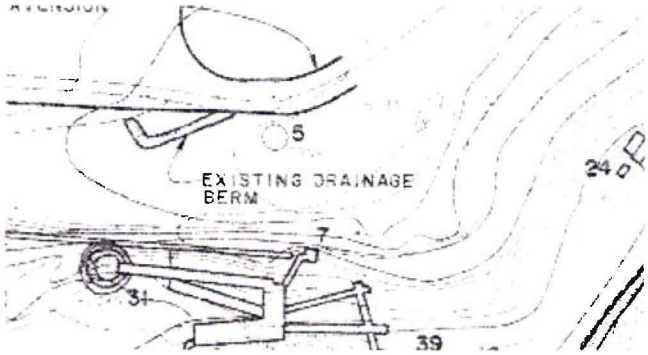
Revised 11/2019

DEMO TAB WATER TANK, 100,000-GALLON 22

The 100,000-gallon water tank *(Map Code 5, Original Plate II-1, August 1990)* was moved to the 4th East Portal. This Main Portal area has been reclaimed.



Google Earth Photo 7/2015

100,000-Gallon Water Tank (CH II, pg 2)

Map Code 5, Plate II-1
Status: Existing – 4th Quarter 1975

The 100,000-gallon tank measures 25 feet high by 26 feet in diameter and is located on the canyon wall above the tipple. The tank sits upon a concrete base and is equipped with an overflow, level indicator, and a bank of valves to direct water flow.

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DEMO TAB WATER TANK, 100,000-GALLON 22 (CONT.)

The 100,000-gallon tank serves as a surge tank for both surface and underground water supplies. Water from underground is pumped to the tank through a bi-directional pipeline. Water may be drawn from the bi-directional pipeline for surface use (bathhouses, wash down hoses, fire hydrants, etc.) or may be allowed to return to the mine via the feedline if the water demand from the underground machinery is greater than that of the tank feed.

Surface drainage from the tank area flows into the mine yard where it is diverted to Sedimentation Pond 2. The tank is also equipped with an automated level control to eliminate any overflow discharge.

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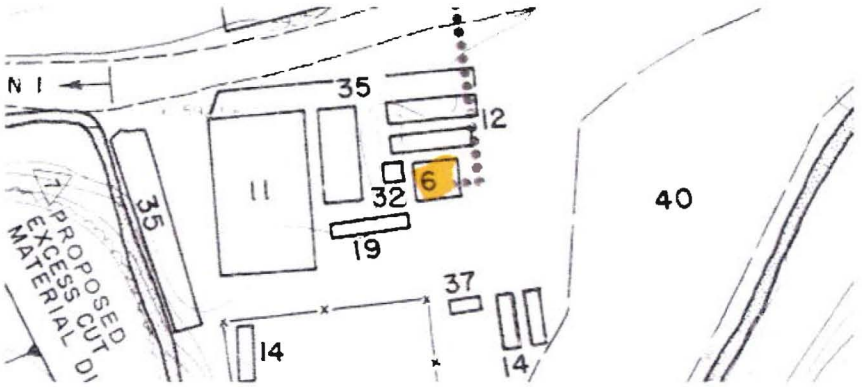
DEMO TAB FRESH WATER TREATMENT BLDG 11 (CH II, PG 3, REVISED AUGUST 1995)

The Fresh Water Treatment system *(Reverse Osmosis System, Map Code 6, Original Plate II-1, August 1990)* was reclaimed when the mine began using city water. The equipment was removed and the building refitted as the Forman Bath House, Map Code 6, Approved Plate II-1, May 2016. A Foreman's Bath House spreadsheet has been added to the Demo bond calculations.

Original Plate II-1, August 1990



Fresh Water Treatment Building (CH II, pg 3, Revised August 1995)

Map Code 6, Plate II-1
Status: Existing – 1st Quarter 1976

The fresh water treatment building located near the office/warehouse houses a reverse osmosis machine and a 5,000-gallon fresh water surge tank. The structure is a prefabricated metal building sitting on a concrete foundation. Water drawn from the 100,000-gallon tank is processed through the reverse osmosis (R/O) at the rate of 24 gallons per minute. The R/O produces two products on a 60% to 40% basis – clean water to brine (reject). The clean water is chlorinated and pumped to a 5,000-gallon holding tank and is distributed to the bathhouses and offices. The brine is pumped to a lagoon for evaporation.

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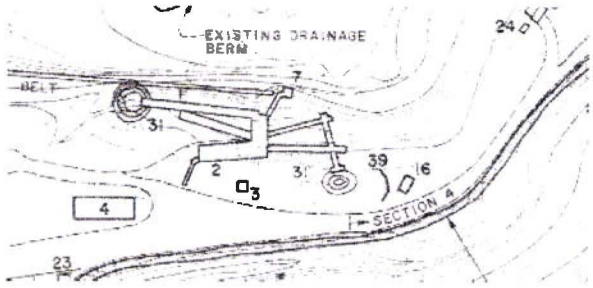
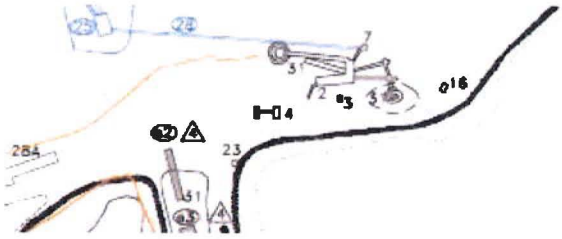
DEMO TAB COAL STOCKPILE FEEDER 34

The Coal Stockpile Feeder 34 is part of the Tipple Stacker – Reclaim System 01 costs at the Main Portal. Coal Stockpile Feeder 34 was labeled as Stacker-Reclaim system *(Map Code 1, Original Plate II-1, August 1990)*. Map Code 1 was inadvertently left out of Approved Plate II-1, May 2016. Map Code 1 has been placed on Plate II-1.

Original Plate II-1, August 1990



Approved Plate II-1, May 2016



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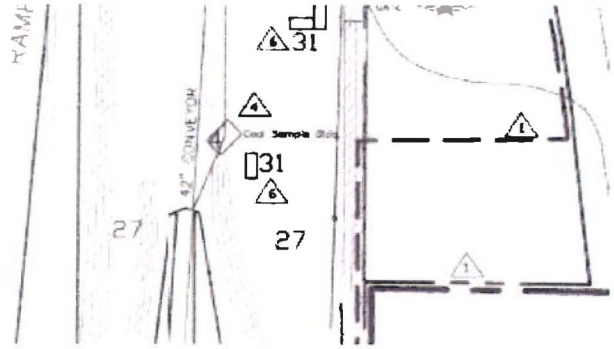
TAB SAMPLER BUILDING 41

The Coal Sample Building and Conveyor Belt *(Map Code 4, Approved Plate II-3, May 2009)* was constructed at the 4th East Portal and has been dismantled and removed.

Approved Plate II-3, May 2009



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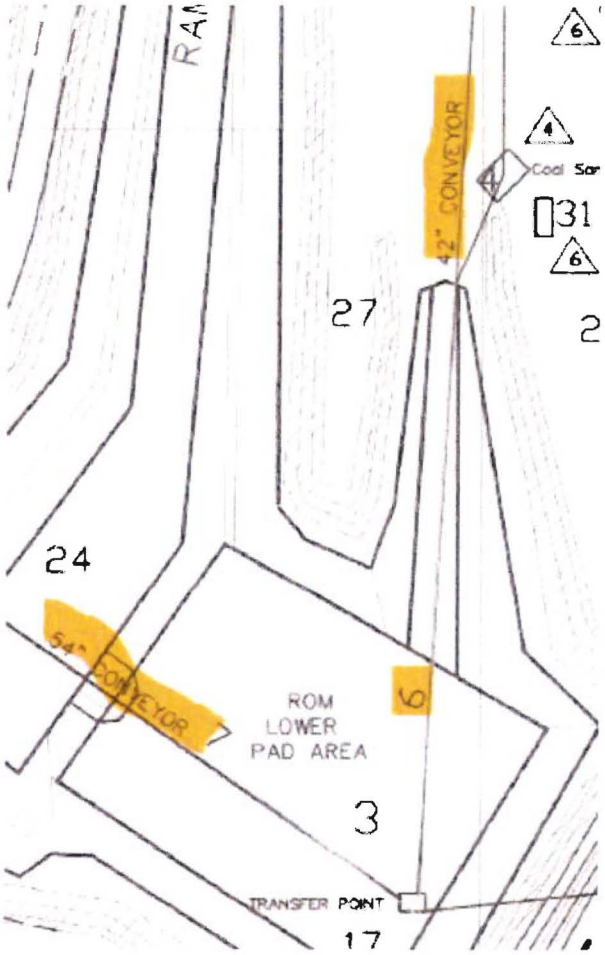
DEMO TAB CONVEYOR SYSTEM 29

The 42-inch and 54-inch conveyors *(Map Codes 6 and 7, Approved Plate II-3 dated 5/16)* constructed at the 4th East Portal have been dismantled, will be reused in the Main Portal area, and are included in the Emery 2 bond calculations. They are not being reconstructed in kind but various parts are used in the Emery 2 conveyor system and the demolition cost is captured in several of the new Emery 2 bond calculation spreadsheets.

Approved Plate II-3, May 2009



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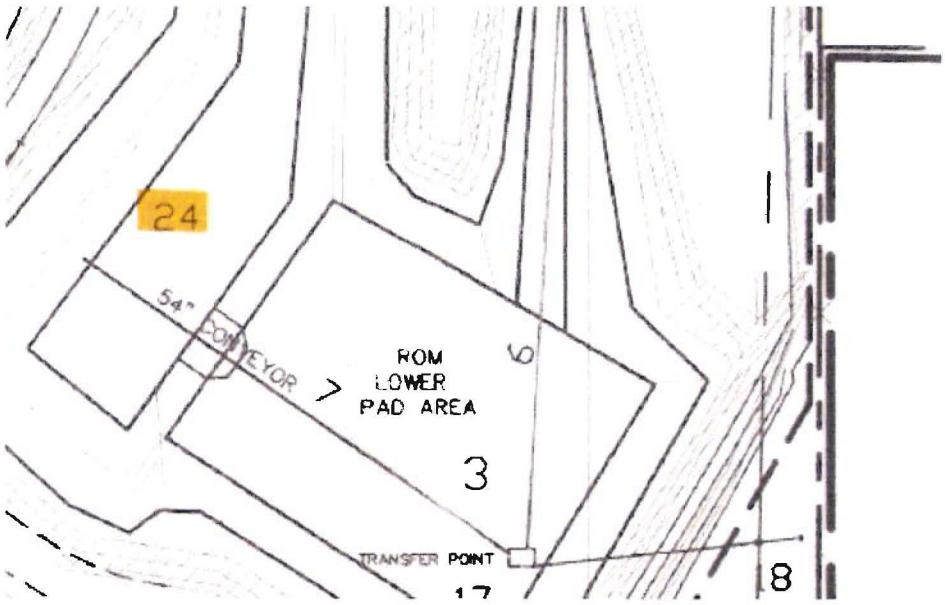
DEMO TAB ENTRANCES 4TH EAST 37 (CH II, PG 4, REVISED OCTOBER 2002)

The 3 entry portals at the 4th East Portal *(Map Code 24, Approved Plate II-3)* have been sealed.

Approved Plate II-3, May 2009



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DEMO TAB ENTRANCES 4TH EAST 37 (CH II, PG 4, REVISED OCTOBER 2002) (CONT.)

4 East Mine Access Portal (CH II, pg 4, Revised October 2002)

Map Code: Plate II-3 (plan view)
Status: Proposed – 3rd Quarter 2002

This 3-entry portal is designed to provide access to the 4 East operating sections of the mine and for future development of the northern part of the mine. The entries will be established at the bottom of an open cut located at the eastern edge of the permit area, near the center of Section 27. A ramp on a grade of 10% will lead to the bottom of the portal cut. Each entry will be 8 feet high by 14 feet wide and will be driven on 45-foot centers. Once established, the portal will be utilized for two purposes:

1. *To allow access of rubber-tired vehicles for transportation of people and supplies into the mine*
2. *To serve as a coal haulage portal…*

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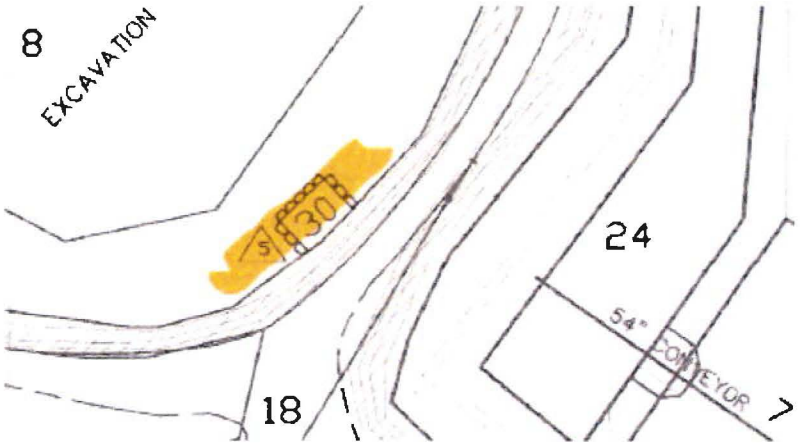
DEMO TAB TRASH PIT 44 (CH II, PG 17F, REVISED SEPTEMBER 2008)

The Trash Pit *(Map Code 30, Approved Plate II-3, May 2009)* was never constructed.

Approved Plate II-3, May 2009



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DEMO TAB **TRASH PIT 44 (CH II, PG 17F, REVISED SEPTEMBER 2008) (CONT.)**

Google Earth 7/2016

Trash Pit (CH II, pg 17f, Revised September 2008)

Map Code: Identified on Map II-3
Status: Proposed – 4th Quarter 2006

The trash pit consists of a concrete floor with moveable concrete side barriers and is used as a temporary storage location for trash generated at the site.

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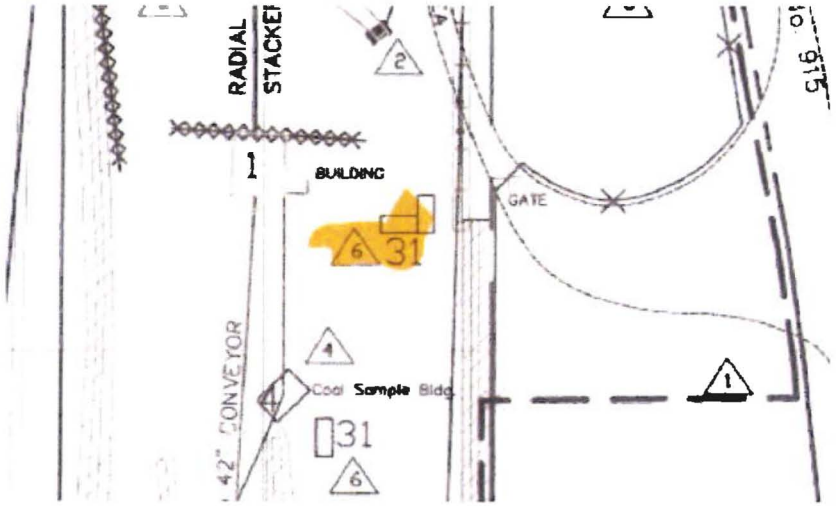
DEMO TAB SKID MOUNTED SHEDS 46 (CH II, PG 17F, REVISED SEPTEMBER 2008)

The Skid-Mounted Sheds *(Map Code 31, Approved Plate II-3, May 2016)* have been removed.

Approved Plate II-3, May 2016



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DEMO TAB **SKID MOUNTED SHEDS 46 (CH II, PG 17F, REVISED SEPTEMBER 2008) (CONT.)**

Skid-Mounted Sheds (CH II, pg 17f, Revised September 2008)

Map Code: Identified on Map II-3
Status: Existing – 4th Quarter of 2007

The portable skid-mounted sheds are used for tool storage, lunchrooms, and equipment storage.

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CHAPTER VI, APPENDIX VI-21

Emery 2 Surface facility As-Built Hydro Design Report- May 2019

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Emery 2 Surface Facility
As-Built Hydrology Design Report

Bronco Utah Operations
Emery Mine
Emery, Utah

May 2019

EarthFax EarthFax Engineering Group, LLC.

Engineers / Scientists
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REFERENCED PLATES

(See Emery Mining and Reclamation Plan)

Plate III-11 – Emery 2 Reclamation Hydrology
Plate VI-10E – Surface Drainage Control Map
Plate VI-11B – Emery 2 Drainage Details
Plate VI-15B – Pond 3 As-Built

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LIST OF ATTACHMENTS

Attachment A - Depth-Duration-Frequency Precipitation Data
Attachment B - Operational Hydrology Design Information
Attachment C - Reclamation Hydrology Design Information

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EMERY 2 SURFACE FACILITY
AS-BUILT HYDROLOGY DESIGN REPORT

CHAPTER 1
INTRODUCTION

Bronco Utah Operations (Bronco) constructed a new mine portal and support areas (the Site) to access the Emery Mine works south of Emery, Utah. The Site currently consists of an undisturbed ephemeral drainage along the bottom of a canyon west of the Site, a mine portal, haul road, a ventilation and water tank pad, and a laydown area. To prevent adverse hydrologic impacts downstream of the Site and to prevent undisturbed runoff from entering the Site, Bronco has construct a storm water runoff conveyance system including berms, culverts, ditches, a swale, a sediment basin, and a sedimentation pond. The area contributing to the sediment basin is considered an Alternative Sediment Control Area (ASCA). An additional disturbed drainage area is discharged into an abandoned area of the mine works.

The purpose of this document is to present design information for the as-built runoff and sediment controls. A series of berms and culverts directs undisturbed runoff around the Site. Additional berms, culverts, ditches, and a swale direct disturbed runoff from the Site into abandoned mine area, a sediment basin, and sedimentation pond. The runoff and sediment controls have been designed to conform to the applicable criteria outlined in the Utah Administrative Code R645- 301. This document has been prepared for Bronco by EarthFax Engineering Group, LLC (EarthFax), and contains the following information:

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- Location and background information;
- Hydrologic analyses to determine runoff discharge for design storm events;
- Sediment control design criteria;

Engineering calculations are included as an attachment to this document.

CHAPTER 2
LOCATION AND BACKGROUND INFORMATION

The general layout of the surface facilities is shown on Plate VI-10E. The total undisturbed watershed area contributing to the diversion conveyance system is 177.5 acres. The total watershed area contributing to Sedimentation Pond 3 is 18.1 acres, which includes 4.2 acres of disturbed area and 13.9 acres of undisturbed area that cannot be reasonably diverted. The total watershed contributing to the ASCA is 1.25 acres of disturbed area. The total area contributing to the runoff directed into the abandoned mine area consists of 8.4 areas, which includes 2.0 acres of disturbed area and 6.4 acres of undisturbed area that cannot be reasonably diverted.

The runoff conveyance and sediment control system for the Site has been designed to meet the minimum standards specified in the Utah Administrative Code Titles R645-301-742 and 751 as well as safety considerations. Thus the conveyance and control system has been designed to comply with the following criteria:

- The disturbed area conveyance system will safely convey the peak flow resulting from a 10-year, 6-hour storm event.
- The undisturbed area conveyance system will safely convey the peak flow resulting from a 100-year, 6-hour storm event.
- Berms, culverts, ditches, and swale will be installed according to standard engineering practices.
- Berms, ditches, and the swale will be constructed from native or imported materials and not from coal mine waste rock.
- Sedimentation Pond 3 and the sediment basin will contain runoff resulting from a 10-year, 24-hour storm event and the contributing sediment.
- The spillway on the pond will safely pass the peak flow resulting from a 25-year, 6-hour storm event.

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CHAPTER 3
OPERATIONAL HYDROLOGIC DESIGN

3.1 Drainage Area Characteristics

Storm water discharge for the area was calculated using HydroCAD version 10.0. Curve number values were determined based on local vegetation and soil conditions, obtained from vegetation surveys conducted by Mt. Nebo Scientific and from Long Resource Consultants, Inc., respectively. The results of these surveys were used in conjunction with the U.S. Department of Agriculture's National Resource Conservation Service National Engineering Handbook, Part 630 Hydrology.

Vegetation in undisturbed areas adjacent to the Site consists of a mixed desert shrub community. Native soils in the area are categorized as Hydrologic Soil Group C soils. Based on these factors, it was assumed that the curve number for undisturbed areas is 80. All disturbed areas were assumed to be free of vegetation. Disturbed-areas were assumed to be represented by a curve number of 87 (typical of a compacted, gravel road). Pond areas were assumed to be represented by a curve number of 98.

Design storm magnitudes were obtained from the National Oceanic and Atmospheric Administration (NOAA) ATLAS 14, Point Precipitation Frequency Estimates web page (http://hdsc.nws.noaa.gov/hdsc/pfds/sa/ut_pfds.html). These data are provided in Attachment A. Watershed areas and average slopes were calculated using AutoCAD 2018 software from a 5-foot contour interval topographic map of the area.

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The drainage areas contributing to the Site during operations and after reclamation are delineated on Plates VI-10E and III-11, respectively, of the Emery Mining and Reclamation Plan ("MRP"). As indicated previously, the total area contributing to Sedimentation Pond 3 is 18.1 acres,

which includes 4.2 acres of disturbed area and 13.9 acres of undisturbed area. The total undisturbed area that will be diverted around the disturbed area is 177.5 acres. The total watershed contributing to the ASCA is 1.25 acres of disturbed area. The total area contributing to the runoff directed into the mine consists of 8.4 areas, which includes 2.0 acres of disturbed area and 6.4 acres of undisturbed area that cannot be reasonably diverted. Table 1 provides a summary of the hydrologic characteristics of all disturbed and undisturbed watershed areas associated with the Emery 2 surface facilities.

3.2 Runoff Conveyance System Details

The results of peak flow calculations used to design the operational runoff conveyance system are presented in Attachment B and summarized in Table 2. The locations and design details of these features for the operational conveyance system are indicated on Plate VI-10E and Plate VI-11B of the MRP.

The runoff conveyance system consists of berms, culverts, ditches, and a swale. Rock armoring was designed in cases where the maximum flow velocity was estimated to exceed 5 ft/s and in areas above the portal box cut (to provide additional safety against flooding). Rock sizing for berms, ditches, and swales were determined in accordance with the 1989 version of Hydraulic Engineering Circular No. 11 published by the U.S. Department of Transportation. Rock pad sizing for the culvert outfall pad was determined in accordance with the 2006 version of the Hydraulic Engineering Circular No. 14 published by the U.S. Department of Transportation. The results of those calculations are provided in Attachment B and summarized in Table 2.

All berms, ditches, and swales have been excavated into and formed out of native materials or compacted native backfill. No coal waste or deleterious material has been used in construction of runoff controls.

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3.3 Sedimentation Pond

Sedimentation Pond 3, a re-designed existing sedimentation pond, collects runoff from the access road, portal pad, laydown area, and undisturbed areas that cannot be reasonably diverted. The stage-capacity data for Sedimentation Pond 3 is shown in Table 3. Additional design details for Sedimentation Pond 3 are presented in Attachment B and indicated on Plate VI-15B of the MRP.

Sedimentation Pond 3 has been designed to safely detain all runoff resulting from the 10-year, 24-hour storm event (24,695 cubic feet) plus 26,620 cubic feet of sediment, for a total of 51,315 cubic feet dead storage. Sediment will be removed when at least 60% of the design sediment capacity (15,972 cubic feet, approximate elevation 5,905.18 feet) and less than 100% of the design sediment capacity (26,620 cubic feet, approximate elevation 5,906.63feet) has accumulated. The elevation of the primary outlet invert is 5,909.55 feet. An additional culvert with an invert elevation of 5,910.0 feet along the east side of Sedimentation Pond 3 acts as a secondary spillway. The elevation of the primary spillway allows for runoff resulting from the 25-year, 6-hour storm event to safely pass without reaching the secondary spillway.

3.4 Sediment Basin

The ventilation and water tank pad consists of 1.25 acres of disturbed area. Runoff from this area cannot be reasonably directed to Sedimentation Pond 3. As the area is only 1.25 acres the runoff from this pad is treated as an ASCA. This ASCA contains runoff and sediment in a sediment basin.

The sediment basin is constructed from a 3-foot earth berm located along the northeast side of the pad. The sediment basin is designed to safely detain all runoff resulting from the 10-year, 24-hour storm event, approximately 2,300 cubic feet.

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3.5 Drainage Narrative

Runoff from Undisturbed Watershed 1 (UW-1) and UW-2 is collected behind a concrete wall and directed into Undisturbed Culvert 1 (UC-1). From UC-1, runoff is directed northeast into UC-2. Runoff from UW-3 is directed into an existing channel via Undisturbed Berm 1 (UB-1). From the existing channel runoff is directed into UC-2. Runoff from UW-4 flows through the existing channel into UC-2. Runoff from UW-5 is directed into the existing channel and UC-2 via UB-2. The outfall for UC-2 is within an existing channel that contributes to Quitchipah Creek.

Runoff from Disturbed Watershed 1 (DW-1) is directed into Disturbed Ditch 1 (DD-1) via Disturbed Berm 1 (DB-1). Runoff within DD-1 is directed to a sump located along the south side of the mine portal. From the sump runoff is pumped into the abandoned mine area.

Runoff from DW-2 is directed into the sediment basin along the north corner of the ventilation and water tank pad.

Runoff from DW-3 is directed into Disturber Culvert 1 (DC-1) via DD-2. Runoff from DC-1 is collected in Sedimentation Pond 3. Runoff from DW-4 is collected by DD-3. As DD-3 approaches and enters Sedimentation Pond 3 the slope steepens to 5H:1V. This steepened section is labeled DD-4, due to the addition of rock lining. Runoff from DW-5 is directed via DB-2 into Disturbed Swale (DS-1). From DS-1 runoff enters DD-5 and then Sedimentation Pond 3. Runoff from DW-6 surface flows into Sedimentation Pond 3. At this time DD-2 has been extended to DD-3 as the inlet to DC-1 is partially plugged with frozen debris. Once the material has thawed Emery Mine will direct DD-2 back into DC-1.

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CHAPTER 4
RECLAMATION HYDROLOGIC DESIGN

The Mining and Reclamation Plan details the reclamation design and plan for the Emery 2 surface facility. Sedimentation Pond 3, along with will all berms, catch basins, culverts, ditches, and swales related to the operational runoff conveyance system of the Emery 2 surface facilities, will be removed during reclamation. Natural drainage patterns will be restored to their approximate original configuration during reclamation.

The results of peak flow calculations used to design reclamation channels are presented in Attachment C and summarized in Table 2. The locations of these features and additional design details for the reclamation channels are indicated on Plate III-11 of the MRP.

The reclaimed runoff conveyance system will consist of two open channels. Both channels will be constructed using native materials. No coal waste or deleterious material will be used in construction of reclamation runoff controls. Riprap sizing was determined in accordance with the 1989 version of Hydraulic Engineering Circular No. 11 published by the U.S. Department of Transportation. The results of those calculations are provided in Attachment C and summarized in Table 2.

Both reclamation channels are designed with a bottom width of 4 feet, a depth of 2 feet, and side slopes of 2H:1V. The median riprap diameter will be 6 inches in channel RD-1 and 12 inches in channel RD-2 (which will be constructed in the steeper portion of the canyon). An impermeable liner will be installed beneath the riprap in channel RD-1 to preclude seepage into the deep fill that will be placed during reclamation of the portal box cut. Riprap in channel RD-2 will be underlain by a non-woven geotextile.

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CHAPTER 5
REFERENCES

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U.S. Natural Resources Conservation Service. Revised September, 2000. National Engineering Handbook, Part 630 Hydrology. Washington, D.C.

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TABLE 1

Watershed Area Characteristics

Watershed ID	Drainage Area (ac)			Average Curve Number	Time of Conc. (min)
	Undisturbed	Disturbed	Total		
DW-1	6.4	2.0	8.4	81.7	2.7
DW-2	0.35	0.9	1.25	85.0	2.5
DW-3	8.8	1.7	10.5	81.1	3.6
DW-4	4.1	0.8	4.9	81.1	5.2
DW-5	0.0	0.9	0.9	87	0.5
DW-6	0.8	0.75/0.25	1.8	85.4	0.9
SUBTOTAL	14.42	13.11	27.53	--	--
UW-1	117	0.00	117	80.0	38.0
UW-2	9.1	0.00	9.1	80.0	9.9
UW-3	12	0.00	12	80.0	24.5
UW-4	35	0.00	35	80.0	23.7
UW-5	4.4	0.00	4.4	80.0	11.3
SUBTOTAL	182.18	0.00	182.18	--	--
RW-1	134.0	0.0	134.0	80.0	38.0
RW-2	14.0	0.0	14.0	80.0	4.1
RW-3	36.0	0.0	36.0	80.0	23.8
RW-4	6.5	0.0	6.5	80.0	3.4
RW-5	12.0	0.0	12.0	80.0	9.1
SUBTOTAL	202.5	0.0	202.5	--	--

Notes: 1. See Plate VI-10E of the Emery MRP for operational watershed boundaries.
2. See Plate III-11 of the Emery MRP for reclamation watershed boundaries.
2. See Attachment B for operational design calculations.
3. See Attachment C for reclamation design calculations.

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TABLE 2

Conveyance System Information

Diversion Structure	Description	Design Event	Peak Flow (cfs)	Max. Vel. (fps)	Riprap D_{50} (in)	Flow Depth (ft)	Freeboard (ft)
DB-1	1-ft high berm with adjacent 6-ft wide access path with 1.5H:1V side slopes	10-yr, 6-hr	2.40	1.56	None	0.12	0.88
DB-2	1-ft high berm with 1.5H:1V side slopes	10-yr, 6-hr	0.60	2.78	None	0.33	0.67
DC-1	24" Diameter CHDPE Pipe	10-yr, 6-hr	1.65	6.43	None	0.27	1.73
DD-1	1-ft deep triangular ditch with a 5H:1V road side slope and a 2H:1V hill side slope	10-yr, 6-hr	1.17	2.72	None	0.31	0.69
DD-2	1.25-ft deep triangle ditch with 1.5H:1V side slopes	10-yr, 6-hr	3.25	2.21	None	0.58	0.67
DD-3	1-ft deep triangular ditch with 1.5H:1V side slopes	10-yr, 6-hr	0.98	2.30	None	0.50	0.50
DD-4	1-ft deep triangular ditch with 1.5H:1V side slopes	10-yr, 6-hr	0.87	4.60	6	0.36	0.64
DD-5	1-ft deep triangular ditch with 1.5H:1V side slopes	10-yr, 6-hr	0.44	3.73	6	0.28	0.72
DS-1	Broad swale, 0.5-ft deep and 15 ft wide	10-yr, 6-hr	0.46	0.88	None	0.18	0.32
SP3-SS	12-inch diameter CHDPE	25-yr, 24-hr	0.58	1.77	None	0.58	0.42
UB-1	1.5-ft high berm with adjacent 1.5-ft deep triangular ditch with 1H:1V side slopes cut into the existing ground and 4H:1V fill slopes on the berm	100-yr, 6-hr	5.09	3.81	None	0.72	0.78
UB-2	1.5-ft high berm with adjacent 1.5-ft deep triangular ditch with 1H:1V side slopes cut into the existing ground and 4H:1V fill slopes on the berm	100-yr, 6-hr	3.06	2.71	None	0.63	0.87
UC-1	30-inch diameter CMP	100-yr, 6-hr	37.56	9.68	None	1.84	0.66
UC-2	30-inch diameter CMP	100-yr, 6-hr	52.33	17.81	9[a]	1.44	1.06
RD-1	2-ft deep trapezoidal ditch with 4-ft bottom width and 2H:1V side slopes	100-yr, 6-hr	43.24	6.34	6	1.10	0.90
RD-2	2-ft deep trapezoidal ditch with 4-ft bottom width and 2H:1V side slopes	100-yr, 6-hr	53.98	8.07	12	1.08	0.92

[a] Sizing for riprap apron at culvert outlet

Note 1. Velocities below 5 ft/s do not require rock lining per U.S. DOT Hydraulic Engineering Circular No. 11. DD-4 and DD-5 have rock lining to stabilize the side slopes of Sedimentation Pond 3.

Note 2. See Plates VI-10E and VI-11B of the Emery MRP for additional design information

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TABLE 3

Sedimentation Pond 3 Stage Capacity Data[a]

Elevation (ft)	Surface Area (ft^2)	Incremental (ft^3)	Cumulative Volume (ft^3)
5,902.0	0	0	0
5,903.0	4,953	2,477	2,477
5,904.0	6,216	5,585	8,061
5,905.0	6,967	6,592	14,653
5,906.0	7,395	7,181	21,834
5,907.0	7,909	7,652	29,486
5,908.0	8,387	8,148	37,634
5,909.0	8,959	8,673	46,307
5,910.0	9,492	9,226	55,532
5,911.0	10,085	9,789	65,321
5,912.0	10,700	10,393	75,713
Total			**75,713**

[a] Based on AutoCAD 2018 Civil 3D Topography.

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ATTACHMENT A

Depth-Duration-Frequency
Precipitation Data

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NOAA Atlas 14, Volume 1, Version 5
Location name: Emery, Utah, US*
Latitude: 38.8540°, Longitude: -111.2606°
Elevation: 6066 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.101 (0.088-0.118)	0.130 (0.114-0.153)	0.182 (0.157-0.212)	0.228 (0.196-0.268)	0.302 (0.252-0.355)	0.370 (0.302-0.435)	0.447 (0.357-0.529)	0.538 (0.417-0.642)	0.681 (0.504-0.829)	0.809 (0.578-0.999)
10-min	0.154 (0.134-0.179)	0.198 (0.173-0.232)	0.277 (0.239-0.323)	0.348 (0.298-0.408)	0.460 (0.384-0.540)	0.562 (0.459-0.662)	0.681 (0.544-0.805)	0.818 (0.635-0.977)	1.04 (0.766-1.26)	1.23 (0.879-1.52)
15-min	0.191 (0.166-0.222)	0.245 (0.214-0.288)	0.343 (0.296-0.400)	0.431 (0.369-0.505)	0.570 (0.476-0.669)	0.697 (0.569-0.820)	0.843 (0.674-0.998)	1.01 (0.787-1.21)	1.28 (0.950-1.56)	1.52 (1.09-1.89)
30-min	0.257 (0.223-0.299)	0.330 (0.288-0.388)	0.462 (0.399-0.538)	0.580 (0.497-0.680)	0.768 (0.642-0.900)	0.939 (0.766-1.10)	1.14 (0.907-1.34)	1.37 (1.06-1.63)	1.73 (1.28-2.11)	2.05 (1.47-2.54)
60-min	0.318 (0.276-0.370)	0.409 (0.357-0.480)	0.572 (0.494-0.666)	0.717 (0.615-0.841)	0.951 (0.794-1.11)	1.16 (0.948-1.37)	1.41 (1.12-1.66)	1.69 (1.31-2.02)	2.14 (1.58-2.61)	2.54 (1.82-3.14)
2-hr	0.384 (0.338-0.440)	0.484 (0.425-0.556)	0.655 (0.573-0.751)	0.811 (0.703-0.928)	1.06 (0.897-1.22)	1.28 (1.06-1.48)	1.54 (1.25-1.80)	1.85 (1.45-2.18)	2.34 (1.76-2.82)	2.79 (2.02-3.41)
3-hr	0.426 (0.384-0.486)	0.539 (0.484-0.614)	0.706 (0.632-0.802)	0.857 (0.760-0.973)	1.09 (0.956-1.24)	1.30 (1.11-1.49)	1.56 (1.31-1.82)	1.86 (1.52-2.20)	2.35 (1.85-2.84)	2.79 (2.12-3.44)
6-hr	0.538 (0.490-0.596)	0.672 (0.614-0.745)	0.849 (0.774-0.940)	1.00 (0.906-1.11)	1.22 (1.09-1.36)	1.41 (1.25-1.58)	1.65 (1.43-1.86)	1.93 (1.64-2.23)	2.42 (2.00-2.87)	2.87 (2.31-3.48)
12-hr	0.650 (0.596-0.709)	0.804 (0.741-0.880)	0.997 (0.911-1.09)	1.16 (1.05-1.26)	1.37 (1.24-1.51)	1.55 (1.38-1.71)	1.73 (1.53-1.92)	1.97 (1.71-2.25)	2.45 (2.06-2.90)	2.90 (2.38-3.51)
24-hr	0.860 (0.790-0.943)	1.07 (0.987-1.18)	1.35 (1.24-1.47)	1.57 (1.44-1.71)	1.87 (1.71-2.04)	2.11 (1.91-2.31)	2.35 (2.12-2.59)	2.61 (2.33-2.88)	2.96 (2.61-3.29)	3.24 (2.82-3.63)
2-day	0.942 (0.872-1.03)	1.17 (1.09-1.27)	1.45 (1.34-1.57)	1.68 (1.55-1.82)	1.99 (1.83-2.17)	2.25 (2.04-2.45)	2.51 (2.27-2.75)	2.78 (2.48-3.07)	3.16 (2.77-3.53)	3.46 (3.00-3.90)
3-day	0.997 (0.925-1.08)	1.24 (1.15-1.34)	1.52 (1.41-1.65)	1.75 (1.63-1.90)	2.08 (1.91-2.25)	2.33 (2.13-2.53)	2.60 (2.36-2.84)	2.88 (2.58-3.16)	3.27 (2.88-3.62)	3.57 (3.10-4.00)
4-day	1.05 (0.978-1.14)	1.30 (1.21-1.41)	1.59 (1.48-1.72)	1.83 (1.70-1.97)	2.16 (2.00-2.33)	2.42 (2.22-2.62)	2.70 (2.45-2.93)	2.98 (2.67-3.25)	3.37 (2.98-3.72)	3.68 (3.21-4.10)
7-day	1.22 (1.13-1.32)	1.51 (1.40-1.64)	1.84 (1.71-1.99)	2.11 (1.96-2.26)	2.46 (2.27-2.65)	2.73 (2.51-2.94)	3.01 (2.75-3.25)	3.28 (2.97-3.57)	3.64 (3.25-4.00)	3.90 (3.46-4.34)
10-day	1.38 (1.27-1.50)	1.71 (1.57-1.86)	2.10 (1.93-2.28)	2.40 (2.21-2.60)	2.80 (2.57-3.04)	3.11 (2.83-3.38)	3.41 (3.09-3.73)	3.71 (3.33-4.08)	4.09 (3.64-4.55)	4.38 (3.86-4.91)
20-day	1.69 (1.54-1.85)	2.10 (1.92-2.30)	2.60 (2.37-2.82)	2.97 (2.72-3.23)	3.46 (3.16-3.76)	3.83 (3.47-4.17)	4.18 (3.78-4.57)	4.53 (4.07-4.97)	4.98 (4.43-5.50)	5.29 (4.67-5.89)
30-day	1.99 (1.83-2.17)	2.46 (2.27-2.68)	3.00 (2.77-3.26)	3.40 (3.13-3.68)	3.92 (3.60-4.24)	4.29 (3.92-4.64)	4.64 (4.23-5.04)	4.98 (4.50-5.43)	5.39 (4.84-5.94)	5.68 (5.05-6.31)
45-day	2.31 (2.12-2.52)	2.86 (2.63-3.12)	3.47 (3.20-3.76)	3.92 (3.61-4.23)	4.47 (4.12-4.81)	4.85 (4.47-5.21)	5.20 (4.78-5.59)	5.49 (5.05-5.92)	5.81 (5.34-6.29)	5.98 (5.50-6.49)
60-day	2.63 (2.43-2.85)	3.25 (3.01-3.52)	3.94 (3.66-4.25)	4.45 (4.13-4.78)	5.10 (4.72-5.46)	5.54 (5.13-5.93)	5.96 (5.50-6.38)	6.32 (5.82-6.80)	6.73 (6.15-7.29)	6.97 (6.36-7.58)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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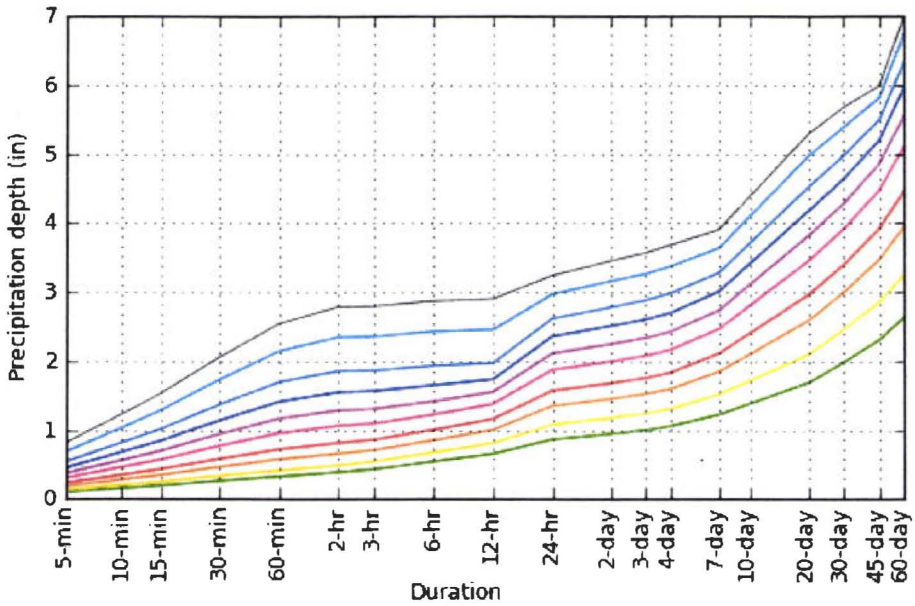
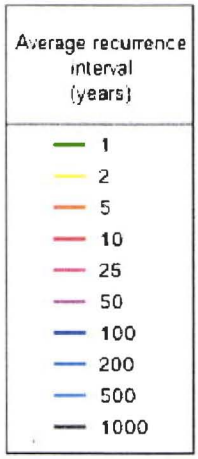
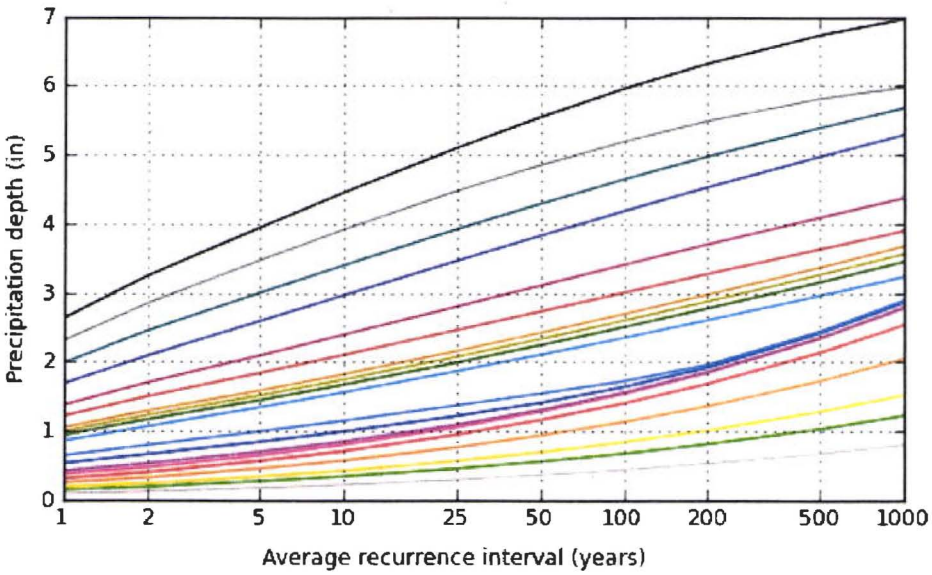
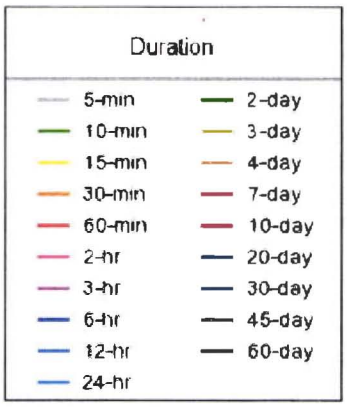
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 38.8540°, Longitude: -111.2606°









NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Thu Jul 7 12:14:50 2016

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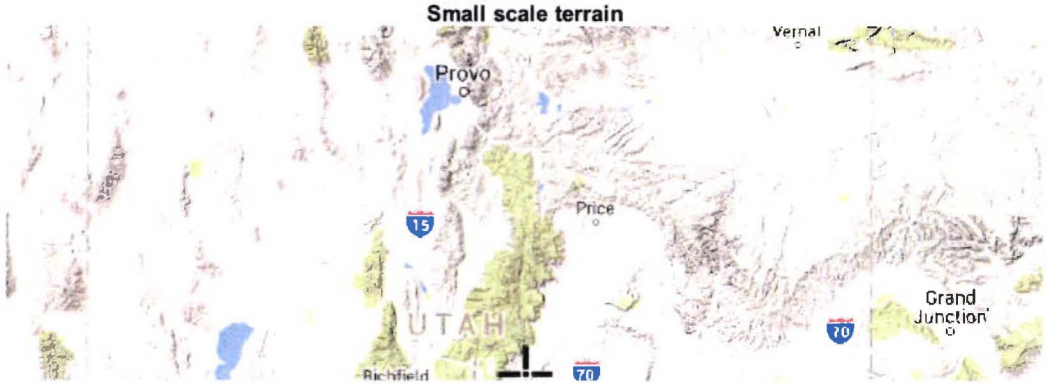
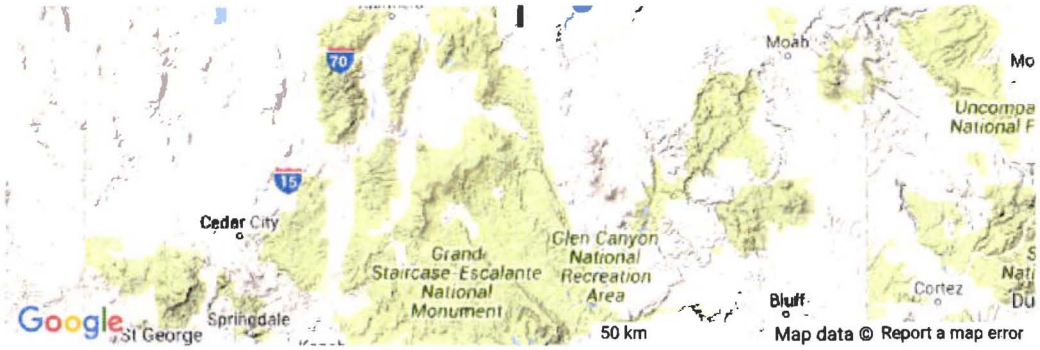
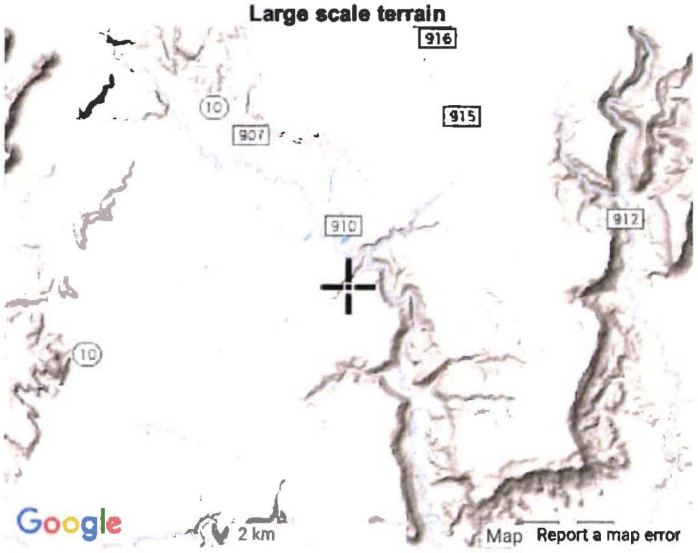
Maps & aerials

Small scale terrain

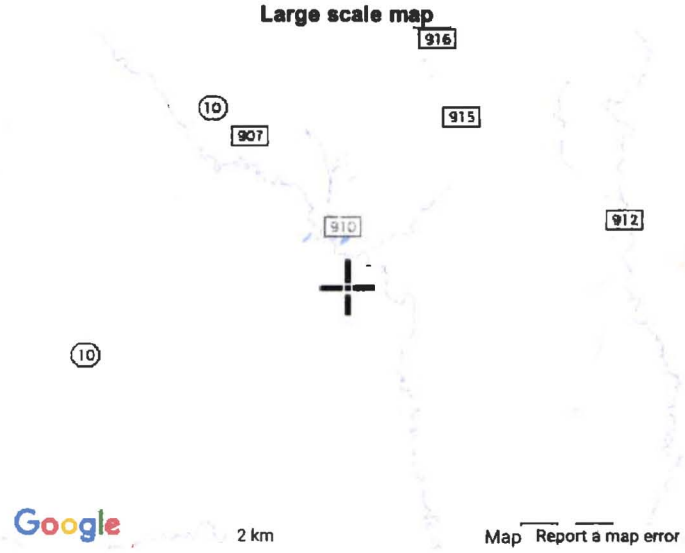




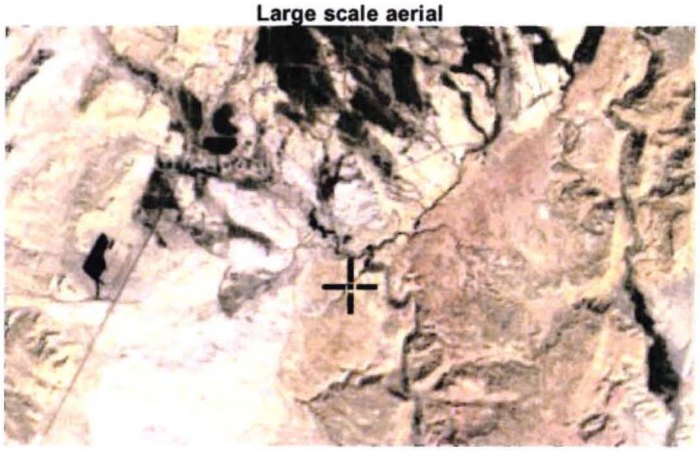
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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ATTACHMENT B

Operational Hydrology Design Information

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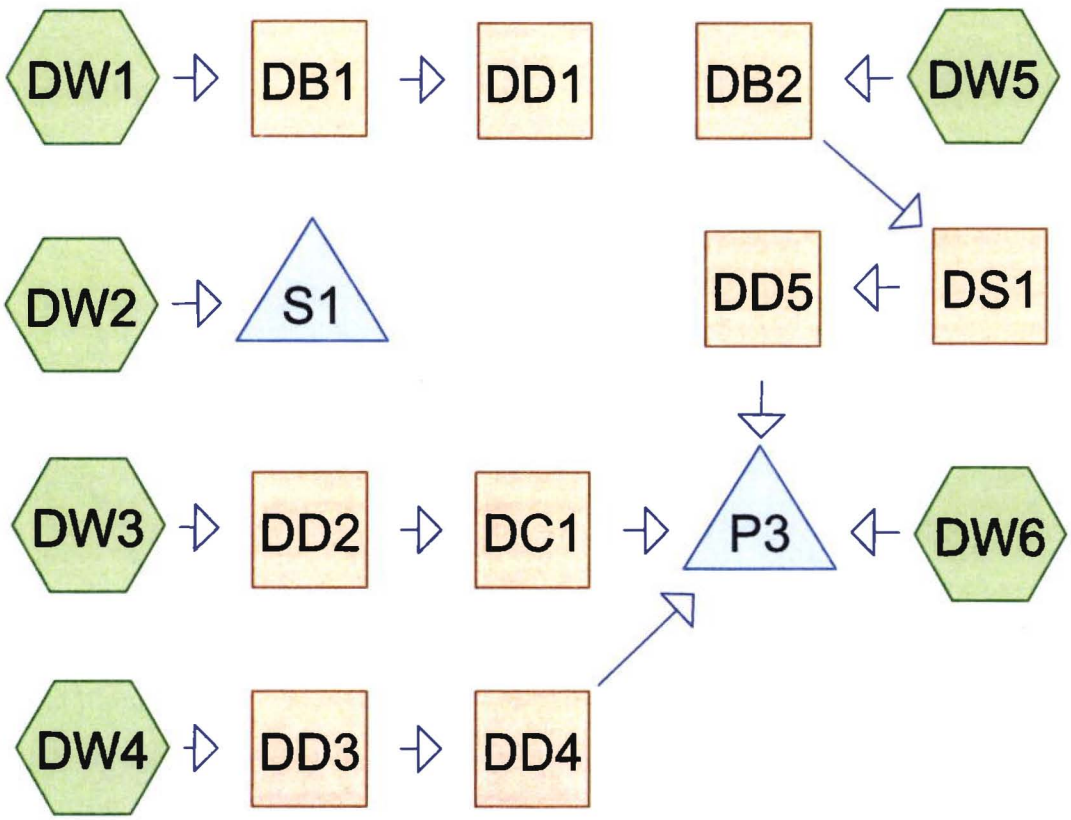

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Subcat Reach Pond Link

Routing Diagram for Operations - Disturbed Drainage
Prepared by EarthFax Engineering, Printed 2/4/2019
HydroCAD® 10.00-20 s/n 03900 © 2017 HydroCAD Software Solutions LLC

Summary for Reach DB1:

Inflow Area = 8.400 ac, 0.00% Impervious, Inflow Depth = 0.11" for 10-yr, 6-hr event
Inflow = 2.40 cfs @ 2.96 hrs, Volume= 0.080 af
Outflow = 1.17 cfs @ 3.04 hrs, Volume= 0.080 af, Atten= 51%, Lag= 4.8 min

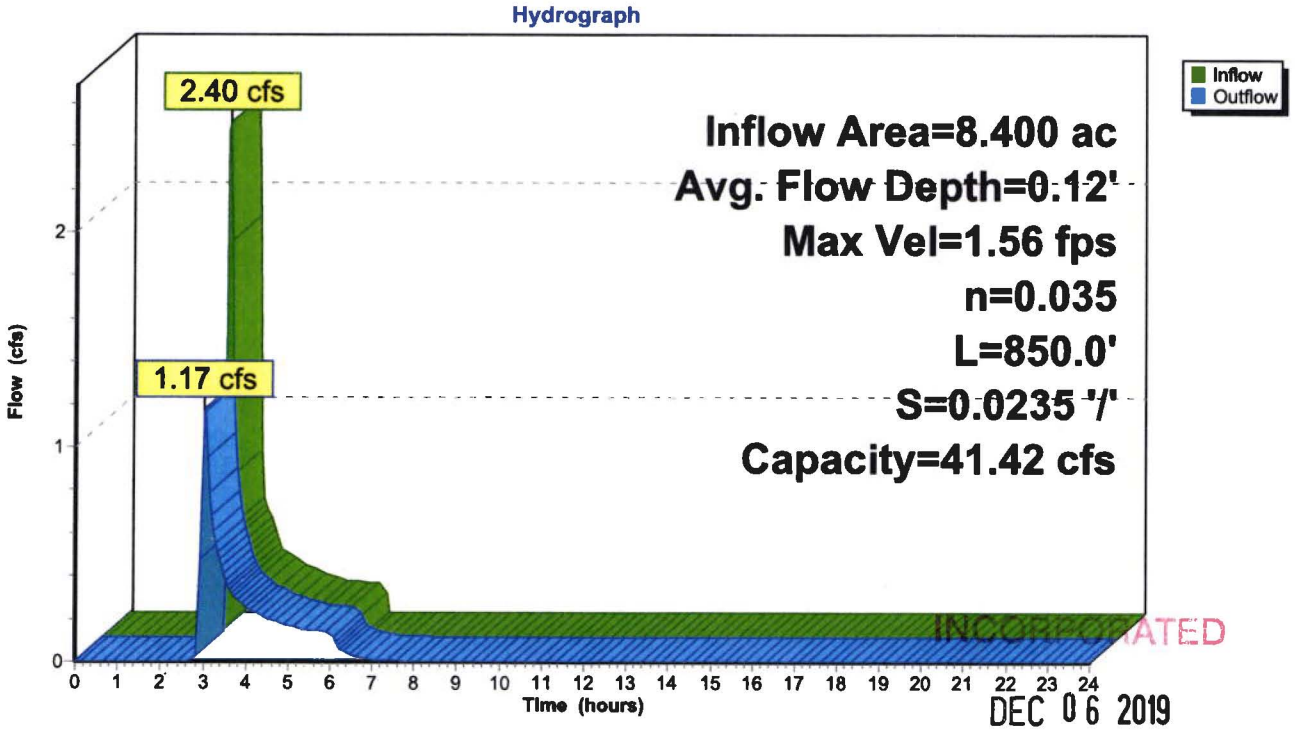
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.56 fps, Min. Travel Time= 9.1 min
Avg. Velocity = 0.51 fps, Avg. Travel Time= 27.6 min

Peak Storage= 641 cf @ 3.04 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 1.00' Flow Area= 7.5 sf, Capacity= 41.42 cfs

6.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 1.5 '/' Top Width= 9.00'
Length= 850.0' Slope= 0.0235 '/'
Inlet Invert= 5,993.00', Outlet Invert= 5,973.00'

‡

Reach DB1:



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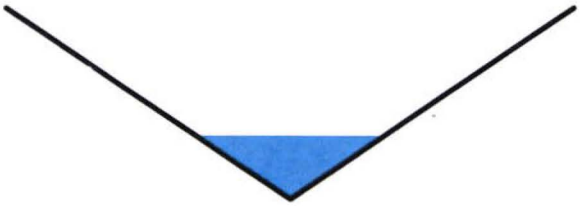
Summary for Reach DB2:

Inflow Area = 0.900 ac, 0.00% Impervious, Inflow Depth = 0.22" for 10-yr, 6-hr event
Inflow = 0.60 cfs @ 2.91 hrs, Volume= 0.017 af
Outflow = 0.46 cfs @ 2.96 hrs, Volume= 0.017 af, Atten= 23%, Lag= 2.8 min

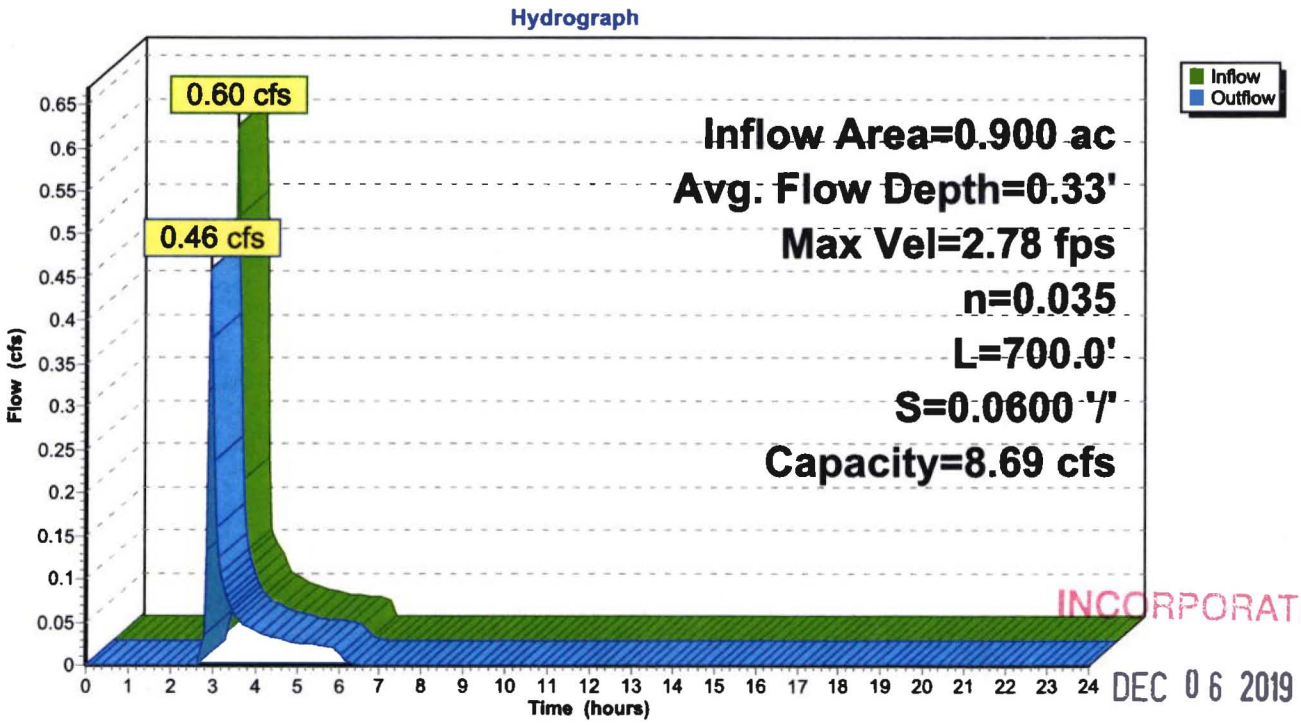
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.78 fps, Min. Travel Time= 4.2 min
Avg. Velocity = 1.16 fps, Avg. Travel Time= 10.1 min

Peak Storage= 116 cf @ 2.96 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.00' Flow Area= 1.5 sf, Capacity= 8.69 cfs

0.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 1.5 '/' Top Width= 3.00'
Length= 700.0' Slope= 0.0600 '/'
Inlet Invert= 5,956.00', Outlet Invert= 5,914.00'



Reach DB2:



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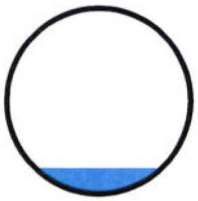
Summary for Reach DC1:

Inflow Area = 10.500 ac, 0.00% Impervious, Inflow Depth = 0.10" for 10-yr, 6-hr event
Inflow = 1.65 cfs @ 3.03 hrs, Volume= 0.086 af
Outflow = 1.67 cfs @ 3.05 hrs, Volume= 0.086 af, Atten= 0%, Lag= 1.5 min

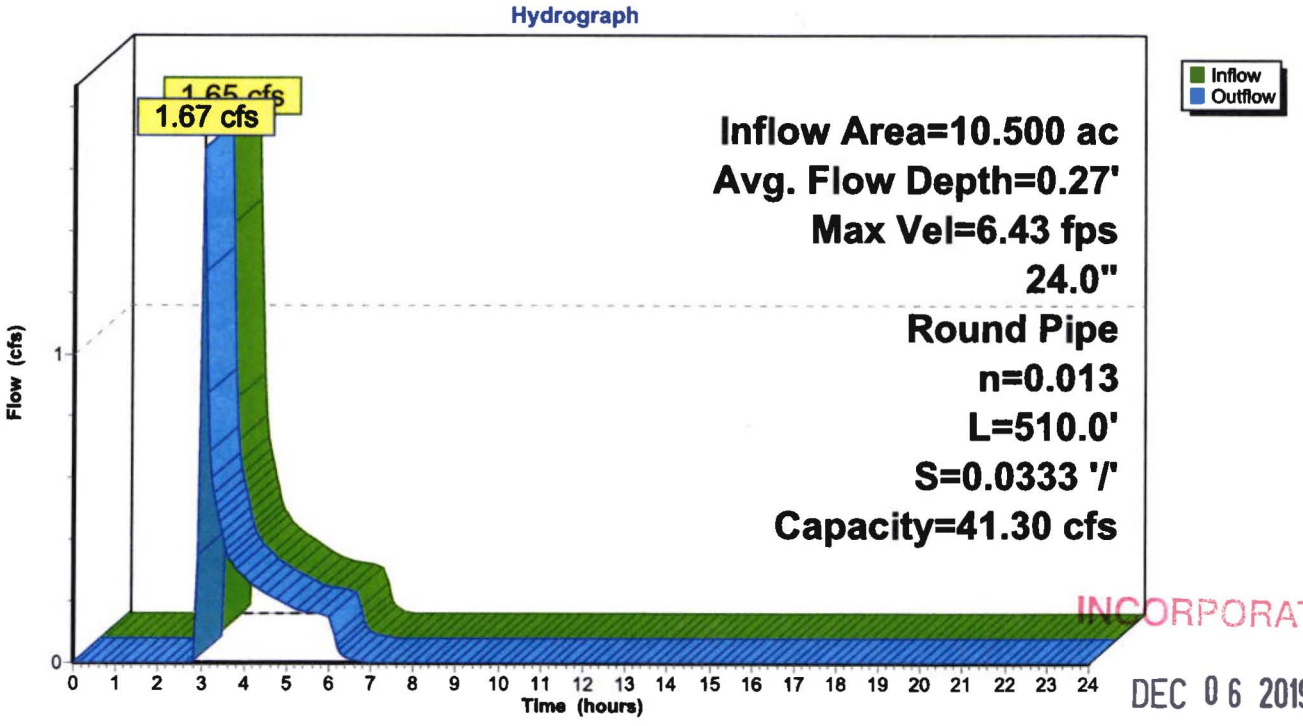
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.43 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 2.88 fps, Avg. Travel Time= 3.0 min

Peak Storage= 132 cf @ 3.05 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 41.30 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 510.0' Slope= 0.0333 '/'
Inlet Invert= 5,922.00', Outlet Invert= 5,905.00'



Reach DC1:



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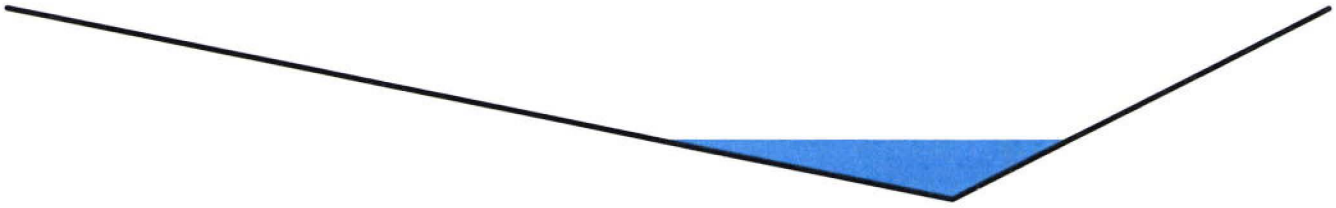
Summary for Reach DD1:

Inflow Area = 8.400 ac, 0.00% Impervious, Inflow Depth = 0.11" for 10-yr, 6-hr event
Inflow = 1.17 cfs @ 3.04 hrs, Volume= 0.080 af
Outflow = 0.94 cfs @ 3.12 hrs, Volume= 0.080 af, Atten= 20%, Lag= 4.6 min

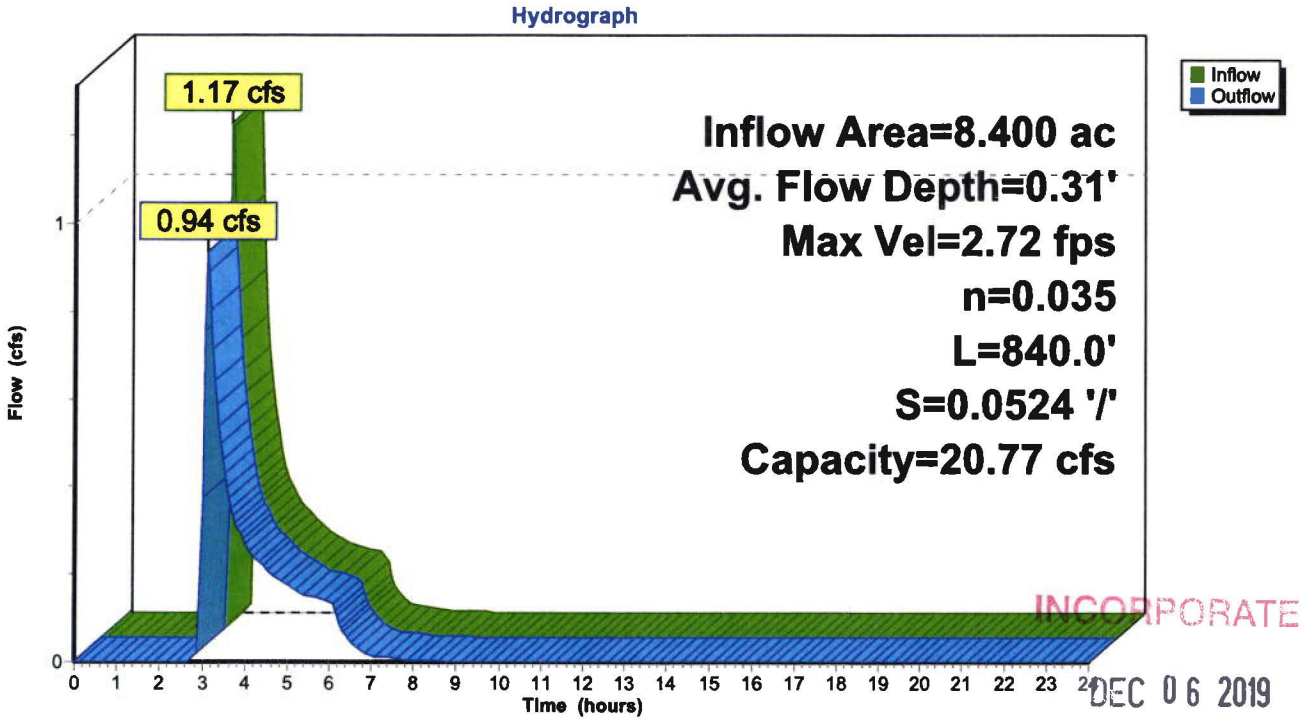
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.72 fps, Min. Travel Time= 5.1 min
Avg. Velocity = 1.02 fps, Avg. Travel Time= 13.7 min

Peak Storage= 287 cf @ 3.12 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 3.5 sf, Capacity= 20.77 cfs

0.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 5.0 2.0 '/' Top Width= 7.00'
Length= 840.0' Slope= 0.0524 '/'
Inlet Invert= 5,973.00', Outlet Invert= 5,929.00'



Reach DD1:



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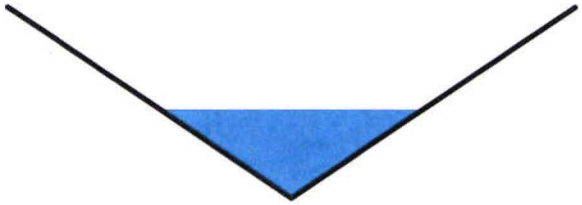
Summary for Reach DD2:

Inflow Area = 10.500 ac, 0.00% Impervious, Inflow Depth = 0.10" for 10-yr, 6-hr event
Inflow = 2.21 cfs @ 2.98 hrs, Volume= 0.086 af
Outflow = 1.65 cfs @ 3.03 hrs, Volume= 0.086 af, Atten= 25%, Lag= 2.7 min

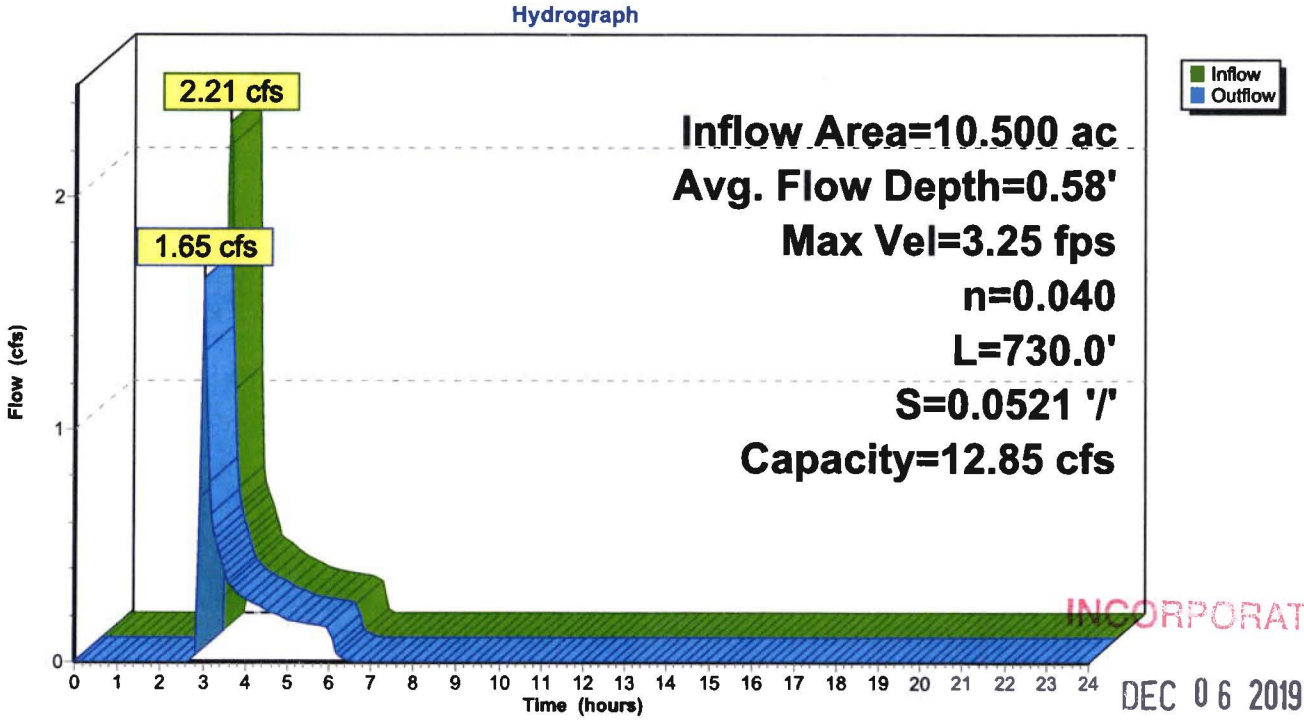
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.25 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 1.36 fps, Avg. Travel Time= 8.9 min

Peak Storage= 368 cf @ 3.03 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.25' Flow Area= 2.3 sf, Capacity= 12.85 cfs

0.00' x 1.25' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.5 '/' Top Width= 3.75'
Length= 730.0' Slope= 0.0521 '/'
Inlet Invert= 5,960.00', Outlet Invert= 5,922.00'



Reach DD2:



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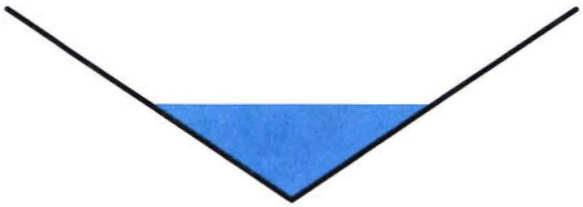
Summary for Reach DD3:

Inflow Area = 4.900 ac, 0.00% Impervious, Inflow Depth = 0.10" for 10-yr, 6-hr event
Inflow = 0.98 cfs @ 3.00 hrs, Volume= 0.040 af
Outflow = 0.87 cfs @ 3.03 hrs, Volume= 0.040 af, Atten= 11%, Lag= 1.4 min

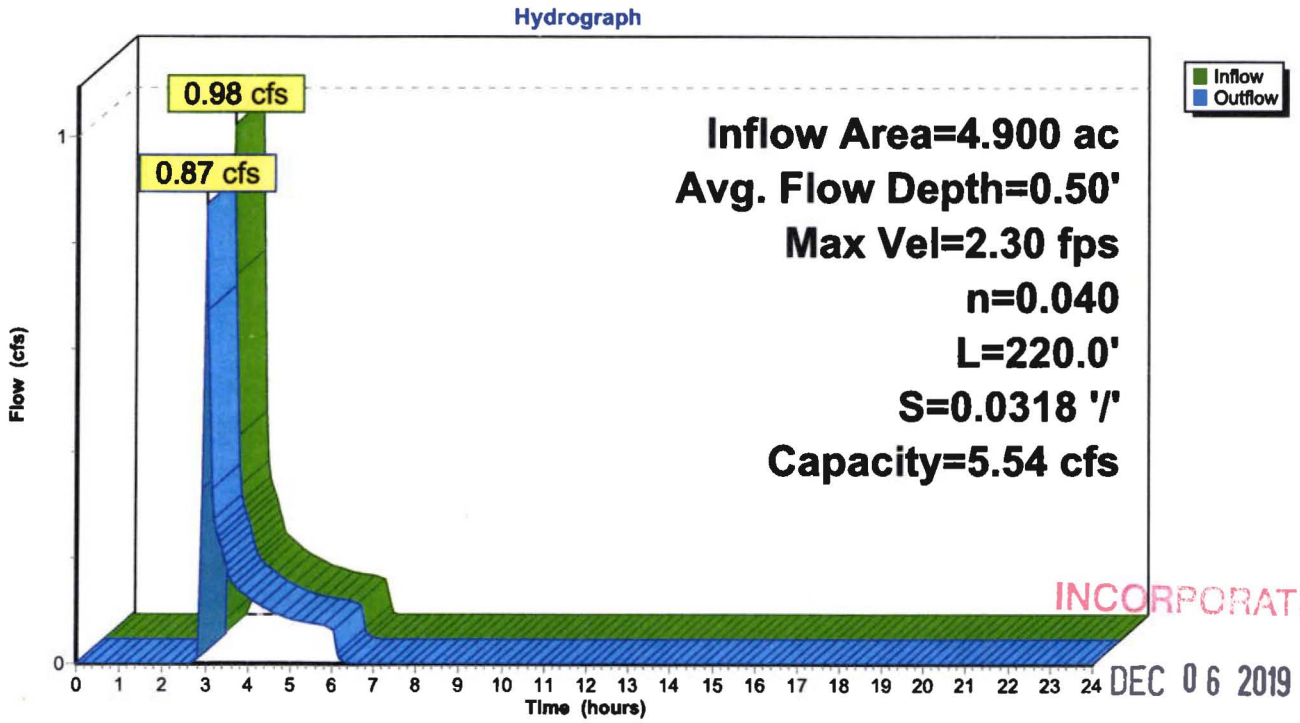
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.30 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.16 fps, Avg. Travel Time= 3.1 min

Peak Storage= 83 cf @ 3.03 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.00' Flow Area= 1.5 sf, Capacity= 5.54 cfs

0.00' x 1.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.5 '/' Top Width= 3.00'
Length= 220.0' Slope= 0.0318 '/'
Inlet Invert= 5,918.00', Outlet Invert= 5,911.00'



Reach DD3:



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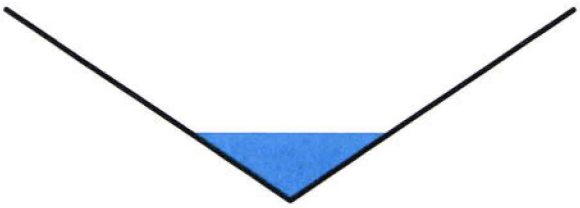
Summary for Reach DD4:

Inflow Area = 4.900 ac, 0.00% Impervious, Inflow Depth = 0.10" for 10-yr, 6-hr event
Inflow = 0.87 cfs @ 3.03 hrs, Volume= 0.040 af
Outflow = 0.88 cfs @ 3.03 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.2 min

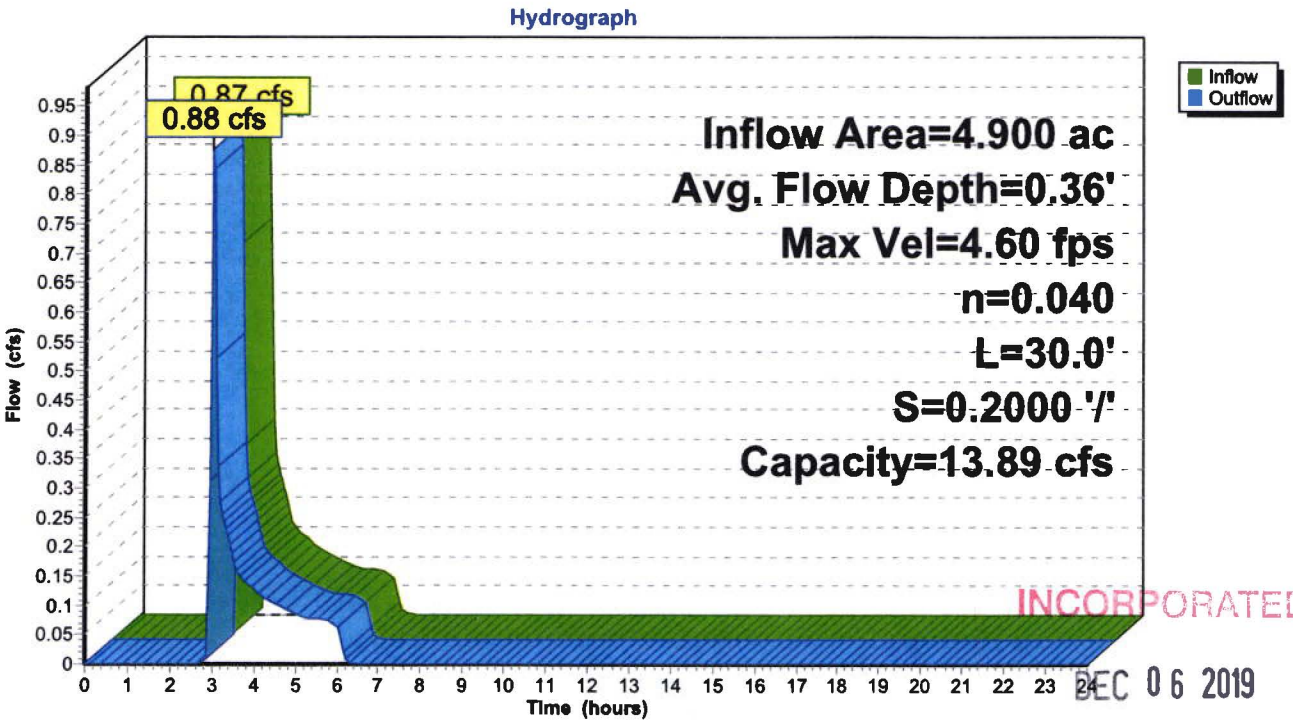
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.60 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.42 fps, Avg. Travel Time= 0.2 min

Peak Storage= 6 cf @ 3.03 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.00' Flow Area= 1.5 sf, Capacity= 13.89 cfs

0.00' x 1.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.5 '/' Top Width= 3.00'
Length= 30.0' Slope= 0.2000 '/'
Inlet Invert= 5,911.00', Outlet Invert= 5,905.00'



Reach DD4:



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Summary for Reach DD5:

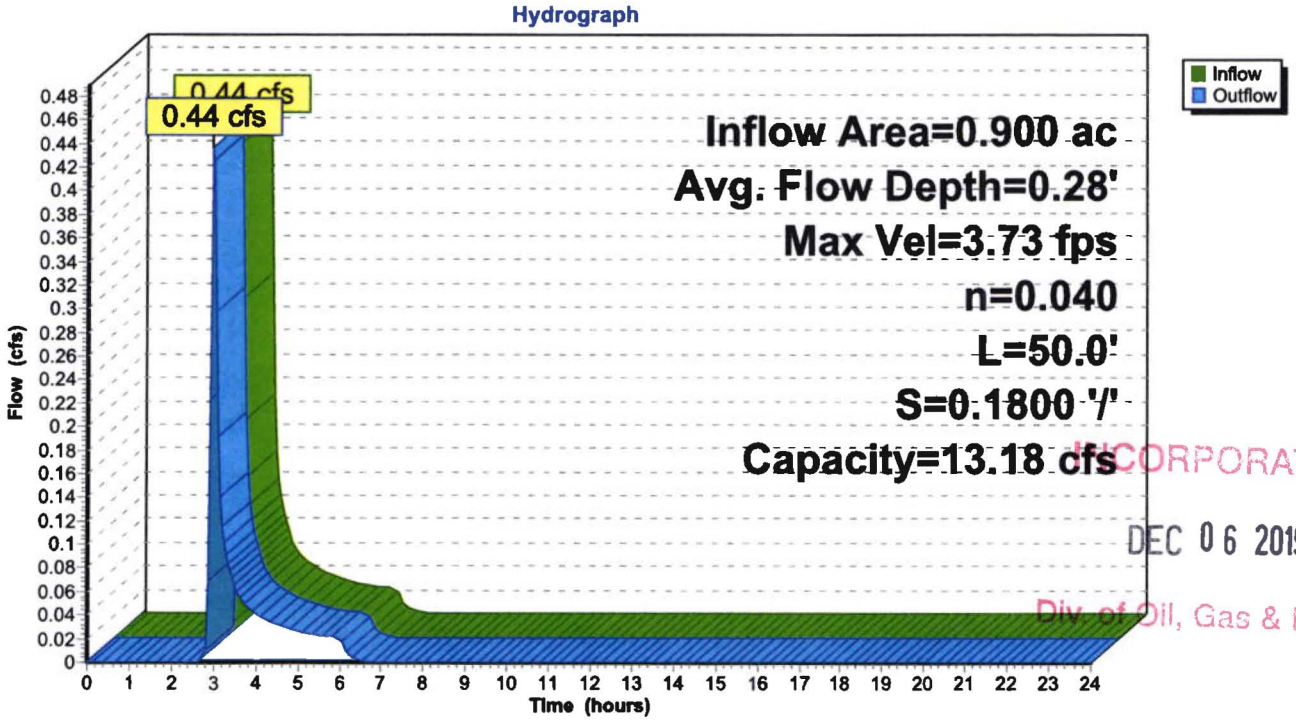
Inflow Area = 0.900 ac, 0.00% Impervious, Inflow Depth = 0.22" for 10-yr, 6-hr event
Inflow = 0.44 cfs @ 2.98 hrs, Volume= 0.017 af
Outflow = 0.44 cfs @ 2.98 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.73 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.62 fps, Avg. Travel Time= 0.5 min

Peak Storage= 6 cf @ 2.98 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 1.5 sf, Capacity= 13.18 cfs

0.00' x 1.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 1.5 '/' Top Width= 3.00'
Length= 50.0' Slope= 0.1800 '/'
Inlet Invert= 5,913.00', Outlet Invert= 5,904.00'

Reach DD5:



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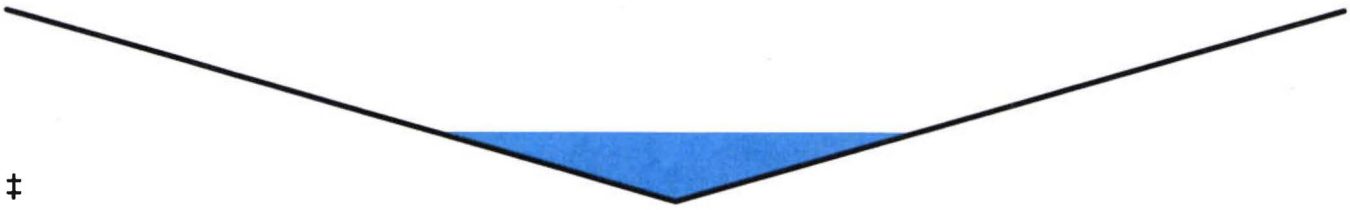
Summary for Reach DS1:

Inflow Area = 0.900 ac, 0.00% Impervious, Inflow Depth = 0.22" for 10-yr, 6-hr event
Inflow = 0.46 cfs @ 2.96 hrs, Volume= 0.017 af
Outflow = 0.44 cfs @ 2.98 hrs, Volume= 0.017 af, Atten= 5%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.88 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.33 fps, Avg. Travel Time= 3.6 min

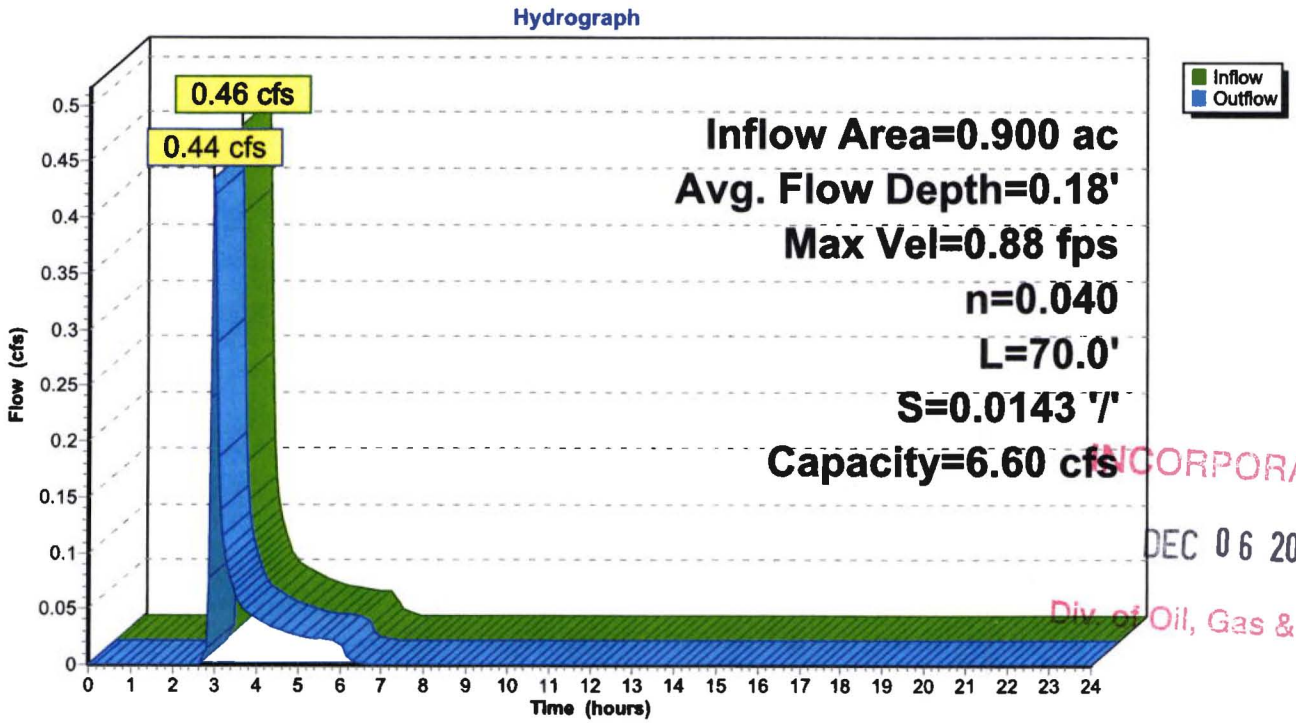
Peak Storage= 34 cf @ 2.98 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 0.50' Flow Area= 3.8 sf, Capacity= 6.60 cfs

0.00' x 0.50' deep channel, n= 0.040
Side Slope Z-value= 15.0 '/' Top Width= 15.00'
Length= 70.0' Slope= 0.0143 '/'
Inlet Invert= 5,914.00', Outlet Invert= 5,913.00'



‡

Reach DS1:



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Summary for Pond P3:

Inflow Area = 18.100 ac, 1.38% Impervious, Inflow Depth > 0.38" for 10-yr, 24-hr event
Inflow = 10.19 cfs @ 11.98 hrs, Volume= 0.567 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 5,906.38' @ 24.00 hrs Surf.Area= 7,591 sf Storage= 24,695 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	5,902.00'	75,713 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5,902.00	0	0.0	0	0
5,903.00	4,953	100.0	2,477	2,477
5,904.00	6,216	100.0	5,585	8,061
5,905.00	6,967	100.0	6,592	14,653
5,906.00	7,395	100.0	7,181	21,834
5,907.00	7,909	100.0	7,652	29,486
5,908.00	8,387	100.0	8,148	37,634
5,909.00	8,959	100.0	8,673	46,307
5,910.00	9,492	100.0	9,226	55,532
5,911.00	10,085	100.0	9,789	65,321
5,912.00	10,700	100.0	10,393	75,713

Device	Routing	Invert	Outlet Devices
#1	Primary	5,909.55'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	5,910.00'	**12.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5,910.00' / 5,908.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5,902.00' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5,902.00' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)

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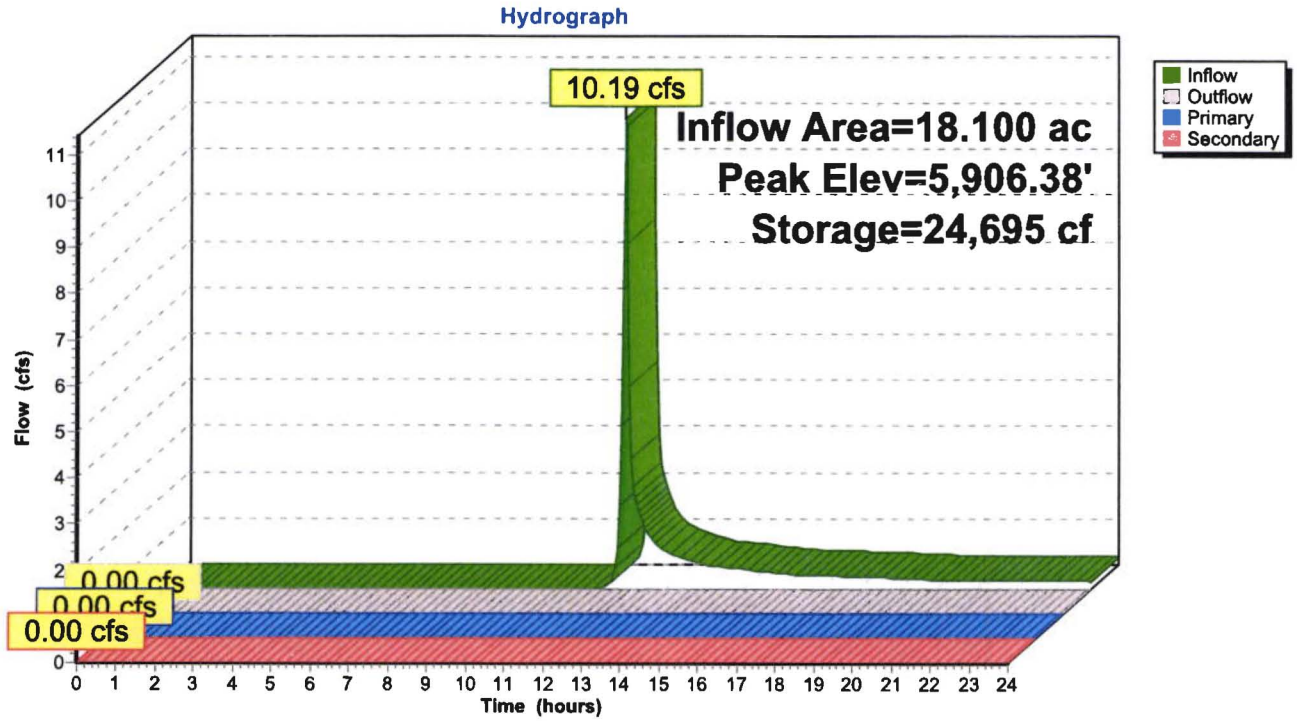
Pond P3:



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POND 3 AS-BUILT STAGE-CAPACITY DATA

Elevation (ft)	Area (sq ft)	Incremental Volume (CF)	Cummulative Volume (CF)
5902.0	0		
5903.0	4,953	2,477	2,477
5904.0	6,216	5,585	8,061
5905.0	6,967	6,592	14,653
5906.0	7,395	7,181	21,834
5907.0	7,909	7,652	29,486
5908.0	8,387	8,148	37,634
5909.0	8,959	8,673	46,307
5910.0	9,492	9,226	55,532
5911.0	10,085	9,789	65,321
5912.0	10,700	10,393	75,713

Inflow from 10-yr, 24-hr event = 0.567 AF
24,695 CF

Primary spillway elevation = 5909.55 ft
Capacity at this elevation = 51,315 CF

Available sediment storage = 26,620 CF

Linear interpolation for top of sediment storage elevation:
Pond capacity at elev. 5906.0 = 21,834 CF
Pond capacity at elev. 5907.0 = 29,486 CF
Elev. at top of sed storage pool = 5,906.63 ft

Pond area at elev. 5906.63 ft = 7,719 sq ft

60% sediment storage volume = 15,972 CF
Elev. at 60% cleanout level = 5905.18 ft

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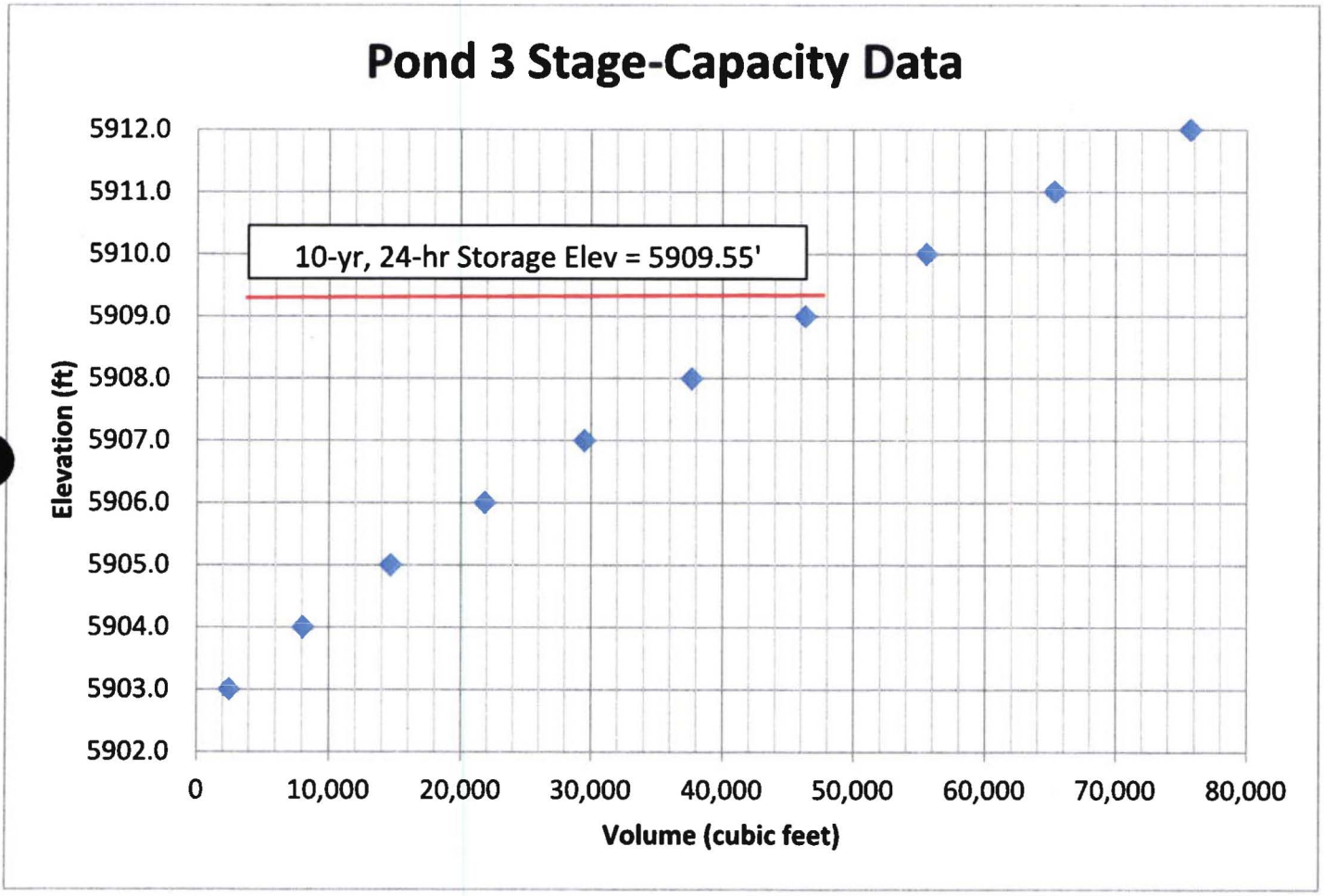

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Summary for Pond S1:

Inflow Area = 1.250 ac, 0.00% Impervious, Inflow Depth > 0.50" for 10-yr, 24-hr event
Inflow = 1.21 cfs @ 11.94 hrs, Volume= 0.052 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 6,049.14' @ 24.00 hrs Surf.Area= 2,659 sf Storage= 2,252 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	6,047.00'	4,930 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6,047.00	0	0.0	0	0
6,048.00	630	100.0	315	315
6,049.00	2,500	100.0	1,565	1,880
6,049.15	2,665	100.0	387	2,267
6,050.00	3,600	100.0	2,663	4,930

Device	Routing	Invert	Outlet Devices
#1	Primary	6,049.15'	**Special & User-Defined** Head (feet) 0.00 0.15 Disch. (cfs) 0.000 0.330

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=6,047.00' (Free Discharge)
↑**1=Special & User-Defined** (Controls 0.00 cfs)

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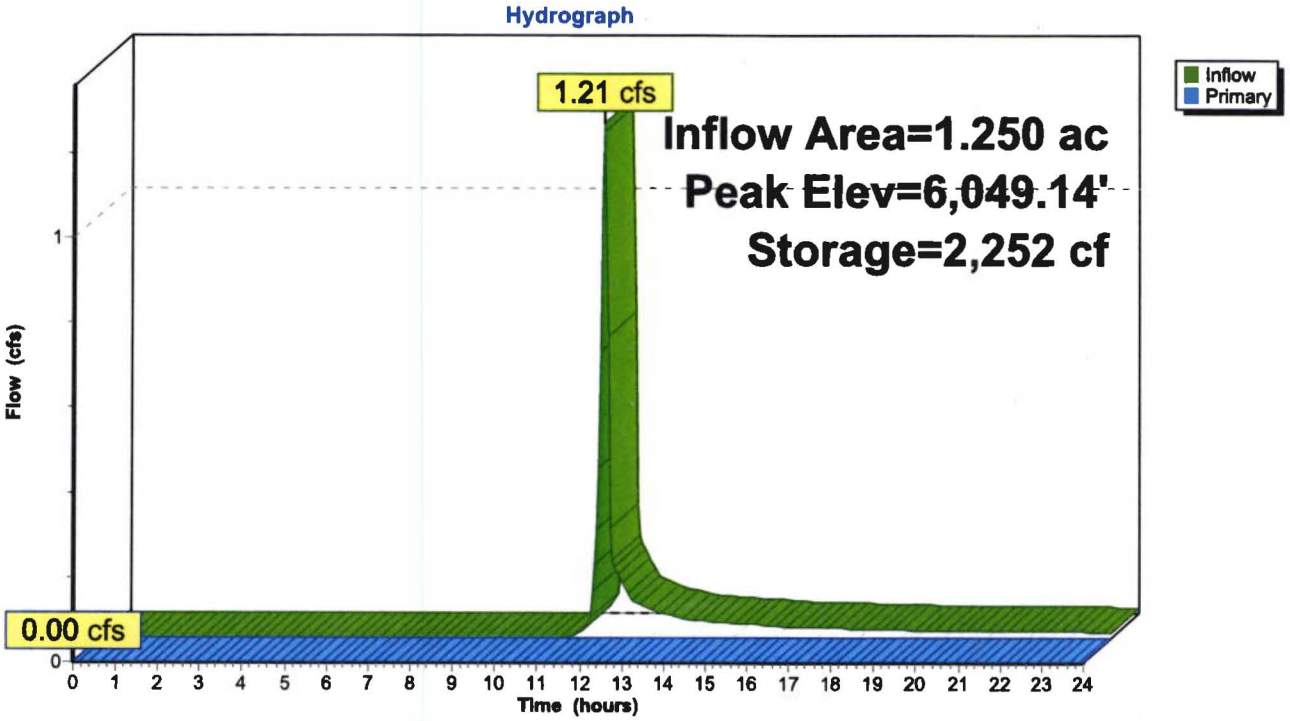
Pond S1:



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Summary for Pond P3:

Inflow Area = 18.100 ac, 1.38% Impervious, Inflow Depth = 0.20" for 25-yr, 6-hr event
Inflow = 7.15 cfs @ 3.01 hrs, Volume= 0.303 af
Outflow = 0.55 cfs @ 4.90 hrs, Volume= 0.187 af, Atten= 92%, Lag= 113.4 min
Primary = 0.55 cfs @ 4.90 hrs, Volume= 0.187 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 5,909.89' @ 4.90 hrs Surf.Area= 9,433 sf Storage= 8,170 cf

Plug-Flow detention time= 160.0 min calculated for 0.187 af (62% of inflow)
Center-of-Mass det. time= 122.2 min (349.4 - 227.2)

Volume	Invert	Avail.Storage	Storage Description
#1	5,902.00'	29,406 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5,902.00	0	0.0	0	0
5,903.00	4,953	0.0	0	0
5,904.00	6,216	0.0	0	0
5,905.00	6,967	0.0	0	0
5,906.00	7,395	0.0	0	0
5,907.00	7,909	0.0	0	0
5,908.00	8,387	0.0	0	0
5,909.00	8,959	0.0	0	0
5,909.55	9,252	100.0	5,008	5,008
5,910.00	9,492	100.0	4,217	9,225
5,911.00	10,085	100.0	9,789	19,014
5,912.00	10,700	100.0	10,393	29,406

Device	Routing	Invert	Outlet Devices
#1	Primary	5,909.55'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	5,910.00'	**12.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5,910.00' / 5,908.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.55 cfs @ 4.90 hrs HW=5,909.89' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.55 cfs @ 2.80 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=5,902.00' (Free Discharge)
↑—**2=Culvert** (Controls 0.00 cfs)

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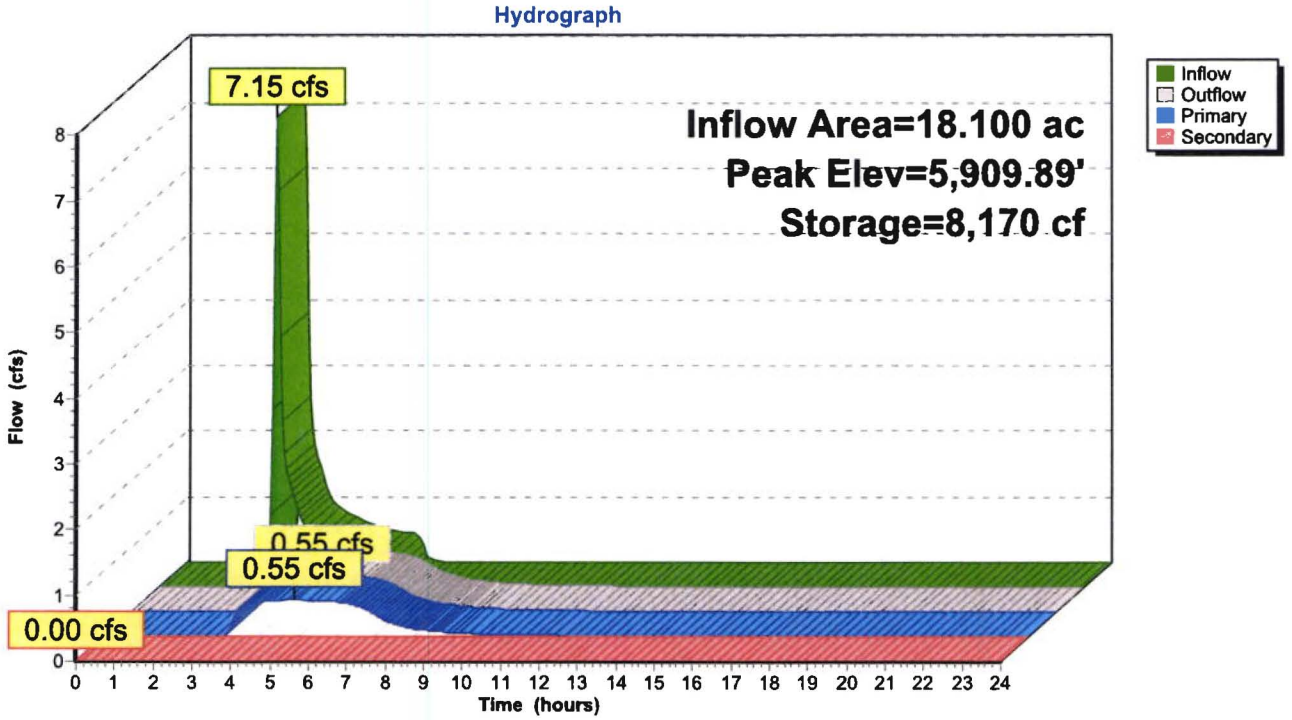
Pond P3:



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Summary for Pond S1:

Inflow Area = 1.250 ac, 0.00% Impervious, Inflow Depth = 0.29" for 25-yr, 6-hr event
Inflow = 1.03 cfs @ 2.94 hrs, Volume= 0.030 af
Outflow = 0.33 cfs @ 3.05 hrs, Volume= 0.030 af, Atten= 68%, Lag= 6.4 min
Primary = 0.33 cfs @ 3.05 hrs, Volume= 0.030 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 6,049.30' @ 3.05 hrs Surf.Area= 2,829 sf Storage= 410 cf

Plug-Flow detention time= 20.4 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 20.5 min (236.7 - 216.2)

Volume	Invert	Avail.Storage	Storage Description
#1	6,047.00'	2,663 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6,047.00	0	0.0	0	0
6,048.00	630	0.0	0	0
6,049.00	2,500	0.0	0	0
6,049.15	2,665	0.0	0	0
6,050.00	3,600	100.0	2,663	2,663

Device	Routing	Invert	Outlet Devices
#1	Primary	6,049.15'	**Special & User-Defined** Head (feet) 0.00 0.15 Disch. (cfs) 0.000 0.330

Primary OutFlow Max=0.33 cfs @ 3.05 hrs HW=6,049.30' (Free Discharge)
↑—**1=Special & User-Defined** (Custom Controls 0.33 cfs)

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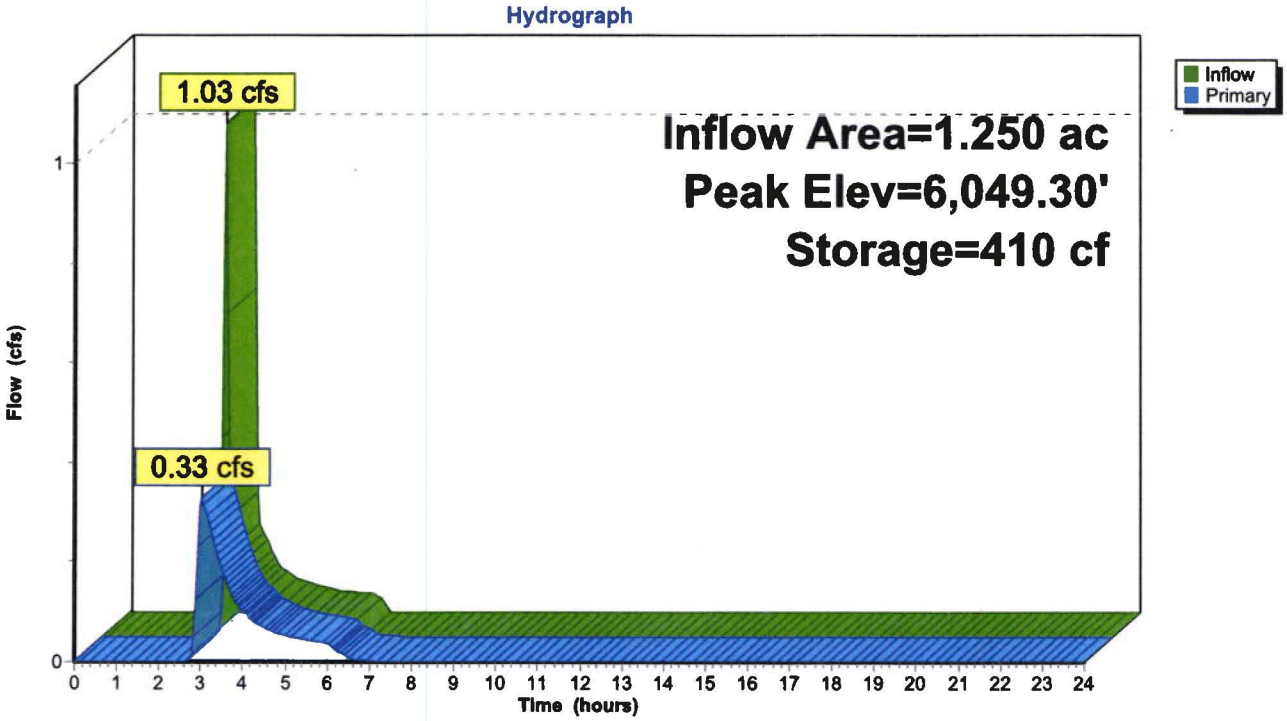
Pond S1:



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Summary for Pond P3:

Inflow Area = 18.100 ac, 1.38% Impervious, Inflow Depth = 0.20" for 25-yr, 6-hr event
Inflow = 7.15 cfs @ 3.01 hrs, Volume= 0.303 af
Outflow = 0.58 cfs @ 4.78 hrs, Volume= 0.198 af, Atten= 92%, Lag= 106.4 min
Secondary = 0.58 cfs @ 4.78 hrs, Volume= 0.198 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 5,910.43' @ 4.78 hrs Surf.Area= 9,749 sf Storage= 8,383 cf

Plug-Flow detention time= 204.4 min calculated for 0.197 af (65% of inflow)
Center-of-Mass det. time= 170.8 min (398.0 - 227.2)

Volume	Invert	Avail.Storage	Storage Description
#1	5,902.00'	24,398 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
5,902.00	0	0.0	0	0
5,903.00	4,953	0.0	0	0
5,904.00	6,216	0.0	0	0
5,905.00	6,967	0.0	0	0
5,906.00	7,395	0.0	0	0
5,907.00	7,909	0.0	0	0
5,908.00	8,387	0.0	0	0
5,909.00	8,959	0.0	0	0
5,909.55	9,252	0.0	0	0
5,910.00	9,492	100.0	4,217	4,217
5,911.00	10,085	100.0	9,789	14,006
5,912.00	10,700	100.0	10,393	24,398

Device	Routing	Invert	Outlet Devices
#1	Secondary	5,910.00'	**12.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 5,910.00' / 5,908.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Secondary OutFlow Max=0.58 cfs @ 4.78 hrs HW=5,910.43' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.58 cfs @ 1.77 fps)

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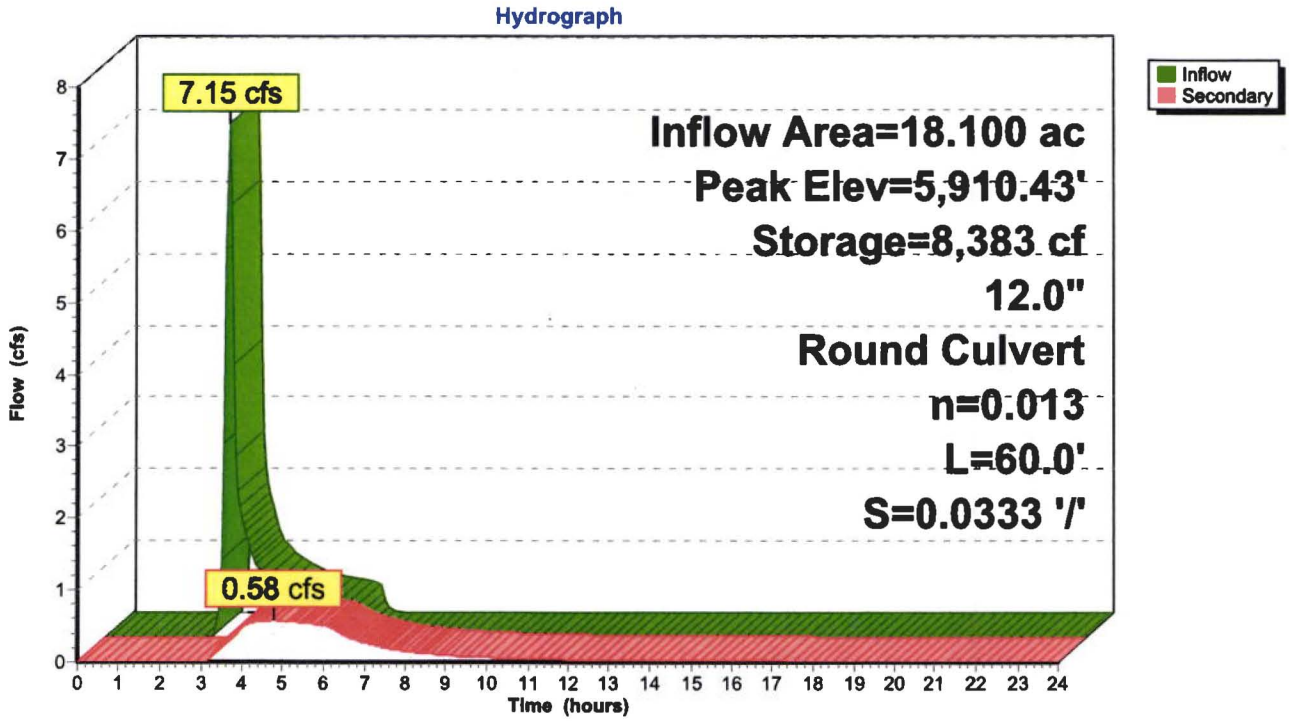
Pond P3:



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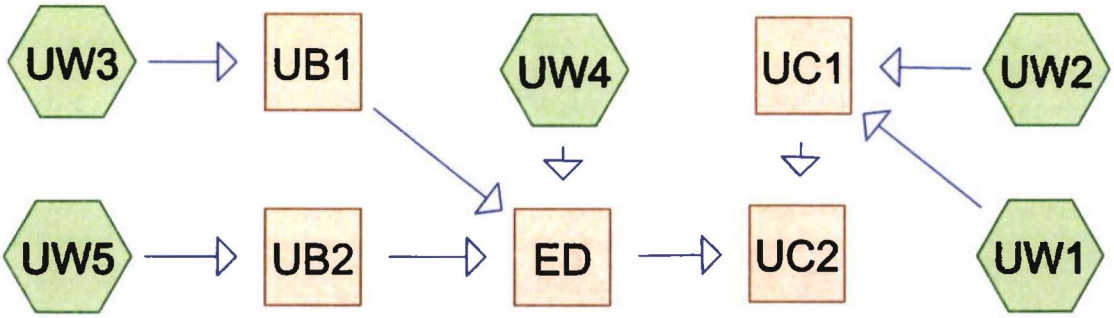

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Subcat Reach Pond Link

Routing Diagram for Operations - Undisturbed Drainage
Prepared by EarthFax Engineering, Printed 2/4/2019
HydroCAD® 10.00-20 s/n 03900 © 2017 HydroCAD Software Solutions LLC

Summary for Subcatchment UW1:

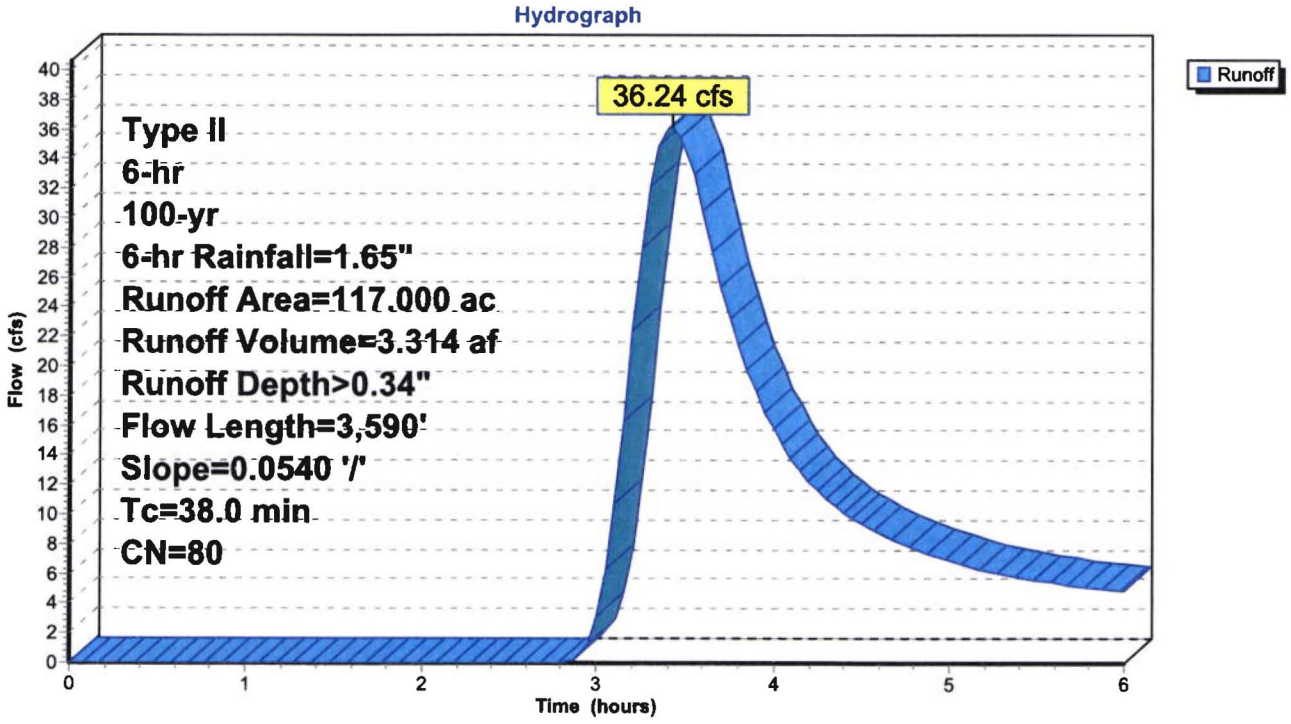
Runoff = 36.24 cfs @ 3.42 hrs, Volume= 3.314 af, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Type II 6-hr 100-yr, 6-hr Rainfall=1.65"

	Area (ac)	CN	Description
*	117.000	80	30% Cover w/HSG C
	117.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.0	3,590	0.0540	1.57		**Lag/CN Method,**

Subcatchment UW1:



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Summary for Subcatchment UW2:

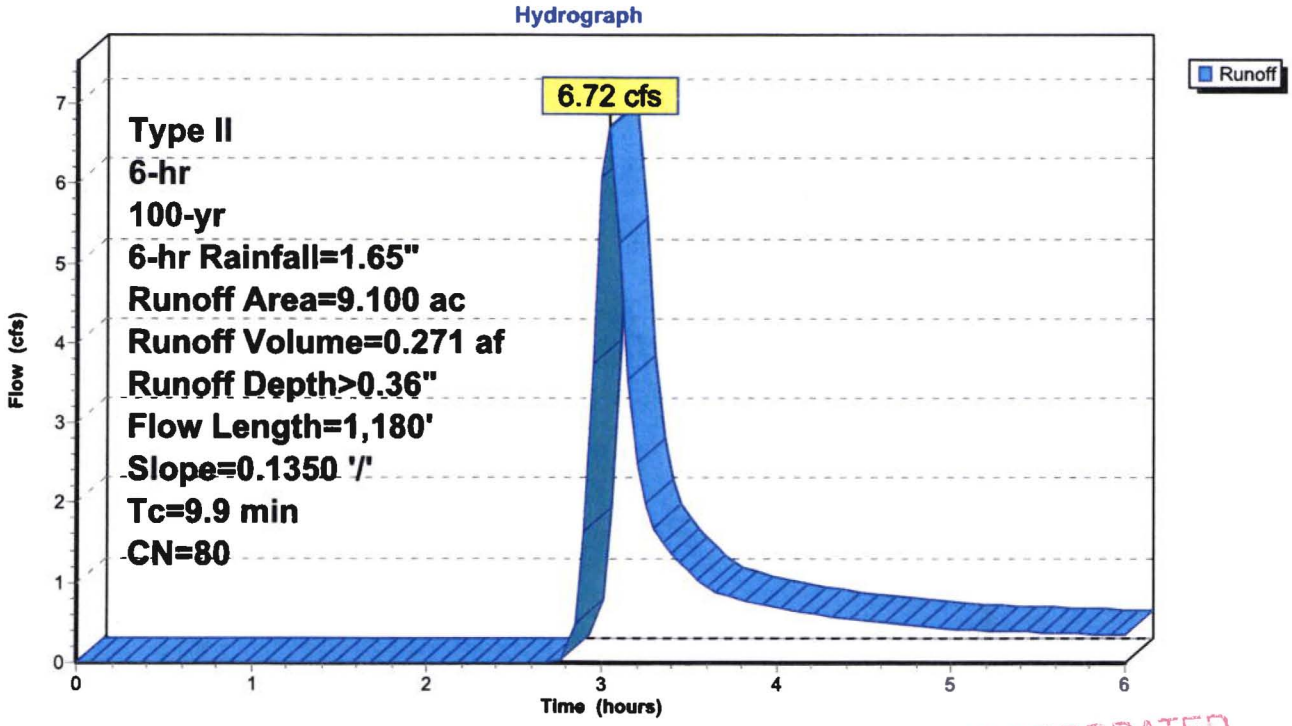
Runoff = 6.72 cfs @ 3.04 hrs, Volume= 0.271 af, Depth> 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Type II 6-hr 100-yr, 6-hr Rainfall=1.65"

	Area (ac)	CN	Description
*	9.100	80	30% Cover w/HSG C
	9.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	1,180	0.1350	1.99		**Lag/CN Method,**

Subcatchment UW2:



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Summary for Subcatchment UW3:

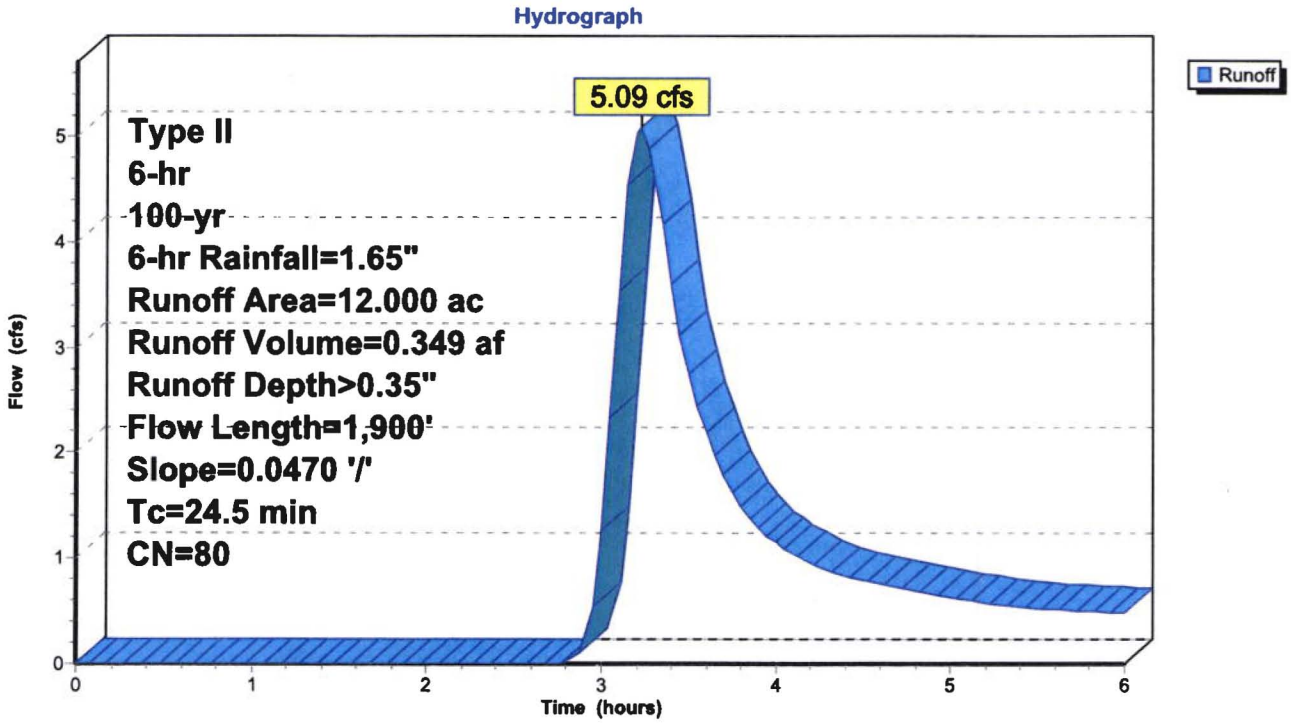
Runoff = 5.09 cfs @ 3.23 hrs, Volume= 0.349 af, Depth> 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Type II 6-hr 100-yr, 6-hr Rainfall=1.65"

	Area (ac)	CN	Description
*	12.000	80	30% Cover w/HSG C
	12.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	1,900	0.0470	1.29		**Lag/CN Method,**

Subcatchment UW3:



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Summary for Subcatchment UW4:

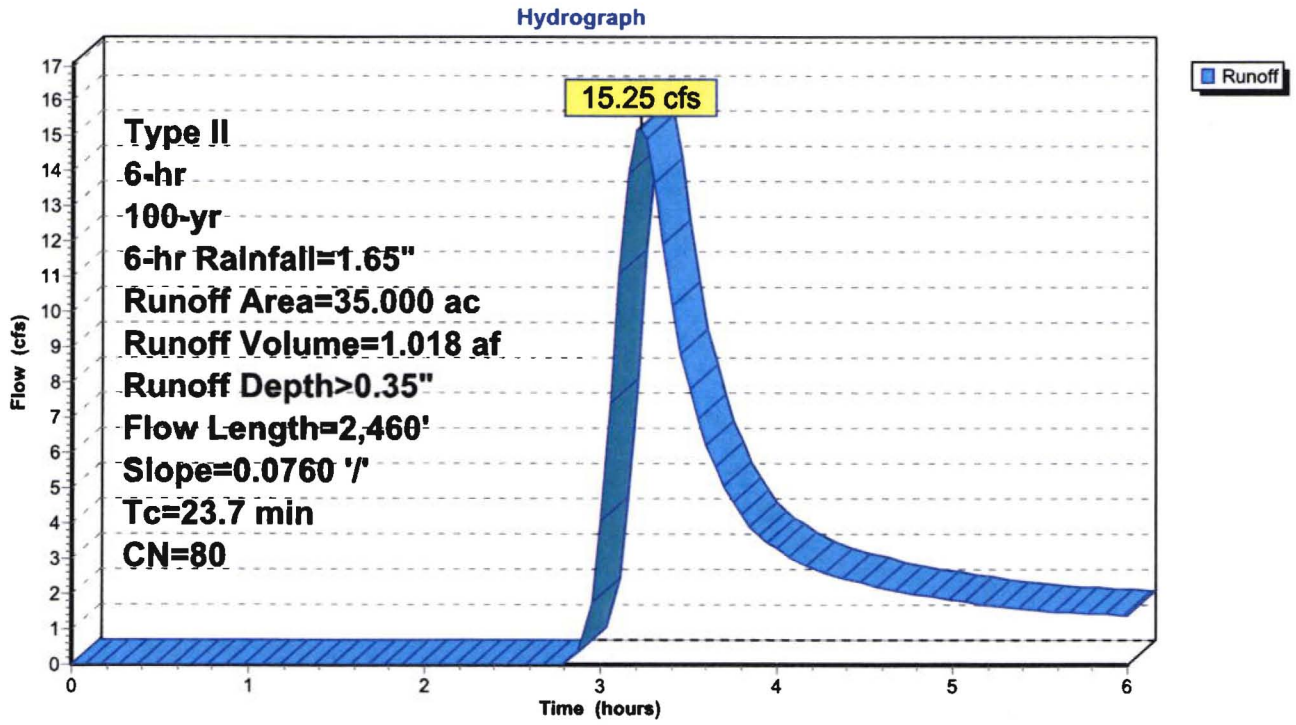
Runoff = 15.25 cfs @ 3.22 hrs, Volume= 1.018 af, Depth> 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Type II 6-hr 100-yr, 6-hr Rainfall=1.65"

	Area (ac)	CN	Description
*	35.000	80	30% Cover w/HSG C
	35.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	2,460	0.0760	1.73		**Lag/CN Method,**

Subcatchment UW4:



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Summary for Subcatchment UW5:

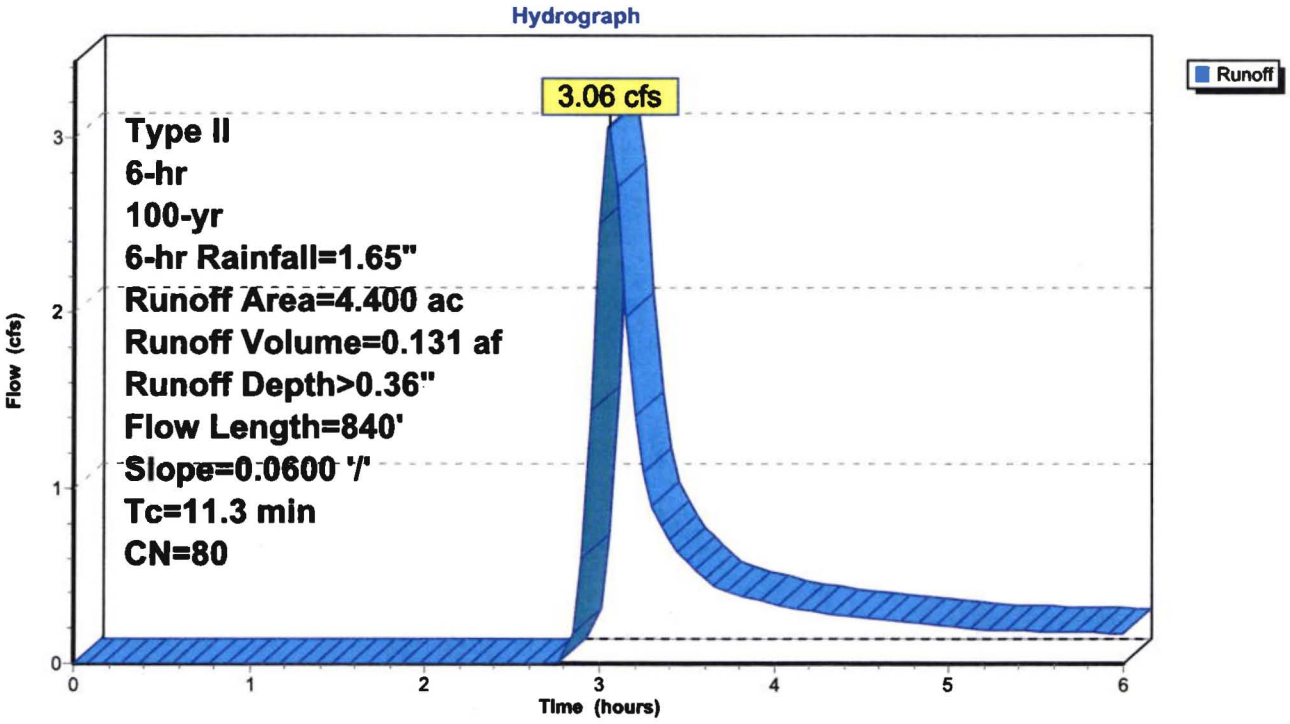
Runoff = 3.06 cfs @ 3.06 hrs, Volume= 0.131 af, Depth> 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Type II 6-hr 100-yr, 6-hr Rainfall=1.65"

	Area (ac)	CN	Description
*	4.400	80	30% Cover w/HSG C
	4.400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	840	0.0600	1.24		**Lag/CN Method,**

Subcatchment UW5:



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Summary for Reach ED:

Inflow Area = 51.400 ac, 0.00% Impervious, Inflow Depth > 0.35" for 100-yr, 6-hr event
Inflow = 21.24 cfs @ 3.24 hrs, Volume= 1.488 af
Outflow = 21.20 cfs @ 3.24 hrs, Volume= 1.487 af, Atten= 0%, Lag= 0.3 min

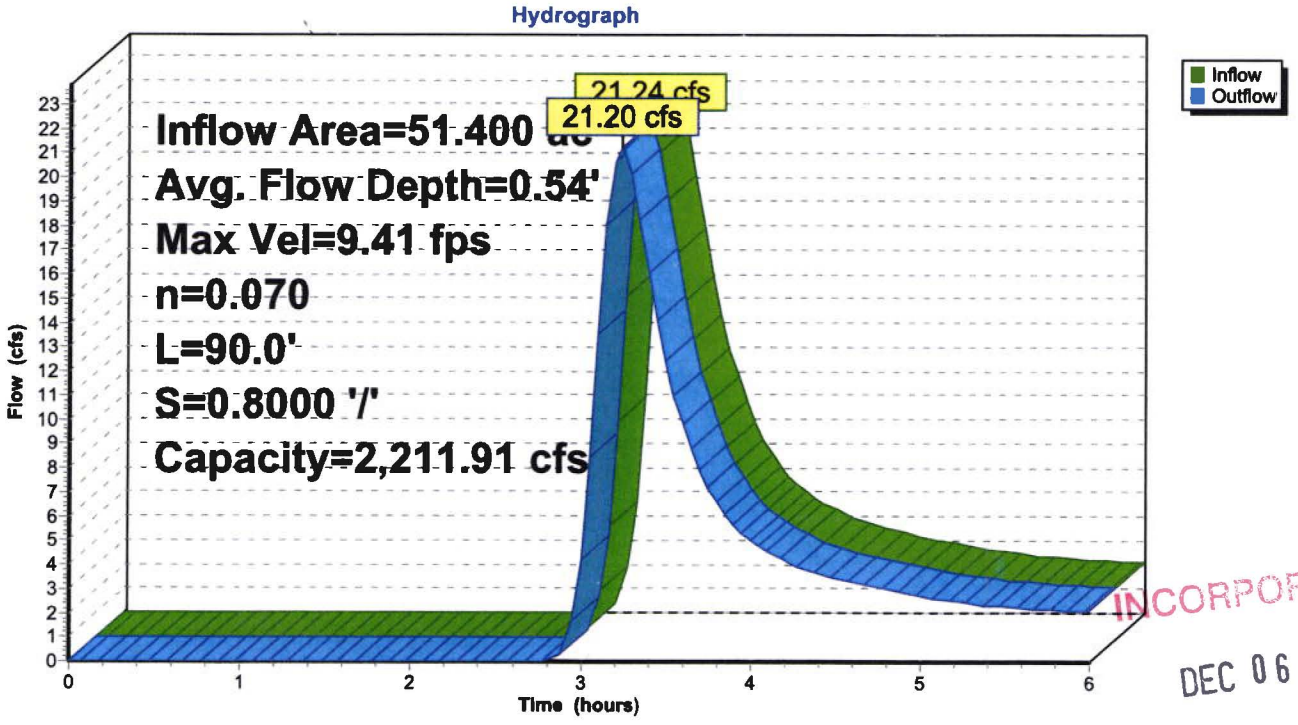
Routing by Stor-Ind+Trans method, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.41 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 5.92 fps, Avg. Travel Time= 0.3 min

Peak Storage= 203 cf @ 3.24 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 4.00' Flow Area= 72.0 sf, Capacity= 2,211.91 cfs

2.00' x 4.00' deep channel, n= 0.070 Mountain streams w/large boulders
Side Slope Z-value= 4.0 '/' Top Width= 34.00'
Length= 90.0' Slope= 0.8000 '/'
Inlet Invert= 6,045.00', Outlet Invert= 5,973.00'

‡

Reach ED:



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Summary for Reach UB1:

Inflow Area = 12.000 ac, 0.00% Impervious, Inflow Depth > 0.35" for 100-yr, 6-hr event
Inflow = 5.09 cfs @ 3.23 hrs, Volume= 0.349 af
Outflow = 4.87 cfs @ 3.34 hrs, Volume= 0.342 af, Atten= 4%, Lag= 6.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.81 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 2.52 fps, Avg. Travel Time= 5.5 min

Peak Storage= 1,059 cf @ 3.28 hrs
Average Depth at Peak Storage= 0.72'
Bank-Full Depth= 1.50' Flow Area= 7.8 sf, Capacity= 37.74 cfs

Custom cross-section, Length= 825.0' Slope= 0.0364 '/'
Constant n= 0.035
Inlet Invert= 6,075.00', Outlet Invert= 6,045.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	1.50	0.00
9.00	1.00	0.50
10.00	0.00	1.50
16.00	1.50	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.00	2.5	5.5	2,063	11.84
1.50	7.8	16.6	6,394	37.74

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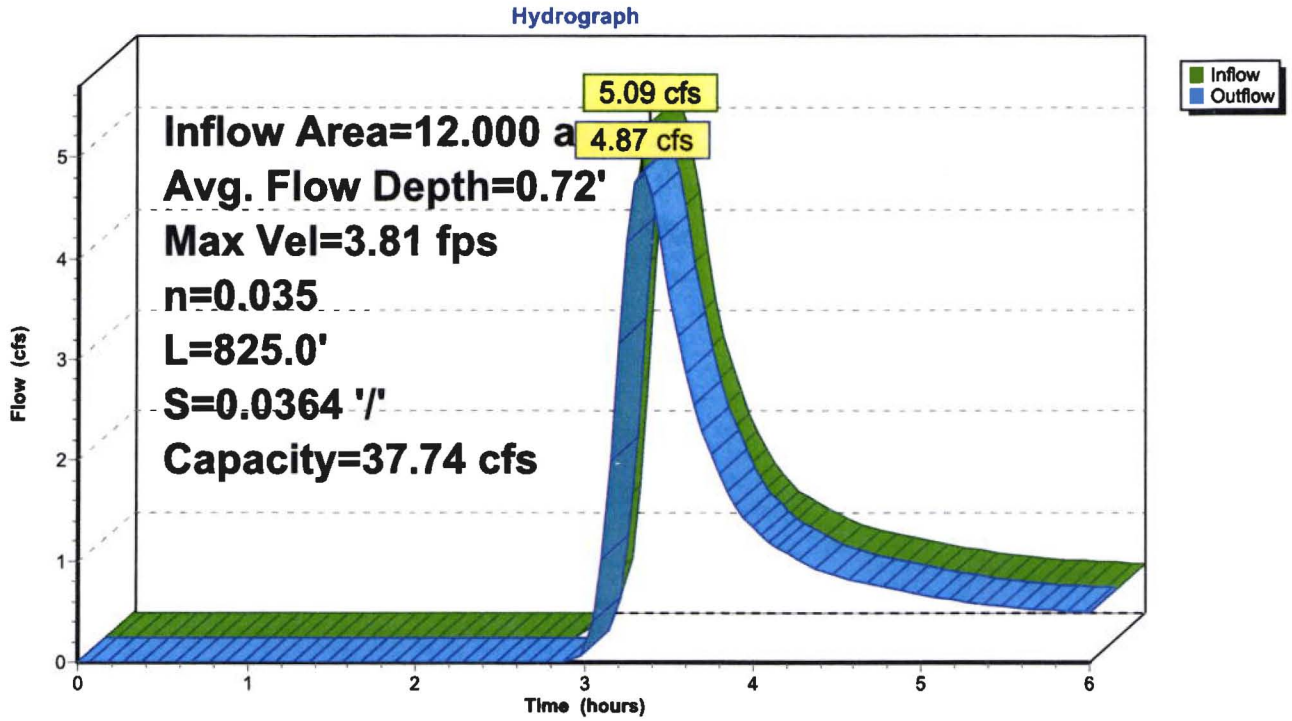
Reach UB1:



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Summary for Reach UB2:

Inflow Area = 4.400 ac, 0.00% Impervious, Inflow Depth > 0.36" for 100-yr, 6-hr event
Inflow = 3.06 cfs @ 3.06 hrs, Volume= 0.131 af
Outflow = 2.60 cfs @ 3.17 hrs, Volume= 0.128 af, Atten= 15%, Lag= 7.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.71 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 6.6 min

Peak Storage= 632 cf @ 3.11 hrs
Average Depth at Peak Storage= 0.63'
Bank-Full Depth= 1.50' Flow Area= 7.8 sf, Capacity= 29.27 cfs

Custom cross-section, Length= 640.0' Slope= 0.0219 '/'
Constant n= 0.035
Inlet Invert= 6,059.00', Outlet Invert= 6,045.00'

‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	1.50	0.00
9.00	1.00	0.50
10.00	0.00	1.50
16.00	1.50	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.00	2.5	5.5	1,600	9.18
1.50	7.8	16.6	4,960	29.27

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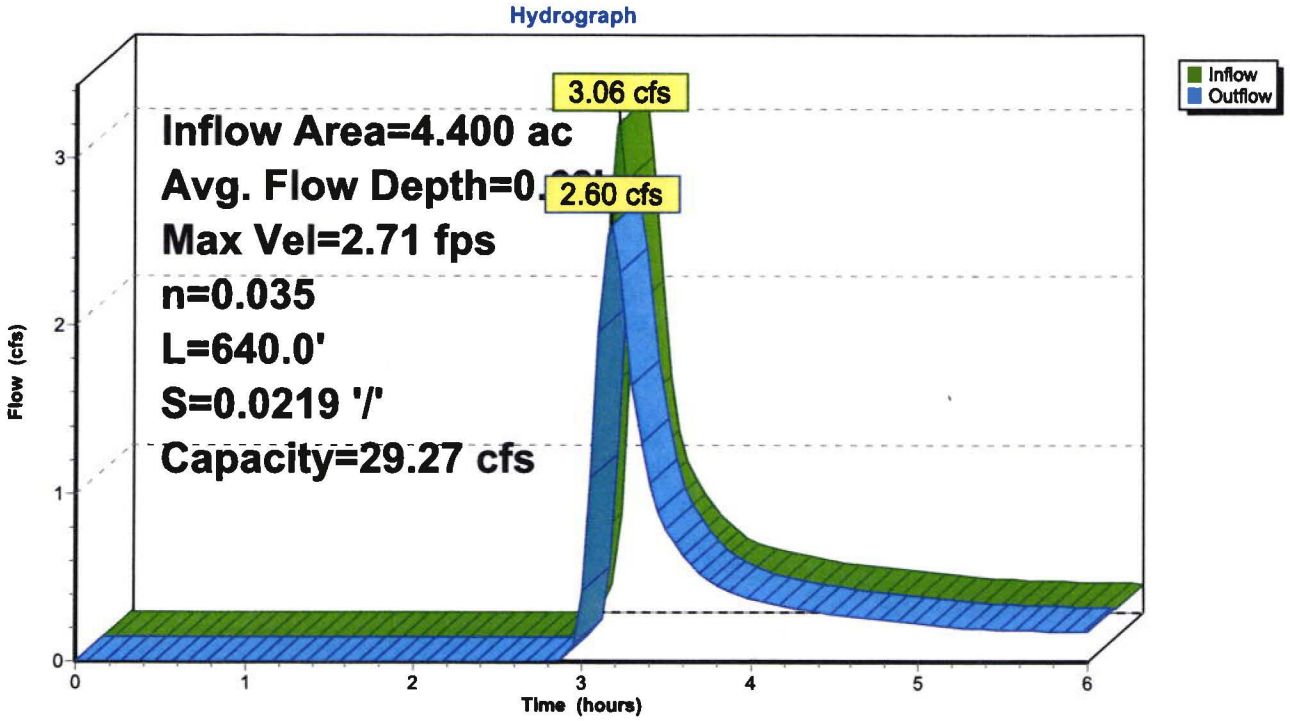
Reach UB2:



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Summary for Reach UC1:

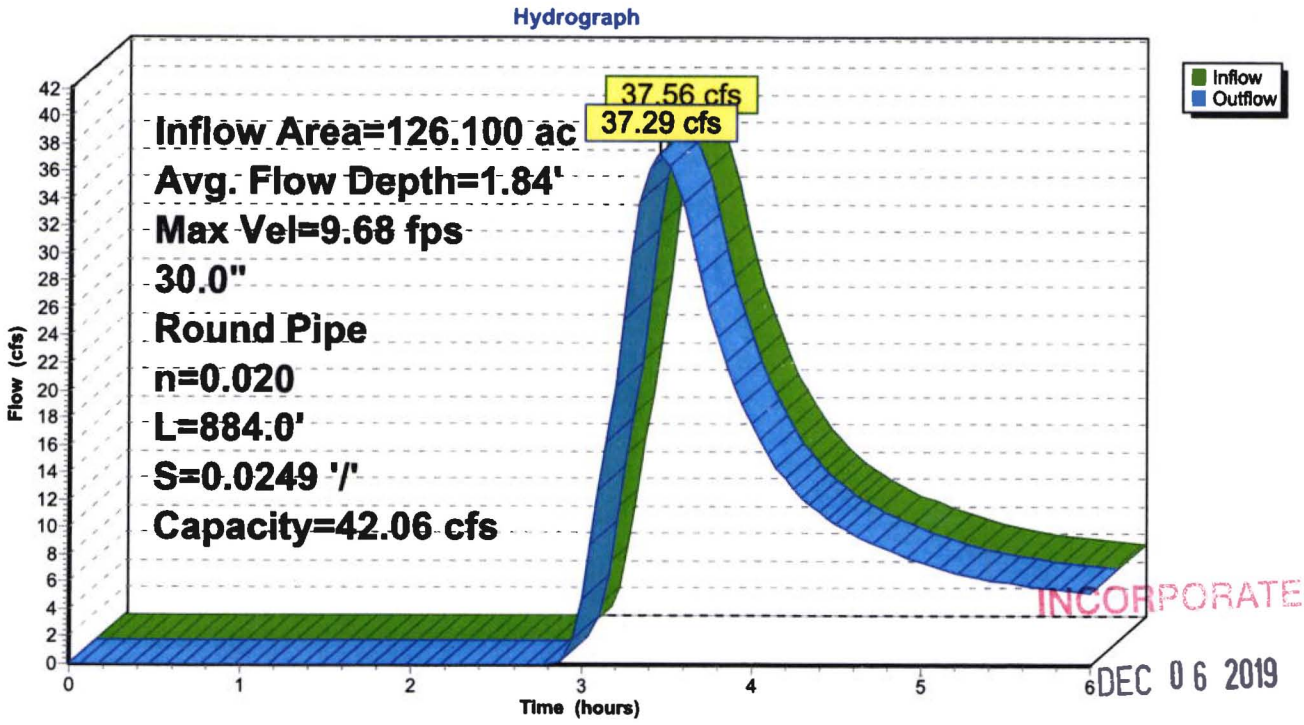
Inflow Area = 126.100 ac, 0.00% Impervious, Inflow Depth > 0.34" for 100-yr, 6-hr event
Inflow = 37.56 cfs @ 3.42 hrs, Volume= 3.586 af
Outflow = 37.29 cfs @ 3.47 hrs, Volume= 3.556 af, Atten= 1%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.68 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 6.96 fps, Avg. Travel Time= 2.1 min

Peak Storage= 3,417 cf @ 3.44 hrs
Average Depth at Peak Storage= 1.84'
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 42.06 cfs

30.0" Round Pipe
n= 0.020
Length= 884.0' Slope= 0.0249 '/'
Inlet Invert= 5,995.00', Outlet Invert= 5,973.00'

Reach UC1:



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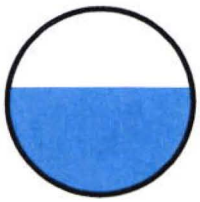
Summary for Reach UC2:

Inflow Area = 177.500 ac, 0.00% Impervious, Inflow Depth > 0.34" for 100-yr, 6-hr event
Inflow = 52.33 cfs @ 3.38 hrs, Volume= 5.043 af
Outflow = 52.22 cfs @ 3.41 hrs, Volume= 5.023 af, Atten= 0%, Lag= 1.4 min

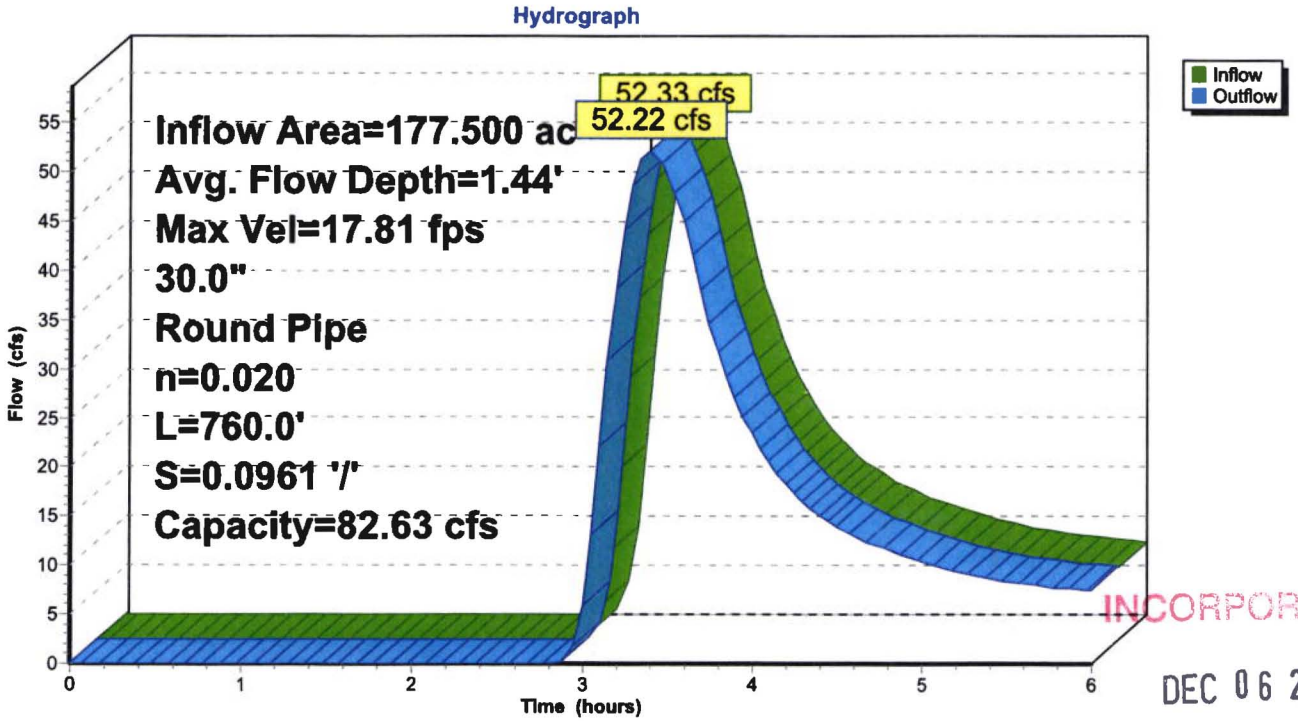
Routing by Stor-Ind+Trans method, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Max. Velocity= 17.81 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 12.59 fps, Avg. Travel Time= 1.0 min

Peak Storage= 2,232 cf @ 3.39 hrs
Average Depth at Peak Storage= 1.44'
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 82.63 cfs

30.0" Round Pipe
n= 0.020
Length= 760.0' Slope= 0.0961 '/'
Inlet Invert= 5,973.00', Outlet Invert= 5,900.00'



Reach UC2:



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RIPRAP APRON DESIGN

Method: Thompson, P.L. and R.T Kilgore. 2006. Hydraulic Design of Energy Dissipators for Culverts and Channels. Hydraulic Engineering Circular No. 14, Third Edition. Federal Highway Administration. Arlington, VA.

Equation:

$$D_{50} = 0.2D\left[\frac{Q}{SQRT(g)*D^{2.5}}\right]^{4/3}\left[\frac{Q}{TW}\right]$$

Where
- D_{50} = median riprap diameter (ft)
- D = culvert diameter (ft)
- Q = design discharge (cfs)
- g = acceleration due to gravity (ft/s^2)
- TW = tailwater depth (ft)

Client: Bronco Utah Operations, LLC
Site: Emery2 surface facility - Outlet of culvert UC-2
Proj. No.: UC-1665-11
Designer: TA Jimenez

Calculations:

D =	2.5	ft
Q =	52.33	cfs
g =	32.2	ft/s^2
TW =	1.44	ft

D_{50} =	**0.79**	**ft**
=	**9.5**	**in**

Use a median diameter of 9 inches for added protection.

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ATTACHMENT C

Reclamation Hydrology Design Information

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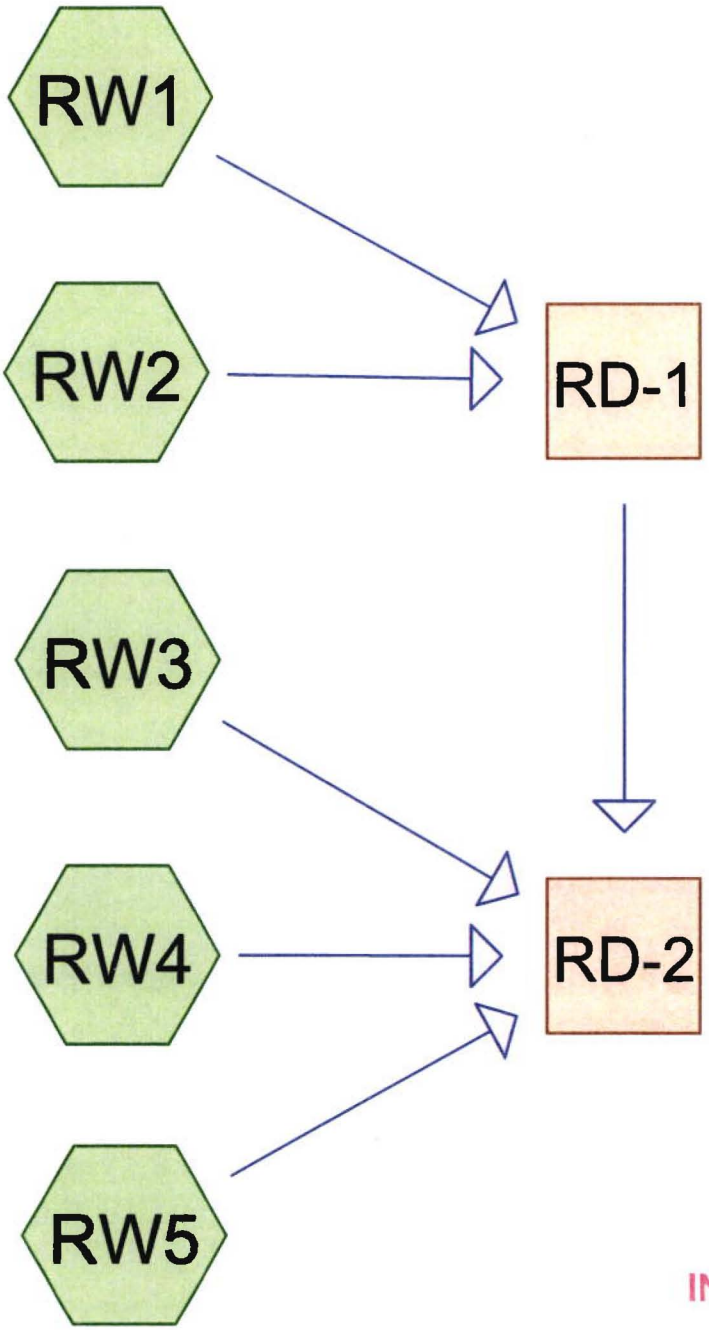

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Subcat Reach Pond Link

Routing Diagram for Reclamation Drainage
Prepared by EarthFax Engineering Group, LLC, Printed 10/12/2016
HydroCAD® 10.00 s/n 03900 © 2011 HydroCAD Software Solutions LLC

Time span=0.00-6.00 hrs, dt=0.05 hrs, 121 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment RW1: Runoff Area=134.000 ac 0.00% Impervious Runoff Depth>0.34"
Flow Length=3,590' Slope=0.0540 '/' Tc=38.0 min CN=80 Runoff=41.51 cfs 3.796 af

Subcatchment RW2: Runoff Area=14.000 ac 0.00% Impervious Runoff Depth>0.36"
Flow Length=440' Slope=0.1600 '/' Tc=4.1 min CN=80 Runoff=13.51 cfs 0.421 af

Subcatchment RW3: Runoff Area=36.000 ac 0.00% Impervious Runoff Depth>0.35"
Flow Length=2,560' Slope=0.0800 '/' Tc=23.8 min CN=80 Runoff=15.62 cfs 1.047 af

Subcatchment RW4: Runoff Area=6.500 ac 0.00% Impervious Runoff Depth>0.36"
Flow Length=460' Slope=0.2500 '/' Tc=3.4 min CN=80 Runoff=6.54 cfs 0.196 af

Subcatchment RW5: Runoff Area=12.000 ac 0.00% Impervious Runoff Depth>0.36"
Flow Length=1,210' Slope=0.1650 '/' Tc=9.1 min CN=80 Runoff=9.14 cfs 0.358 af

Reach RD-1: Avg. Flow Depth=1.10' Max Vel=6.34 fps Inflow=43.24 cfs 4.217 af
n=0.040 L=910.0' S=0.0418 '/' Capacity=139.90 cfs Outflow=42.87 cfs 4.160 af

Reach RD-2: Avg. Flow Depth=1.08' Max Vel=8.07 fps Inflow=53.98 cfs 5.760 af
n=0.040 L=960.0' S=0.0688 '/' Capacity=179.51 cfs Outflow=53.69 cfs 5.697 af

Total Runoff Area = 202.500 ac Runoff Volume = 5.818 af Average Runoff Depth = 0.34"
100.00% Pervious = 202.500 ac 0.00% Impervious = 0.000 ac

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Summary for Subcatchment RW1:

Runoff = 41.51 cfs @ 3.42 hrs, Volume= 3.796 af, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Type II 6-hr 100-yr, 6-hr Rainfall=1.65"

	Area (ac)	CN	Description
*	134.000	80	30% Cover w/HSG C
	134.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.0	3,590	0.0540	1.57		**Lag/CN Method,**

Summary for Subcatchment RW2:

Runoff = 13.51 cfs @ 2.96 hrs, Volume= 0.421 af, Depth> 0.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Type II 6-hr 100-yr, 6-hr Rainfall=1.65"

	Area (ac)	CN	Description
*	14.000	80	30% Cover w/HSG C
	14.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	440	0.1600	1.78		**Lag/CN Method,**

Summary for Subcatchment RW3:

Runoff = 15.62 cfs @ 3.22 hrs, Volume= 1.047 af, Depth> 0.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Type II 6-hr 100-yr, 6-hr Rainfall=1.65"

	Area (ac)	CN	Description
*	36.000	80	30% Cover w/HSG C
	36.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.8	2,560	0.0800	1.79		**Lag/CN Method,**

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Summary for Subcatchment RW4:

Runoff = 6.54 cfs @ 2.96 hrs, Volume= 0.196 af, Depth> 0.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Type II 6-hr 100-yr, 6-hr Rainfall=1.65"

	Area (ac)	CN	Description
*	6.500	80	30% Cover w/HSG C
	6.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	460	0.2500	2.25		**Lag/CN Method,**

Summary for Subcatchment RW5:

Runoff = 9.14 cfs @ 3.03 hrs, Volume= 0.358 af, Depth> 0.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Type II 6-hr 100-yr, 6-hr Rainfall=1.65"

	Area (ac)	CN	Description
*	12.000	80	30% Cover w/HSG C
	12.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	1,210	0.1650	2.21		**Lag/CN Method,**

Summary for Reach RD-1:

Inflow Area = 148.000 ac, 0.00% Impervious, Inflow Depth > 0.34" for 100-yr, 6-hr event
Inflow = 43.24 cfs @ 3.42 hrs, Volume= 4.217 af
Outflow = 42.87 cfs @ 3.49 hrs, Volume= 4.160 af, Atten= 1%, Lag= 4.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.34 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 4.35 fps, Avg. Travel Time= 3.5 min

Peak Storage= 6,175 cf @ 3.45 hrs
Average Depth at Peak Storage= 1.10'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 139.90 cfs

4.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 910.0' Slope= 0.0418 '/'
Inlet Invert= 6,000.00', Outlet Invert= 5,962.00'

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Summary for Reach RD-2:

Inflow Area = 202.500 ac, 0.00% Impervious, Inflow Depth > 0.34" for 100-yr, 6-hr event
Inflow = 53.98 cfs @ 3.44 hrs, Volume= 5.760 af
Outflow = 53.69 cfs @ 3.50 hrs, Volume= 5.697 af, Atten= 1%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-6.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.07 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 5.69 fps, Avg. Travel Time= 2.8 min

Peak Storage= 6,402 cf @ 3.46 hrs
Average Depth at Peak Storage= 1.08'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 179.51 cfs

4.00' x 2.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12.00'
Length= 960.0' Slope= 0.0688 '/'
Inlet Invert= 5,962.00', Outlet Invert= 5,896.00'

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EARTHFAX ENGINEERING GROUP, LLC
RIPRAP SIZING BASED ON HEC-11

Project #: UC-1665-07
Site: Emery 2 Facility Reclamation Channel Riprap Design
Engineer: RB White

Bank angle = 2 :1 = 26.57 degrees = 0.464 radians
Riprap material angle of repose = 39 degrees = 0.681 radians

K1 = 0.704

Channel	Design Velocity (ft/s)	Flow Depth (ft)	Median Riprap Diameter		
			Calculated (ft)	Calculated (in)	Planned (in)
RD-1	6.34	1.10	0.412	4.9	6
RD-2	8.07	1.08	0.857	10.3	12

Reference:

Brown, S.A. and E,S, Clyde. 1989. Design of Riprap Revetment. Hydraulic Engineering Circular No. 11. U.S. Departmnt of Transportation, Federal Highway Administration. McLean, Virginia.

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TABLE VI-18

Summary of Operational Diversion Ditches and Culverts

Structure		Design Event	Ditch Features			Culvert Type
			Bottom Width (ft)	Side Slopes (H:V)	Design Flow Depth (ft)	
Waste Disposal Site Diversion		100-yr, 24-hr	14	3:1	2.1	NA
4th East Portal Stream Diversion		10-yr, 24-hr	6	2:1	1.7	NA
Prep. Plant Ditch and Culvert		10-yr, 24-hr	10	2:1	0.3-0.5	30" CMP
Ditch and Culvert No. 1		10-yr, 6-hr	0	4:1	0.7	18" CMP
Ditch No. 2		10-yr, 6-hr	0-2	2:1	0.3-1.0	NA
Ditch No. 2A		100-yr, 6-hr	0	2:1	1.0	NA
Ditch No. 3		10-yr, 24-hr	2	2:1	1.1	NA
Ditch No. 3A		10-yr, 24-hr	2	2:1	0.4	NA
Ditch No. 4		10-yr, 24-hr	2	2:1	0.4-0.6	18" CMP
Ditch No. 5		10-yr, 24-hr	2	2:1	0.8	NA
Ditch No. 6		10-yr, 24-hr	0	2:1	0.6	NA
Arch Culvert on Quitchupah Creek		25-yr, 24-hr	NA	NA	NA	15'x10' pipe arch
Emery 2 Surface Facility	DB-1	10-yr, 6-hr	0	1.5:1	0.12	NA
	DB-2	10-yr, 6-hr	0	1.5:1	0.33	NA
	DC-1	10-yr, 6-hr	NA	NA	0.27	24" CHDPE
	DD-1	10-yr, 6-hr	0	2:1/5:1	0.31	NA
	DD-2	10-yr, 6-hr	1	1.5:1	0.58	NA
	DD-3	10-yr, 6-hr	0	1.5:1	0.50	NA
	DD-4	10-yr, 6-hr	0	1.5:1	0.36	NA
	DD-5	10-yr, 6-hr	0	1.5:1	0.28	NA
	DS-1	10-yr, 6-hr	0	15:1	0.18	NA
	UB-1	100-yr, 6-hr	0	1:1/4:1	0.72	NA
	UB-2	100-yr, 6-hr	0	1:1/4:1	0.63	NA
	UC-1	100-yr, 6-hr	NA	NA	1.84	30" CMP
	UC-2	100-yr, 6-hr	NA	NA	1.44	30" CMP

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VII.C.1 UMC 783.21 SOIL RESOURCES INFORMATION

Soil survey information for portions of the permit area to be affected by surface operations is provided in Chapter VII-SOILS.

Refer to the attached Soil Map which delineates the different soil mapping units for the surface operations area.

Refer to Chapter VII.A.1 Scope of Investigation and Chapter VII.A.2 Methodology concerning soil identification.

Refer to Chapter VII.A.3 Soil Description concerning soil descriptions.

Refer to Chapter VII.A.4 Estimated Yields concerning present and potential productivity of existing soils.

Refer to Chapter VII B.5 Depth of Suitable Topsoil Material with soil analysis provided in Chapter VII.B.3 Soil Data.

Refer to Chapter VII.B.5 Depth of Suitable Topsoil Material for the depths of selected overburden material that would be suitable for topsoil material. Refer to Chapter VII.B.2 Soil Data for the results of analysis, trials and tests required under UMC 817.22.

Refer to Chapter VII, Appendix VII-3 (Biological & Soil Resources at the 4th East Portal Area) and Appendix VII-4 (additional 1.5 ac at 4th East Portal)

Refer to Chapter VII, Appendix 5 (Order 2 Soil Survey of Emery 2 Mine Permit, and Appendix 6 (Soil Survey of the Emery Deep Mine-Canyon Disturbance-2/16/2017) for Emery 2 boxcut soil information

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VII.C.4 UMC 817.21 TOPSOIL: GENERAL REQUIREMENTS

Before any additional disturbance (Post September 1, 1990), topsoil thickness will be determined and mapped in the field. At each sample site a soil sample will be bagged and labeled for shipment to a laboratory for analyses.

In the laboratory the following soil analysis determinations will be performed: soil pH, available phosphorus, extractable potassium, percent sand, percent silt and percent clay.

Field parameters outlined in Table 2 and the laboratory parameters outlined in Table 3 of The Division's 2008 Guidelines for Management of Topsoil and Overburden will be followed.

Refer to Chapter III.A.2 - TIMING, SEQUENCE AND BONDING for the reclamation time table concerning the stockpiling of topsoil.

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VII.C.6 UMC 817.23 TOPSOIL: STORAGE

Refer to Chapter III.A.2 - TIMING, SEQUENCE AND BONDING for the reclamation time table concerning the stockpiling of topsoil.

Stockpiled materials shall be selectively placed on a stable surface area within the surface operations area, not disturbed, and protected from wind and water erosion, unnecessary compaction, and contaminants which lessen the capability of the materials to support vegetation when redistributed.

The topsoil stockpile and disturbed area will be seeded the first normal period after removal using the contemporaneous reclamation seed mix in Chapter VIII.C.3. Unless approved by the Division, stockpiled topsoil will not be moved or disturbed until required for redistribution on a disturbed area.

It should be noted that a portion of the existing subsoil stockpile S-1 overlaps the proposed clean coal storage area of the preparation plant area on the operations plan map. This conflict will be resolved prior to construction of the preparation plant facility by utilizing the stockpile in reclamation at the earliest possible time. The respread depth and respread location will be provided to the Division prior to initiating any reclamation. If it is not possible to utilize the stockpile prior to construction of the preparation plant facility, final disposition of the stockpile will be determined in consultation with the Division.

The following table is a compilation of all known stockpile volumes both topsoil and subsoil

T-1 topsoil	538 cu yd	surveyed 11/19	Plate II-1
T-2 topsoil	2,370 cu yd	surveyed 3/17	Plate II-1
S-1 subsoil	9,524 cu yd	surveyed 11/19	Plate II-1
Pond 1 Outfall 001 topsoil	7,200 cu yd	surveyed 11/19	Plate III-3
Pond 6 Outfall 003 topsoil	2,795 cu yd	surveyed 11/19	Plate III-2
Pond 6 Outfall 003 subsoil	2,795 cu yd	surveyed 11/19	Plate III-2
4th East berms topsoil	1,400 cu yd	surveyed 2002	Plate II-3A
4th East topsoil	10,440 cu yd	surveyed 2002	Plate II-3A

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Revised 9/1991
Revised 11/2019

R5E R6E

FEDERAL LEASE IBC

FED LEASE U-5287

FED LEASE U-50044

FED LEASE UTU-86038

1.0 AC

0.6 AC

4.6 AC

4th EAST PORTAL

16.0 AC

1.6 AC

4.1 AC

1.1 AC

1.8 AC

6.4 AC

0.9 AC

1.3 AC

1.2 AC

1.7 AC

0.2 AC

0.03 AC

6.8 AC

5.3 AC

0.05 AC

0.3 AC

7.9 AC

12.7 AC

0.7 AC

0.4 AC

9.2 AC

NOT PERMITTED

EXCLUSION AREA (NO MINING) RELINQUISHED STATE LEASE

BUFFER ZONE NO PILLARING

SEVIER CO / EMERY CO

A-1 ZONE

202,000N
200,000N
198,000N
196,000N
194,000N
192,000N
190,000N
188,000N

2,058,000E
2,060,000E
2,062,000E
2,064,000E
2,066,000E
2,068,000E
2,070,000E
2,072,000E
2,074,000E
2,076,000E
2,078,000E
2,080,000E

T22S
T23S

LEGEND

- PERMIT AREA BOUNDARY
- ADJACENT AREA FOR NON-WATER RESOURCES. FOR THE AREA OF HYDROLOGIC EVALUATION, SEE PLATE VI-4
- SURFACE AFFECTED PRIOR TO 8/3/77
- SURFACE AFFECTED POST 8/3/77 TO 7/1/2002
- SURFACE AFFECTED EMERY 2 EXPANSION
- POTENTIAL SURFACE OPERATIONS AREA (UNDISTURBED)

REGISTERED PROFESSIONAL ENGINEER
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NICOLAUS PATRICK NEUMANN
STATE OF UTAH

11.26.19

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NOTE: REFER TO CHAPTER III PAGE 2 TABLES III-1 AND III-2 FOR SURVEYED BOUNDARIES

THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. COORDINATES ARE NOT TO MINE DATUM.

N

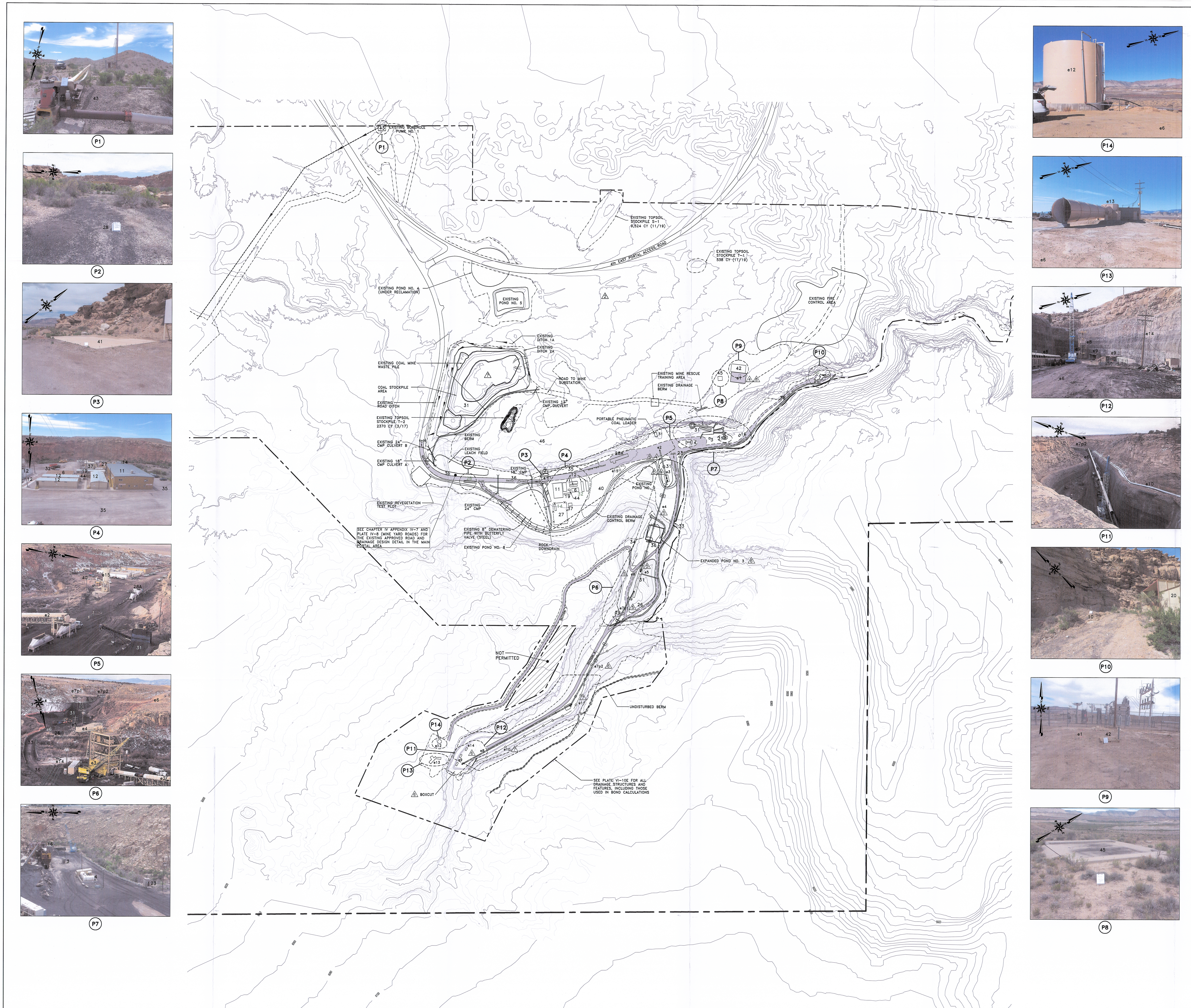
1000 0 1000 FT.

REV.	DATE	COMMENTS
6	11/19	Mid-Term Review As-Built 5670, 5864, 5966, 5987, 6010
5	02/17	#2 PHASE II ADDITIONAL PERMIT TASK #5365
4	04/10	ZZN WEDGE
3	08/09	ZZ NORTH, MILLER CANYON LBA UTU-86038
2	05/09	ZZ NORTH, ADJ. VS. PERMIT DEF. 3099
1	12/06	1st NORTH FED LEASE IBC, FULL EXTRACTION
0	04/05	ADDED IBC BOUNDARY

BRONCO UTAH OPERATIONS, LLC
P.O. BOX 527
EMERY, UTAH 84522

PERMIT BOUNDARIES AND BONDING MAP AS-BUILT (EXHIBIT D)

MINE EMERY MINE	ORIGINAL DATE: 10-29-03
CHKD. JAG	RE-DRAWN DATE: 12/05
APPD. JAG	SCALE AS NOTED
DRAWN SWF SHEET 1 OF 1	DRAWING NO. PLATE III-9
	FILE G:\UCR\EMERY\DWG\



LEGEND

- EXISTING FACILITIES
- PROPOSED FACILITIES
- EXISTING BOREHOLE PUMP WATER LINE
- PERMIT AREA BOUNDARY
- ADJACENT AREA FOR NON-WATER RESOURCES, FOR THE AREA OF HYDROLOGIC EVALUATION, SEE PLATE VI-4
- APPROVED DISTURBED AREA BOUNDARY

(P11) PHOTOS REFLECT EXISTING CONDITION FEBRUARY 2019

EXISTING FACILITIES KEY

1	TIPPLE STACKER-RECLAIM SYSTEM
3	TIPPLE CONTROL STATION
4	SURFACE STORAGE TANK CONTAINMENT AREA
6	FOREMAN'S BATH HOUSE
10	RETURN AIR PORTAL
11	WAREHOUSE/OFFICE BUILDING
12	BATHHOUSES
14	STORAGE TRAILERS
16	TIPPLE TRANSFORMER BUILDING
19	FOREMAN'S/SHIFT CHANGE OFFICE
20	MINE FAN BUILDING
23	STEAM CLEANER BUILDING
26	SCRAP YARD
27	SUPPLY YARDS
28	OLD TRUCK SCALE FOUNDATION
28A	TRUCK SCALE
29	EXPLOSIVES STORAGE
31	COAL STOCKPILE AREA
32	SEWAGE TREATMENT SYSTEM
33	BRIDGE ON QUITCHUPAH CREEK
34	NON-COAL WASTE STORAGE AREA
35	PARKING AREA
36	MINE YARD ROADS
37	MINE RESCUE STORAGE AREA
40	MATERIAL STORAGE AREA
41	TRAINING SITE PAD
42	EXISTING MINE SUBSTATION
43	BOREHOLE PUMP FACILITY
44	SEWAGE PUMPING STATION
45	TRANSFORMER STORAGE PAD
46	POWER LINE

NOTE: FACILITIES SHOWN IN GREEN HAVE BEEN REMOVED.
FACILITIES SHOWN IN BLACK ARE EXISTING.

NEW FACILITIES KEY △5

e1	MINE SUBSTATION
e2	CONVEYOR 6/TRUCK LOADOUT
e3	SCREENING AND CRUSHING FACILITY
e4	CONVEYOR 5
e5	RECLAIM TUNNEL
e6	ROADS
e7p1	CONVEYOR 2 P1
e7p2	CONVEYOR 2 P2
e8	CONVEYOR 1
e9	E2 PORTALS
e10	DIVERSION CULVERT
e11	DIVERSION CULVERT
e12	WATER TANK
e13	VENT FAN
e14	E2 POWERLINE
e15	ROCK DUST BIN

INCORPORATED
DEC 05 2019
Div. of Oil, Gas & Mining

REGISTERED PROFESSIONAL ENGINEER No. 7397 NICOLAUS PATRICK NEUMANN STATE OF UTAH

11-26-19

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BASE MAP:

COORDINATE SYSTEM:
STATE PLANE COORDINATES
ZONE 4302—UTAH CENTRAL — US FEET
VERTICAL DATUM — NAVD 88—US FEET

EXTERNAL REFERENCE:

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	09/07	JAG	UPDATED MAP
2	01/08	JAG	N.O.V. 10005
3	07/08	JAG	TRAINING SITE PAD
4	05/16	JAG	e2-CONCRETE PAD (tsk 5197)
5	06/16	JAG	e2 PHASE I PERMITTED (TSK 5198)
6	02/17	JAG	e2 PHASE II ADDITIONAL PERMIT TASK #5362
7	11/19	NPN	Mid-Term Review As-Built #5670, 5864, 5966, 5987, 6010

SCALE: 1" = 200' (0' – 200')

DRAWN BY: SWF
CHECKED BY: JAG
APPROVED BY: JAG
ORIGINAL DATE: 8/90
RE-DRAWN DATE: 9/07
DWG DATA: G:\UC1665\05\PHASE II DWGS

EMERY MINE
EMERY COUNTY, UTAH
PERMIT NO. ACT015/015

BRONCO UTAH OPERATIONS, LLC
P.O. BOX 527
EMERY, UTAH 84522

PLATE II-1
STRUCTURES AND FACILITIES
MAIN PORTAL AREA

RW–4

RW–5

RW–3

RW–2

RW–1

NOT PERMITTED

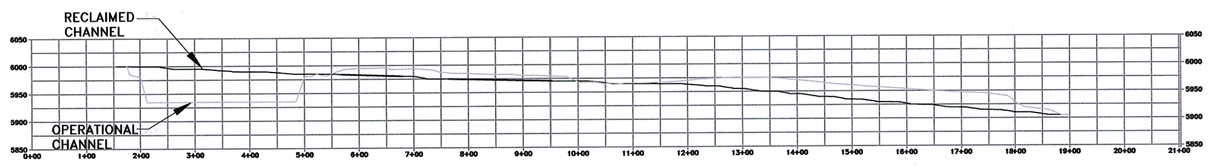
RD–1

RD–2

2

LEGEND

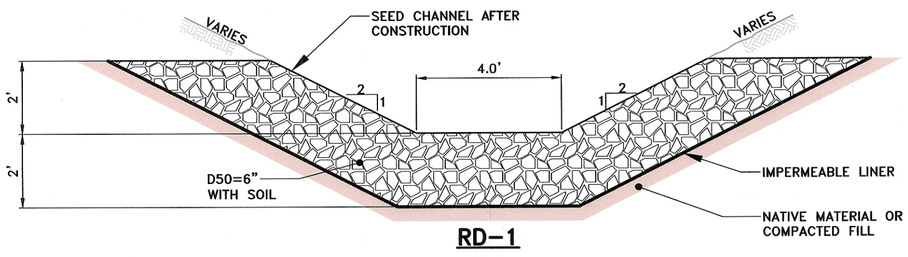
- PERMIT AREA BOUNDARY
- ADJACENT AREA FOR NON–WATER RESOURCES
- EXISTING CHANNEL
- PROPOSED DITCH
- WATERSHED BOUNDARY
- RD — RECLAIMED AREA DITCH



RECLAMATION CHANNEL

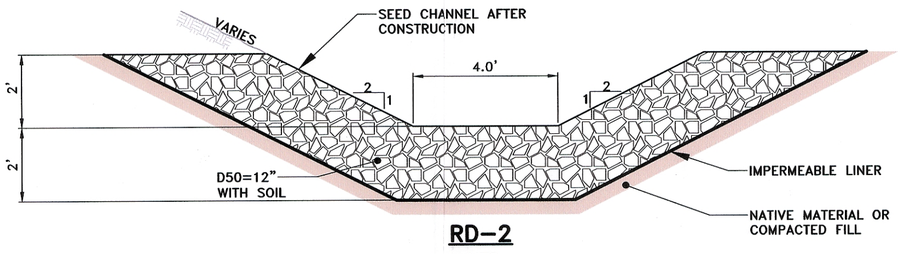
SCALE:1"=200'
HORZ. AND VERT.

2



RD–1

NTS



RD–2

NTS

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REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD B. WHITE
21 NOV 2019
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BASE MAP:
U.S.G.S 7.5 MINUTE QUADRANGLE'S. EMERY WEST 1968. EMERY EAST 1968, PHOTO REVISED 1978. MESA BUTTE 1968, PHOTO REVISED 1978. WALKER FLATE 1968, PHOTO REVISED 1978.

COORDINATE SYSTEM:
STATE PLANE COORDINATES.
NAD 83 CONUS
ZONE 4302–UTAH, CENTRAL – US FEET
VERTICAL DATUM – NAVD 88–US FEET

EXTERNAL REFERENCE:

REVISIONS

NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
1	02/17	JAG	e2 PHASE II ADDITIONAL PERMIT TASK #5362				
2	11/19	TAJ	MID TERM REVIEW AS–BUILT TASK, 5670, 5864, 5966				

0' 200'
SCALE: 1" = 200'
CONTOUR INTERVAL = 40'

DRAWN BY: JBL | CHECKED BY: JAG | ORIGINAL DATE: 10/16

APPROVED BY: JAG | DWG DATA: G:\UC1665\05\PHASE II DWGS PLATE III–11–e2P2–FEB 19

EMERY MINE
EMERY COUNTY, UTAH

PERMIT NO.
ACT015/015

BRONCO UTAH OPERATIONS, LLC
P.O. BOX 527
PRICE, UT 84522

PLATE III–11
EMERY 2 RECLAMATION HYDROLOGY

Z:\CLIENTS\Bronco\EarthFax Historical bkup\UC1665 - Bronco Utah Operations\05 - Emery Mine permit maps\PHASE II DWGS\PLATE III–11–e2P2–OCT 19 JBL.dwg, 11/8/2019 9:44:23 AM

Mine Yard & Section 5, 6 , 7 Roads
Plan View
1" = 100'

Approved Permit Boundary

Phase I

Phase II

Emery 2 Disturbed Boundary 1

Refer to Plate IV-8c for Plan, Profile and Cross Sections for Road Section 7

Not Permitted

Water Tank

Fan House

Emery 2 Mine Portal

Emery 2 Conveyor System

Conveyor 1

Conveyor 2

Cross-section 45+50

Cross-section 12+30

Section 6

Section 7

Section 1

Section 1 (Paved)

Section 2

Section 3

Section 4

Section 5

Mine Yard Road

Conveyor / Truck Loadout

Screening / Crushing Facility

Reclaim Tunnel

Conveyor 5

Quitchupah Creek

Quitchupah Creek Bridge

Existing Pond 3

Existing Drainage Control Berm

Christiansen Wash

Substation 6037.78

Refer to Plate IV-8b for Section 5 and 6 As-Built Road Profiles / Cross-Sections

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Graphic Scale in Feet
0 100 200

Drawing Revisions			
2	11/19	SRR	Mid-Term Review As-Built Task 5670,5864, 5966, 5967, 6010
1	02/17	JAG	Emery 2 Phase II Expansion Task ID 5362
NO.	DATE	BY	DESCRIPTION

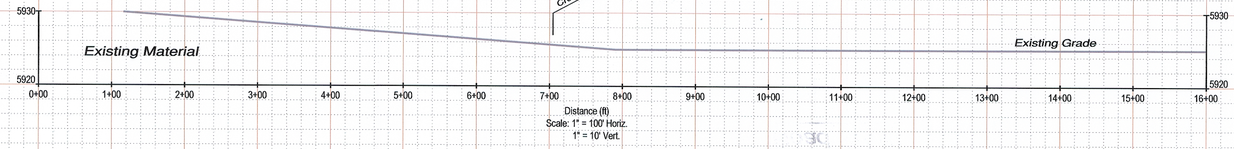
NPN ENVIRONMENTAL

Emery 2 Phase I & II Expansion As-Built
Roads - Plan View

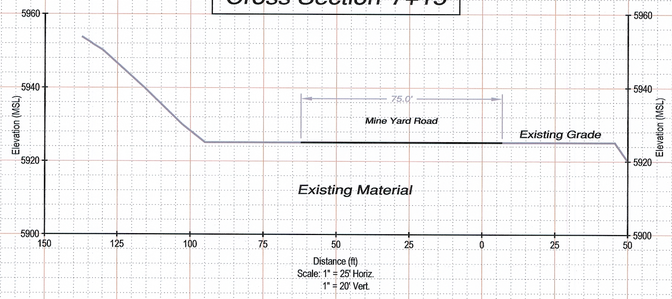
SITE:	EMERY MINE	DATE:	DECEMBER 2018
LOCATION:	EMERY, UTAH	SCALE:	AS SHOWN
PROJECT NO:	C-18075	FILE:	Road Profile - Cross Sections.dwg
DRAWN BY:	SRR	SHEET	1 OF 1
		PLATE NO.	IV-8a

REGISTERED PROFESSIONAL ENGINEER
No. 7397
NICOLAUS PATRICK NEUMANN
STATE OF UTAH
11-26-19

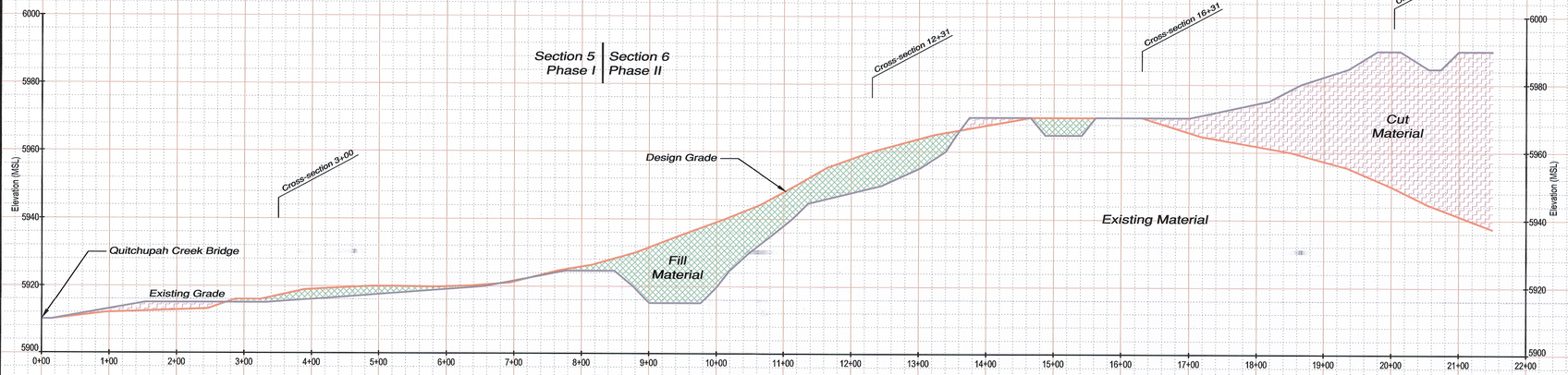
Mine Yard Road Profile Phase I



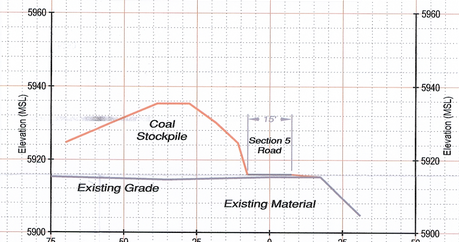
Mine Yard Road Cross Section 7+15



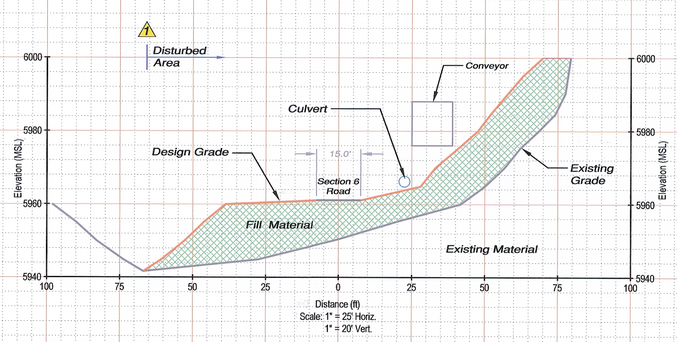
Section 5 & Section 6 Road Profile



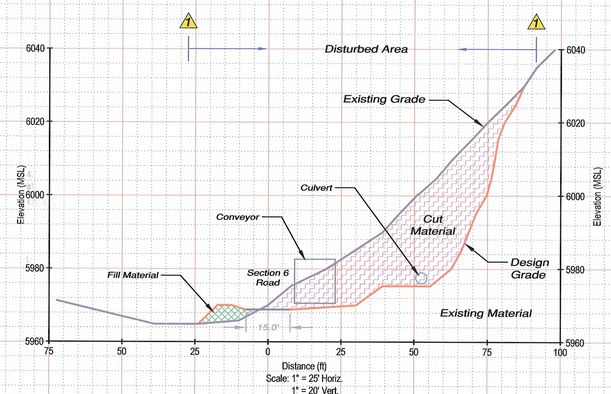
Section 5 Road Cross Section 3+00



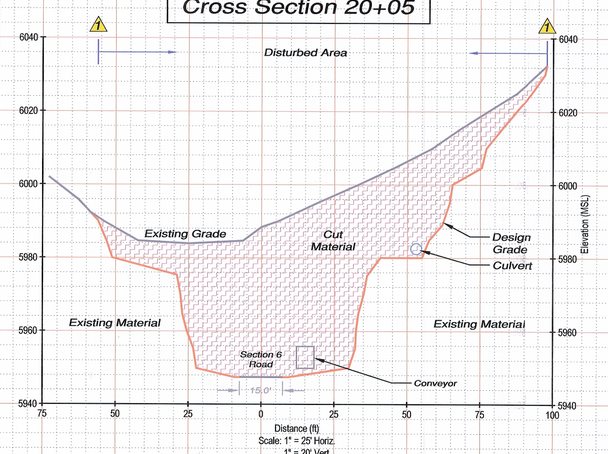
Section 6 Road Cross Section 12+30



Section 6 Road Cross Section 16+30



Section 6 Road Cross Section 20+05



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Div. of Oil, Gas & Mining

11-26-19

Drawing Revisions			
2	11/19	NPN	Mid-Term Review Review Task 5970, 5864, 5966, 5987, 6010
1	02/17	JAG	Emery 2 Phase II Expansion Task ID 5362
NO.	DATE	BY	DESCRIPTION

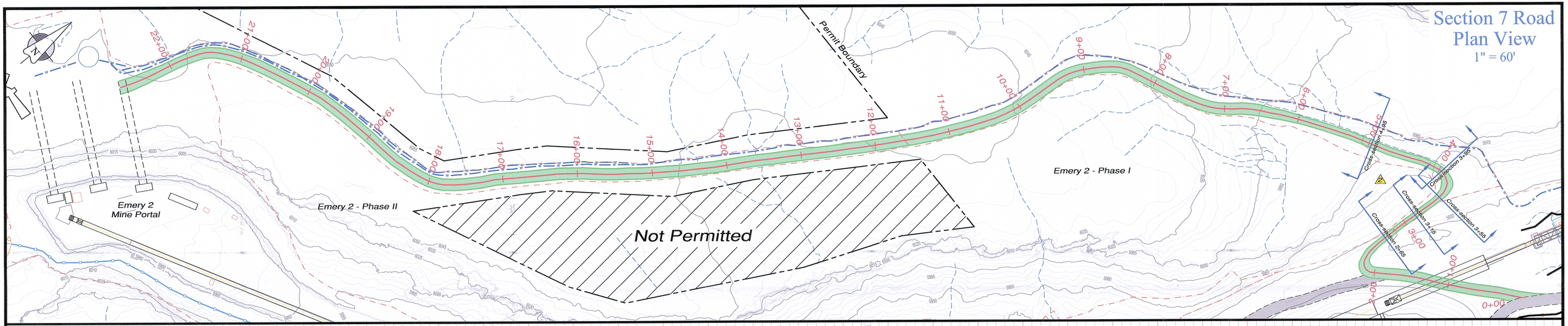
NPN ENVIRONMENTAL

Emery 2 Phase I & II Expansion As-Built
Roads - Profiles/Cross-Sections

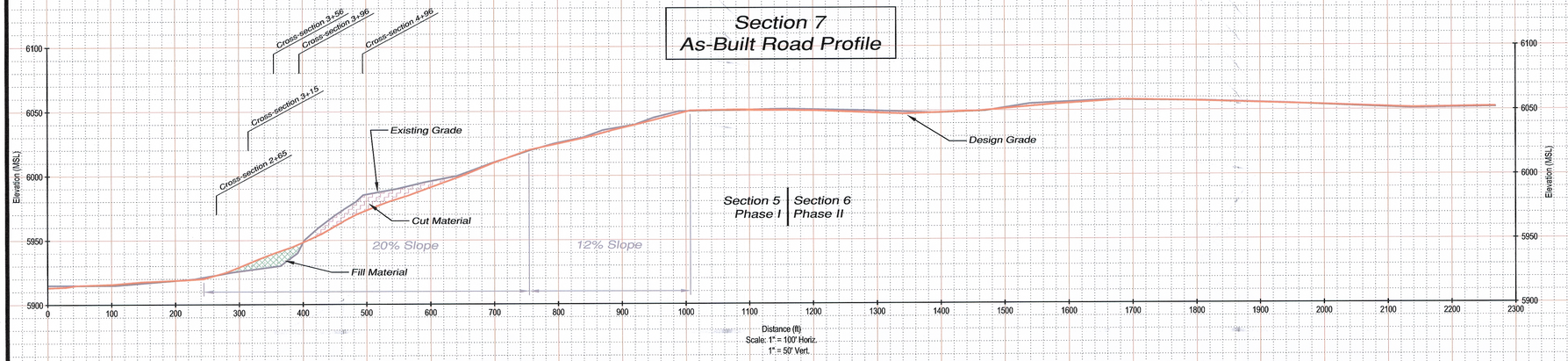
SITE:	EMERY MINE	DATE:	JULY 2016
LOCATION:	EMERY, UTAH	SCALE:	AS SHOWN
PROJECT NO:	C-16141	FILE:	Road Profile - Cross Sections.dwg
DRAWN BY:	SRR	SHEET	1 OF 1
		PLATE NO.	IV-8b

Section 7 Road Plan View

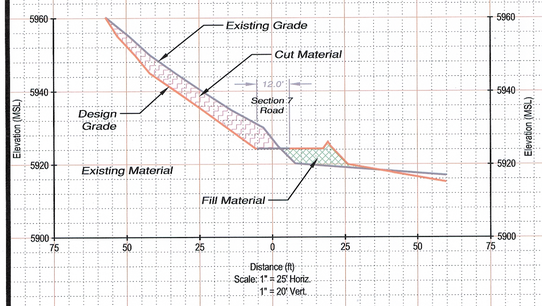
1" = 60'



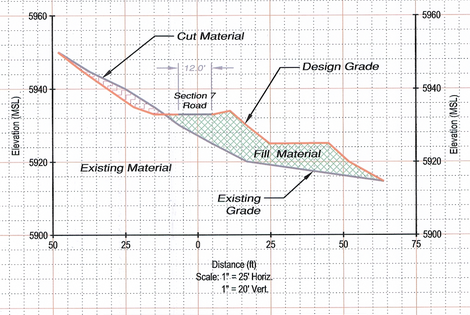
Section 7 As-Built Road Profile



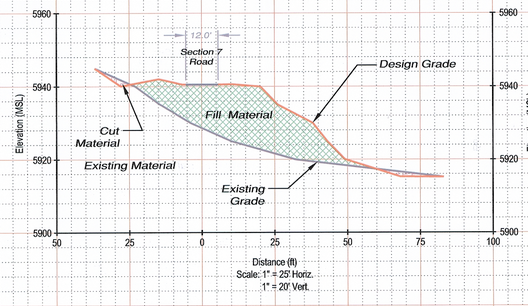
Section 7 Road Cross Section 2+65



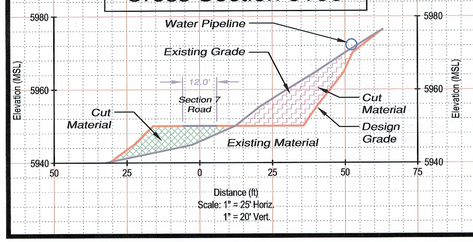
Section 7 Road Cross Section 3+15



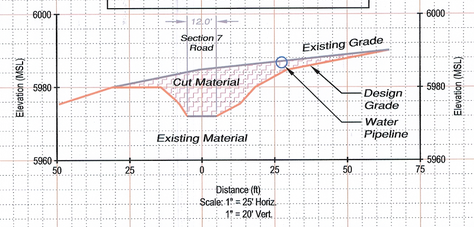
Section 7 Road Cross Section 3+55



Section 7 Road Cross Section 3+95



Section 7 Road Cross Section 4+95



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No. 7397
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STATE OF UTAH

11-26-19

Drawing Revisions

NO.	DATE	BY	DESCRIPTION
2	11/19	NPN	Mid-Term Review As-Built Task 5970, 5864, 5966, 5987, 6010
1	02/17	JAG	Emery 2 Phase II Expansion Task ID 5362

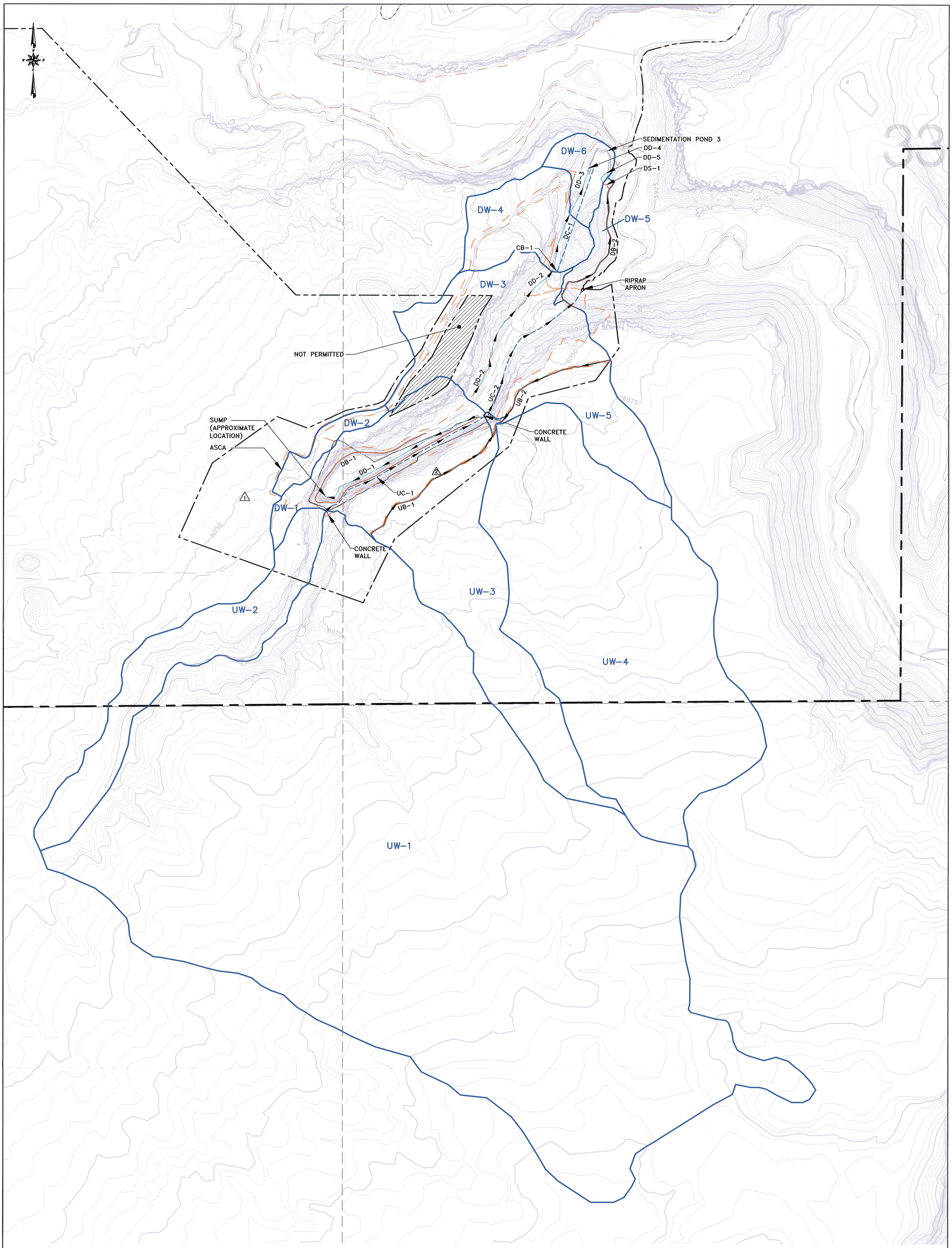
NPN ENVIRONMENTAL

Emery 2 Expansion

Roads - Plan/Profile/Cross-Sections

Section 7 Road As-Built

SITE:	EMERY MINE	DATE:	JULY 2016
LOCATION:	EMERY, UTAH	SCALE:	AS SHOWN
PROJECT NO:	C-16141	FILE:	Road Profile - Cross Sections.dwg
DRAWN BY:	SRR	SHEET	1 OF 1
		PLATE NO.	IV-8c



LEGEND

- PERMIT AREA BOUNDARY
- APPROXIMATE AREA OF HYDROLOGIC EVALUATION
- ADJACENT AREA FOR NON-WATER RESOURCES
- DISTURBED AREA BOUNDARY
- MAJOR CONTOURS (25 FEET)
- MINOR CONTOURS (5 FEET)
- NATIVE CHANNEL
- DITCH
- CULVERT
- BERM
- WATERSHED BOUNDARY
- SWALE
- UB — UNDISTURBED AREA BERM
- DB — DISTURBED AREA BERM
- DD — DISTURBED AREA DITCH
- UC — UNDISTURBED AREA CULVERT
- DC — DISTURBED AREA CULVERT
- DS — DISTURBED AREA SWALE
- CB — CATCH BASIN
- DIRECTION OF FLOW

INCORPORATED
DEC 06 2019
Div. of Oil, Gas & Mining

EarthFax

BASE MAP:
U.S.G.S. 7.5 MINUTE QUADRANGLE'S. EMERY WEST 1968. EMERY EAST 1968, PHOTO REVISED 1978. MESA BUTTE 1968, PHOTO REVISED 1978. WALKER FLATE 1968, PHOTO REVISED 1978.

COORDINATE SYSTEM:
STATE PLANE COORDINATES.
NAD 83 CONUS
ZONE 4302-UTAH, CENTRAL - US FEET
VERTICAL DATUM - NAVD 88-US FEET

EXTERNAL REFERENCE:

REVISIONS	NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
	1	02/17	JAG	e2 PHASE II ADDITIONAL PERMIT TASK #5362				
	2	11/19	TAJ	MID TERM REVIEW AS-BUILT TASK. 5670. 5864. 5966				

REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD B. WHITE
NOT VALID WITHOUT A SIGNATURE
STATE OF UTAH
21 NOV 2019

0' 200'
SCALE: 1" = 200'
CONTOUR INTERVAL = 40'

DRAWN BY: JBL | CHECKED BY: TAJ | ORIGINAL DATE: 10/16
APPROVED BY: JAG
DWG DATA: UC1665\05\PHASE II DWGS PLATE VI-10E-e2P2-JUNE 19 ASBUILT.DWG

EMERY MINE
EMERY COUNTY, UTAH
PERMIT NO.
ACT015/015

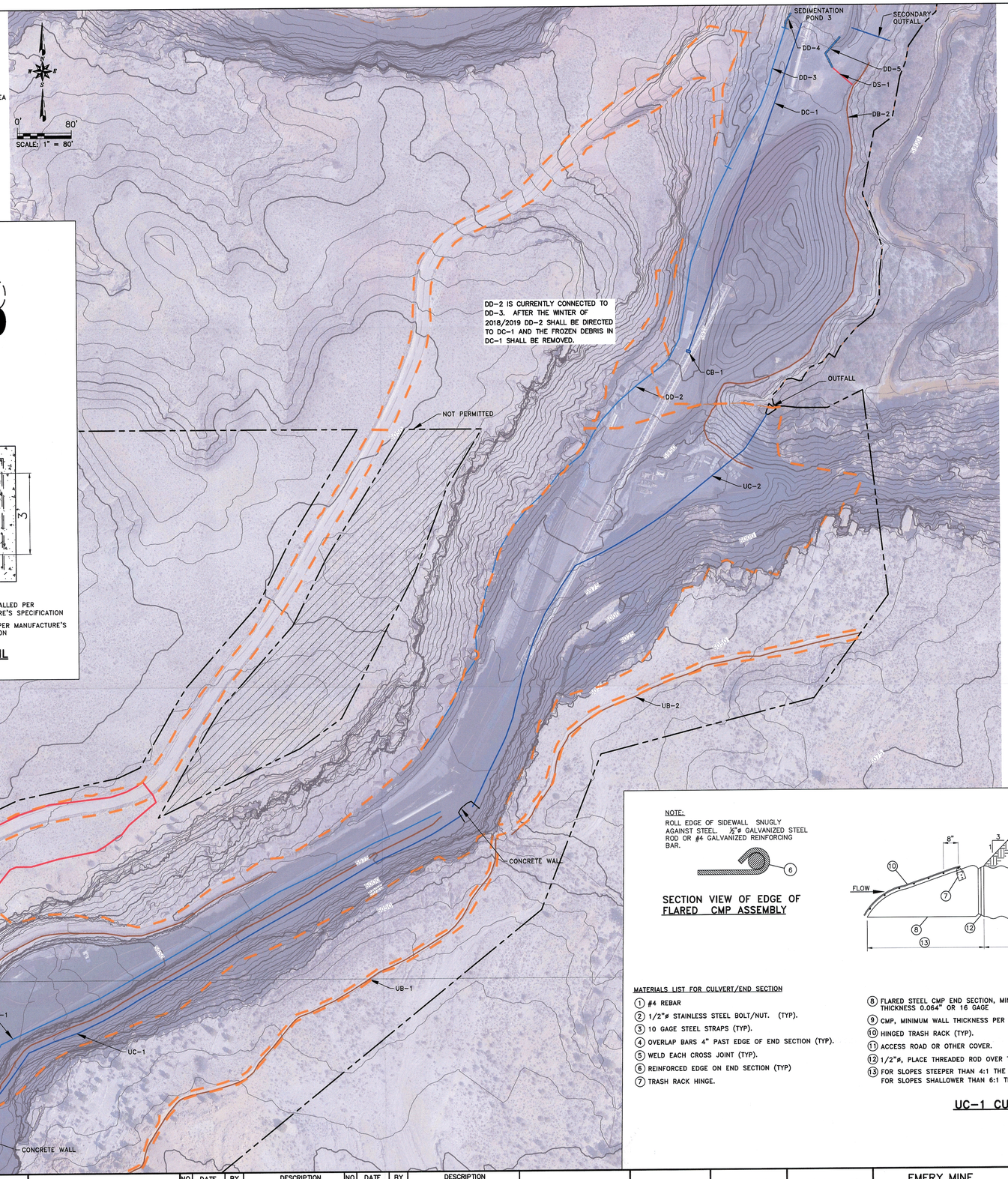
BRONCO UTAH OPERATIONS, LLC
P.O. BOX 527
PRICE, UT 84522

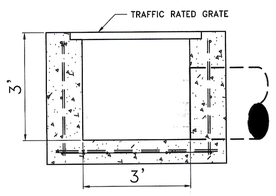
PLATE VI-10E
SURFACE DRAINAGE CONTROL MAP

Z:\CLIENTS\B\Bronco\EarthFax Historical bkup\UC1665 - Bronco Utah Operations\05 - Emery Mine permit maps\PHASE II DWGS\PLATE VI-10E-e2P2-OCT 19 ASBUILT JBL.dwg, 11/8/2019 10:02:44 AM

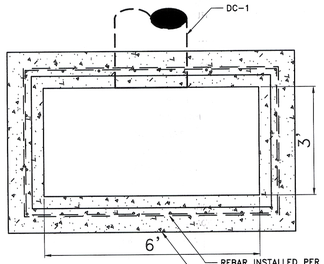
LEGEND

- AS-BUILT MAJOR CONTOURS
- AS-BUILT MINOR CONTOURS
- EXISTING DITCH
- PERMIT BOUNDARY
- DISTURBED AREA BOUNDARY
- ALTERNATIVE SEDIMENT CONTROL AREA (ASCA)
- AS-BUILT DITCH
- AS-BUILT CULVERT
- AS-BUILT BERM
- AS_BUILT SWALE
- UB — UNDISTURBED BERM
- DB — DISTURBED BERM
- DD — DISTURBED DITCH
- UC — UNDISTURBED CULVERT
- DS — DISTURBED SWALE





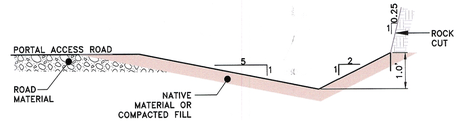
SECTION



PLAN

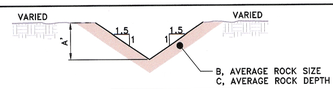
CATCH BASIN 1 (CB-1) DETAIL

NTS



DD-1

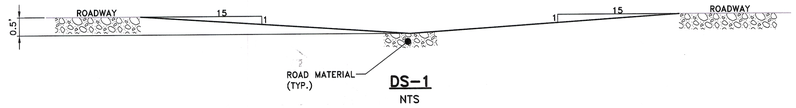
NTS



DITCH	A	B	C
DD-2	1.25	NA	NA
DD-3	1.0	NA	NA
DD-4	1.0	6"	12"
DD-5	1.0	6"	12"

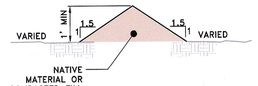
DD-2 THROUGH 5

NTS



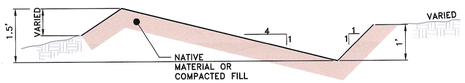
DS-1

NTS



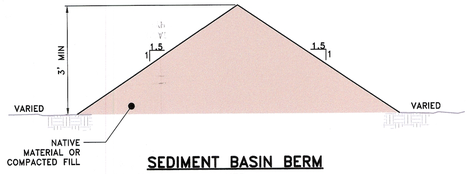
DB-1/DB-2

NTS



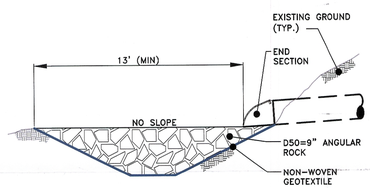
UB-1/UB-2

NTS

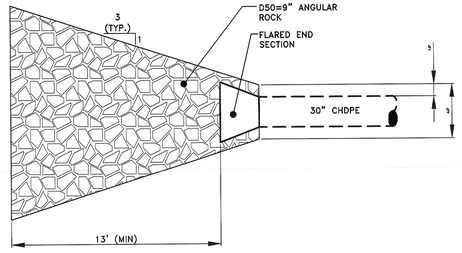


SEDIMENT BASIN BERM

NTS



SECTION



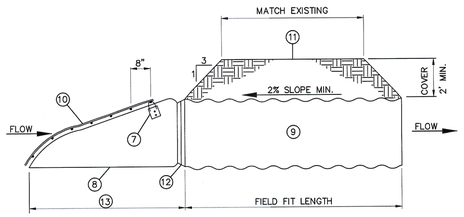
PLAN

UC-2 OUTFALL DETAIL

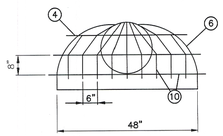
NO SCALE

NOTE:
ROLL EDGE OF SIDEWALL SNUGLY AGAINST STEEL. ½"ø GALVANIZED STEEL ROD OR #4 GALVANIZED REINFORCING BAR.

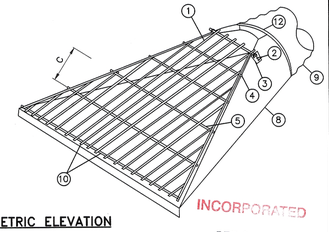
SECTION VIEW OF EDGE OF FLARED CMP ASSEMBLY



FRONT ELEVATION



SIDE ELEVATION



ISOMETRIC ELEVATION

MATERIALS LIST FOR CULVERT/END SECTION

1. #4 REBAR
2. 1/2"ø STAINLESS STEEL BOLT/NUT. (TYP).
3. 10 GAGE STEEL STRAPS (TYP).
4. OVERLAP BARS 4" PAST EDGE OF END SECTION (TYP).
5. WELD EACH CROSS JOINT (TYP).
6. REINFORCED EDGE ON END SECTION (TYP)
7. TRASH RACK HINGE.
8. FLARED STEEL CMP END SECTION, MINIMUM WALL THICKNESS 0.064" OR 16 GAGE
9. CMP, MINIMUM WALL THICKNESS PER TABLE.
10. HINGED TRASH RACK (TYP).
11. ACCESS ROAD OR OTHER COVER.
12. 1/2"ø, PLACE THREADED ROD OVER TOP OF END SECTION.
13. FOR SLOPES STEEPER THAN 4:1 THE LENGTH IS 32" FOR SLOPES SHALLOWER THAN 6:1 THE LENGTH IS 48"

NOTES:

1. PROVIDE HINGED SAFETY BARS (TRASH RACK) ON INFLOW SIDE OF CULVERT.
2. PROVIDE FLARED END SECTIONS ON BOTH ENDS OF CULVERT.
3. INSTALL CULVERT ASSEMBLY INTO EXISTING FLOW CHANNEL. REPAIR CHANNEL AS REQUIRED TO INSTALL CULVERT ASSEMBLY AS DIRECTED BY OWNER OR ENGINEER.
4. ALL SAFETY BARS (TRASH RACK) AND COMPONENTS SHALL HAVE A CORROSION PROTECTIVE FINISH.

FLARED END SECTION INSTALLATION ON:

- –INLET OF UC–1
- –OUTLET OF UC–2
- –INLET AND OUTLET OF DC–1
- –INLET AND OUTLET OF SEDIMENTATION POND 3 SECONDARY SPILLWAY
- –TRASH RACKS INSTALLED ON CULVERT INLETS ONLY

UC–1 CULVERT INLET TRASH RACK DETAIL

NO SCALE

INCORPORATED
DEC 06 2019
Div. of Oil, Gas & Mining

REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD B. WHITE
STATE OF UTAH

EarthFax

BASE MAP: TOPOGRAPHY BLENDED FROM VICTOR GRAPHICS 2018 SURVEY

COORDINATE SYSTEM: STATE PLANE COORDINATES. NAD 83 (CORP)
ZONE 4302-UTAH, CENTRAL – US FEET
VERTICAL DATUM – NAVD 88–US FEET

EXTERNAL REFERENCE:

REVISIONS NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION
1	11/19	TAJ	MD TERM REVIEW, AS-BUILT TASK 5970, 5984, 5995				

AS SHOWN

DRAWN BY: JBL	CHECKED BY: TAJ	ORIGINAL DATE: 02/19
APPROVED BY: TAJ	DWG DATA: G:\UC1665\05\PHASE II DWGS\ PLATE VI–11B – 2019 JNUE 19 ASBUILT.DWG	

EMERY MINE
EMERY COUNTY, UTAH
PERMIT NO.
ACT015/015

BRONCO UTAH OPERATIONS, LLC
P.O. BOX 527
EMERY, UTAH 84522

PLATE VI–11B
EMERY 2 DRAINAGE DETAILS

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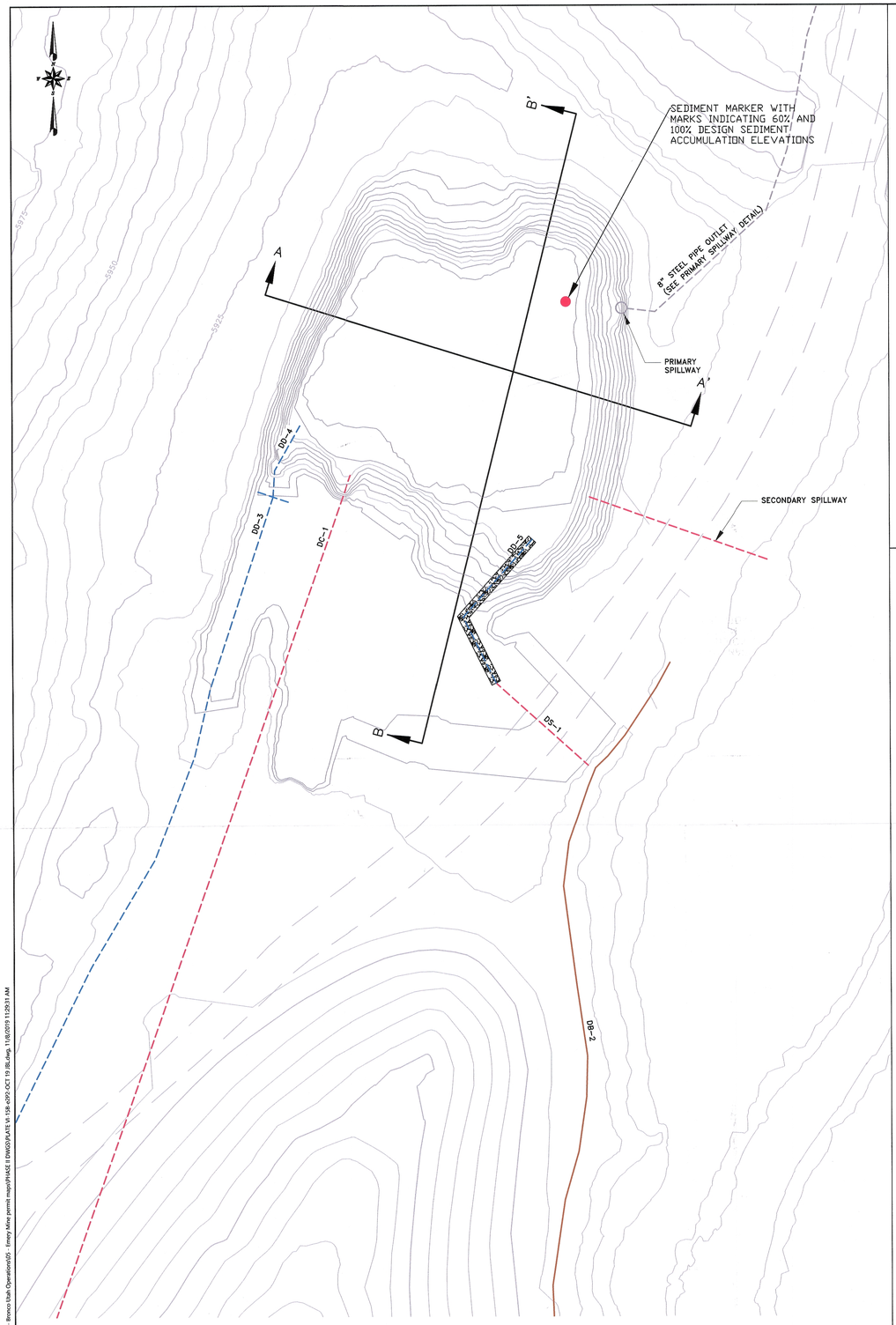
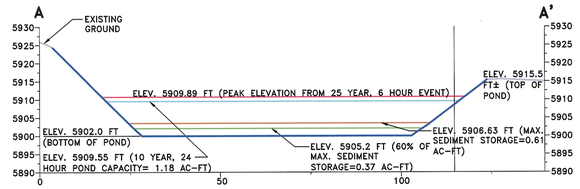
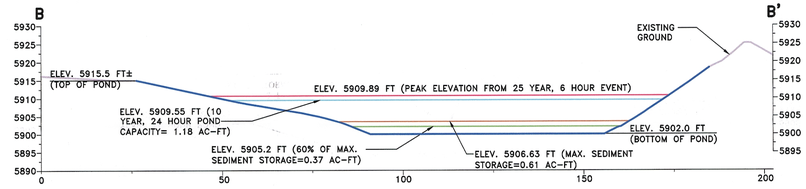


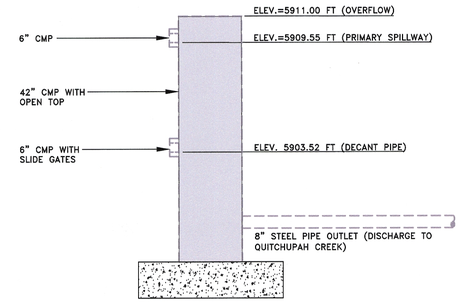
PLAN
SCALE: 1"=20'



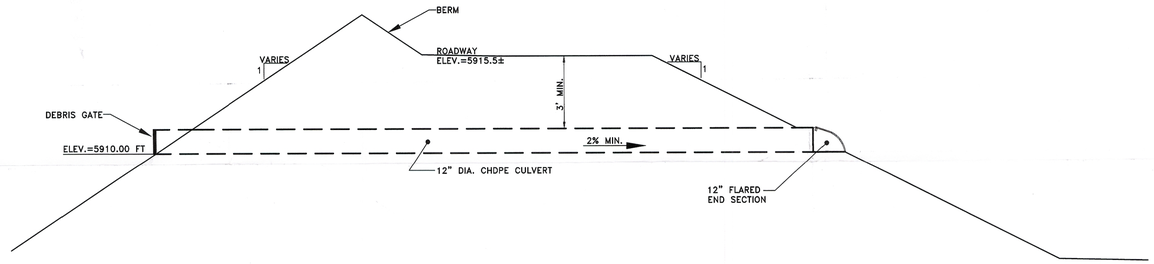
CROSS SECTION A–A'
1"=20'



CROSS SECTION B–B'
1"=20'



PRIMARY SPILLWAY DETAIL
NTS



SECONDARY SPILLWAY DETAIL
NTS

INCORPORATED
DEC 06 2019
Div. of Oil, Gas & Mining

REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD B. WHITE
In New Jersey
STATE OF UTAH

EarthFax	BASE MAP:		REVISIONS	NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION	AS SHOWN	DRAWN BY: JBL
	COORDINATE SYSTEM:	EXTERNAL REFERENCE:		1	02/17	JAG	B2 PHASE II ADDITIONAL PERMIT TASK #5082						APPROVED BY: TAJ
				2	11/19	TAJ	MIN. DEM. REVIEW AS-BUILT TASK 5870,5954,5966,5987						

CHECKED BY: TAJ	ORIGINAL DATE: 02/19	EMERY MINE EMERY COUNTY, UTAH	BRONCO UTAH OPERATIONS, LLC	PLATE VI–15B POND 3 AS BUILTS
DWG DATA: G:\UC1665\05\PHASE II DWGS		PERMIT NO. ACT015/015	P.O. BOX 527 EMERY, UTAH 84522	

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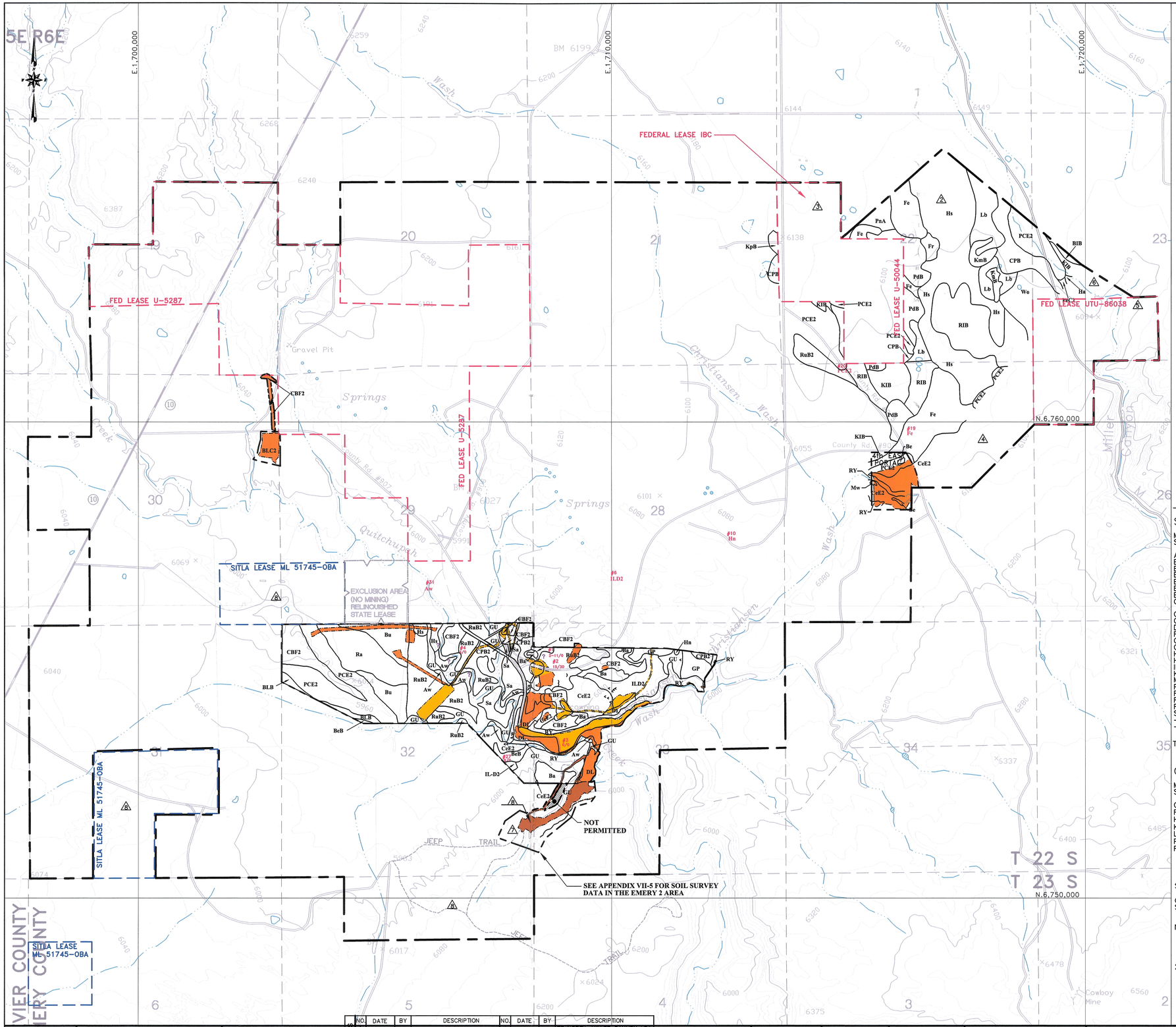

LEGEND

- PERMIT AREA BOUNDARY
- ADJACENT AREA FOR NON-WATER RESOURCES. FOR THE AREA OF HYDROLOGIC EVALUATION, SEE PLATE VI-4
- DISTURBED AREA BOUNDARY
- SOIL TYPE BOUNDARY
- Aw — SOIL MAPPING UNIT
- SURFACE AFFECTED PRIOR TO 8/3/77
- SURFACE AFFECTED AFTER 8/3/77
- e2 PHASE II DISTURBED AREA BOUNDARY
- #14 — CORE SAMPLE SITE
- 6 / – — TOPSOIL DEPTH
- – / 22 — SUITABLE TOPSOIL DEPTH / MATERIAL BORROW DEPTH
- ? — SALINE/SODIC SPOT
- › — GULLIED
- ‹ — ROCK OUTCROP

SURFACE OPERATIONS AREA

SOIL MAPPING UNITS

MAP SYMBOL	ACRES	MAPPING UNIT
Aw	9.0	ALLUVIAL LAND, 0 TO 3% SLOPES
Ba	13.5	BADLAND
BeB	24.0	BEEBE FINE SANDY LOAM, 0 TO 3% SLOPES
Be	0.6	BEGAY
BLB	4.1	BILLINGS SILTY CLAY LOAM, 1 TO 3% SLOPES
BLC2	4.5	BILLINGS SILTY CLAY LOAM, 1 TO 6% SLOPES
Bu	6.8	BUNDERSON
CeE2	41.3	CASTLE VALLEY EXTREMELY STONY VERY FINE SANDY LOAM 0 TO 20% SLOPES
CBF2	27.1	CHIPETA–BADLAND ASSOCIATION, 3 TO 30% SLOPES, ERODED.
CPB2	8.6	CHIPETA–PERSAYO COMPLEX, 1 TO 8% SLOPES, ERODED.
DL	16.1	DISTURBED LAND, 0 TO 15% SLOPES
Fe	2.5	FERRON SILT LOAM HEAVY VARIANT, 0 TO 3% SLOPES
GP	9.2	GP SILT LOAM, 0 TO 12% SLOPES
GU	38.6	GULLIED LAND, VARIABLE SLOPES
Hn	0.2	HUNTING CLAY LOAM, 0 TO 5% SLOPES
Hs	3.8	HUNTING CLAY LOAM, MODERATELY SALINE, 1 TO 3% SLOPES
ILD2	18.5	ILDEFONSO LOAM, 3 TO 30% SLOPES
KIB	1.4	KILLPACK SILTY CLAY LOAM, 0 TO 3% SLOPES
Mw	0.2	MONTWELL
PCE2	43.55	PERSAYO–CHIPETA COMPLEX, 1 TO 20% SLOPES
Ra	27.4	RAFAEL SILTY CLAY LOAM, 1 TO 3% SLOPES
RuB2	65.7	RAVOLA–BUNDERSON COMPLEX, 1 TO 3% SLOPES, ERODED
RY	34.6	ROCKLAND
Sa	14.5	SALTAIR SILTY CLAY LOAM, 0 TO 30% SLOPES
–	19.5	INDUSTRIAL (COAL MINING)
–	5.8	ROADS
TOTAL	442.45	

⚠ SURFACE DISTURBANCE AREA

	ACRES
PRIOR TO AUGUST 3, 1977 AREA	23.4
POST AUGUST 3, 1977 AREA	52.2
EMERY 2 EXPANSION DISTURBANCE AREA	10.3
TOTAL DISTURBED AREA	85.9

OTHER MAPPED SOILS NOT IN SURFACE OPERATIONS AREAS

MAP SYMBOL	MAPPING UNIT
CPB	CHIPETA–PERSAYO ASSOCIATION, 1 TO 3% SLOPES
Fr	FERRON SILT LOAM
Ha	HARDING VERY FINE SANDY LOAM
KmB	KILLPACK CLAY LOAM, HIGH WATER TABLE VARIANT, 1 TO 3% SLOPES
Lb	LIBBINGS SILTY CLAY LOAM
PeC2	PENOYER LOAM, 2 TO 6% SLOPES, ERODED
RlB	RAVOLA LOAM, 1 TO 3% SLOPES

SAMPLE

CORE SAMPLE SITES SURFACE OPERATIONS AREA

NO.	SOIL SERIES
1	CHIPETA–BADLANDS ASSOC.
2	RAVOLA–BUNDERSON COMPLEX
3	DISTURBED LAND
4	RAVOLA–BUNDERSON COMPLEX
27	BEEBE VARIANT

CORE SAMPLE SITES NEAR SURFACE OPERATIONS AREA

NO.	SOIL SERIES
6	GP SERIES
10	HUNTING
19	FERRON VARIANT
20	PERSAYO–CHIPETA COMPLEX
31	ALLUVIAL LAND

INCORPORATED
DEC 06 2019
Div. of Oil, Gas & Mining

REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD B. WHITE
STATE OF UTAH

EarthFax

BASE MAP:
U.S.G.S. 7.5 MINUTE QUADRANGLE'S: EMERY WEST 1968. EMERY EAST 1968, PHOTO REVISED 1978. MESA BUTTE 1968, PHOTO REVISED 1978. WALKER FLAT 1968, PHOTO REVISED 1978.

COORDINATE SYSTEM:
STATE PLANE COORDINATES. NAD 83 CONUS
ZONE 4302–UTAH, CENTRAL – US FEET
VERTICAL DATUM – NAVD 88–US FEET

FIELD SURVEY INFORMATION BY:
J. WALSH & ASSOCIATES 3/81
HARNER–WHITE 7/81
USDA–SCS 10/88

EXTERNAL REFERENCE:
G:\UC982\XREF–CURRENT\XREF–USGSMAP.DWG
G:\UC982\XREF–CURRENT\XREF–SECTION.DWG
G:\UC1665\05\XREF\EMERY FINAL PERMIT–e2P2–FEB 17

REVISIONS NO.	DATE	BY	DESCRIPTION
1	8/20/01	TDK	ADD 1.45 AC. SURFACE DISTURBANCE 4TH EAST PORTAL SITE
2	6/30/05	JAG	ADDED FIRST NORTH I.B.C.
3	12/12/06	JAG	1ST NORTH FED LEASE IBC, FULL EXTRACTION
4	05/09	JAG	1ST NORTH ADJ. VS. PERMIT
5	08/09	JAG	1ST NORTH MILLER CANYON LBA UTU–86038
6	11/09	JAG	ZZN WEDGE
7	02/17	JAG	e2 PHASE II ADDITIONAL PERMIT TASK 5870
8	11/19	JAG	MID TERM REVIEW AS–BUILT TASK 5870 5864, 5866, 5987

0' 1000'
SCALE: 1" = 1000'
CONTOUR INTERVAL = 40'

DRAWN BY: JBL | CHECKED BY: JAG | ORIGINAL DATE: 8/95 | RE–DRAWN DATE: 12/05
APPROVED BY: JAG | DWG DATA: G:\UC1665\05\PHASE II DWGS | PERMIT NO. ACT015/015

EMERY MINE
EMERY COUNTY, UTAH

BRONCO UTAH OPERATIONS, LLC
P.O. BOX 527
PRICE, UT 84522

PLATE VII–1
SOIL MAP

Z:\CLIENTS\Bronco\Earthfax Historical Files\UC1665 - Bronco Utah Operations\05 - Emery Mine permit maps\PHASE II DWGS\PLATE VII-1-e2P2-OCT 19 JBL.dwg, 11/8/2019 11:54:14 AM