C/007/039 Incoming
cc: Steve C.
#4952

Canyon Fuel Company, LLC
A Subsidiary of Bowie Resource Holdings, LLC

Dugout Canyon Mine
P.O. Box 1029
Wellington, Utah 84542
(435) 637-6360
Fax (435) 636-2897

July 8, 2015

Coal Regulatory Program
Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Salt Lake City, UT 84114-5801

RE: Permit C/007/039 Permit Modification

Subject: Waste Rock Expansion, Dugout Canyon Mine, Canyon Fuel Company, LLC C007/0039, Task ID # 4892, Response to deficiencies

Dear Mr. Haddock:

Canyon Fuel Company, LLC herby files application to modify the permit C/007/039. Enclosed please a copy of the submittal to address the expansion of Dugout's Waste Rock Pile.

Should you have any questions please contact Bill King at (435) 636-2898 or David Spillman at (435) 636-2872.

Sincerely,

Bill King
Mining Engineer

RECEIVED
JUL 13 2015
DIV. OF OIL, GAS & MINING

APPLICATION FOR COAL PERMIT PROCESSING

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

Permittee: Canyon Fuel Company, LLC
Mine: Dugout Canyon Mine **Permit Number:** C/007/039
Title: Waste Rock Site Permit Expansion Phase I
Description, Include reason for application and timing required to implement:
Dugout Mine is expanding its Waste Rock Site to allow for more capacity and would like to expand in 2015.

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 one (1) review copy of the application.

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.

Bill King
Print Name

Mining Engineer, 7/8/15
Sign Name, Position, Date

Subscribed and sworn to before me this 8th day of July, 2015

Monica S. Clausing
Notary Public

My commission Expires: 11-7-15 _____, 20___)
Attest: State of Utah _____)) ss:
County of Carbon

NOTARY PUBLIC
MONICA CLAUSING
649779
My Commission Expires
November 07, 2015
STATE OF UTAH

For Office Use Only:	Assigned Tracking Number:	Received by Oil, Gas & Mining
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APPLICATION FOR COAL PERMIT PROCESSING
Detailed Schedule Of Changes to the Mining And Reclamation Plan

Permittee: Canyon Fuel Company, LLC
Mine: Dugout Canyon Mine **Permit Number:** C/007/039
Title: Waste Rock Site Permit Expansion Phase I

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	Dugout M&RP, Appendix 5-6, Reclamation Bond Estimate
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, RA Plate 2-2
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, RA Plate 5-1
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, RA Plate 5-1A
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, RA Plate 5-2
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, RA Plate 5-2A
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, RA Plate 7-1
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, RA Plate 7-3
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, Chapter 2, pg 2-12
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, Chapter 2, pg 2-15, 2-16
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, Chapter 2, Table 2-2
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, Chapter 2, RA Attachment 2-2
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, Chapter 5, pg 5-16, 5-17
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, Chapter 5, RA Attachment 5-3
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, Chapter 5, RA Attachment 5-4
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, Chapter 7, Table 7-3
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, Chapter 7, RA Attachment 7-4 Cover Page
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, Chapter 7, RA Attachment 7-4 pg 9-10
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, Chapter 7, RA Attachment 7-4 pg 17-19
☐ Add	☒ Replace	☐ Remove	Dugout, Refuse Pile Amendment, Chapter 7, RA Attachment 7-4 pg 47-52
☐ Add	☐ Replace	☒ Remove	Dugout, Refuse Pile Amendment, Chapter 8, RA Attachment 8-1, Refuse Pile Bond Calculation
☒ Add	☐ Replace	☐ Remove	Dugout, Refuse Pile Amendment, Chapter 8, RA Attachment 8-1, Refuse Pile Bond Calculation
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	
☐ Add	☐ Replace	☐ Remove	

Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.	Received by Oil, Gas & Mining
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Form DOGM - C2 (Revised March 12, 2002)

Canyon Fuel Company, LLC.
A Subsidiary of Bowie Resource Partners, LLC

Dugout Canyon Mine
William King
Mining Engineer
PO Box 1029
Wellington Utah 84542
(435) 636-2898

Response to Deficiencies

Date: July 8, 2015

Subject: Technical Analysis and Findings, Waste Rock Expansion, Dugout Canyon Mine, Canyon Fuel Company, LLC, C/007/039, Task ID # 4892

From: Bill King

To: Steve Christensen

CC: Pricilla Burton, Cheryl Parker

Deficiencies: pburton, Topsoil and Subsoil
R645-301-121.200, In RA Table 2-2 topsoil salvage volumes the totals below each column are not summed correctly and should be checked for accuracy. In addition, figures provided in Row M of this table should be checked for accuracy.
Response: Topsoil/subsoil volumes were corrected in RA Table 2-2.

Deficiencies: pburton, Topsoil and Subsoil
R645-301-231.400 The Soil Stockpile map outlines a larger area than necessary to store the 2,518 CY. Therefore a commitment to maintain slopes of the topsoil stockpile to 3h: 1v is requested as that will provide better protection for the pile, by allowing the seeded vegetation an opportunity to take hold.
Response: The slopes for the topsoil and subsoil piles is addressed in Chapter 2, pg 2-12, Section 234.100.

Deficiencies: pburton, Topsoil and Subsoil
R645-301-232.200, The salvaged soil should be stockpiled and labeled subsoil, as suggested by the quality of Map Units B and M soil described in RA Section 231.100, p. 2-7 and Attachment RA 2-1.
Response: The salvaged soil was labeled correctly and corrected in Chapter 2, pg 2-15, 2-16, RA Attachment 2-2, Table 2-2, RA Plate 2-2 and RA Plate 5-1.

Deficiencies: cparker, Spoil Waste Refuse Piles
R645-301-536.100 requires that details be added to include the new capacity added and total new overall capacity of the refuse pile site. This section should also describe the acreage disturbed by the refuse site with the new application considerations.
Response: Details were added to show existing, new and total capacities of the Waste Rock Site. These capacities are found in Chapter 5, RA Attachment 5-3. A new total capacity was also updated in Chapter 5, pg. 5-16.

Deficiencies: cparker, Spoil Waste Refuse Piles
R645-301-536.120 requires that this section should also detail that the applications area is covered under sufficient foundation investigations, etc.
Response: Chapter 5, pg 5-15, Section 536.100 states "*Based on the materials encountered in the refuse pile site area, the refuse pile can be constructed to an approximate height of 60 feet with 2H: 1 V outslopes on the native alluvial soils and have a static safety factor of 1.59 for failure surfaces starting in the refuse and terminating in the underlying soils.*" These results are found in RA Attachment 5-2.

In section 2.0 Background Information during the site investigation 10 test pits were excavated to determine the subsurface soils. The investigation typically encountered granular soils and weathered Mancos Shale throughout project site, as shown in the test pit logs. These test pits are representative of the underlying soils for what is considered the foundation of the waste rock stockpile.

Section 3.4 Soil Properties used for Slide Analysis in the interest of conservatism, the weakest soils from the laboratory testing program were used in the slope stability analysis. See table 1 for soils properties.

As this is the case, table 2 shows a summary of the factor of safety for the various "worst case" scenarios. All factors of safety are within the allowable limits. Another note is that the slope stability of all scenarios, includes the soil properties of the "foundation" soils as well as the waste rock properties. These are best illustrated in Appendix B, Slide output files.

Deficiencies: cparker, Spoil Waste Refuse Piles

R645-301-536.200 requires this section to address how the area within the application will be placed in a controlled manner to ensure mass stability, etc.

Response: Chapter 5, pg. 2-15, 2-16 in Section 536.200 references CFR 77.215 "Refuse piles; construction requirements". This reference states how the refuse will be placed to ensure stability.

Deficiencies: pburton, Topsoil and Subsoil

R645-301-121.200, The total cover material available in storage is calculated in RA attachment 2.2. The total figure of 23,060 is based upon an increase of 2,518 CY in the topsoil stockpiled and the as built figures for soil already stockpiled. However, the increase in salvaged soil should be logged as subsoil (see deficiency under Soil Operations Plan).

Response: The total cover material is corrected and found in Chapter 2, pg. 2-15, 2-16, RA Attachment 2-2, Table 2-2.

Deficiencies: pburton, Topsoil and Subsoil

R645-301-553.252, The plan should specify in RA-Attachment 2-2 that refuse analysis will be monitored to assure that acid/toxic material is buried in the fill and only waste rock determined by analysis to be suitable will be mixed with substitute topsoil to provide cover. Should testing of the waste indicate that the final lift is acid/toxic forming, then four feet of suitable cover will be required.

Response: Chapter 2, RA Attachment 2-2, pg. 2 states that "*The mixing of coal waste and subsoil, to produce the first foot of cover for the refuse pile, will occur only if the coal waste has been demonstrated through sampling and analysis to not be acid or toxic forming. Otherwise the entire 4 feet of cover material will be composed of subsoil and topsoil*".

Deficiencies: pburton, Topsoil and Subsoil

R645-301-553.252, The last record of waste sampling in the MRP Appendix 5-4 is dated December 2011. If there has been additional waste placed at the pile since that time, it must be sampled in accordance with the requirements of the MRP Section 536.200 of the RA volume.

Response: The refuse samples from 2011 to present were added to Chapter 5, RA Attachment 5-4.

Deficiencies: cparker, Bonding Determination of Amount

The grading bond sheet needs to be updated to reflect the increase in subsoil and top soil at reclamation. Volume of material needed to obtain 4 feet of cover= 91,720 Total Cover material available at refuse site=23,060 Vol of coal waste blended with subsoil= 11,465 Vol of subsoil and top soil to cover pile=B0,255 Vol of cover material imported from borrow site=57,195

Response: The grading bond sheet was updated with the new volumes added by the Phase I expansion.

Deficiencies: cparker, Bonding Determination of Amount

The revegetation bond sheet needs to be updated to reflect the increase in disturbance area requiring reseeding to 14.2 acres, as stated in the MRP section 2, page 2-16.

Response: The revegetation bond sheet was updated to the new acreage increased by the Phase I expansion.

Dugout Canyon Mine
Waste Rock Application for Reference Only

Canyon Fuel Company, LLC

Dugout Canyon Mine Permit Number C/007/039

Waste Rock Site Permit Expansion Phase I

Redline Strikeout Copies

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout M&RP, Appendix 5-6, Reclamation Bond Estimate

APPENDIX 5-6

Reclamation Bond Estimate

Direct Costs			
Subtotal Demolition and Removal		$846,450	
Subtotal Backfilling and Grading	~~1,084,252~~	**$1,103,045**	
Subtotal Revegetation	~~430,179~~	**$434,784**	
Direct Costs	~~2,360,881~~	**$2,384,278**	
Indirect Costs			
Mob/Demob	~~236,088~~	**$238,428**	10.0%
Contingency	~~118,044~~	**$119,214**	5.0%
Engineering Redesign	~~59,022~~	**$59,607**	2.5%
Main Office Expense	~~160,540~~	**$162,131**	6.8%
Project Management Fee	~~59,022~~	**$59,607**	2.5%
Subtotal Indirect Costs	~~632,716~~	**$638,987**	26.8%
Total Reclamation Cost 2014 Dollars	~~2,993,597~~	**$3,023,265**	
Escalation factor for 2014			0.012
Number of years to next review			5
Escalation	~~183,079.00~~	**$185,802.00**	
Escalated Reclamation Cost to 2019	~~3,177,576.40~~	**$3,209,067.11**	
Reclamation Cost (rounded to nearest $1,000)	~~3,178,000.00~~	**$3,209,000.00**	
Bond Amount in 2009 Dollars		$3,550,000.00	
Difference Between Cost Estimate and Bond	~~372,000.00~~	**$341,000.00**	
Percent Difference	~~10.48~~	**9.61%**	

$$Escalated\$ = \left(\$ \times \left[1 + Rate\right]^{Years}\right)$$

Demo Line Item Subtotals

Ref.	Description	Cost Mid Dollars
1	Mine Belt BC-1 No 1	$ 11,332
2	Transfer Building No 2	$ 35,287
3	Feed Belt BC 2 No 3	$ 6,999
4	Stack Tubes 2 No4	$ 13,910
5	Head House 1 No 5	$ 3,422
6	Transfer Belt BC 2 No 6	$ 4,447
7	Head House 2 No 7	$ 797
8	Reclaim Tunnel No 8	$ 107,327
9	Reclaim Belt BC 4 No 9	$ 8,980
10	Escape Tunnel 60 inch No 10	$ 481
11	Crusher Building No 11	$ 22,691
12	Truck Loadout Belt BC 5 No 12	$ 8,005
13	Truck Loadout and Scale No 13	$ 25,121
14	Bathhouse No 14	$ 104,537
15	Substation No 15	$ 3,642
16	Power Lines and Poles No 16	$ 2,765
17	Retaining Wall No 17	$ 2,642
18	Gabion Wall No 18	$ 20,751
19	Pump House No 19	$ 7,627
20	Paved Road No 20	$ 147,706
21	Stream Culvert 72 inch No 21	$ 28,032
22	Water Tanks No 22	$ 5,231
23	Rock Dust Bin No 23	$ 1,462
24	Fuel Tank and Fuel Station No 24	$ 2,276
25	Holding Tank No 25	$ 2,535
26	Ventilation Fan No 26	$ 1,123
27	Magnet No 27	$ 1,826
28	Water System No 28	$ 20,994
29	Sewage System No 29	$ -
30	Storage Containers Non30 (8)	$ -
31	Gilson Well No 31	$ 5,606
32	Switch House No 32	$ 8,760
33	Portals No 33	$ 32,790
34	Storage & Bolts Bin No 34	$ 4,859
35	Storage Building No 35	$ 3,788
36	Sampling System No 36	$ 1,723
37	Stoker Storage Bin No 37	$ 3,082
38	Substation No 2 No 38	$ 5,852
39	Gabion Baskets No 39	$ 1,432
40	Pace Fan Culvert No 40	$ 1,118
41	Pace Fan & Generators No 41	$ 78,115
42	Pace Fan Portal No 42	$ 9,941
43	Refuse Pile No 43	$ 30,361
44	Refuse Site No 44	$ 14,105
45	Degas Well G2 No 45	$ 10,563
46	Degas Well G3 No 46	$ 5,463
47	Degas Well G4 No 47	$ 5,733
48	Degas Well G-5 No 48	$ 7,729
49	Degas Well G 6 No 49	$ 3,193
50	Degas Well G-7 No 50	$ 6,034
51	Degas Well G-9 No 51	$ 7,755
52	Degas Well G-10 No 52	$ 7,987
53	Degas Well G-11 No 53	$ 4,022
54	Degas Well G-12 No 54	$ 5,671
55	Degas Well G-13 No 55	$ 9,091
56	Degas Well G-14 No 56	$ 7,317
57	Degas Well G-15 No 57	$ 5,395
58	Degas Well G-16 No 58	$ 7,239
59	Degas Well G-17 No 59	$ 7,053
60	Degas Well G-18 No 60	$ 14,931
61	Degas Well G-19 No 61	$ 8,972
62	Degas Well G-22 & Access Road No 62	$ 15,767
63	Degas Well G-25 No 63	$ 8,904
64	Degas Well G-26 No 64	$ 8,284
66	Degas Well G-30 No 66	$ 9,330
67	Degas Well G-31 No 67	$ 19,192
68	AMV Road No 68	$ 47,330
	Total	**$ 989,104**

TOTAL with Phase I & II Bond Release Applied

Total with Phase I & II Bond Release	**$**	**846,450**

Phase I & II Bond Release of Degas Wells Breakout

Description	Phase I Bond Release 60%	Phase II Bond Release 40%	Total
Degas Well G2 No 45	$ 6,338	$ 4,225	$ 10,563
Degas Well G3 No 46	$ 3,278	$ 2,185	$ 5,463
Degas Well G4 No 47	$ 3,440	$ 2,293	$ 5,733
Degas Well G-5 No 48	$ 4,637	$ 3,092	$ 7,729
Degas Well G 6 No 49	$ 1,916	$ 1,277	$ 3,193
Degas Well G-7 No 50	$ 3,620	$ 2,414	$ 6,034
Degas Well G-9 No 51	$ 4,653		$ 4,653
Degas Well G-10 No 52	$ 4,792	$ 3,195	$ 7,987
Degas Well G-11 No 53			
Degas Well G-12 No 54	$ 3,403	$ 2,268	$ 5,671
Degas Well G-13 No 55	$ 5,455	$ 3,636	$ 9,091
Degas Well G-14 No 56	$ 4,390	$ 2,927	$ 7,317
Degas Well G-15 No 57			
Degas Well G-16 No 58	$ 4,343		$ 4,343
Degas Well G-17 No 59			
Degas Well G-18 No 60	$ 8,959	$ 5,972	$ 14,931
Degas Well G-19 No 61	$ 5,383		$ 5,383
Degas Well G-22 & Access Road No 62	$ 9,460		$ 9,460
Degas Well G-25 No 63	$ 5,342		$ 5,342
Degas Well G-26 No 64	$ 4,970		$ 4,970
Degas Well G-30 No 66	$ 5,598		$ 5,598
Degas Well G-31 No 67	$ 11,515	$ 7,677	$ 19,192
AMV Road No 68	$ 10,086		$ 10,086
Total	**$ 101,493**	**$ 41,162**	**$ 142,655**

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
1	**Mine Belt BC-1 No 1**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						62800					CF		62800	CF	
	No interior Wall Deduct		02 41 16 13 0750	50%													0.5	31400		$ 8,478
	Structure's Vol. Demolished																	1163	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											52				TON				
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										3.3					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									1.1		DAY		1.1	DAY	$ 761
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	Trhv	37.55	HR									8.8		HR		8.8	HR	$ 330
	Disposal Cost Steel																			
	Subtotal																			$ 9,570
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						20					CY		20	CY	$ 1,435
	Concrete's Vol. Demolished																1.3	26	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													26	CY	$ 25
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23.20 1014	2.95	/CY						26					CY		26	CY	$ 77
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													26	CY	$ 225
	Subtotal																			$ 1,762
	Total																			**$ 11,332**

NOTES

Assumes 6" thick concrete unreinforced slab

Assumes no interior walls

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
2	**Transfer Building No 2**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						104618					CF		104618	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	52309		$ 14,123
	Rubble's Weight (exclude steel)																	1937.37	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											50				TON				
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										3.1					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									1		DAY		1	DAY	$ 692
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	Trhv	37.55	HR									8		HR		8	HR	$ 300
	Disposal Cost Steel																			
	No interior Wall Deduct																			$ -
	Subtotal																			$ 15,116
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						229					CY		229	CY	$ 16,431
	Concrete's Vol. Demolished																1.3	298	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													298	CY	$ 283
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23.20 1014	2.95	/CY						298					CY		298	CY	$ 879
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													298	CY	$ 2,578
	Subtotal																			$ 20,171
	Total																			**$ 35,287**

NOTES

Assumes 6" thick concrete unreinforced slab

Assumes no interior walls

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Deduct	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
3	**Feed Belt BC 2 No 3**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						47438					CF		47438	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	0.5													0.5	23719		$ 6,404
	Rubble's Weight (exclude steel)																	878.5	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											30				TON				
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										1.9					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.6		DAY		0.6	DAY	$ 415
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	Trhv	37.55	HR									4.8		HR		4.8	HR	$ 180
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 6,999
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			**$ 6,999**

NOTES

Assumes no interior walls

No.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
4	**Stack Tubes 2 No4**																			
	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	03 05 05.10 0050	71.75	/CY						158					CY		158	CY	$ 11,337
	Concrete's Vol. Demolished																1.3	205	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													205	CY	$ 195
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23.20 1014	2.95	/CY						205					CY		205	CY	$ 605
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													205	CY	$ 1,773
	Subtotal																			$ 13,910
	Total																			**$ 13,910**

NOTES

Assumes 6" thick concrete unreinforced slab

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
5	**Head House 1 No 5**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						23878					CF		23878	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	11939		$ 3,224
	Rubble's Weight (exclude steel)																	442.2	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											10				TON				
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										0.6					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.2		DAY		0.2	DAY	$ 138
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	Trhv	37.55	HR									1.6		HR		1.6	HR	$ 60
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 3,422
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			**$ 3,422**

NOTES

Assumes no interior walls

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
6	**Transfer Belt BC 2 No 6**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						30000					CF		30000	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	15000		$ 4,050
	Rubble's Weight (exclude steel)																	555.6	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											20				TON		20	TON	
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										1.3					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.4		DAY		0.4	DAY	$ 277
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									3.2		HR		3.2	HR	$ 120
	Disposal Cost Steel																			
	Subtotal																			$ 4,447
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			**$ 4,447**

NOTES

Assumes no interior walls

Ref	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
7	**Head House 2 No 7**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						4436					CF		4436	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	2218		$ 599
	Rubble's Weight (exclude steel)																	82.1	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											10				TON				
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										0.6					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.2		DAY		0.2	DAY	$ 138
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	trhv	37.55	HR									1.6		HR		1.6	HR	$ 60
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 797
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			$ 797

NOTES

Assumes no interior walls

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
8	**Reclaim Tunnel No 8**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						18774					CF		18774	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	9387		$ 2,534
	Rubble's Weight (exclude steel)																	347.7	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											32				TON				
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										2					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.7		DAY		0.7	DAY	$ 485
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									5.6		HR		5.6	HR	$ 210
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 3,229
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						1182					CY		1182	CY	$ 84,809
	Concrete's Vol. Demolished																1.3	1537	CY	$ -
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													1537	CY	$ 1,460
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23.20 1014	2.95	/CY						1537					CY		1537	CY	$ 4,534
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													1537	CY	$ 13,295
	Subtotal																			$ 104,098
	Total																			$ 107,327

NOTES

Assumes 6" thick concrete unreinforced slab

Assumes no interior walls

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
9	**Reclaim Belt BC 4 No 9**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						35180					CF		35180	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	17590		$ 4,749
	Rubble's Weight (exclude steel)																	651.5	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											40				TON				
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										2.5					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.8		DAY		0.8	DAY	$ 554
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									6.4		HR		6.4	HR	$ 240
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 5,543
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						39					CY		39	CY	$ 2,798
	Concrete's Vol. Demolished																1.3	51	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													51	CY	$ 48
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	31 23 23.20 1014	2.95	/CY						51					CY		51	CY	$ 150
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													51	CY	$ 441
	Subtotal																			$ 3,437
	Total																			**$ 8,980**

NOTES

Assumes 6" thick concrete unreinforced slab

Assumes no interior walls

Truck rental totaled for entire sheet

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
10	**Escape Tunnel 60 inch No 10**																			
	Structure's Demolition Cost	Steel Bid. Large	02 41 16 13 0020	0.27	/CF						2827					CF		2827	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	1413.5		$ 382
	Rubble's Weight (exclude steel)																	52.4	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											4				TON				
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										0.3					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.1		DAY		0.1	DAY	$ 69
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									0.8		HR		0.8	HR	$ 30
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 481
	Total																			**$ 481**

NOTES

Assumes no interior walls

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
11	**Crusher Building No 11**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						93305					CF		93305	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	46652.5		$ 12,596
	Rubble's Weight (exclude steel)																	1727.9	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											100				TON		100	TON	
	Truck's Capacity	12 CY (16 Ton) Dump Truck									12	16		3		CY Trips				
	Haulage										6.3					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									2.1		DAY		2.1	DAY	$ 1,454
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									16.8		HR		16.8	HR	$ 631
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 14,681
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						91					CY		91	CY	$ 6,529
	Concrete's Vol. Demolished																1.3	118	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													118	CY	$ 112
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23.20 1014	2.95	/CY						118					CY		118	CY	$ 348
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													118	CY	$ 1,021
	Subtotal																			$ 8,010
	Total																			**$ 22,691**

NOTES
Assumes 6" thick concrete unreinforced slab
Assumes no interior walls

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
12	**Truck Loadout Belt BC 5 No 12**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						30899					CF		30899	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	15449.5		$ 4,171
	Rubble's Weight (exclude steel)																	572.2	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											20				TON		20	TON	
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										1.3					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.4		DAY		0.4	DAY	$ 277
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									3.2		HR		3.2	HR	$ 120
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 4,568
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						39					CY		39	CY	$ 2,798
	Concrete's Vol. Demolished																1.3	51	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													51	CY	$ 48
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23.20 1014	2.95	/CY						51					CY		51	CY	$ 150
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													51	CY	$ 441
	Subtotal																			$ 3,437
	Total																			**$ 8,005**

NOTES

Assumes 6" thick concrete unreinforced slab

Assumes no interior walls

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
13	**Truck Loadout and Scale No 13**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						74976					CF		74976	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	37488		$ 10,122
	Rubble's Weight (exclude steel)																	1388.4	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											50				TON		50	TON	
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										3.1					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									1		DAY		1	DAY	$ 692
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									8		HR		8	HR	$ 300
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 11,114
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						159					CY		159	CY	$ 11,406
	Concrete's Vol. Demolished																1.3	207	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													207	CY	$ 197
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tri	31 23 23.20 1014	2.95	/CY						207					CY		207	CY	$ 611
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													207	CY	$ 1,791
	Subtotal																			$ 14,007
	Total																			**$ 25,121**

NOTES

Assumes 6" thick concrete unreinforced slab

Assumes no interior walls

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Crew	Swell Factor	Quantity	Unit	Cost
14	**Bathhouse No 14**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						416365					CF		416365	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	208182.5		$ 56,209
	Rubble's Weight (exclude steel)																	7710.5	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											107								
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										6.7					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									2.2		DAY		2.2	DAY	$ 1,523
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									17.6		HR		17.6	HR	$ 661
	Disposal Cost Steel																			
	Subtotal																			$ 58,393
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						524					CY		524	CY	$ 37,597
	Concrete's Vol. Demolished																1.3	681	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													681	CY	$ 647
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	31 23 23.20 1014	2.95	/CY						681					CY		681	CY	$ 2,009
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													681	CY	$ 5,891
	Subtotal																			$ 46,144
	Total																			**$ 104,537**

NOTES

Assumes 6" thick concrete unreinforced slab

Assumes no interior walls

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
15	**Substation No 15**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						4000					CF		4000	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	2000		$ 540
	Rubble's Weight (exclude steel)																	74.1	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											50				TON		50	TON	
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										3.1					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton Payload	01 54 33 20 5300	692.2	/day									1		DAY		1	DAY	$ 692
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									8		HR		8	HR	$ 300
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 1,532
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						24					CY		24	CY	$ 1,722
	Concrete's Vol. Demolished																1.3	31	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													31	CY	$ 29
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	31 23 23.20 1014	2.95	/CY						31					CY		31	CY	$ 91
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													31	CY	$ 268
	Subtotal																			$ 2,110
	Total																			$ 3,642

NOTES

Assumes 6" thick concrete unreinforced slab

Assumes no interior walls

Item	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
16	**Power Lines and Poles No 16**																			
	Structure's Demolition Cost	Dugout Power line	26 05 05 10 1900	19.15	/CLF	1937										CLF		19.37	CLF	$ 371
	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																			$ 371
	Power Poles																			
	Equipment 's Disposal Cost	Dugout Power Poles	02 41 13.80 0100	199.5	/EA										12	EA		12	EA	$ 2,394
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 2,394
	Total																			**$ 2,765**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
17	**Retaining Wall No 17**																			
	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	03 05 05.10 0050	71.75	/CY						30					CY		30	CY	$ 2,153
	Concrete's Vol. Demolished																1.3	39	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													39	CY	$ 37
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tri	31 23 23.20 1014	2.95	/CY						39					CY		39	CY	$ 115
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													39	CY	$ 337
	Subtotal																			$ 2,642
	Total																			**$ 2,642**

NOTES

Assumes 6" thick concrete unreinforced slab

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
18	**Gabion Wall No 18**																			
	Structures Volume	Gabion Removal	02 41 13 90 1300	17.54	ea.						880							880	ea	$ 15,435
	Demolition Time 60 CY/ DAY																			
	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	Truck Driver, Heavy	Trhv	37.55	HR									117		HR		117	HR	$ 4,393
	Disposal Cost Non Steel																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Hilfiker Mesh	Select Demo disposal loading and haul	02 41 19.19 5000	0.85	/CY													513	CY	$ 436
	Load Mesh into Dumpster	Front End Loader 3 CY	31 23 16 42 1601	0.95	/CY													513	CY	$ 487
	Disposal Cost Steel																			
	Subtotal																			$ 20,751
	Total																			**$ 20,751**

NOTES

Ref.	Description	Materials	Mapos Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
19	**Pump House No 19**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						2219					CF		2219	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	1109.5		$ 300
	Rubble's Weight (exclude steel)																	41.1	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											5				TON		5	TON	
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										0.3					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.1		DAY		0.1	DAY	$ 69
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									0.8		HR		0.8	HR	$ 30
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 399
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						82					CY		82	CY	$ 5,884
	Concrete's Vol. Demolished																1.3	107	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													107	CY	$ 102
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tri	31 23 23.20 1014	2.95	/CY						107					CY		107	CY	$ 316
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													107	CY	$ 926
	Subtotal																			$ 7,228
	Total																			**$ 7,627**

NOTES

Assumes 6" thick concrete unreinforced slab

Assumes no interior walls

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
20	**Paved Road No 20**																			
	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																			$ -
	Asphalt Demolition																			
	Demolition Cost	Pavement Removal 4-6"	02 41 13 17 5050	7.01	/SY					19500						SY		19500	SY	$ 136,695
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY						1273					CY		1273	CY	$ 11,011
	Subtotal																			$ 147,706
	Total																			**$ 147,706**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
21	**Stream Culvert 72 inch No 21**																			
	Excavate Culvert	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY	2350	12	12								CF		12533	CY	$ 11,906
	Backfill Culvert	Backfill structural 300 HP	31 23 23 14 5020	0.82	/CY	2350	12	12								CF		12533	CY	$ 10,277
	Structure's Vol. Demolished																	464.2	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											94				TON		94	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									5.9		DAY		5.9	DAY	$ 4,084
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									47		HR		47	HR	$ 1,765
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 28,032
	Total																			**$ 28,032**

NOTES

Assumes no interior walls

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
22	**Water Tanks No 22**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						241					CF		241	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	120.5		$ 33
	Rubble's Weight (exclude steel)																	4.5	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											39				TON		39	TON	
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										2.4					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.8		DAY		0.8	DAY	$ 554
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									6.4		HR		6.4	HR	$ 240
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 827
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						50					CY		50	CY	$ 3,588
	Concrete's Vol. Demolished																1.3	65	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													65	CY	$ 62
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	31 23 23.20 1014	2.95	/CY						65					CY		65	CY	$ 192
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													65	CY	$ 562
	Subtotal																			$ 4,404
	Total																			**$ 5,231**

NOTES

Assumes 6" thick concrete unreinforced slab

Assumes no interior walls

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
23	**Rock Dust Bin No 23**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						2265					CF		2265	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	1132.5		$ 306
	Rubble's Weight (exclude steel)																	41.9	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											5				TON		5	TON	
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										0.3					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.1		DAY		0.1	DAY	$ 69
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									0.8		HR		0.8	HR	$ 30
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 405
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						12					CY		12	CY	$ 861
	Concrete's Vol. Demolished																1.3	15.6	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													15.6	CY	$ 15
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	31 23 23.20 1014	2.95	/CY						15.6					CY		15.6	CY	$ 46
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													15.6	CY	$ 135
	Subtotal																			$ 1,057
	Total																			**$ 1,462**

NOTES

Assumes 6" thick concrete unreinforced slab

Assumes no interior walls

Bldg	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
24	**Fuel Tank and Fuel Station No 24**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						3945					CF		3945	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	1972.5		$ 533
	Rubble's Weight (exclude steel)																	73.1	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											7				TON		7	TON	
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										0.4					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.1		DAY		0.1	DAY	$ 69
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									0.8		HR		0.8	HR	$ 30
	Disposal Cost Steel																			
	Subtotal																			$ 632
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						18.68					CY		18.66	CY	$ 1,339
	Concrete's Vol. Demolished																1.3	24.3	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													24.3	CY	$ 23
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. md. tm	31 23 23.20 1014	2.95	/CY						24.3					CY		24.3	CY	$ 72
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													24.3	CY	$ 210
	Subtotal																			$ 1,644
	Total																			**$ 2,276**

NOTES

Assumes 6" thick concrete unreinforced slab

Assumes no interior walls

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
25	**Holding Tank No 25**																			
	Structure's Demolition Cost	Septic Tanks & Related Components	02 41 13 44 0600	1995	EA													1		$ 1,995
	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	On site disposal	02 41 16 17 4200	8.65	CY						50					CY		50	CY	$ 433
	Steel's Weight											2				TON		2	TON	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.1	51.76	HR		0.1	day	$ 69
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	Trhv	37.55	HR									1		HR		1	HR	$ 38
	Disposal Cost Steel																			
	Subtotal																			$ 2,535
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			**$ 2,535**

NOTES

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
26	**Ventilation Fan No 26**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						6850					CF		6850	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	3425		$ 925
	Rubble's Weight (exclude steel)																	126.9	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											10				TON		10	TON	
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										0.6					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.2		DAY		0.2	DAY	$ 138
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	Trhv	37.55	HR									1.6		HR		1.6	HR	$ 60
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 1,123
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			**$ 1,123**

NOTES

Assumes no interior walls

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
27	**Magnet No 27**																			
	Structure's Demolition Cost	Steel Building Small	02 41 16 13 0500	0.3	CF						35					CF		35		
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	17.5		$ 5
																		0.6	CY	
	Rubble's Weight (exclude steel)	Truck Mounted Crane 55 ton	01 54 33 60 2600	77.5	HR										2	HR		2	HR	$ 155
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	City Services	City Service Price	4	/CY													35	CY	140
	Steel's Weight											2				TON		2	TON	
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										0.1					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.03		DAY		0.03	DAY	$ 21
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	Trhv	37.55	HR									0.2		HR		0.2	HR	$ 8
	Disposal Cost Steel																			
	Subtotal																			$ 329
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						17					CY		17	CY	$ 1,220
	Concrete's Vol. Demolished																1.3	22.1	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													22.1	CY	$ 21
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	31 23 23.20 1014	2.95	/CY						22.1					CY		22.1	CY	$ 65
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													22.1	CY	$ 191
	Subtotal																			$ 1,497
	Total																			**$ 1,826**

NOTES

Assumes 6" thick concrete unreinforced slab

Assumes no interior walls

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
28	**Water System No 28**																			
	Excavate Pipe	Excavation Bulk Bank 3 CY	31 23 16.42 1601	0.95	/CY	8450	2	4								FT		2504	CY	$ 2,379
	Pipe Removal	Pipe removal	02 41 13.38 1700	1.96	/LF	8450										FT		8450		$ 16,562
	Backfill Trench	Backfill structural 300 HP	31 23 23 14 5020	0.82	/CY	8450	2	4								FT		2504	CY	$ 2,053
	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																			$ 20,994
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			**$ 20,994**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
29	**Sewage System No 29**																			
	Excavate Pipe	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0	/CY	2832	2	4								FT		839	CY	$ -
	Pipe Removal	Pipe removal	02 41 13.38 1700	0	/FT	2832										FT		2832		$ -
	Backfill Trench	Backfill structural 300 HP	31 23 23 14 5020	0	/CY	2832	2	4								FT		839	CY	$ -
	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																			$ -
	Total																			$ -

NOTES

See Dugout Canyon Mine Leach Field Amendment pg. 5-13 states sewer pipeline and leach field piping and concrete boxes will be left in place as part of the final reclamation.

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
30																				
	Storage Containers Non30 (8)																			
	Load, Transport, and Return Trip	Truck Mounted Crane 55 ton	01 54 33 60 2600	77.5	HR									16		HR		16		$ 1,240
	Structure's Demolition Cost	Mixed Materials Bld. Large	02 41 16 13 0100	0.3	/CF	40	10	10							8	EA		32000	CF	$ 9,600
	Structure's Vol. Demolished																0.35	415	CY	
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	Building Construction Materials	02 41 19.19 0400	10.04	/CY							107						107	CY	$ 1,074
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 11,914
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			$ -

NOTES

All Storage Containers will be salvaged

Salvaged

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
31	**Gilson Well No 31**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF						800					CF		800	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	400		$ 108
	Rubble's Weight (exclude steel)																	14.8	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											0.5				TON		0.5	TON	
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										1					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.3		DAY		0.3	DAY	$ 208
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									2.4		HR		2.4	HR	$ 90
	Disposal Cost Steel																			
	Subtotal																			$ 406
	Plug Well Casing	Concrete Ready Mix 8000 PSI	03 31 13.35 0412	119	CY						3					CY		3	CY	$ 357
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 357
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						55					CY		55	CY	$ 3,946
	Concrete's Vol. Demolished																1.3	71.5	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													71.5	CY	$ 68
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	31 23 23.20 1014	2.95	/CY						71.5					CY		71.5	CY	$ 211
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													71.5	CY	$ 618
	Subtotal																			$ 4,843
	Total																			$ 5,606

NOTES

Assumes 6" thick concrete unreinforced slab

Assumes no interior walls

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
32	**Switch House No 32**																			
	Structure's Demolition Cost	Steel Bid. Large	02 41 16 13 0020	0.27	/CF						14400					CF		14400	CF	$ 3,888
	Structure's Vol. Demolished																	533.3	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											1				TON		1	TON	
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										0.1					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.03		DAY		0.03	DAY	$ 21
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									0.2		HR		0.2	HR	$ 8
	Disposal Cost Steel																			
	Subtotal																			$ 3,917
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						55					CY		55	CY	$ 3,946
	Concrete's Vol. Demolished																1.3	71.5	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													71.5	CY	$ 68
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd, tri	31 23 23.20 1014	2.95	/CY						71.5					CY		71.5	CY	$ 211
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													71.5	CY	$ 618
	Subtotal																			$ 4,843
	Total																			**$ 8,760**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
33	**Portals No 33**																			
	Structure's Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	CY						34				5	EA		170	CY	$ 12,198
	Loading Cost																			
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Concrete Unit Masonry	Concrete Block, Back Up	04 22 10.14 1250	8.35	/SF						400				5	EA		2000	CY	$ 16,700
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY						90				5	EA		450	CY	$ 3,893
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			**$ 32,790**
	Total																			**$ 32,790**

NOTES

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
34	**Storage & Bolts Bin No 34**																			
	Structure's Demolition Cost	LG Steel Bldg./include 20 mi haul	02 41 16 13 0020	0.27	/CF						3272					/CF		3272	/CF	$ 883
	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	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.44		DAY		0.44	DAY	$ 305
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	Trhv	37.55	HR									4		HR		4	HR	$ 150
	Disposal Cost Steel																			
	Subtotal																			$ 1,338
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						39.99					CY		39.99	CY	$ 2,869
	Concrete's Vol. Demolished																1.3	52	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													52	CY	$ 49
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	31 23 23.20 1014	2.95	/CY						52					CY		52	CY	$ 153
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													52	CY	$ 450
	Subtotal																			$ 3,521
	Total																			**$ 4,859**

NOTES

Assumes 6" thick slab concrete

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
35	**Storage Building No 35**																			
	Structure's Demolition Cost	Steel Bid, Large	02 41 16 13 0020	0.27	/CF						2284					CF		2284	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	1142		$ 308
	Rubble's Weight (exclude steel)																	42.3	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel																			
	Steel's Weight											6				TON		6	TON	
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										0.4					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.1		DAY		0.1	DAY	$ 69
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									0.8		HR		0.8	HR	$ 30
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 407
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete Demo Means	03 05 05.10 0050	71.75	/CY						38.4					CY		38.4	CY	$ 2,755
	Concrete's Vol. Demolished																1.3	49.9	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													49.9	CY	$ 47
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23.20 1014	2.95	/CY						49.9					CY		49.9	CY	$ 147
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													49.9	CY	$ 432
	Subtotal																			$ 3,381
	Total																			**$ 3,788**

NOTES
Assumes 6" thick slab concrete

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
36	**Sampling System No 36**																			
	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	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.14		DAY		0.14	DAY	$ 97
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									1.1		HR		1.1	HR	$ 41
	Disposal Cost Steel																			
	Subtotal																			$ 138
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete Demo Means	03 05 05.10 0050	71.75	/CY						18					CY		18	CY	$ 1,292
	Concrete's Vol. Demolished																1.3	23.4	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													23.4	CY	$ 22
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23.20 1014	2.95	/CY						23.4					CY		23.4	CY	$ 69
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													23.4	CY	$ 202
	Subtotal																			$ 1,585
	Total																			**$ 1,723**

NOTES

Assumes 6" thick slab concrete

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
37	**Stoker Storage Bin No 37**																			
	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 Demo	03 05 05.10 0050	71.75	/CY						35					CY		35	CY	$ 2,511
	Concrete's Vol. Demolished																1.3	45.5	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													45.5	CY	$ 43
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	31 23 23.20 1014	2.95	/CY						45.5					CY		45.5	CY	$ 134
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													45.5	CY	$ 394
	Subtotal																			$ 3,082
	Total																			**$ 3,082**

NOTES

Assumes 6" thick slab concrete

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
38	**Substation No 2 No 38**																			
	Structure's Demolition Cost	Mixed Materials Bid. Large	02 41 16 13 0100	0.3	/CF						4000					CF		4000	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	2000		$ 600
	Rubble's Weight (exclude steel)																	74.1	CY	
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Cost Non Steel	6000 gal. to 8000 gal. tank	02115 200 0310	232	Ea.										1	EA		1	EA	232
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 832
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						57					CY		57	CY	$ 4,090
	Concrete's Vol. Demolished																1.3	74.1	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													74.1	CY	$ 70
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. trip	31 23 23.20 1014	2.95	/CY						74.1					CY		74.1	CY	$ 219
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													74.1	CY	$ 641
	Subtotal																			$ 5,020
	Total																			**$ 5,852**

NOTES

Assumes 6" thick slab concrete

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
39	**Gabion Baskets No 39**																			
	Excavate	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY						88					CY		88		$ 84
	Support	CLAB	Clab	36.65	HR									8		hr.		8	hr.	$ 293
	Disposal	On site disposal	02 41 16 17 4200	8.65	/CY						122					CY		122	CY	$ 1,055
	See Earthwork																			
	Subtotal																			$ 1,432
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			**$ 1,432**

NOTES

Rep.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
40	**Pace Fan Culvert No 40**																			
	Excavate Culvert	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY	585	3	8										520	CY	$ 494
	Backfill Culvert	Backfill structural 300 HP	31 23 23 14 5020	0.82	/CY	585	3	8										520	CY	$ 426
	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											8.5				ton				
	Truck's Capacity										12	16		3		CY Trips				
	Haulage										0.5					CY				
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.2		DAY		0.2	DAY	$ 138
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									1.6		HR		1.6	HR	$ 60
	Disposal Cost Steel																			
	Subtotal																			$ 1,118
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			**$ 1,118**

NOTES

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
41	**Pace Fan & Generators No 41**																			
	Structure's Demolition Cost	Steel Bld. Large	02 41 16 13 0020	0.27	/CF	25	25	12								CF		7500	CF	
	Structure's Vol. Demolished	No interior Wall Deduct	02 41 16 13 0750	50%													0.5	3750		$ 1,013
	Rubble's Weight (exclude steel)																	138.9	CY	
	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	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									1		DAY		1	DAY	$ 692
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									8		HR		8	HR	$ 300
	Disposal Cost Steel																			
	No interior Wall Deduct																			
	Subtotal																			$ 2,005
	Equipment 's Disposal Cost																			
	Ducting	Mechanical equipment heavy	23 05 05.10 3600	765	/ton							35				ton		35	ton	$ 26,775
	Fan	Mechanical equipment heavy	23 05 05.10 3600	765	/ton							10				ton		10	ton	$ 7,650
	Hilfiker Mesh	Mechanical equipment heavy	23 05 05.10 3600	765	/ton							0.7				ton		0.7	ton	$ 536
	Portal plate liner	Mechanical equipment heavy	23 05 05.10 3600	765	/ton							1.2				ton		1.2	ton	$ 918
	Total steel weight											46.9								
	Transportation Cost Steel Truck	Truck dump 16 ton payload	01 54 33 20 5300	692.2	/day									0.6		DAY		0.6	DAY	$ 415
	Transportation Cost Steel Truck Drive	Truck Driver, Heavy	TRHV	37.55	HR									5		HR		5	HR	$ 188
	Subtotal																			$ 36,482
	Portal plate liner																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						70					CY		70	CY	$ 5,023
	Concrete's Vol. Demolished																1.3	91	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													91	CY	$ 86
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	31 23 23.20 1014	2.95	/CY						91					CY		91	CY	$ 268
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													91	CY	$ 787
	Subtotal																			$ 6,164
	Generator Pad																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						128					CY		128	CY	$ 9,184
	Concrete's Vol. Demolished																1.3	166.4	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													166.4	CY	$ 158
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	31 23 23.20 1014	2.95	/CY						166.4					CY		166.4	CY	$ 491
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													166.4	CY	$ 1,439
	Subtotal																			$ 11,272
	Fan Building																			
	Concrete Demolition																			
	Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						252					CY		252	CY	$ 18,081
	Concrete's Vol. Demolished																1.3	327.6	CY	
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY													327.6	CY	$ 311
	Transportation Cost	12 CY (16 Ton) Dump Truck 1/2 mi. rnd. tri	31 23 23.20 1014	2.95	/CY						327.6					CY		327.6	CY	$ 966
	Disposal Costs	On site disposal	02 41 16 17 4200	8.65	/CY													327.6	CY	$ 2,834
	Subtotal																			$ 22,192
	Total																			**$ 78,115**

NOTES

Assume 6" thick slab none reinforced concrete

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
42	**Pace Fan Portal No 42**																			
	Structure's Demolition Cost	Concrete demolition	03 05 05.10 0050	71.75	/CY						90				1	EA		1	EA	$ 6,458
	Loading Cost	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY						150				1	EA		1	EA	$ 143
	Rubble's Weight (exclude steel)																			
	Truck's Capacity																			
	Concrete Unit Masonry	Concrete Block, Back Up	04 22 10.14 1250	8.35	/SF						400				1	EA		400		$ 3,340
	Transportation Cost Non Steel Truck																			
	Transportation Cost Non Steel Drive																			
	Disposal Costs																			
	Steel's Weight																			
	Truck's Capacity																			
	Haulage																			
	Transportation Cost Steel Truck																			
	Transportation Cost Steel Truck Drive																			
	Disposal Cost Steel																			
	Subtotal																			$ 9,941
	Total																			**$ 9,941**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
43	**Refuse Pile No 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																			$ -
	Erosion Control																			
	Riprap	Machine placed rip-rap slope protection	31 37 13 10 0100	52.35	CY						561					CY		561	CY	$ 29,368
	Polypropylene Mesh	Polypropylene mesh	31 25 14.16 0100	0.59	SY					1683						SY		1683	SY	$ 993
	Subtotal																			$ 30,361
	Concrete Demolition																			
	Demolition Cost																			
	Concrete's Vol. Demolished																			
	Loading Cost																			
	Transportation Cost																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			**$ 30,361**

NOTES

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
44	**Refuse Site No 44**																			
	See Earthwork also																			
		Fencing Barbed wire 3 strand	02 41 13 60 1600	1.36	/LF	3250										FT		3250	FT	$ 4,420
	Remove Fence	Chain link remove 8'-10'	02 41 13 60 1700	2.98	/LF	3250										FT		3250	FT	$ 9,685
	Subtotal																			$ 14,105
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			**$ 14,105**

NOTES

Ref.	Description	Material	Mean Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
45	**Degas Well G2 No 45**																			
	Grade and Backfill	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY						378					CY		378	CY	$ 359
	Fill in Mud Pit	Backfill Trench minimal Haul 2 1/4 CY	31 23 16 13 3080	1.77	/CY						1246					CY		1246	CY	$ 2,205
	Subtotal																			$ 2,564
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	/CY						20					CY		20	CY	$ 2,380
	Subtotal																			$ 2,380
	Spread Topsoil	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY						3104					CY		3104	CY	$ 2,949
	Subtotal																			$ 2,949
	Fence																			
	Remove Barbed Wire	Fencing Barbed wire 3 strand	02 41 13 60 1600	1.36	/LF	1200										FT		1200	FT	$ 1,632
	Subtotal																			$ 1,632
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	per HR									16		hr.		16	hr.	$ 789
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									16		hr.		16	hr.	$ 249
	Subtotal																			$ 1,038
	Total																			**$ 10,563**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
46	**Degas Well G3 No 46**																			
	Grade and Backfill	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY						412					CY		412	CY	$ 391
	Fill in Mud Pit	Backfill Trench minimal Haul 2 1/4 CY	31 23 16 13 3080	1.77	/CY						110					CY		110	CY	$ 195
	Subtotal																			$ 586
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	/CY						21					CY		21	CY	$ 2,499
	Subtotal																			$ 2,499
	Spread Topsoil	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY						1182					CY		1182	CY	$ 1,123
	Subtotal																			$ 1,123
	Fence																			
	Remove Barbed Wire	Fencing Barbed wire 3 strand	02 41 13 60 1600	1.36	/LF	542										FT		542	FT	$ 737
	Subtotal																			$ 737
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	per HR									8		hr.		8	hr.	$ 394
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									8		hr.		8	hr.	$ 124
	Subtotal																			$ 518
	Total																			**$ 5,463**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
47	**Degas Well G4 No 47**																			
	Grade and Backfill	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY						218					CY		218	CY	$ 207
	Fill in Mud Pit	Backfill Trench Mini Haul 2 1/4 CY	31 23 16 13 3080	1.77	/CY						110					CY		110	CY	$ 195
	Subtotal																			$ 402
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	/CY						21					CY		21	CY	$ 2,499
	Subtotal																			$ 2,499
	Spread Topsoil	Front end loader 3 CY	31 23 16 42 1601	0.95	/CY						1100					CY		1100	CY	$ 1,045
	Subtotal																			$ 1,045
	Fence																			
	Remove Barbed Wire	Fencing, barbed wire, 3 strand - 2011	02 41 13 60 1600	1.36	/LF	551										FT		551	FT	$ 749
	Subtotal																			$ 749
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	per HR									16		hr.		16	HR	$ 789
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									16		hr.		16	HR	$ 249
	Subtotal																			$ 1,038
	Total																			**$ 5,733**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
48	**Degas Well G-5 No 48**																			
	Grading and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						818					CY		818	CY	$ 777
	Fill Mud Pit	Backfill Trench Minimal Haul 2 1/4	31 23 16 42 1601	0.95	/CY						110					CY		110	CY	$ 105
	Plug well Casing	Concrete ready Mix 8000 psi	03 31 13.35 0412	119	/CY						21					CY		21	CY	$ 2,499
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	/CY						1909					CY		1909	CY	$ 1,814
	Remove Barbed Wire	Fencing Barbed wire 3 strand	02 41 13 60 1600	1.36	/LF	1100										LF		1100	LF	$ 1,496
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	per HR										16	HR		16	HR	$ 789
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR										16	HR		16	HR	$ 249
	Subtotal																			$ 7,729
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			**$ 7,729**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
49	**Degas Well G 6 No 49**																			
	Grading and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	/CY						682					CY		682	CY	$ 648
																CY				
	Fill Mud Pit	Backfill Trench Minimal Haul 2 1/4	31 23 16 42 1601	0.95	/CY						110					CY		110	CY	$ 105
	Plug Well Casing																			
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	/CY						792					CY		792	CY	$ 752
	Remove Barbed Wire	Fencing Barbed wire 3 strand	02 41 13 60 1600	1.36	/LF	860										LF		860	LF	$ 1,170
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	per HR									8		HR		8	HR	$ 394
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									8		HR		8	HR	$ 124
	Subtotal																			$ 3,193
	Equipment 's Disposal Cost																			
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ -
	Total																			**$ 3,193**

NOTES

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
50	**Degas Well G-7 No 50**																			
	Grading and Backfill	Frond End Loader 3 CY	31 23 16 42 1601	0.95	/CY						908					CY		908	CY	$ 863
	Fill Mud Pit	Backfill trench minimal haul 21/4 CY	31 23 16 42 1601	0.95	/CY						430					CY		430	CY	$ 409
	Plug Well Casing																			
	Spread Topsoil	Front End Loader	31 23 16 42 1601	0.95	/CY						2345					CY		2345	CY	$ 2,228
	Remove Barbed Wire	Fencing Barbed wire 3 strand	02 41 13 60 1600	1.36	/LF	1100										LF		1100	LF	$ 1,496
	Subtotal																			$ 4,996
	Foreman	Foreman Average, Outside	Foreman	49.3	hr.									16		hr.		16	hr.	$ 789
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									16		hr.		16	hr.	$ 249
	Dismantling Cost																			
	Equipment 's Vol. Demolished																			
	Loading Costs																			
	Transport Costs																			
	Disposal Costs																			
	Subtotal																			$ 1,038
	Total																			**$ 6,034**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
51	**Degas Well G-9 No 51**																			
	Grading and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						575					CY		575	CY	$ 546
	Fill Mud Pit	Backfill Trench Minimal Haul 2 1/4 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Plug Well Casing	Concrete Ready Mix	03 31 13.35 0412	119	CY						21					CY		21	CY	$ 2,499
	Subtotal																			$ 3,454
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						1574					CY		1574	CY	$ 1,495
	Subtotal																			$ 1,495
	Remove Fence	Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	per LF	1300										LF		1300	LF	$ 1,768
	Subtotal																			$ 1,768
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									16		HR		16	HR	$ 789
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									16		HR		16	HR	$ 249
	Subtotal																			$ 1,038
	Total																			**$ 7,755**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
52	**Degas Well G-10 No 52**																			
	Grading and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						922					CY				$ -
	Fill Mud Pit	Backfill Trench Minimal Haul 2 1/4 CY	31 23 16 42 1601	0.95	CY						622					CY		622	CY	$ 591
	Subtotal																			$ 591
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	CY						21					CY		21	CY	$ 2,499
	Subtotal																			$ 2,499
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						2344					CY		2344	CY	$ 2,227
	Subtotal																			$ 2,227
	Remove Fence	Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1200										LF		1200	LF	$ 1,632
	Subtotal																			$ 1,632
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									16		HR		16	HR	$ 789
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									16		HR		16	HR	$ 249
	Subtotal																			$ 1,038
	Total																			**$ 7,987**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
53	**Degas Well G-11 No 53**																			
	Grade and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						882					CY		882	CY	$ 838
	Fill in Mud Pit	Backfill Trench Minimal Haul 2 1/4 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Subtotal																			$ 1,247
	Plug Well Casing																			
	Subtotal																			$ -
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						254					CY		254	CY	$ 241
	Subtotal																			$ 241
	Remove Fence	Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1100										FT		1100	FT	$ 1,496
	Subtotal																			$ 1,496
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									16		HR		16	HR	$ 789
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									16		HR		16	HR	$ 249
	Subtotal																			$ 1,038
	Total																			**$ 4,022**

NOTES

Item	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
54	**Degas Well G-12 No 54**																			
	Grading and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						429					CY		429	CY	$ 408
	Fill Mud Pit	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Subtotal																			$ 817
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	CY						15					CY		15	CY	$ 1,785
	Subtotal																			$ 1,785
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						563					CY		563	CY	$ 535
	Subtotal																			$ 535
	Remove Fence	Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1100										FT		1100	LF	$ 1,496
	Subtotal																			$ 1,496
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									16		HR		16	HR	$ 789
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									16		HR		16	HR	$ 249
	Subtotal																			$ 1,038
	Total																			**$ 5,671**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
55	**Degas Well G-13 No 55**																			
	Grade and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						1393					CY		1393	CY	$ 1,323
	Fill in Mud Pit	Backfill Trench Minimal Haul 2 1/4 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Subtotal																			$ 1,732
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	CY						21					CY		21	CY	$ 2,499
	Subtotal																			$ 2,499
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						2162					CY		2162	CY	$ 2,054
	Subtotal																			$ 2,054
	Remove Fence	Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1300										LF		1300	LF	$ 1,768
	Subtotal																			$ 1,768
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									16		HR		16	HR	$ 789
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									16		HR		16	HR	$ 249
	Subtotal																			$ 1,038
	Total																			**$ 9,091**

NOTES

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
56	**Degas Well G-14 No 56**																			
	Grade and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						429					CY		429	CY	$ 408
	Fill in Mud Pit	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Subtotal																			$ 817
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	CY						21					CY		21	CY	$ 2,499
	Subtotal																			$ 2,499
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						1544				1544	CY		1544	CY	$ 1,467
	Subtotal																			$ 1,467
	Remove Fence	Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1100										LF		1100	LF	$ 1,496
	Subtotal																			$ 1,496
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									16		HR		16	HR	$ 789
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									16		HR		16	HR	$ 249
	Subtotal																			$ 1,038
	Total																			$ 7,317

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
57	**Degas Well G-15 No 57**																			
	Grade and Backfill	Front end Loader 3 CY	31 23 16 42 1601	0.95	CY						1106					CY		1106	CY	$ 1,051
	Fill in Mud Pit	Front end Loader 3 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Subtotal																			$ 1,460
	Plug Well Casing																			
	Subtotal																			$ -
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						1475					CY		1475	CY	$ 1,401
	Subtotal																			$ 1,401
	Fence																			
	Remove Barbed Wire	Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1100										FT		1100	FT	$ 1,496
	Subtotal																			$ 1,496
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									16		HR		16	HR	$ 789
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									16		HR		16	HR	$ 249
	Subtotal																			$ 1,038
	Total																			**$ 5,395**

NOTES

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
58	**Degas Well G-16 No 58**																			
	Grade and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						800					CY		800	CY	$ 760
	Fill in Mud Pit	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Subtotal																			$ 1,169
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	/CY						21					CY		21	CY	2499
	Subtotal																			$ 2,499
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						1092					CY		1092	CY	$ 1,037
	Subtotal																			$ 1,037
	Fence																			
	Remove Barbed Wire	Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1100										LF		1100	LF	$ 1,496
	Subtotal																			$ 1,496
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									16		HR		16	HR	$ 789
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									16		HR		16	HR	$ 249
	Subtotal																			$ 1,038
	Total																			**$ 7,239**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
59	**Degas Well G-17 No 59**																			
	Grade and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						756					CY		756	CY	$ 718
	Fill in Mud Pit	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Subtotal																			$ 1,127
	Plug well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	/CY						21					CY		21	CY	2499
	Subtotal																			$ 2,499
	Spread topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						797					CY		797	CY	$ 757
	Subtotal																			$ 757
	Fence																			
	Remove Barbed Wire	Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1200										LF		1200	LF	$ 1,632
	Subtotal																			$ 1,632
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									16		HR		16	HR	$ 789
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									16		HR		16	HR	$ 249
	Subtotal																			$ 1,038
	Total																			**$ 7,053**

NOTES

Ref.	Description	Material	Master Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
60	**Degas Well G-18 No 60**																			
	Grade and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						6962					CY		6962	CY	$ 6,614
	Fill in Mud Pit	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Subtotal																			$ 7,023
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	/CY						21					CY		21	CY	2499
	Subtotal																			$ 2,499
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						2195					CY		2195	CY	$ 2,085
	Subtotal																			$ 2,085
	Remove Barbed Wire Fence																			
		Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1300												1300	LF	$ 1,768
	Subtotal																			$ 1,768
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									24		HR		24	HR	$ 1,183
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									24		HR		24	HR	$ 373
	Subtotal																			$ 1,556
	Total																			**$ 14,931**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
61	**Degas Well G-19 No 61**																			
	Grade and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						1393					CY		1393	CY	$ 1,323
	Fill in Mud Pit	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Subtotal																			$ 1,732
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	/CY						21					CY		21	CY	2499
	Subtotal																			$ 2,499
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						2037					CY		2037	CY	$ 1,935
	Subtotal																			$ 1,935
	Fence																			
	Remove Barbed Wire	Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1300										LF		1300	LF	$ 1,768
	Subtotal																			$ 1,768
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									16		HR		16	HR	$ 789
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									16		HR		16	HR	$ 249
	Subtotal																			$ 1,038
	Total																			**$ 8,972**

NOTES

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
62	**Degas Well G-22 & Access Road No 62**																			
	Grade and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						7386					CY		7386	CY	$ 7,017
	Fill in Mud Pit	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Subtotal																			$ 7,426
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	/CY						21					CY		21	CY	2499
	Subtotal																			$ 2,499
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						2103							2103	CY	$ 1,998
	Subtotal																			$ 1,998
	Fence																			
	Remove Barbed Wire	Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1300										LF		1300	LF	$ 1,768
	Subtotal																			$ 1,768
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									32		HR		32	HR	$ 1,578
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									32		HR		32	HR	$ 498
	Subtotal																			$ 2,076
	Total																			**$ 15,767**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
63	**Degas Well G-25 No 63**																			
	Grade and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						1406					CY		1406	CY	$ 1,336
	Fill in Mud Pit	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Subtotal																			$ 1,745
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	/CY						21					CY		21	CY	2499
	Subtotal																			$ 2,499
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						1406					CY		1406	CY	$ 1,336
	Subtotal																			$ 1,336
	Fence																			
	Remove Barb Wire Fence	Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1300										FT		1300	LF	$ 1,768
	Subtotal																			$ 1,768
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									24		HR		24	HR	$ 1,183
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									24		HR		24	HR	$ 373
	Subtotal																			$ 1,556
	Total																			**$ 8,904**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
64	**Degas Well G-26 No 64**																			
	Grade and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						1080					CY		1080	CY	$ 1,026
	Fill in Mud Pit	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Subtotal																			$ 1,435
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	/CY						21					CY		21	CY	2499
	Subtotal																			$ 2,499
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						1080					CY		1080	CY	$ 1,026
	Subtotal																			$ 1,026
	Fence																			
	Remove Barbed Wire	Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1300										LF		1300	LF	$ 1,768
	Subtotal																			$ 1,768
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									24		HR		24	HR	$ 1,183
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									24		HR		24	HR	$ 373
	Subtotal																			$ 1,556
	Total																			**$ 8,284**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
66	**Degas Well G-30 No 66**																			
	Grade and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						1479					CY		1479	CY	$ 1,405
	Fill in Mud Pit	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Subtotal																			$ 1,814
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	/CY						21					CY		21	CY	2499
	Subtotal																			$ 2,499
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						1235					CY		1235	CY	$ 1,173
	Subtotal																			$ 1,173
	Fence																			
	Remove Barbed Wire	Fencing Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1300										LF		1300	LF	$ 1,768
	Subtotal																			$ 1,768
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									32		HR		32	HR	$ 1,578
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									32		HR		32	HR	$ 498
	Subtotal																			$ 2,076
	Total																			**$ 9,330**

NOTES

Rep.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Item	Number	Unit	Swell Factor	Quantity	Unit	Cost
67	**Degas Well G-31 No 67**																			
	Grade and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						8470					CY		8470	CY	$ 8,047
	Fill in Mud Pit	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						430					CY		430	CY	$ 409
	Subtotal																			$ 8,456
	Plug Well Casing	Concrete Ready Mix 8000 psi	03 31 13.35 0412	119	/CY						21					CY		21	CY	2499
	Subtotal																			$ 2,499
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						4624					CY		4624	CY	$ 4,393
	Subtotal																			$ 4,393
	Fence																			
	Remove Fencing	Barbed Wire 3 Strand	02 41 13 60 1600	1.36	LF	1300										LF		1300	LF	$ 1,768
	Subtotal																			$ 1,768
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR									32		HR		32	HR	$ 1,578
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR									32		HR		32	HR	$ 498
	Subtotal																			$ 2,076
	Total																			**$ 19,192**

NOTES

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
68	**AMV Road No 68**																			
	Grade and Backfill	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						15207					CY		15207	CY	$ 14,447
	Subtotal																			$ 14,447
	Spread Topsoil	Front End Loader 3 CY	31 23 16 42 1601	0.95	CY						24374					CY		24374	CY	$ 23,155
	Subtotal																			$ 23,155
	Support																			
	Foreman	Foreman Average, Outside	Foreman	49.3	HR						150					HR		150	HR	$ 7,395
	4X4 Pickup	Equipment Rental	01 54 33 40 7200	15.55	/HR						150					HR		150	HR	$ 2,333
	Subtotal																			$ 9,728
	Subtotal																			$ -
	Total																			$ 47,330

NOTES

Earth Line Item Subtotals

Ref.	Description	COST 2014 Dollars	
1	Facilities Area 01	$ 489,732	
2	Facilities Area 02	$ 158,066	
3	Stream Channel 03	$ 44,939	
5	Refuse Pile 05	$ 397,632	~~379,839~~
6	Backfill Shaft	$ 12,676	
	Total	$1,103,045	~~$ 1,084,252~~

Ref.	Description	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 $ 2,005 Dollars
	Dugout Mine															
1	**Facilities Area 01**															
	Cut and Fill at Mine Site															
	Equipment															
	Rough Grading															
	D9R Semi-U EROPS (9-35) (2H2014)	23835	132.1	0.1	55.4	349.68	1	349.68	$/HR	118169	CY	184	CY/HR	642.2	HR	$ 224,564
	Finished Grading															
	D9R Semi-U EROPS (9-35) (2H2014)	23835	132.1	0.1	55.4	349.68	1	349.68	$/HR	19926	CY	680	CY/HR	29.3	HR	$ 10,246
	825H ((6-12) (2H2014))	169000	100.85	0.1	55.4	1222.59	1	1222.59	$/HR	58490	CY	876	CY/HR	66.8	HR	$ 81,669
	CAT 345D L(10-20)(2nd2014)	17095	113.1	0.1	55.4	286.65	1	286.65	$/HR	10000	CY	308	CY/HR	32.5	HR	$ 9,316
	966H EROPS (9-26) (2nd2014)	8725	62.85	0.1	55.4	179.07	1	179.07	$/HR	8342	CY	204	CY/HR	40.9	HR	$ 7,324
	Support Personnel and Labor															
	CLAB				42.65	42.65	1	42.65	$/HR					642.2	HR	$ 27,390
	5,000 gal H2O truck Diesel (20-15) (2nd2014)	5260	48.7	0.1	43.3	129.75	1	129.75	$/HR					642.2	HR	$ 83,325
	Pickup Truck Crew 4x4 1 ton (20-16) (2nd2014)	300	12.75	0.1	43.3	59.2	1	11.57	$/HR					642.2	HR	$ 7,430
	Foreman Average, Outside					59.9	1	59.9	$/HR					642.2	HR	$ 38,468
	Subtotal															**$ 489,732**

Ref.		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 2005 Dollars
	Dugout Mine															
2	**Facilities Area 02**															
	Topsoil Distribution															
	Move topsoil															
	D9R Semi-U EROPS (9-35) (2H2014)	23835	132.1	0.1	55.4	349.68	1	349.68	$/HR	21460	CY	184	CY/HR	116.6	HR	$ 40,773
	Pocking Handled in Vegetation Section															
	966H EROPS (9-26) (2nd2014)	8725	62.85	0.1	55.4	179.07	1	179.07	$/HR	21460	CY	204	CY/HR	105.2	HR	$ 18,838
	6X4 70,000lbs 12-18 CY (20-11) (2nd2014)	4410	71.55	0.1	43.3	100.96	6	605.76	$/HR	21460	CY	204	CY/HR	105.2	HR	$ 63,726
	Support Personnel and Labor															
	CLAB					49	1	49	$/HR					116.6	HR	$ 5,713
	5,000 gal H2O truck Diesel (20-15) (2nd2014)	5260	48.7	0.1	43.3	129.75	1	129.75	$/HR					116.6	HR	$ 15,129
	Pickup Truck Crew 4x4 1 ton (20-16) (2nd2014)	300	12.75	0.1	43.3	59.2	1	59.2	$/HR					116.6	HR	$ 6,903
	Foreman Average, Outside					59.9	1	59.9	$/HR					116.6	HR	$ 6,984
	Subtotal															$ 158,066

Ref.		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 2005 Dollars
	Dugout Mine															
3	**Stream Channel 03**															
	Remove Culvert and Restore Channel															
	CAT 345D L(10-20)(2nd2014)	17095	113.1	0.1	55.4	286.65	1	286.65	$/HR	14400	CY	310	CY/HR	46.5	HR	$ 13,329
	CLAB					42.65	0.5	21.33	$/HR					46.5	HR	$ 992
	966H EROPS (9-26) (2nd2014)	8725	62.85	0.1	55.4	179.07	1	179.07	$/HR	1500	CY	204	CY/HR	7.4	HR	$ 1,325
	CLAB					42.65	0.5	21.33	$/HR					7.4	HR	$ 158
	6X4 70,000lbs 12-18 CY (20-11) (2nd2014)	4410	71.55	0.1	43.3	100.96	1	100.96	$/HR	7000	CY	50	CY/HR	140	HR	$ 14,134
	CLAB					49	0.5	24.5	$/HR					140	HR	$ 3,430
	Support															
							1									$ -
	5,000 gal H2O truck Diesel (20-15) (2nd2014)	5260	48.7	0.1	43.3	129.75	1	129.75	$/HR					46.5	HR	$ 6,033
	Pickup Truck Crew 4x4 1 ton (20-16) (2nd2014)	300	12.75	0.1	43.3	59.2	1	59.2	$/HR					46.5	HR	$ 2,753
	Foreman Average, Outside					59.9	1	59.9	$/HR					46.5	HR	$ 2,785
	Subtotal															**$ 44,939**

Ref.		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 2005 Dollars	
	Dugout Mine																
5	**Refuse Pile 05**																
	Cut and Fill Refuse Site																
	D9R Semi-U EROPS (9-35) (2H2014)	23835	132.1	0.1	55.4	349.68	1	349.68	$/HR	27556	CY	102	CY/HR	270.2	HR	$ 94,484	
	5,000 gal H2O truck Diesel (20-15) (2nd2014)	5260	48.7	0.1	43.3	129.75	1	129.75	$/HR					270.2	HR	$ 35,058	
							1										
	Foreman & 4X4 Pickup (20-16) (2nd2014)	300	12.75	0.1	56.5	72.4	1	72.4	$/HR					270.2	HR	$ 19,562	
	Doze On-site Subsoil/Topsoil																
	D8R Series II (9-35) (2nd2014)	15845	80.9	0.1	55.4	213.03	1	213.03	$/HR	23060	CY	480	CY/HR	48	HR	$ 10,225	~~13,826~~
	Borrow Area Soils																
	Trucking Soil																
	CAT 345D L(10-20)(2nd2014)	17095	113.1	0.1	55.4	286.65	1	286.65	$/HR	57195		150	CY/HR	381.3	HR	$ 109,300	~~99,038~~
	6X4 70,000lbs 12-18 CY (20-11) (2nd2014)	4410	71.55	0.1	43.3	100.96	1.5	151.44	$/HR	57195		150	CY/HR	381.3	HR	$ 57,744	~~52,323~~
	Doze Trucked Subsoil																
	D8R Series II (9-35) (2nd2014)	15845	80.9	0.1	55.4	213.03	1	213.03	$/HR	57195		171	CY/HR	334.5	HR	$ 71,259	~~64,548~~
	Subtotal															$ 397,632	~~378,839~~

Ref.		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 2005 Dollars
	Pace Canyon Fan Portal															
6	**Backfill Shaft**															
	CAT 345D L(10-20)(2nd2014)	17095	113.1	0.1	55.4	286.65	1	286.65	$/HR	641	CY	216	CY/HR	3	HR	$ 860
	6X4 70,000lbs 12-18 CY (20-11) (2nd2014)	4410	71.55	0.1	43.3	100.96	3	302.88						3	HR	$ 909
	Backfill Portal															
	D8R Series II (9-35) (2nd2014)	15845	80.9	0.1	55.4	213.03	1	213.03	$/HR	331	CY	171	CY/HR	1.9	HR	$ 405
	Subsoil Placement															
	D8R Series II (9-35) (2nd2014)	15845	80.9	0.1	55.4	213.03	1	213.03	$/HR	4045	CY	90	CY/HR	44.9	HR	$ 9,565
	Doze On -site Topsoil															
	D8R Series II (9-35) (2nd2014)	15845	80.9	0.1	55.4	213.03	1	213.03	$/HR	2128	CY	480	CY/HR	4.4	HR	$ 937
	Subtotal															$ 12,676

Vegetation Line Item Subtotals

Ref.	Description	Cost 2014 Dollars	
V-1	Dugout Mine Vegetation	$ 167,994	
V-2	Dugout Mine Refuse Pile	$ 114,043	~~109,439~~
V-3	Pace Canyon Fan Portal	$ 8,050	
V-4	Degas Well G2	$ 2,442	
V-5	Degas Well G3	$ 2,741	
V-6	Degas Well G4	$ 2,096	
V-7	Degas Well G5	$ 2,247	
V-8	Degas Well G6	$ 3,183	
V-9	Degas Well G7	$ 2,621	
V-10	Degas Well G9	$ 1,685	
V-11	Degas Well G10	$ 1,574	
V-12	Degas Well G11	$ 1,705	
V-13	Degas Well G12	$ 1,723	
V-14	Degas Well G13	$ 2,360	
V-15	Degas Well G14	$ 2,134	
V-16	Degas Well G15	$ 4,166	
V-17	Degas Well G16	$ 3,454	
V-18	Degas Well G17	$ 2,697	
V-19	Degas Well G-18	$ 3,745	
V-20	Degas Well G-19	$ 2,809	
V-21	Degas Well G-22 and Access Road	$ 9,623	
V-22	Degas Well G-25	$ 5,862	
V-23	Degas Well G-26	$ 3,221	
V-24	Degas Well G-30	$ 5,018	
V-25	Degas Well G-31	$ 3,828	
V-26	AMV Road	$ 73,764	
	Total	$ 434,784	~~430,179~~

Ref.	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-1	**Dugout Mine Vegetation**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					14.56						AC		23490	CY	$ 9,631
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					14.56						AC		23490	CY	$ 22,316
	Subtotal																			$ 31,947
	Fence																			
	Silt Fence	Wire Reinforced Silt Fence 3'x 100', 4' T Pd	Maxwell Quote	0.55	ft.	6800										FT		6800	FT	$ 3,724
	Subtotal																			$ 3,724
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					13.9						AC		605	MSF	$ 18,785
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					13.9						AC		13.9	AC	$ 7,318
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					13.9						AC		1	ton/AC	$ 8,674
	Tackifer	Tackifer	Tackifer	52.5	/AC					13.9						AC		13.9	AC	$ 730
	Transplant Area No 1																			
	Area																			
	Transplant Materials	Dugout Transplant Mix No 1	Dugout Transp 1	984.5	/AC					13.9						AC		13.9	AC	$ 13,685
	Transplant Labor	Bare root seedlings, 11" to 16" med. soil	32 93 43 10 0130	0.79	Ea.										550	#/AC		7645	EA	$ 6,040
	Seed Mix No 2																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					2.45						AC		107	MSF	$ 3,322
	Hydro seed Material	Dugout Seed Mix No 2	Dugout Seed 2	414	/AC					2.45						AC		2.45	AC	$ 1,014
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					2.45						AC		1	ton/AC	$ 1,529
	Tackifer	Tackifer	Tackifer	52.5	/AC					2.45						AC		2.45	AC	$ 129
	Transplant Area No 2																			
	Area																			
	Transplant Materials	Dugout Transplant Mix #2	Dugout Transp 2	13,083	/AC					2.45						AC		2.45	AC	$ 32,052
	Transplant Labor	Bare root seedlings, 11" to 16" med. soil	32 93 43 10 0130	0.79	Ea.										6500	#/AC		15925	EA	$ 12,581
	Subtotal																			$ 105,858
	Direct Vegetation																			$ 141,529
	Reseeding																			
	Assume 25% reveg rate																			$ 26,465
	Total																			**$ 167,994**

NOTE:

Ref.	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost	
V-2	**Dugout Mine Refuse Pile**																				
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	/CY					16.34	15.6					AC		26362	CY	$ 10,808	10,319
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					16.34	15.6					AC		26362	CY	$ 25,044	23,910
	Subtotal																			$ 35,852	34,229
	Seed Mix No 1																				
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					16.34	15.6					AC		712	MSF	$ 22,108	21,114
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					16.34	15.6					AC		16.34	AC	$ 8,603	8,213
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					16.34	15.6					AC		15.6	ton/AC	$ 9,734	9,734
	Tackifer	Tackifer	Tackifer	52.5	/AC					16.34	15.6					AC		16.34	AC	$ 858	819
	Transplant Area No 1																				
	Area																				
	Transplant Materials	Dugout Transplant Mix No 1	Dugout Transp 1	984.5	/AC					16.34	15.6					AC		16.34	AC	$ 16,087	15,358
	Transplant Labor	Bare root seedlings, 11" to 16" med. soil	32 93 43 10 0130	0.79	Ea.										400	#/AC		6536	EA	$ 5,163	4,930
	Subtotal																			$ 62,553	60,168
	Reseeding																				
	Assume 25% reveg rate																			$ 15,638	15,042
	Total																			$ 114,043	109,439

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref.	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-3	**Pace Canyon Fan Portal**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					1.5						AC		2420	CY	$ 992
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					1.5						AC		2420	CY	$ 2,299
	Subtotal																			$ 3,291
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					1.5						AC		65	MSF	$ 2,018
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					1.5						AC		1.5	AC	$ 790
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					1.5						AC		1.5	ton/AC	$ 936
	Tackifer	Tackifer	Tackifer	52.5	/AC					1.5						AC		1.5	AC	$ 79
	Subtotal																			$ 3,823
	Direct Vegetation																			$ 7,114
	Reseeding																			
	Assume 25% reveg rate																			$ 936
	Total																			**$ 8,050**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-4	**Degas Well G2**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.45						AC		726	CY	$ 298
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.45						AC		726	CY	$ 690
	Subtotal																			$ 988
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.45						AC		20	MSF	$ 621
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.45						AC		0.45	AC	$ 237
	Hay Mulch	Hay 1" material only	31 25 14.16 1200	624	TON					0.45						AC		0.45	ton/AC	$ 281
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.45						AC		0.45	AC	$ 24
	Subtotal																			$ 1,163
	Direct Vegetation																			$ 2,151
	Reseeding																			
	Assume 25% reveg rate																			$ 291
	Total																			**$ 2,442**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-5	**Degas Well G3**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.51						AC		823	CY	$ 337
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.51						AC		823	CY	$ 782
	Subtotal																			$ 1,119
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.51						AC		22	MSF	$ 683
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.51						AC		0.51	AC	$ 269
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.51						AC		0.51	ton/AC	$ 318
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.51						AC		0.51	AC	$ 27
	Subtotal																			$ 1,297
	Direct Vegetation																			$ 2,416
	Reseeding																			
	Assume 25% reveg rate																			$ 324
	Total																			**$ 2,741**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref	Description	Material	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-6	**Degas Well G4**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.39						AC		629	CY	$ 258
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.39						AC		629	CY	$ 598
	Subtotal																			$ 856
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.39						AC		17	MSF	$ 528
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.39						AC		0.39	AC	$ 205
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.39						AC		0.39	ton/AC	$ 243
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.39						AC		0.39	AC	$ 20
	Subtotal																			$ 996
	Direct Vegetation																			$ 1,852
	Reseeding																			
	Assume 25% reveg rate																			$ 244
	Total																			**$ 2,096**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref.	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-7	**Degas Well G5**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.42						AC		678	CY	$ 278
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.42						AC		678	CY	$ 644
	Subtotal																			$ 922
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.42						AC		18	MSF	$ 559
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.42						AC		0.42	AC	$ 221
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.42						AC		0.42	ton/AC	$ 262
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.42						AC		0.42	AC	$ 22
	Subtotal																			$ 1,064
	Direct Vegetation																			$ 1,986
	Reseeding																			
	Assume 25% reveg rate																			$ 261
	Total																			**$ 2,247**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref.	Description	Material	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-8	**Degas Well G6**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.59						AC		952	CY	$ 390
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.59						AC		952	CY	$ 904
	Subtotal																			$ 1,294
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.59						AC		26	MSF	$ 807
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.59						AC		0.59	AC	$ 311
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.59						AC		0.59	ton/AC	$ 368
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.59						AC		0.59	AC	31
	Subtotal																			$ 1,517
	Direct Vegetation																			$ 2,811
	Reseeding																			
	Assume 25% reveg rate																			$ 372
	Total																			**$ 3,183**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref.	Description	Material	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-9	**Degas Well G7**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.49						AC		791	CY	$ 324
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.49						AC		791	CY	$ 751
	Subtotal																			$ 1,075
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.49						AC		21	MSF	$ 652
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.49						AC		0.49	AC	$ 258
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.49						AC		1	ton/AC	$ 306
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.49						AC		0.49	AC	$ 26
	Subtotal																			$ 1,242
	Direct Vegetation																			$ 2,317
	Reseeding																			
	Assume 25% reveg rate																			$ 304
	Total																			**$ 2,621**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref.	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-10	**Degas Well G9**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.31						AC		500	CY	$ 205
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.31						AC		500	CY	$ 475
	Subtotal																			$ 680
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.31						AC		14	MSF	$ 435
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.31						AC		0.31	AC	$ 163
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.31						AC		0.31	ton/AC	$ 193
	Tackifier	Tackifier	Tackifier	52.5	/AC					0.31						AC		0.31	AC	$ 16
	Subtotal																			$ 807
	Direct Vegetation																			$ 1,487
	Reseeding																			
	Assume 25% reveg rate																			$ 198
	Total																			**$ 1,685**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref.	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-11	**Degas Well G10**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.29						AC		468	CY	$ 192
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.29						AC		468	CY	$ 445
	Subtotal																			$ 637
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.29						AC		13	MSF	$ 404
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.29						AC		0.29	AC	$ 153
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.29						AC		0.29	ton/AC	$ 181
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.29						AC		0.29	AC	$ 15
	Subtotal																			$ 753
	Direct Vegetation																			$ 1,390
	Reseeding																			
	Assume 25% reveg rate																			$ 184
	Total																			**$ 1,574**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-12	**Degas Well G11**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.32						AC		516	CY	$ 212
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.32						AC		516	CY	$ 490
	Subtotal																			$ 702
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.32						AC		14	MSF	$ 435
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.32						AC		0.32	AC	$ 168
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.32						AC		0.32	ton/AC	$ 200
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.32						AC		0.32	AC	$ 17
	Subtotal																			$ 803
	Direct Vegetation																			$ 1,505
	Reseeding																			
	Assume 25% reveg rate																			$ 201
	Total																			**$ 1,705**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref.	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-13	**Degas Well G12**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.32						AC		516	CY	$ 212
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.32						AC		516	CY	$ 490
	Subtotal																			**$ 702**
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.32						AC		14	MSF	$ 435
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.32						AC		0.32	AC	$ 168
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.32						AC		0.32	ton/AC	$ 200
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.32						AC		0.32	AC	$ 17
	Subtotal																			**$ 820**
	Direct Vegetation																			**$ 1,522**
	Reseeding																			
	Assume 25% reveg rate																			**$ 201**
	Total																			**$ 1,723**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-14	**Degas Well G13**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.44						AC		710	CY	$ 291
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.44						AC		710	CY	$ 675
	Subtotal																			$ 966
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.44						AC		19	MSF	$ 590
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.44						AC		0.44	AC	$ 232
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.44						AC		0.44	ton/AC	$ 275
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.44						AC		0.44	AC	$ 23
	Subtotal																			$ 1,120
	Direct Vegetation																			$ 2,086
	Reseeding																			
	Assume 25% reveg rate																			$ 274
	Total																			**$ 2,360**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref.	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-15	**Degas Well G14**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.4						AC		645	CY	$ 264
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.4						AC		645	CY	$ 613
	Subtotal																			$ 877
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.4						AC		17	MSF	$ 528
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.4						AC		0.4	AC	$ 211
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.4						AC		0.4	ton/AC	$ 250
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.4						AC		0.4	AC	$ 21
	Subtotal																			$ 1,010
	Direct Vegetation																			$ 1,887
	Reseeding																			
	Assume 25% reveg rate																			$ 247
	Total																			**$ 2,134**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref.	Description	Material	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-16	**Degas Well G15**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.77						AC		1242	CY	$ 509
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.77						AC		1242	CY	$ 1,180
	Subtotal																			$ 1,689
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.77						AC		34	MSF	$ 1,056
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.77						AC		0.77	AC	$ 405
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.77						AC		0.77	ton/AC	$ 480
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.77						AC		0.77	AC	$ 40
	Subtotal																			$ 1,981
	Direct Vegetation																			$ 3,670
	Reseeding																			
	Assume 25% reveg rate																			$ 495
	Total																			**$ 4,166**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref.	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-17	**Degas Well G16**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.64						AC		1033	CY	$ 424
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.64						AC		1033	CY	$ 981
	Subtotal																			$ 1,405
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.64						AC		28	MSF	$ 869
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.64						AC		0.64	AC	$ 337
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.64						AC		0.64	ton/AC	$ 399
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.64						AC		0.64	AC	$ 34
	Subtotal																			$ 1,639
	Direct Vegetation																			$ 3,044
	Reseeding																			
	Assume 25% reveg rate																			$ 410
	Total																			**$ 3,454**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref.	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-18	**Degas Well G17**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.5						AC		807	CY	$ 331
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	/CY					0.5						AC		807	CY	$ 767
	Subtotal																			$ 1,098
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	/MSF					0.5						AC		22	MSF	$ 683
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	/AC					0.5						AC		0.5	AC	$ 263
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.5						AC		0.5	ton/AC	$ 312
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.5						AC		0.5	AC	$ 26
	Subtotal																			$ 1,284
	Direct Vegetation																			$ 2,382
	Reseeding																			
	Assume 25% reveg rate																			$ 315
	Total																			**$ 2,697**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

ID	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Capacity	Unit	Cost
V-19	**Degas Well G-18**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.7						AC		1129	CY	$ 463
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	CY					0.7						AC		1129	CY	$ 1,073
	Subtotal																			$ 1,536
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	MSF					0.7						AC		30	MSF	$ 932
	Hydro seed Material	Dugout Seed Mix No. 1	Dugout Seed 1	526.5	AC					0.7						AC		0.7	AC	$ 369
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	Ton					0.7						AC		0.7	Ton/AC	$ 437
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.7						AC		0.7	AC	$ 37
	Subtotal																			$ 1,775
	Direct Vegetation																			$ 3,311
	Reseeding																			
	Assume 25% reveg rate																			$ 434
	Total																			**$ 3,745**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

REF.	Description	Materials	Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-20	**Degas Well G-19**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.52						AC		839	CY	$ 344
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	CY					0.52						AC		839	CY	$ 797
	Subtotal																			$ 1,141
	Seed Mix No !																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	MSF					0.52						AC		23	MSF	$ 714
	Hydro seed Material	Dugout Seed Mix No. 1	Dugout Seed 1	526.5	AC					0.52						AC		0.52	AC	$ 274
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	Ton					0.52						AC		0.52	Ton/AC	$ 324
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.52						AC		0.52	AC	$ 27
	Subtotal																			$ 1,339
	Direct Vegetation																			$ 2,480
	Reseeding																			
	Assume 25% reveg rate																			$ 328
	Total																			**$ 2,809**

NOTE:

Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-21	**Degas Well G-22 and Access Road**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					1.79						AC		2888	CY	$ 1,184
	Pocking	Excavation Bulk Bank 3CY	31 23 16 42 1601	0.95	CY					1.79						AC		2888	CY	$ 2,744
	Subtotal																			**$ 3,928**
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	MSF					1.79						AC		78	MSF	$ 2,422
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	AC					1.79						AC		1.79	AC	$ 942
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					1.79						AC		1.79	TON/AC	$ 1,117
	Tackifer	Tackifer	Tackifer	52.5	/AC					1.79						AC		1.79	AC	$ 94
	Subtotal																			**$ 4,575**
	Direct Vegetation																			**$ 8,503**
	Reseeding																			
	Assume 25% Reveg Rate																			**$ 1,120**
	Subtotal																			
	Total																			**$ 9,623**

Ref.	Description	Material	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-22	**Degas Well G-25**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					1.8						AC		2904	CY	$ 1,191
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	CY					1.8						AC		2904	CY	$ 2,759
	Subtotal																			$ 3,950
	Seed Mix No 1																			
	Hydro seed Equipment & Labor	Hydro Seeding, Mulch & Fertilize	32 92 19.14 5800	31.05	MSF					0.6						AC		26	MSF	$ 807
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.6						AC		0.6	TON/AC	$ 374
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	AC					0.6						AC		0.6	AC	$ 316
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.6						AC		0.6	AC	$ 32
	Subtotal																			$ 1,530
	Direct Vegetation																			$ 5,479
	Reseeding																			
	Assume 25% Reveg Rate																			$ 382
	Total																			**$ 5,862**

NOTE:

Ref	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Num	Unit	Swell Factor	Quantity	Unit	Cost
V-23	**Degas Well G-26**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.6						AC		968	CY	$ 397
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	CY					0.6						AC		968	CY	$ 920
	Subtotal																			$ 1,317
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	MSF					0.6						MSF		26	MSF	$ 807
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.6						TON/AC		0.6	AC	$ 374
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	AC					0.6						AC		0.6	AC	$ 316
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.6						AC		0.6	AC	$ 32
	Subtotal																			$ 1,530
	Direct Vegetation																			$ 2,846
	Reseeding																			
	Assume 25 % Reveg Rate																			$ 374
	Subtotal																			
	Total																			$ 3,221

NOTE:

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-24	**Degas Well G-30**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.93						AC		1500	CY	$ 615
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	CY					0.93						AC		1500	CY	$ 1,425
	Subtotal																			$ 2,040
	Seed Mix No1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertiliz	32 92 19.14 5800	31.05	MSF					0.93						AC		41	MSF	$ 1,273
	Hay Mulch	Hay 1"	31 25 14.16 1200	624	TON					0.93						AC		0.93	Ton/AC	$ 580
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	AC					0.93						AC		0.93	AC	$ 490
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.93						AC		0.93	AC	$ 49
	Subtotal																			$ 2,392
	Direct Vegetation																			$ 4,432
	Reseeding																			
	Assume 25 % Reveg Rate																			$ 586
	Total																			**$ 5,018**

Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-25	**Degas Well G-31**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					0.71						AC		1145	CY	$ 469
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	CY					0.71					1.75	AC		1145	CY	$ 1,088
	Subtotal																			$ 1,557
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	MSF					0.71					1.75	AC		31	MSF	$ 963
	Hay Mulch	Hay 1 "	31 25 14.16 1200	624	TON					0.71					1.75	AC		0.71	TON/AC	$ 443
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	AC					0.71					1.75	AC		0.71	AC	$ 374
	Tackifer	Tackifer	Tackifer	52.5	/AC					0.71						AC		0.71	AC	$ 37
	Subtotal																			$ 1,817
	Direct Vegetation																			$ 3,374
	Reseeding																			
	Assume 25 % Reveg Rate																			$ 454
	Subtotal																			
	Total																			**$ 3,828**

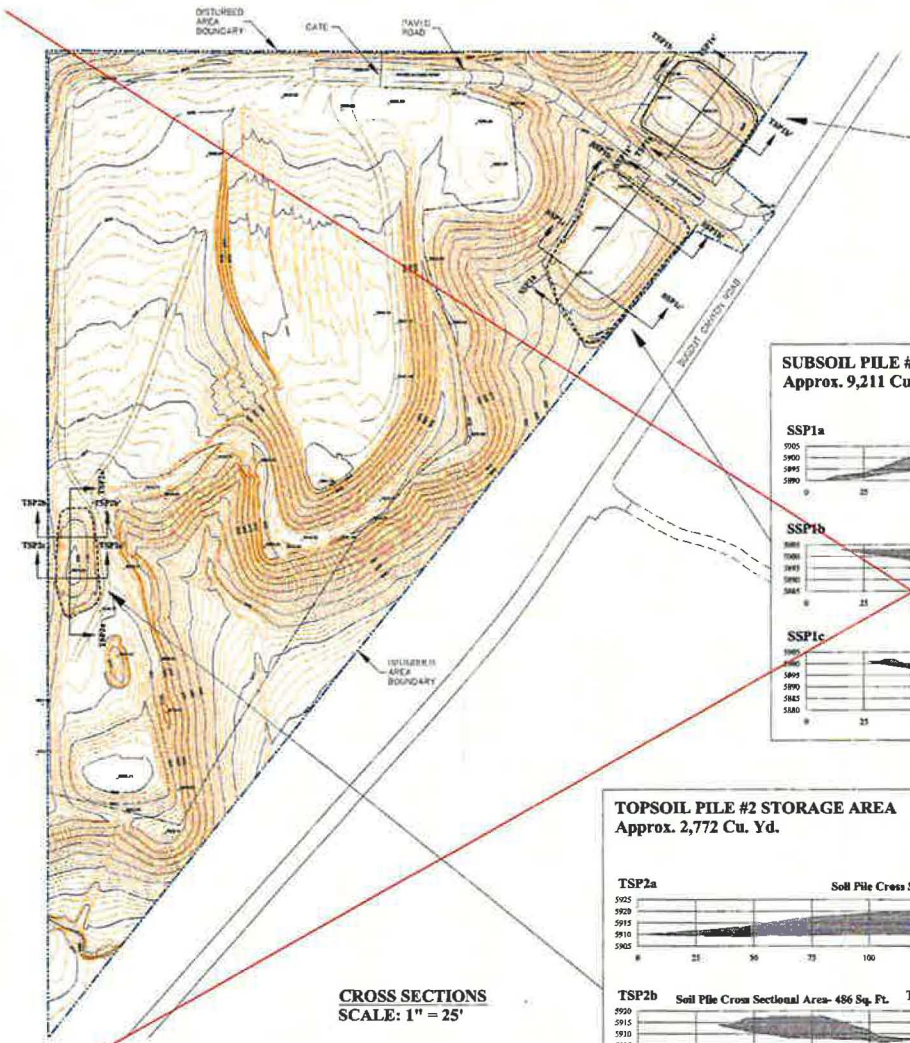
Ref.	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
V-26	**AMV Road**																			
	Soil Preparation	Ripping	31 23 16.32 2820	0.41	BCY					13.72						AC		22135	CY	$ 9,075
	Pocking	Excavation Bulk Bank 3 CY	31 23 16 42 1601	0.95	CY					13.72						AC		22135	CY	$ 21,028
	Subtotal																			$ 30,103
	Seed Mix No 1																			
	Hydro seed Equipment and Labor	Hydro Seeding, Mulch & Fertilizer	32 92 19.14 5800	31.05	MSF					13.72						AC		598	MSF	$ 18,568
	Hydro seed Material	Dugout Seed Mix No 1	Dugout Seed 1	526.5	AC					13.72						AC		13.72	AC	$ 7,224
	Hay Mulch	Hay 1 "	31 25 14.16 1200	624	TON					13.72						AC		13.72	Ton/AC	$ 8,561
	Tackifer	Tackifer	Tackifer	52.5	/AC					13.72						AC		13.72	AC	$ 720
	Subtotal																			$ 35,073
	Direct Vegetation																			$ 65,176.01
	Subtotal																			
	Reseeding																			
	Assume 25 % Reveg Rate																			$ 8,588
	Total																			**$ 73,764**

NOTE:

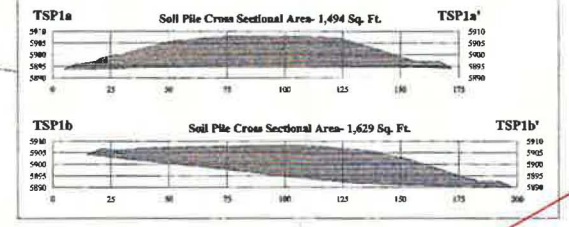
Area reflects disturbed acreage as surveyed by Cody Ware of Ware Surveying

Dugout Canyon Mine
Waste Rock Application for Reference Only

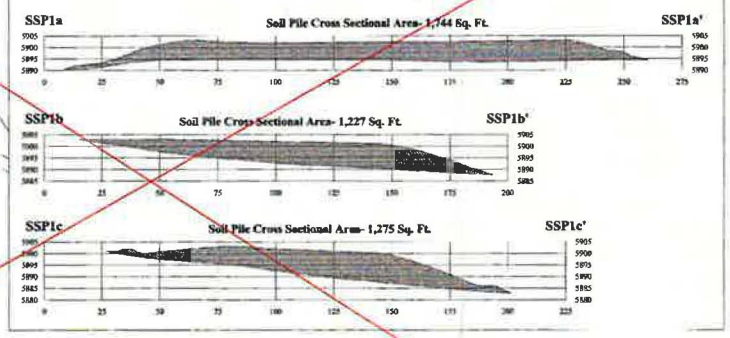
Dugout, Refuse Pile Amendment, RA Plate 2-2



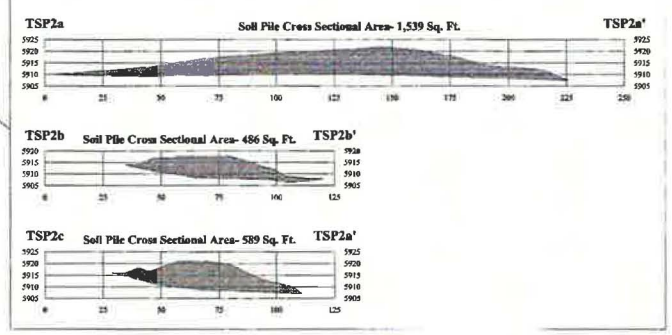
TOPSOIL PILE #1 STORAGE AREA
Approx. 5,612 Cu. Yd.



SUBSOIL PILE #1 STORAGE AREA
Approx. 9,211 Cu. Yd.



TOPSOIL PILE #2 STORAGE AREA
Approx. 2,772 Cu. Yd.



CROSS SECTIONS
SCALE: 1" = 25'

CROSS SECTION DATA
Base Topo- Olympus Aerial Survey- Dated June 09, 2008
Operational Topo- Aero-Graphics, Inc. Survey- Dated May 06, 2009

LEGEND

- DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
- OPERATIONAL CONTOURS
- CROSS-SECTION LOCATIONS
- FENCE LINE

NOTES

1. REFER TO RA PLATE 5-1 FOR MORE SURFACE FACILITY DETAIL.
2. STOCKPILE VOLUMES ILLUSTRATED WERE CALCULATED BY AERO-GRAPHICS INC - MAY 06, 2009

PROJECT AREA LOCATED ENTIRELY WITHIN SEC 18, T 14 S, R 12 E, SLBM
CONTOUR INTERVAL 1'

REVISION

DATE	BY

Canyon Fuel Company, LLC
Dugout Canyon Mine

INCORPORATED
FEB 08 2011

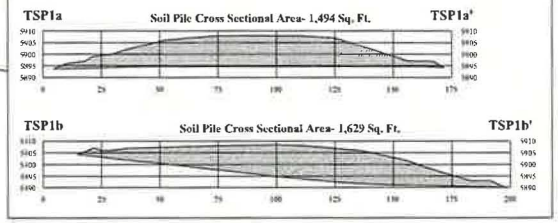
SOIL STOCKPILES (AS BUILT)

RECEIVED
FEB 22 2011
DIV OF OIL, GAS & MINING

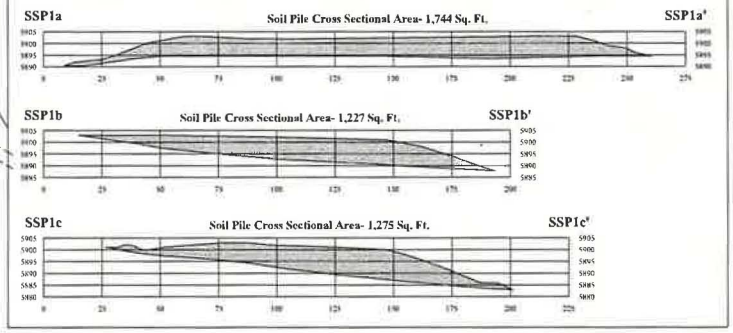
Dugout Canyon Mine

DRAWN BY: STY	DATE: October 12, 2010	SCALE: 1" = 100'	
ATTACHED BY: KSM	FILE NAME: RA PLT 5-2 Soil Stockpiles.dwg	DRAWING OR MAP NUMBER	

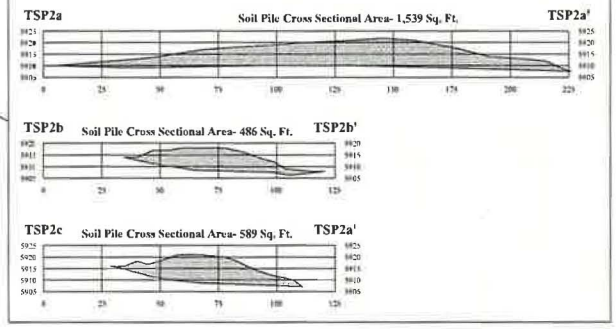
TOPSOIL PILE #1 STORAGE AREA
Approx. 5,612 Cu. Yd.



SUBSOIL PILE #1 STORAGE AREA
Approx. 9,211 Cu. Yd.



TOPSOIL PILE #2 STORAGE AREA
Approx. 2,772 Cu. Yd.



SUBSOIL PILE #3 STORAGE AREA
Approx. 2,518 Cu. Yd.

CROSS SECTION DATA
Base Topo - Olympus Aerial Survey - Dated June 09, 2008
Operational Topo - Aero-Graphics, Inc. Survey - Dated May 06, 2009
Proposed Topo - EarthFax Engineering Group, LLC - Dated March 06, 2015

LEGEND

- DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
- OPERATIONAL CONTOURS
- PROPOSED CONTOURS
- CROSS-SECTION LOCATIONS
- FENCE LINE

NOTES

1. REFER TO RA PLATE 5-1 FOR MORE SURFACE DETAIL.
2. SUBSOIL STOCKPILE #1 AND TOPSOIL STOCKPILES #1 AND #2 VOLUMES ILLUSTRATED WERE CALCULATED BY AERO-GRAPHICS, INC.– MAY 06, 2009
3. SUBSOIL STOCKPILE #3 VOLUME WAS CALCULATED WITH AUTOCAD 2014 BY EARTHFAX ENGINEERING GROUP, LLC– FEBRUARY 16, 2015

N S E W

100' 50' 0' 100' 200' 300'

PROJECT AREA LOCATED ENTIRELY WITHIN
SEC. 18, T. 14 S., R. 12 E., SLBM
CONTOUR INTERVAL: 1'

REGISTERED PROFESSIONAL ENGINEER No. 162M RICHARD B. WHITE STATE OF UTAH

REVISION	
DATE	BY
3/2015	TAJ

Canyon Fuel Company, LLC
Dugout Canyon Mine

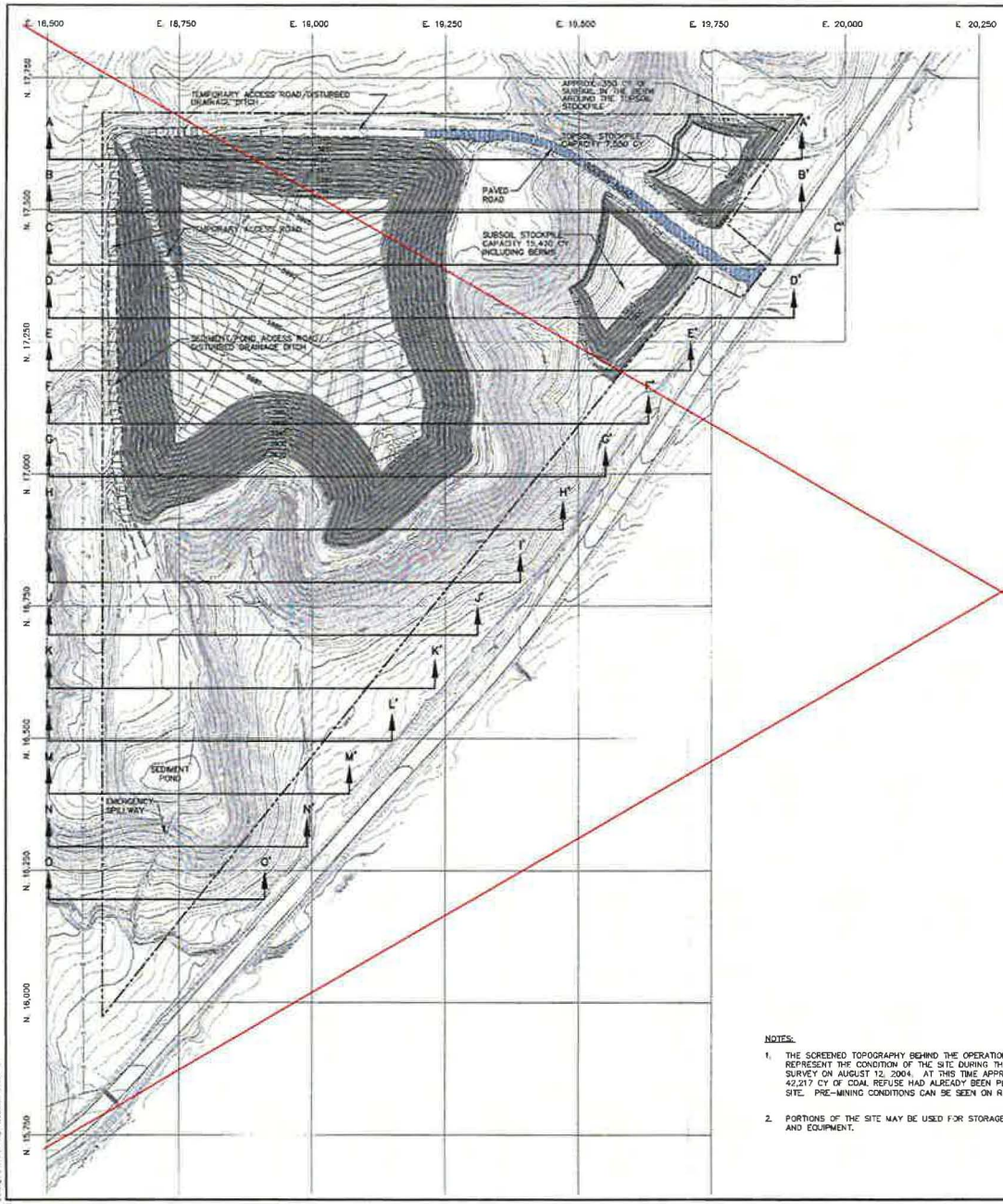
SOIL STOCKPILES
(AS BUILT)

Dugout Canyon Mine

DRAWN BY: STV/TAJ	DATE: March 16, 2015	SCALE: 1" = 100'	
APPROVED BY: RBW	FILE NAME: S:\AUTHOCAD\DWG\PLATE-RA2-2 PHASE 1.DWG	DRAWING OR MAP NUMBER	RA PLATE 2-2

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, RA Plate 5-1



LEGEND

- DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
- OPERATIONAL CONTOURS
- EXISTING GROUND CONTOURS
- CROSS-SECTION LOCATION

NOTES:

1. THE SCREENED TOPOGRAPHY BEHIND THE OPERATIONAL CONTOURS REPRESENT THE CONDITION OF THE SITE DURING THE LAST AERIAL SURVEY ON AUGUST 12, 2004. AT THIS TIME APPROXIMATELY 42,217 CY OF COAL REFUSE HAD ALREADY BEEN PLACED AT THE SITE. PRE-MINING CONDITIONS CAN BE SEEN ON RA PLATE 5-3.

2. PORTIONS OF THE SITE MAY BE USED FOR STORAGE OF SNOW AND EQUIPMENT.

0' 100'

PROJECT AREA LOCATED ENTIRELY WITHIN SEC. 18, T. 14 S., R. 12 E., SLBM

INCORPORATED
OCT 11 2006

RECEIVED
NOV 09 2006
DIV. OF OIL, GAS & MINING

REGISTERED PROFESSIONAL ENGINEER No. 166246 RICHARD B. WHITE STATE OF UTAH

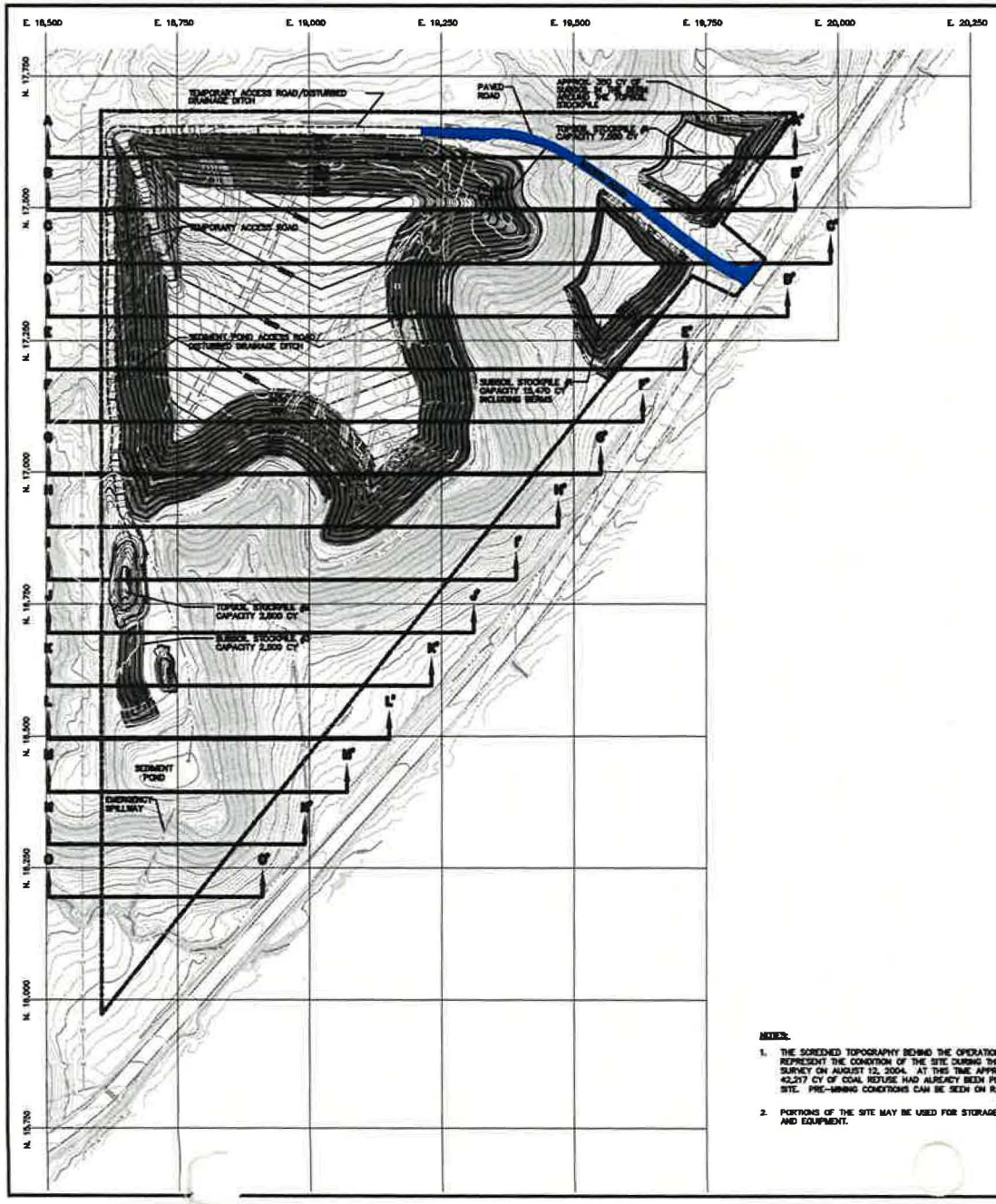
REVISION	
DATE	BY

Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines

STORAGE AREA LAYOUT
OPERATIONS PLAN

Dugout Canyon Mine

DRAWN BY: DMF	DATE: JAN 2006	SCALE: 1"=100'	
APPROVED BY: VSM	FILE NAME: "D:\JOBS\DUGOUT\PLATES-RA\5-1 SNOW.DWG"	DRAWING OR MAP NUMBER: RA PLATE 5-1	



LEGEND

- DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
- OPERATIONAL CONTOURS
- EXISTING GROUND CONTOURS
- CROSS-SECTION LOCATION

NOTES:

1. THE SCREENED TOPOGRAPHY BEHIND THE OPERATIONAL CONTOURS REPRESENT THE CONDITION OF THE SITE DURING THE LAST AERIAL SURVEY ON AUGUST 12, 2004. AT THIS TIME APPROXIMATELY 42,217 CY OF COAL REFUSE HAD ALREADY BEEN PLACED AT THE SITE. PRE-MINING CONDITIONS CAN BE SEEN ON RA PLATE 5-3.
2. PORTIONS OF THE SITE MAY BE USED FOR STORAGE OF SNOW AND EQUIPMENT.

0' 100'

PROJECT AREA LOCATED ENTIRELY WITHIN SEC. 18, T. 14 S., R. 12 E., SLBM

REGISTERED PROFESSIONAL ENGINEER No. 180[illegible] RICHARD B. WHITE STATE OF UTAH

REVISION	
DATE	BY
3/2005	TAJ

Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines

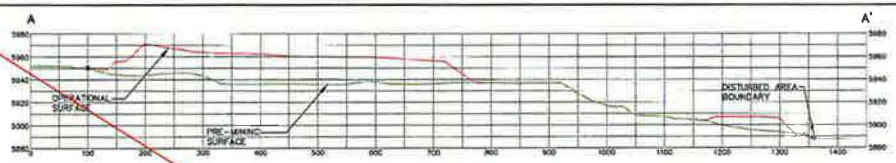
STORAGE AREA LAYOUT
OPERATIONS PLAN

Dug[illegible]yon Mine

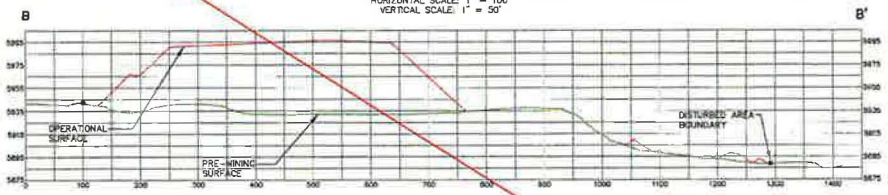
DRAWN BY: [illegible]/TAJ | DATE: MARCH 2005 | SCALE: 1"=100'
APPROVED BY: [illegible] | FILE NAME: [illegible] | DRAWING NO. RA PLATE 5-1

Dugout Canyon Mine
Waste Rock Application for Reference Only

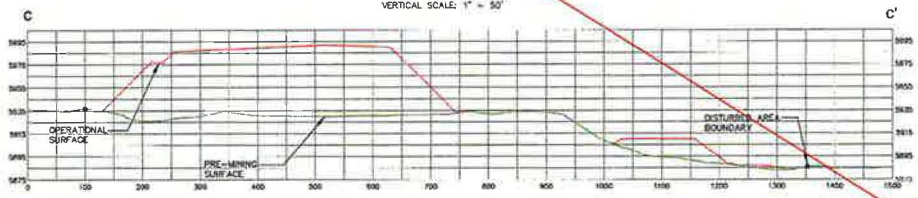
Dugout, Refuse Pile Amendment, RA Plate 5-1A



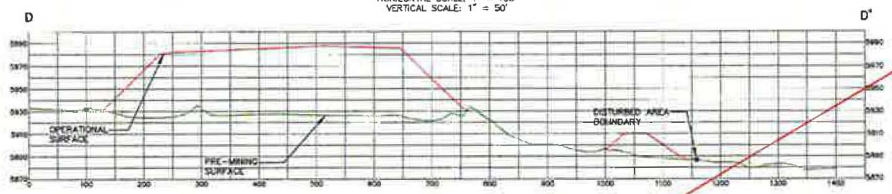
CROSS-SECTION A-A'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION B-B'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION C-C'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION D-D'
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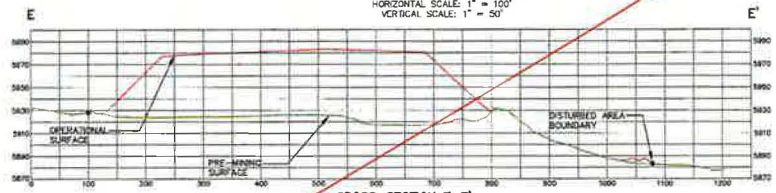
VERTICAL SCALE: 1" = 50'



CROSS-SECTION E-E'
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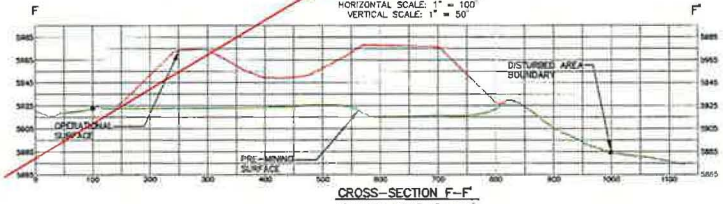
VERTICAL SCALE: 1" = 50'



CROSS-SECTION F-F'
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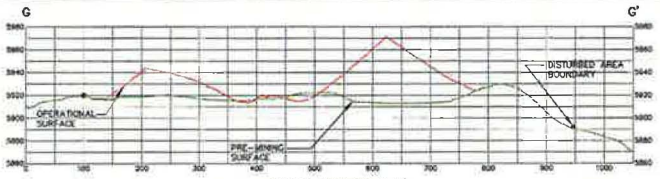
VERTICAL SCALE: 1" = 50'



CROSS-SECTION G-G'
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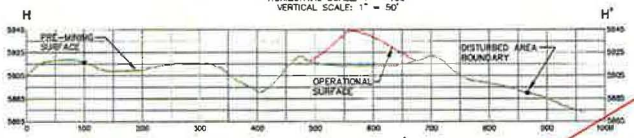
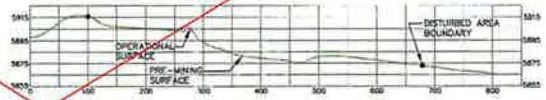
VERTICAL SCALE: 1" = 50'



CROSS-SECTION H-H'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

CROSS-SECTION I-I'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION J-J'
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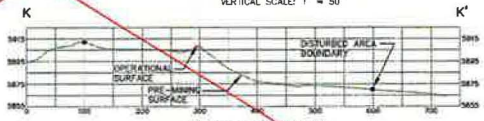

CROSS-SECTION K-K'
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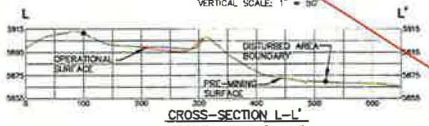
VERTICAL SCALE: 1" = 50'



CROSS-SECTION L-L'
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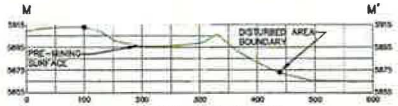
VERTICAL SCALE: 1" = 50'



CROSS-SECTION M-M'
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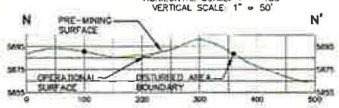
VERTICAL SCALE: 1" = 50'



CROSS-SECTION N-N'
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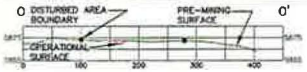
VERTICAL SCALE: 1" = 50'



CROSS-SECTION O-O'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

File in:
Confidential
Shale
Logs
Hydrology
Chemical
Graphic
Sediment
Subsidence
Date for Bond Release
Date for Completion
Date for Bond Release
Date for Completion
Date for Bond Release
Date for Completion
For additional information

RECEIVED
NOV 09 2006
DIVISION OF OIL, GAS & MINING

RECEIVED (STATE)
OCT 11 2006

REGISTERED PROFESSIONAL ENGINEER
No. 165246
RICHARD B. WHITE
STATE OF UTAH

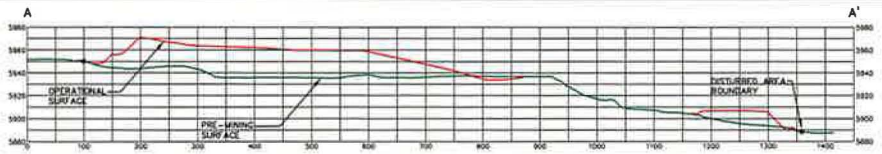
REVISION	
DATE	BY

Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines

STORAGE AREA OPERATIONAL SURFACE CROSS-SECTIONS

Dugout Canyon Mine

DRAWN BY: SWF	DATE: JAN 2006	SCALE: AS SHOWN
APPROVED BY: VSN	FILE NAME: O:\UCDMT\SP\PLATE-RA5-1A DWG 01-2006	DRAWING OR MAP NUMBER: RA PLATE 5-1A



CROSS-SECTION A-A'
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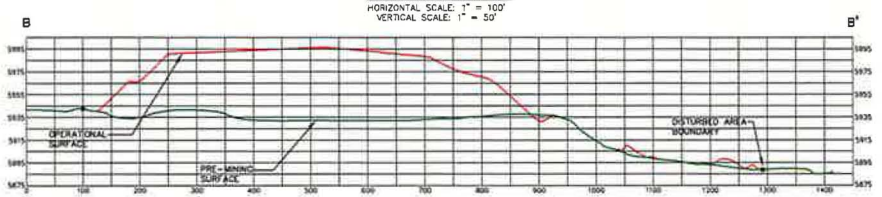
VERTICAL SCALE: 1" = 50'



CROSS-SECTION B-B'
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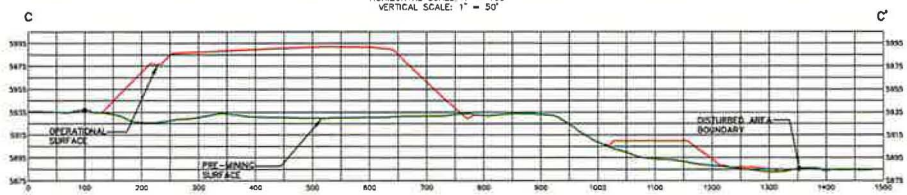
VERTICAL SCALE: 1" = 50'



CROSS-SECTION C-C'
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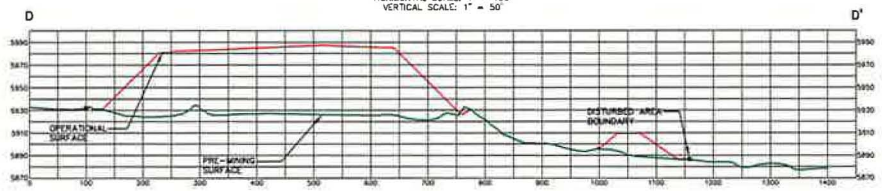
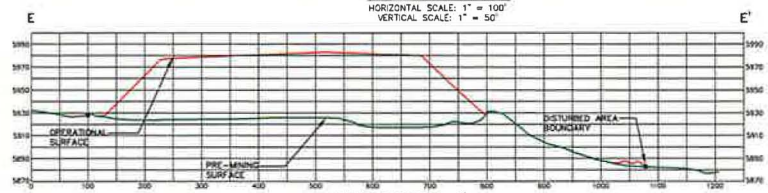
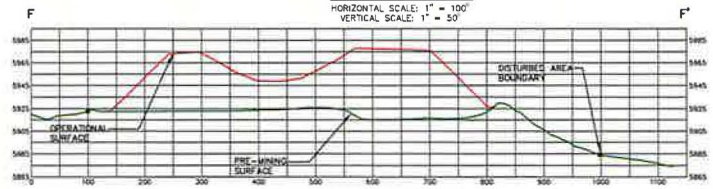
VERTICAL SCALE: 1" = 50'



CROSS-SECTION D-D'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION E-E'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION F-F'
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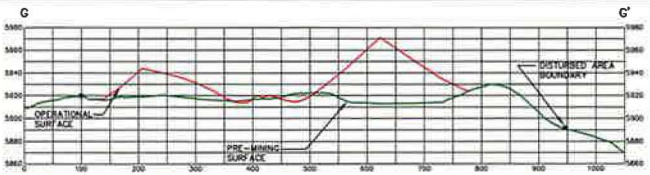
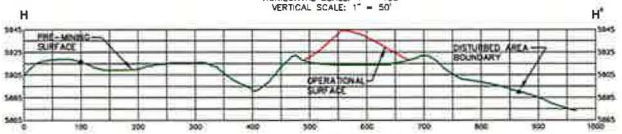
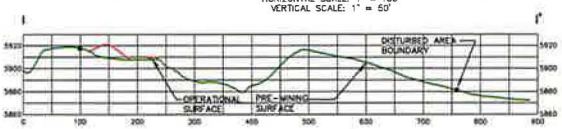
VERTICAL SCALE: 1" = 50'



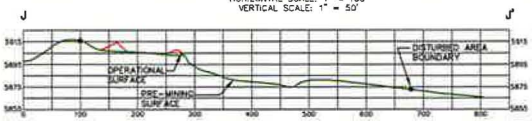
CROSS-SECTION G-G'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



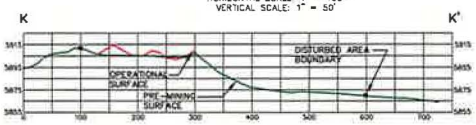
CROSS-SECTION H-H'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION I-I'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION J-J'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION K-K'
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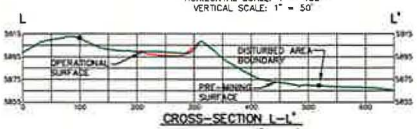
VERTICAL SCALE: 1" = 50'



CROSS-SECTION L-L'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

CROSS-SECTION M-M'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

CROSS-SECTION N-N'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

CROSS-SECTION O-O'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

REGISTERED PROFESSIONAL ENGINEER
No. 162246
RICHARD B. WHITE
STATE OF UTAH

REVISION	
DATE	BY
3/2015	TAJ

Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines

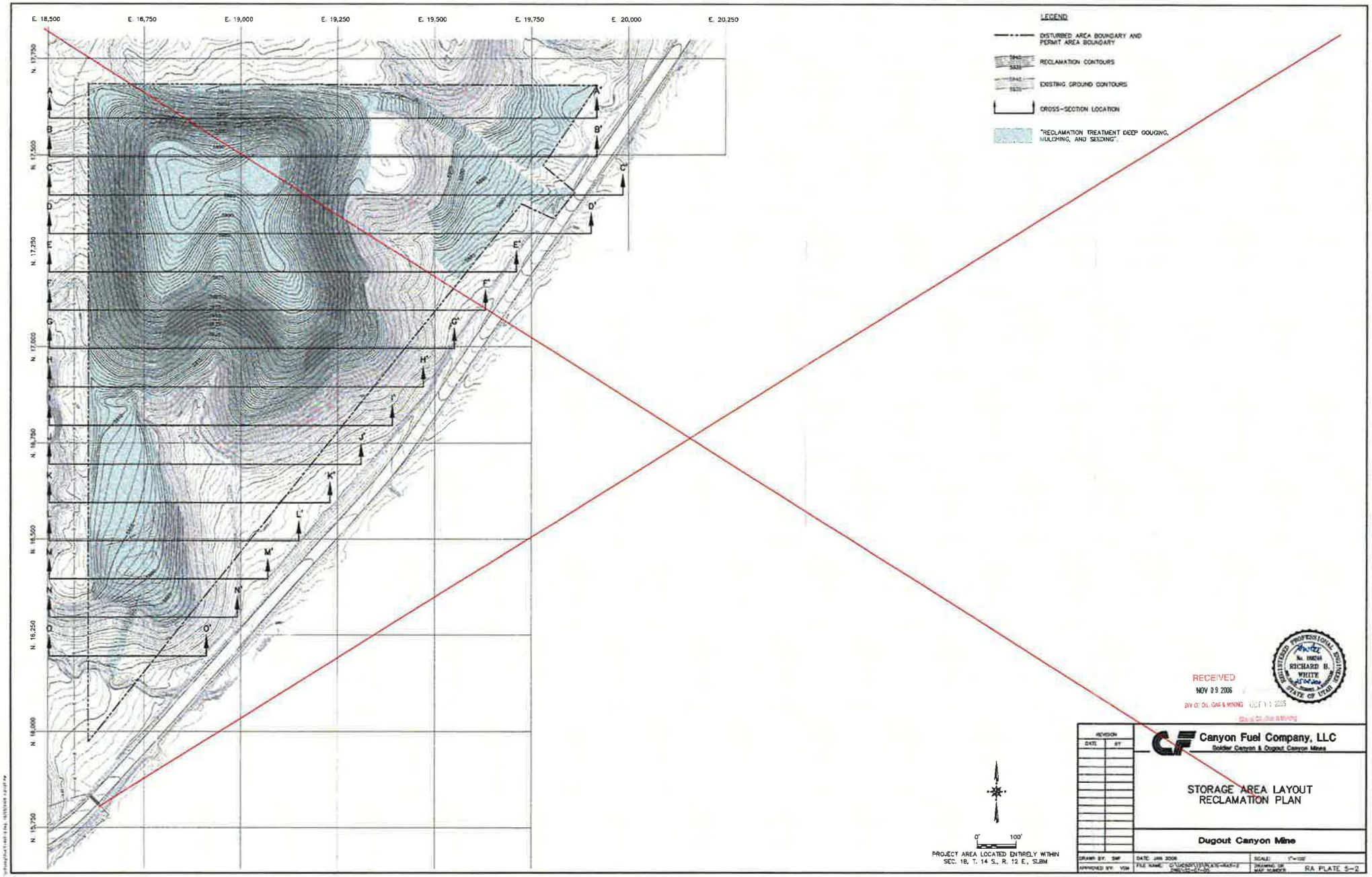
STORAGE AREA
OPERATIONAL SURFACE
CROSS-SECTIONS

Dugout Canyon Mine

DRAWN BY: SMF/TAJ	DATE: MARCH 2015	SCALE: AS SHOWN	
APPROVED BY: RBW	FILE NAME:	DRAWING OR MAP NUMBER	RA PLATE 5-1A

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, RA Plate 5-2


E. 18,500
E. 18,750
E. 19,000
E. 19,250
E. 19,500
E. 19,750
E. 20,000
E. 20,250
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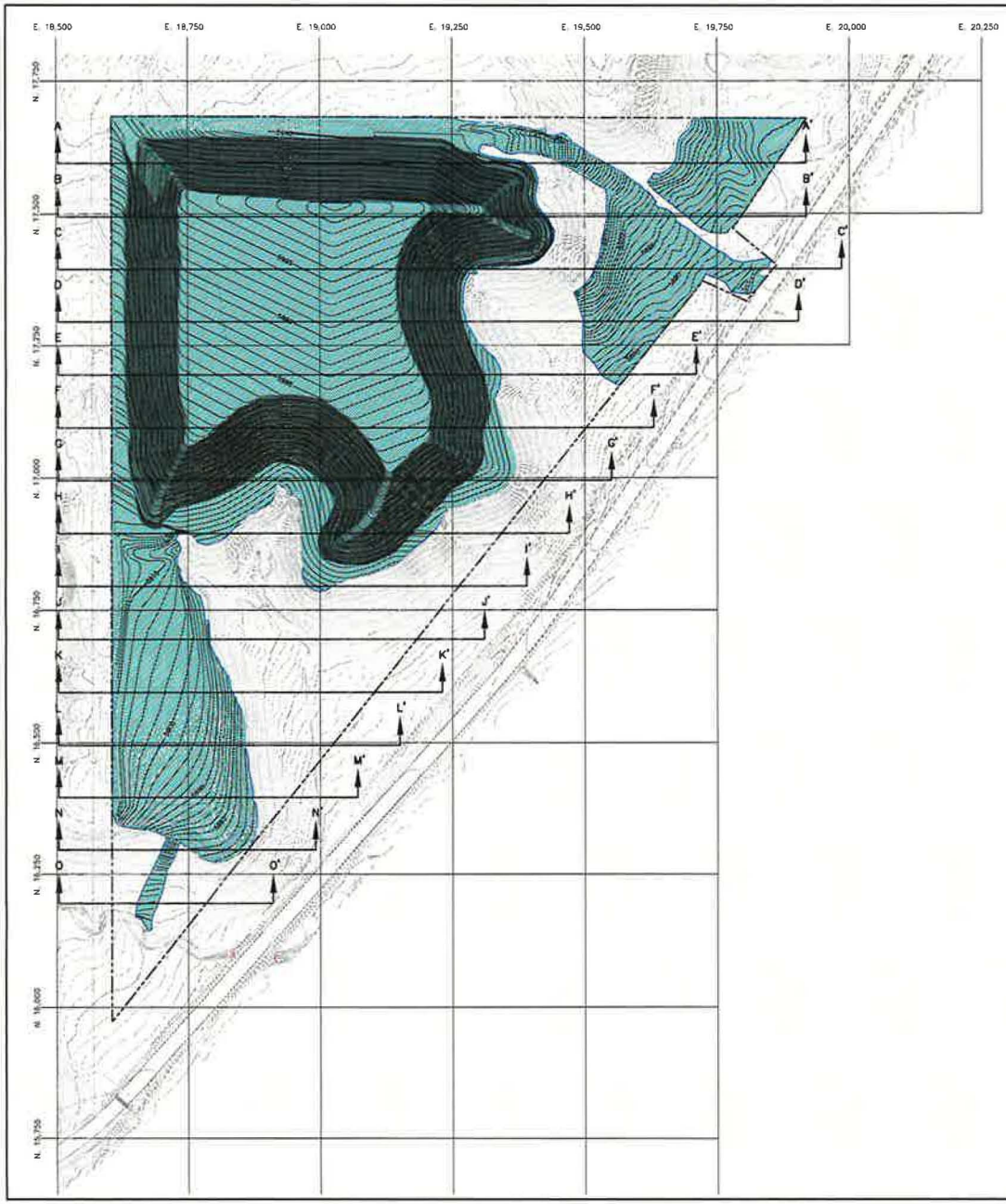
N. 17,500
N. 17,250
N. 17,000
N. 16,750
N. 16,500
N. 16,250
N. 16,000
N. 15,750
A
A'
B
B'
C
C'
D
D'
E
E'
F
F'
G
G'
H
H'
I
I'
J
J'
K
K'
L
L'
M
M'
N
N'
O
O'
LEGEND
DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
RECLAMATION CONTOURS
EXISTING GROUND CONTOURS
CROSS-SECTION LOCATION
"RECLAMATION TREATMENT DEEP GOUGING, MULCHING, AND SEEDING".
0'
100'
PROJECT AREA LOCATED ENTIRELY WITHIN SEC. 18, T. 14 S., R. 12 E., SLBM
REGISTERED PROFESSIONAL ENGINEER
No. 166264
RICHARD B. WHITE
STATE OF UTAH
RECEIVED
NOV 09 2006
DIV OF OIL, GAS & MINING
OCT 11 2005
REVISION
DATE
BY
Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines
STORAGE AREA LAYOUT
RECLAMATION PLAN
Dugout Canyon Mine
DRAWN BY: SMF
APPROVED BY: VSM
DATE: JAN 2006
SCALE: 1"=100'
DRAWING OR MAP NUMBER: RA PLATE 5-2



LEGEND

- DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
- RECLAMATION CONTOURS
- EXISTING GROUND CONTOURS
- CROSS-SECTION LOCATION
- "RECLAMATION TREATMENT DEEP GOUGING, MULCHING, AND SEEDING".

0' 100'

PROJECT AREA LOCATED ENTIRELY WITHIN SEC 18, T. 14 S., R. 12 E., SLBM

REGISTERED PROFESSIONAL ENGINEER No. 185246 RICHARD B. WHITE STATE OF UTAH

REVISION	
DATE	BY
3/2015	TAJ

Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines

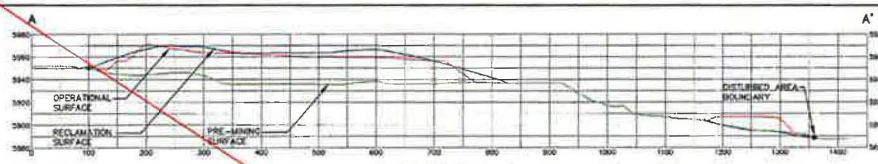
STORAGE AREA LAYOUT
RECLAMATION PLAN

Dugout Canyon Mine

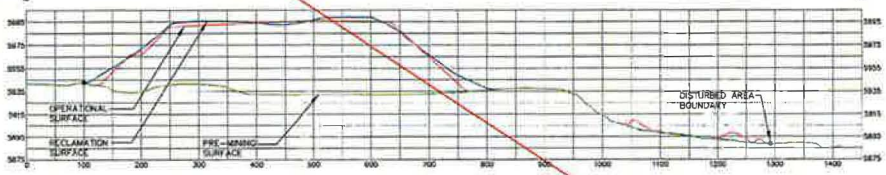
DRAWN BY: SWF/TAJ
APPROVED BY: RBW
DATE: MARCH 2015
FILE NAME: G:\CUCTMOD\CUTOMER\PLATE-RAS-1 PHASE 1.DWG
SCALE: 1"=100'
DRAWING OR MAP NUMBER: RA PLATE 5-2

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, RA Plate 5-2A



CROSS-SECTION A-A'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION B-B'
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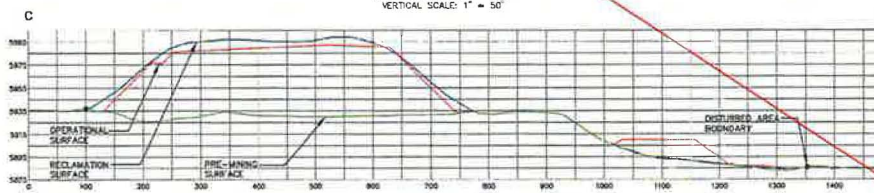
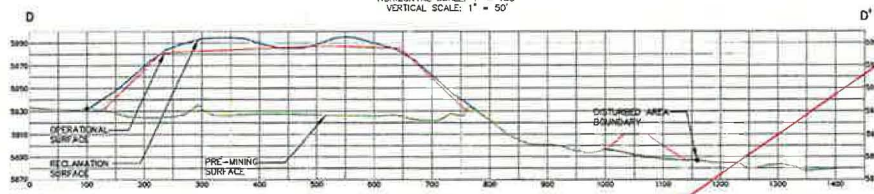
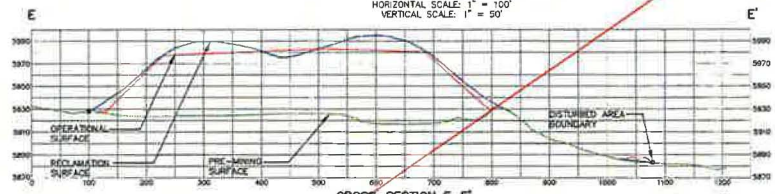
VERTICAL SCALE: 1" = 50'



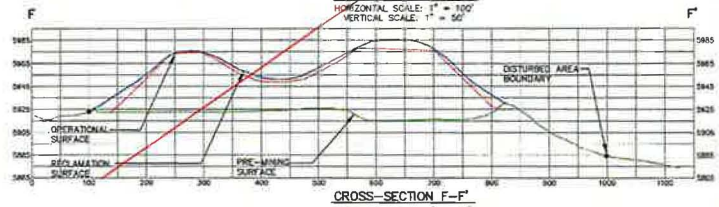
CROSS-SECTION C-C'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



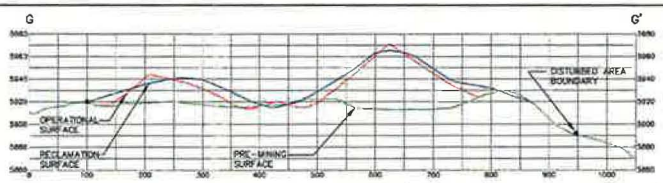
CROSS-SECTION D-D'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



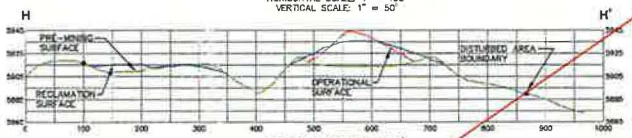
CROSS-SECTION E-E'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



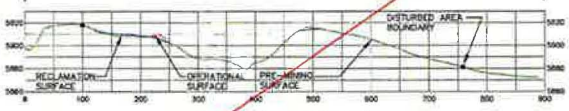
CROSS-SECTION F-F'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



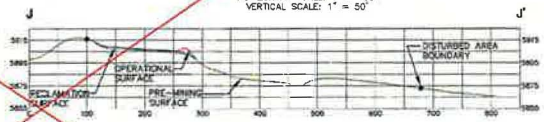
CROSS-SECTION G-G'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION H-H'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

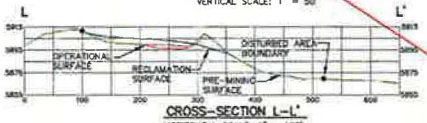


CROSS-SECTION I-I'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

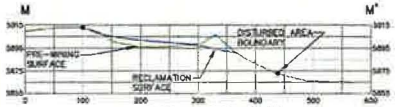


CROSS-SECTION J-J'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

CROSS-SECTION K-K'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION L-L'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION M-M'
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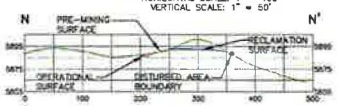
VERTICAL SCALE: 1" = 50'



CROSS-SECTION N-N'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

CROSS-SECTION O-O'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

LEGEND

- PRE-MINING SURFACE
- OPERATIONAL SURFACE
- RECLAMATION SURFACE

NOTE: THE RECLAMATION SURFACE REPRESENTS THE REGRADED COAL WASTE WITH 4' OF SOIL COVER.

RECEIVED
NOV 09 2006
DIV OF OIL, GAS & MINING

RECEIVED
OCT 11 2006
DIV. OF OIL, GAS & MINING

REGISTERED PROFESSIONAL ENGINEER
No. 180608
RICHARD D. WHITE
STATE OF UTAH

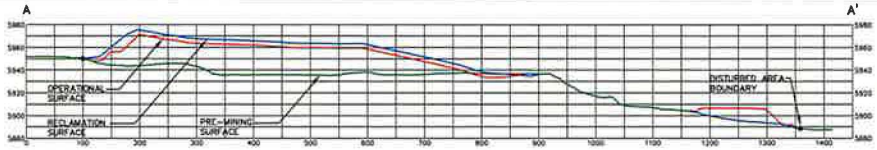
REVISION	
DATE	BY

Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines

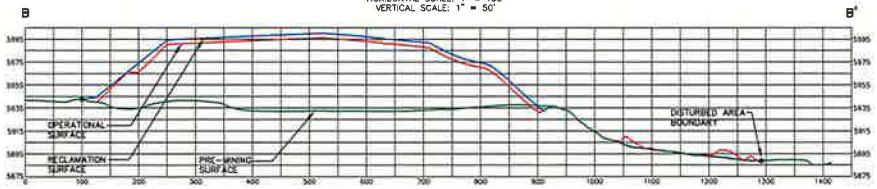
STORAGE AREA
RECLAMATION CROSS SECTIONS

Dugout Canyon Mine

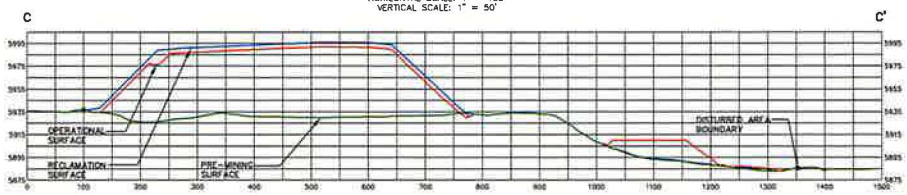
DRAWN BY: SWF	DATE: JAN 2006	SCALE: AS SHOWN
APPROVED BY: VJM	FILE NAME: G:\GIS\DUG\PLATES-RAS-2A FEB2006	DRAWING OR MAP NUMBER: RA PLATE 5-2A



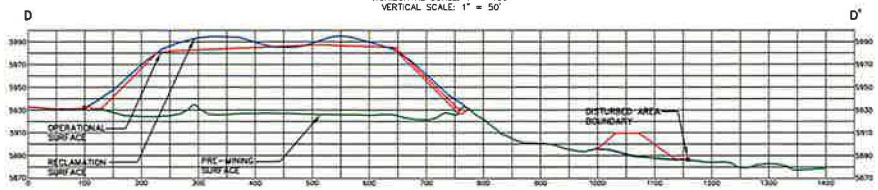
CROSS-SECTION A-A'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



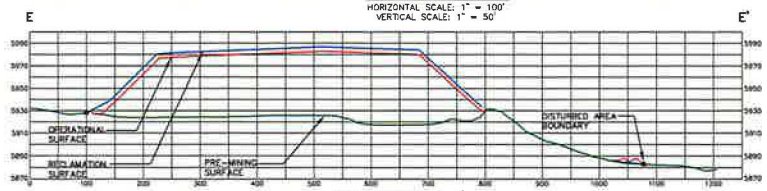
CROSS-SECTION B-B'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



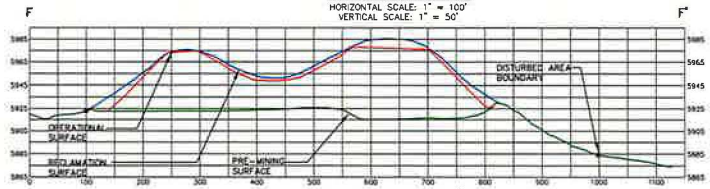
CROSS-SECTION C-C'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



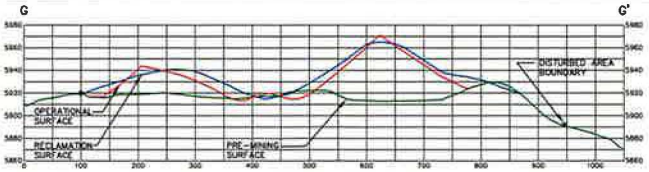
CROSS-SECTION D-D'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



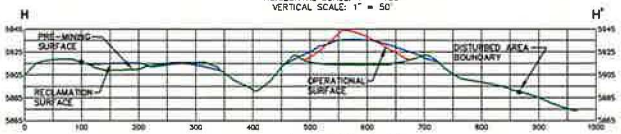
CROSS-SECTION E-E'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



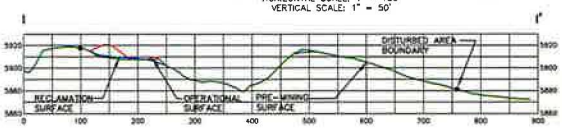
CROSS-SECTION F-F'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION G-G'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION H-H'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION I-I'
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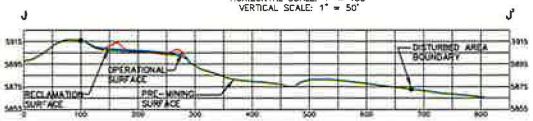
VERTICAL SCALE: 1" = 50'



CROSS-SECTION J-J'
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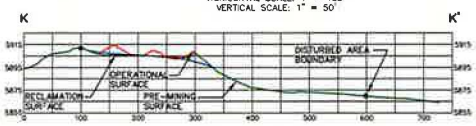
VERTICAL SCALE: 1" = 50'



CROSS-SECTION K-K'
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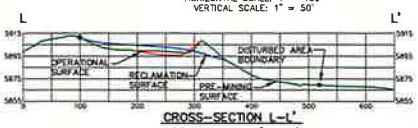
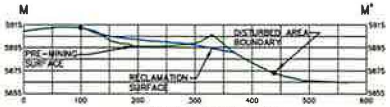
VERTICAL SCALE: 1" = 50'



CROSS-SECTION L-L'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION M-M'
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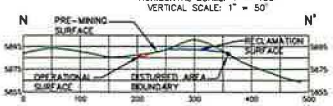
VERTICAL SCALE: 1" = 50'



CROSS-SECTION N-N'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

CROSS-SECTION O-O'
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

LEGEND

- PRE-MINING SURFACE
- OPERATIONAL SURFACE
- RECLAMATION SURFACE

NOTE: THE RECLAMATION SURFACE REPRESENTS THE REGRADED COAL WASTE WITH 4' OF SOIL COVER.

REGISTERED PROFESSIONAL ENGINEER No. 180210 RICHARD B. WHITE STATE OF UTAH

REVISION	
DATE	BY
3/2015	TAJ

Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines

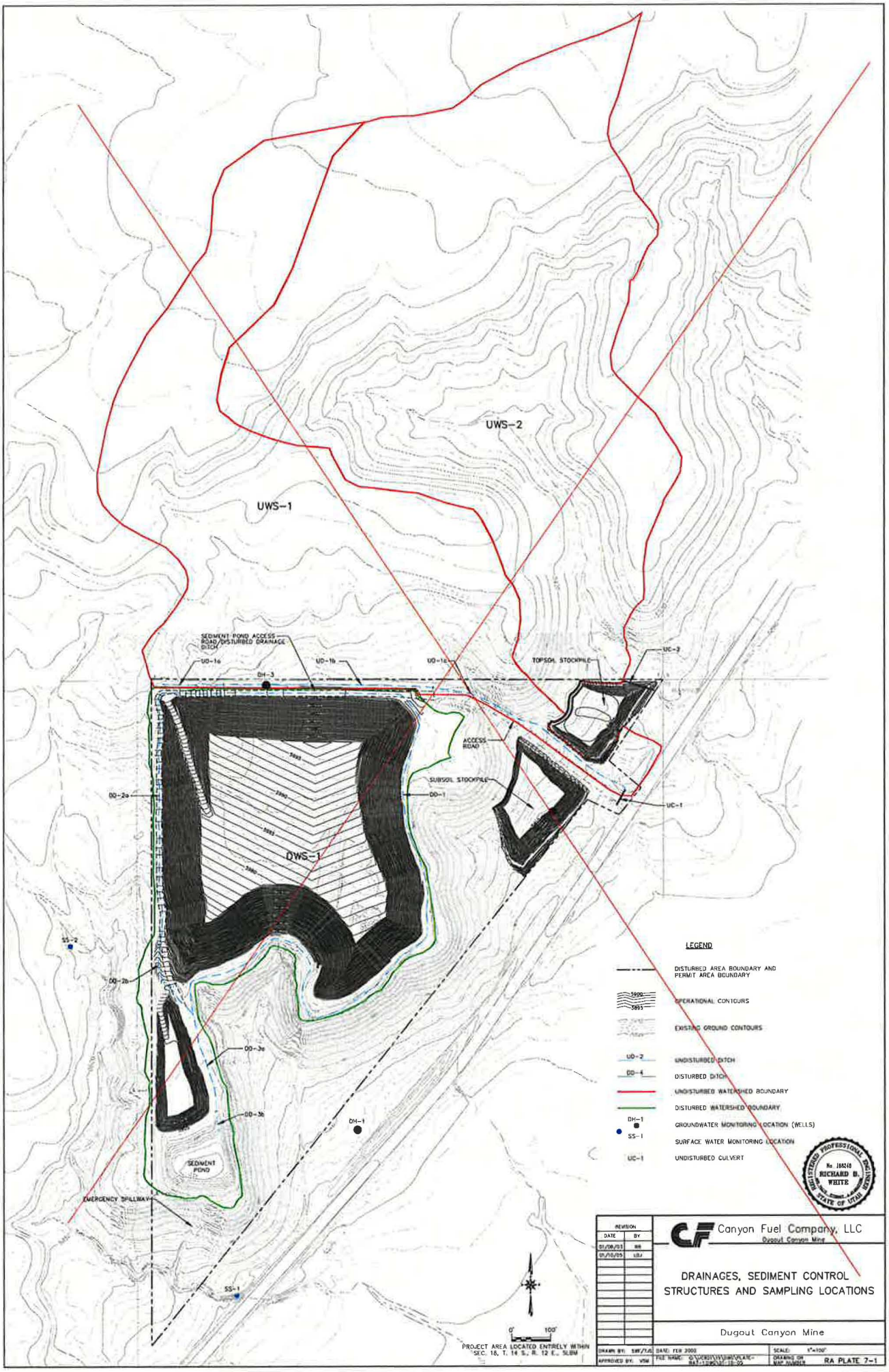
STORAGE AREA
RECLAMATION CROSS SECTIONS

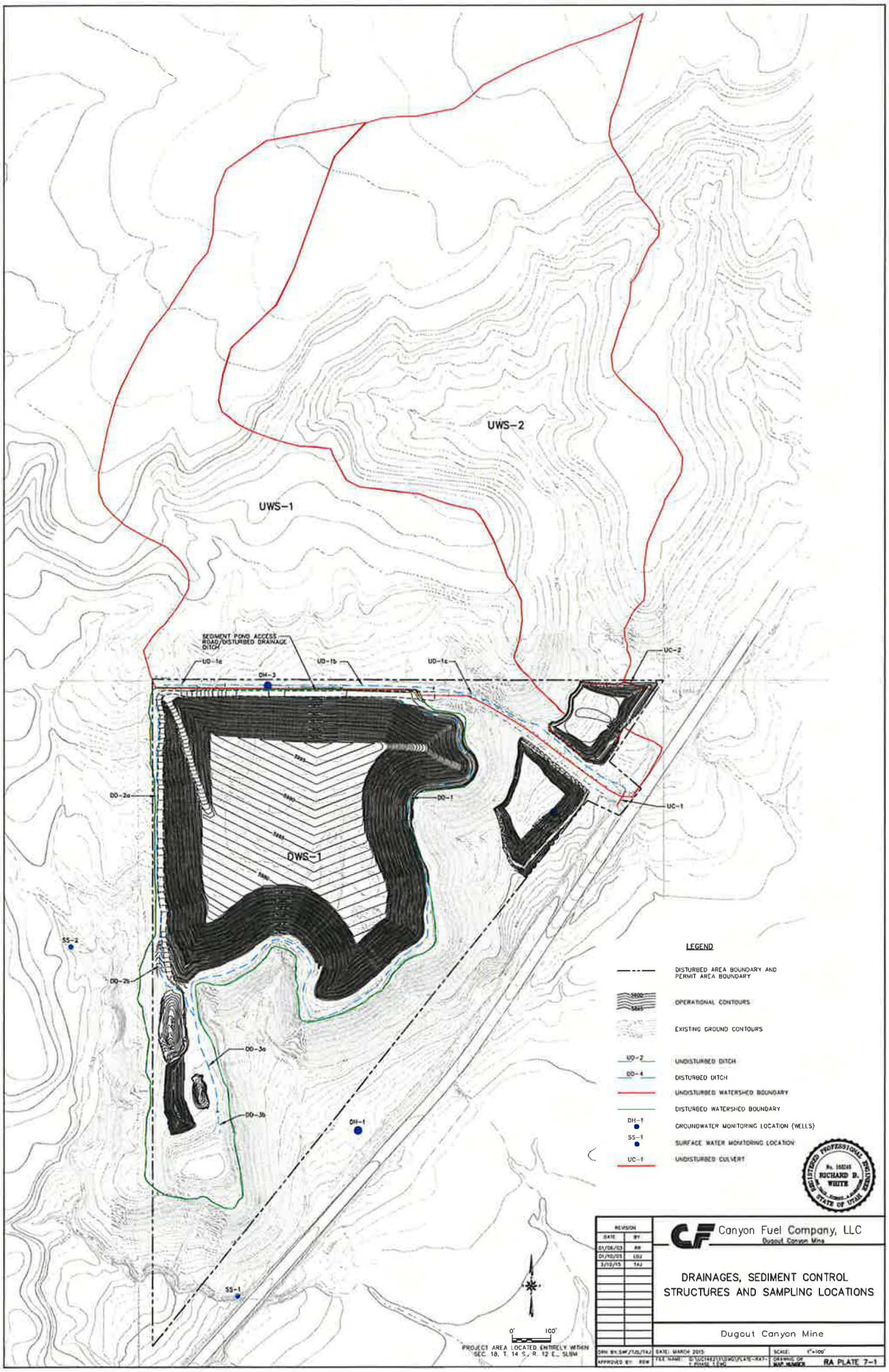
Dugout Canyon Mine

Drawn By: CMF/TAJ	DATE: JAN 2006	SCALE: AS SHOWN
APPROVED BY: RBW	FILE NAME: S:\UCI\4621\1\DWG\PLATE-RAS-2A PHASE 1.DWG	DRAWING OR MAP NUMBER: RA PLATE 5-2A

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, RA Plate 7-1


UWS-2
UWS-1
SEDIMENT POND ACCESS ROAD/DISTURBED DRAINAGE DITCH
UD-1a
UD-1b
UD-1c
DH-3
TOPSOIL STOCKPILE
UC-2
ACCESS ROAD
SUBSOIL STOCKPILE
DD-1
UC-1
DD-2a
DWS-1
SS-2
DD-2b
DD-3a
DD-3b
DH-1
SEDIMENT POND
EMERGENCY SPILLWAY
SS-1
LEGEND
DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
OPERATIONAL CONTOURS
EXISTING GROUND CONTOURS
UD-2 UNDISTURBED DITCH
DD-4 DISTURBED DITCH
UNDISTURBED WATERSHED BOUNDARY
DISTURBED WATERSHED BOUNDARY
DH-1 GROUNDWATER MONITORING LOCATION (WELLS)
SS-1 SURFACE WATER MONITORING LOCATION
UC-1 UNDISTURBED CULVERT
REGISTERED PROFESSIONAL ENGINEER
No. 166240
RICHARD B. WHITE
STATE OF UTAH
0' 100'
PROJECT AREA LOCATED ENTIRELY WITHIN SEC. 16, T. 14 S., R. 12 E., SLBM
REVISION
DATE BY
01/08/03 RB
01/10/05 LDJ
Canyon Fuel Company, LLC
Dugout Canyon Mine
DRAINAGES, SEDIMENT CONTROL STRUCTURES AND SAMPLING LOCATIONS
Dugout Canyon Mine
DRAWN BY: SAW/TJG
DATE: FEB 2002
SCALE: 1"=100'
APPROVED BY: VSM
FILE NAME: G:\UCRD\1113\MAPS\PLATE-RA7-12PROJECT-10-02
DRAWING OR MAP NUMBER
RA PLATE 7-1


UWS-2
UWS-1
SEDIMENT POND ACCESS ROAD/DISTURBED DRAINAGE DITCH
UD-1a
UD-1b
UD-1c
DH-3
UC-2
UC-1
DD-2a
DD-1
DWS-1
SS-2
DD-2b
DD-3a
DD-3b
DH-1
SS-1
LEGEND
DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
OPERATIONAL CONTOURS
EXISTING GROUND CONTOURS
UD-2 UNDISTURBED DITCH
DD-4 DISTURBED DITCH
UNDISTURBED WATERSHED BOUNDARY
DISTURBED WATERSHED BOUNDARY
DH-1 GROUNDWATER MONITORING LOCATION (WELLS)
SS-1 SURFACE WATER MONITORING LOCATION
UC-1 UNDISTURBED CULVERT
REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD D. WHITE
STATE OF UTAH
0' 100'
PROJECT AREA LOCATED ENTIRELY WITHIN SEC. 18, T. 14 S., R. 12 E., SLB&M
REVISION
DATE BY
01/06/03 RR
01/10/05 LSU
3/12/15 TAJ
Canyon Fuel Company, LLC
Dugout Canyon Mine
DRAINAGES, SEDIMENT CONTROL STRUCTURES AND SAMPLING LOCATIONS
Dugout Canyon Mine
DWN BY: SM/TJS/TAJ
DATE: MARCH 2015
SCALE: 1"=100'
APPROVED BY: REW
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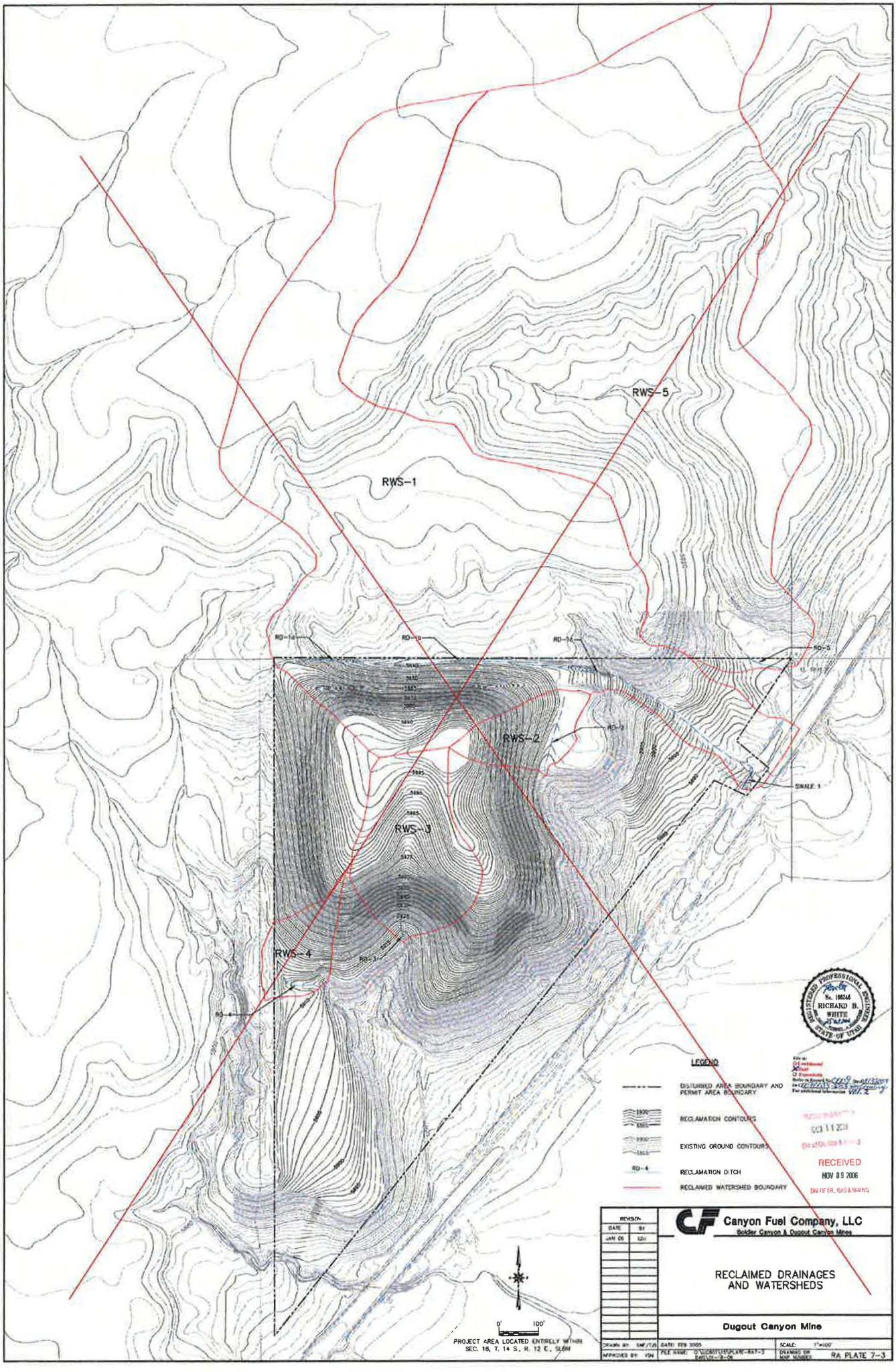
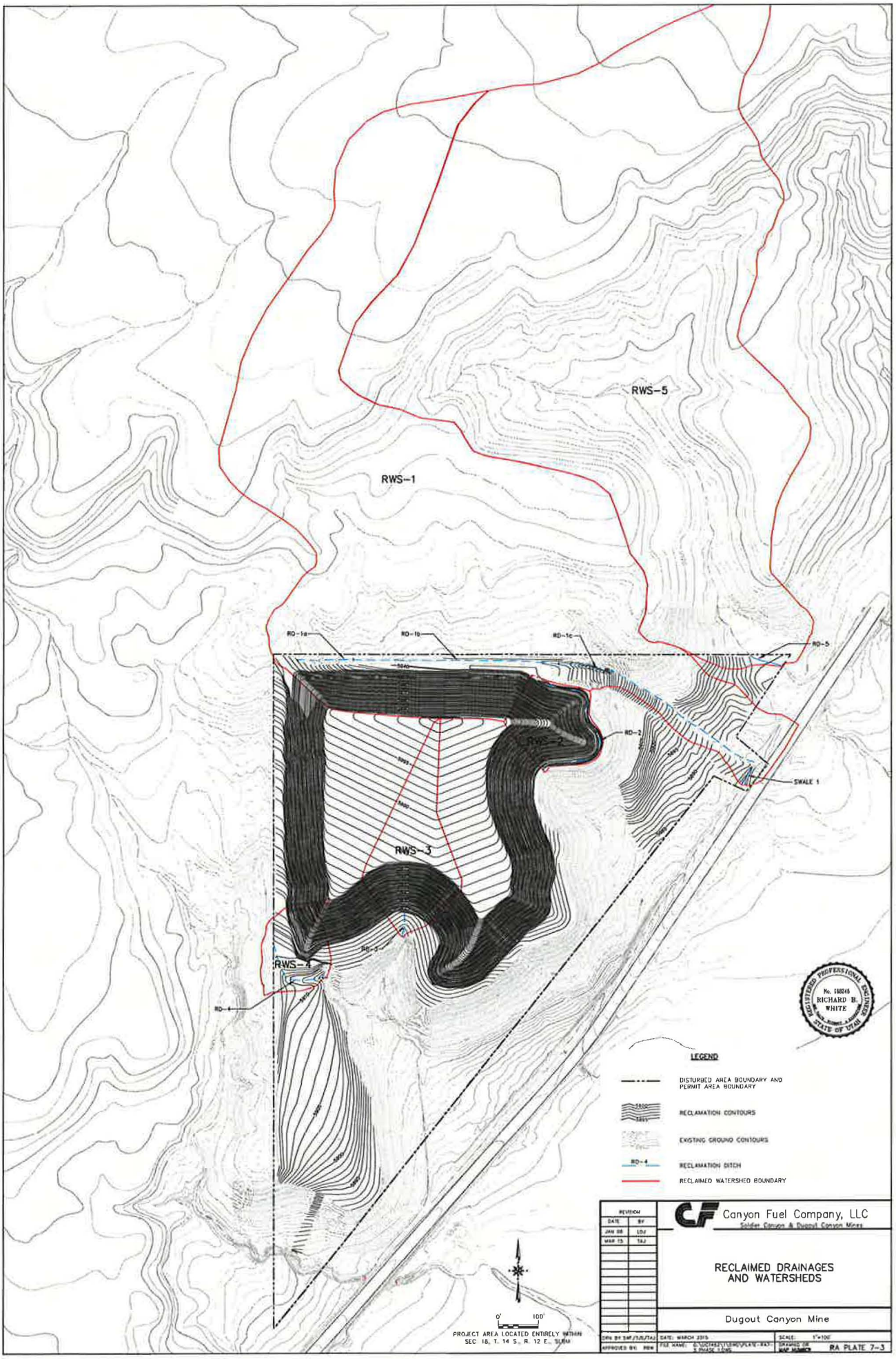
DRAWING OR MAP NUMBER
RA PLATE 7-1

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, RA Plate 7-3


RWS-1
RWS-2
RWS-3
RWS-4
RWS-5
RD-1a
RD-1b
RD-1c
RD-2
RD-3
RD-4
RD-5
SWALE 1
LEGEND
DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
RECLAMATION CONTOURS
EXISTING GROUND CONTOURS
RECLAMATION DITCH
RECLAIMED WATERSHED BOUNDARY
REGISTERED PROFESSIONAL ENGINEER
No. 166346
RICHARD D. WHITE
STATE OF UTAH
RECEIVED
NOV 09 2006
DIV OF OIL, GAS & MINING
0' 100'
PROJECT AREA LOCATED ENTIRELY WITHIN SEC. 18, T. 14 S., R. 12 E., SLBM
REVISION
DATE
BY
Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines
RECLAIMED DRAINAGES AND WATERSHEDS
Dugout Canyon Mine
SCALE: 1"=100'
DRAWING OR MAP NUMBER
RA PLATE 7-3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RWS-1
RD-1a
RD-1b
RD-1c
RD-5
RD-2
RWS-2
SWALE 1
RWS-3
RD-3
RWS-4
RD-4
REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD H. WHITE
STATE OF UTAH
LEGEND
DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
RECLAMATION CONTOURS
EXISTING GROUND CONTOURS
RD-4
RECLAMATION DITCH
RECLAIMED WATERSHED BOUNDARY
0' 100'
PROJECT AREA LOCATED ENTIRELY WITHIN SEC. 18, T. 14 S., R. 12 E., SLB&M
REVISION
DATE BY
JAN 08 LDJ
MAR 15 TAJ
Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines
RECLAIMED DRAINAGES AND WATERSHEDS
Dugout Canyon Mine
DRN BY SAF/TJS/TAJ
DATE: MARCH 2015
SCALE: 1"=100'
APPROVED BY: RBW
FILE NAME: G:\DGTRES\TLEND\PLATE-RA7-3 PHASE 1.DWG
DRAWING OR MAP NUMBER
RA PLATE 7-3

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, Chapter 2, pg. 2-12

Valley Authority, BLM - USFS published data, physical and chemical analyses results, field-site trials, or greenhouse tests.

233.400 Testing of Substitute Topsoil

Only the substitute topsoil used in lieu of, or in conjunction with, on-site overburden and soil will be tested as described in Section 233.300.

234 Topsoil Storage

Soils salvaged from the site will be stockpiled on the site. Refer to Plates RA 5-1 and 7-1 for the stockpile location. The estimated volumes of soil to be stockpiled are presented in RA Table 2-2.

234.100 Topsoil Stockpiling

Soil removed will be stockpiled for later use in reclamation operations when it is impractical to promptly redistribute the materials on regraded areas. Refer to Plates RA 5-1 and 7-1 for the location of the soil storage area. Because the soil salvage quantities are estimated, the actual contours and corresponding cross-sections are approximate. The final soil stockpiles will be reflected in the as-built drawings for the site. RA Plate 2-2 reflects as-built drawings of the stockpiles soils.

It is anticipated that the piles will be constructed in horizontal lifts of 1.5 to 2.0 feet. Tracked equipment will be used to reduce compaction. The stockpiles will be graded to a maximum slope of 2:1, where space is available a slope of 3:1 and seeded to promote surface stabilization. The interim reclamation seed mix described in Chapter 3, Section 341.200 will be used for this purpose.

The stockpiles will be kept isolated from the main area of the refuse site to protect the material from contaminants and unnecessary compaction that would interfere with vegetation. A sign will be

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, Chapter 2, pg. 2-15, 2-16

The stored soil will be redistributed after recontouring of the site has occurred during reclamation activities. The refuse pile will be covered with 1 foot of equally blended coal waste and subsoil, approximately 2.6 feet of subsoil and approximately 0.4 feet of topsoil, to obtain a total depth of cover on the pile of 4 feet. The volume of material needed to cover the refuse pile is ~~82,976 CY~~ 91,720 CY.

There are currently topsoil and subsoil stockpiles located in the northeast portion of the site. Aero-Graphics, Inc. surveys estimated the volume in each stockpile as:

Topsoil Stockpiles volume = ~~8,384~~ 8,384 CY
Subsoil Stockpile volume = ~~9,211~~ 11,729 CY

Total cover material currently available in the stockpiles is estimated to be ~~17,595~~ 20,113 CY.

During reclamation the berms and embankments that create the perimeter ditches and sediment pond will be pulled back to blend the undisturbed areas into the reclaimed refuse pile. This process will generate approximately 2,947 CY of additional cover material. The total available cover material at the refuse site is ~~20,542~~ 23,060 CY

To reduce the volume of imported cover material the bottom foot of cover material will be a blend of coal waste and subsoil. Equal portions of coal waste and subsoil will be used to create this blended cover material. Thus, the volume of available cover material may be increased by ~~10,372~~ 11,465 CY to a total of ~~30,914~~ 34,525 CY.

Volume of cover material to be imported ~~= 82,976 – 30,914 = 52,062~~ 91,720-34,525 = 57,195 CY

Summary of Volumes

Volume of material needed to obtain 4 feet of cover = ~~82,976~~ 91,720CY
Total cover material available at the site = ~~20,542~~ 23,060 CY
Vol. of coal waste blended with sub-soil to produce the first foot of cover = ~~10,372~~ 11,465 CY

Vol. of subsoil blended with coal waste to produce the first foot of cover = ~~10,372~~ 11,465CY
Volume of subsoil and topsoil needed to cover the pile = ~~72,604~~ 80,255 CY
Volume of cover material to be imported from borrow site = ~~52,062~~ 57,195 CY

Soils will be handled when they are in a loose or friable condition.

Contemporaneous Reclamation: In the future, the applicant may decide to demonstrate that two feet of cover material over the refuse pile is sufficient to meet reclamation standards for bond release. Additional information and clarification of the project will be provided at that time. An area on the refuse pile will receive reclamation treatments contemporaneously to justify the decrease of required cover soils from four feet to two feet for final reclamation.

Soil Thickness: The topsoil will be distributed to the disturbed areas illustrated on Figure RA 5-1.

Currently, it is planned that the refuse pile portion of the site be covered with approximately 48 inches of soil. Based on the proposed pile configuration this will require about ~~82,976~~ 91,720 CY of soil. The remainder of the site area, not used for refuse storage will be covered with approximately 6 inches of substitute topsoil. Calculations of the soil cover volumes are presented in Attachment 2-2. Soils in the area designated as H and J (approximately 11.2 acres) are not currently planned for salvage, except in the area of the pond spillway (RA Plate 2-1).

Compaction. To prevent compaction of topsoil, soil-moving equipment will refrain from unnecessary operation over spread soil. Front-end-loaders and other wheel-mounted equipment may be used to transport and dump soil. However, to minimize compaction, only track-mounted equipment (e.g. bulldozers, trackhoes) will be used to spread the soil. The soil will be loosened prior to seeding as described in Section 341.200.

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, Chapter 2, Table 2-2

RA TABLE 2-2

SOIL SAVLAGE VOLUMES

AREA	VOLUME ANTICIPATED (CY)	VOLUME SALVAGED APPROXIMATE (CY)	
		Topsoil	Subsoil
A	4719		1787
B	~~14300~~15,559		~~5323~~ 6582
C	5467		2778
D	2957	832	
E	4616	1313	
F	3393	2423	
G	2603	2595	
I	2356		
K	206		407
M	~~3700~~ 5116		~~3857~~ 5116
H & J (Spillway)		135	293
TOTAL	~~44317~~ 46992 CY	7298 CY	~~15511~~ 18029 CY

Soil Borrow Area (approximate available soil) 106,000 CY

*Exact Subsoil and Topsoil volumes are found on RA Plate 2-2

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, Chapter 2, RA Attachment 2-2

RA ATTACHMENT 2-2

SOIL VOLUME CALCULATION

REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD B. WHITE
29 Apr 2015
STATE OF UTAH

Reclamation Soil Thickness
Dugout Refuse Pile Site

The Refuse Pile is to be covered with 1 foot of equally blended coal waste and subsoil, approximately 2.6 feet of subsoil and approximately 0.4 feet of topsoil, to obtain a total depth of cover on the pile of 4 feet. The volumes of subsoil and topsoil needed to cover the pile are discussed below.

Area covered by the refuse pile= ~~516,552~~ 548,552 ft^2

To obtain the surface area to be covered by soil the above area must be adjusted to account for the 2: 1 slopes of the refuse pile. A 2: 1 slope increases the surface area by 11.8%.

Slope area = ~~368,950~~ 393,449 ft^2
Area of flatter space on top of the pile = ~~147,602~~ 179,231 ft^2
Adjusted slope area= 1.118 x ~~368,950~~ 393,449 ft^2 = ~~412,486~~ 439,876 ft^2
Adjusted surface area of the pile to be covered= ~~560,088~~ 619,107 ft^2

The refuse pile will be covered with 4 feet of cover material. The cover material will consist of topsoil, subsoil, and a blend of coal waste and subsoil.

The volume of material needed to cover the refuse pile= ~~82,976~~ 91,720 CY

Available Cover Material

There are currently topsoil and subsoil stockpiles located in the northwestern portion of the site. These stockpiles have been surrounded by a full containment berm. Olympus Aerial Surveys and EarthFax Engineering Group, LLC estimated the volume in each stockpile as well as the volume of soil in the containment berms.

Topsoil Stockpile volume= ~~7,298~~ 8,384 CY
Subsoil Stockpile volume = ~~6,508~~ 11,729 CY
Berm volume = ~~2,686~~ 2947 CY

~~An additional 6,317 CY of subsoil has been stripped from the site since construction of the stockpiles.~~

Total cover material currently available to be placed in the new stockpiles = ~~22,809~~ 23,060 CY

~~When the topsoil and subsoil stockpiles are moved to facilitate the expansion of the waste rock site additional subsoil may be excavated from the northwest portion of the site. The volume of material available to be stripped has been estimated to be 5,400 CY~~

During reclamation the berms and embankments that create the perimeter ditches and sediment pond will be pulled back to blend the undisturbed areas into the reclaimed refuse pile. This process will generate approximately 2,947 CY of additional cover material.

Total available cover material = ~~31,156~~ 23,060 CY

To reduce the volume of imported cover material the bottom foot of cover material will be a blend of coal waste and subsoil. Equal portions of coal waste and subsoil will be used to create this blended cover material. Thus, the volume of available cover material may be increased by ~~10,372~~ 11,465 CY (~~560,088~~ 619,107 ft^2 x 0.5 ft. / 27 ft^3/CY) to a total of ~~41,528~~ 34,525 CY.

The mixing of coal waste and subsoil, to produce the first foot of cover for the refuse pile, will occur only if the coal waste has been demonstrated through sampling and analysis to not be acid or toxic forming. Otherwise the entire 4 feet of cover material will be composed of subsoil and topsoil.

Volume of cover material needing to be imported= ~~82,976~~ 91,720 – ~~41,528~~ 34,525 = ~~41,448~~ 57,195 CY

Summary of Volumes

Volume of material needed to obtain 4 feet of cover= ~~82,976~~ 91,720 CY
Total cover material available at the site= ~~31,156~~ 23,060 CY
Vol. of coal waste blended with sub-soil to produce the first foot of cover= ~~10,372~~ 11,465 CY
Vol. of subsoil blended with coal waste to produce the first foot of cover= ~~10,372~~ 11,465 CY
Volume of subsoil and topsoil needed to cover the pile= ~~72,604~~ 80,255 CY
Volume of cover material to be imported from borrow site= ~~41,448~~ 57,195 CY

Soil/Waste Rock Mixing Procedure

Depending on conditions there are many ways that the imported soil and coal waste can be effectively mixed. Examples of methods that may be used are:

1. Mixing with a tractor mounted tiller or similar equipment. On flatter areas of the pile a 6-incb layer of soil will be spread on the surface and then tilled with the coal waste to a depth of 12-inches. This tilled material may be left in place and the additional 3-feet of soil placed on top or the mixed material may be pushed onto the slopes as the initial I 2'inches of soil cover;

2. Mixing with an excavator or front end loader. Equal amounts of soil and coal

waste will be dumped on the surface of the pile and mixed together using an excavator or front end loader. A dozer will then push the mixture onto the surface of the pile in a 12-inch layer;

3. Loading equal amounts of coal waste and soil into a dump truck. Trucks hauling soil to the site can be loaded with an equal amount of coal waste. Mixing will occur as the material is being loaded as well as when the load is dumped. Additional mixing will occur when the mixture is pushed out over the pile by a dozer; and

4. Mixing with a dozer. A 6-inch layer of soil can be spread on the surface of the pile and then a dozer will push the soil and 6-inches of coal waste into a pile. The rolling action of the material in front of the dozer blade will mix the soil and coal waste. Additional mixing will occur as the material is pushed back out in a 12-inch layer;

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, Chapter 5, pg. 5-16, 5-17

Storage capacity of the pile is estimated to be approximately ~~1,018,792~~ tons of refuse. Calculations are presented in RA Attachment 5-3. 1,081,162

536.200 Waste Emplacement

Construction. Prior to the start of refuse pile construction, the appropriate sediment control facilities (sediment pond, undisturbed diversion ditch/berm, and disturbed area diversions) described in Chapter 7 were in place. Since initial waste rock storage will occur in an area 4 feet below natural grade, it is anticipated that ditches DD-1 and DD-2 will be constructed to their full extent only after waste reaches a level equal to the currently existing ground surface. An interim berm will be constructed to direct surface runoff away from the storage area below grade and toward ditch DD-3 and the sediment pond. RA Plate 5-1 presents the layout of the refuse pile areas.

Vegetative cover will be removed from the refuse site area, prior to placement of any coal mine or underground development waste. Soil materials shall be removed, stockpiled, and properly protected for future use in reclaiming the site. As the site has previously been disturbed there is no topsoil present. CFC commits to reasonable mechanized efforts to collect the maximum amount of soil materials still present on the site. It is anticipated that all suitable soil materials down to the Mancos Shale will be stripped. The soil materials salvaged from the strip area will be stored in the soil stockpile. The details of the soil salvage operations and estimates of the volume of soil to be stripped are presented in Chapter 2.

Once the soils have been stripped from the area, the refuse material will be placed. Based on prior experience, the refuse materials anticipated to be generated by the mine will generally consist of shale with some sandstone, bone coal, and in limited quantities, sandstone from paleochannels.

Sediment pond wastes from either the mine site or refuse area sediment pond will be stored in the refuse pile.

Coal processing waste to will be stored at the refuse site, should economics justify the washing of coal. Waste stored at the refuse site will be hauled to a wash facility for processing and the waste

material not shipped to customers will be returned to the Dugout refuse site for disposal. The waste material returned to the Dugout refuse site could be from any of the Canyon Fuel mines. To assist the Abandoned Mine Reclamation Program (AMRP) Dugout's refuse site will accept for disposal approximately 36,500 cyds of pre-SMCRA coal refuse materials from the AMRP Knight-Ideal Loadout Project in Wellington Utah (AMR/007/935/L). Waste will be sampled as described below under the subheading "Testing".

Operation. Refuse materials will be hauled to the site using either belly dump trailers or end dump trucks. At the refuse site, the trucks will deposit the refuse on a fill bench, where it will be spread and compacted by truck and equipment traffic. Successive lift will be allowed to drain (when necessary) before it is capped with the next lift in the construction sequence.

The gradation of the refuse material will most likely be coarse and poorly graded with a small percentage of fine materials. Therefore, it is necessary to rework and level the lifts to assist in achieving the desired densities and prevent the formation of large voids. Additional compaction of each lift can be accomplished by routing the loaded haul trucks over the lift surface in such a manner as to cover the surface uniformly.

Waste rock loads containing non-cemented, soft shale, clay, or fine-grained materials shall be mixed with coarser graded loads in a controlled manner to limit concentrations of fine materials within the fill. This will be especially true for sediment pond wastes from either the mine site or refuse area sediment pond.

All lifts will be emplaced in a controlled manner to ensure the mass stability of the refuse pile and prevent mass movement during and after construction according to CFR 77.215. Additionally, the lifts shall be graded to promote drainage off the pile surface. No intentional impoundments will be created by the placement of the refuse materials.

As the limits of the site area are reached laterally, the outer slope shall conform to the slope indicated in RA Plate 5-1.

Maintenance. Coal mine and underground development waste may have high moisture content. Controlled placement and compaction of the refuse materials will minimize the potential for spontaneous combustion or ignition of these materials. In the unlikely event that any burning waste

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, Chapter 5, RA Attachment 5-3

Determination of Refuse Tonnage for Final Pile Configuration

The existing topography shown on the maps is representative of the site when the last aerial survey was conducted on August 12, 2004. At that time Olympus Aerial Surveys had estimated that 46,217 CY of coal refuse had already been placed at the site.

At the final pile configuration an additional 639,838 CY of coal waste will have been added to the refuse pile.

Disturbed acres = 15.60 acres

Total coal refuse in the pile = 46,217 CY + 639,838 CY = 686,055 CY

Unit weight of coal refuse = 110 lbs/ft^3

Tonnage = (686,055 CY * 27 ft^3/CY * 110 lbs/ft^3) / 2000 lbs/ft^3 = 1,018,792 tons

2015 Phase I Pile Expansion

Additional disturbed acres = 0.74 acres

Total disturbed acres = 15.6 + 0.74 = 16.34 acres

Unit weight of coal refuse = 110 lbs/ft^3

Additional tonnage capacity = (42,000 CY * 27 ft^3/CY * 110 lbs/ft^3) / 2000 lbs/ft^3 = 62,370 tons

Total combined tonnage capacity = (686,055+42,000 CY * 27 ft^3/CY * 110 lbs/ft^3) / 2000 lbs/ft^3 = 1,081,162 tons

Dugout Canyon Mine Refuse Pile
2011 Annual Assessment

The following information has been determined for the 2011 activities conducted at the Dugout Canyon Mine Refuse Pile:

- 2011 Total Delivered Tonnage – 221,149 Tons
- Estimated Density of the Placed and Compacted Refuse – 117 lbs/ft^3
- Calculated Placed Refuse Volume – 3,780,325 ft^3 (140,012 yd^3)
- Permitted Capacity Remaining at Year's End – 4,212,006 ft^3 (246,402 Tons @ 117 lbs/ft^3)
- Approximate Elevation – 5,988 ft (Upper Working Pad Surface – November 2011)

David G. Spillman, P.E.
Technical Services Manager
P.E. No. 151610-2202, State of Utah

LICENSED PROFESSIONAL ENGINEER
No. 151610
DAVID G. SPILLMAN
7/20/12
STATE OF UTAH

INCORPORATED
/ 2012
Div. of Oil, Gas & Mining

Dugout Canyon Mine Refuse Pile
2014 Annual Assessment

The following information has been determined for the 2014 activities conducted at the Dugout Canyon Mine Refuse Pile:

- 2014 Total Delivered Tonnage – 29,375 Tons
- Average Density of the Placed and Compacted Refuse – 106 lbs/ft^3
- Estimated 2014 Placed Refuse Volume – 554,245 ft^3 (20,528 yd^3)
- Permitted Capacity Remaining at Year's End – 2,025,724 ft^3 (111,415 Tons @ 110 lbs/ft^3)

David G. Spillman, P.E.
Technical Services Manager
P.E. No. 151610-2202, State of Utah

LICENSED PROFESSIONAL ENGINEER
No. 151610
DAVID G. SPILLMAN
3/23/15
STATE OF UTAH

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, Chapter 5, RA Attachment 5-4

RA ATTACHMENT 5-4
WASTE ROCK ANALYSIS

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1112289001

Project: Dugout Canyon Mine
Date Received: 12/14/2011

Date Reported: 1/24/2012
Work Order: S1112289

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Field Capacity	Wilt Point	PE Calcium	PE Magnesium	PE Potassium	PE Sodium	SAR
		s.u.	%	dS/m	%	%	meq/L	meq/L	meq/L	meq/L	
S1112289-001	WR Sept 2 11	7.9	26.5	1.63	15.0	6.1	10.4	14.0	1.45	1.80	0.51
S1112289-002	WR Oct 1 11	8.1	25.9	0.84	17.4	4.6	3.80	4.73	0.71	1.59	0.77
S1112289-003	WR Oct 2 11	8.2	33.0	0.73	14.1	4.3	2.93	3.68	0.64	1.69	0.93
S1112289-004	WR Nov 1 11	8.2	29.5	0.70	14.8	4.2	2.75	3.81	0.65	1.29	0.71
S1112289-005	WR Dec 1 11	8.1	30.2	0.82	12.7	4.3	3.47	4.38	0.68	2.11	1.07

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1112289001

Project: Dugout Canyon Mine
Date Received: 12/14/2011

Date Reported: 1/24/2012
Work Order: S1112289

Lab ID	Sample ID	Sand %	Silt %	Clay %	Texture	Boron ppm	Nitrate (as N) ppm	Phosphorus ppm	Selenium ppm	TKN %
S1112289-001	WR Sept 2 11	69.0	19.0	12.0	Sandy Loam	0.52	<0.1	2.35	<0.02	0.04
S1112289-002	WR Oct 1 11	71.0	20.0	9.0	Sandy Loam	0.42	<0.1	2.05	<0.02	0.04
S1112289-003	WR Oct 2 11	73.0	17.0	10.0	Sandy Loam	0.46	<0.1	2.24	<0.02	0.15
S1112289-004	WR Nov 1 11	75.0	17.0	8.0	Sandy Loam	0.46	<0.1	2.05	<0.02	0.08
S1112289-005	WR Dec 1 11	72.0	18.0	10.0	Sandy Loam	0.39	<0.1	1.99	<0.02	0.20

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
en Secor, Soil Lab Supervisor

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1112289001

Project: Dugout Canyon Mine
Date Received: 12/14/2011

Date Reported: 1/24/2012
Work Order: S1112289

Lab ID	Sample ID	Available Sodium meq/100g	Exchangeable Sodium meq/100g	Total Carbon %	TOC %
S1112289-001	WR Sept 2 11	0.06	0.02	5.6	2.4
S1112289-002	WR Oct 1 11	0.10	0.06	3.8	3.0
S1112289-003	WR Oct 2 11	0.15	0.09	6.7	5.2
S1112289-004	WR Nov 1 11	0.09	0.06	4.5	3.1
S1112289-005	WR Dec 1 11	0.16	0.10	5.3	4.6

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1112289001

Project: Dugout Canyon Mine
Date Received: 12/14/2011

Date Reported: 1/24/2012
Work Order: S1112289

Lab ID	Sample ID	Total Sulfur %	T.S. AB t/1000t	Neutral. Potential t/1000t	T.S. ABP t/1000t	Sulfate Sulfur %	Pyritic Sulfur %	Organic Sulfur %	PyriticS AB t/1000t	PyriticS ABP t/1000t
S1112289-001	WR Sept 2 11	1.31	41.0	267	226	0.36	0.83	0.13	26.0	241
S1112289-002	WR Oct 1 11	2.16	67.6	67.6	0.07	0.44	1.52	0.21	47.4	20.2
S1112289-003	WR Oct 2 11	1.28	40.1	125	84.7	0.06	1.06	0.16	33.3	91.5
S1112289-004	WR Nov 1 11	1.25	39.1	115	75.7	0.03	1.09	0.13	34.1	80.6
S1112289-005	WR Dec 1 11	1.27	39.6	63.2	23.5	0.10	1.03	0.14	32.2	31.0

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.
CHAIN OF CUSTODY
DUGOUT CANYON MINE

S1112289

Sample Identification	WR Sept 2 11	WR Oct 1 11	WR Oct 2 11	WR Nov 11	WR Dec 11							
Sample Date	09/27/11	10/10/11	10/27/11	11/08/11	12/08/11							
Number of Samples	1	1	1	1	1							
Type of Soil	WR	WR	WR	WR	WR							
Laboratory Analyses												
Table 6, Topsoil & Overburden Parameters	X	X	X	X	X							
AND												
Texture	X	X	X	X	X							
pH	X	X	X	X	X							
Electrical Conductivity	X	X	X	X	X							
Total Carbon	X	X	X	X	X							
SAR	X	X	X	X	X							
Water Holding Capacity	X	X	X	X	X							
Plant Available Nitrogen	X	X	X	X	X							
Phosphorus	X	X	X	X	X							
Pyritic sulfur	X	X	X	X	X							
T.S. ABP	X	X	X	X	X							

WR (Waste Rock), SS (Sub-Soil), TS (Topsoil)

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Vicky L Miller	12/12/11	1230	Karen A Secor	12/14/11	

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Date: 5/25/2012

CLIENT: Canyon Fuel Company
Project: Dugout Canyon Mine
Lab Order: S1205128

CASE NARRATIVE

Report ID: S1205128001

Samples WR2012-01, WR2012-02, WR2012-03, WR2012-04, WR2012-05, WR2012-06, WR2012-07, and WR2012-08 were received on May 8, 2012.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1205128001

Project: Dugout Canyon Mine
Date Received: 5/8/2012

Date Reported: 5/25/2012
Work Order: S1205128

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Field Capacity	Wilt Point	PE Calcium	PE Magnesium	PE Potassium	PE Sodium	SAR
		s.u.	%	dS/m	%	%	meq/L	meq/L	meq/L	meq/L	
S1205128-001	WR2012-01	7.5	24.8	1.92	15.4	7.1	11.3	14.5	1.46	3.38	0.94
S1205128-002	WR2012-02	7.8	27.0	1.61	16.4	6.2	7.46	13.1	1.16	2.95	0.92
S1205128-003	WR2012-03	7.5	26.9	1.65	16.2	7.4	8.98	11.4	1.34	3.52	1.10
S1205128-004	WR2012-04	7.5	27.4	2.31	21.2	6.8	12.8	20.5	1.56	4.24	1.04
S1205128-005	WR2012-05	8.1	25.5	0.90	14.5	6.1	3.59	5.29	0.77	2.11	1.00
S1205128-006	WR2012-06	8.0	26.8	1.11	15.1	5.7	4.32	6.70	0.89	2.92	1.25
S1205128-007	WR2012-07	7.9	27.7	1.33	15.1	7.6	5.37	8.96	1.15	3.07	1.15
S1205128-008	WR2012-08	7.6	26.0	5.23	16.6	4.6	27.5	58.8	2.38	14.6	2.22

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1205128001

Project: Dugout Canyon Mine
Date Received: 5/8/2012

Date Reported: 5/25/2012
Work Order: S1205128

Lab ID	Sample ID	Sand %	Silt %	Clay %	Texture	Boron ppm	Nitrate (as N) ppm	Phosphorus ppm	Selenium ppm	TKN %
S1205128-001	WR2012-01	70.0	18.0	12.0	Sandy Loam	0.62	1.2	4.35	0.05	0.18
S1205128-002	WR2012-02	67.0	24.0	9.0	Sandy Loam	0.63	0.8	4.03	0.05	0.19
S1205128-003	WR2012-03	69.0	22.0	9.0	Sandy Loam	0.57	1.1	4.98	0.02	0.18
S1205128-004	WR2012-04	70.0	22.0	8.0	Sandy Loam	0.51	1.1	4.35	0.07	0.18
S1205128-005	WR2012-05	68.0	22.0	10.0	Sandy Loam	0.72	<0.1	4.42	<0.02	0.18
S1205128-006	WR2012-06	72.0	20.0	8.0	Sandy Loam	0.67	<0.1	4.32	<0.02	0.18
S1205128-007	WR2012-07	68.0	23.0	9.0	Sandy Loam	0.72	0.5	4.51	0.03	0.19
S1205128-008	WR2012-08	73.0	23.0	4.0	Sandy Loam	0.43	3.9	4.49	0.24	0.17

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

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Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1205128001

Project: Dugout Canyon Mine
Date Received: 5/8/2012

Date Reported: 5/25/2012
Work Order: S1205128

Lab ID	Sample ID	Available Sodium meq/100g	Exchangeable Sodium meq/100g	Total Carbon %	TOC %
S1205128-001	WR2012-01	0.21	0.13	7.0	5.5
S1205128-002	WR2012-02	0.20	0.12	6.3	4.5
S1205128-003	WR2012-03	0.24	0.15	7.6	6.1
S1205128-004	WR2012-04	0.25	0.13	7.9	6.0
S1205128-005	WR2012-05	0.19	0.13	5.2	3.2
S1205128-006	WR2012-06	0.23	0.15	5.5	4.1
S1205128-007	WR2012-07	0.21	0.13	5.4	3.8
S1205128-008	WR2012-08	0.57	0.19	3.9	1.9

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1205128001

Project: Dugout Canyon Mine
Date Received: 5/8/2012

Date Reported: 5/25/2012
Work Order: S1205128

Lab ID	Sample ID	Total Sulfur %	T.S. AB t/1000t	Neutral. Potential t/1000t	T.S. ABP t/1000t	Sulfate Sulfur %	Pyritic Sulfur %	Organic Sulfur %	PyriticS AB t/1000t	PyriticS ABP t/1000t
S1205128-001	WR2012-01	3.24	101	124	22.7	0.10	2.81	0.34	87.7	36.3
S1205128-002	WR2012-02	1.91	59.6	153	92.9	0.02	1.71	0.19	53.3	99.3
S1205128-003	WR2012-03	2.33	72.8	124	51.2	0.39	1.63	0.32	50.9	73.2
S1205128-004	WR2012-04	2.25	70.4	158	87.9	0.17	1.79	0.29	56.1	102
S1205128-005	WR2012-05	2.38	74.5	163	88.9	0.11	1.97	0.30	61.6	102
S1205128-006	WR2012-06	2.77	86.6	116	29.7	0.17	2.22	0.38	69.3	46.9
S1205128-007	WR2012-07	2.48	77.4	130	53.1	0.70	1.43	0.35	44.8	85.7
S1205128-008	WR2012-08	0.85	26.5	159	133	0.01	0.70	0.13	21.9	137

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.
CHAIN OF CUSTODY
DUGOUT CANYON MINE

51205128

Sample Identification	WR 2012-01	WR 2012-02	WR 2012-03	WR 2012-04	WR 2012-05	WR 2012-06	WR 2012-07	WR 2012-08				
Sample Date	01/20/12	01/30/12	02/21/12	02/27/12	03/15/12	03/28/12	04/19/12	05/04/12				
Number of Samples	1	1	1	1	1	1	1	1				
Type of Soil	WR	WR	WR	WR	WR	WR	WR	WR				
Laboratory Analyses												
Table 6, Topsoil & Overburden Parameters	X	X	X	X	X	X	X	X				
AND												
Texture	X	X	X	X	X	X	X	X				
pH	X	X	X	X	X	X	X	X				
Electrical Conductivity	X	X	X	X	X	X	X	X				
Total Carbon	X	X	X	X	X	X	X	X				
SAR	X	X	X	X	X	X	X	X				
Water Holding Capacity	X	X	X	X	X	X	X	X				
Plant Available Nitrogen	X	X	X	X	X	X	X	X				
Phosphorus	X	X	X	X	X	X	X	X				
Pyritic sulfur	X	X	X	X	X	X	X	X				
T.S. ABP	X	X	X	X	X	X	X	X				

WR (Waste Rock), SS (Sub-Soil), TS (Topsoil)

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Wesley A Mellen	5/4/12	1240	Kane A Seca	5/8/12	

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Date: 11/6/2012

CLIENT: Canyon Fuel Company
Project: Dugout Canyon Mine
Lab Order: S1208298

CASE NARRATIVE

Report ID: S1208298001

Samples WR 2012-09, WR 2012-10, WR 2012-11, WR 2012-12, WR 2012-13, WR 2012-14, and WR 2012-15 were received on August 15, 2012.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1208298001

Project: Dugout Canyon Mine
Date Received: 8/15/2012

Date Reported: 11/6/2012
Work Order: S1208298

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Field Capacity	Wilt Point	PE Calcium	PE Magnesium	PE Potassium	PE Sodium	SAR
		s.u.	%	dS/m	%	%	meq/L	meq/L	meq/L	meq/L	
S1208298-001	WR 2012-09	7.9	25.7	1.66	18.3	6.4	7.68	11.6	1.02	4.94	1.59
S1208298-002	WR 2012-10	7.7	26.5	1.30	17.0	7.8	6.04	8.92	1.14	2.23	0.81
S1208298-003	WR 2012-11	8.0	27.1	1.48	17.2	5.7	6.26	9.29	0.93	4.19	1.50
S1208298-004	WR 2012-12	8.0	24.4	2.09	16.8	8.0	11.9	16.2	1.41	4.94	1.32
S1208298-005	WR 2012-13	7.7	25.7	1.73	16.8	7.8	9.12	15.5	1.45	2.27	0.65
S1208298-006	WR 2012-14	7.5	23.4	1.77	16.9	7.3	9.23	14.4	1.38	3.07	0.89
S1208298-007	WR 2012-15	7.6	25.8	1.72	16.6	7.3	9.30	15.6	1.29	2.63	0.75

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1208298001

Project: Dugout Canyon Mine
Date Received: 8/15/2012

Date Reported: 11/6/2012
Work Order: S1208298

Lab ID	Sample ID	Sand %	Silt %	Clay %	Texture	Boron ppm	Nitrate (as N) ppm	Phosphorus ppm	Selenium ppm	TKN %
S1208298-001	WR 2012-09	72.0	20.0	8.0	Sandy Loam	0.48	0.3	3.3	0.06	0.19
S1208298-002	WR 2012-10	70.0	19.0	11.0	Sandy Loam	0.36	0.2	3.6	0.03	0.15
S1208298-003	WR 2012-11	74.0	17.0	9.0	Sandy Loam	0.44	0.2	3.6	0.05	0.13
S1208298-004	WR 2012-12	68.0	20.0	12.0	Sandy Loam	0.65	0.3	3.7	0.03	0.11
S1208298-005	WR 2012-13	70.0	19.0	11.0	Sandy Loam	0.41	0.2	4.4	0.04	0.12
S1208298-006	WR 2012-14	70.0	19.0	11.0	Sandy Loam	0.50	0.2	3.8	0.05	0.14
S1208298-007	WR 2012-15	68.0	22.0	10.0	Sandy Loam	0.58	0.3	3.7	0.06	0.14

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1208298001

Project: Dugout Canyon Mine
Date Received: 8/15/2012

Date Reported: 11/6/2012
Work Order: S1208298

Lab ID	Sample ID	Available Sodium meq/100g	Exchangeable Sodium meq/100g	Total Carbon %	TOC %
S1208298-001	WR 2012-09	0.26	0.14	10.7	8.9
S1208298-002	WR 2012-10	0.17	0.11	7.9	5.6
S1208298-003	WR 2012-11	0.29	0.18	6.6	4.6
S1208298-004	WR 2012-12	0.31	0.19	7.2	5.3
S1208298-005	WR 2012-13	0.15	0.10	5.9	3.6
S1208298-006	WR 2012-14	0.19	0.12	7.6	5.4
S1208298-007	WR 2012-15	0.17	0.10	6.8	4.2

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1208298001

Project: Dugout Canyon Mine
Date Received: 8/15/2012

Date Reported: 11/6/2012
Work Order: S1208298

Lab ID	Sample ID	Total Sulfur %	T.S. AB t/1000t	Neutral. Potential t/1000t	T.S. ABP t/1000t	Sulfate Sulfur %	Pyritic Sulfur %	Organic Sulfur %	PyriticS AB t/1000t	PyriticS ABP t/1000t
S1208298-001	WR 2012-09	0.83	26.0	152	126	0.05	0.65	0.13	20.3	131
S1208298-002	WR 2012-10	1.40	43.7	192	148	0.44	0.81	0.15	25.3	167
S1208298-003	WR 2012-11	1.30	40.7	169	128	0.31	0.83	0.16	25.9	143
S1208298-004	WR 2012-12	1.80	56.2	162	106	0.06	1.53	0.21	47.8	114
S1208298-005	WR 2012-13	2.37	74.1	197	123	0.24	1.95	0.18	60.9	136
S1208298-006	WR 2012-14	1.41	44.2	180	136	0.19	1.06	0.16	33.1	147
S1208298-007	WR 2012-15	1.38	43.2	222	178	0.42	0.82	0.14	25.6	196

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.
CHAIN OF CUSTODY
DUGOUT CANYON MINE

S1208298

Sample Identification	WR 2012-09	WR 2012-10	WR 2012-11	WR 2012-12	WR 2012-13	WR 2012-14	WR 2012-15					
Sample Date	05/04/12	05/16/12	05/30/12	06/06/12	06/15/12	06/29/12	07/11/12					
Number of Samples	1	1	1	1	1	1	1					
Type of Soil	WR	WR	WR	WR	WR	WR	WR					
Laboratory Analyses												
Table 6, Topsoil & Overburden Parameters	X	X	X	X	X	X	X					
AND												
Texture	X	X	X	X	X	X	X					
pH	X	X	X	X	X	X	X					
Electrical Conductivity	X	X	X	X	X	X	X					
Total Carbon	X	X	X	X	X	X	X					
SAR	X	X	X	X	X	X	X					
Water Holding Capacity	X	X	X	X	X	X	X					
Plant Available Nitrogen	X	X	X	X	X	X	X					
Phosphorus	X	X	X	X	X	X	X					
Pyritic sulfur	X	X	X	X	X	X	X					
T.S. ABP	X	X	X	X	X	X	X					

WR (Waste Rock), SS (Sub-Soil), TS (Topsoil)

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Vicky L Muller	8/13/12	942	Karen A Secor	8/15/12	

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1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Date: 12/3/2012

CLIENT: Canyon Fuel Company
Project: Dugout Canyon Mine
Lab Order: S1210039

CASE NARRATIVE

Report ID: S1210039001

Samples WR 2012-16, WR 2012-17, and WR 2012-18 were received on September 28, 2012.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1210039001

Project: Dugout Canyon Mine
Date Received: 9/28/2012

Date Reported: 12/3/2012
Work Order: S1210039

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Field Capacity	Wilt Point	PE Calcium	PE Magnesium	PE Potassium	PE Sodium	SAR
		s.u.	%	dS/m	%	%	meq/L	meq/L	meq/L	meq/L	
S1210039-001	WR 2012-16	7.6	24.8	2.34	14.8	7.6	8.70	10.1	1.40	10.3	3.36
S1210039-002	WR 2012-17	7.9	26.5	2.36	14.5	6.9	6.70	8.99	1.25	5.71	2.04
S1210039-003	WR 2012-18	8.2	26.9	1.76	16.2	7.8	4.76	4.62	0.89	10.1	4.65

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1210039001

Project: Dugout Canyon Mine
Date Received: 9/28/2012

Date Reported: 12/3/2012
Work Order: S1210039

Lab ID	Sample ID	Sand %	Silt %	Clay %	Texture	Boron ppm	Nitrate (as N) ppm	Phosphorus ppm	Selenium ppm	TKN %
S1210039-001	WR 2012-16	69.0	19.0	12.0	Sandy Loam	1.61	0.5	1.8	0.03	0.11
S1210039-002	WR 2012-17	65.0	23.0	12.0	Sandy Loam	0.78	0.3	1.8	<0.02	0.07
S1210039-003	WR 2012-18	67.0	21.0	12.0	Sandy Loam	1.13	0.4	1.5	0.03	0.07

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

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Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1210039001

Project: Dugout Canyon Mine
Date Received: 9/28/2012

Date Reported: 12/3/2012
Work Order: S1210039

Lab ID	Sample ID	Available Sodium meq/100g	Exchangeable Sodium meq/100g	Total Carbon %	TOC %
S1210039-001	WR 2012-16	0.80	0.54	8.9	7.8
S1210039-002	WR 2012-17	0.34	0.18	5.3	3.9
S1210039-003	WR 2012-18	0.79	0.52	11.1	10.3

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1210039001

Project: Dugout Canyon Mine
Date Received: 9/28/2012

Date Reported: 12/3/2012
Work Order: S1210039

Lab ID	Sample ID	Total Sulfur %	T.S. AB t/1000t	Neutral. Potential t/1000t	T.S. ABP t/1000t	Sulfate Sulfur %	Pyritic Sulfur %	Organic Sulfur %	PyriticS AB t/1000t	PyriticS ABP t/1000t
S1210039-001	WR 2012-16	2.04	63.6	89.5	25.9	0.07	1.74	0.23	54.4	35.1
S1210039-002	WR 2012-17	1.62	50.5	120	69.9	0.08	1.28	0.26	40.0	80.4
S1210039-003	WR 2012-18	0.69	21.5	68.9	47.4	0.45	0.07	0.17	2.19	66.7

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
en Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.
CHAIN OF CUSTODY
DUGOUT CANYON MINE

51210039

	1	2	3									
Sample Identification	WR 2012-16	WR 2012-17	WR 2012-18									
Sample Date	07/30/12	08/10/12	09/25/12									
Number of Samples	1	1	1									
Type of Soil	WR	WR	WR									
Laboratory Analyses												
Table 6, Topsoil & Overburden Parameters	X	X	X									
AND												
Texture	X	X	X									
pH	X	X	X									
Electrical Conductivity	X	X	X									
Total Carbon	X	X	X									
SAR	X	X	X									
Water Holding Capacity	X	X	X									
Plant Available Nitrogen	X	X	X									
Phosphorus	X	X	X									
Pyritic sulfur	X	X	X									
T.S. ABP	X	X	X									

WR (Waste Rock), SS (Sub-Soil), TS (Topsoil)

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Vicky L Miller	9/25/12	850	Kara A Seco	9/28/12	

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Date: 7/1/2013

CLIENT: Canyon Fuel Company
Project: Dugout Canyon Mine
Lab Order: S1306325

CASE NARRATIVE

Report ID: S1306325001

Sample WR2013-01 was received on June 19, 2013.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1306325001

Project: Dugout Canyon Mine
Date Received: 6/19/2013

Date Reported: 7/1/2013
Work Order: S1306325

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Field Capacity	Wilt Point	PE Calcium	PE Magnesium	PE Potassium	PE Sodium	SAR
		s.u.	%	dS/m	%	%	meq/L	meq/L	meq/L	meq/L	
S1306325-001	WR2013-01	7.8	28.6	3.47	13.2	5.9	16.3	22.8	1.49	8.80	1.99

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1306325001

Project: Dugout Canyon Mine
Date Received: 6/19/2013

Date Reported: 7/1/2013
Work Order: S1306325

Lab ID	Sample ID	Sand %	Silt %	Clay %	Texture	Boron ppm	Nitrate (as N) ppm	Phosphorus ppm	Selenium ppm	TKN %
S1306325-001	WR2013-01	78.0	14.0	8.0	Loamy Sand	0.75	<0.1	1.7	0.02	0.13

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

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Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1306325001

Project: Dugout Canyon Mine
Date Received: 6/19/2013

Date Reported: 7/1/2013
Work Order: S1306325

Lab ID	Sample ID	Available Sodium meq/100g	Exchangeable Sodium meq/100g	Total Carbon %	TOC %
S1306325-001	WR2013-01	0.46	0.21	5.9	4.2

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1306325001

Project: Dugout Canyon Mine
Date Received: 6/19/2013

Date Reported: 7/1/2013
Work Order: S1306325

Lab ID	Sample ID	Total Sulfur %	T.S. AB t/1000t	Neutral. Potential t/1000t	T.S. ABP t/1000t	Sulfate Sulfur %	Pyritic Sulfur %	Organic Sulfur %	PyriticS AB t/1000t	PyriticS ABP t/1000t
S1306325-001	WR2013-01	1.45	45.2	138	92.5	0.08	1.19	0.18	37.1	101

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.

CHAIN OF CUSTODY

DUGOUT CANYON MINE

S1306325-001

Sample Identification	WR 2013-01											
Sample Date	06/13/13											
Number of Samples	1											
Type of Soil	WR											
Laboratory Analyses												
Table 6, Topsoil & Overburden Parameters	X											
AND												
Texture	X											
pH	X											
Electrical Conductivity	X											
Total Carbon	X											
SAR	X											
Water Holding Capacity	X											
Plant Available Nitrogen	X											
Phosphorus	X											
Pyritic sulfur	X											
T.S. ABP	X											

WR (Waste Rock), SS (Sub-Soil), TS (Topsoil)

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Robert Jones	6/17/13	2:00 PM	Kaye Abeon	6/19/13	

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Date: 1/28/2014

CLIENT: Canyon Fuel Company
Project: Dugout Canyon Mine
Lab Order: S1312032

CASE NARRATIVE

Report ID: S1312032001

Sample WR 2013-04 was received on November 25, 2013.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1312032001

Project: Dugout Canyon Mine
Date Received: 11/25/2013

Date Reported: 1/28/2014
Work Order: S1312032

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Field Capacity	Wilt Point	PE Calcium	PE Magnesium	PE Potassium	PE Sodium	SAR
		s.u.	%	dS/m	%	%	meq/L	meq/L	meq/L	meq/L	
S1312032-001	WR 2013-04	7.8	28.1	2.01	15.5	6.8	6.99	9.69	0.91	11.8	4.08

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1312032001

Project: Dugout Canyon Mine
Date Received: 11/25/2013

Date Reported: 1/28/2014
Work Order: S1312032

Lab ID	Sample ID	Sand %	Silt %	Clay %	Texture	Available Boron ppm	Available Nitrate(as N) ppm	Available Phosphorus ppm	Available Selenium ppm	TKN %
S1312032-001	WR 2013-04	68.0	18.0	14.0	Sandy Loam	0.77	0.4	3.0	0.03	0.13

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

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Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1312032001

Project: Dugout Canyon Mine
Date Received: 11/25/2013

Date Reported: 1/28/2014
Work Order: S1312032

Lab ID	Sample ID	Available Sodium meq/100g	Exchangeable Sodium meq/100g	Total Carbon %	TOC %
S1312032-001	WR 2013-04	0.74	0.41	7.9	5.7

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1312032001

Project: Dugout Canyon Mine
Date Received: 11/25/2013

Date Reported: 1/28/2014
Work Order: S1312032

Lab ID	Sample ID	Total Sulfur %	T.S. AB t/1000t	Neutral. Potential t/1000t	T.S. ABP t/1000t	Sulfate Sulfur %	Pyritic Sulfur %	Organic Sulfur %	PyriticS AB t/1000t	PyriticS ABP t/1000t
S1312032-001	WR 2013-04	1.13	35.3	185	150	0.28	0.63	0.23	19.6	166

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.
CHAIN OF CUSTODY
DUGOUT CANYON MINE

513/2032-001

Sample Identification	WR 2013-04											
Sample Date	11/21/13											
Number of Samples	1											
Type of Soil	WR											
Laboratory Analyses												
Table 3, Topsoil & Overburden Parameters	X											
AND												
Texture	X											
pH	X											
Electrical Conductivity	X											
Total Carbon	X											
SAR	X											
Water Holding Capacity	X											
Plant Available Nitrogen	X											
Phosphorus	X											
Pyritic sulfur	X											
T.S. ABP	X											

WR (Waste Rock), SS (Sub-Soil), TS (Topsoil)

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Robert Jones	11/21/2013	12:20 PM	Kane A Secor	11/25/13	

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Date: 11/25/2014

CLIENT: Canyon Fuel Company
Project: Dugout Canyon Mine
Lab Order: S1410054

CASE NARRATIVE

Report ID: S1410054001

Sample WR 2014-01 was received on October 2, 2014.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1410054001

Project: Dugout Canyon Mine
Date Received: 10/2/2014

Date Reported: 11/25/2014
Work Order: S1410054

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Field Capacity	Wilt Point	PE Calcium	PE Magnesium	PE Potassium	PE Sodium	SAR
		s.u.	%	dS/m	%	%	meq/L	meq/L	meq/L	meq/L	
S1410054-001	WR 2014-01	8.5	28.0	1.02	15.4	6.4	0.85	0.70	0.16	8.32	9.47

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1410054001

Project: Dugout Canyon Mine
Date Received: 10/2/2014

Date Reported: 11/25/2014
Work Order: S1410054

Lab ID	Sample ID	Sand %	Silt %	Clay %	Texture	Boron ppm	Nitrate(as N) ppm	Available Phosphorus ppm	Selenium ppm	TKN %
S1410054-001	WR 2014-01	60.0	25.0	15.0	Sandy Loam	1.02	0.1	4.1	<0.02	0.22

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

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Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1410054001

Project: Dugout Canyon Mine
Date Received: 10/2/2014

Date Reported: 11/25/2014
Work Order: S1410054

Lab ID	Sample ID	Available Sodium meq/100g	Exchangeable Sodium meq/100g	Total Carbon %	TOC %
S1410054-001	WR 2014-01	1.39	1.15	16.4	13.1

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1410054001

Project: Dugout Canyon Mine
Date Received: 10/2/2014

Date Reported: 11/25/2014
Work Order: S1410054

Lab ID	Sample ID	Total Sulfur %	T.S. AB t/1000t	Neutral. Potential t/1000t	T.S. ABP t/1000t	Sulfate Sulfur %	Pyritic Sulfur %	Organic Sulfur %	PyriticS AB t/1000t	PyriticS ABP t/1000t
S1410054-001	WR 2014-01	0.26	8.10	275	267	0.02	0.11	0.13	3.35	272

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.
CHAIN OF CUSTODY
DUGOUT CANYON MINE

S1410054-001

Sample Identification	WR 2014-01											
Sample Date	09/29/14											
Number of Samples	1											
Type of Soil	**WR**											
Laboratory Analyses												
Table 6, Topsoil & Overburden Parameters	X											
AND												
Texture	X											
pH	X											
Electrical Conductivity	X											
Total Carbon	X											
SAR	X											
Water Holding Capacity	X											
Plant Available Nitrogen	X											
Phosphorus	X											
Pyritic sulfur	X											
T.S. ABP	X											

WR (Waste Rock), SS (Sub-Soil), TS (Topsoil)

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Bill King	9/29/2014	9:40 AM	Karen A Secor	10/2/14	

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Your Environmental Monitoring Partner

Date: 12/31/2014

CLIENT: Canyon Fuel Company
Project: Dugout Canyon Mine
Lab Order: S1411140

CASE NARRATIVE

Report ID: S1411140001

Sample WR 2014-01 was received on November 7, 2014.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1411140001

Project: Dugout Canyon Mine
Date Received: 11/7/2014

Date Reported: 12/31/2014
Work Order: S1411140

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Field Capacity	Wilt Point	PE Calcium	PE Magnesium	PE Potassium	PE Sodium	SAR
		s.u.	%	dS/m	%	%	meq/L	meq/L	meq/L	meq/L	
S1411140-001	WR 2014-01	8.7	32.0	1.03	14.6	5.7	0.23	0.16	0.10	9.18	20.9

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1411140001

Project: Dugout Canyon Mine
Date Received: 11/7/2014

Date Reported: 12/31/2014
Work Order: S1411140

Lab ID	Sample ID	Sand %	Silt %	Clay %	Texture	Boron ppm	Nitrate(as N) ppm	Available Phosphorus ppm	Selenium ppm	TKN %
S1411140-001	WR 2014-01	47.0	25.0	28.0	Sandy Clay Loam	1.38	0.2	1.0	0.04	0.24

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

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Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1411140001

Project: Dugout Canyon Mine
Date Received: 11/7/2014

Date Reported: 12/31/2014
Work Order: S1411140

Lab ID	Sample ID	Available Sodium meq/100g	Exchangeable Sodium meq/100g	Total Carbon %	TOC %
S1411140-001	WR 2014-01	2.44	2.15	9.7	5.6

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1411140001

Project: Dugout Canyon Mine
Date Received: 11/7/2014

Date Reported: 12/31/2014
Work Order: S1411140

Lab ID	Sample ID	Total Sulfur %	T.S. AB t/1000t	Neutral. Potential t/1000t	T.S. ABP t/1000t	Sulfate Sulfur %	Pyritic Sulfur %	Organic Sulfur %	PyriticS AB t/1000t	PyriticS ABP t/1000t
S1411140-001	WR 2014-01	0.09	2.86	344	341	<0.01	0.04	0.05	1.11	343

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
en Secor, Soil Lab Supervisor

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CHAIN OF CUSTODY
DUGOUT CANYON MINE

S1411140-001

Sample Identification	WR 2014-01											
Sample Date	11/04/14											
Number of Samples	1											
Type of Soil	WR											
Laboratory Analyses												
Table 6, Topsoil & Overburden Parameters	X											
AND												
Texture	X											
pH	X											
Electrical Conductivity	X											
Total Carbon	X											
SAR	X											
Water Holding Capacity	X											
Plant Available Nitrogen	X											
Phosphorus	X											
Pyritic sulfur	X											
T.S. ABP	X											

WR (Waste Rock), SS (Sub-Soil), TS (Topsoil)

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Bill King	11/4/2014	2:39 PM	Kate Alecn	11/7/14	

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Your Environmental Monitoring Partner

Date: 12/31/2014

CLIENT: Canyon Fuel Company
Project: Dugout Canyon Mine
Lab Order: S1411403

CASE NARRATIVE

Report ID: S1411403001

Sample WR 2014-01 was received on November 25, 2014.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1411403001

Project: Dugout Canyon Mine
Date Received: 11/25/2014

Date Reported: 12/31/2014
Work Order: S1411403

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Field Capacity	Wilt Point	PE Calcium	PE Magnesium	PE Potassium	PE Sodium	SAR
		s.u.	%	dS/m	%	%	meq/L	meq/L	meq/L	meq/L	
S1411403-001	WR 2014-01	8.6	36.5	1.10	21.6	5.1	0.47	0.49	0.10	10.4	15.0
S1411403-002	WR 2014-01	8.4	32.9	0.94	20.2	4.4	0.69	0.76	0.14	7.54	8.84

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1411403001

Project: Dugout Canyon Mine
Date Received: 11/25/2014

Date Reported: 12/31/2014
Work Order: S1411403

Lab ID	Sample ID	Sand %	Silt %	Clay %	Texture	Boron ppm	Nitrate(as N) ppm	Available Phosphorus ppm	Selenium ppm	TKN %
S1411403-001	WR 2014-01	77.0	15.0	8.0	Sandy Loam	1.07	0.3	3.5	<0.02	0.27
S1411403-002	WR 2014-01	72.0	20.0	8.0	Sandy Loam	1.34	0.3	4.0	<0.02	0.18

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1411403001

Project: Dugout Canyon Mine
Date Received: 11/25/2014

Date Reported: 12/31/2014
Work Order: S1411403

Lab ID	Sample ID	Available Sodium meq/100g	Exchangeable Sodium meq/100g	Total Carbon %	TOC %
S1411403-001	WR 2014-01	2.35	1.97	21.8	17.6
S1411403-002	WR 2014-01	1.08	0.83	17.5	12.2

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1411403001

Project: Dugout Canyon Mine
Date Received: 11/25/2014

Date Reported: 12/31/2014
Work Order: S1411403

Lab ID	Sample ID	Total Sulfur %	T.S. AB t/1000t	Neutral. Potential t/1000t	T.S. ABP t/1000t	Sulfate Sulfur %	Pyritic Sulfur %	Organic Sulfur %	PyriticS AB t/1000t	PyriticS ABP t/1000t
S1411403-001	WR 2014-01	0.17	5.36	345	339	<0.01	0.05	0.12	1.56	343
S1411403-002	WR 2014-01	0.09	2.80	442	439	<0.01	0.03	0.05	1.07	441

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
ɜn Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.
CHAIN OF CUSTODY
DUGOUT CANYON MINE

51411403-001

Sample Identification	WR 2014-01											
Sample Date	11/04/14											
Number of Samples	1											
Type of Soil	WR											
Laboratory Analyses												
Table 6. Topsoil & Overburden Parameters	X											
AND												
Texture	X											
pH	X											
Electrical Conductivity	X											
Total Carbon	X											
SAR	X											
Water Holding Capacity	X											
Plant Available Nitrogen	X											
Phosphorus	X											
Pyritic sulfur	X											
T.S. ABP	X											

WR (Waste Rock), SS (Sub-Soil), TS (Topsoil)

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Bill King	11/21/2014	12:16 PM	Kane A Secor	11/25/14	

Inter-Mountain Laboratories, Inc.
CHAIN OF CUSTODY
DUGOUT CANYON MINE

S14 11403-002

Sample Identification	WR 2014-01											
Sample Date	11/21/14											
Number of Samples	1											
Type of Soil	WR											
Laboratory Analyses												
Table 6. Topsoil & Overburden Parameters	X											
AND												
Texture	X											
pH	X											
Electrical Conductivity	X											
Total Carbon	X											
SAR	X											
Water Holding Capacity	X											
Plant Available Nitrogen	X											
Phosphorus	X											
Pyritic sulfur	X											
T.S. ABP	X											

WR (Waste Rock), SS (Sub-Soil), TS (Topsoil)

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Bill King	11/21/2014	12:16 PM	Kare Sean	11/25/14	

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Date: 1/7/2015

CLIENT: Canyon Fuel Company
Project: Dugout Canyon Mine
Lab Order: S1412104

CASE NARRATIVE

Report ID: S1412104001

Sample WR 2014-01 was received on December 5, 2014.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1412104001

Project: Dugout Canyon Mine
Date Received: 12/5/2014

Date Reported: 1/7/2015
Work Order: S1412104

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Field Capacity	Wilt Point	PE Calcium	PE Magnesium	PE Potassium	PE Sodium	SAR
		s.u.	%	dS/m	%	%	meq/L	meq/L	meq/L	meq/L	
S1412104-001	WR 2014-01	8.0	28.5	1.89	16.5	9.7	2.47	1.54	0.20	13.6	9.63

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
n Secor, Soil Lab Supervisor

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1412104001

Project: Dugout Canyon Mine
Date Received: 12/5/2014

Date Reported: 1/7/2015
Work Order: S1412104

Lab ID	Sample ID	Sand %	Silt %	Clay %	Texture	Boron ppm	Nitrate(as N) ppm	Available Phosphorus ppm	Selenium ppm	TKN %
S1412104-001	WR 2014-01	44.0	30.0	26.0	Loam	2.31	0.5	2.1	0.08	0.16

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

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Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1412104001

Date Reported: 1/7/2015

Work Order: S1412104

Project: Dugout Canyon Mine

Date Received: 12/5/2014

Lab ID	Sample ID	Available Sodium meq/100g	Exchangeable Sodium meq/100g	Total Carbon %	TOC %
S1412104-001	WR 2014-01	2.32	1.93	13.8	8.2

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor

n Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1412104001

Project: Dugout Canyon Mine
Date Received: 12/5/2014

Date Reported: 1/7/2015
Work Order: S1412104

Lab ID	Sample ID	Total Sulfur %	T.S. AB t/1000t	Neutral. Potential t/1000t	T.S. ABP t/1000t	Sulfate Sulfur %	Pyritic Sulfur %	Organic Sulfur %	PyriticS AB t/1000t	PyriticS ABP t/1000t
S1412104-001	WR 2014-01	0.25	7.76	465	458	<0.01	0.14	0.11	4.34	461

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.
CHAIN OF CUSTODY
DUGOUT CANYON MINE

S1412104- 001

Sample Identification	WR 2014-01											
Sample Date	12/03/14											
Number of Samples	1											
Type of Soil	WR											
Laboratory Analyses												
Table 6. Topsoil & Overburden Parameters	X											
AND												
Texture	X											
pH	X											
Electrical Conductivity	X											
Total Carbon	X											
SAR	X											
Water Holding Capacity	X											
Plant Available Nitrogen	X											
Phosphorus	X											
Pyritic sulfur	X											
T.S. ABP	X											

WR (Waste Rock), SS (Sub-Soil), TS (Topsoil)

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Bill King	12/3/2014	2:04 PM	Karen Alecon	12/5/14	

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Date: 3/31/2015

CLIENT: Canyon Fuel Company
Project: Dugout Canyon Mine
Lab Order: S1503054

CASE NARRATIVE

Report ID: S1503054001

Sample WR 2015-01 was received on March 5, 2015.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1503054001

Project: Dugout Canyon Mine
Date Received: 3/5/2015

Date Reported: 3/31/2015
Work Order: S1503054

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Field Capacity	Wilt Point	PE Calcium	PE Magnesium	PE Potassium	PE Sodium	SAR
		s.u.	%	dS/m	%	%	meq/L	meq/L	meq/L	meq/L	
S1503054-001	WR 2015-01	7.4	29.6	2.68	19.3	5.6	23.4	21.4	0.95	6.19	1.31

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1503054001

Project: Dugout Canyon Mine
Date Received: 3/5/2015

Date Reported: 3/31/2015
Work Order: S1503054

Lab ID	Sample ID	Sand %	Silt %	Clay %	Texture	Boron ppm	Available Phosphorus ppm	Selenium ppm	Nitrate(as N) ppm	TKN %
S1503054-001	WR 2015-01	68.0	21.0	11.0	Sandy Loam	0.61	12.2	<0.02	0.4	0.14

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1503054001

Project: Dugout Canyon Mine
Date Received: 3/5/2015

Date Reported: 3/31/2015
Work Order: S1503054

Lab ID	Sample ID	Available Sodium meq/100g	Exchangeable Sodium meq/100g	Total Carbon %	TOC %
S1503054-001	WR 2015-01	0.32	0.14	11.0	9.4

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
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Soil Analysis Report

Canyon Fuel Company

Dugout Canyon Mine
P.O. Box 1029
Wellington, UT 84542

Report ID: S1503054001

Project: Dugout Canyon Mine
Date Received: 3/5/2015

Date Reported: 3/31/2015
Work Order: S1503054

Lab ID	Sample ID	Total Sulfur %	T.S. AB t/1000t	Neutral. Potential t/1000t	T.S. ABP t/1000t	Sulfate Sulfur %	Pyritic Sulfur %	Organic Sulfur %	PyriticS AB t/1000t	PyriticS ABP t/1000t
S1503054-001	WR 2015-01	1.62	50.6	130	79.3	0.16	1.24	0.23	38.6	91.4

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Laboratories, Inc.
CHAIN OF CUSTODY
DUGOUT CANYON MINE

S1503054-001

Sample Identification	WR 2015-01											
Sample Date	03/03/15											
Number of Samples	1											
Type of Soil	WR											
Laboratory Analyses												
Table 6, Topsoil & Overburden Parameters	X											
AND												
Texture	X											
pH	X											
Electrical Conductivity	X											
Total Carbon	X											
SAR	X											
Water Holding Capacity	X											
Plant Available Nitrogen	X											
Phosphorus	X											
Pyritic sulfur	X											
T.S. ABP	X											

WR (Waste Rock), SS (Sub-Soil), TS (Topsoil)

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
Bill King	3/3/2015	12:42 PM	Karen Allen	3/5/15	

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, Chapter 7, Table 7-3

RA TABLE 7-3
DIVERSION DESIGN SUMMARY

I.D. No.	Min. Bottom Width (ft)	Min. Channel Depth (ft)	Left Side Slope (xH:1V)	Right Side Slope (xH:1V)	Max. Flow Depth (ft)	Min. Slope (%)	Max. Slope (%)	Peak Flow (cfs)[a]	Req. Riprap D_{50} (ft)	Minimum Freeboard (ft)
OPERATIONAL DIVERSIONS										
DD-1	4.0	1.5	2.0	2.0	0.96	0.6	12.9	12.82	0.5*	0.54
DD-2a	15.0	1.0	2.0	2.0	0.22	1.9	10.0	8.02	None	0.78
DD-2b	4.0	1.0	2.0	2.0	0.41	5.0	13.5	8.02	0.5	0.59
DD-3a	15.0	1.0	2.0	2.0	0.37	1.3	3.5	16.03	None	0.63
DD-3b	2.0	1.5	2.0	2.0	1.03	1.3	9.0	16.03	0.5	0.47
UD-1a	1.0	1.0	2.0	2.0	0.27	2.0	15.0	0.71	None	0.73
UD-1b	2.0	1.5	2.0	2.0	0.87	0.3	2.8	4.74	None	0.63
UD-1c	2.0	1.0	2.0	2.0	0.5	4.4	23.3	4.74	0.5	0.5
RECLAMATION CHANNELS										
RD-1a	1.0	1.0	2.0	2.0	0.35	2.0	15.0	5.41	None	0.65
RD-1b	3.0	1.5	2.0	2.0	0.83	0.3	4.6	5.41	None	0.67
RD-1c	2.0	1.0	2.0	2.0	0.59	4.4	23.3	6.36	0.5	0.41
RD-2	1.0	1.0	2.0	2.0	~~0.37~~ 0.20	1.0	14.3	~~0.71~~ 0.46	None	~~0.63~~ 0.80
RD-3	2.0	1.0	2.0	2.0	~~0.14~~ 0.10	8.0	30.5	~~0.9~~ 0.73	None	~~0.86~~ 0.90
RD-4	1.0	1.0	2.0	2.0	~~0.19~~ 0.15	2.8	6.1	~~0.41~~ 0.37	None	~~0.81~~ 0.85
RD-5	3.0	1.0	2.0	2.0	0.56	1.7	2.4	6.87	None	0.44
Swale 1	3.0	1.0	4.0	4.0	0.44	NA	NA	6.36	None	0.56

(a) Peak discharge resulting from the 100-year, 6-hour precipitation event.

* 6" only on slopes exceeding 4%.

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, Chapter 7, RA Attachment 7-4 pg. 9-10, 17-19, 47-52

RA ATTACHMENT 7-4

HYDROLOGY CALCULATIONS

REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD B. WHITE
29 Apr 2015
STATE OF UTAH

RD-1c

Contributing Watershed is RWS-1

Peak Flow= 6.55 cfs
Minimum Slope= 4.4%
Maximum Slope= 23.3%

Trapezoidal Ditch
Side slopes= 2: 1
Depth = 1 .25 ft
Bottom Width= 2.0 ft
Riprap = 6 inch

Maximum Velocity= 6.97 fps
Maximum Depth = 0.61 ft
Freeboard = 0.64 ft

See pages 45 and 46 for calculation sheets and page 67 for a typical cross-section of the ditch

RD-2

Contributing Watershed is RWS-2

Peak Flow= ~~0.59~~ 0.46cfs
Minimum Slope = 1. 77%
Maximum Slope= 17.24%

Trapezoidal Ditch
Side slopes = 2: 1
Depth = 1.0 ft
Bottom Width = I ft
Riprap = none

Maximum Velocity= ~~4.07~~ 3.50 fps
Maximum Depth= ~~0.27~~ 0.20 ft
Freeboard = ~~0.73~~ 0.80ft

See pages 4 7 and 48 for calculation sheets and page 68 for a typical cross-section of the ditch

RD-3

Contributing Watershed is RWS-3

Peak Flow= ~~1.47~~ 0.73cfs
Minimum Slope = 15.38%
Maximum Slope = 31 .80%

Trapezoidal Ditch
Side slopes= 2: I
Depth = 1. 0 ft
Bottom Width= 2.0 ft
Riprap = ~~3"~~ None

Maximum Velocity = ~~4.79~~ 4.20fps
Maximum Depth= ~~0.17~~ 0.10ft
Freeboard = ~~0.83~~ 0.90 -ft

See pages 49 and 50 for calculation sheets and page 69 for a typical cross-section of the ditch

RD-4

Contributing Watershed is RWS-4

Peak Flow = ~~0.50~~ 0.37 cfs
Minimum Slope= 3.25%
Maximum Slope = 11.44%

Trapezoidal Ditch
Side slopes = 2: 1
Depth = 1. 0 ft
Bottom Width= 1.0 ft
Riprap = none

Maximum Velocity = ~~3.36~~ 2.84fps
Maximum Depth= ~~0.21~~ 0.15 ft
Freeboard = ~~0.79~~ 0.85 ft

See pages 51 and 52 for calculation sheets and page 70 for a typical cross-section of the ditch

Triangular Hydrograph Calculations using

SCSHYDRO Program

Watershed I.D.:
RWS-2 100-YEAR 6-HOUR

Replace with HydroCAD PDF

INPUT SUMMARY

STORM :	WATERSHED :
Dist.= SCS Type 'b'	Area = 1.00 acres
Depth = 2.05 inches	CN = 80.00
Duration = 6.0 hrs	Time conc.= 0.04 hrs

OUTPUT SUMMARY

Runoff depth: 0.593 inches
Initial abstr: 0.500 inches
Peak flow: 0.59 cfs (0.581 iph)
at time: 2.507 hrs

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Triangular Hydrograph Calculations using

SCSHYDRO Program

Watershed I.D.:
RWS-3 100-YEAR 6-HOUR

Replace with HydroCAD PDF

INPUT SUMMARY

STORM :	WATERSHED :
Dist.= SCS Type `b'	Area = 2.60 acres
Depth = 2.05 inches	CN = 80.00
Duration = 6.0 hrs	Time conc.= 0.07 hrs

OUTPUT SUMMARY

Runoff depth: 0.593 inches
Initial abstr: 0.500 inches
Peak flow: 1.47 cfs (0.562 iph)
at time: 2.511 hrs

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Triangular Hydrograph Calculations using

SCSHYDRO Program

Watershed I.D.:
RWS-4 100-YEAR 6-HOUR

INPUT SUMMARY

STORM :	WATERSHED :
Dist.= SCS Type `b'	Area = 0.87 acres
Depth = 2.05 inches	CN = 80.00
Duration = 6.0 hrs	Time conc.= 0.05 hrs

OUTPUT SUMMARY

Runoff depth: 0.593 inches
Initial abstr: 0.500 inches
Peak flow: 0.50 cfs (0.574 iph)
at time: 2.509 hrs

Replace with HydroCAD PDF

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RD-2 Minimum Slope
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Refuse Pile Rec
Flow Element	Trapezoidal Cha
Method	Manning's Form
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.035	Rocky ground
Slope	017700	ft/ft
Left Side Slope	2.00	V : H
Right Side Slope	2.00	V : H
Bottom Width	1.00	ft
Discharge	0.59	cfs

Results		
Depth	0.27	ft < 1.0' ∴ ok
Flow Area	0.3	ft²
Wetted Perim	1.61	ft
Top Width	1.27	ft
Critical Depth	0.21	ft
Critical Slope	0.040045	ft/ft
Velocity	1.89	ft/s
Velocity Head	0.06	ft
Specific Energ	0.33	ft
Froude Numb	0.67	
Flow Type	Subcritical	

Replace with HydroCAD PDF

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RD-2 Maximum Slope
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Refuse Pile Rec
Flow Element	Trapezoidal Cha
Method	Manning's Form
Solve For	Channel Depth

Input Data		
Mannings Coeffi	0.035	Rocky ground
Slope	172400	ft/ft
Left Side Slope	2.00	V : H
Right Side Slope	2.00	V : H
Bottom Width	1.00	ft
Discharge	0.59	cfs

Results		
Depth	0.14	ft
Flow Area	0.1	ft²
Wetted Perim	1.30	ft
Top Width	1.14	ft
Critical Depth	0.21	ft
Critical Slope	0.040044	ft/ft
Velocity	4.07	ft/s < 5.0 fps ∴ ok
Velocity Head	0.26	ft
Specific Energ	0.39	ft
Froude Numb	2.01	
Flow Type	Supercritical	

Replace with HydroCAD PDF

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RD-3 Minimum Slope
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Refuse Pile Rec
Flow Element	Trapezoidal Cha
Method	Manning's Form
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.040	D_{50} = 3" slope = 15.38
Slope	153800	ft/ft
Left Side Slope	2.00	V : H
Right Side Slope	2.00	V : H
Bottom Width	2.00	ft
Discharge	1.47	cfs

Results		
Depth	0.17	ft < 1.0' ∴ ok
Flow Area	0.4	ft²
Wetted Perim	2.38	ft
Top Width	2.17	ft
Critical Depth	0.25	ft
Critical Slope	0.045437	ft/ft
Velocity	4.09	ft/s
Velocity Head	0.26	ft
Specific Energ	0.43	ft
Froude Numb	1.77	
Flow Type	Supercritical	

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RD-3 Maximum Slope
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Refuse Pile Rec
Flow Element	Trapezoidal Cha
Method	Manning's Form
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.045	n_{50} = 3"
Slope	316000	ft/ft
Left Side Slope	2.00	V : H
Right Side Slope	2.00	V : H
Bottom Width	2.00	ft
Discharge	1.47	cfs

slope = 31.8 %

Results		
Depth	0.15	ft
Flow Area	0.3	ft²
Wetted Perim	2.33	ft
Top Width	2.15	ft
Critical Depth	0.25	ft
Critical Slope	0.057411	ft/ft
Velocity	4.79	ft/s
Velocity Head	0.36	ft
Specific Energ	0.50	ft
Froude Numb	2.23	
Flow Type	Supercritical	

< 5.0 fps ∴ ok

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mad 1-06

RD-4 Minimum Slope
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Refuse Pile Rec
Flow Element	Trapezoidal Cha
Method	Manning's Form
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.035	Rocky Ground
Slope	032500	ft/ft
Left Side Slope	2.00	V : H
Right Side Slope	2.00	V : H
Bottom Width	1.00	ft
Discharge	0.50	cfs

Results		
Depth	0.21	ft < 1.0' ∴ ok
Flow Area	0.2	ft²
Wetted Perim	1.46	ft
Top Width	1.21	ft
Critical Depth	0.19	ft
Critical Slope	0.040547	ft/ft
Velocity	2.21	ft/s
Velocity Head	0.08	ft
Specific Energ	0.28	ft
Froude Numb	0.90	
Flow Type	Subcritical	

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mad 1-06

RD-4 Maximum Slope
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Refuse Pile Rec
Flow Element	Trapezoidal Cha
Method	Manning's Form
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.035	Rocky Ground
Slope	114400	ft/ft
Left Side Slope	2.00	V : H
Right Side Slope	2.00	V : H
Bottom Width	1.00	ft
Discharge	0.50	cfs

Results		
Depth	0.14	ft
Flow Area	0.1	ft²
Wetted Perim	1.31	ft
Top Width	1.14	ft
Critical Depth	0.19	ft
Critical Slope	0.040546	ft/ft
Velocity	3.36	ft/s < 5.0 fps ∴ ok
Velocity Head	0.18	ft
Specific Energ	0.31	ft
Froude Numb	1.64	
Flow Type	Supercritical	

Replace with HydroCAD PDF

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Summary for Subcatchment RWS2:

Runoff = 0.46 cfs @ 2.47 hrs, Volume= 0.046 af, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-12.00 hrs, dt= 0.05 hrs
Type B 6-hr Rainfall=2.05"

	Area (ac)	CN	Description
*	0.930	80	
	0.930		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	210	0.3100	2.14		**Lag/CN Method,**

Summary for Subcatchment RWS3:

Runoff = 0.73 cfs @ 2.53 hrs, Volume= 0.074 af, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-12.00 hrs, dt= 0.05 hrs
Type B 6-hr Rainfall=2.05"

	Area (ac)	CN	Description
*	1.500	80	
	1.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	560	0.1600	1.87		**Lag/CN Method,**

Summary for Subcatchment RWS4:

Runoff = 0.37 cfs @ 2.47 hrs, Volume= 0.037 af, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-12.00 hrs, dt= 0.05 hrs
Type B 6-hr Rainfall=2.05"

	Area (ac)	CN	Description
*	0.750	80	
	0.750		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	200	0.3000	2.08		**Lag/CN Method,**

RD-2 Minimum Slope
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Dugout Refuse Pile RD-2 Minir
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.035	
Slope	017700	ft/ft
Left Side Slope	0.50	V : H
Right Side Slope	0.50	V : H
Bottom Width	1.00	ft
Discharge	0.46	cfs

Results		
Depth	0.20	ft
Flow Area	0.3	ft²
Wetted Perim	1.91	ft
Top Width	1.82	ft
Critical Depth	0.17	ft
Critical Slope	0.037161	ft/ft
Velocity	1.60	ft/s
Velocity Head	0.04	ft
Specific Energ	0.24	ft
Froude Numb	0.71	
Flow Type	Subcritical	

RD-2 Maximum Slope
Worksheet for Trapezoidal Channel

Revised 4/28/15
PG 48

Project Description	
Worksheet	Dugout Refuse Pile RD-2 Maxi
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.035	
Slope	172400	ft/ft
Left Side Slope	0.50	V : H
Right Side Slope	0.50	V : H
Bottom Width	1.00	ft
Discharge	0.46	cfs

Results		
Depth	0.11	ft
Flow Area	0.1	ft²
Wetted Perim	1.48	ft
Top Width	1.43	ft
Critical Depth	0.17	ft
Critical Slope	0.037161	ft/ft
Velocity	3.50	ft/s
Velocity Head	0.19	ft
Specific Energ	0.30	ft
Froude Numb	2.04	
Flow Type	Supercritical	

RD-3 Minimum Slope
Worksheet for Trapezoidal Channel

Revised 4/28/15
PG 49

Project Description	
Worksheet	Dugout Refuse Pile RD-3 Minir
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.035	
Slope	153800	ft/ft
Left Side Slope	0.50	V : H
Right Side Slope	0.50	V : H
Bottom Width	2.00	ft
Discharge	0.73	cfs

Results		
Depth	0.10	ft
Flow Area	0.2	ft²
Wetted Perim(	2.45	ft
Top Width	2.40	ft
Critical Depth	0.15	ft
Critical Slope	0.036126	ft/ft
Velocity	3.33	ft/s
Velocity Head	0.17	ft
Specific Energ	0.27	ft
Froude Numb(	1.94	
Flow Type	Supercritical	

RD-3 Maximum Slope
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Dugout Refuse Pile RD-3 Maxi
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.035	
Slope	318000	ft/ft
Left Side Slope	0.50	V : H
Right Side Slope	0.50	V : H
Bottom Width	2.00	ft
Discharge	0.73	cfs

Results		
Depth	0.08	ft
Flow Area	0.2	ft²
Wetted Perim	2.36	ft
Top Width	2.32	ft
Critical Depth	0.15	ft
Critical Slope	0.036126	ft/ft
Velocity	4.20	ft/s
Velocity Head	0.27	ft
Specific Energ	0.36	ft
Froude Numb	2.71	
Flow Type	Supercritical	

RD-4 Minimum Slope
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Dugout Refuse Pile RD-4 Mini
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.035	
Slope	032500	ft/ft
Left Side Slope	0.50	V : H
Right Side Slope	0.50	V : H
Bottom Width	1.00	ft
Discharge	0.37	cfs

Results		
Depth	0.15	ft
Flow Area	0.2	ft²
Wetted Perim	1.69	ft
Top Width	1.61	ft
Critical Depth	0.15	ft
Critical Slope	0.038390	ft/ft
Velocity	1.85	ft/s
Velocity Head	0.05	ft
Specific Energ	0.21	ft
Froude Numb	0.93	
Flow Type	Subcritical	

RD-4 Maximum Slope
Worksheet for Trapezoidal Channel

Project Description	
Worksheet	Dugout Refuse Pile RD-4 Maxi
Flow Element	Trapezoidal Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.035	
Slope	114400	ft/ft
Left Side Slope	0.50	V : H
Right Side Slope	0.50	V : H
Bottom Width	1.00	ft
Discharge	0.37	cfs

Results		
Depth	0.11	ft
Flow Area	0.1	ft²
Wetted Perim	1.48	ft
Top Width	1.43	ft
Critical Depth	0.15	ft
Critical Slope	0.038391	ft/ft
Velocity	2.84	ft/s
Velocity Head	0.13	ft
Specific Energ	0.23	ft
Froude Numb	1.66	
Flow Type	Supercritical	

Dugout Canyon Mine
Waste Rock Application for Reference Only

Dugout, Refuse Pile Amendment, Chapter 8, RA Attachment 8-1, Refuse Pile Bond Calculation

RA ATTACHMENT 8-1

REFUSE PILE BOND CALCULATIONS

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Direct Costs		
Subtotal Demolition and Removal	$644,994	
Subtotal Backfilling and Grading	$628,346	
Subtotal Revegetation	$197,099	
Subtotal Direct Costs	$1,470,438	
Indirect Costs		
Mobilization/Demobilization	$147,044	10.00%
Contingencies	$73,522	5.00%
Engineering Redesign	$36,761	2.50%
Main Office Expense	$99,990	6.80%
Project Management Fee	$36,761	2.50%
Subtotal Indirect Costs	$394,077	
Total Costs	$1,864,515	
Inflation Factor		0.025226
Years		5
Inflation	$235,176	
Reclamation Cost Inflated	$2,099,691	
Bond Amount (rounded to nearest $1,000)	$2,100,000	

Inflation Factor = ENR Construction Cost Index (CCI) for Current Year / ENR CCI for mo/yr 5 years prior to Current Year

Current Year Sept. 2002	6589	=	1.126132
Prior Sept. 1997	5851		12.61%

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Materials	Reference Number	Cost	Unit
Excavate Broken Concrete 3 CY (325BL)	02315 400 0300	2.01	/CY
Front-End Loader 5 CY (966G)	02315 400 1650	1.30	/CY
12 CY Truck, 1/2 mile Round Trip	02320 200 0320	3.09	/CY
On Site Disposal	02220 375 5550	6.80	/CY
Asphalt	02220 375 1750	6.20	/SY
Distance Disposal >5 miles	0220 375 5600	9.38	/CY
Steel Building	02220 100 0012	0.24	/CF
City Service	City Service Price	4.00	/CY
Haul, per mile over 8 CY Truck	02225 730 5100	17.20	/CY
16 Ton Truck	01590 200 5300	517.66	/Day
Truck Driver		38.10	/HR
Masonry Building	02220 100 0080	0.20	/CF
1 CY Skid Loader	02315 440 3020	10.92	/CY
Excavator, Diesel Hydraulic, 3-1/2 CY Operating Rate	Blue Book	53.15	/HR
Excavator, Diesel Hydraulic, 3-1/2 CY Rental Rate	Blue Book	15,130.00	/Month
Concrete Pump	03310 700 5350	19.75	/CY
Excavator, Diesel Hydraulic, 2 CY (325B)	02315 400 260	1.71	/CY
Backfill trench, 2-1/4 CY Bucket	02315 900 3080	1.55	/CY
Machine Placed for Slope Protection	02370 300 0100	27.45	/CY
Polypropylene Mesh, Stapled, 6.5 oz./SY	02370 300 0200	1.45	/SY
Drill and Blast Open Face >1500 Cy	02315 340 0010	8.29	/CY
D9R U-Blade ROPS Operating Rate	Blue Book	70.00	/HR
D9R U-Blade ROPS Rental Rate	Blue Book	17,590.00	/Month
815 F Compactor Operating Rate	Blue Book	31.85	/HR
815 F Compactor Rental Rate	Blue Book	9,064.00	/Month
613C Water Wagon Operating Rate	Blue Book	25.70	/HR
613 C Water Wagon Rental Rate	Blue Book	5,010.00	/Month
Truck Pickup 3/4 ton, 4 Wheel drive Operating Rate	Blue Book	7.40	/HR
Truck Pickup 3/4 ton, 4 Wheel drive Rental Rate	Blue Book	785.00	/Month
Foreman		39.60	/HR
Labor		36.50	/HR
Heavy Equipment Operator		47.15	/HR
Front-End Loader 5 CY (966G) Operating Rate	Blue Book	29.05	/HR
Front-End Loader 5 CY (966G) Rental Rate	Blue Book	7,085.00	/Month
12 CY Truck	01590 200 5250	19.90	/HR
Excavator, Diesel Hydraulic, 2 CY (325B)	01590 200 0300	33.90	/HR
Hydro seeding, seed, fertilizer, wood mulch	02920 500 1100	0.47	/SY
State Nursery		1.00	/Plant
Shrubs	02930 410 0200	6.05	/Plant
Storm Drainage	02630 100 2240	31.50	/FT
Water Line	02220 875 3200	4.96	/FT
Sewer Line	02220 875 3200	9.88	/FT
Backhoe-Loader	01590 200 0460	9.20	/HR
12-18 CY Truck Operating Rate	Blue Book	25.05	/HR
12-18 CY Truck Rental Rate	Blue Book	3,580.00	
Silt Fence	02370 550 1100	0.93	/LF
Chicken Wire	02820 500 0010	6.56	/LF
Crew B 13	Means Crew B 13	374.41	/HR
6000 gal to 8000 gal tank	02115 200 0310	225.00	/EA
Mixed Material Building, Large	02220 100 0100	0.26	/CF
Pipe Removal 12 inch	02220 875 2900	6.50	/LF
Excavating 2-1/2 CY hydraulic backhoe	02315 900 0620	2.58	/CY
ECDC	ECDC	35.00	/TON
Seal Portals	AML1	5,200.00	/EA
Fencing, barbed wire, 3 strand	0200 875 0600	1.36	/LF

Note:
Resources used were:
R. S. Means Building Construction Cost Data 60th Edition

Concrete Breakage

Concrete Demolition — 13.56 per cu. yd.

Powerline

1/3 the cost of a new line $1,550 plus $705 for labor and equipment divided by 5,280 feet. Personal communication with Means — 0.23 /FT

Powerpoles

1/3 the cost of a new pole $226 plus $51 for labor and equipment Personal communication with Means. — 126 /Pole

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Ref.	Description	Cost
1	Mine Belt BC-1	18,333
2	Transfer Building	34,105
3	Feed Belt BC-2	12,941
4	Stack Tube (2)	4,436
5	Head House #1	6,233
6	Transfer Belt BC-3	8,254
7	Head House #2	1,567
8	Reclaim Tunnel	39,378
9	Reclaim Belt BC-4	11,599
10	60" Escape Tunnel	909
11	Crusher Building	30,113
12	Truck Loadout Belt BC-5	9,569
13	Truck Loadout and Scale	25,024
14	Bathhouse	126,051
15	Substation	1,920
16	Power Lines and Poles	2,884
17	Retaining Wall	844
18	Gabion Wall	55,822
19	Pump House	3,074
20	Paved Roads	53,439
21	Stream Culverts	45,702
22	Water Tank (2)	3,430
23	Rock Dust Bin	1,117
24	Fueling Station	1,610
25	Holding Tank (Sewer)	315
26	Ventilation Fan	2,146
27	Magnet	578
28	Water System	65,266
29	Sewage System	21,873
30	Trailers	6,112
31	Containers	9,160
32	Gilson Well	1,768
33	Shop Building	5,032
34	Switch Houses	1,128
35	Sampling System	1,472
36	Storage Building	1,950
37	Stoker Storage Bin	990
38	Substation No 2	2,849
39	Seal Portals	26,000
	Total	644,994

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Ref.	Description	Cost
40	Cut and Fill Mine Site	311,921
41	Topsoil Placement	143,686
42	Stream Channel	108,250
43	Gabion Baskets	447
44	Refuse Site	64,042
	Total	628,346

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Ref 44	Description	Materials	Means Reference Number	Unit Cost	Unit	Hourly Operating Costs	Hourly Equipment Costs	Operator's Hourly Wage Rate	Hourly Cost	Number or Men or Eq.	Total Eq. & Lab. Costs	Units	Quantity	Units	Production Rate	Unit	Equip. + Labor Time/Dis.	Unit		Cost
Refuse Site																				
	Structure Demolition Cost	Fencing, barbed wire, 3 strand	0200 875 0600	1.36	/LF								3250	LF			1.36	/LF		4,420
	Grading and Backfilling	D6R U-Blade ROPS Operating Rate		17,590		70.00	0.1	47.15	234.09	1	234.09	$/Hr	9687	CY	102	CT/Hr	96.9	hrs		22,683
	Subtotal																			27,103
	Spread Topsoil	Front-End Loader 5 CY (966G)		7,095		29.05	0.1	47.15	123.45	1	123.45	$/Hr.	36700	CY	203	LCY/Hr.	180.8	Hrs.		22,318
	Subtotal																			22,318
	Foreman							39.80	39.80	1	39.80	$/Hr.					277.7	Hrs.		10,996
	Truck Pickup 3/4 ton, 4 Wheel drive			785		7.40	0.1		13.05	1	13.05	$/Hr					277.7	Hrs.		3,624
	5,000 Gallon Water Wagon			5,010		25.70	0.1	38.10	97.68	1	97.68	$/Hr					277.7	Hrs.		27,129
																				14,820
	Total																			64,042

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	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell Factor	Quantity	Unit	Cost
45	Vegetation																			
	Soil Preparation																			
	Pocking	Excavator, Diesel Hydraulic, 2 CY (325B)	02315 400 260	1.71	/CY					14.56						AC		23,490	CY	40,168
	Subtotal																			[illegible]
	Fence																			
	Silt Fence	Silt Fence	02370 550 1100	0.93	/LF	7480										FT		6,800	FT	6,324
	Chicken Wire	Fence Chicken Wire	02820 500 0010	6.56	/LF	4500										FT		3,400	FT	22,304
	Subtotal																			28,628
	Seed Mix No. 1																			
	Hydroseed Equipment and Labor	Hydro Spreader (equip. & labor) B-81	Reveg005	19.95	/MSF					13.9						AC		605	MSF	12,070
	Hydroseed Material	Dugout Seed Mix No. 1	Dugout 07391	394.75	/AC					13.9						AC		13.9	AC	5,487
	Transplant Area No. 1																			
	Area										13.9					AC				
	Transplant Materials	Snowberry		0.66	EA										75	/AC		1,043	EA	688
		Utah Serviceberry		0.66	EA										75	/AC		1,043	EA	688
		Pinyon Pine		0.59	EA										200	/AC		2,780	EA	1,640
		Utah Juniper		0.66	EA										200	/AC		2,780	EA	1,835
	Transplant Labor	Bare root seedlings 6 to 10 inch, heavy soil		1.15	EA													7,645	EA	8,792
	Seed Mix No. 2																			
	Hydroseed Equipment and Labor	Hydro Spreader (equip. & labor) B-81	Reveg005	19.95	/MSF					2.45						AC		107	MSF	2,135
	Hydroseed Material	Dugout Seed Mix No. 1	Dugout 07391	362.25	/AC					2.45						AC		2	AC	888
	Transplant Area No. 2																			
	Area										2.45					AC				
	Transplant Materials	Narrowleaf Cottonwood		0.83	EA										250	/AC		613	EA	508
		Rocky Mountain Maple		1.00	EA										250	/AC		613	EA	613
		Willow		0.84	EA										4000	/AC		9,800	EA	8,232
		Woods Rose		0.55	EA										1000	/AC		2,450	EA	1,348
		Snowberry		0.66	EA										250	/AC		613	EA	404
		Utah Serviceberry		0.66	EA										250	/AC		613	EA	404
		Blue Elderberry		8.95	EA										250	/AC		613	EA	5,482
		Chokecherry		0.73	EA										250	/AC		613	EA	447
		Golden Current		0.66	EA										250	/AC		613	EA	404
		Carex Spp.		0.75	EA										500	/AC		1,225	EA	919
		Horsetail		0.75	EA										500	/AC		1,225	EA	919
	Transplant Labor	Bare root seedlings 6 to 10 inch, heavy soil		1.15	EA													18,988	EA	21,836
	Seed Mix No. 3 Refuse Site																			
	Hydroseed Equipment and Labor	Hydro Spreader (equip. & labor) B-81	Reveg005	19.95	/MSF					15.6						AC		680	MSF	13,566
	Hydroseed Material	Refuse Seed Mix No. 1	Maple Leaf	164.95	/AC					15.6						AC		16	AC	2,573
	Transplant Area No. 3																			
	Area																			
	Transplant Materials										15.6					AC				
		Black Sagebrush		0.40	EA										200	/AC		3,120	EA	1,248
		Schadscale		0.75	EA										200	/AC		3,120	EA	2,340
	Transplant Labor	Bare root seedlings 6 to 10 inch, heavy soil		1.15	EA													6,240	EA	7,176
	Subtotal																			[illegible]
	Revegetation																			
	25% Vegetation Rate																			25,661
	Subtotal																			25,661
	Total																			197,[illegible]

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Earth Work
Refuse Site

Productivity and Hours Required for Dozer Use

Earthmoving Activity:
Rough grading and backfilling

Characterization of Dozer Used (type, size, etc.):
Caterpillar Dozer D0R-9SU

Description of Dozer Use (origin, destination, grade, haul distance, materials, etc.):
Level grade, 21 feet blade width, 11.4 cu. yd. Capacity, 400 foot push

Productivity Calculations:

Operating Adjustment Hours =	0.85 x operation factor	0.8 x material factor	0.83 x efficiency factor	1.0 grade factor
	0.9 x weight correction factor	1.0 x production method/blade factor	1.0 x visibility factor	1.0 elevation factor
	=	0.51		

Net Hourly Production =	200 LCY/Hr normal hourly production	x	0.51 = operating adjustment factor	102 LCY/Hr

Data Source:
Caterpillar Performance Handbook - Edition 30

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Earth Work
Refuse Site

Productivity and Hours Required for Loader Use

Earthmoving activity:
Moving and spreading topsoil

Characterization of Loader Used (type, size, etc.):
Caterpillar Front End Loader 966G

Description of Loader Used (loading, geometry, materials, etc.):
5 CY bucket, haul distance 500 feet, -2% grade

Productivity Calculations:

Cycle Time	=	0.38 min haul time (loaded)	+	0.4 min return time (empty)	+	
		0.5 min basic cycle time	=	1.28 min		
Net Bucket Capacity	=	5 LCY heaped bucket capacity	x	0.95 = bucket fill factor		4.75 LCY
Hourly Production	=	4.75 LCY net bucket capacity	/	1.28 min cycle time	x	
		0.91 x efficiency factor		60 min/hr	=	203 LCY/Hr

Data Source:
Caterpillar Performance Handbook - Edition 30

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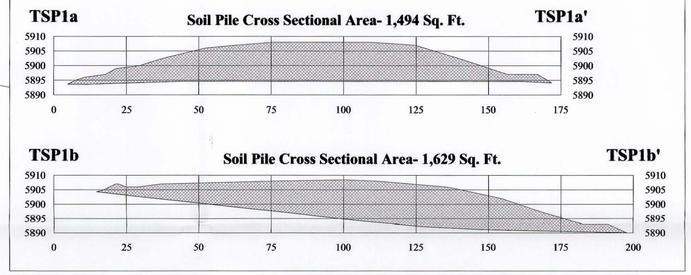
RA ATTACHMENT 8-1

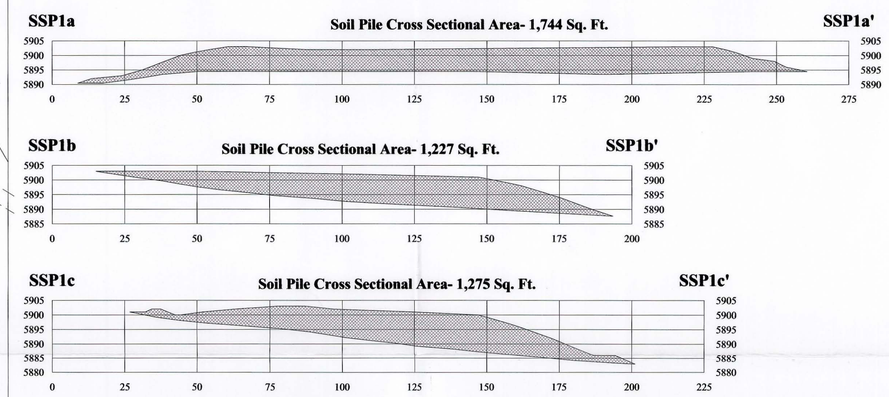
Refuse Pile Bond Calculations

For Refuse Pile Bond Calculations see the Mining and Reclamation Plan for Dugout Canyon Mine Appendix 5-6.

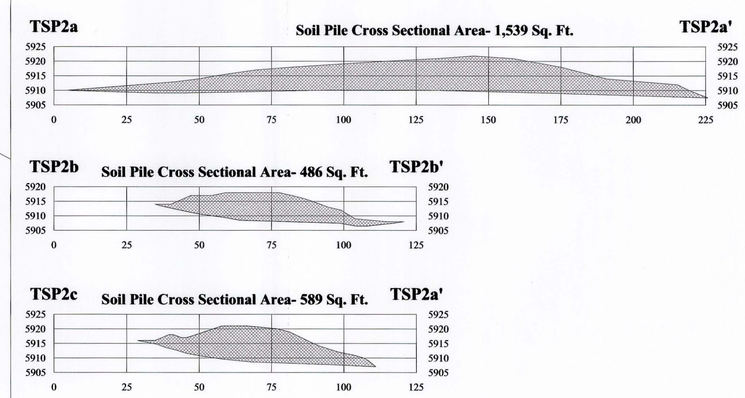
TOPSOIL PILE #1 STORAGE AREA
Approx. 5,612 Cu. Yd.



SUBSOIL PILE #1 STORAGE AREA
Approx. 9,211 Cu. Yd.



TOPSOIL PILE #2 STORAGE AREA
Approx. 2,772 Cu. Yd.



SUBSOIL PILE #3 STORAGE AREA
Approx. 2,518 Cu. Yd.

CROSS SECTION DATA
Base Topo - Olympus Aerial Survey - Dated June 09, 2008
Operational Topo - Aero-Graphics, Inc. Survey - Dated May 06, 2009
Proposed Topo - EarthFax Engineering Group, LLC - Dated March 06, 2015

LEGEND

- DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
- 5900 / 5895 — OPERATIONAL CONTOURS
- 5900 / 5895 — PROPOSED CONTOURS
- CROSS-SECTION LOCATIONS
- FENCE LINE

NOTES

1. REFER TO RA PLATE 5-1 FOR MORE SURFACE DETAIL.
2. SUBSOIL STOCKPILE #1 AND TOPSOIL STOCKPILES #1 AND #2 VOLUMES ILLUSTRATED WERE CALCULATED BY AERO-GRAPHICS, INC.- MAY 06, 2009
3. SUBSOIL STOCKPILE #3 VOLUME WAS CALCULATED WITH AUTOCAD 2014 BY EARTHFAX ENGINEERING GROUP, LLC- FEBRUARY 16, 2015

N W E S

100' 50' 0' 100' 200' 300'

PROJECT AREA LOCATED ENTIRELY WITHIN
SEC. 18, T. 14 S., R. 12 E., SLBM
CONTOUR INTERVAL: 1'

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

REVISION	
DATE	BY
3/2015	TAJ

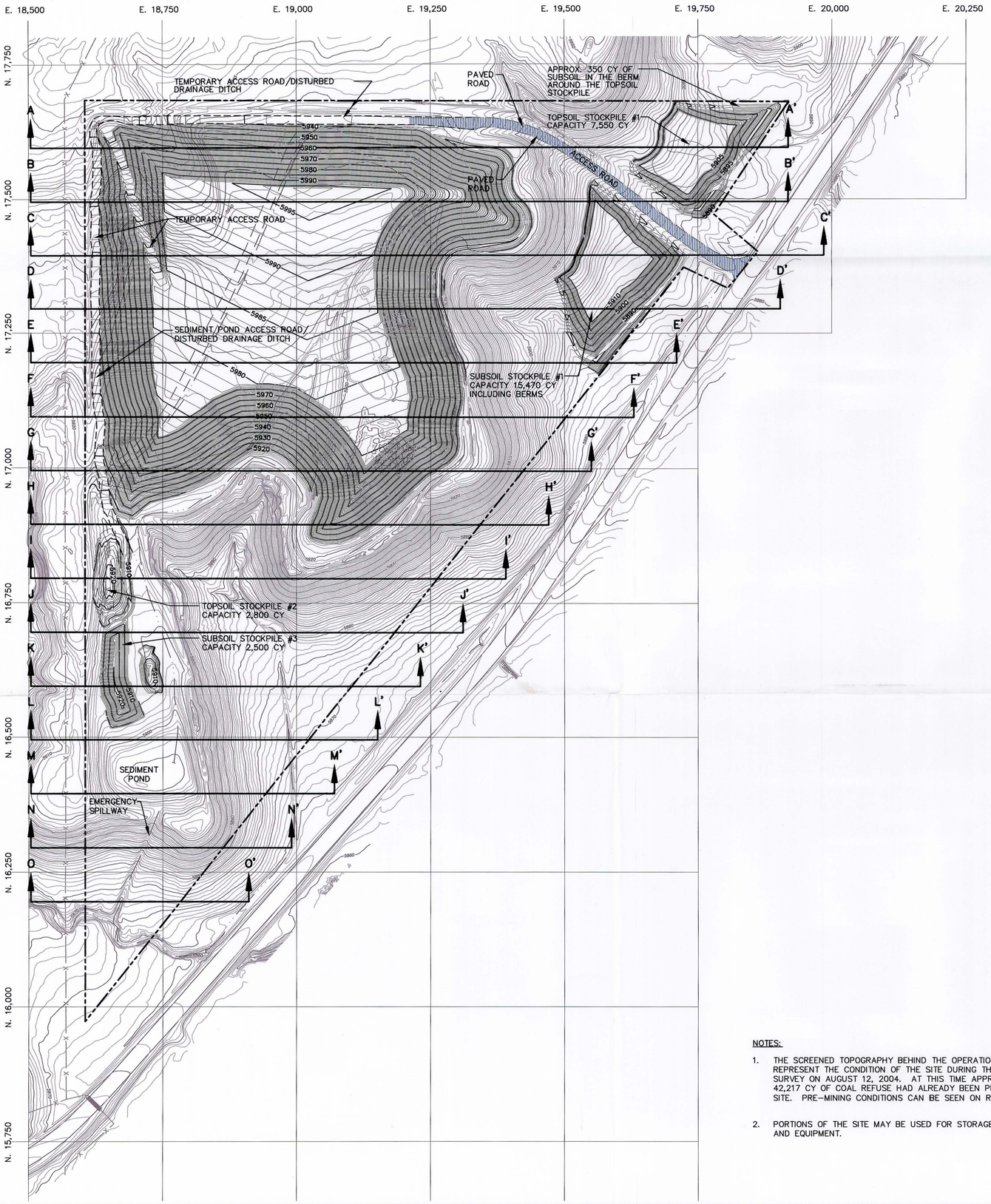
Canyon Fuel Company, LLC
Dugout Canyon Mine

RECEIVED
JUL 13 2015
DIV. OF OIL, GAS & MINING

SOIL STOCKPILES
(AS BUILT)

Dugout Canyon Mine

DRAWN BY: STV/TAJ	DATE: March 10, 2015	SCALE: 1" = 100'
APPROVED BY: RBW	FILE NAME: G:\UC1462\1\DWG\PLATE-RA2-2 PHASE 1.DWG	DRAWING OR MAP NUMBER: RA PLATE 2-2



LEGEND

- DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
- 5940 / 5935 — OPERATIONAL CONTOURS
- 5940 / 5935 — EXISTING GROUND CONTOURS
- CROSS-SECTION LOCATION

NOTES:

1. THE SCREENED TOPOGRAPHY BEHIND THE OPERATIONAL CONTOURS REPRESENT THE CONDITION OF THE SITE DURING THE LAST AERIAL SURVEY ON AUGUST 12, 2004. AT THIS TIME APPROXIMATELY 42,217 CY OF COAL REFUSE HAD ALREADY BEEN PLACED AT THE SITE. PRE-MINING CONDITIONS CAN BE SEEN ON RA PLATE 5-3.

2. PORTIONS OF THE SITE MAY BE USED FOR STORAGE OF SNOW AND EQUIPMENT.

0' 100'

PROJECT AREA LOCATED ENTIRELY WITHIN SEC. 18, T. 14 S., R. 12 E., SLBM

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

REVISION	
DATE	BY
3/2015	TAJ

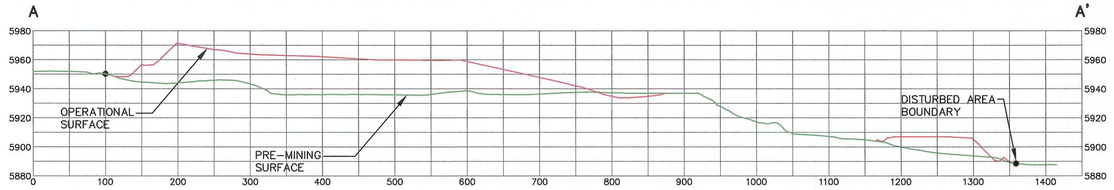
Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines

RECEIVED
JUL 13 2015
DIV. OF OIL, GAS & MINING

STORAGE AREA LAYOUT OPERATIONS PLAN

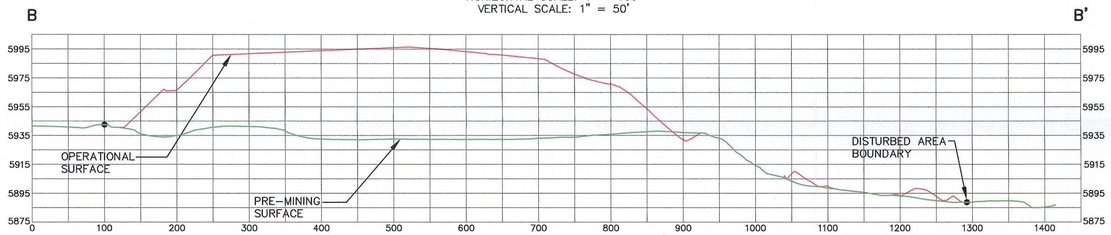
Dugout Canyon Mine

DRAWN BY: SWF/TAJ	DATE: MARCH 2015	SCALE: 1"=100'
APPROVED BY: RBW	FILE NAME: G:\UC1462\1\DWG\PLATE-RA5-1 PHASE 1.DWG	DRAWING OR MAP NUMBER: RA PLATE 5-1



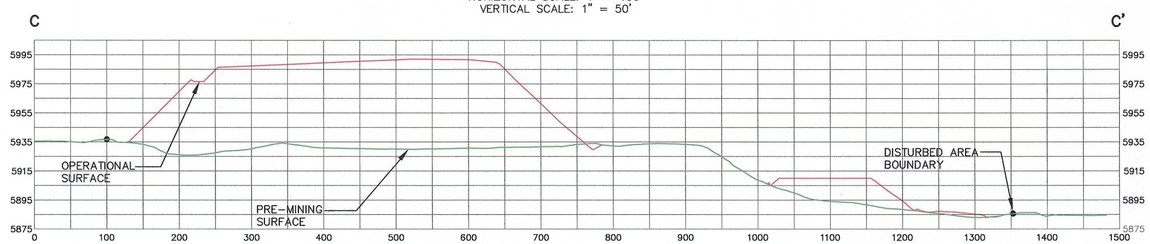
CROSS-SECTION A-A'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



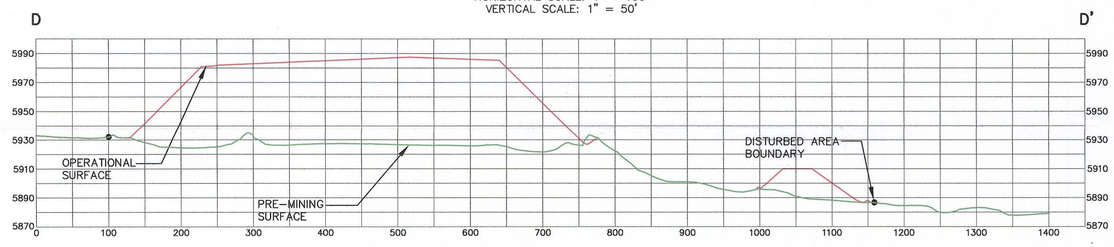
CROSS-SECTION B-B'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



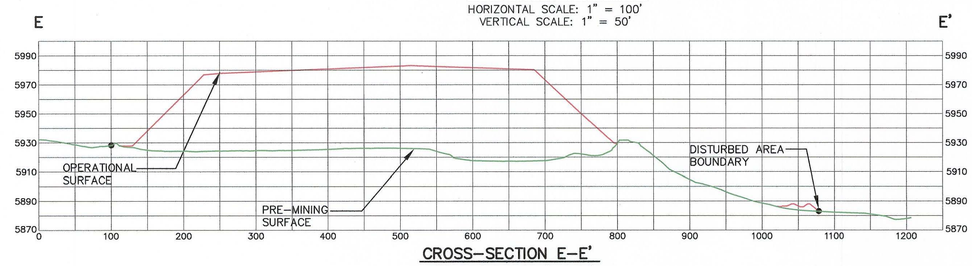
CROSS-SECTION C-C'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



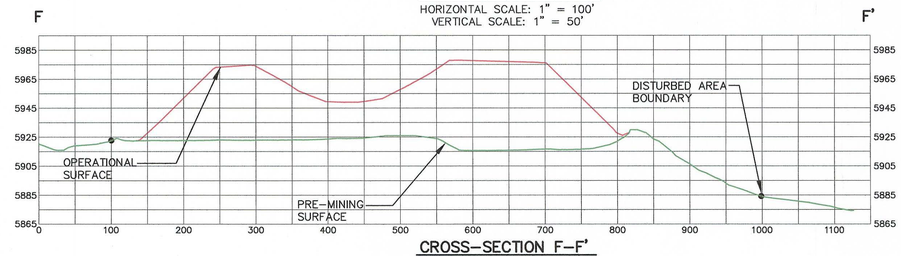
CROSS-SECTION D-D'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



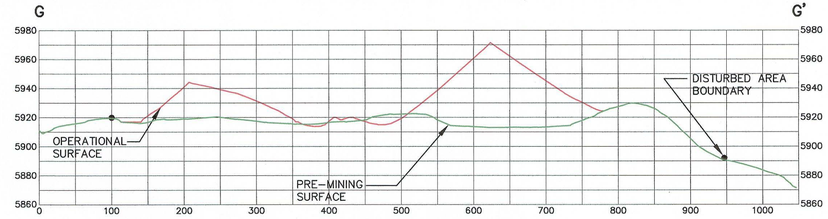
CROSS-SECTION E-E'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



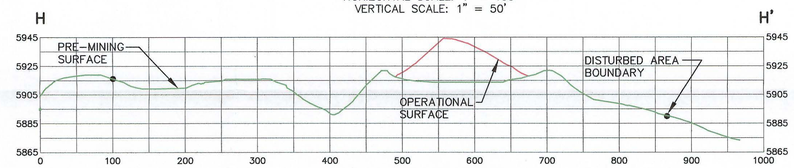
CROSS-SECTION F-F'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



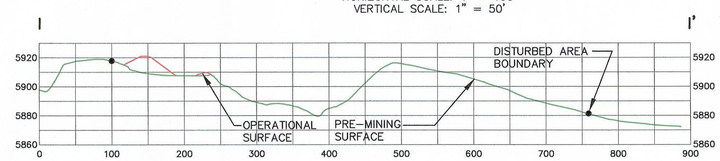
CROSS-SECTION G-G'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



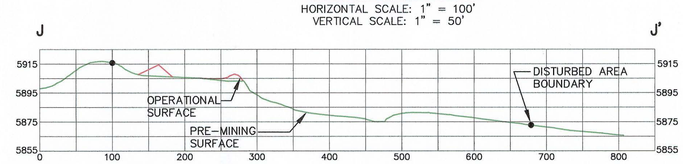
CROSS-SECTION H-H'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



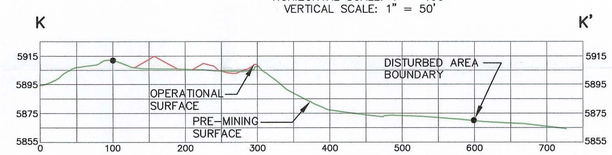
CROSS-SECTION I-I'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



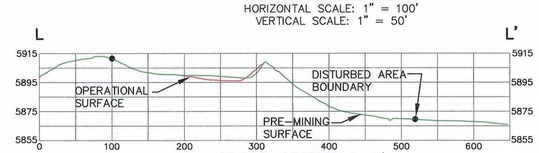
CROSS-SECTION J-J'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



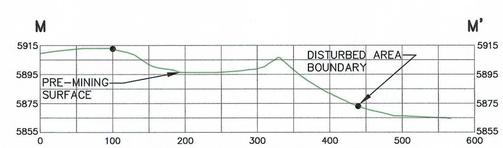
CROSS-SECTION K-K'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



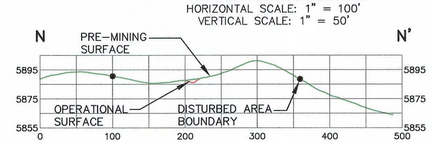
CROSS-SECTION L-L'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



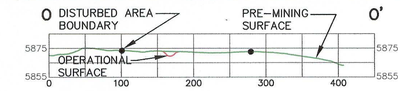
CROSS-SECTION M-M'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION N-N'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION O-O'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD B. WHITE
24 Apr 2015
STATE OF UTAH

REVISION	
DATE	BY
3/2015	TAJ

Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines

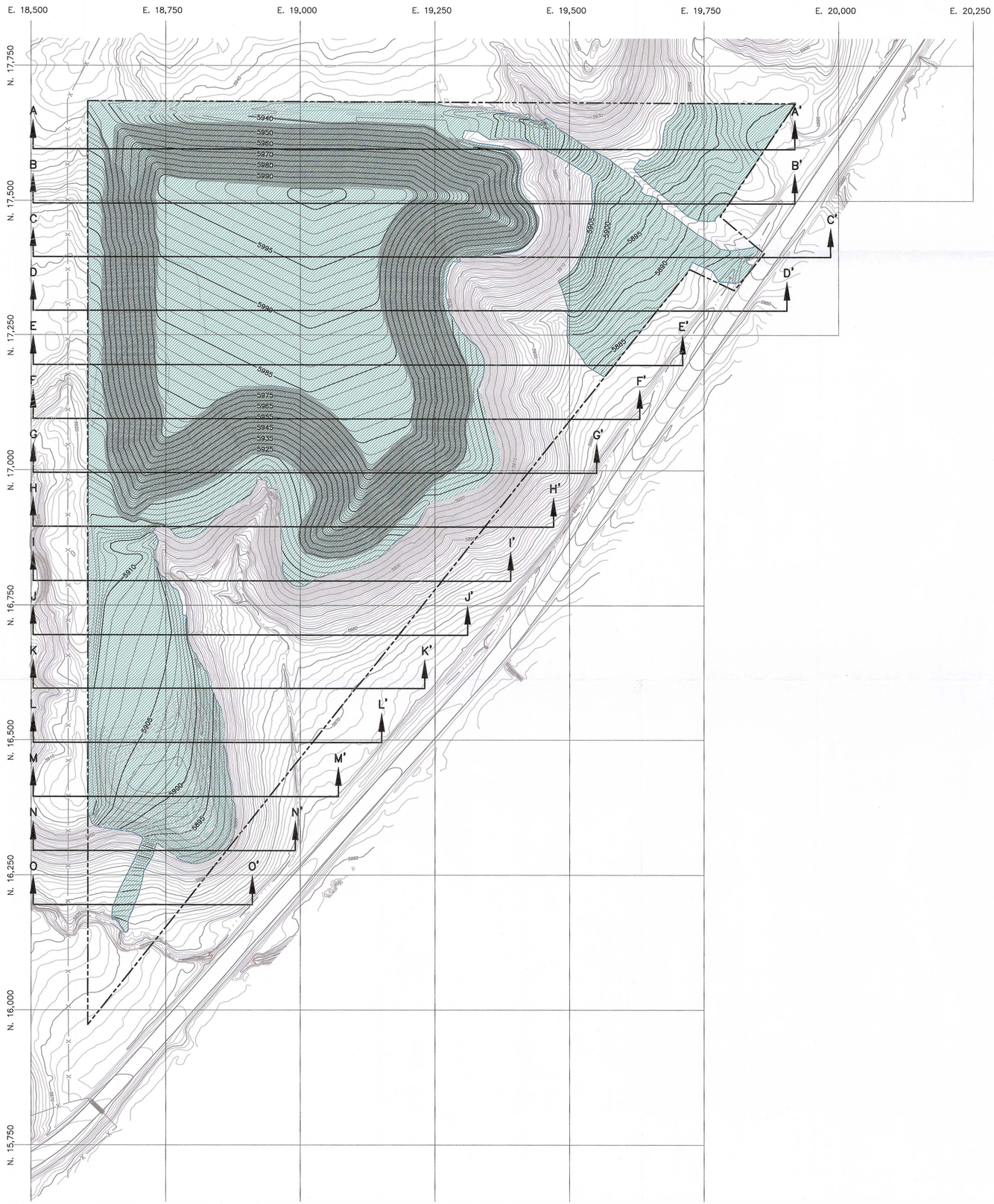
STORAGE AREA OPERATIONAL SURFACE CROSS-SECTIONS

RECEIVED
JUL 13 2015
DIV. OF OIL, GAS & MINING

Dugout Canyon Mine

DRAWN BY: SWF/TAJ	DATE: MARCH 2015	SCALE: AS SHOWN	
APPROVED BY: RBW	FILE NAME: G:\UC1462\1\DWG\PLATE-RA5-1A PHASE 1.DWG	DRAWING OR MAP NUMBER	RA PLATE 5-1A

G:\UC1462\01 - Sediment control redesign\DWG\PLATE-RA5-1A - Phase 1.dwg, 4/29/2015 10:02:13 AM



LEGEND

- DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
- 5940 / 5935 — RECLAMATION CONTOURS
- 5940 / 5935 — EXISTING GROUND CONTOURS
- CROSS-SECTION LOCATION
- "RECLAMATION TREATMENT DEEP GOUGING, MULCHING, AND SEEDING".

0' 100'

PROJECT AREA LOCATED ENTIRELY WITHIN SEC. 18, T. 14 S., R. 12 E., SLBM

REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD B. WHITE
STATE OF UTAH
24 Apr 2015
SIGNED SEALED & DATED

REVISION	
DATE	BY
3/2015	TAJ

Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines

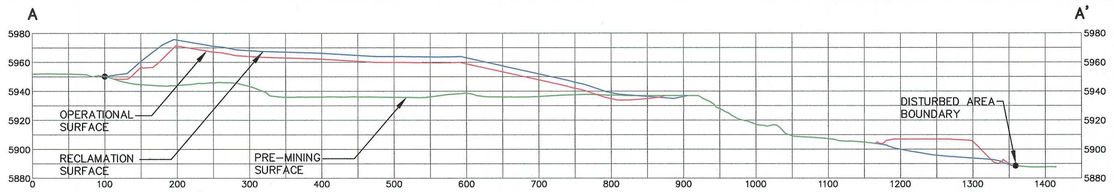
STORAGE AREA LAYOUT RECLAMATION PLAN

RECEIVED
JUL 13 2015
DIV. OF OIL, GAS & MINING

Dugout Canyon Mine

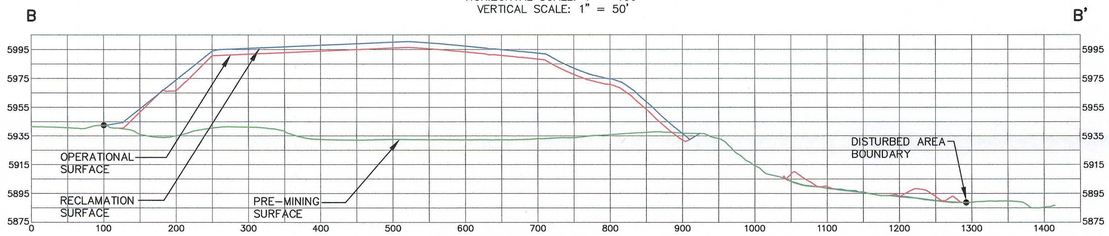
DRAWN BY: SWF/TAJ	DATE: MARCH 2015	SCALE: 1"=100'
APPROVED BY: RBW	FILE NAME: G:\UC1462\1\DWG\PLATE-RA5-2 PHASE 1.DWG	DRAWING OR MAP NUMBER RA PLATE 5-2

G:\UC1462\01 - Sediment control redesign\DWG\PLATE-RA5-2 - Phase 1.dwg, 4/29/2015 10:07:41 AM



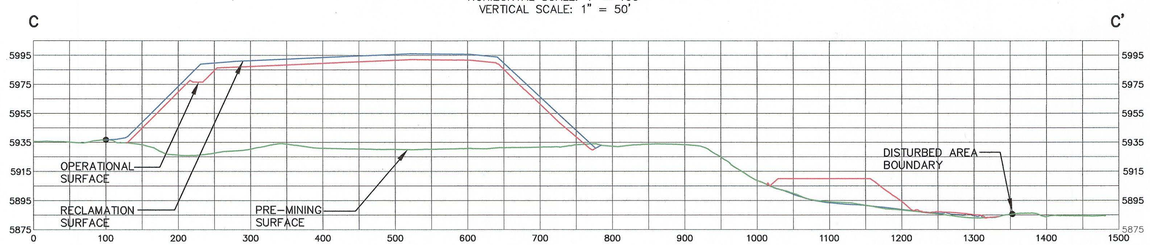
CROSS-SECTION A-A'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



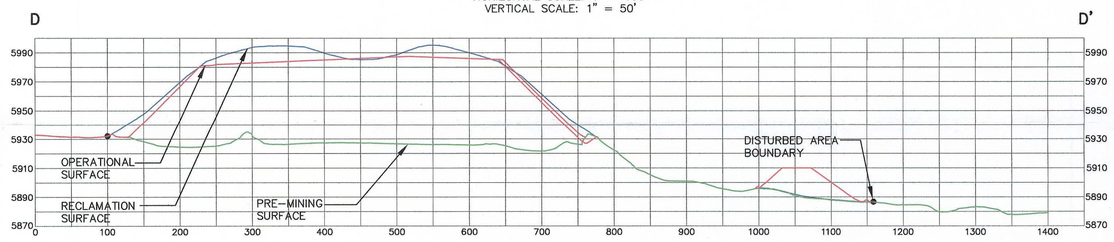
CROSS-SECTION B-B'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



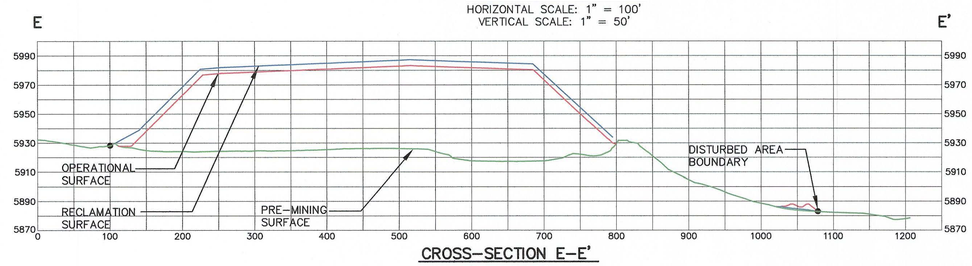
CROSS-SECTION C-C'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



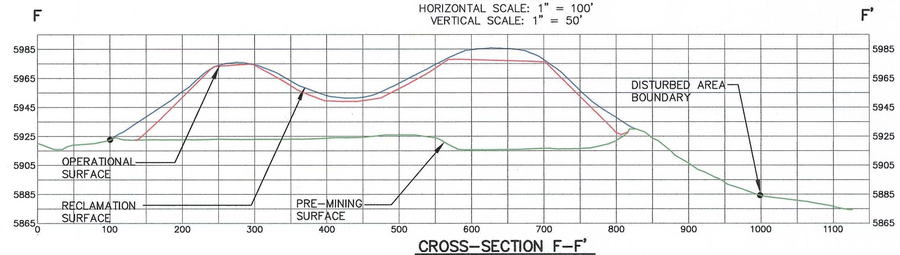
CROSS-SECTION D-D'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



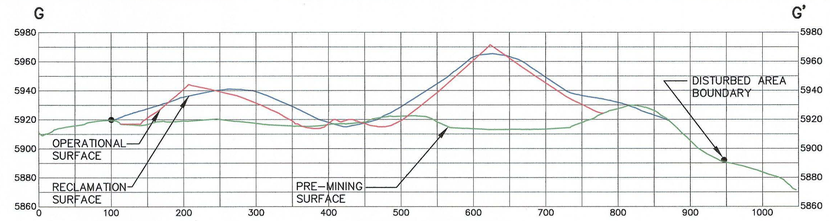
CROSS-SECTION E-E'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



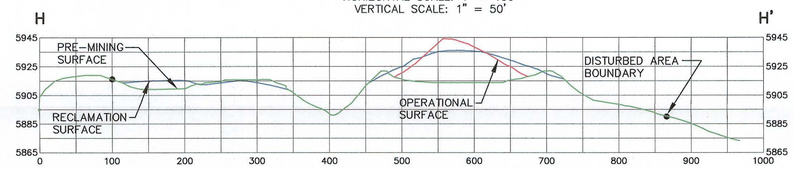
CROSS-SECTION F-F'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



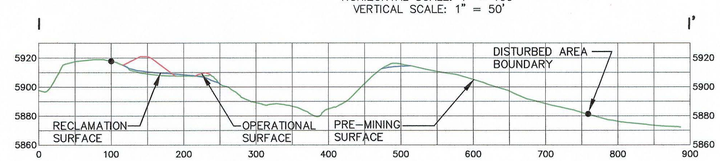
CROSS-SECTION G-G'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



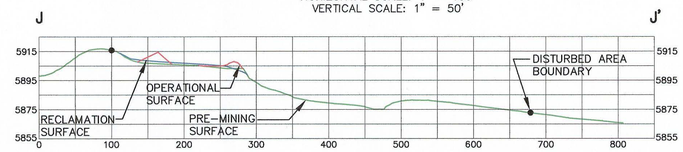
CROSS-SECTION H-H'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



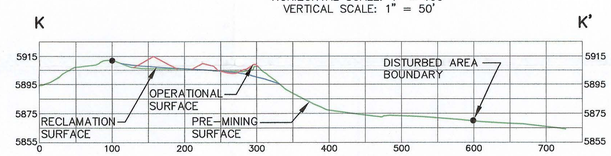
CROSS-SECTION I-I'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION J-J'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION K-K'

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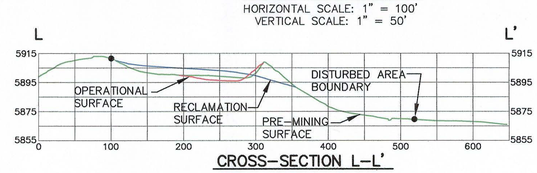
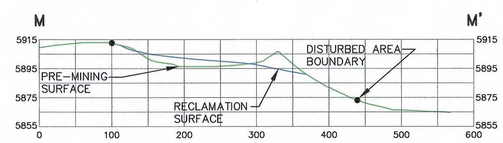
VERTICAL SCALE: 1" = 50'



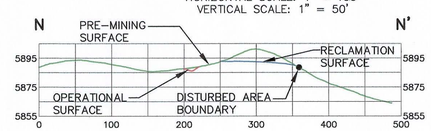
CROSS-SECTION L-L'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



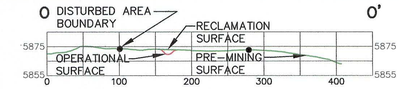
CROSS-SECTION M-M'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION N-N'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'



CROSS-SECTION O-O'

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 50'

LEGEND

- PRE-MINING SURFACE
- OPERATIONAL SURFACE
- RECLAMATION SURFACE

NOTE: THE RECLAMATION SURFACE REPRESENTS THE REGRADED COAL WASTE WITH 4' OF SOIL COVER.

REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD B. WHITE
STATE OF UTAH

REVISION	
DATE	BY
3/2015	TAJ

Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines

RECEIVED
JUL 13 2015
DIV. OF OIL, GAS & MINING

STORAGE AREA RECLAMATION CROSS SECTIONS

Dugout Canyon Mine

DRAWN BY: SWF/TAJ	DATE: JAN 2006	SCALE: AS SHOWN
APPROVED BY: RBW	FILE NAME: G:\UC1462\1\DWG\PLATE-RA5-2A PHASE 1.DWG	DRAWING OR MAP NUMBER: RA PLATE 5-2A

G:\UC1462\01 - Sediment control redesign\DWG\PLATE-RA5-2A - Phase 1.dwg, 4/29/2015 10:13:03 AM

UWS-1

UWS-2

SEDIMENT POND ACCESS ROAD/DISTURBED DRAINAGE DITCH

UD-1a

UD-1b

UD-1c

UC-2

UC-1

DH-3

DH-2

DH-1

DD-1

DD-2a

DD-2b

DD-3a

DD-3b

DWS-1

SS-1

SS-2

ELEV 5892.00

LEGEND

— — —	DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
5900 / 5895	OPERATIONAL CONTOURS
5900 / 5895	EXISTING GROUND CONTOURS
UD-2	UNDISTURBED DITCH
DD-4	DISTURBED DITCH
	UNDISTURBED WATERSHED BOUNDARY
	DISTURBED WATERSHED BOUNDARY
DH-1	GROUNDWATER MONITORING LOCATION (WELLS)
SS-1	SURFACE WATER MONITORING LOCATION
UC-1	UNDISTURBED CULVERT

RECEIVED
JUL 13 2015
DIV. OF OIL, GAS & MINING

REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD B. WHITE
29 Apr 2015
NOT VALID WITHOUT A SIGNATURE
STATE OF UTAH

0' 100'

PROJECT AREA LOCATED ENTIRELY WITHIN SEC. 18, T. 14 S., R. 12 E., SLBM

REVISION	
DATE	BY
01/06/03	RR
01/10/05	LDJ
3/10/15	TAJ

Canyon Fuel Company, LLC
Dugout Canyon Mine

DRAINAGES, SEDIMENT CONTROL STRUCTURES AND SAMPLING LOCATIONS

Dugout Canyon Mine

DRN BY: SWF/TJS/TAJ	DATE: MARCH 2015	SCALE: 1"=100'
APPROVED BY: RBW	FILE NAME: G:\UC1462\1\DWG\PLATE-RA7-1 PHASE 1.DWG	DRAWING OR MAP NUMBER RA PLATE 7-1

G:\UC1462\01 - Sediment control redesign\DWG\PLATE_RA7-1 - Phase 1.dwg, 4/29/2015 10:26:48 AM

RWS-1

RWS-2

RWS-3

RWS-4

RWS-5

RD-1a

RD-1b

RD-1c

RD-2

RD-3

RD-4

RD-5

SWALE 1

5940
5950
5960
5970
5980
5990
5995
5990
5985
5975
5965
5955
5945
5935
5925
5920
5910
5905
5900
5895
5890
5885
5880

PROJECT AREA LOCATED ENTIRELY WITHIN
SEC. 18, T. 14 S., R. 12 E., SLBM

0' 100'

REGISTERED PROFESSIONAL ENGINEER
No. 168246
RICHARD B. WHITE
NOT VALID WITHOUT A SIGNATURE
29 Apr 2015
STATE OF UTAH

LEGEND

— — —	DISTURBED AREA BOUNDARY AND PERMIT AREA BOUNDARY
5900 / 5895	RECLAMATION CONTOURS
5900 / 5895	EXISTING GROUND CONTOURS
RD-4	RECLAMATION DITCH
	RECLAIMED WATERSHED BOUNDARY

REVISION	
DATE	BY
JAN 06	LDJ
MAR 15	TAJ

Canyon Fuel Company, LLC
Soldier Canyon & Dugout Canyon Mines

RECLAIMED DRAINAGES AND WATERSHEDS

RECEIVED
JUL 13 2015
DIV. OF OIL, GAS & MINING

Dugout Canyon Mine

DRN BY: SWF/TJS/TAJ	DATE: MARCH 2015	SCALE: 1"=100'
APPROVED BY: RBW	FILE NAME: G:\UC1462\1\DWG\PLATE-RA7-3 PHASE 1.DWG	DRAWING OR MAP NUMBER RA PLATE 7-3

G:\UC1462\01 - Sediment control redesign\DWG\PLATE-RA7-3 - Phase 1.dwg, 4/29/2015 10:51:29 AM