



**Dugout Canyon Mine**

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August 25, 2020

Permit Supervisor  
Utah Coal Regulatory program  
Utah Division of Oil, Gas and Mining  
1594 West North Temple, Suite 1210  
PO Box 145801  
Salt Lake City, UT 84114-5801

Re: Permit Revision Associated with Phase II Contemporaneous Reclamation Soils, Task ID#6178, Refuse Pile, Canyon Fuel Company, LLC, Dugout Canyon Mine, C/007/039

Dear Sirs:

Please find enclosed with this letter an amendment to update information associated with the Phase II Reclamation Soils at the Dugout Canyon Mine Refuse Pile. The amendment was requested by Pricilla Burton per a phone call and follow up e-mail to Robert (Jay) Marshall on January 21, 2020.

If you have questions or need addition information, please contact Vicky Miller at [vmiller@wolverinefuels.com](mailto:vmiller@wolverinefuels.com) or leave a message at (435)636-2887.

CANYON FUEL COMPANY  
Dugout Canyon Mine

A handwritten signature in blue ink that reads 'Vicky A Miller' with 'for' written below it.

Kirt Tatton  
General Manager  
Encl.

cc: DOGM Correspondence File

# 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:** Revision to M&RP - Phase II Contemporaneous Reclamation Soils at Refuse Pile, Task ID# 6178

**Description,** Include reason for application and timing required to implement:

**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.

Kirt Tatton, General Manager      [Signature]      8/19/20  
 Print Name      Sign Name,      Date

Subscribed and sworn to before me this 19<sup>th</sup> day of August, 2020

Jill White  
 Notary Public  
 My commission Expires: 3/28, 2024  
 Attest: State of Utah } ss:  
 County of Sevier



|   |                           |                               |
|---|---------------------------|-------------------------------|
| <b>For Office Use Only:</b><br><br><br><br> | Assigned Tracking Number: | Received by Oil, Gas & Mining |
|---|---------------------------|-------------------------------|



Canyon Fuel Company, LLC  
Dugout Canyon Mine

Refuse Pile Amendment  
August ~~July~~ 2020 ~~April~~ 2017

## CHAPTER 2

### SOILS

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## CHAPTER 2

### SOILS

#### 210 INTRODUCTION

This chapter and associated appendices address the data required for the refuse pile site for the Dugout Canyon Mine. The M&RP and this document contain pertinent information relating to identification, management, and reclamation activities associated with the soil resources present in the disturbed area of the Dugout Canyon Mine. The soil studies were conducted in accordance with the Utah Division of Oil, Gas, and Mining guidelines that were in effect at the time each study was conducted. The site specific soil survey conducted for this permit application was conducted in accordance with the standards set by the National Cooperative Soil Survey and analyzed according to Table 1 of the Division's "Guidelines for the Management of Topsoil and Overburden for Underground and Surface Coal Mining" (Leatherwood and Duce, 1988).

#### 220 ENVIRONMENTAL DESCRIPTION

The site is located at an elevation of about 5,900 feet on a well-drained bench (pediment) composed of gravelly to stony alluvial deposits, which overlie the Mancos Shale formation. Pinyon-Juniper, sagebrush, and various grasses are the dominant vegetation in the area. Climatological information is provided in RA Attachment 7-3.

#### 221 Prime Farmland Investigation

Refer to a letter included in RA Attachment 3-1, which states that the area of the Dugout Canyon Road cannot be considered as prime farmland and the refuse pile area is immediately adjacent to the road.

## **222 Soil Survey**

### **222.100 Soils Map**

A description of the soils within the refuse pile area on an Order III soil survey level can be found in the SCS "Soil Survey of the Carbon County Area" (Jensen, 1988). A copy of the soil descriptions from the Order III survey has been included in Appendix S-5 of RA Attachment 2-1. Information pertaining to the soils associated with the construction of the sediment pond emergency spillway is included in RA Attachment 2-1.

An Order I soil survey was conducted of the refuse pile site in September 1999. Descriptions of the site soils are derived from ten pit locations and twenty-two soil samples. Based on the soil descriptions and other site observations, thirteen soil map units have been identified. The map units are shown on RA Plate 2-1 and in RA Attachment 2-1. The locations of the soil test pits excavated during the survey are shown on Map SM-1, RA Attachment 2-1.

### **222.200 Soil Identification**

Following is a list of the soils found in the general area of the storage area as mapped by the SCS (Jensen, 1988).

| Map         |  |
|-------------|--|
| <u>Unit</u> | <u>Soil Identification</u>                                 |
| 33          | Gerst-Badland-Rubbleland complex, 15 to 50 percent slopes, |
| 48          | Haverdad loam, 1 to 8 percent slopes,                      |
| 49          | Haverdad loam, alkali, 0 to 3 percent slopes,              |
| 50          | Haverdad loam, moist, 1 to 5 percent slopes,               |
| 66          | Mivida gravelly fine sandy loam, 3 to 8 percent slopes     |
| 113         | Strych stony loam, 3 to 15 percent slopes.                 |

The SCS descriptions for the soils are included in Appendix S-5 of Attachment 2-1.

### **222.300 Soil Description**

The description of the soils is based on the following information: taxonomic classification, horizon name and depth, color, texture (percent sand, silt, and clay), consistence, structure, percent rock fragments and organic matter, saturation, pH, EC, SAR, and solubility of calcium, magnesium, and sodium. This information is included in the soil test pit logs in RA Attachment 2-1, Appendix S1 and the lab data sheets included in RA Attachment 2-1, Appendix S3 of this submittal. RA Table 2-1 presents a summary of the soil unit features. The description of soils outside the disturbed area boundary has been taken from the SCS (Jensen, 1988).

The site has gravelly and cobbly soils of the Strych series over much of the area (Jensen, 1988). The project area is primarily disturbed with little evidence of natural soils in place. Original surface soils were stripped by previous site activities. Therefore, the natural soils are basically lacking except at the edges of the site and outside the disturbed area boundary. The remaining soil materials generally consist of coarse alluvium of varying thickness covering the Mancos Shale. In some places the shale is at or near the surface.

### **222.400 Soil Productivity**

The data obtained from soil testing are provided in Appendix S3 of RA Attachment 2-1. A table showing depth and the number of samples taken from each backhoe pit location (Soil Pits DCW1 through DCW10) can be found in Appendix S3.

A summary of the soil testing results and ratings are provided below:

PH - All samples rated good, with a range of 6.9 to 7.8.

% Saturation - 17 samples rates good (25.1 to 45.3) and 5 samples rated fair (21.6 to 24.9).

Electrical Conductivity - 17 samples rates good (0.038 to 1.93 umhos/cm) and 5 samples rated fair (2.12 to 4.68 umhos/cm).

Sodium Adsorption Ratio - 20 sampled rated good (0.56 to 3.71) and 2 samples rated fair (4.64 and 6.03).

Texture - 12 samples rated good (loam and sandy clay loam) and 10 samples rated fair (clay loam and silty clay loam)

Available Water Capacity - 6 samples rated good (0.11 to 0.14 inches per inch) and 16 samples rated fair (0.05 to 0.10 inches per inch)

Boron - All samples rated good (0.05 to 0.50 ppm)

Selenium - All samples rated good (0.02 ppm or less)

Acid/Base Potential - All samples rated good (90.0 to 282 0 T/1000 tons)

Tests not used in the UDOGM rating criteria indicated low phosphorus, nitrogen, and sulfur levels. Calcium carbonate content is relatively high, with a range of 9.3 to 26.9 percent. Organic matter is low although there are pockets of woody materials in various sample locations. The soils were determined to be acceptable for use in site reclamation.

A summary of the sediment pond spillway soil testing results and ratings for four samples are: pH - samples rated good, with a range of 7.5 to 7.6; % Saturation - samples rates good (26 to 35.4); Electrical Conductivity - samples rated good (0.40 to 0.58 umhos/cm); Sodium Adsorption Ratio - samples rated good (0.53 to 1.05); Texture - samples rated good (sandy loam and sandy clay loam); Available Water Capacity - samples rated good; Boron - samples rated good (0.21 to 0.31 ppm); Selenium - samples rated good (less than 0.02 ppm) and Acid/Base Potential - All samples rated good (115 to 150 t/1000 tons).

## **223 Soil Characterization**

Daniel M. Larsen, Professional Soil Scientist, performed the soil survey described in this chapter and included as RA Attachment 2-1, in accordance with the standards of the National Cooperative Soil Survey.

## **224 Substitute Topsoil**

All soil resources to be removed from the refuse pile site qualify as growth media but not as topsoil. However, CFC may use selected overburden materials as a substitute or supplement to the salvaged soil.

If necessary, for reclamation of the refuse pile, substitute topsoil/growth medium will be salvaged from a borrow area approximately 3/4 mile southeast of the refuse pile. The borrow area is located on lands owned by the permittee (Portions of the E1/2 NE1/4 SW1/4, W1/2 SE1/4, Section 17, T14S R12E). The borrow area has sufficient soil, in addition to the soils previously salvaged or available for salvage at the refuse site to cover the refuse pile with 4 feet of material. Refer to Section 233 and RA Attachment 2-3 for additional information.

Prior to salvaging soil to cover the waste at the refuse pile, 12- inches of soil will be salvaged from the borrow area to be used to reclaim the borrow area. This soil will be stockpiled in berms around the area to be salvaged. An additional 24 to 40 inches of soil will then be salvaged from the borrow area and transported to the refuse pile site to be used as cover over the waste in preparation for reclamation.

At the borrow site the southwestern quarter will be salvaged first, followed by the northwestern quarter (SB1 thru SB5, Figure 2, RA Attachment 2-3). Only the quantity of soil necessary for reclamation will be removed from the borrow area, thus if sufficient substitute soil is available from these areas, the area containing sites SB6 thru SB9 shown on Figure 2 will remain intact and undisturbed. The soil salvage will be between gullies, the boundary of the borrow area on the southern, eastern and western edges are gullies as drawn on Figure 2, including a gully running through the middle of the borrow area site separating samples sites SB1 thru SB5 from sites SB6 thru SB9 (Figure 2, RA Attachment 2-3).

## 230 OPERATION PLAN

### 231 General Requirements

#### 231.100 Removing and Storing Soil Methods

The refuse pile area has been the site of activities since the early 1900's. At the time of the initial disturbances, topsoil was apparently not salvaged; however, during the excavation of gravel in 1998 - 1999 some soil was salvaged. These salvaged soils will be included in the soil stockpiles for the refuse pile (RA Plate 5-1). The methods described for soil salvage herein will be followed when removing and storing soil resources currently in-place.

Soil salvage will take place at the beginning of site use for all areas within the disturbed area boundary to be used immediately. The removal of salvaged soils will include all horizons (RA Plate 2-1). These materials will be stored in graded **long-term** stockpiles and seeded to promote surface stabilization or utilized on site for contemporaneous reclamation. The seed mix to be used will be the interim seed mix described in Chapter 3, Section 341.200. At the time of the 1999 Soil and Geotechnical Surveys, the area designated a "L" in the soil survey was described as being a pile of gravel (on top of the soil), the gravel has since been removed from the site (2002). The soils available for salvage in area "L" are assumed to be similar to those in area "M". As recommended by the Division under R645-310-232.500 of the October 24, 2002 Technical Analysis two **long-term** piles have been created, one stockpile for topsoil and the second for subsoils. Areas D, E, F plus areas K and G designated on RA Plate 2-1 will be salvaged and placed in the topsoil pile. The majority of the salvaged topsoil come from the G and F soil units noted on the soils map. The remainder of the areas to be salvaged will be placed in the **long-term** subsoil stockpile. Daniel M. Larsen, Professional Soil Scientist was on site during the salvage operations and determined in which pile the salvaged soils were placed. **The long-term stockpiles are located adjacent to the waste rock site access road.**

The operator will endeavor to remove and store as much soil as possible in the designated stockpiles, thereby maximizing the protection of the soil resources of the site. The salvaged soil will be treated in compliance with R614-201-234.300.

**231.200 Suitability of Topsoil Substitutes/Supplements**

See Section 233.200.

**231.300 Testing of Topsoil Handling and Reclamation Procedures Regarding Revegetation**

See Sections 232 through 234 and Section 240.

**231.400 Construction, Modification, Use, and Maintenance of Topsoil Storage Piles**

See Section 234.

**232 Topsoil and Subsoil Removal**

**232.100 Topsoil Removal and Segregation**

Due to the disturbed nature of the site area, all available soil materials will be removed and stockpiled, since the soil resource is limited on the site (refer to Section 231.100). RA Plate 2-1 shows the areas of soils to be stripped and the approximate depth ranges for each soil. Supporting calculations are presented in RA Attachment 2-2. The estimate is based on an average of the recommendations of Mr. Larsen's soils report presented in RA Attachment 2-1. During the actual salvaging activities, efforts will be made to maximize the soil volume to be salvaged.

A professional soil scientist will be on-site during soil salvage operations to monitor and supervise salvage activities for the purpose of maximizing soil salvage volumes, quantities and to determine

medium to be left in place (i.e. gravel, boulders). Should a professional soil scientist be unavailable, a professional with knowledge and experience in soil salvage (i.e. UDOGM Soil Reclamation Specialist) will be used. This commitment also applies to soil salvage from the borrow area.

RA Plate 2-2 will be amended to show the location of existing topsoil stockpile(s) following an aerial survey in 2020. In addition, the volume of topsoil in each stockpile will be documented in this chapter.

### **232.200 Poor Topsoil**

The soils on the site have been classified as fair to good for sustaining vegetation. Therefore, all available soil materials will be removed and stockpiled.

### **232.300 Thin Topsoil**

Soil that is less than 6 inches thick will be removed with the immediately underlying unconsolidated materials and the mixture will be treated as salvageable soil.

### **232.400 Minor Disturbances Not Requiring Topsoil Removal**

**Small Structures.** Soil will not be removed prior to construction that would result in only minor disturbances. Such construction activity includes work on small structures such as signs, fence lines, and etc.

**Vegetation.** The operator will not remove soil for minor disturbances where such activity will destroy vegetation or cause erosion.

### **232.500 Subsoil Segregation**

The soil horizons will be removed and stockpiled together during the construction of the site, as

described in Section 234. RA Plate 2-2 will be amended to show the location of existing subsoil stockpile(s) following an aerial survey in 2020. In addition, the volume of soil in each stockpile will be documented in this chapter.

### **232.600      Timing**

Soil removal will take place after all vegetation that could interfere with soil salvage has been removed.

### **232.700      Topsoil and Subsoil Removal Under Adverse Conditions**

Due to the disturbed nature of the site, soil horizons will be removed together, except where natural conditions render operations hazardous or detrimental to soils outside the disturbed area.

**Conventional Machines.** In localities where steep grades, adverse terrains, severe rockiness, limited depth of soils, or other adverse conditions exist that render soil removal activities using conventional machines hazardous, soils will not be salvaged and stockpiled.

**Substitute Topsoil.** Importing of substitute topsoil may be required depending upon the final height of the refuse pile, refer to Sections 224, 233 and 242.

## **233      Topsoil Substitutes and Supplements**

### **233.100      Overburden Materials Supplementing and/or Replacing Topsoil**

Selected overburden materials may be used below the salvaged soils during reclamation operations if sufficient soil materials are not available for the proposed reclamation activities. Where overburden materials are used, the operator commits to demonstrating to the Division prior to salvaged soil emplacement that the overburden materials are non-toxic, non-acid forming, and non-combustible. Refer to Section 536.200 discussion of waste sampling/testing.

The mixing of coal waste and subsoil is discussed in Section 242 and RA Attachment 2-2.

### **233.200 Suitability of Topsoil Substitutes and Supplements**

The description of the substitute topsoil from the borrow area is based on the following information: taxonomic classification, horizon name and depth, color, texture (percent sand, silt, and clay), consistence, structure, percent rock fragments and organic matter, saturation, pH, EC, SAR, and solubility of calcium, magnesium, and sodium. This information in the soil test pit logs and the lab data sheets are included in RA Attachment 2-3 of this submittal.

The material from the borrow area will be available should there be a need for supplemental topsoil/growth medium to reclaim the refuse pile. The analysis of the soil test pit samples indicate that the physical and chemical properties are comparable to the soils salvaged at the refuse pile site. The substitute topsoil/growth medium will be left in place and be utilized only if needed for reclamation of the refuse pile site.

The depth and number of samples taken from each backhoe pit location (Soil Pits SB1 through SB9) can be found in RA Attachment 2-3 on the laboratory soil analysis report. The soil pit locations are shown on Figure 2, RA Attachment 2-3. Photographs of the pits and borrow area are located in RA Attachment 2-3.

A summary of the borrow area soil testing results and ratings are provided below:

PH - Samples rated from mildly alkaline to moderately alkaline, with a range of 7.6 to 8.4.  
% Saturation - 42 samples rated good (25 to 46.4) and 1 sample in SB8 rated fair (23.8).  
Electrical Conductivity - 24 samples rates good (0.22 to 1.90 umhos/cm) and 14 samples rated fair (2.12 to 4.83 umhos/cm) and 5 samples rated poor (5.39 to 12.2 umhos/cm).

Texture - 41 samples rated good (loam, sand loam and sandy clay loam) and 2 samples rated fair (silt loam and silty clay loam)

Boron - 36 samples rated good (0.12 to 0.45 ppm), 7 samples rated fair (0.51 to 1.14 ppm)

Selenium - 34 samples rated good (0.02 ppm or less), 9 samples rated fair (0.04 to 0.28)

Acid/Base Potential - All samples rated good (124 to 197 T/1000 tons).

Borrow Area Soil Salvage Procedures - The soil borrow area will only be impacted during the short period during which the refuse pile is being reclaimed. The top 12-inches of soil from the borrow area will be removed/salvaged and placed as berms surrounding the salvage area. Once the salvage of soil to reclaim the waste rock site has been completed, the soil from the borrow area stored in the berms will be replaced, deep gouged, mulched and seeded. These activities should ensure adequate revegetation potential at the borrow area.

Refer to Section 224 for addition information about the borrow area.

### **233.300 Physical and Chemical Analyses**

Topsoil substitutes and supplements may be used for the refuse site area. The laboratory soil analysis report for the borrow area is included in RA Attachment 2-3.

The rate of sampling for the overburden beneath the soil will be sampled as discussed in Section 536.200.

**Certification of Reclamation Topsoil Suitability.** The borrow area substitute topsoil was certified by an approved laboratory in accordance with at least one of the following: Soil Conservation Service published data and technical guides, state agricultural agency, Tennessee

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.

### **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 will reflect as-built drawings of the stockpile's 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 **long-term** 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 installed on the stockpiles to identify topsoil storage areas and subsoil storage areas. The stockpiles will be protected from wind and water erosion by being revegetated with a quick growing vegetative cover (interim seed mix) and by installing berms around the stockpiles to help trap sediment coming off the stockpiles. The boulders designated in area "K" (RA Plate 2-1) will be

stockpiled separately from the soils salvaged from the refuse site. The boulders will either be placed along the perimeter of the substitute topsoil pile, access road, on top of the subsoil pile or will be transported to the rock stockpile at the Dugout/Soldier Canyon Mine topsoil stockpile adjacent to the Soldier Canyon Road.

### **234.200 Stockpiled Topsoil**

**Stable Stockpile Site.** Stockpiled materials will be placed on a stable site as described in Section 234.100.

**Protection from Contaminants and Compaction.** Stockpiled soil will be protected from contaminants and unnecessary compaction. To protect the soil from contaminants and unnecessary compaction that could interfere with vegetation, the stockpiles will be isolated from the main refuse pile area (Section 234.100). A sign designating “topsoil” will be installed on the stockpile.

The stockpile will be constructed in such a manner as to allow equipment access around the base of the stockpiles for repair of the surfaces and diversion structures as needed.

Furthermore, berms will be constructed around the stockpiles to further separate the soils from the materials stored on the site. The berm will be constructed as specified in Chapter 7, **Plate 7-2a**.

**Wind and Water Erosion Protection.** The stockpiles will be protected from wind and water erosion by prompt establishment and maintenance of a vegetative cover. Berms will be constructed around the stockpiles to help trap sediment runoff from the stockpiles. Refer to Section 242 .100 for additional protection information.

**Topsoil Redistribution.** A limited quantity of stockpiled soil may be distributed on the refuse

pile to determine the quantity of soil cover necessary to meet revegetation reclamation requirements. The remainder of the stockpiled soil will not be moved until redistributed during reclamation operations unless approved by the Division.

### **234.300 Topsoil Stockpile Relocation**

Stockpiled soil in jeopardy of being detrimentally affected in terms of its quantity and quality by refuse pile operations may be temporarily redistributed upon approval by the Division and modification of this M&RP.

During 2017 stockpiled and salvaged soils were redistributed on the north/northeastern end of the refuse pile. Stockpiled soils not redistributed in contemporaneous activity remained on top of the refuse pile. Additional stockpiled topsoil and subsoil material was relocated to the top of the refuse pile in January 2020 (personal communication with UDOGM by Jay Marshall, Dugout Canyon Mine). These soils will be redistributed as soon as possible when the contemporaneous reclamation of the refuse pile continues in 2020.

**Host Site.** Soil relocation may occur provided that such action does not permanently adversely affect soil of the host site.

**Topsoil Suitability.** Stockpiled soil relocation may occur provided the material is retained in a condition more suitable for redistribution than if stockpiled.

## **240 RECLAMATION PLAN**

### **241 General Requirements**

Reclamation of the site (soil redistribution, amendments, and stabilization) is discussed in Sections 242, 243, and 244, respectively.

## 242 Soil Redistribution

### 242.100 Soil Redistribution Practices

The stored soil will be redistributed after recontouring of the site has occurred during reclamation activities. The refuse pile will be covered with a minimum depth of the following: 1 foot of equally blended coal waste and subsoil, approximately 2.6 feet of subsoil and approximately 0.4 feet of topsoil. The volume of material needed to cover the refuse pile is 117,403 CY (RA Attachment 2-2.)

Soil will be salvaged from the southern expansion from the soil map units H and J. It is anticipated that the soil map unit H **within the expansion** area will have a soil salvage area of 0.73 acres. This will provide an average topsoil (A+B Horizons) salvage depth of 12 inches providing 3,533 CY and subsoil (C Horizons) salvage of 47 inches providing 13,948 CY. It is anticipated that the soil map unit J will have a soil salvage area of 2.5 acres with an average topsoil (A+B Horizons) salvage depth of 8 inches providing 8,066 CY and subsoil (C Horizons) salvage of 10 inches providing 10,152 CY.

The topsoil salvaged from the southern expansion will be used to provide contemporaneous reclamation and ~~will~~ may provide additional soil to the current topsoil stockpiles. ~~Topsoil will be salvaged Topsoil pile #3 will be added and stored in subsoil pile's #2 location.~~ **Topsoil will be moved from topsoil pile previously adjacent to the fence line on the western site boundary (RA Plate 2-2) and will be temporarily stored atop the refuse pile and used for contemporaneous reclamation. In addition, a pile of topsoil removed from a flooded/blocked drainage which was temporarily stored in the immediate area will be moved to the top of the refuse pile. Both piles were combined into one pile and will be used to contemporaneously reclaim the refuse pile in the area shown on RA Plates 2-2 and 5-1. A figure in RA Attachment 2-2, shows the location of the topsoil pile.**

The subsoil extracted from the southern expansion will be used to provide contemporaneous reclamation and the excess will add additional soil to the current subsoil stockpile #1. The subsoil

in pile #2 moved from the fence line on the western site boundary to atop the refuse pile will be used for contemporaneous reclamation.

The contemporaneous reclamation will commence on the northeastern area of the refuse pile and will continue to the southern end of the pile as needed. See RA Plate 2-2 for more details.

There ~~are currently~~ were topsoil and subsoil stockpiles located in the northeastern and southwestern portions of the site. The southwestern piles were relocated temporarily to atop the refuse pile and will be used to contemporaneously reclaim the refuse pile. A figure showing the location of the relocated topsoil and subsoil is in RA Attachment 2-2. Aero-Graphics, Inc. surveys estimated the volumes in each stockpile as:

Topsoil Stockpile #1 volume = 5,612 CY (Existing) + 4,088 CY (Phase II Expansion) = 9,700 CY  
Topsoil Stockpile #2 volume = 2,937 CY (Existing)  
Topsoil Stockpile #3 volume = 4,426 CY (Phase II Expansion)  
Contemporaneous Reclamation Topsoil volume = 3,086 CY (Phase II Expansion)  
Total Available Topsoil volume = 9,700 CY + 2,937 CY + 4,426 CY + 3,086 CY = 20,149 CY

Subsoil Stockpile #1 volume = 9,211 CY (Existing) + 2,920 CY (Phase II Expansion) = 12,131 CY  
Contemporaneous Reclamation Subsoil volume = 2,753 CY (Subsoil Pile #2) + 21,180 CY (Phase II Expansion) = 23,933 CY  
Total Available Subsoil volume = 12,131 CY + 23,933 CY = 36,064 CY

Total anticipated cover material available in the stockpiles or contemporaneously reclaimed is estimated to be 56,213 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 14,675 CY of subsoil (see RA Attachment 2-2) to a total of 70,888 CY. Blending methods are discussed in RA Attachment 2-2

The total volume of material required to cover the pile minus the available cover material equals the volume of cover material to be imported = 117,403 – 70,888 = 46,515 CY (see RA Attachment 2-2).

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### Summary of Volumes (Approximate)

Volume of material needed to obtain 4 feet of cover = 117,403 CY

Total cover material available at the site = 56,213 CY

Vol. of coal waste blended with sub-soil to produce the first foot of cover = 14,675 CY

Vol. of subsoil blended with coal waste to produce the first foot of cover = 14,675 CY

Volume of subsoil and topsoil needed to cover the pile = 102,728 CY

Volume of cover material to be imported from borrow site = 46,515 CY

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

Aero-Graphics, Inc. surveys from 2008, 2009, 2015, and 2017 were used to estimate the volume in the stockpiles, area of the refuse pile, and the location of Phase II in-place soils.

**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.

During the southern expansion, contemporaneous reclamation will occur on the northeastern portion of the refuse pile. Under the direction of Dugout engineers, a two-foot cover test plot was ~~will be~~ designated in this area. See drawings in Appendix RA Attachment 2-1 and RA Plate 2-2 for the location.

**Soil Thickness:** The topsoil will be distributed to the disturbed areas illustrated on RA Plate 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 117,403 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 RA Attachment 2-2.

**Compaction.** To prevent compaction of topsoil, soil-moving equipment will refrain from

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

**Erosion.** Care will be exercised to ensure the stability of soil on graded slopes to guard against erosion during and after soil application. Erosion control measures will include but not be limited to extreme surface roughening (also known as pocking and gouging). The addition of erosion control matting will be placed along the pile slopes as needed. A 10-foot wide terrace will be placed along the southern slope of the refuse pile at approximately 5,925 feet elevation with a 10-foot variance to allow for adjustments to tie into disturbed ditches. The terrace will provide a means to convey runoff and aid in sediment control.

#### **242.200      Regrading**

Since the site has been disturbed by previous activities and will be used to permanently store coal mine waste, the area will not be returned to the original geometric configuration. Prior to soil redistribution, the disturbed area will be graded to meet the proposed final reclamation topography (RA Plate 5-2).

The surface of the refuse pile will be left in a roughened state and in addition will be ripped prior to the application of soil. After the 1<sup>st</sup> lift of subsoil is placed, the surface of the refuse pile will be ripped again to a depth of approximately 12 inches in an effort to promote root penetration and to mix the top layer of the refuse with the subsoil. Refer to Section 341.200 for further discussion of roughening methods.

The second type of surface consists of roads, perimeter ditches, etc. which may be compacted through their use. The surface will be ripped to a depth of approximately 1.5 to 2 feet with a ripper-equipped tractor or other appropriate equipment where possible to reduce surface

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compaction, to assure soil adherence, and promote root penetration. Following the ripping of the soils and the application of stockpiled soils, extreme roughening techniques will be applied. A backhoe or trackhoe will be used to create microbasins with a minimum depth of 18" and the width of the bucket. Soil removed to form the microbasins will be dropped approximately 2 to 3 feet above the microbasin onto the soil surface.

### **242.300 Topsoil Redistribution on Impoundments and Roads**

The sedimentation ponds and embankments will be breached and reclaimed with the other surface disturbed areas. Similarly, reclamation of abandoned roads will also follow the same technique as for other disturbed areas.

### **243 Soil Nutrients and Amendments**

Soil nutrients and amendments may be applied to the redistributed soil as necessary, to establish the vegetative cover. The type and rate of application will be determined just prior to contemporaneous and final reclamation activities based on analyses of samples collected from the stockpiled soil materials. The soils will, at a minimum, be tested for pH, EC, total carbon, SAR, phosphorus, nitrate-nitrogen, and water holding capacity.

In the event that the topsoil/subsoil piles are moved adjacent to the Dugout Canyon Road in conjunction with the pile expansion, organic matter will be incorporated into topsoil/subsoil piles when the soils are relocated. Vegetation growing on the piles was incorporated into the topsoil/subsoil piles as they were relocated. The future type and rate of application will be determined by the applicant and UDOGM reclamation specialists prior to moving the soils during reclamation activities.

### **244 Soil Stabilization**

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### **244.100 Protection and Stabilization of Surface Areas**

Reclaimed areas will be stabilized to control erosion by application of one or combinations of a mulch, extreme surface roughening, or other appropriate methods. Rills and gullies will be regraded (Refer to Section 244.300). Seeding will be accomplished using BTCA methods suitable for reclamation. These methods may include, but not necessarily limited to: application of seeds, and mulch with a long fiber tackifier. Refer to Section 341.200 for a discussion of the seeding and the incorporation of straw/hay into the soil. Additional and more detailed discussions regarding soil protection during and after final reclamation can be found in Chapter 5 of this submittal. Methods of revegetation to be employed at final reclamation at this site are discussed in more detail in Chapter 3.

### **244.200 Mulch Application**

Mulch will be applied as discussed previously in this chapter and for a further discussion of revegetation practices to be utilized, see Chapter 3 of the approved M&RP.

### **244.300 Rills and Gullies**

**Postmining Land Use and Revegetation.** Rills and gullies that disrupt the postmining land use or reestablishment of vegetative cover will be regraded and seeded. CFC will fill, regrade, or otherwise stabilize any rills or gullies deeper than nine (9) inches that form in areas that have been regraded and soiled. The areas adjacent to any rills or gullies, which have been filled, regraded or otherwise stabilized, will be reseeded or stabilized accordingly.

**Water Quality.** Rills and gullies that contribute to the degradation of stream quality will be regraded and be seeded.

## **250 PERFORMANCE STANDARDS**

## **251 Topsoil, Subsoil, and Topsoil Supplements Management**

Topsoil, subsoil, and topsoil supplements shall be managed as outlined in Sections 230 and 240.

## **252 Stockpiled Topsoil and Subsoil**

All stockpiled topsoil and subsoil will be managed according to plans outlined in Sections 230 and 240.

### **REFERENCES:**

Jensen, E. H., and Borchert, J. W., 1988. Soil Survey of Carbon Area, Utah. Soil Conservation Service, United States Department of Agriculture, Washington D.C.

Leatherwood, J., and Duce, D., 1988. Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining. State of Utah Department of Natural Resources, Division of Oil, Gas and Mining.

**RA TABLE 2-1**  
**SOIL MAP UNIT FEATURES**

| Map Unit Symbol | Material   | Depth to Shale | Texture                                     | Rock Fragments (%) | Average pH |
|-----------------|--|----------------|---|--------------------|------------|
| A               | Shale  | 0 - 6"         | Clay loam, silty clay loam                  | 5 - 15             | 7.5        |
| B               | Gravelly Alluvium over Shale                                   | 20 - 40"       | Loam, clay loam                             | 20 - 60            | 7.3        |
| C               | Gravelly to Stony Alluvium                                     | 40 - 100"      | Loam, clay loam, sandy clay loam            | 20 - 60            | 7.3        |
| D               | Non-gravelly Alluvium, some wind blown material                | 40 - 100"      | Loam, clay loam, sandy clay loam            | 5 - 15             | 7.5        |
| E               | Gravelly Alluvium, small amount of refuse with coal on surface | 40 - 100"      | Clay loam, loam                             | 15 - 45            | 7.5        |
| F               | Non-gravelly Alluvium (topsoil storage)                        | 40 - 100"      | Clay loam, sandy clay loam                  | 5 - 15             | 7.0        |
| G               | Alluvium and woody materials                                   | 40 - 100"      | Clay loam, sandy clay loam                  | 15 - 30            | 7.3        |
| H               | Relatively Non-gravelly Alluvium (undisturbed)                 | 60 - 100"      | Loam, clay loam, sandy clay loam            | 5 - 25             | 7.4        |
| I               | Cobbly and Gravelly Alluvium                                   | 40 - 100"      | Sandy clay loam, clay loam                  | 25 - 65            | 7.5        |
| J               | Gravelly to Stony Alluvium over Shale                          | 10 - 40"       | Silty clay loam, clay loam, sandy clay loam | 10 - 60            | 7.5        |
| K               | Boulders   | -*             | -   | -                  | -          |
| M               | Shale with thin layer of Gravelly Alluvium                     | 4 - 20"        | Silty clay loam, sandy clay loam            | 5 - 40             | 7.5        |

\*Refer to RA Plate 2-1 for description.

Canyon Fuel Company, LLC  
Dugout Canyon Mine

Refuse Pile Amendment  
June 2006

**RA ATTACHMENT 2-1**

**SOILS REPORT**

Canyon Fuel Company, LLC  
Dugout Canyon Mine

Refuse Pile Amendment  
~~July~~ April 2020 ~~June 2006~~

**RA ATTACHMENT 2-2**

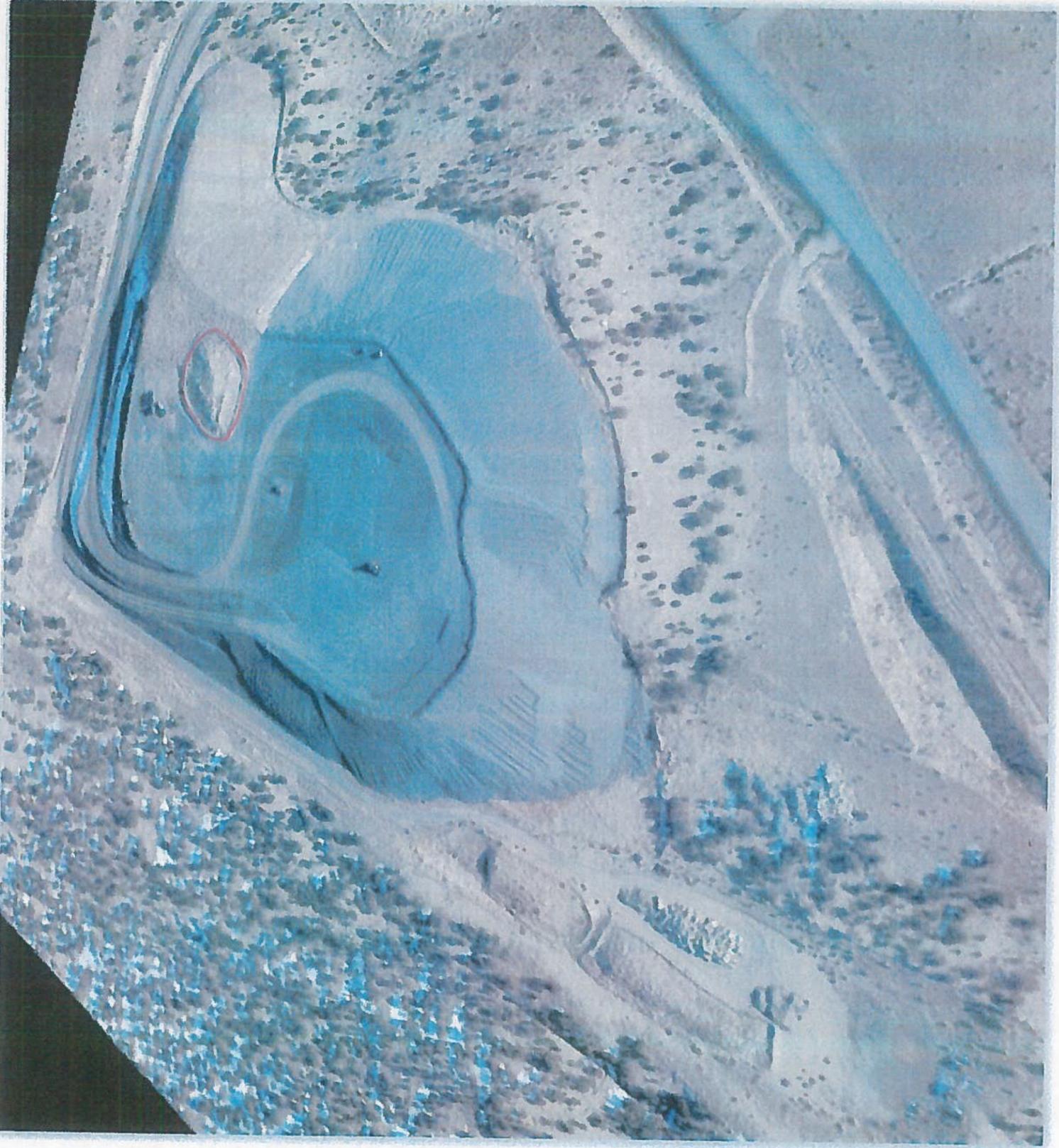
**Soil Volume Calculations and Relocated Stockpiles**

Canyon Fuel Company, LLC  
Dugout Canyon Mine

Refuse Pile Amendment  
June 2006

**RA ATTACHMENT 2-2**

**Soil Volume Calculations and Relocated Stockpiles**



**Photography Date and Time:**  
 September 20, 2018  
 @ 9:41 AM MDT  
 December 17, 2019  
 @ 10:10 AM MST

**DUGOUT CANYON MINE  
 Waste Rock Facility**

Canyon Fuel Company

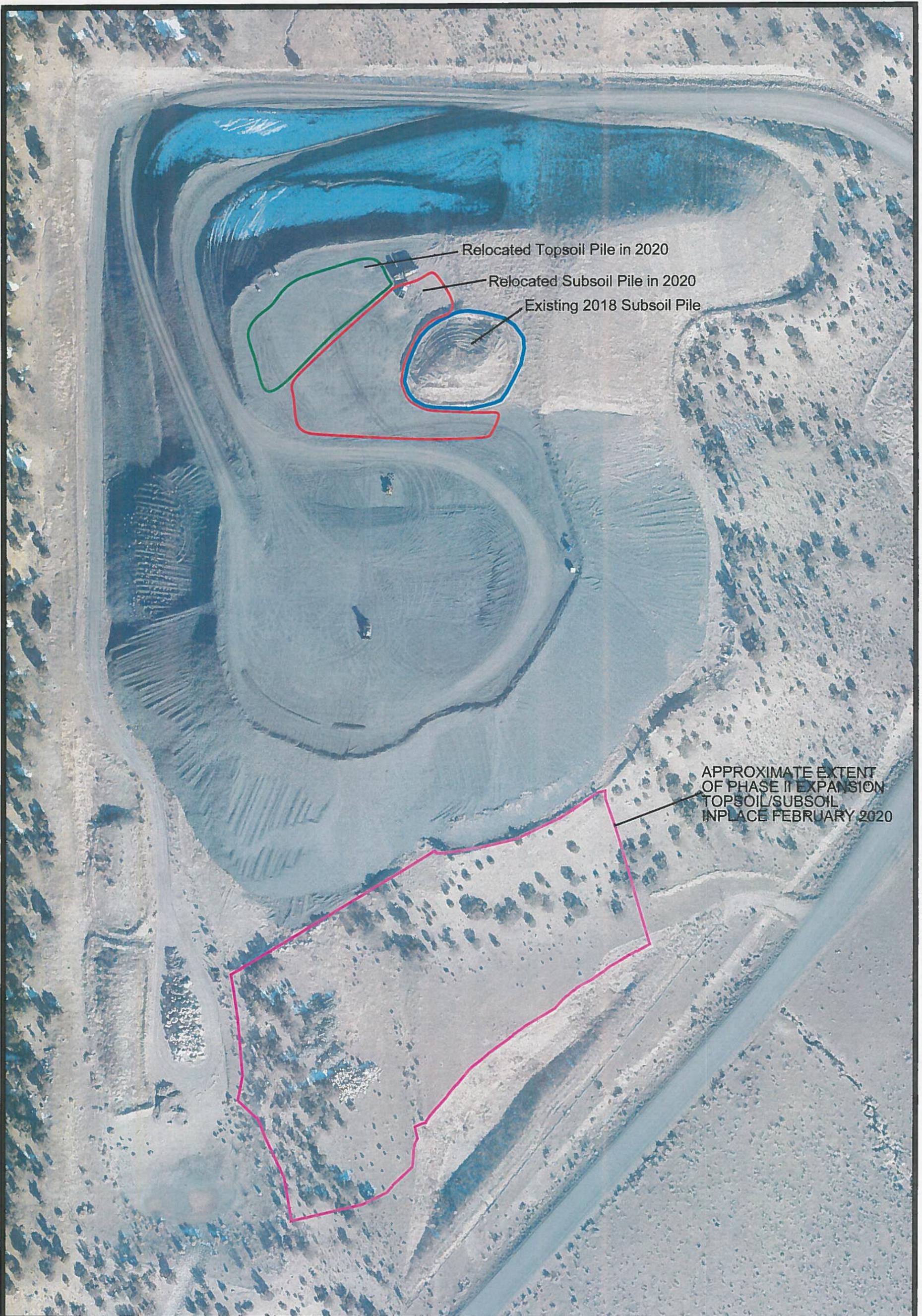
| Pile Name                          | Area                            | Average Depth | Elevation Accuracy(+/-) | Volume Accuracy(+/-) | Cut Volume                    | Fill Volume                           | Net Volume                            |
|------------------------------------|---------------------------------|---------------|-------------------------|----------------------|-------------------------------|---------------------------------------|---------------------------------------|
| Soil Storage Pile<br>(Red Outline) | 12,432.08 sq. ft.<br>0.29 acres | 4.57 ft.      | 0.20 ft.                | 4.38 %               | 3.10 cu. yd.<br>83.70 cu. ft. | 2,105.20 cu. yd.<br>56,840.40 cu. ft. | 2,102.10 cu. yd.<br>56,756.70 cu. ft. |

The piles use the toe of the pile for the base.  
 The "Expansion Area" has had the piles subtracted from the volume and uses the original base for the calculation



40 W. Oakland Ave. Salt Lake City, UT 84115

(801) 487-3273



For Relocated Soil Quantities  
Refer To Section 242.100



| REVISIONS OR UP-DATES                    |      |    | DATE:         |
|--|------|----|---------------|
| NO.                                      | DATE | BY | 02/03/2020    |
|  |      |    | DESIGNED BY:  |
|  |      |    | DRAWN BY: JKS |
|  |      |    | CHECKED BY:   |
|  |      |    | SCALE: NTS    |
| FILENAME: Waste Rock Piles Relocated.Dwg |      |    |               |



Canyon Fuel Company, LLC  
Dugout Canyon Mine

Refuse Pile Facility  
Relocated Soils

P.O BOX 1029  
WELLINGTON, UTAH 84542

DRAWING OR  
MAP NUMBER  
RA Attachment 2-2