

May 21, 2013

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: Expansion of Lift #5 at Waste Rock Disposal Site

Dear Sirs:

Please find enclosed with this letter an amendment to the Sufco Mine Permit to revise the area of Lift #5 at the Waste Rock Disposal Site. We have included three redline/strike out copies of the text and 3 copies of the maps associated with this amendment.

We are planning to expand the area of Lift #5 to the west of the existing lift boundary. This expansion will require removal of growth medium/topsoil from approximately 0.53 acres. Ditch No. 1 will be moved to the perimeter of the expanded lift and will be constructed to the currently approved design calculations. The concrete of the existing Ditch No. 1 will be broken up and left in place, to be covered with waste rock. Undisturbed Diversion No.2 will be moved closer to the hillside on the west and will be constructed to the currently approved design.

During the construction of the expansion, subsoil which was previously deposited during a storm which breeched a berm surrounding the existing subsoil pile will be collected and replaced on the existing pile. Division No. 2 will be redefined in the area following the removal and replacement of the subsoil materials.

The expanded Lift #5 will be constructed and maintain as written in the currently approved permit.

In addition, we have addressed some deficiencies from Priscilla Burton associated with the as-built for the subsoil and topsoil storage piles at the waste rock site.

If you have questions or need addition information please contact Vicky Miller at (435)286-4481.

CANYON FUEL COMPANY
SUFSCO Mine



Kenneth E. May
General Manager

Encl.

cc: DOGM Correspondence File

File in:

- Confidential
- Shelf
- Expandable

Date Folder *052813* *C/0410002*

Incoming

RECEIVED

MAY 28 2013

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: SUFCO MINE

Permit Number:

C/041/0002

Title: Revisions to Waste Rock Disposal Site to Expand the Area of Lift #5

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

Modification of the Monitoring & Mitigation plan for the South Fork Quitcupah 3R2S portion of the stream channel.

Instructions: If you answer yes to any of the first eight questions, this application may require Public Notice publication.

- Yes No 1. Change in the size of the Permit Area? Acres: _____ Disturbed Area: 0.53 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?
- Yes No 24. Does the application include confidential information and is it clearly marked and separated in the plan?

Please attach three (3) review copies of the application. If the mine is on or adjacent to Forest Service land please submit four (4) copies, thank you. (These numbers include a copy for the Price Field Office)

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

KENNETH E. MAY

GENERAL MANAGER

5/21/13

Kenneth E. May

Print Name

Position

Date

Signature (Right-click above choose certify then have notary sign below)

Subscribed and sworn to before me this 21 day of May, 2013

Notary Public: Jacquelyn Nebeker, state of Utah.

My commission Expires: _____

Commission Number: _____

Address: _____

City: _____ State: _____ Zip: _____



JACQUELYN NEBEKER
Notary Public
State Of Utah
My Commission Expires 3/24/2015
Commission# 606049

For Office Use Only:

Assigned Tracking Number:

Received by Oil, Gas & Mining

CHAPTER 1
GENERAL CONTENTS

CHAPTER 2

SOILS

barbwire fence, and revegetated with a quick growing vegetative cover (standard seed mix in section 3.4.1.2 minus the shrubs and trees) to control erosion. The surface of the topsoil pile will be pitted to reduce runoff and erosion. This soil will not be moved or disturbed until it is required for redistribution during final reclamation.

Topsoil from the Link Canyon Substation No. 1 will be placed and stored on the outslope of the pad. This storage area will be protected with berms and/or silt fences, a three-strand barbwire fence, and revegetated to control erosion. This soil will not be moved or disturbed until it is required for redistribution during final reclamation.

Soil from the Link Canyon Substation No. 2 will be placed in a soil stock pile located at the south end of the pad area. The storage area will be protected with berms and/or silt fences, a three strand barbwire fence, and revegetated to control erosion. This soil will not be moved or disturbed until it is required for redistribution during final reclamation.

Soil from the Link Canyon Mine Portal area will be placed in a topsoil pile located south of the disturbed portal pad area out of the floodplain (Plate 5-2F). The storage area will be protected by installing a topsoil storage sign at the base of the pile, berms and/or silt fences, a three strand barbwire fence, and protected from wind and water erosion by surface pitting the stockpile to retain moisture and reduce erosion and by being revegetated with a quick growing vegetative cover (standard seed mix in section 3.4.1.2 minus the shrubs and trees) to control erosion. This soil will not be moved or disturbed until it is required for redistribution during final reclamation. The surface of the topsoil pile will be pitted to reduce runoff and erosion. Vegetation removed during site construction, such as sage brush and other woody plants, will be placed on top of the pile.

Excess subsoil associated with construction of a run of mine coal stockpile and the West Lease portal tunnel development is stored at SUFACO Mine's 40-acre waste rock disposal site (see Section 3.1.6 of Volume 3 of this M&RP). This material is segregated and will be available for fill during the reclamation phase of the mine site if needed. ~~About 1,100~~ A total of 756.4 cubic yards of topsoil are stored immediately west and to the east of the subsoil pile. This material represents the upper 24.12 inches of topsoil removed prior to placing the subsoil. This material is stored and

protected as described in Section 3.1.6 of Volume 3 of this M&RP. This topsoil is reserved to reclaim the subsoil storage area. The substation binwall has 2,160 cubic yards of subsoil material and 5,300 cubic yards of road base and there is 11,364 cubic yards subsoil material stored at the waste rock site for a total of 18,824 cubic yards that will be available for use as subsoil material during final reclamation of the minesite facilities pad site.

2.3.2 Topsoil and Subsoil Removal

2.3.2.1 Topsoil Removal and Segregation

All topsoil thicker than 6 inches will be removed as a separate layer from the subsoil, segregated, and stockpiled separately. Topsoil less than 6 inches thick will be removed according to Section 2.3.2.3. However, in the areas of the Link Canyon Substation Nos. 1 and 2 pads, all soil will be removed and stored in one area as a single soil resource. At substation pad No. 1, the maximum projected volume of topsoil salvage based on the soil survey depth of 20 inches and the projected topsoil salvage area of 0.08 acres is 224 cubic yards. The salvaged topsoil will be removed as a separate layer, segregated and placed on the south end of the pad outslope. The remaining excavated material in the deeper cuts will be used as fill material for the access road and the north end of the substation pad. At substation No. 2, the volume of soil projected to be removed is 118 CY.

2.3.2.2 Poor Topsoil

Topsoil that is of an insufficient quantity, or of poor quality (for sustaining vegetation) will be removed as a separate layer and segregated. Such operations will be done with approval of the UDOGM, and in compliance with R645-301-233.100 (Section 2.3.3.1).

2.3.2.3 Thin Topsoil

Topsoil to be removed that is less than 6 inches thick will be removed with the immediately underlying unconsolidated materials (up to a total of 6 inches). This material mixture will be treated as topsoil and stockpiled together without any horizon segregation.

2.3.2.4 Minor Disturbances Not Requiring Topsoil Removal

APPENDIX 2-3

Water and Soil Data Report



July 16, 2010

Mr. Leland Roberts
Canyon Fuel Company
Sufco Mine
597 South SR 24
Salina, Utah 85654

Dear Leland:

Enclosed are the results for samples our laboratory received on June 15, 2010. The analyses were completed according to Utah "Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining."

Feel free to contact me at your convenience if you have any questions or concerns.

Sincerely,

A handwritten signature in cursive script that reads "Karen Secor".

Karen Secor
Mining Soils

xc: File
Encl



Soil Analysis Report
Canyon Fuel Company, LLC.
397 South 800 West
Salina, UT 84654

Report ID: S1006246001

Project: Sufco Topsoil

Date Reported: 7/8/2010

Date Received: 6/15/2010

Work Order: S1006246

Lab ID	Sample ID	pH s.u.	Saturation %	Electrical Conductivity dS/m	Organic Matter %	PE		PE		
						Calcium meq/L	Magnesium meq/L	Potassium meq/L	Sodium meq/L	
S1006246-001	Gob Pile Composite	7.3	30.1	2.82	3.9	22.2	12.2	0.31	2.02	0.49

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= 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



Soil Analysis Report
Canyon Fuel Company, LLC.

397 South 800 West
Salina, UT 84654

Report ID: S1006246001

Project: Sufco Topsoil

Date Received: 6/15/2010

Date Reported: 7/8/2010

Work Order: S1006246

Lab ID	Sample ID	Sand			Silt		Clay		Texture		Very Fine		Nitrogen		Boron		Selenium		Phosphorus		
		%	%	%	%	%	%	%	%	%	CO3	Nitrate	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
S1006246-001	Gob Pile Composite	76.0	15.0	9.0	Sandy Loam	11.2	16.6	1.9	<0.02	1.07	2.50										

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= 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



Soil Analysis Report
Canyon Fuel Company, LLC.

397 South 800 West
Salina, UT 84654

Report ID: S1006246001

Project: Sufco Topsoil

Date Received: 6/15/2010

Date Reported: 7/8/2010

Work Order: S1006246

Lab ID	Sample ID	Available		Total		Neutral
		Potassium meq/100g	Carbon %	TOC %	Potential t/1000t	
S1006246-001	Gob Pile Composite	0.14	12.6	10.6	167	

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2Oso= 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

CHAPTER 7
HYDROLOGY

3 East portals, and Quitchupah portals have sediment control consisting of routing runoff from disturbed areas into the mine with berms and insloping. The runoff is then treated using in mine settling ponds prior to discharge through approved UPDES points. The disturbed area associated with the South portals is 0.017 acre. The disturbed area associated with the 3 East portals is 0.017 acre. The disturbed area associated with the Quitchupah portals is 0.017 acre. A calculation demonstrating the insignificance of the inflow of surface water into the mine is included in Appendix 7-16.

During construction of the new overflow pond sediment from the disturbed area will be controlled by the use of containment berms and silt fencing.

Several alternate sediment control areas are defined within the mine site and are listed below (see Plates 5-2B,C,D,E,&F):

- The original substation pad area and fire water tank above the office building. The sediment controls include a graveled pad area and silt fences. The disturbed area is 0.324 acre.
- The topsoil stockpile near the mine site primary sedimentation pond. The sediment control consists of containment berms and silt fencing. The disturbed area is 0.105 acre.
- The topsoil stockpile near the mine site overflow pond. The sediment control consists of containment berms and silt fencing. The disturbed area of the overflow pond topsoil stockpile is 0.141 acres.
- The subsoil, topsoil and sedimentation pond topsoil stockpiles at the waste rock disposal site. The sediment controls include containment berms and silt fencing. The disturbed area of the subsoil and topsoil stockpiles is 0.541.24 acre. The disturbed area of the pond topsoil pile is 0.293 acre.
- The area above the mine fan in East Spring Canyon. The sediment control consists of silt fencing. The disturbed area is 0.122 acre.
- The pump house in Convulsion Canyon. The sediment control consists of containment berms and silt fencing. The disturbed area is 0.075 acre.
- The leach field in Convulsion Canyon. The sediment control consists of containment berms and silt fencing. The area is fenced to prevent grazing. The disturbed area is 0.40 acre.
- The new substation pad disturbed area is 0.287 acre. The sediment controls include gravel and silt fences.
- The 4 East portal site consists of a pad area where a mine fan has been built. The disturbed area associated with the two portal openings at this site is 0.70 acre.

VOLUME 3
WASTE ROCK DISPOSAL SITE

WASTE ROCK DISPOSAL SITE

PART 1 INTRODUCTION

Canyon Fuel Company LLC operates a waste rock disposal site at a location west of their SUFCO Mine. The facility is required for disposal of underground development wastes generated during mining operations.

~~Coal mine waste produced in the underground Soldier Canyon and Dugout Canyon mines will normally be disposed of in the underground working areas. Excess gob material produced that cannot be disposed of underground will be brought to the surface and stored in a temporary gob pile until the material can be hauled to the approved SUFCO Waste Rock Disposal site. Before any coal mine waste is hauled from either the Soldier Canyon or Dugout Canyon mines, the material will be tested to insure that material meets the requirements of R645-301-536.110. The results of the material testing will be certified. Any gob material hauled from the Soldier Canyon or Dugout Canyon mines will be tested for toxicity as outlined in Section 3.1.5 of this permit.~~

Many of the general requirements for an operating permit are covered in the minesite M&RP, Volumes 1 and 2, and are not repeated in this document. Only those items considered site specific or those items requested by the Division have received detailed attention in this Waste Rock Disposal site M&RP. Information contained in the SUFCO Mine M&RP application should also be considered during review of this document.

1.1 Scope of Operation

The disposal site is located on part of a 9,640 acre parcel of private land located within the boundaries of the Fishlake National Forest. SUFCO hauls the development wastes by truck from the mine via a paved county road. Travel distance along the road is 6.4 miles from the portal to the disposal site exit. ~~Coal mine waste from the Soldier Canyon and Dugout Canyon mines will be hauled by truck via public (state and county) roads to the SUFCO site. Approximately, a total of 40,000 tons of waste material will be disposed of at the site each year from the three mines.~~

1.2 Access and Use

The waste rock disposal site is located on forty acres owned by Southern Utah Fuel Company. The site is located in the northwest 1/4 of the northeast 1/4 of Section 18, Township 22 South, Range 4 East, Salt Lake Base and Meridian. A copy of SUFCO's Warranty Deed is included as Exhibit 1. This location is some 6 miles west from the minesite and is within Sevier County. ~~Access frequency is minimal with waste rock being hauled to the site only a few times each year.~~ It is estimated that approximately 10,000 tons of non-toxic, non-acid forming waste shale, coal, and sandstone per year will be generated by the mining operation. Life of the facility at this rate is estimated at 20 years. The design of the disposal area conforms to all State and Federal regulations.

The site will not be used as a sanitary land fill or for disposal of mining related rubbish. Efforts will be made to haul to the site ~~only~~ on week days. Waste rock will be contemporaneously spread and compacted. ~~After a section of the fill site is completed, that segment will be reclaimed. It is unlikely that any structure will ever be placed on the fill area.~~

1.3 Disposal Site

The disposal site is located next to a paved county road that is presently used for access to the mine. Part of the site was **previously** disturbed for use as a borrow area for material to repair a slide on the county road in 1981. The site is situated between two natural drainages and, consequently, will cause only minimal disturbance to the existing drainages. The waste rock will be placed ~~adjacent to the embankment of the county road and will be terraced to fit in with the natural contour to the extent allowed.~~ Drainage from the waste rock disposal area will be treated with a sediment pond, **silt fences and other sediment controls**. The drainage from the surrounding undisturbed area **will be routed around the disturbed area when possible.** ~~is bypassed with three diversion ditches.~~ There are no buildings or structures within 300 feet of the disposal site. ~~The Bureau of Land Management owns any and all mineral rights to the property.~~ There are no holders of lease hold interest or purchasers of record in the waste rock disposal area.

1.4 Contiguous Owners

~~Canyon Fuel Company's forty acre plot~~ **The waste rock site** is bordered by private and Forest Service land. The Warranty Deed showing Southern Utah Fuel Company's right of ownership **for Section 18, Township 22S, Range 4E** is included as Exhibit 1. The adjacent property owners are shown on Map 1. Table 1.3 gives the names of the present property owners of record contiguous to the waste rock disposal site.

TABLE 1.3
CONTIGUOUS PROPERTY OWNERS

~~Howard W. & Janet Nielsen Trustees~~

~~Mount Air Oaks Corp.~~

~~Camp Estates L.C.~~

Kenneth M. Christensen ETAL
Fishlake National Forest, U.S. Department of Agriculture
Ark Land Company
Cary & Leanna Beagley

1.5 Mining Permits - Compliance Information

Canyon Fuel Company currently operates under approved mining permit Number ACT/041/002. ~~Canyon Fuel Company presently holds an approved Mining Permit (Number ACT/007/005) for its Skyline Mines operation located in Carbon and Emery Counties, Utah.~~ This permit was approved and issued by the State of Utah Division of Oil, Gas, and Mining in June of 1980. A NOV history of all of Canyon Fuel Company's operations is given in Volume 1 **and in General Chapter 1** of the M&RP.

1.6 Insurance Coverage

The waste rock disposal site is included in the liability insurance coverage held by the operator **(See General Chapter 1 for a copy).**

PART 2 ENVIRONMENTAL RESOURCES

2.1 General Environmental Resources Summary

The environmental resources in the waste rock disposal area have been individually studied and are either presented in this document or are addressed in the main body of the M&RP.

The Permittee has attempted to provide pertinent and complete reports for each environmental study discipline through the use of independent consultants who are recognized as experts in their individual fields. It is the Permittee's intent that by so doing, the reviewing agencies will have available to them reliable data for their environmental analysis.

The initial geotechnical/hydrological analyses were contracted to Sergent, Hauskins and Beckwith (SHB). Drs. Stanley Welsh, Joseph Murdock, and Sheldon Nelson combined their efforts on the vegetative and soils requirements. Dr. Clyde Pritchett supervised the mammals study, and Dr. Clayton White concentrated on the birds with particular emphasis on the area's raptors. (These wildlife reports cover the general permit area which is adjacent to the proposed disposal site.) An extended opinion covering wildlife use has been provided by the Division of Wildlife Resource and is appended as Exhibit 2. Drs. Welsh, Nelson, Murdock, Pritchett, and White are all associated with the faculty of Brigham Young University. The cultural resource surveys were performed by Archeological-Environmental Research Corporation of Salt Lake City with Dr. Rick Hauck serving as project director. Copies of consultant reports not included previously in the M&RP are incorporated in this document.

Sediment will be controlled by construction of ~~a~~ diversion ditches around the area to be disturbed and through the use of berms, and **other sediment control devices such as** silt fences . The active disposal area will be limited to ~~approximately 2 acres at any given time~~ and will be protected by ~~erosion~~ **sediment** control devices located in the immediate area. Topsoil will **be salvaged** and stored for distribution on newly filled areas. Revegetation **is discussed in Section 4, Reclamation Plan.** ~~on completed fill areas will be accomplished during the first available growing season.~~

The site contains no springs or perennial streams. Surface flow is limited to runoff from precipitation events and is minimal because of a small upslope drainage area. ~~Surface flow from above the site will be diverted past the disturbed area using diversion ditches and culverts.~~

~~The climate of the disposal area is similar to that found at the mine portal. No additional monitoring is proposed.~~

The applicant will help to prevent, control, and suppress ~~range, forest, and coal fires~~ in the waste rock pile(s). ~~the permit area which are not approved by the Division.~~

2.1.1 Archeological Evaluation

A cultural resources evaluation, conducted by Dr. F.R. Hauck of Archeological-Environmental Research Corporation, resulted in negative findings. A copy of Dr. Hauck's report is attached as Appendix I.

2.1.2 Threatened & Endangered Species

The waste rock disposal site is not known to provide habitat for any threatened or endangered species. A letter from the Regional Resource Analyst of the Division of Wildlife Resources confirming this opinion is included as Exhibit 2. The applicant will promptly report any threatened or endangered species in the permit area, or golden eagles not previously reported, to the Division.

2.2 Geology

The bedrock, which underlies the site and is exposed immediately to the north and east of the site, consists of massive sandstone and sandy, carbonaceous claystone of the Price River Formation. The Price River Formation is part of the Mesaverde Group which is upper Cretaceous in age. The total thickness of the Price River Formation is about 700 feet, but the thickness below the site has not been determined. Local bedrock dips do not appear to exceed 10 degrees and no major faulting is apparent in the immediate site area. There has been no underground mining beneath the site.

As encountered in the seven boreholes and five backhoe test pits performed on site by SHB, the Price River Formation is overlain by 4 to 30+ feet of unconsolidated colluvial material. This overburden consists of a soft to hard clay sequence with varying amounts of sand and silt. Subordinate units of argillaceous sand are also present in the colluvial deposit. The predominant clay units are normally gray to black in color, medium in plasticity, and firm to hard in consistency.

2.3 Ground Water Hydrology

No free ground water was encountered in the soils overlying the bedrock. Water was encountered in the bedrock formation. Original ground water levels in the observation wells are recorded on the Well Completion Records which are included in Appendix A of the SHB report included as Appendix II. Subsequent ground water ~~observation well~~ level measurements are found on the Division's EDI data site. ~~may be found in Volume 9 of the M&RP.~~ Activity at the disposal site will have no impact on the ground water system.

2.4 Surface Water Hydrology

Surface drainage of the immediate site area appears to be good. No existing springs are within the proposed waste rock disposal area; however, some spring activity is present to the north and east of the forty acre parcel of property. A cut section of the county road to the east of the property has experienced some localized, shallow seated instability due to spring seepage in the cut slopes.

Drainage of the area to the north of the proposed fill area is directed by culverts through the county road embankment fills. The culverts are located to the east and west of the proposed waste disposal area and discharge into natural channels which naturally isolate the area to be disturbed. Some natural erosion is evident in the channels. ~~below the east culvert.~~ However, at a point approximately half way along the south side of the disposal site, the channels fade into an open grassy area and becomes almost indiscernible. ~~The channel below the west culvert is similarly nearly indiscernible.~~ The lack of defined channels through the lower half of this down slope drainage area emphasizes the lack of significant surface flow in the recent past.

At the time the exploration was made, the surface of the site was firm and the drilling equipment experienced no problems.

The only impact on the surface water hydrology will be that associated with collection of the water from the disturbed area, and routing of this water through the sedimentation pond and the routing of water from the undisturbed area around the waste disposal area site. No perennial or intermittent streams pass through the area. Flow is limited to storm and/or snow melt runoff.

2.4.1 Diversion Ditches

Sergent, Hauskins & Beckwith's work on hydrology of the area was of an investigative nature. Subsequent designs of diversions used actual areas and runoff curve numbers that are believed to be more representative of the area. These calculations are included in Appendix III.

Diversion ditches are provided to direct runoff around the disturbed areas and sediment pond. Ditches will convey runoff from the disposal area to the sediment pond. These diversion ditches are shown on Map 2.

The maximum flow resulting from a 10 year, 24 hour storm was used as the design flow for each of the diversions. Ditches No. 1 and 2 conveying runoff to the sediment pond shall be trapezoidal shaped in cross-section. Both ditches have a bottom width of 12 inches and side slopes of 1:1 and are a nominal 16 inches deep. ~~These two ditches are both~~ Ditch No. 2 is concrete lined, Ditch No. 1 is a dirt ditch with steep areas within the ditch being riprap lined. Ditch No. 1 was previously a concrete lined ditch, which will be broken up, left in place and covered with waste rock.

This design will carry the 4.42 cfs of runoff expected from the disturbed area with 0.3 feet of freeboard. Design calculations are included in Appendix III.

Undisturbed drainage is routed around the disposal site and sediment pond using Diversions No. 1, 2, and 3 as shown on Map 2. The drainage areas are shown on Map 3. Diversion No. 1 utilizes an existing culvert to convey part of the drainage area across the county road and onto an existing flood plain. This vegetated channel will adequately carry the runoff expected from the 0.19 square mile area. Another culvert will be used to collect the runoff from Area No. 2 and convey it across the county road. The diversion utilizes a vegetated ditch 0.90 feet deep and 19 feet wide of parabolic cross-section. Diversion No. 3 will route road runoff away from the facility. Design calculations for these diversions are included in Appendix III.

2.4.2 Hydrologic Design Criteria of the Sedimentation Pond

Calculations of hydrologic design criteria are presented in Appendix III. Runoff volumes were calculated using SCS procedures.

The maximum capacity of the proposed sediment pond is 33,360 cubic feet. An ultimate sediment load based on 3 year loading was determined to be 9,148 cubic feet. Sediment volume is based on 0.0697 acre-foot per year for the 7.93 acres of disturbed area. In addition, a 10 year, 24 hour storm on the area would produce 21,792 cubic feet of runoff assuming no infiltration or collection. The total storage required for the reservoir is therefore 30,940 cubic feet. The additional storage volume is to allow for detention of a 10-year, 24-hour storm should the pond have water at the beginning of the storm.

The emergency spillway was designed to convey a 25 year, 24 hour flood flow through the pond safely with one foot of freeboard, assuming the pond was full at the beginning of the storm and no routing in the pond. The emergency spillway consists of a rip-rap lined ditch of trapezoidal cross-section. The side slopes are 3h:1v. The bottom width is 3 feet with a minimum depth of 0.75 feet. Rip-rap and filter blanket are in accordance with the recommendations in Appendix III. The crest elevation of the emergency spillway is 7890.70 feet.

2.4.3 Hydrologic Design Criteria of the Decanting Impoundment

Calculations and Hydrologic design criteria are presented in Appendix III. Runoff volumes were calculated using SCS procedures.

The maximum capacity of the decanting impoundment is 5,048 cubic feet. An ultimate sediment load based on 3 year loading was determined to be 654 cubic feet. In addition, a 10 year, 24 hour storm on the area would produce 3,655 cubic feet of runoff assuming no infiltration. The total storage required for the impoundment is therefore, 4309 cubic feet.

The emergency spillway was designed to convey the 25 year, 24 hour flood flow from the sediment pond through the impoundment safely with one foot of freeboard, assuming the pond was full at the beginning of the storm and no routing in the pond. The emergency spillway consists of a rip-rap

lined ditch of trapezoidal cross-section. The bottom width is 4.6 feet with a depth of 1.5 feet. Rip-rap and filter blanket are in accordance with the recommendations in Appendix III. The crest elevation of the impoundment emergency spillway is 7880.25 feet.

2.5 Hydrological Impacts

Beyond those factors discussed in sections 2.3 and 2.4, no hydrological impacts, either surface or underground, are anticipated.

2.6 Climate

The climate at the proposed disposal site is typical of subalpine areas in the central region of Utah. Summer seasons are generally short with considerable variation in temperature. Fall and Spring are erratic in nature with snow precipitation occurring as early as September and as late as June. Snow frequently remains on the ground from November until May.

A complete climatological summary for the climatological station at the SUFCO Mine is included in Volume 9 of the M&RP.

2.7 Vegetation

An analysis of the vegetative community at the waste rock disposal site was made by Drs. Welsh and Murdock in 1983. Their measurements included information on cover, productivity and shrub density for the disposal site. An amended copy of this report is included as Appendix IV. The range condition was evaluated by the SCS in 1987. A copy of their evaluation is included as Exhibit 3.

2.8 Aquatic Wildlife Resources

The disposal site contains no perennial or intermittent streams. The only surface flow in the area is in the form of occasional storm runoff. Consequently there has been no analysis made of the aquatic wildlife resources.

2.9 Terrestrial Wildlife

The disposal area is adjacent to the area investigated by Drs. Pritchett and White as reported in the appendices to the M&RP, Volume 6. A further evaluation of the wildlife use of the site has been

provided by Wes Shields, Resource Analyst, DWR, Cedar City. A copy of Mr. Shields' report is included as Exhibit 2.

The area is probably used by wintering deer and elk and by several non-game species of birds and mammals. The small area which will be disturbed at the disposal site at any given time will result in minimal disruption to the wildlife community. Revegetation of those areas currently disturbed and the sediment pond water retained should help mitigate the impact.

Protection of the area wildlife will also be provided by the Applicant not using persistent pesticides unless approved in advance by the Division.

2.10 Mammals

Refer to discussion of Section 2.9.

2.11 Raptors

The waste rock disposal site contains no suitable nesting sites for raptors. The area is probably part of the hunting territory for certain raptor species. (See DWR letter appended as Exhibit 2.)

The impact on the hunting activity of the raptors will be minimal since the area to be disturbed at any given time is small.

2.12 Soils

Soils surveys were done for different purposes by both the engineering consultant and by a soils specialist. Seven exploratory borings were drilled with truck-mounted equipment to depths of 25 to 51 feet below existing grades at the site. The borings were performed using 6 1/2 inch O.D. hollow stem augers. Standard penetration testing and open-end drive sampling were performed at selected intervals in the borings.

In ~~four~~ **five** of the borings, PVC observation wells were installed for the purpose of long term monitoring of the ground water conditions at the site.

In addition, five backhoe test pits were performed at the site to supplement the soil boring program. The results of the field investigation are presented in Appendix A of the SHB report, which includes a brief description of drilling and sampling equipment and procedures, logs of the test borings, logs of the test pits, and records of the observation well construction details. A site plan showing the boring, test pit, and observation well locations is included in a pocket at the back of the report.

The field investigation was supervised by Paul Kaplan and Donald Curran, engineers with SHB.

Moisture content determinations were made on selected tube samples recovered, and dry densities were determined for selected 2.42 inch diameter open-end drive samples. The results of these tests are shown on the boring logs.

Grain-size analysis, Atterberg limits, and direct shear tests were performed on selected soil samples. The results of these tests are presented in Appendix B of the SHB report along with a brief description of testing procedures.

A soil survey report dated December 22, 1987 is included as Appendix V. A facilities map overlay is provided that shows the outline of the sagebrush-grass vegetative type. Essentially all of the permitted ~~10.986~~ acre waste rock disposal site is within that vegetative type. A very small proportion was mapped previously as mountain brush, and about two acres of the site was modified historically as a source of fill materials.

Four soil test pits were dug at the site, within the undisturbed area on December 10, 1987, and five more were dug on 16 December 1987 (to ascertain the adequacy of the first four pits). It was ascertained that the soils in the sagebrush-grass vegetative type are all sufficiently similar as to not be further divisible into mappable units. There are no rock outcrops within the undisturbed area. Rock outcrops were exposed in the existing borrow area, prior to using the area for waste rock disposal.

The contemporary study of soils at the waste rock disposal site indicate "that this small area is predominated by a single soil type which is classified as Typic Torrifuvents and in land capability

class V with limitations due to climate and slope. Surrounding soils have been previously classified as Typic Argixerolls and the soil on the proposed soil site is small enough to have been considered an inclusion on previous soil maps." See the appended soil analysis report for additional details.

A discussion of the soil taxonomic classification availability of topsoil and other related soils discussion may be found in the report prepared by Dr. Sheldon D. Nelson located in Appendix V.

Lift #5 Expansion - Growth medium will be removed to a minimum depth of 18 inches in the approximately 0.54 acre area of the expansion. The growth medium will either be used immediately to reclaim a portion of the #5 lift or will be stockpiled on Topsoil Storage No. 2 to be used for reclamation in the future. Growth medium to be removed is estimated to be 1,300 yds. The logs from boring number B-1 located within the expansion area shows the topsoil to be 12 inches deep, however the area has been part of an undisturbed ditch and additional sediment has the potential of having been deposited in the area.

2.13 Land Use

The waste rock disposal site is privately owned and is suitable primarily for summer range for cattle although the area has not been used as such in recent years. Some land in the adjacent area is being subdivided as summer home building lots of five-acre minimum size. ~~Lot sales have been slow with very few cabins having been constructed in the area.~~

The waste rock disposal site is visible from a few of the summer home sites, however, the terrain is such that the disposal site is somewhat isolated. The visual impact is minimized by keeping the disturbed acreage small at any given time and by prompt revegetation of completed fill areas. ~~Equipment activity at the site will be necessary only on an occasional basis.~~ Efforts will be made to use the disposal site during the week, thus avoiding an impact on weekend recreational use.

The visual impact will be only temporary in nature with the site being restored to an approximation of pre-mining conditions at the completion of mining activity.

2.14 Community Infrastructure and Socioeconomics

The waste disposal site is operated by personnel from the work force as currently proposed. No additional utilities or services will be required. Consequently, there will be no community infrastructure or socioeconomic impacts.

2.15 Prime Farm Land Investigation

The site has no developed water supply suitable for irrigation and is located in an area not considered to be prime farm land. Soil Conservation Service confirmation of this opinion may be found as Exhibit 4.

3.1.5 Acid and Toxic Forming Materials

Based on analyses of material that has been placed in the waste rock disposal site to date, no acid forming problems are anticipated. There is a potential for borderline toxicity problems from boron. Samples of the waste material will be collected quarterly when the site is receiving material and will be analyzed for acid or toxic forming potential. ~~Should a problem be identified, a mitigation plan will be prepared and submitted to the Division for approval within 30 days of receipt of the analysis.~~ All identified potential acid or toxic forming materials will be buried or otherwise treated. ~~within 30 days after the mitigation plan is approved by the Division.~~

Copies of laboratory reports on toxicity/acid-base accountability from representative waste samples are included in Volume 8 of the M&RP **prior to 2005** and starting in 2005 will be included in the annual report.

3.1.6 Subsoil Stockpile

Excess subsoil material and a small amount of topsoil from the minesite is stockpiled at the Waste Rock Disposal Site for possible use during final reclamation of SUFCO minesite facilities. The location of the subsoil and topsoil material is shown on Map 2. Total acreage of the subsoil stockpile and associated topsoil piles **1A and 1B** is **0.541.19** acres. **From the as-built survey of the subsoil stockpile area** ~~Approximately 2,224~~ **11,364** cubic yards of subsoil material and ~~approximately 568.2~~ **568.2** cubic yards of **minesite** topsoil material are stockpiled at the site. The associated **original topsoil pile #1B (457 cubic yards) and new topsoil piles #2 (161.4 cubic yards) and #3 (138 cubic yards)** removed from the subsoil stockpile area contains **a total of about 1,100** ~~756.4~~ **756.4** cubic yards. The top ~~24~~ **12** inches of soil material was removed from the subsoil stockpile area as described in Section 3.1.2, Site Preparation. This topsoil was stored along the westerly boundary **and east** of the subsoil stockpile as shown on Map 2. Topsoil handling procedures complied with those described in Section 3.2.3, Topsoil Handling. ~~This~~ **ese** topsoil stockpiles will be stored and seeded using the grasses and forbes of the standard seed mix, Table 4.6.1-1. When the subsoil and minesite topsoil are removed the topsoil will be redistributed and the area reclaimed and seeded in accordance with sections 4.5 and 4.6.

Subsoil material was placed in 2-3 ft. lifts using dump trucks and a D-7-Cat dozer. Exterior slopes of the subsoil stockpile are **approximately** 1v:1.25h. At this slope the material will be stable as placed. The subsoil stockpile was seeded using the grasses and forbes of the standard seed mix, Table 4.6.1-1. This subsoil may be taken to the minesite and used for fill material during final reclamation of the minesite.

Run off from the subsoil and associated topsoil stockpiles is collected and routed through a silt fence treatment located ~~on the southeast corner~~ as shown on Map 2. The total acreage of the ~~three~~**five** stockpiles is ~~0.51~~**1.24** acres. Alternate sediment control measures are in place as described above. This area is classified as an approved Alternate Sediment Control Area (ASCA).

3.2 Components of Operation

3.2.1 Sedimentation Pond

A sedimentation pond was constructed down gradient from the rock fill area to control sediment removed from the disturbed areas by surface runoff. The pond was constructed prior to disturbing any other areas of the site. It will remain in place until the waste rock disposal area has been completely ~~restored~~ **reclaimed**.

The pond consists of an excavated storage basin. Suitable material removed from the excavation was used to construct an embankment on the downstream perimeter of the excavation to yield a maximum storage depth in the pond of 5.70 feet.

The embankment has a top width of 10 feet, a minimum height of 6.8 feet with exterior side slopes of 2.5h:1v. The bottom of the pond was constructed at an elevation of 7885.00 feet.

In accordance with Section 73-5-12 of the Utah Code Annotated 1953, before commencing construction of the sediment pond for the project, written notice was given to the State Engineer, Division of Water Rights.

All intermittent construction slopes and the final exterior slopes of the fill should not be steeper than 2h:1v. ~~For reclamation purposes, a final exterior slope of 3h:1v may facilitate reseeding of the area.~~

Final slopes of the top surface of the waste rock area will be contoured to blend into the natural contour of the area. The final fill slope will be terraced on 20 feet elevation increments as shown in Map 2. ~~These terraces will be about 10 feet wide with a V-shaped ditch near the center placed on a 1-2% grade draining towards diversion Ditch No. 2. The ditch will be 1 foot deep with 1.5h:1v sides.~~

3.2.7 Signs and Markers

The site is properly posted with signs and markers. The extent of the disturbed area is marked with ~~delimiters~~ T-posts. The topsoil storage piles are labeled as such.

3.2.8 Inspections

The sediment pond, diversion ditches, and waste rock fill shall be inspected on at least a quarterly basis throughout construction by a qualified engineer. The sedimentation pond **and waste rock fill** will be inspected and certified in accordance with the requirements of the SMCRA regulations. R645-301-514.300. Reports are to be provided to the mine office and the Utah Division of Oil, Gas and Mining as to compliance with the project specifications.

3.3 Timing of Operation

Since the waste rock disposal area is relatively small and relatively small volumes of fill are placed annually, the fill will be constructed in segments. ~~The 200 feet wide strips will be placed beginning along the southern boundary and extend between the drainage diversion ditches. The eastern half of the disposal area will be completed first. The original Map 4 showed the areas that would be completed based on a waste rock volume of 10,000 tons per year. The average fill volume from 1996 through 2003 was 3,200 tons per year and ranged from 1,400 to 6,800 tons per year. The original fill volume was estimated at 10,000 tons or 8,200 cubic yards per year. The average fill volume from 1996 through 2012 was 5,180 tons per year and ranged from 156 to 27,135 tons per year. At this projected rate, once the fill bench-slope configuration is established about 1.5 acres should be filled and reclaimed every six to nine years. The fill is expected to be completed in 2016.~~

The waste rock disposal pile was surveyed in August 2005 and contains an estimated 163,748 tons of waste rock. It should be noted that the active fill area will extend beyond the area shown for each year. This is best seen in cross-section G-G' of Figure 2 which shows the active fill areas in relation to the reclaimed area, topsoil removal area, and undisturbed area. Map 4 has been revised to illustrate the current status of the reclaimed, active and undisturbed areas of the waste rock disposal area as of ~~August 2005~~ April 2013.

3.4 Area Affected by Each Phase of Operation

The eastern half of the waste rock disposal site will be built up first. ~~Approximately 4.5 acres will be disturbed.~~ Once the eastern portion is to design height, the fill will be extended to the western boundary by extending the fill in segments. As each segment of the fill is brought to final design height, it will be contoured to the approximate contours shown on Map 2. Once this has been accomplished, topsoil will be distributed and revegetation will proceed as indicated in the Revegetation Plan contained in Section 4.6.

3.5 Major Equipment List

The waste rock will be loaded at the mine by a front-end loader ~~or other available equipment.~~, such as a 988 Cat. Transport to the disposal site will be by dump trucks. ~~Two types may be utilized, 10 ton end-dumps or 40 ton bottom-dumps.~~ The waste rock will be spread and compacted by a self powered compactor of suitable size, a dozer of a suitable size, or with a large front-end loader. ~~such as a 988 Cat.~~

PART 4 RECLAMATION PLAN

4.1 Introduction

The operation of the waste rock disposal site is designed for minimal areal disturbance at any given time. The waste material will be placed in compacted lifts and will be covered with topsoil and revegetated. ~~in the first available growing season following completion.~~ Routes required for access to active disposal areas will be revegetated as soon as practical. The final contours will be as shown on Map 2.

4.2 Time Table

The waste rock disposal site will be used on an infrequent basis as required to dispose of rock generated during mining. ~~The fill area will eventually encompass about 8 acres and contain an estimated 204,700 tons of waste rock.~~ Because of the irregularity of use, the fill will be constructed **in segments of varying widths and lengths, refer to Map 4 for dimensions.** ~~envisioned to be about 300 feet long by 150 feet wide.~~ As segments are complete, they will be graded and vegetated as set forth in Sections 4.4-4.6. Final grading, topsoil application, seeding and other revegetation activities will be done in the Fall, preferably during late September or early October. ~~The waste rock disposal pile was surveyed in August 2005 and contains an estimated 163,748 tons of waste rock. Map 4 has been revised to illustrate the current status of the reclaimed, active and undisturbed areas of the waste rock disposal area as of August 2005.~~

~~The original fill volume was estimated at 10,000 tons or 8,200 cubic yards per year. The average fill volume from 1996 through 2003 was 3,200 tons per year and ranged from 1,400 to 6,800 tons per year. At this projected rate, once the fill bench-slope configuration is established about 1.5 acres should be filled and reclaimed every six to nine years. The fill is expected to be completed in 2016.~~

After vegetation and monitoring requirements have been fulfilled, the sediment pond will be leveled, this is expected to occur in 2026. This Phase II reclamation will consist of dozing the embankment into the pond and re-establishing the original contour as shown on Map 5. Topsoil will be placed over the area from the dedicated stockpile prior to reseeding according to Section 4.6. The

monitoring bore holes will also be closed as part of the Phase II reclamation. ~~The shallow pipes will be pulled from the ground or and the wells buried. These well areas will then be reseeded by hand broadcasting and raking.~~

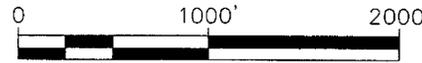
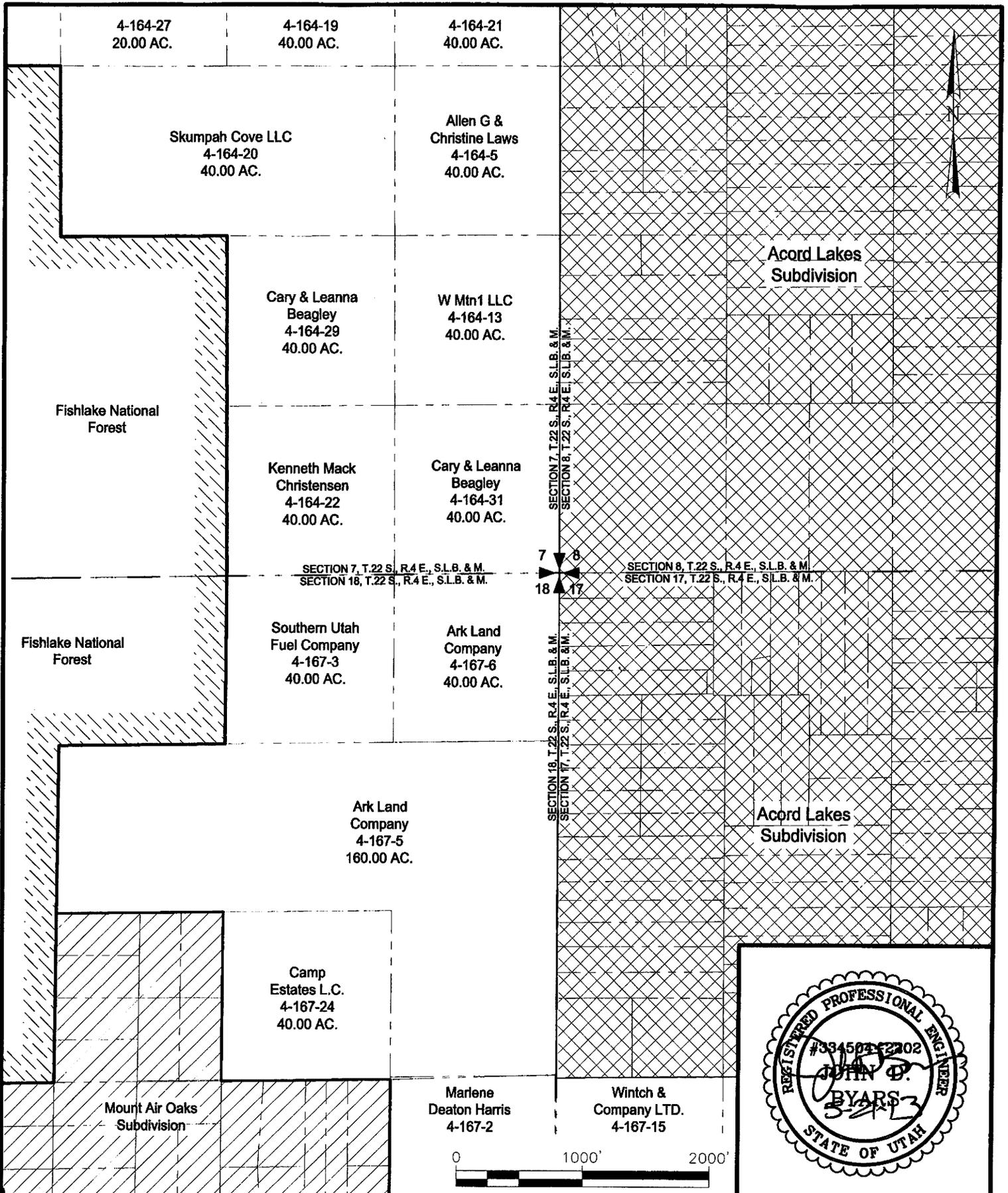
4.3 Cost Estimate for Performance Bond

The Surface Mining Control and Reclamation Act of 1977 requires the operator of a coal mine to file with the Office of Surface Mining, a bond payable to the regulatory authority in the amount equal to the estimated cost of completing the work described in the operator's reclamation plan. The purpose of the bond provision is to ensure the State of Utah that in the event of the operator being financially unable to reclaim the disturbed areas, such areas can and will be restored by the proper regulatory authority at no cost to state residents.

Reclamation will consist of grading and revegetating the waste rock disposal fill area, **site, monitoring wells locations** and removing the sediment pond(s) ~~once vegetation has been established as required~~ described in Section 4.6. ~~The waste rock disposal area consists of 7.223 acres. The pond area consists of one acre. The estimate reclamation cost is \$42,791.~~ Appendix III contains the calculations for reclamation costs. **The permitted disturbed area acreage and actual disturbed area acreage and legal description of the permit area is provided in Chapter 1, Section 116 of the M&RP.**

4.4 Backfill Soil Stabilization, Compaction, Contouring & Grading

The fill area will be built up using waste rock generated during the mining operation at the SUFCO Mine. The waste rock will consist of shales, sandstones, mudstones, and some coal. Prior to fill placement, all vegetative cover will be removed from the area where fill is to be placed. Topsoil will then be removed, stockpiled, and reseeded. Fill will be placed in segments using trucks, **loaders, other equipment** and compaction equipment. These segments **will vary in length and width, refer to Map 4 for dimensions.** ~~are envisioned to be about 300 feet long by 200 feet wide.~~ The first segment will be placed on the southeast side of the disposal area. Additional segments will be placed beginning on the east side and working to the west. The fill will be built up to approximate the final contours shown on Map 2. The active area of the fill will consist of a pad where the haul road and compaction activities are taking place with an associated upslope and down slope. The



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Underground Development Waste Disposal Site - Property Ownership		
SCALE: 1" = 1000'	DATE: 6/20/2012	DRAWN BY: K.B.B.
ENGINEER: J.D.B.	CHECKED BY: K.B.B.	PROJ:
FILE NAME: H:\DRAWINGS\MRP\PLATES\WRDS MAP1v2.dwg		

SHEET NO.
Map 1