

August 14, 2018

Daron Haddock  
Permit Supervisor  
Utah Coal Regulatory Program  
Division of Oil, Gas & Mining  
1594 West North Temple, Suite 1210  
PO Box 145801  
Salt Lake City, Utah 84114-5801

Re: Intent to Conduct Minor Coal Exploration, Canyon Fuel Fee Coal Flat Canyon, 2018

Dear Daron:

Attached are five copies of an Intent to Conduct Minor Coal Exploration for six exploration boreholes (designated 1-18, 3-18, 4-18S, 4-18B, 7-15) in Flat Canyon, north and west of Electric Lake. Also included are the DOGM application forms C-1 and C-2. The type of exploration proposed is conventional truck-mounted core drilling.

If possible, we would like to initiate drilling operations as early as August 27, 2018. Sections of the application dealing with wildlife/vegetation/soils and cultural history sites are enclosed in separate folders for inclusion in Skyline's confidential files as needed. Also included in the document is the Temporary Water Change approval for use of Skyline Mine water for drilling, the surface landowner agreements, and the fee coal lease documents. I appreciate your consideration of this application.

If you have any questions, please contact me at (435-448-2693).

Sincerely,



Paul Jensen  
Geologist  
Canyon Fuel Company, Skyline Mine

Encl.  
PHJ:phj

# APPLICATION FOR COAL PERMIT PROCESSING

Permit Change  New Permit  Renewal  Exploration  Bond Release  Transfer

Permittee: Canyon Fuel Company, LLC

Mine: SKYLINE

Permit  
Number:

C/007/005

Title: NOTICE OF INTENT TO CONDUCT MINOR COAL EXPLORATION -- COLLARD, SITLA, C.K. COX FAMILY CORP, COX INC, CUNNINGHAM, PACIFICORP FEE COAL, FLAT CANYON, 2018

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

FIVE CONVENTIONAL-DRILL COAL EXPLORATION BOREHOLES TO BE DRILLED IN FALL, 2018

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

- Yes  No 1. Change in the size of the Permit Area? Acres: \_\_\_\_\_ Disturbed Area: \_\_\_\_\_  increase  decrease.
- Yes  No 2. Is the application submitted as a result of a Division Order? DO# \_\_\_\_\_
- Yes  No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
- Yes  No 4. Does the application include operations in hydrologic basins other than as currently approved?
- Yes  No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
- Yes  No 6. Does the application require or include public notice publication?
- Yes  No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
- Yes  No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
- Yes  No 9. Is the application submitted as a result of a Violation? NOV # \_\_\_\_\_
- Yes  No 10. Is the application submitted as a result of other laws or regulations or policies?  
*Explain:* \_\_\_\_\_
- Yes  No 11. Does the application affect the surface landowner or change the post mining land use?
- Yes  No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
- Yes  No 13. Does the application require or include collection and reporting of any baseline information?
- Yes  No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
- Yes  No 15. Does the application require or include soil removal, storage or placement?
- Yes  No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
- Yes  No 17. Does the application require or include construction, modification, or removal of surface facilities?
- Yes  No 18. Does the application require or include water monitoring, sediment or drainage control measures?
- Yes  No 19. Does the application require or include certified designs, maps or calculation?
- Yes  No 20. Does the application require or include subsidence control or monitoring?
- Yes  No 21. Have reclamation costs for bonding been provided?
- Yes  No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
- Yes  No 23. Does the application affect permits issued by other agencies or permits issued to other entities?

Please attach four (4) review copies of the application. If the mine is on or adjacent to Forest Service land please submit five (5) copies, thank you. (These numbers include a copy for the Price Field Office)

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

Craig Brown  
Print Name

Cacey B... Engineering manager  
Sign Name, Position, Date 8-15-18

Subscribed and sworn to before me this 16 day of August, 20 18

Melissa S Willden  
Notary Public

My commission Expires: 3-19, 20 19

Attest: State of Utah } ss:  
County of Carbon



<b>For Office Use Only:</b>	<b>Assigned Tracking Number:</b>	<b>Received by Oil, Gas &amp; Mining</b>
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Form DOGM- C1 (Revised March 12, 2002)



**Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.**

**Received by Oil, Gas & Mining**

**NOTICE OF INTENT TO CONDUCT  
MINOR COAL EXPLORATION**

**CANYON FUEL FEE COAL LEASE  
FLAT CANYON AREA  
2018**

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

June 2018



**Canyon Fuel Company LLC**  
**Skyline Mines**

## INTRODUCTION

Canyon Fuel Company – Skyline Mine (a subsidiary of Bowie Resource Partners) is submitting this Notice of Intent to Conduct Minor Coal Exploration to the Utah Division of Oil, Gas, and Mining (UDOGM) in order to obtain approval to conduct coal exploration and reclamation activities in the Fall of 2018. The type of exploration proposed is conventional core drilling. A total of 5 holes will be drilled on fee land; one hole on surface owned Collard Family Trust, one hole on land belonging to the C.K. Cox Family Corp, two holes on Cox Inc, and one hole on Cunningham et al. The surface owners also own the mineral rights where the exploration hole will be drilled except for the location on Collard property, those minerals are owned by SITLA and the location on Cunningham property, those minerals are owned by Pacificorp. This exploration work is being conducted in conjunction with a Federal on-lease exploration plan submitted to the Bureau of Land Management. This application is formatted to address the specific requirements of R645-201-200. Other related information is given in Appendix A through E. Five copies of this notice are submitted.

### **R645-201 Coal Exploration: Requirements for Exploration Approval**

The proposed exploration plan qualifies as minor exploration as described in the State of Utah Coal Mining Rules R645 section R645-201-200.

R645-201-221

The name, address and telephone number of the applicant are:

Canyon Fuel Company  
C/O Skyline Mine  
HC 35 Box 380  
Helper, Utah 84526  
435-448-2693

The applicant is the same as the operator of the proposed exploration plan. Correspondence regarding this exploration plan should be addressed to:

Paul Jensen  
Canyon Fuel Company  
C/O Skyline Mine  
HC 35 Box 380  
Helper, Utah 84526  
435-448-2693

R645-201-222

The name, address and telephone number of the representative of the applicant who will be present during and be responsible for conducting the exploration is:

Paul Jensen  
Canyon Fuel Company  
C/O Skyline Mine  
HC 35 Box 380  
Helper, Utah 84526  
435-448-2693

At times a consulting geologist may act as representative of the applicant. The UDOGM and USFS will be notified of the consulting geologist's name and address if one is used.

R645-201-223

The exploration area is generally located in central Utah east-central Utah, approximately three miles southwest of Scofield near Flat Canyon and Electric Lake (Map 1). The legal descriptions of the mineral ownership is as follows:

SITLA Fee

Section 29, Township 13 South, Range 6 East, S.L.P.M.

SE, SE, Section 29, Township 13 South, Range 6 East, Salt Lake Base Meridian.

Acreage: 40.00

C.K. Cox Family Corp Fee

Section 32, Township 13 South, Range 6 East, S.L.P.M.

Beginning 5 chains East of the Northwest corner of the Southeast quarter of the Northeast quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian; thence South 40.00 chains, thence East 10.00 chains, thence North 40.00 chains, thence West 10.00 chains to the point of the beginning. Excepting therefrom that part in the state road right of way.

Acreage from county tax records: 8.57 acres

Tax Serial No: 21162

Cox Inc Fee

Section 32, Township 13 South, Range 6 East, S.L.P.M.

Beginning at the Northeast corner of the Southeast quarter of the Northeast quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian; thence South 40 chains, thence West 5 chains, thence North 30.03 chains, thence South 79 degrees 18 minutes East 4

chains, thence North 5 chains, thence North 79 degrees 18 minutes West 4 chains, thence North 4.97 chains, thence East 5 chains. Excepting therefrom the part in the state road right of way.  
Acreage from county tax records: 15.43 acres  
Tax Serial No: 21156

Pacificorp Fee

Section 10, Township 14 South, Range 6 East, S.L.P.M.  
SW, Section 10, Township 14 South, Range 6 East, Salt Lake Base Meridian.  
Acreage: 160.00

The private mineral ownership is located in Sanpete County, Utah. The documents allowing minor coal exploration within the boundaries of the private mineral ownership is included in Appendix D. Map 2 shows the location of the proposed boreholes. The proposed drill sites are located on private surface land belonging to the Collard Family Trust, C.K. Cox Family Corp, Cox Inc, and Cunningham et al. The surface access and use agreements are included in Appendix C.

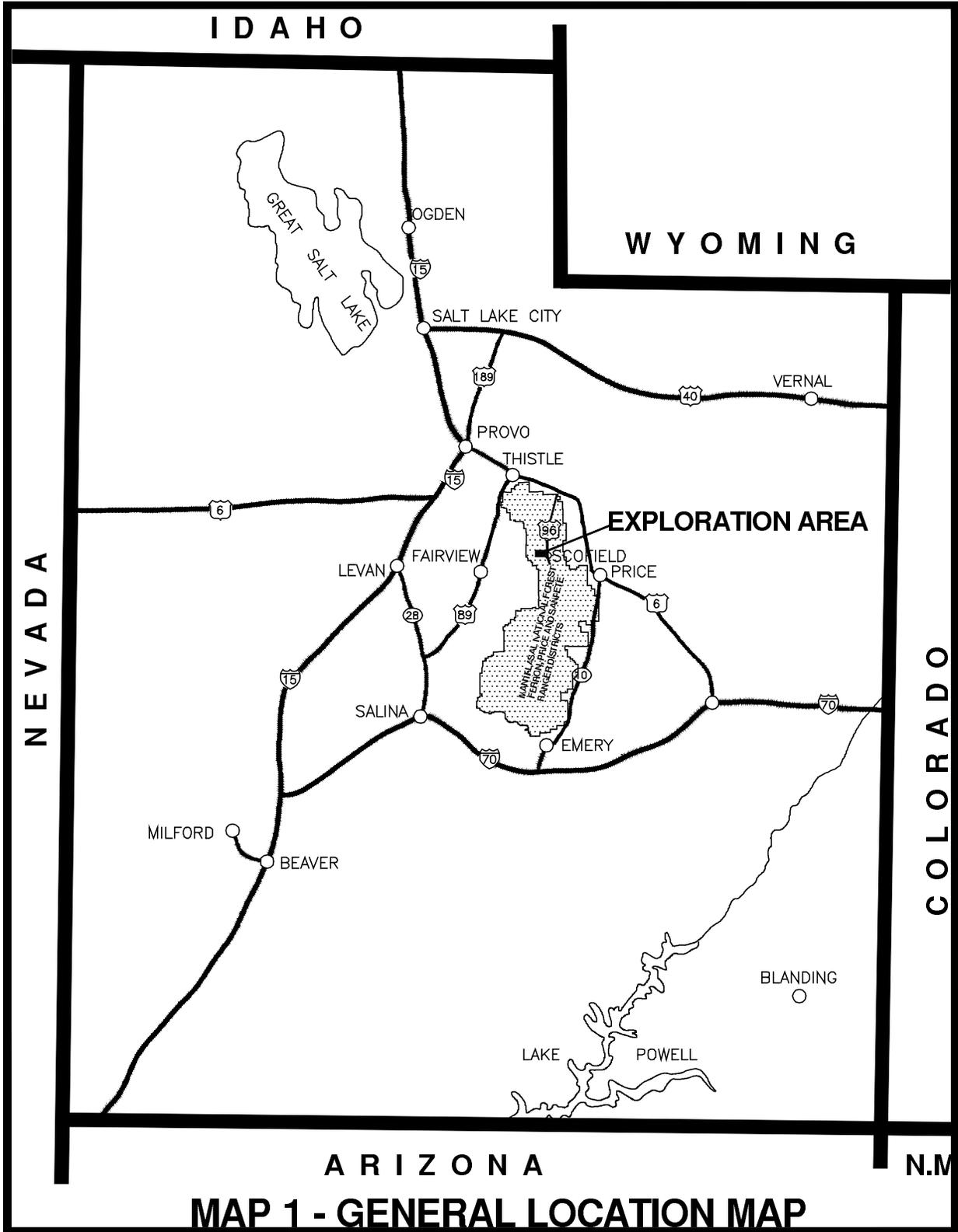
The proposed exploration area is located in Flat Canyon and Little Eccles Canyon (Map 2). The area lies within the Wasatch Plateau physiographic province. Flat Canyon and Little Eccles Canyons both drains eastward into Electric Lake, 6 miles southwest of the town of Scofield. Topography in the area is mountainous with narrow east-west trending ridges and deep canyons. Elevation ranges from approximately 8000 ft. to 9200 ft.

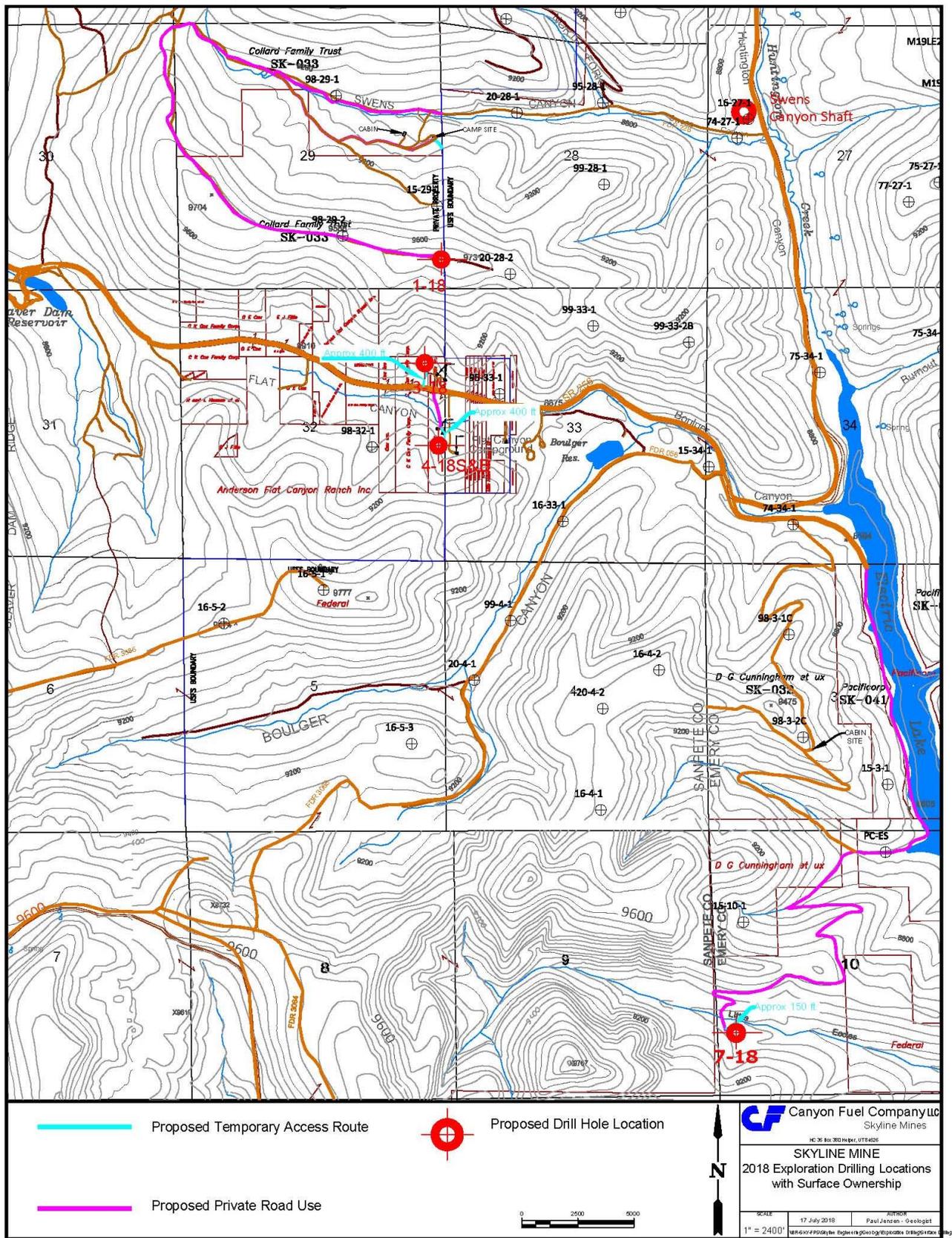
The exploration area is underlain by sedimentary rocks of late Cretaceous age. Two formations crop out in the area including the coal-bearing Blackhawk Formation and the overlying Price River Formation. At least three potentially mineable coal seams occur in the area including the Lower O'Connor A and B seams and the Flat Canyon seam.

Strata in the area dip uniformly from 2 to 8 degrees west-northwest. Several faults have been identified in the area. A number of igneous dike zones also exist in the exploration area.

Rock types are predominantly sandstones, siltstones, shale and coal.

Vegetation in the exploration area occurs in the Mountain Brush and White Fur/Spruce plant communities. Upper Huntington Creek supports game fish. The exploration area is important habitat for raptors, elk, mule deer, cougar, bobcat, black bear, and small mammals.





Map 2 – Exploration drilling locations, equipment/helicopter staging area, and water tank/pump.

R645-201-225

Threatened, endangered, or special interest species in the exploration area include the goshawk, sage grouse, bald eagle and peregrine falcon. Exploration and reclamation activities will not occur within one half mile of known breeding and nesting areas during breeding or nesting periods. Appendix A (confidential file) contains the 2005 BEBA and Wildlife Resources reports for the area. Additional biological surveys were completed in the area in 2006 and 2008, and copies are included in Appendix A. A site specific biological survey was conducted in June 2018 by Mace Crane of Alpine Ecological in the area of the proposed drill holes; this is also included in Appendix A. No Mexican Spotted owls are known to occur in the area.

EPG, LLC has completed a cultural resource evaluation on and near the proposed drill sites which is attached in Appendix B (Confidential File). Tetra Tech has completed site specific biological surveys of the sites (Appendix A Confidential File).

R645-201-224

Timetables for exploration related activities by drill type is given below. Table 1 is an approximate timetable for conventional drill holes located on LDS Church property. It is anticipated that exploration activities will start on approx. September 1, 2018. This schedule is estimated only and may have to be altered depending on such factors as contractor availability, drilling conditions, weather, water availability, etc.

TABLE 1:

EVENT	WK 1	WK 2	WK 3-6	WK 7	WK8
Prepare access roads and drill pads as needed					
Move drill equipment to site and drilling					
Remove equipment					
Reclaim drill pads and temporary roads					

R645-201-225

The general method to be followed during conventional rotary drill hole exploration, reclamation, and abandonment procedure is: 1) repair the existing roads where needed, make temporary access roads where needed and prepare the drill sites,

2) rotary drill, core, log and complete the exploration drill holes as water monitor wells, 3) reclaim the drill sites and access routes. No blasting will be done for road building or repair.

Conventional drilling will be accomplished utilizing rotary and continuous core drilling techniques. Drilling will involve one rotary/core rig capable of drilling 3,000 ft.; with necessary support equipment such as supply trailers, portable water tanks, mud tanks, compressors, fuel tanks, etc. The drilling procedure will be to rotary or plug drill to core point and then continuously core through the coal zone. Drilling fluid will mainly be water with some foam, polymer, and/or mud as drilling medium.

Water for drilling and dust suppression will be transported from the Skyline Mine site hydrant and/or other permitted areas via 1,500 gal. water trucks. An approved Temporary Water Change from the Division of Water Rights is in place and included in Appendix E.

The only coal to be removed during exploration activities will be cores. Cores will nominally be 2.5 inches (HQ) in diameter. Given an approximate average projected thickness of 9 ft. for each seam, Lower O'Connor B seam, Lower O'Connor A seam, and Flat Canyon seam, approximately 300 lbs. of coal will be removed (75 lbs./hole, 25 lbs/seam) from the four conventional holes, one hole will not be cored.

Temporary drill pad and road construction is planned for this project. Earth excavation will mostly be done for drill sites using a D-8 Cat (or equivalent) and road grader.

Drill sites will be approximately 150 ft x 150 ft in size. A track mounted backhoe and/or a rubber-tired backhoe may be used at times for construction of mud pits which will measure approximately 20 ft x 40 ft x 10 ft deep. Excavation will include grubbing, removal and separate storage of the soil A horizon and, if needed, removal and separate storage of material below the soil A horizon to make a level drill site. One to four mud pits will be excavated in the material below the soil A horizon if there is sufficient soil depth. No hazardous material or trash will be disposed of at the drill site. The only material disposed of at the drill site will be cuttings and any drilling foam and/or mud which will be placed in the mud pits. Figure 1 shows the typical layout of a truck-mounted drill rig site. Small leaks of petroleum products will be cleaned-up with absorbent pads and any contaminated subsoil will be removed and contaminated pads and rags will be hauled off the site and disposed of in an approved waste site. No blasting will be done when constructing the drill site. Drill sites have been selected such that no trees will be removed during construction of the drill sites.

Regulations cited in R645-202-232 relative to roads will be followed as they apply. Temporary access road construction width for the road will be approximately 14 ft and the least amount of disturbance will be made while constructing the access route as possible. New road placement has been

selected to follow existing logging roads as much as possible so as to reduce impact to undisturbed areas. No soil disturbed during access road construction will be disposed of. Material will be sidecast to each side of the road for later use during reclamation. Map 2 shows the temporary access routes. Temporary access roads will be reclaimed upon completion of drilling. Temporary road alignment has been selected such that no trees will be removed. Disturbance to wildlife will be minimized by utilizing the existing roads and trails and eliminating the need to build roads with heavy equipment. No wetlands or riparian areas are known along the proposed routes. No utility or support facilities are present in the area.

Reclamation is an integral part of the exploration activities and will progress as contemporaneously as practical with the other exploration activities.

Reclamation of drill sites and temporary access roads will occur as soon as possible upon completion of drilling operations. The topsoil will be redistributed and replaced. The topsoil surface will be roughened, pitted, and/or deep gouged prior to seeding to help alleviate soil compaction, increase soil stability, and to increase water harvesting. It is possible the surface owner may not allow deep gouging and will require the site be recontoured and roughened to a lesser extent. If such is the case, the desires of the surface owner will be provided to DOGM in writing. Reclamation will include reseeding the disturbed surface utilizing the approved seed mix. No damage to public or private property will occur.

There will be no diversion of overland flows.

It is not anticipated that acid- or toxic- forming materials will be encountered during exploration because none have been encountered previously. Samples of drill core will be analyzed for acid- and toxic-forming materials. These samples will be taken from the 10 ft. interval above and below each seam of mineable thickness if core recovery has occurred.

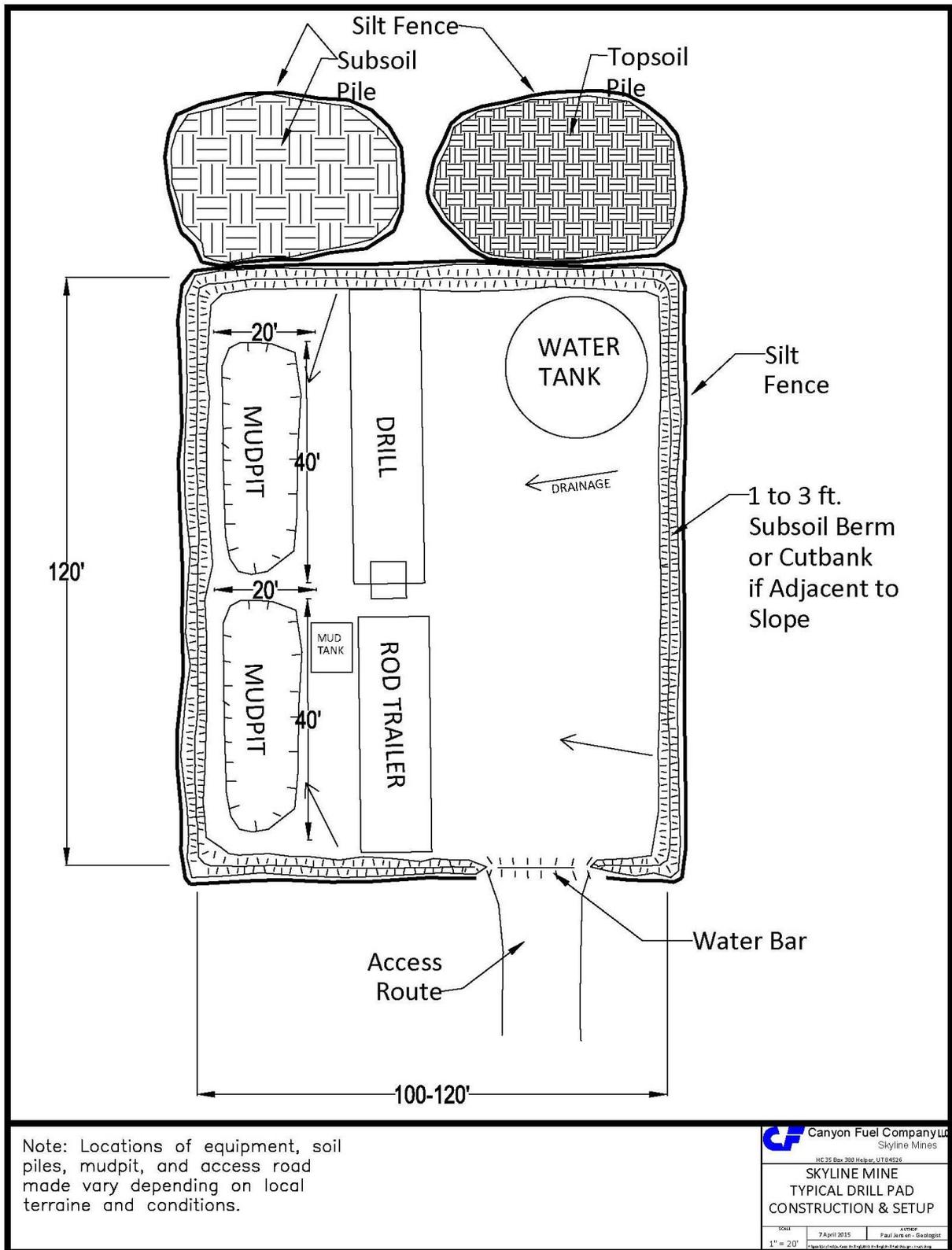


Figure 1. Typical conventional drill site setup. Note: The berm will be constructed of excavated mud pit material or imported material.

The method of revegetation is intended to encourage prompt revegetation and recovery of a diverse, effective, and permanent vegetative cover. The following seed mix was prescribed by the U.S. Forest Service for the reclamation of 2017 Upper Huntington Canyon area drill holes and will be also used in 2018 (the seed mix as approved by UDOGM will be utilized):

**Seed Mix**

		<u>Pounds PLS/acre</u>
Western Wheatgrass	Elymus smithii	2
Basin Wild Ryegrass	Elymus cinereus	1
Intermediate Wheatgrass	Elymus hispidus	2
Yellow Sweet Clover	Melilotus officinalis	1
Blue Leaf Aster	Aster glaucodes	0.25
Silvery Lupine	Lupinus argenteus	1
True Mahogany	Cercocarpus montanus	1
Lewis Flax	Linum lewisii	0.5
Small Burnet	Sanguisorbia minor	1
	<b>TOTAL</b>	<b>9.75</b>

The pure live seed (PLS) rating will be 99% containing a maximum of 1% weeds, none of which are toxic and only seed meeting the State Seed Act will be used. Certification tags will be retained by the permittee. The vegetative cover resulting from this seed mix is considered capable of stabilizing the soil surface from erosion.

Upon completion of drilling, holes 1-18, 3-18 and 7-18 will be plugged and abandoned with a cement, bentonite, or cement/bentonite slurry to full depth. A brass tag will be placed at the top of the drill hole stating the operator's name, drill hole number, and legal description. The tag will be placed in cement at ground level. Holes 4-18B and 4-18S will be completed as water monitor wells in the Blackhawk Fm, above the coal zones, and in the Star Point Sandstone, below the coal zones, respectively.

Estimated depth and other drill hole information is given in Table 1. Disturbed area will include drill pads and temporary access roads. Total disturbed area acreage is estimated at 3.15 acres as shown on Table 1.

Drill Site	Location	Total Depth (ft)	Disturbed Area (acres)
1-18	SE SE Sec 29 T 13S R 6E	2,550	0.331
3-18	SE NE Sec 32 T 13S R 6E	1,735	0.331
4-18B	NE SE Sec 32 T 13S R 6E	1,680	0.331
4-18S	NE SE Sec 32 T 13S R 6E	1,100	0.00

7-18	SW SW Sec 10 T 14S R 6E	1,575	0.331
Temp Road to 3-18	Distance & Width (ft)	400 X 14	0.128
Temp Road to 4-18	Distance & Width (ft)	350 X 14	0.112
Temp Road to 7-18	Distance & Width (ft)	150 X 14	0.048
		<b>TOTAL</b>	<b>1.61 acres</b>

There are no occupied dwellings or pipelines located in the exploration area. No trenches will be dug and no structures will be constructed nor will debris be disposed of in the exploration area. The permittee or his representative will have a copy of this Notice of Intention to Conduct Minor Coal Exploration while in the exploration area available for review by an authorized representative of the Division by request.

R645-203-200

Canyon Fuel Company requests that the Division not make any drilling information available for public inspection relative to coal seam thickness or quality. This information is considered crucial to Canyon Fuel Company's competitive rights.

R645-202.230

No adverse impacts to stream channels will occur during water pumping or drilling activities. An approved "Temporary Change of Water" is in place with the Division of Water Rights (Appendix E). It is projected that approx. 0.3 acre/ft. of water will be utilized during the project.

R645-202-231

A cultural resource survey has been conducted for the area on and near the drillhole site. A copy of the cultural resource survey is included in Appendix B (confidential). Threatened, endangered, and sensitive plant and animal survey information has been developed by the U.S.F.S. and Maxim Technologies during their work relative to Canyon Fuel/Canyon Fuel Company's 2005 Exploration License and Plan approvals (Appendix A, confidential). Tetra Tech conducted a site specific biological survey on the proposed drill site (Appendix A). No nests were observed during those surveys.

R645-202-232

Temporary drilling access road construction is planned for this project as previously described. Regulations cited in R645-202-232 relative to roads will be followed as they apply.

R645-202-235 (R645-301-624.210, R645-301-731.121, R645-301-731.218))

Geologic logs of drilling will be kept. Any appreciable water encountered during drilling will be logged, noting depth, geology, and estimated flow. Any such zones will be evaluated for potential water monitoring.

Figure 1 shows a drawing of the approximate drillsite setup.

If the drill hole begins to make excess water, such water will be pumped into the constructed mud pits at the drill site. From there it will be hauled to an approved waste water disposal site. At no time will excess drill water generated in the drill hole be allowed to run on topsoil on the surface.

Fresh water pumped to the drill site to be utilized for the drilling process will be allowed to run off the site over topsoil as long as it contains no drilling additives. This is necessary to allow cooling of the engine during rod tripping or when water tanks overflow at the drill site. Measures will be taken to disperse the water flow over the topsoil such that no erosion occurs.

R645-301-525-200

No major utilities pass over, under, or through the exploration area. Use of roads and development of the exploration site will not disrupt or damage any utility service.

R645-301-527.230

Roads utilized as part of this minor coal exploration plan will be maintained in a safe condition, including proper control of fugitive dust to minimize effects to fish, wildlife, and related environmental values.

R645-301-731.100

An approved Temporary Change of Water for water to be used in the drilling process is in place (Appendix E).

R645-301-742.410 thru 742.420

Surface disturbance will be limited to drill sites and temporary access roads. No changes will occur to drainage patterns. No perennial or intermittent stream drainages will be crossed by temporary access roads or drill sites. Excess water will be placed in the mud pits and then hauled to an approved waste water disposal site. Contributions of suspended solids will not occur.

The potential for water pollution will be minimized by keeping pollutants away from the drill hole and in their containers. Materials used during drilling operations will be selected to be as non-polluting as possible. All spills of polluting materials will be removed from the area and properly disposed of.

No mixing of surface and ground waters is possible because all drill sites will be above perennial and ephemeral stream drainages.

Drill fluids and/or cuttings will be contained within mud pits. If necessary, excess fluids will be pumped out and excess drill cuttings and core will be hauled off and disposed of properly.

Canyon Fuel Company will retain all drill and geophysical logs.

**APPENDIX A**

**2018 SOILS SURVEY  
2018 VEGETATION SURVEY**

**(CONFIDENTIAL FILES)  
WILDLIFE SURVEYS**

**2018 BIOLOGICAL SURVEYS**

August 1, 2018

Greg Galecki  
Skyline Mine  
HC 35 Box 380  
Helper, Utah 84526

Dear Greg

Alpine Ecological has conducted a soil survey on the proposed drill site 1-18 on behalf of Skyline Mine. The survey was conducted in order to comply with requirements of Utah Division of Oil, Gas and Mining (DOG M).

### **NRCS Soil Data**

There has been no soil survey conducted in the area of the proposed drill site 1-18. The United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) have conducted soil surveys approximately 4 miles East of the proposed drill site. The USDA-NRCS Web Soil Survey (WSS) utility and associated soil reports were used in determining the soil types in the proposed disturbance area (Appendices A & B ).

According to the information provided by the NRCS, soils in the vicinity of the proposed drill site is comprised of the Trag-Croydon Complex as well as 7 others. The Trag-Croydon Complex soils were identified on the south-facing and east-facing slopes of the soil survey areas.

The proposed drill site 1-18 is located on a south facing summit, mountain top. This soil most closely resembles the Trag-Croydon Complex.

### **Site Reconnaissance**

Site reconnaissance was conducted by Dr. Stevens. The proposed drill site location was identified the soil survey was conducted at the proposed site. This was done to ensure that the same soils were being surveyed that would be disturbed with the proposed drill project. (Appendix C).

Since there were no soil surveys previously conducted in the proposed drill site area by the NRCS Dr. Stevens investigated road cuts and other exposed soils within the NRCS soil survey area east of the affected areas to familiarize himself with the previously classified soils.

# Appendix A

Map and Legends of NRCS Soil Survey  
(obtained from WSS)

Soil Map—Carbon Area, Utah, Parts of Carbon and Emery Counties; and Manti-Lasal National Forest, Manti Division - Parts of Sanpete and Emery Counties

111° 20' 22" W

111° 5' 53" W

39° 42' 39" N

39° 42' 39" N



39° 35' 23" N

39° 35' 23" N

111° 20' 22" W

N

Map Scale: 1:94,700 (if printed on A landscape (11" x 8.5") sheet).



0 1000 2000 4000 6000 Meters



0 4500 9000 18000 27000 Feet

Map projection: Web Mercator Corner coordinates: WGS84

## MAP LEGEND

	Area of Interest (AOI)		Spoil Area
	Area of Interest (AOI)		Stony Spot
	Soils		Very Stony Spot
	Soil Map Unit Polygons		Wet Spot
	Soil Map Unit Lines		Other
	Soil Map Unit Points		Special Line Features
<b>Special Point Features</b>			
	Blowout		Water Features
	Borrow Pit		Streams and Canals
	Clay Spot		Interstate Highways
	Closed Depression		US Routes
	Gravel Pit		Major Roads
	Gravelly Spot		Local Roads
	Landfill		Background
	Lava Flow		Aerial Photography
	Marsh or swamp		
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Carbon Area, Utah, Parts of Carbon and Emery Counties  
 Survey Area Date: Version 9, Sep 7, 2017

Soil Survey Area: Mantí-Lasal National Forest, Mantí Division - Parts of Sanpete and Emery Counties  
 Survey Area Date: Version 1, Dec 27, 2013

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Nov 29, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
22	Croydon loam, 30 to 50 percent slopes	158.0	0.5%
23	Curecanti family-Pathead complex	3,126.2	8.9%
29	Dumps, mine	47.4	0.1%
105	Senchert family-Senchert complex	402.4	1.1%
109	Silas-Brycan loams	176.0	0.5%
115	Trag stony loam, 30 to 60 percent slopes	400.5	1.1%
118	Trag-Croydon complex	1,763.3	5.0%
125	Uinta-Toze families complex	2,264.3	6.5%
<b>Subtotals for Soil Survey Area</b>		<b>8,338.2</b>	<b>23.8%</b>
<b>Totals for Area of Interest</b>		<b>34,999.5</b>	<b>100.0%</b>

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
NOTCOM	No Digital Data Available	26,661.3	76.2%
<b>Subtotals for Soil Survey Area</b>		<b>26,661.3</b>	<b>76.2%</b>
<b>Totals for Area of Interest</b>		<b>34,999.5</b>	<b>100.0%</b>

# Appendix B

Soil Series Descriptions for Trag-Croydon Complex as Developed by the  
NRCS  
(obtained from WWS)

## 118-Trag-Croydon Complex

### Map Unit Setting

- Elevation: 7,580 to 9,470 feet
- Mean annual precipitation: 16 to 25 inches
- Mean annual air temperature: 34 to 40 degrees F
- Frost-free period: 40 to 80 days

### Map Unit Composition

- Trag and similar soils: 50 percent
- Croydon and similar soils 30 percent

### *Description of Trag*

#### Setting

- Landform: Mountain slopes
- Landform position (three-dimensional): Mountainflank
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent Material: Alluvium and/or colluvium derived from sandstone and shale

#### Properties and qualities

- Slope: 30 to 60 percent
- Surface area covered with cobbles, stones or boulders: 13.0 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum content: 10 percent
- Available water capacity: High (about 10.2 inches)

#### Interpretive groups

- Land capability (nonirrigated): 7e
- Ecological site: Mountain Loam (Salina Wildrye) (R048AY409UT)

### Typical profile

- 0 to 10 inches: Stony loam
- 10 to 36 inches: Clay loam
- 36 to 60 inches: Clay loam

### *Description of Croydon*

#### Setting

- Landform: Mountain slopes
- Landform position: (three-dimensional): Mountainflak
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent material: Colluvium and/or slope alluvium over residuum weathered from sandstone and shale

#### Properties and qualities

- Slope: 30 to 50 percent
- Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None

#### Interpretive groups

- Land capability (nonirrigated): 7e
- Ecological site: High Mountain Loam (Aspen) (R047XA508UT)

### Typical profile

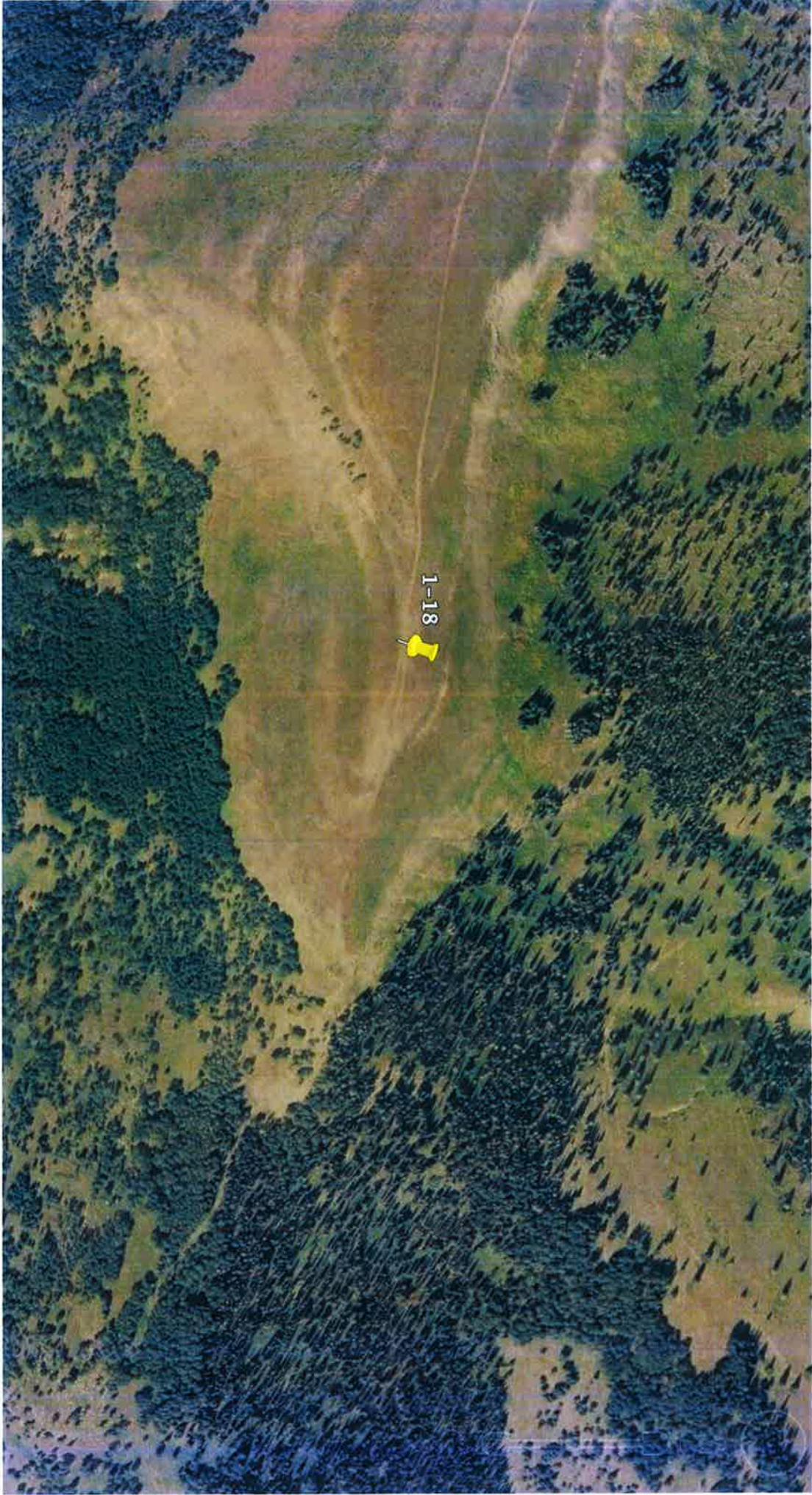
- 0 to 16 inches: Loam
- 16 to 23 inches: loam
- 23-48 inches: Clay loam
- 48-52 inches: weathered bedrock

# Appendix C

Google Earth Image of the Proposed Drill Site and Soil Pit Location

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# Appendix D

## Soil Profile Log

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# Soil Profile Log

Sp 1-18

Name	Allan Stevens			Drainage Pattern	Dendritic					
Date	July 25, 2018			Drainage	WD Well Drained					
Weather	Sunny (75° F)			Flooding	NO None					
Location	39°39'21.5"N 111°16'01.8"W			Ponding	None					
Slope Aspect	South			Depth to Water	Unknown					
Slope Gradient	7%			Plant Cover	ELTR, CHVI, ARTRV					
Slope	Complex			Parent Material	COL Colluvium					
Complexity				Erosion	W1 0-25% erosion from water					
Slope Shape	VV Convex Convex			Surface Fragment	< 5% Coarse gravel					
Hillslope Profile	SU Summit									
Geomorphic	MT Mountain Top									
Diagnostic Horizons	Observation Method	Depth (cm)	Boundary		Color	Texture	Structure	Reaction (HCD)	% Rock Fragment and Size	% Roots Size and Location
			Distinctness	Topography						
A	SP	0-13	Abrupt	Smooth	Dark Brown	CL	VF, gr	ST	FG 3%	F 20%
B	SP	13-38	Clear	Irregular	Very Dark Grayish Brown	CL	VF, abk	ST	CG 5%	VF 20%
C	SP	38-71	Abrupt	Wavy	Dark Yellowish Brown	CL	F, abk	ST	S 85%	None
BR	SP									
Description										
Depth										
1-13	Clay loam with fine root material, very fine granular, fine gravel, moist									
13-38	Clay loam with very fine root material, very fine angular blocky, coarse gravel, moist									
38-71	Clay loam with no root material, fine angular blocky, stony, moist									

# Appendix E

Soil Profile Photo



August 1, 2018

Greg Galecki  
Skyline Mine  
HC 35 Box 380  
Helper, Utah 84526

Dear Greg

Alpine Ecological has conducted a soil survey on the proposed drill site 3-18.2 on behalf of Skyline Mine. The survey was conducted in order to comply with requirements of Utah Division of Oil, Gas and Mining (DOGGM).

### **NRCS Soil Data**

There has been no soil survey conducted in the area of the proposed drill site 3-18.2. The United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) have conducted soil surveys approximately 4 miles East of the proposed drill site. The USDA-NRCS Web Soil Survey (WSS) utility and associated soil reports were used in determining the soil types in the proposed disturbance area (Appendices A & B).

According to the information provided by the NRCS, soils in the vicinity of the proposed drill site is comprised of the Trag-Croydon Complex as well as 7 others. The Trag-Croydon Complex soils were identified on the south-facing and east-facing slopes of the soil survey areas.

The proposed drill site 3-18.2 is located on a south facing footslope, base slope. This soil most closely resembles the Trag-Croydon Complex.

### **Site Reconnaissance**

Site reconnaissance was conducted by Dr. Stevens. The proposed drill site location was identified the soil survey was conducted at the proposed site. This was done to ensure that the same soils were being surveyed that would be disturbed with the proposed drill project. (Appendix C).

Since there were no soil surveys previously conducted in the proposed drill site area by the NRCS Dr. Stevens investigated road cuts and other exposed soils within the NRCS soil survey area east of the affected areas to familiarize himself with the previously classified soils.

## **Soil Profiles**

Soil investigations were conducted at the proposed 3-18.2 drill location on July 16, 2018. A soil profile (Sp3-18.2) was excavated near the proposed drill location to gather representative soils data for the proposed drill site. The soil pit was excavated by hand to a depth of approximately 1 meter. The pit was logged and photographed (Appendices D and E). The soils in the pits correlated with Trag-Croydon Complex soils identified by the NRCS in nearby areas. The site was excavated on a south facing footslope, base slope.

Please feel free to contact me if you have any questions.

Sincerely,  
Alpine Ecological

A handwritten signature in black ink, appearing to read "Allan Stevens", with a long horizontal flourish extending to the right.

Allan Stevens PhD

# Appendix A

Map and Legends of NRCS Soil Survey  
(obtained from WSS)

Soil Map—Carbon Area, Utah, Parts of Carbon and Emery Counties; and Manti-Lasal National Forest, Manti Division - Parts of Sanpete and Emery Counties

111° 20' 22" W

39° 42' 39" N

111° 5' 53" W

39° 42' 39" N



39° 35' 23" N

39° 35' 23" N

111° 20' 22" W

111° 5' 53" W



Map Scale: 1:94,700 if printed on A landscape (11" x 8.5") sheet.  
0 1000 2000 4000 6000 8000 10000 Meters  
0 4500 9000 18000 27000 Feet  
Map projection: Web Mercator Corner coordinates: WGS84

## MAP LEGEND

 Area of Interest (AOI)	 Area of Interest (AOI)	 Spoil Area	 Stony Spot
<b>Soils</b>	 Soil Map Unit Polygons	 Very Stony Spot	 Wet Spot
 Soil Map Unit Lines	 Soil Map Unit Points	 Other	 Special Line Features
<b>Special Point Features</b>	 Blowout	<b>Water Features</b>	 Streams and Canals
 Borrow Pit	 Clay Spot	<b>Transportation</b>	 Interstate Highways
 Closed Depression	 Gravel Pit	 Rails	 US Routes
 Gravelly Spot	 Landfill	 Major Roads	 Local Roads
 Lava Flow	 Marsh or swamp	<b>Background</b>	 Aerial Photography
 Mine or Quarry	 Miscellaneous Water		
 Perennial Water	 Rock Outcrop		
 Saline Spot	 Sandy Spot		
 Severely Eroded Spot	 Sinkhole		
 Slide or Slip	 Sodic Spot		

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Carbon Area, Utah, Parts of Carbon and Emery Counties  
 Survey Area Data: Version 9, Sep 7, 2017

Soil Survey Area: Manti-Lasal National Forest, Manti Division - Parts of Sanpete and Emery Counties  
 Survey Area Data: Version 1, Dec 27, 2013

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Nov 29, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
22	Croydon loam, 30 to 50 percent slopes	158.0	0.5%
23	Curecanti family-Pathead complex	3,126.2	8.9%
29	Dumps, mine	47.4	0.1%
105	Senchert family-Senchert complex	402.4	1.1%
109	Silas-Brycan loams	176.0	0.5%
115	Trag stony loam, 30 to 60 percent slopes	400.5	1.1%
118	Trag-Croydon complex	1,763.3	5.0%
125	Uinta-Toze families complex	2,264.3	6.5%
<b>Subtotals for Soil Survey Area</b>		<b>8,338.2</b>	<b>23.8%</b>
<b>Totals for Area of Interest</b>		<b>34,999.5</b>	<b>100.0%</b>

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
NOTCOM	No Digital Data Available	26,661.3	76.2%
<b>Subtotals for Soil Survey Area</b>		<b>26,661.3</b>	<b>76.2%</b>
<b>Totals for Area of Interest</b>		<b>34,999.5</b>	<b>100.0%</b>

# Appendix B

Soil Series Descriptions for Trag-Croydon Complex as Developed by the  
NRCS  
(obtained from WWS)

## **118-Trag-Croydon Complex**

### **Map Unit Setting**

- Elevation: 7,580 to 9,470 feet
- Mean annual precipitation: 16 to 25 inches
- Mean annual air temperature: 34 to 40 degrees F
- Frost-free period: 40 to 80 days

### **Map Unit Composition**

- Trag and similar soils: 50 percent
- Croydon and similar soils 30 percent

### *Description of Trag*

#### **Setting**

- Landform: Mountain slopes
- Landform position (three-dimensional): Mountainflank
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent Material: Alluvium and/or colluvium derived from sandstone and shale

#### **Properties and qualities**

- Slope: 30 to 60 percent
- Surface area covered with cobbles, stones or boulders: 13.0 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum content: 10 percent
- Available water capacity: High (about 10.2 inches)

#### **Interpretive groups**

- Land capability (nonirrigated): 7e
- Ecological site: Mountain Loam (Salina Wildrye) (R048AY409UT)

#### Typical profile

- 0 to 10 inches: Stony loam
- 10 to 36 inches: Clay loam
- 36 to 60 inches: Clay loam

#### *Description of Croydon*

#### Setting

- Landform: Mountain slopes
- Landform position: (three-dimensional): Mountainflak
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent material: Colluvium and/or slope alluvium over residuum weathered from sandstone and shale

#### Properties and qualities

- Slope: 30 to 50 percent
- Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderatey low to moderately high (0.06 to 0.20 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None

#### Interpretive groups

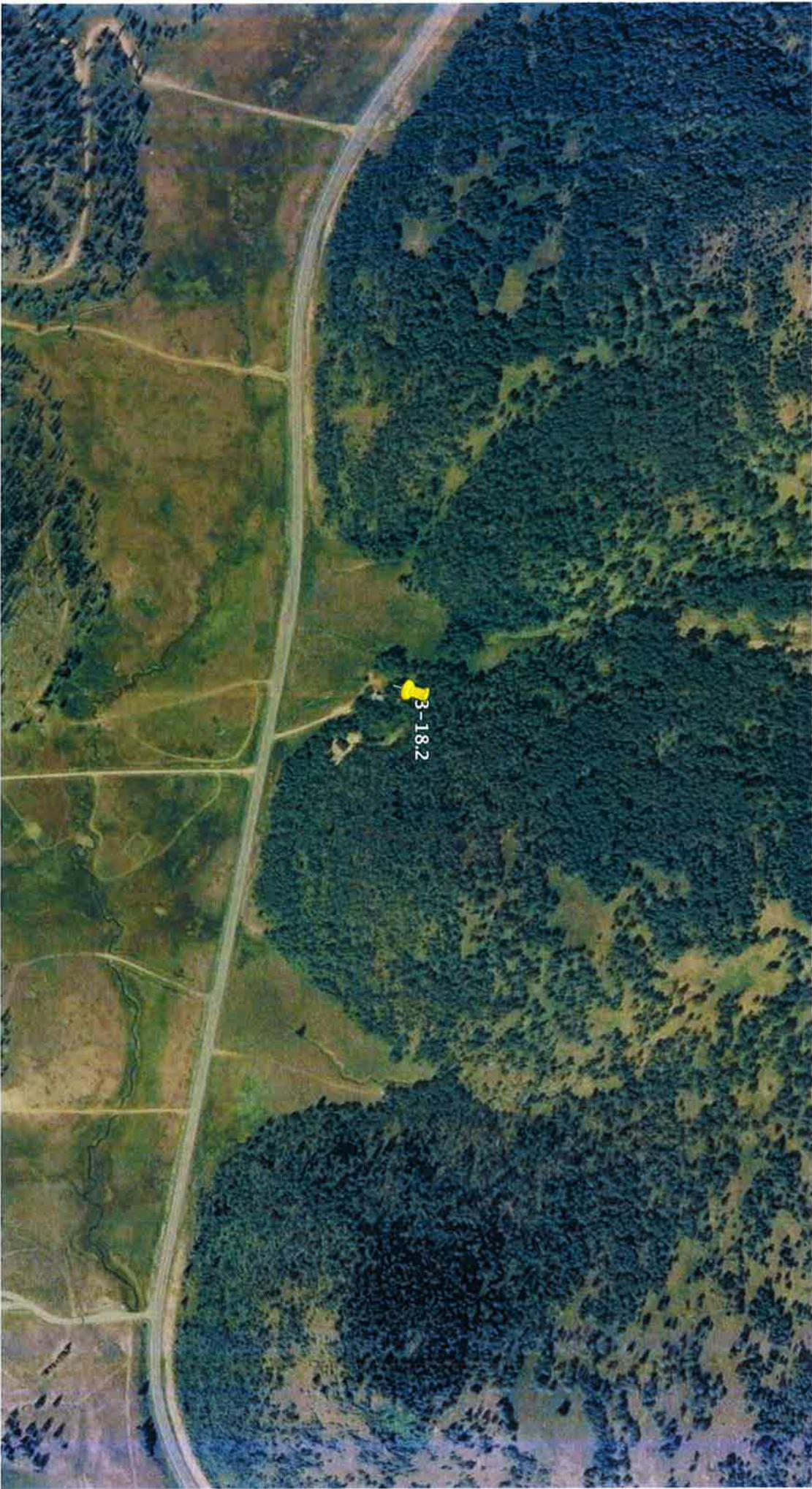
- Land capability (nonirrigated): 7e
- Ecological site: High Mountain Loam (Aspen) (R047XA508UT)

#### Typical profile

- 0 to 16 inches: Loam
- 16 to 23 inches: loam
- 23-48 inches: Clay loam
- 48-52 inches: weathered bedrock

# Appendix C

Google Earth Image of the Proposed Drill Site and Soil Pit Location



# Appendix D

## Soil Profile Log

# Soil Profile Log

Sp 3-18.2

Name	Allan Stevens			Drainage Pattern	PI Pinnate					
Date	July 16, 2018			Drainage	MW Moderately Well Drained					
Weather	Sunny (73° F)			Flooding	OC Occasional, VB Very Brief					
Location	39°38'59.1"N 111°16'04.7"W			Ponding	NO None					
Slope Aspect	South			Depth to Water	Unknown					
Slope Gradient	3%			Plant Cover	ACNE, PERY, POPR					
Slope	Simple			Parent Material	COL Colluvium					
Complexity				Erosion	W1 0-25% erosion from water					
Slope Shape	CC Concave Concave			Surface Fragment	< 5% Coarse gravel					
Hillslope Profile	FS Footslope									
Geomorphic	BS Base Slope									
Diagnostic Horizons	Observation Method	Depth (cm)	Boundary		Color	Texture	Structure	Reaction (HCD)	% Rock Fragment and Size	% Roots Size and Location
			Distinctness	Topography						
A	SP	0-18	Clear	Wavy	Black	SL	VF <sub>gr</sub> , ST	ST	None	F 25%
B	SP	18-38	Clear	Irregular	Dark Grayish Brown	SL	VF <sub>pr</sub> , ST	ST	None	VF 10%
C	SP	38-			Brown	SL	F <sub>pr</sub> , ST	ST	CG 20%	None
Depth										
Description										
1-18	Sandy loam with fine root material, very fine granular, moist									
18-38	Sandy loam with very fine root material, very fine prismatic, moist									
38-	Sandy loam with no root material, fine prismatic, coarse gravel, moist									

# Appendix E

## Soil Profile Photo



August 1, 2018

Greg Galecki  
Skyline Mine  
HC 35 Box 380  
Helper, Utah 84526

Dear Greg

Alpine Ecological has conducted a soil survey on the proposed drill site 4-18W on behalf of Skyline Mine. The survey was conducted in order to comply with requirements of Utah Division of Oil, Gas and Mining (DOGMA).

### **NRCS Soil Data**

There has been no soil survey conducted in the area of the proposed drill site 4-18W. The United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) have conducted soil surveys approximately 4 miles East of the proposed drill site. The USDA-NRCS Web Soil Survey (WSS) utility and associated soil reports were used in determining the soil types in the proposed disturbance area (Appendices A & B ).

According to the information provided by the NRCS, soils in the vicinity of the proposed drill site is comprised of the Trag-Croydon Complex as well as 7 others. The Trag-Croydon Complex soils were identified on the south-facing and east-facing slopes of the soil survey areas.

The proposed drill site 4-18W is located on a north facing backslope, side slope. This soil most closely resembles the Trag-Croydon Complex.

### **Site Reconnaissance**

Site reconnaissance was conducted by Dr. Stevens. The proposed drill site location was identified the soil survey was conducted at the proposed site. This was done to ensure that the same soils were being surveyed that would be disturbed with the proposed drill project. (Appendix C).

Since there were no soil surveys previously conducted in the proposed drill site area by the NRCS Dr. Stevens investigated road cuts and other exposed soils within the NRCS soil survey area east of the affected areas to familiarize himself with the previously classified soils.

## **Soil Profiles**

Soil investigations were conducted at the proposed 4-18W drill location on July 8, 2018. A soil profile (4-18W) was excavated near the proposed drill location to gather representative soils data for the proposed drill site. The soil pit was excavated by hand to a depth of approximately 1 meter. The pit was logged and photographed (Appendices D and E). The soils in the pits correlated with Trag-Croydon Complex soils identified by the NRCS in nearby areas. The site was excavated on a north facing backslope, side slope.

Please feel free to contact me if you have any questions.

Sincerely,  
Alpine Ecological

A handwritten signature in black ink, appearing to read 'Allan Stevens', with a long horizontal flourish extending to the right.

Allan Stevens PhD

# Appendix A

Map and Legends of NRCS Soil Survey  
(obtained from WSS)

Soil Map—Carbon Area, Utah, Parts of Carbon and Emery Counties; and Manti-Lasal National Forest, Manti Division - Parts of Sanpete and Emery Counties

111° 20' 22" W

111° 5' 53" W

39° 42' 39" N

39° 42' 39" N



111° 20' 22" W

111° 5' 53" W



Map Scale: 1:94,700 if printed on A landscape (11" x 8.5") sheet.  
0 1000 2000 4000 6000 Meters  
0 4500 9000 18000 27000 Feet  
Map projection: Web Mercator Corner coordinates: WGS84

## MAP LEGEND

	Area of Interest (AOI)		Spoil Area
	Area of Interest (AOI)		Stony Spot
	Soils		Very Stony Spot
	Soil Map Unit Polygons		Wet Spot
	Soil Map Unit Lines		Other
	Soil Map Unit Points		Special Line Features
	Special Point Features		Water Features
	Blowout		Streams and Canals
	Borrow Pit		Transportation
	Clay Spot		Rails
	Closed Depression		Interstate Highways
	Gravel Pit		US Routes
	Gravelly Spot		Major Roads
	Landfill		Local Roads
	Lava Flow		Background
	Marsh or swamp		Aerial Photography
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Carbon Area, Utah, Parts of Carbon and Emery Counties  
 Survey Area Data: Version 9, Sep 7, 2017

Soil Survey Area: Mantí-Lasal National Forest, Mantí Division - Parts of Sanpete and Emery Counties  
 Survey Area Data: Version 1, Dec 27, 2013

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Nov 29, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
22	Croydon loam, 30 to 50 percent slopes	158.0	0.5%
23	Curecanti family-Pathead complex	3,126.2	8.9%
29	Dumps, mine	47.4	0.1%
105	Senchert family-Senchert complex	402.4	1.1%
109	Silas-Brycan loams	176.0	0.5%
115	Trag stony loam, 30 to 60 percent slopes	400.5	1.1%
118	Trag-Croydon complex	1,763.3	5.0%
125	Uinta-Toze families complex	2,264.3	6.5%
<b>Subtotals for Soil Survey Area</b>		<b>8,338.2</b>	<b>23.8%</b>
<b>Totals for Area of Interest</b>		<b>34,999.5</b>	<b>100.0%</b>

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
NOTCOM	No Digital Data Available	26,661.3	76.2%
<b>Subtotals for Soil Survey Area</b>		<b>26,661.3</b>	<b>76.2%</b>
<b>Totals for Area of Interest</b>		<b>34,999.5</b>	<b>100.0%</b>

# Appendix B

Soil Series Descriptions for Trag-Croydon Complex as Developed by the  
NRCS  
(obtained from WWS)

## 118-Trag-Croydon Complex

### Map Unit Setting

- Elevation: 7,580 to 9,470 feet
- Mean annual precipitation: 16 to 25 inches
- Mean annual air temperature: 34 to 40 degrees F
- Frost-free period: 40 to 80 days

### Map Unit Composition

- Trag and similar soils: 50 percent
- Croydon and similar soils 30 percent

### *Description of Trag*

#### Setting

- Landform: Mountain slopes
- Landform position (three-dimensional): Mountainflank
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent Material: Alluvium and/or colluvium derived from sandstone and shale

#### Properties and qualities

- Slope: 30 to 60 percent
- Surface area covered with cobbles, stones or boulders: 13.0 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum content: 10 percent
- Available water capacity: High (about 10.2 inches)

#### Interpretive groups

- Land capability (nonirrigated): 7e
- Ecological site: Mountain Loam (Salina Wildrye) (R048AY409UT)

### Typical profile

- 0 to 10 inches: Stony loam
- 10 to 36 inches: Clay loam
- 36 to 60 inches: Clay loam

### *Description of Croydon*

#### Setting

- Landform: Mountain slopes
- Landform position: (three-dimensional): Mountainflak
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent material: Colluvium and/or slope alluvium over residuum weathered from sandstone and shale

#### Properties and qualities

- Slope: 30 to 50 percent
- Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderatey low to moderately high (0.06 to 0.20 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None

#### Interpretive groups

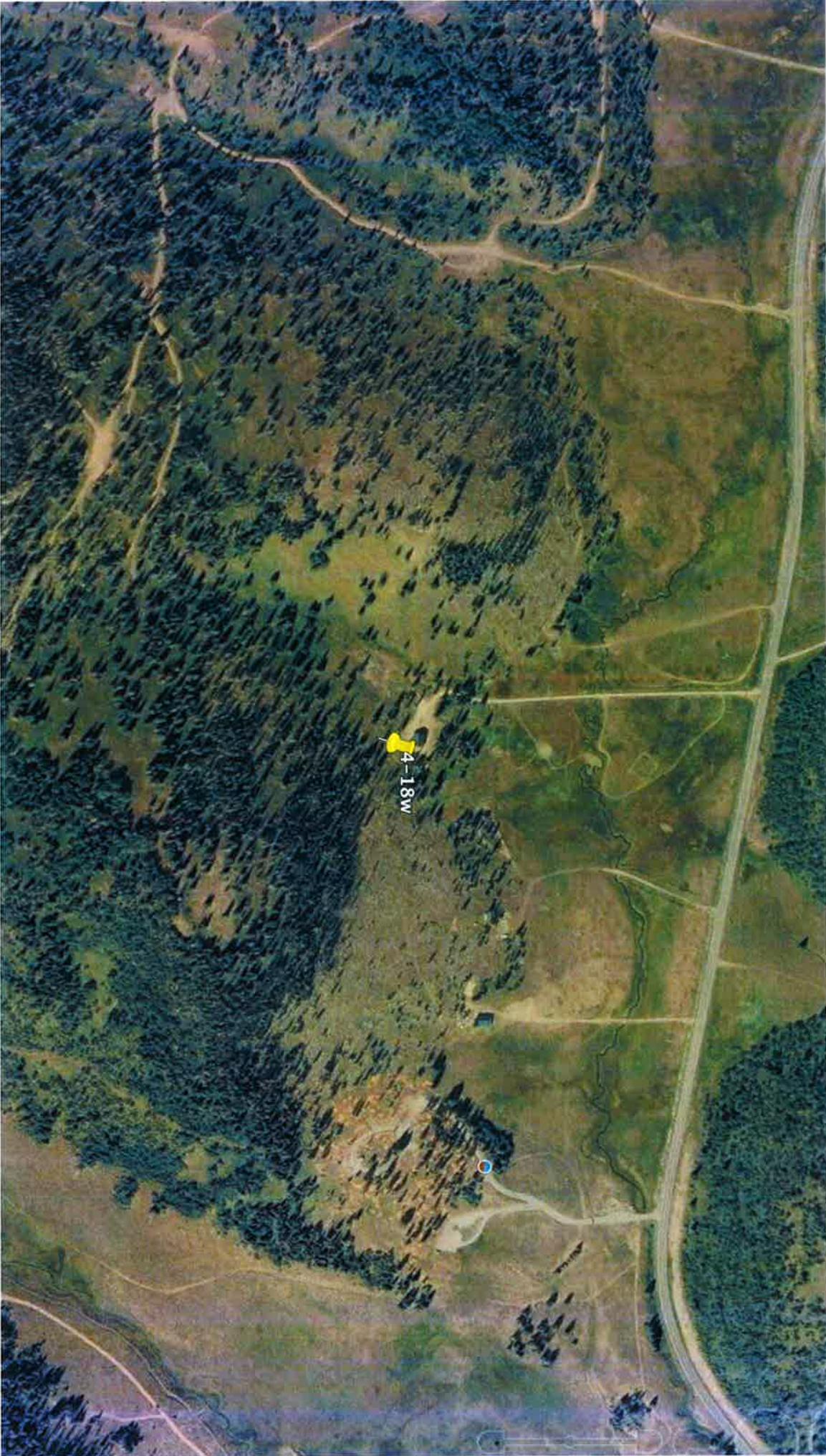
- Land capability (nonirrigated): 7e
- Ecological site: High Mountain Loam (Aspen) (R047XA508UT)

### Typical profile

- 0 to 16 inches: Loam
- 16 to 23 inches: loam
- 23-48 inches: Clay loam
- 48-52 inches: weathered bedrock

# Appendix C

Google Earth Image of the Proposed Drill Site and Soil Pit Location



# Appendix D

## Soil Profile Log

# Soil Profile Log

Sp 4-18W

Name	Allan Stevens			Drainage Pattern	Dendritic					
Date	July 8, 2018			Drainage	WD Well Drained					
Weather	Sunny (70° F)			Flooding	NO None					
Location	39°38'41.5"N 111°15'59.0"W			Ponding	None					
Slope Aspect	North			Depth to Water	Unknown					
Slope Gradient	7%			Plant Cover	BRMA, Carex, VIAM, ELTR					
Slope Complexity	Complex			Parent Material	COL Coluvium					
Slope Shape	CC Concave Concave			Erosion	W1 0-25% erosion from water					
Hillslope Profile	BS Backslope			Surface Fragment	None					
Geomorphic	SS Side Slope									
Diagnostic Horizons	Observation Method	Depth (cm)	Boundary		Color	Texture	Structure	Reaction (HCD)	% Rock Fragment and Size	% Roots Size and Location
			Distinctness	Topography						
A	SP	0-15	Abrupt	Smooth	Dark Brown	SCL	M, gr	ST	VFG 1%	F 70%
B	SP	15-51	Gradual	Irregular	Dark Yellowish Brown	SL	M, sbk	ST	CG 45%	F 15%
C	SP	51-			Yellowish Brown	SL	M, sbk	ST	C 60%	None
<b>Description</b>										
0-15 Sandy clay loam with fine root material, medium granular, fine gravel, moist										
15-51 Sandy loam with fine root material, medium subangular blocky, coarse gravel, moist										
51- Sandy loam with no root material, medium subangular blocky, cobbles, moist										

# Appendix E

## Soil Profile Photo



August 1, 2018

Greg Galecki  
Skyline Mine  
HC 35 Box 380  
Helper, Utah 84526

Dear Greg

Alpine Ecological has conducted a soil survey on the proposed drill site 7-18 on behalf of Skyline Mine. The survey was conducted in order to comply with requirements of Utah Division of Oil, Gas and Mining (DOG M).

### **NRCS Soil Data**

There has been no soil survey conducted in the area of the proposed drill site 7-18. The United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) have conducted soil surveys approximately 5 miles East of the proposed drill site. The USDA-NRCS Web Soil Survey (WSS) utility and associated soil reports were used in determining the soil types in the proposed disturbance area (Appendices A & B ).

According to the information provided by the NRCS, soils in the vicinity of the proposed drill site is comprised of the Trag-Croydon Complex as well as 7 others. The Trag-Croydon Complex soils were identified on the south-facing and east-facing slopes of the soil survey areas.

The proposed drill site 7-18 is located on a northeast facing footslope, base slope. This soil most closely resembles the Trag-Croydon Complex.

### **Site Reconnaissance**

Site reconnaissance was conducted by Dr. Stevens. The proposed drill site location was identified the soil survey was conducted at the proposed site. This was done to ensure that the same soils were being surveyed that would be disturbed with the proposed drill project. (Appendix C).

Since there were no soil surveys previously conducted in the proposed drill site area by the NRCS Dr. Stevens investigated road cuts and other exposed soils within the NRCS soil survey area east of the affected areas to familiarize himself with the previously classified soils.

## **Soil Profiles**

Soil investigations were conducted at the proposed 7-18 drill location on July 26, 2018. A soil profile (7-18) was excavated near the proposed drill location to gather representative soils data for the proposed drill site. The soil pit was excavated by hand to a depth of approximately 1 meter. The pit was logged and photographed (Appendices D and E). The soils in the pits correlated with Trag-Croydon Complex soils identified by the NRCS in nearby areas. The site was excavated on a northeast facing footslope, base slope.

Please feel free to contact me if you have any questions.

Sincerely,  
Alpine Ecological

A handwritten signature in black ink, appearing to read 'Allan Stevens', followed by a long horizontal line extending to the right.

Allan Stevens PhD

# Appendix A

Map and Legends of NRCS Soil Survey  
(obtained from WSS)

Soil Map—Carbon Area, Utah, Parts of Carbon and Emery Counties; and Manti-Lasal National Forest, Manti Division - Parts of Sanpete and Emery Counties

111° 20' 22" W

111° 5' 53" W

39° 42' 39" N

39° 42' 39" N



39° 35' 23" N

39° 35' 23" N

111° 20' 22" W

111° 5' 53" W



Map Scale: 1:94,700 if printed on A landscape (11" x 8.5") sheet.

Map projection: Web Mercator Corner coordinates: WGS84

## MAP LEGEND

	Area of Interest (AOI)		Spoil Area
	Area of Interest (AOI)		Stony Spot
	Soils		Very Stony Spot
	Soil Map Unit Polygons		Wet Spot
	Soil Map Unit Lines		Other
	Soil Map Unit Points		Special Line Features
	Special Point Features		Water Features
	Blowout		Streams and Canals
	Borrow Pit		Transportation
	Clay Spot		Rails
	Closed Depression		Interstate Highways
	Gravel Pit		US Routes
	Gravelly Spot		Major Roads
	Landfill		Local Roads
	Lava Flow		Background
	Marsh or swamp		Aerial Photography
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Carbon Area, Utah, Parts of Carbon and Emery Counties  
 Survey Area Data: Version 9, Sep 7, 2017

Soil Survey Area: Manti-Lasal National Forest, Manti Division - Parts of Sanpete and Emery Counties  
 Survey Area Data: Version 1, Dec 27, 2013

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Nov 29, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
22	Croydon loam, 30 to 50 percent slopes	158.0	0.5%
23	Curecanti family-Pathead complex	3,126.2	8.9%
29	Dumps, mine	47.4	0.1%
105	Senchert family-Senchert complex	402.4	1.1%
109	Silas-Brycan loams	176.0	0.5%
115	Trag stony loam, 30 to 60 percent slopes	400.5	1.1%
118	Trag-Croydon complex	1,763.3	5.0%
125	Uinta-Toze families complex	2,264.3	6.5%
<b>Subtotals for Soil Survey Area</b>		<b>8,338.2</b>	<b>23.8%</b>
<b>Totals for Area of Interest</b>		<b>34,999.5</b>	<b>100.0%</b>

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
NOTCOM	No Digital Data Available	26,661.3	76.2%
<b>Subtotals for Soil Survey Area</b>		<b>26,661.3</b>	<b>76.2%</b>
<b>Totals for Area of Interest</b>		<b>34,999.5</b>	<b>100.0%</b>

# Appendix B

Soil Series Descriptions for Trag-Croydon Complex as Developed by the  
NRCS  
(obtained from WWS)

## **118-Trag-Croydon Complex**

### **Map Unit Setting**

- Elevation: 7,580 to 9,470 feet
- Mean annual precipitation: 16 to 25 inches
- Mean annual air temperature: 34 to 40 degrees F
- Frost-free period: 40 to 80 days

### **Map Unit Composition**

- Trag and similar soils: 50 percent
- Croydon and similar soils 30 percent

### *Description of Trag*

#### **Setting**

- Landform: Mountain slopes
- Landform position (three-dimensional): Mountainflank
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent Material: Alluvium and/or colluvium derived from sandstone and shale

#### **Properties and qualities**

- Slope: 30 to 60 percent
- Surface area covered with cobbles, stones or boulders: 13.0 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum content: 10 percent
- Available water capacity: High (about 10.2 inches)

#### **Interpretive groups**

- Land capability (nonirrigated): 7e
- Ecological site: Mountain Loam (Salina Wildrye) (R048AY409UT)

#### Typical profile

- 0 to 10 inches: Stony loam
- 10 to 36 inches: Clay loam
- 36 to 60 inches: Clay loam

#### *Description of Croydon*

#### Setting

- Landform: Mountain slopes
- Landform position: (three-dimensional): Mountainflak
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent material: Colluvium and/or slope alluvium over residuum weathered from sandstone and shale

#### Properties and qualities

- Slope: 30 to 50 percent
- Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None

#### Interpretive groups

- Land capability (nonirrigated): 7e
- Ecological site: High Mountain Loam (Aspen) (R047XA508UT)

#### Typical profile

- 0 to 16 inches: Loam
- 16 to 23 inches: loam
- 23-48 inches: Clay loam
- 48-52 inches: weathered bedrock

# Appendix C

Google Earth Image of the Proposed Drill Site and Soil Pit Location



# Appendix D

## Soil Profile Log

# Soil Profile Log

Sp 7-18

<b>Name</b>	Allan Stevens			<b>Drainage Pattern</b>	Dendritic					
<b>Date</b>	July 26, 2018			<b>Drainage</b>	MW Moderately Well Drained					
<b>Weather</b>	Sunny (76° F)			<b>Flooding</b>	OC Occasional					
<b>Location</b>	39°36'45.8"N 111°14'44.3"W			<b>Ponding</b>	None					
<b>Slope Aspect</b>	Northeast			<b>Depth to Water</b>	Unknown					
<b>Slope Gradient</b>	5%			<b>Plant Cover</b>	POPR, Carex, ACMI					
<b>Slope</b>	Simple			<b>Parent Material</b>	COL Colluvium					
<b>Complexity</b>										
<b>Slope Shape</b>	CC Concave Concave			<b>Erosion</b>	W1 0-25% erosion from water					
<b>Hillslope Profile</b>	FS Footslope			<b>Surface Fragment</b>	12% Cobbles					
<b>Geomorphic</b>	BS Base Slope									
<b>Diagnostic Horizons</b>	<b>Observation Method</b>	<b>Depth (cm)</b>	<b>Boundary</b> Distinctness Topography		<b>Color</b>	<b>Texture</b>	<b>Structure</b>	<b>Reaction (HCl)</b>	<b>% Rock Fragment and Size</b>	<b>% Roots Size and Location</b>
A	SP	0-13	Clear	Wavy	Very Dark Brown	SL	VF <sub>gr</sub>	ST	FG 3%	F 75%
B	SP	13-51	Abrupt	Smooth	Brown	S	M <sub>sbk</sub>	ST	CG 20%	VF 5%
C	SP	51-			Dark Yellowish Brown	S	M <sub>sbk</sub>	ST	S 75%	None
<b>Depth</b> <span style="float: right;"><b>Description</b></span>										
0-13	Sandy loam with fine root material, very fine granular, fine gravel, moist									
13-51	Sandy with very fine root material, medium subangular blocky, coarse gravel, moist									
51-	Sandy with no root material, medium subangular blocky, stony, moist									

# Appendix E

Soil Profile Photo



**Skyline Mine  
Vegetative Analysis of  
Proposed Drill Site 1-18  
and Reference Site 1-18**

# **Report Prepared By**

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By Allan R. Stevens Ph.D

For  
Canyon Fuel Company, LLC.  
Skyline Mine  
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July 2018

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## **Introduction**

The purpose of the proposed drill site 1-18 is part of a conventional rotary/core drilling program. Heavy equipment to be utilized will access the exploration area via existing roads.

Total estimated disturbance area for drill site 1-18 in 2018 is 0.275 acres. Reclamation of the disturb area will occur in the fall of 2018 after completion of the drilling and capping of the well.

Skyline Mine is a coal mine with its surface facilities located about 4 miles southwest of the town of Scofield in Carbon County, Utah. The proposed drill site 1-18 is located approximately 3.7 miles southwest of the surface facilities of the mine. The drill site is located at the top of a ridge line in Sanpete County. The vegetation on the drill site is grasses, forbs and shrubs. The elevations of the drill sites is 9,721 feet above sea level.

## **Methods**

### **Sampling Standards**

Methodologies used for this analysis were performed in accordance with vegetation guidelines supplied by the State of Utah, Division of Oil, Gas and Mining (DOG M). In July of 2018, quantitative and qualitative data were collected in the plant communities proposed for drilling activities as well as reference areas that were chosen for future revegetation success standards.

### **Sampling Methodology for Cover, Frequency and Composition**

The areas that is proposed to be disturbed is centered on the proposed drill site. Therefore, the vegetation around the drill site needed to be analyzed. It was determined that the best method to determine vegetative cover frequency and composition on this area would be nested frequency belt lines as described in the U.S. Forest Service Rangeland Ecosystem Analysis and Monitoring Handbook (FSH 2209.21). Five 100 ft. beltlines were established in five different compass directions radiating from the proposed drill site and reference site point. With this methodology the vegetation composition around the proposed drill site and reference site would be determined. The five compass directions used were the following from magnetic North: Belt 1 at 23 degrees, Belt 2 at 121 degrees, Belt 3 at 173 degrees, Belt 4 at 269 degrees and Belt 5 at 296 degrees. Every 5 ft. along each transect line a  $\frac{1}{2}$  m<sup>2</sup> nested frequency frame was

placed on alternating sides of the transect line. Species composition and frequency were recorded using the frame. Ground cover was also determined using the frame. The percent cover of each species was then estimated within each frame. A total of 100 nested frequency data points were therefore taken at each proposed drill site and each reference site. Plant nomenclature follows the USDA-ARS Plant Database ([plants.usda.gov](http://plants.usda.gov)).

### **Placement of Reference Sites**

The reference site was chosen to represent future revegetation success standards. The reference site was chosen by walking far enough away from the proposed drill site so it would not be disturbed during the drilling activity. Locations for the reference site was chosen by visually looking at the site and trying to choose a site that looked similar in vegetative composition to the proposed drill site.

### **Sampling Methodology for Density**

Density estimates for the woody plant species on the proposed drill site and reference areas were made using a distance method called the point-quarter technique. In this method, random points were placed on the sample sites and measured into four quarters. The distance to the nearest woody plant species were then recorded in each quarter. The average point to individual distance was equal to the square root of the mean area per individual.

### **Photographs and Map**

A map was created with the proposed drill site and reference site (Appendix 5). In addition photographs were taken of each belt line from the center point (Appendix 3-4).

### **Threatened, Endangered, Candidate and Sensitive Species**

The inventory of federally listed threatened, endangered and candidate plant species for Emery and Sanpete Counties was consulted prior to field work. Both Emery and Sanpete County lists were consulted because the proposed drill site is close to the Sanpete/Emery County line. In addition the State of Utah, Department of Natural Resource's biodiversity database and the USDA Forest Service Intermountain Region's list of proposed, endangered, threatened and sensitive species for the Manti portion of the Manti-La Sal National Forest was consulted for possible impacts by the proposed project.

If applicable, this information would be used to drive species of concern field surveys if any of the species or habitats were found on or near the proposed project.

## Results

### Drill Site 1-18

The proposed drill site 1-18 is located at the top of a ridge line and slopes slightly to the south (Appendix 5). The vegetative community is a grass/forb/shrub community.

There were no overstory species at this site. The most common understory species were Slender Wheatgrass (*Elymus trachycaulus*), Yellow Rabbitbrush (*Chrysothamnus viscidiflorus*), Mountain Big Sagebrush (*Artemisia tridentate vaseyana*), Columbia Needlegrass (*Achnatherum nelsonii*), Mountain Brome (*Bromus marginatus*) and Rydberg's Penstemon (*Penstemon rydbergii*). A list of all species encountered in the sample quadrats is listed in Appendix 1.

Total living cover for this area was estimated at 54%, of which 54% was from understory cover and 0% was from overstory cover (Appendix 1). The composition of the understory cover was 53.8% grasses, 16.1% forbs and 30.1% shrubs.

### Reference Site 5-16

The proposed reference site 1-18 is located at the top of a ridge line and slopes slightly to the south (Appendix 5). The vegetative community is a grass/forb/shrub community.

There were no overstory species at this site. The most common understory species were Slender Wheatgrass (*Elymus trachycaulus*), Yellow Rabbitbrush (*Chrysothamnus viscidiflorus*) and Columbia Needlegrass. A list of all species encountered in the sample quadrats is listed in Appendix 1.

Total living cover for this area was estimated at 54%, of which 54% was from understory cover and 0% was from overstory cover (Appendix 1). The composition of the understory cover was 63.8% grasses, 12.5% forbs and 23.7% shrubs.

### Analysis of Similarities Between Drill Site and Reference Site

Specific parameters for those plant communities that would be disturbed by the proposed drilling activities were compared statistically using an unpaired t test with the correlating reference area that could be used for revegetation success standard following final reclamation of the site. When total living cover values of the proposed drill site were compared to the corresponding reference site there were no significant differences found between the sites.

When total woody species density values of the drill site were compared to the reference site there was no significant difference.

### Threatened, Endangered, Candidate and Sensitive Species

The following is a table of potential endangered, threatened, candidate and sensitive plant species know to occur in Sanpete and Emery Counties. Next to each species name information is provided about the likelihood of occurrence for each species in the proposed drill site areas.

Federally listed endangered, threatened, candidate and sensitive species for Emery and Sanpete County.	
Endangered	
<i>Pediocactus despainii</i> (San Rafael cactus)	<p>This species is found in open pinyon-juniper communities at 6,000-6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Schoenocrambe barnebyi</i> (Barnaby reed-mustard)	<p>This species is found in mixed shadscale, eriogonum and ephedra communities at 5,600-5,700 ft. elevation.</p>

	<p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species</p>
<i>Sclerocactus wrightiae</i> (Wright fishhook cactus)	<p>This plant is found on the Mancos Shale Formation in salt desert shrub to juniper communities at 4,790-6,120 ft. elevation.</p> <p>The study area is above the elevation range for this species. The vegetative types are very different and there is no Mancos Shale in the study area.</p> <p>The proposed project will not impact this plant species.</p>
<b>Threatened</b>	
<i>Astragalus montii</i> (Heliotrope milk-vetch)	<p>This species is found in alpine on windblown ridges and snowdrift sites at 10,500-11,000 ft. elevation.</p> <p>The study areas are below the elevation range for this species. The habitat is different. The know locations of this species are well South of the study area.</p> <p>The proposed project will not impact this plant species</p>
<i>Cycladenia humilis var jonesii</i> (Jones Cyladenia)	<p>This species is found in cool desert shrub and juniper communities at 4,400-6,000 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p>

	<p>The proposed project will not impact this plant species.</p>
<p><i>Pediocactus despainii</i> (Despain Footcactus)</p>	<p>This species is found in open piyon-juniper communities at 6,000-6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Townsendia aprica</i> (Last Chance townsendia)</p>	<p>This species is found in salt desert shrub and pinyon-juniper communities in the Arapien and Mancos Shale formations at 6,100-8,000 ft. elevation.</p> <p>The study areas are not found in the Arapien or Mancos Shale formation. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><b>Candidate/Sensitive</b></p>	
<p><i>Aster kingie</i> var <i>barnebyana</i> (Barneby woody aster)</p>	<p>This species is found in mountain mahogany-oak communities in rock outcrops composed of Precambrian quartzite at 7,345-7,610 ft. elevation.</p> <p>There are not outcrops of Precambrian quartzite in the study areas. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Astragalus consobrinus</i> (Bicknell milkvetch)</p>	<p>This species is found in sagebrush-grassland and pinyon-juniper</p>

	<p>communities on the Mancos Shale formation at 5,200-9,000 ft. elevation.</p> <p>The study areas are not found in the Mancos Shale formation. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Astragalus subcinereus</i> var. <i>basalticus</i> (Basalt milkvetch or Silver milkvetch)</p>	<p>This species is found in pinyon-juniper and ponderosa communities at 4,520-7,970 ft. elevation.</p> <p>The vegetative types of the study areas are very different and the know population of this plant are found in southern Emery County.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Cryptantha compacta</i> (Mound cryptanth)</p>	<p>This species is found in salt desert shrub and mixed desert shrub communities at 4,950-9,250 ft. elevation.</p> <p>The vegetative types of the study areas are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Cryptantha creutzfeldtii</i> (Creutzfeldt-flower)</p>	<p>This species is found in mat atriplex communities on the Mancos Shale formation at 5,250-6,495 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p>

	<p>The proposed project will not impact this plant species.</p>
<p><i>Cymopterus coulteri</i> (Coulter biscuitroot)</p>	<p>This species is found in black sagebrush, shadscale, desert shrub and juniper communities at 4,955-6,000 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Erigeron carringtonae</i> (Carrington daisy)</p>	<p>This species is found in meadows and escarpment margins at 10,000-11,000 ft. elevation.</p> <p>The study areas are below the elevation range.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Erigonoum corymbosum</i> var. <i>smithii</i> (Big Flattop buckwheat or Smith wild buckwheat)</p>	<p>This species is found in purple-sage matchweed, ephedra-Indian ricegrass and rabbitbrush communities at 5,200-5,610 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Festuca dasyclada</i> (Sedge fescue)</p>	<p>This species is found on open slopes and ridges in sagebrush, mountain brush, and juniper communities on the Green River Shale Formation and limestone gravels at 6,990-10,000 ft. elevation.</p>

	<p>The study areas are in a different formation.</p> <p>The proposed project will not impact this plant species.</p>
<i>Gilia tenuis</i> (Mussentuchit Gilia)	<p>This species is found in pinyon-juniper woodlands.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<i>Hedysarum occidentale</i> var. <i>canone</i> (Canyon sweetvetch or Coal sweetvetch)	<p>This species is found in pinyon-juniper, sagebrush and wash communities at 5,000-8,000 ft. elevation.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<i>Hymenoxys depressa</i> (Low hymenoxys or Depressed bitterweed)	<p>This species is found in ephedra, sagebrush, shadscale and pinyon-juniper communities at 4,400-7,100 ft. elevation.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<i>Hymenoxys helenioides</i> (Helenium hymenoxys or Intermountain bitterweed)	<p>This species is found in mountain brush, sagebrush, aspen and meadow communities at 8,800-10,700 ft. elevation.</p> <p>Known populations of this species are found at quite a distance south and north of the study site.</p>

	<p>The proposed project will not impact this plant species.</p>
<i>Lygodesmia entrada</i> (Entrada rushpink)	<p>This species is found in mixed desert shrub and juniper communities at 4,400-4,800 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Mentzelia argillosa</i> (Arapien stickleaf)	<p>This species is found in salt desert shrub and pinyon-juniper communities on the Arapien Shale formation at 5,000-6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different. The Arapien Shale formation is not found in the study areas.</p> <p>The proposed project will not impact this plant species.</p>
<i>Mentzelia multicaulis var. librina</i> (Book Cliffs blazing star)	<p>This species is found in sagebrush, rabbitbrush, and pinyon-juniper communities at 6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>

<p><i>Penstemon tidestromii</i> (Tidestrom beardtongue)</p>	<p>This species is found in desert shrub, sagebrush, and pinyon-juniper communities at 5,300-8,200 ft elevation.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Penstemon wardii</i> (Ward beardtongue)</p>	<p>This species is found in desert shrub, pinyon-juniper, sagebrush, shadescale and greasewood communities on the Arapien Shale formation at 5,495-6,810 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Phacelia utahensis</i> (Utah phacelia)</p>	<p>This species is found in salt desert shrub communities on the Arapien Shale Formation at 5,500-5,700 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Psoralea polydenius</i> var. <i>jonesii</i> (Jones indigo-bush or glandular indigo-bush)</p>	<p>This species is found in salt desert shrub communities on Mancos Shale formations at 4,820 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p>

	<p>The proposed project will not impact this plant species.</p>
<p><i>Silene petersonii</i> (Maguire campion, Wasatch limestone catchfly or Peterson catchfly)</p>	<p>This species is found in ponderosa pine, rocky mountain juniper, bristlecone pine, spruce-fier, and aspen-sagebrush communities on open calcareous and igneous gravels at 6,955-11,200 ft. elevation.</p> <p>The study sites have no open calcareous and igneous gravels.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Sphaeralcea psoraloides</i> (Psoralea globemallow)</p>	<p>This species is found in zuckia ephedra communities at 4,000-6,000 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Talinum thompsonii</i> (Thompson talinum)</p>	<p>This species is found on silicious conglomeratic gravels in pinyon-juniper and ponderosa pine communities at 7,500 ft. elevation.</p> <p>The study sites do not contain any silicious conglomeratic gravels.</p> <p>The proposed project will not impact this plant species.</p>

## Summary

Total estimated disturbance area for drill site 1-18 in 2018 is 0.275 acres. Reclamation of the disturb area will occur in the fall of 2018 after completion of the drilling and capping of the well.

Drilling activities will necessitate disturbance to the vegetation in this area. The plant community at the proposed drill site 1-18 and reference site 1-18 are in their native condition. The plant community where drilling is proposed was quantitatively sampled, along with a reference area chosen to be used for final revegetation success standards. Additionally, endangered, threatened, candidate and sensitive plant species know to occur in Sanpete and Emery counties will not be impacted by the proposed drilling action

**Appendix 1- Data Summary Tables for Drill Site 1-18**

<b>Drill Site 1-18</b>		<b>2018</b>
<b>Percent Cover and Percent Frequency by Species</b>		
Species Name (Common Name)	Mean Percent Cover	Percent Frequency
<b>UNDERSTORY</b>		
<b>GRASSES</b>		
<i>Achnatherum nelsonii</i> (Columbia Needlegrass)	6.67	12.35
<i>Bromus marginatus</i> (Mountain Brome)	3.14	5.82
<i>Carex</i> ( <i>Carex</i> spp.)	0.33	0.62
<i>Elymus elymoides</i> (Squirreltail)	0.62	1.15
<i>Elymus trachycaulus</i> (Slender Wheatgrass)	12.14	22.49
<i>Koeleria macrantha</i> (Prairie Junegrass)	2.14	3.97
<i>Melica spectabilis</i> (Purple Oniongrass)	0.52	0.97
<i>Poa fendleriana</i> (Muttongrass)	3.24	6
<i>Poa secunda</i> (Sandberg Bluegrass)	0.24	0.44
<b>FORBS</b>		
<i>Achillea millefolium</i> (Common Yarrow)	1.62	3
<i>Agastache urticifolia</i> (Nettleleaf Giant Hyssop)	0.24	0.44
<i>Astragalus</i> (Milkvetch spp.)	0.86	1.59
<i>Delphinium occidentale</i> (Western Larkspur)	0.43	0.79
<i>Geranium richardsonii</i> (Richardson's Geranium)	0.05	0.09
<i>Hackelia floribunda</i> (Mayflower Stickseed)	0.91	1.68
<i>Hydrophyllum capitatum</i> (Ballhead Waterleaf)	0.1	0.18
<i>Hymenoxys hoopesii</i> (Orange Sneezeweed)	0.62	1.15
<i>Orthocarpus tolmiei</i> (Tolmie's Owl's-clover)	0.38	0.71
<i>Penstemon rydbergii</i> (Rydberg's Penstemon)	2.38	4.41
<i>Taraxacum officinale</i> (Common Dandelion)	0.05	0.09
<i>Vicia americana</i> (American Vetch)	1.1	2.03
<b>TREES/SHRUBS</b>		
<i>Artemisia tridentata vaseyana</i> (Mountain Big Sagebrush)	6.91	12.79

<i>Chrysothamnus viscidiflorus</i> (Yellow Rabbitbrush)	8.96	16.59
<i>Symphoricarpos oreophilus</i> (Mountain Snowberry)	0.38	0.71

Drill Site 1-18		2018
<b>Total Cover and Composition</b>		
		Mean Percent cover
<b>TOTAL COVER</b>		
Overstory Cover		0
Understory Cover		54
Litter		18
Bareground		23
Rock		5
Total Living Cover		54
<b>% Composition</b>		
Grasses		53.8
Forbs		16.1
Shrubs		30.1

Drill Site 1-18		2018
<b>Woody Species Density</b>		
		Number/Acre
<b>SPECIES (COMMON NAME)</b>		
<i>Artemisia tridentata vaseyana</i> (Mountain Big Sagebrush)		26.8
<i>Chrysothamnus viscidiflorus</i> (Yellow Rabbitbrush)		23.5
<i>Symphoricarpos oreophilus</i> (Mountain Snowberry)		8.2
<b>TOTAL</b>		58.5

**Appendix 2- Data Summary Tables for Drill Site 1-18 Reference Site**

<b>Drill Site 1-18 Reference Site</b>		<b>2018</b>
<b>Percent Cover and Percent Frequency by Species</b>		
Species Name (Common Name)	Mean Percent Cover	Percent Frequency
<b>UNDERSTORY</b>		
<b>GRASSES</b>		
<i>Achnatherum nelsonii</i> (Columbia Needlegrass)	5.56	10.29
<i>Bromus marginatus</i> (Mountain Brome)	3.11	5.75
<i>Carex</i> ( <i>Carex</i> spp.)	0.75	1.39
<i>Elymus elymoides</i> (Squirreltail)	1.08	2
<i>Elymus trachycaulus</i> (Slender Wheatgrass)	10.69	19.79
<i>Koeleria macrantha</i> (Prairie Junegrass)	4.76	8.81
<i>Melica spectabilis</i> (Purple Oniongrass)	0.14	0.26
<i>Poa fendleriana</i> (Muttongrass)	5.37	9.94
<i>Poa secunda</i> (Sandberg Bluegrass)	3.01	9.94
<b>FORBS</b>		
<i>Achillea millefolium</i> (Common Yarrow)	3.25	6.02
<i>Astragalus</i> (Milkvetch spp.)	0.99	1.83
<i>Delphinium occidentale</i> (Western Larkspur)	0.14	0.26
<i>Hackelia floribunda</i> (Mayflower Stickseed)	0.47	0.87
<i>Hymenoxys hoopesii</i> (Orange Sneezeweed)	0.09	0.17
<i>Orthocarpus tolmiei</i> (Tolmie's Owl's-clover)	0.09	0.17
<i>Penstemon rydbergii</i> (Rydberg's Penstemon)	1.6	2.96
<i>Vicia americana</i> (American Vetch)	0.33	0.61
<b>TREES/SHRUBS</b>		
<i>Artemisia tridentata vaseyana</i> (Mountain Big Sagebrush)	4.66	8.63
<i>Chrysothamnus viscidiflorus</i> (Yellow Rabbitbrush)	8.1	15
<i>Symphoricarpos oreophilus</i> (Mountain Snowberry)	0.09	0.17

<b>Drill Site 1-18 Reference Site</b>		<b>2018</b>
<b>Total Cover and Composition</b>		
		Mean Percent cover
<b>TOTAL COVER</b>		
Overstory Cover		0
Understory Cover		54
Litter		22
Bareground		22
Rock		2
Total Living Cover		54
<b>% Composition</b>		
Grasses		63.8
Forbs		12.5
Shrubs		23.7

<b>Drill Site 1-18 Reference Site</b>		<b>2018</b>
<b>Woody Species Density</b>		
		Number/Acre
<b>SPECIES (COMMON NAME)</b>		
<i>Artemisia tridentata vaseyana</i> (Mountain Big Sagebrush)		17.6
<i>Chrysothamnus viscidiflorus</i> (Yellow Rabbitbrush)		22.8
<i>Symphoricarpos oreophilus</i> (Mountain Snowberry)		5.7
<b>TOTAL</b>		46.1

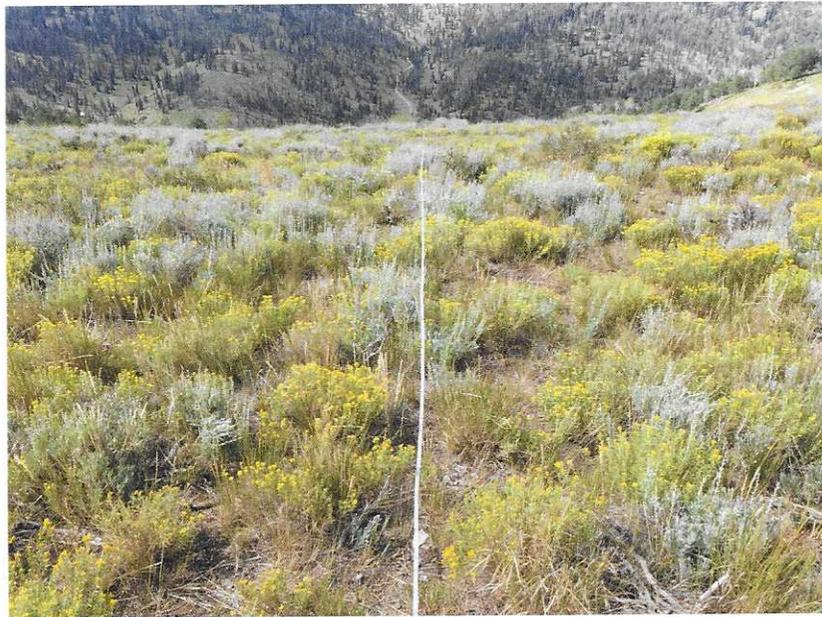
**Appendix 3- Photos Drill Site 1-18**



Drill Site 1-18 Belt 1



Drill Site 1-18 Belt 2



Drill Site 1-18 Belt 3



Drill Site 1-18 Belt 4



Drill Site 1-18 Belt 5

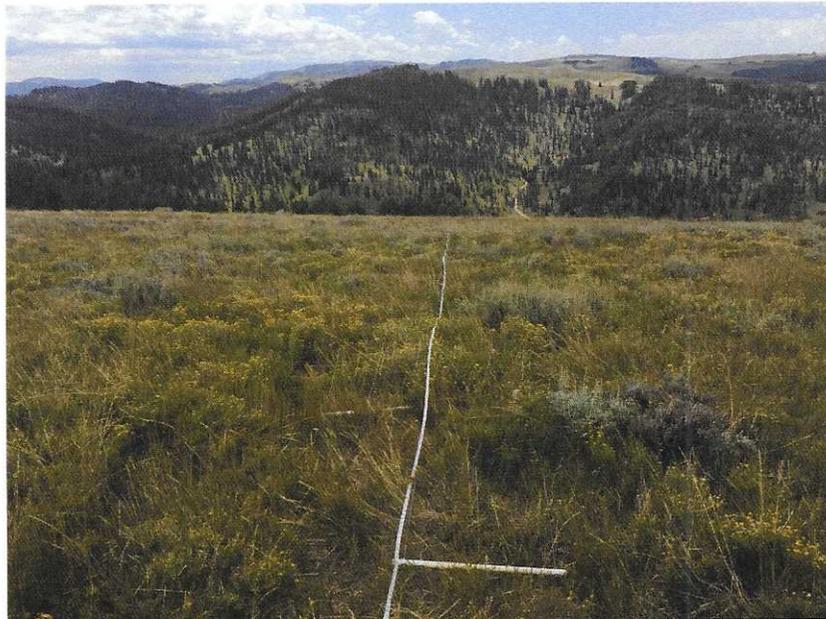
**Appendix 4- Photos of Drill Site 1-18 Reference**



Drill Site 1-18 Reference Belt 1



Drill Site 1-18 Reference Belt 2



Drill Site 1-18 Reference Belt 3

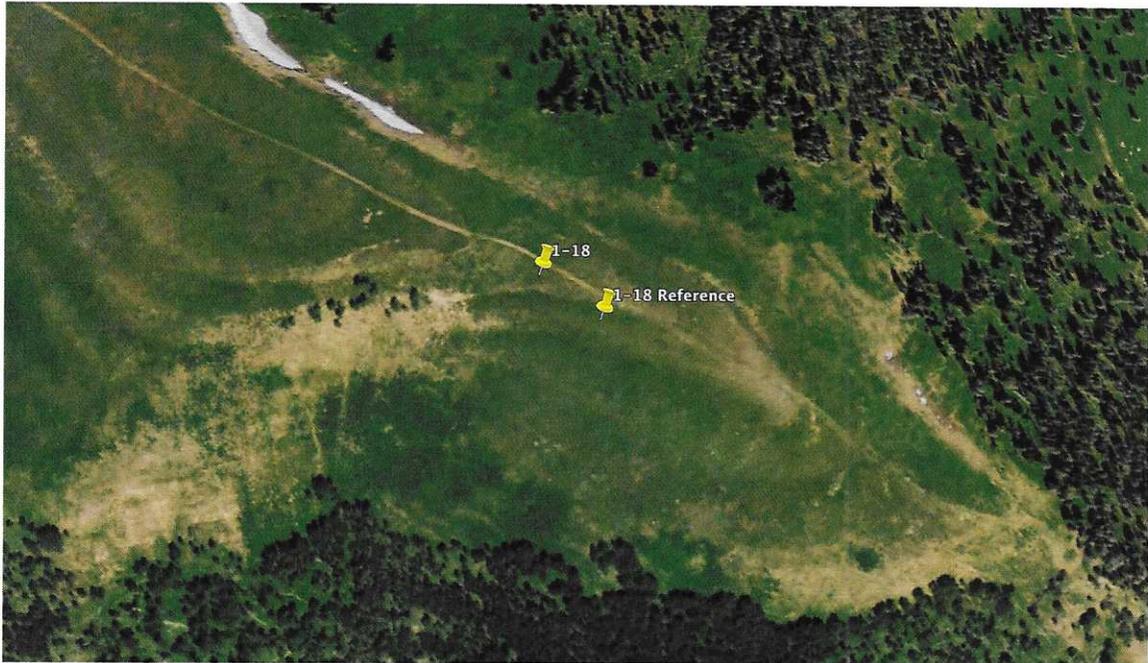


Drill Site 1-18 Reference Belt 4



Drill Site 1-18 Reference Belt 5

## Appendix 5- Study Area Map



1-18 Drill Site and Reference Site

## Appendix 6 - UTM Coordinates of 1-18 Reference Site

Drill 1-18 Reference 12 S 0477153 E 4389485 N

**Skyline Mine  
Vegetative Analysis of  
Proposed Drill Site 3-18.2  
and Reference Site 3-18.2**

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## **Introduction**

The purpose of the proposed drill site 3-18.2 is part of a conventional rotary/core drilling program. Heavy equipment to be utilized will access the exploration area via existing roads.

Total estimated disturbance area for drill site 3-18.2 in 2018 is 0.275 acres. Reclamation of the disturb area will occur in the fall of 2018 after completion of the drilling and capping of the well.

Skyline Mine is a coal mine with its surface facilities located about 4 miles southwest of the town of Scofield in Carbon County, Utah. The proposed drill site 3-18.2 is located approximately 4.1 miles southwest of the surface facilities of the mine. The drill site is located on a flat area near a highway in Sanpete County. The vegetation on the drill site is grasses, forbs and shrubs. The elevations of the drill sites is 8,936 feet above sea level.

## **Methods**

### **Sampling Standards**

Methodologies used for this analysis were performed in accordance with vegetation guidelines supplied by the State of Utah, Division of Oil, Gas and Mining (DOGGM). In July of 2018, quantitative and qualitative data were collected in the plant communities proposed for drilling activities as well as reference areas that were chosen for future revegetation success standards.

### **Sampling Methodology for Cover, Frequency and Composition**

The areas that is proposed to be disturbed is centered on the proposed drill site. Therefore, the vegetation around the drill site needed to be analyzed. It was determined that the best method to determine vegetative cover frequency and composition on this area would be nested frequency belt lines as described in the U.S. Forest Service Rangeland Ecosystem Analysis and Monitoring Handbook (FSH 2209.21). Five 100 ft. beltlines were established in five different compass directions radiating from the proposed drill site and reference site point. With this methodology the vegetation composition around the proposed drill site and reference site would be determined. The five compass directions used were the following from magnetic North: Belt 1 at 23 degrees, Belt 2 at 121 degrees, Belt 3 at 173 degrees, Belt 4 at 269 degrees and Belt 5 at 296 degrees. Every 5 ft. along each transect line a  $\frac{1}{2}$  m<sup>2</sup> nested frequency frame was

placed on alternating sides of the transect line. Species composition and frequency were recorded using the frame. Ground cover was also determined using the frame. The percent cover of each species was then estimated within each frame. A total of 100 nested frequency data points were therefore taken at each proposed drill site and each reference site. Plant nomenclature follows the USDA-ARS Plant Database (plants.usda.gov).

### **Placement of Reference Sites**

The reference site was chosen to represent future revegetation success standards. The reference site was chosen by walking far enough away from the proposed drill site so it would not be disturbed during the drilling activity. Locations for the reference site was chosen by visually looking at the site and trying to choose a site that looked similar in vegetative composition to the proposed drill site.

### **Sampling Methodology for Density**

Density estimates for the woody plant species on the proposed drill site and reference areas were made using a distance method called the point-quarter technique. In this method, random points were placed on the sample sites and measured into four quarters. The distance to the nearest woody plant species were then recorded in each quarter. The average point to individual distance was equal to the square root of the mean area per individual.

### **Photographs and Map**

A map was created with the proposed drill site and reference site (Appendix 5). In addition photographs were taken of each belt line from the center point (Appendix 3-4).

### **Threatened, Endangered, Candidate and Sensitive Species**

The inventory of federally listed threatened, endangered and candidate plant species for Emery and Sanpete Counties was consulted prior to field work. Both Emery and Sanpete County lists were consulted because the proposed drill site is close to the Sanpete/Emery County line. In addition the State of Utah, Department of Natural Resource's biodiversity database and the USDA Forest Service Intermountain Region's list of proposed, endangered, threatened and sensitive species for the Manti portion of the Manti-La Sal National Forest was consulted for possible impacts by the proposed project.

If applicable, this information would be used to drive species of concern field surveys if any of the species or habitats were found on or near the proposed project.

## Results

### Drill Site 3-18.2

The proposed drill site 3-18.2 is located on a flat area near a highway and slopes slightly to the south (Appendix 5). The vegetative community is a grass/forb/shrub community.

There were no overstory species at this site. The most common understory species were Columbia Needlegrass (*Achnatherum nelsonii*), Rydberg's Penstemon (*Penstemon rydbergii*), Slender Cinquefoil (*Potentilla gracilis*), Mountain Big Sagebrush (*Artemisia tridentate vaseyana*) and Kentucky Bluegrass (*Poa pratensis*). A list of all species encountered in the sample quadrats is listed in Appendix 1.

Total living cover for this area was estimated at 78%, of which 78% was from understory cover and 0% was from overstory cover (Appendix 1). The composition of the understory cover was 39% grasses, 47.5% forbs and 13.5% shrubs.

### Reference Site 3-18.2

The proposed reference site 3-18.2 is located on a flat area near a highway and slopes slightly to the south (Appendix 5). The vegetative community is a grass/forb/shrub community.

There were no overstory species at this site. The most common understory species were Columbia Needlegrass (*Achnatherum nelsonii*), Rydberg's Penstemon (*Penstemon rydbergii*), Slender Cinquefoil (*Potentilla gracilis*), Mountain Big Sagebrush (*Artemisia tridentate vaseyana*) and Kentucky Bluegrass (*Poa pratensis*). A list of all species encountered in the sample quadrats is listed in Appendix 1.

Total living cover for this area was estimated at 84%, of which 84% was from understory cover and 0% was from overstory cover (Appendix 1). The composition of the understory cover was 37.6% grasses, 49.7% forbs and 12.7% shrubs.

**Analysis of Similarities Between Drill Site and Reference Site**

Specific parameters for those plant communities that would be disturbed by the proposed drilling activities were compared statistically using an unpaired t test with the correlating reference area that could be used for revegetation success standard following final reclamation of the site. When total living cover values of the proposed drill site were compared to the corresponding reference site there were no significant differences found between the sites.

When total woody species density values of the drill site were compared to the reference site there was no significant difference.

**Threatened, Endangered, Candidate and Sensitive Species**

The following is a table of potential endangered, threatened, candidate and sensitive plant species know to occur in Sanpete and Emery Counties. Next to each species name information is provided about the likelihood of occurrence for each species in the proposed drill site areas.

Federally listed endangered, threatened, candidate and sensitive species for Emery and Sanpete County.	
<b>Endangered</b>	
<i>Pediocactus despainii</i> (San Rafael cactus)	<p>This species is found in open pinyon-juniper communities at 6,000-6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Schoenocrambe barnebyi</i> (Barnaby reed-mustard)	<p>This species is found in mixed shadscale, eriogonum and ephedra communities at 5,600-5,700 ft. elevation.</p>

	<p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species</p>
<i>Sclerocactus wrightiae</i> (Wright fishhook cactus)	<p>This plat is found on the Mancos Shale Formation in salt desert shrub to juniper communities at 4,790-6,120 ft. elevation.</p> <p>The study area is above the elevation range for this species. The vegetative types are very different and there is no Mancos Shale in the study area.</p> <p>The proposed project will not impact this plant species.</p>
<b>Threatened</b>	
<i>Astragalus montii</i> (Heliotrope milk-vetch)	<p>This species is found in alpine on windblown ridges and snowdrift sites at 10,500-11,000 ft. elevation.</p> <p>The study areas are below the elevation range for this species. The habitat is different. The know locations of this species are well South of the study area.</p> <p>The proposed project will not impact this plant species</p>
<i>Cycladenia humilis var jonesii</i> (Jones Cyladenia)	<p>This species is found in cool desert shrub and juniper communities at 4,400-6,000 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p>

	The proposed project will not impact this plant species.
<i>Pediocactus despainii</i> (Despain Footcactus)	<p>This species is found in open piyon-juniper communities at 6,000-6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Townsendia aprica</i> (Last Chance townsendia)	<p>This species is found in salt desert shrub and pinyon-juniper communities in the Arapien and Mancos Shale formations at 6,100-8,000 ft. elevation.</p> <p>The study areas are not found in the Arapien or Mancos Shale formation. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<b>Candidate/Sensitive</b>	
<i>Aster kingie</i> var <i>barnebyana</i> (Barneby woody aster)	<p>This species is found in mountain mahogany-oak communities in rock outcrops composed of Precambrian quartzite at 7,345-7,610 ft. elevation.</p> <p>There are not outcrops of Precambrian quartzite in the study areas. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Astragalus consobrinus</i> (Bicknell milkvetch)	This species is found in sagebrush-grassland and pinyon-juniper

	<p>communities on the Mancos Shale formation at 5,200-9,000 ft. elevation.</p> <p>The study areas are not found in the Mancos Shale formation. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Astragalus subcinereus</i> var. <i>basalticus</i> (Basalt milkvetch or Silver milkvetch)</p>	<p>This species is found in pinyon-juniper and ponderosa communities at 4,520-7,970 ft. elevation.</p> <p>The vegetative types of the study areas are very different and the know population of this plant are found in southern Emery County.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Cryptantha compacta</i> (Mound cryptanth)</p>	<p>This species is found in salt desert shrub and mixed desert shrub communities at 4,950-9,250 ft. elevation.</p> <p>The vegetative types of the study areas are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Cryptantha creutzfeldtii</i> (Creutzfeldt-flower)</p>	<p>This species is found in mat atriplex communities on the Mancos Shale formation at 5,250-6,495 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p>

	<p>The proposed project will not impact this plant species.</p>
<i>Cymopterus coulteri</i> (Coulter biscuitroot)	<p>This species is found in black sagebrush, shadscale, desert shrub and juniper communities at 4,955-6,000 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Erigeron carringtonae</i> (Carrington daisy)	<p>This species is found in meadows and escarpment margins at 10,000-11,000 ft. elevation.</p> <p>The study areas are below the elevation range.</p> <p>The proposed project will not impact this plant species.</p>
<i>Eriogonum corymbosum</i> var. <i>smithii</i> (Big Flattop buckwheat or Smith wild buckwheat)	<p>This species is found in purple-sage matchweed, ephedra-Indian ricegrass and rabbitbrush communities at 5,200-5,610 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Festuca dasyclada</i> (Sedge fescue)	<p>This species is found on open slopes and ridges in sagebrush, mountain brush, and juniper communities on the Green River Shale Formation and limestone gravels at 6,990-10,000 ft. elevation.</p>

	<p>The study areas are in a different formation.</p> <p>The proposed project will not impact this plant species.</p>
<i>Gilia tenuis</i> (Mussentuchit Gilia)	<p>This species is found in pinyon-juniper woodlands.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<i>Hedysarum occidentale var. canone</i> (Canyon sweetvetch or Coal sweetvetch)	<p>This species is found in pinyon-juniper, sagebrush and wash communities at 5,000-8,000 ft. elevation.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<i>Hymenoxys depressa</i> (Low hymenoxys or Depressed bitterweed)	<p>This species is found in ephedra, sagebrush, shadscale and pinyon-juniper communities at 4,400-7,100 ft. elevation.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<i>Hymenoxys helenioides</i> (Helenium hymenoxys or Intermountain bitterweed)	<p>This species is found in mountain brush, sagebrush, aspen and meadow communities at 8,800-10,700 ft. elevation.</p> <p>Known populations of this species are found at quite a distance south and north of the study site.</p>

	<p>The proposed project will not impact this plant species.</p>
<i>Lygodesmia entrada</i> (Entrada rushpink)	<p>This species is found in mixed desert shrub and juniper communities at 4,400-4,800 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Mentzelia argillosa</i> (Arapien stickleaf)	<p>This species is found in salt desert shrub and pinyon-juniper communities on the Arapien Shale formation at 5,000-6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different. The Arapien Shale formation is not found in the study areas.</p> <p>The proposed project will not impact this plant species.</p>
<i>Mentzelia multicaulis</i> var. <i>librina</i> (Book Cliffs blazing star)	<p>This species is found in sagebrush, rabbitbrush, and pinyon-juniper communities at 6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>

<p><i>Penstemon tidestromii</i> (Tidestrom beardtongue)</p>	<p>This species is found in desert shrub, sagebrush, and pinyon-juniper communities at 5,300-8,200 ft elevation.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Penstemon wardii</i> (Ward beardtongue)</p>	<p>This species is found in desert shrub, pinyon-juniper, sagebrush, shadescale and greasewood communities on the Arapien Shale formation at 5,495-6,810 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Phacelia utahensis</i> (Utah phacelia)</p>	<p>This species is found in salt desert shrub communities on the Arapien Shale Formation at 5,500-5,700 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Psorothamnus polydenius</i> var. <i>jonesii</i> (Jones indigo-bush or glandular indigo-bush)</p>	<p>This species is found in salt desert shrub communities on Mancos Shale formations at 4,820 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p>

	<p>The proposed project will not impact this plant species.</p>
<p><i>Silene petersonii</i> (Maguire campion, Wasatch limestone catchfly or Peterson catchfly)</p>	<p>This species is found in ponderosa pine, rocky mountain juniper, bristlecone pine, spruce-fier, and aspen-sagebrush communities on open calcareous and igneous gravels at 6,955-11,200 ft. elevation.</p> <p>The study sites have no open calcareous and igneous gravels.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Sphaeralcea psoraloides</i> (Psoralea globemallow)</p>	<p>This species is found in zuckia ephedra communities at 4,000-6,000 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Talinum thompsonii</i> (Thompson talinum)</p>	<p>This species is found on silicious conglomeratic gravels in pinyon-juniper and ponderosa pine communities at 7,500 ft. elevation.</p> <p>The study sites do not contain any silicious conglomeratic gravels.</p> <p>The proposed project will not impact this plant species.</p>

## Summary

Total estimated disturbance area for drill site 3-18.2 in 2018 is 0.275 acres. Reclamation of the disturb area will occur in the fall of 2018 after completion of the drilling and capping of the well.

Drilling activities will necessitate disturbance to the vegetation in this area. The plant community at the proposed drill site 3-18.2 and reference site 3-18.2 are in their native condition. The plant community where drilling is proposed was quantitatively sampled, along with a reference area chosen to be used for final revegetation success standards. Additionally, endangered, threatened, candidate and sensitive plant species know to occur in Sanpete and Emery counties will not be impacted by the proposed drilling action

**Appendix 1- Data Summary Tables for Drill Site 3-18.2**

<b>Drill Site 3-18.2</b>		<b>2018</b>
<b>Percent Cover and Percent Frequency by Species</b>		
Species Name (Common Name)	Mean Percent Cover	Percent Frequency
<b>UNDERSTORY</b>		
<b>GRASSES</b>		
<i>Achnatherum nelsonii</i> (Columbia Needlegras)	16.6	21.28
<i>Carex</i> ( <i>Carex</i> spp.)	5.5	7.05
<i>Poa pratensis</i> (Kentucky Bluegrass)	8.3	10.64
<b>FORBS</b>		
<i>Achillea millefolium</i> (Common Yarrow)	0.81	1.04
<i>Cirsium scariosum</i> (Meadow Thistle)	0.76	0.98
<i>Erigeron speciosus</i> (Aspen Fleabane)	0.05	0.07
<i>Hymenoxys hoopesii</i> (Orange Sneezeweed)	4.43	5.68
<i>Orthocarpus tolmiei</i> (Tolmie's Owl's-clover)	3.16	4.05
<i>Penstemon rydbergii</i> (Rydberg's Penstemon)	16.19	20.76
<i>Potentilla gracilis</i> (Slender Cinquefoil)	10.54	13.51
<i>Thalictrum fendleri</i> (Fendler's Meadow-rue)	0.86	1.1
<i>Vicia americana</i> (American Vetch)	0.05	0.07
<b>TREES/SHRUBS</b>		
<i>Artemisia tridentata vaseyana</i> (Mountain Big Sagebrush)	8.66	11.1
<i>Chrysothamnus viscidiflorus</i> (Yellow Rabbitbrush)	1.93	2.48

<b>Drill Site 3-18.2</b>		<b>2018</b>
<b>Total Cover and Composition</b>		
		Mean Percent cover
<b>TOTAL COVER</b>		
Overstory Cover		0
Understory Cover		78
Litter		5
Bareground		15
Rock		2
Total Living Cover		78
<b>% Composition</b>		
Grasses		39
Forbs		47.5
Shrubs		13.5

<b>Drill Site 3-18.2</b>		<b>2018</b>
<b>Woody Species Density</b>		
		Number/Acre
<b>SPECIES (COMMON NAME)</b>		
<i>Artemisia tridentata vaseyana</i> (Mountain Big Sagebrush)		54.3
<i>Chrysothamnus viscidiflorus</i> (Yellow Rabbitbrush)		26.9
<b>TOTAL</b>		81.2

**Appendix 2- Data Summary Tables for Drill Site 3-18.2 Reference Site**

<b>Drill Site 3-18.2 Reference Site</b>		<b>2018</b>
<b>Percent Cover and Percent Frequency by Species</b>		
Species Name (Common Name)	Mean Percent Cover	Percent Frequency
<b>UNDERSTORY</b>		
<b>GRASSES</b>		
<i>Achnatherum nelsonii</i> (Columbia Needlegras)	16.56	19.71
<i>Carex</i> ( <i>Carex</i> spp.)	5.04	6
<i>Poa pratensis</i> (Kentucky Bluegrass)	9.98	11.88
<b>FORBS</b>		
<i>Achillea millefolium</i> (Common Yarrow)	2.97	3.54
<i>Cirsium scariosum</i> (Meadow Thistle)	1.7	2.02
<i>Delphinium occidentale</i> (Western Larkspur)	0.11	0.13
<i>Fragaria virginiana</i> (Virginia Strawberry)	0.48	0.57
<i>Hymenoxys hoopesii</i> (Orange Sneezeweed)	8.75	10.42
<i>Lathyrus pauciflorus</i> (Fewflower pea)	0.32	0.38
<i>Orthocarus tolmiei</i> (Tolmie's Owl's-clover)	0.48	0.57
<i>Penstemon rydbergii</i> (Rydberg's Penstemon)	15.55	18.51
<i>Potentilla gracilis</i> (Slender Cinquefoil)	11.36	13.52
<b>TREES/SHRUBS</b>		
<i>Artemisia tridentata vaseyana</i> (Mountain Big Sagebrush)	10.4	12.38
<i>Chrysothamnus viscidiflorus</i> (Yellow Rabbitbrush)	0.32	0.38

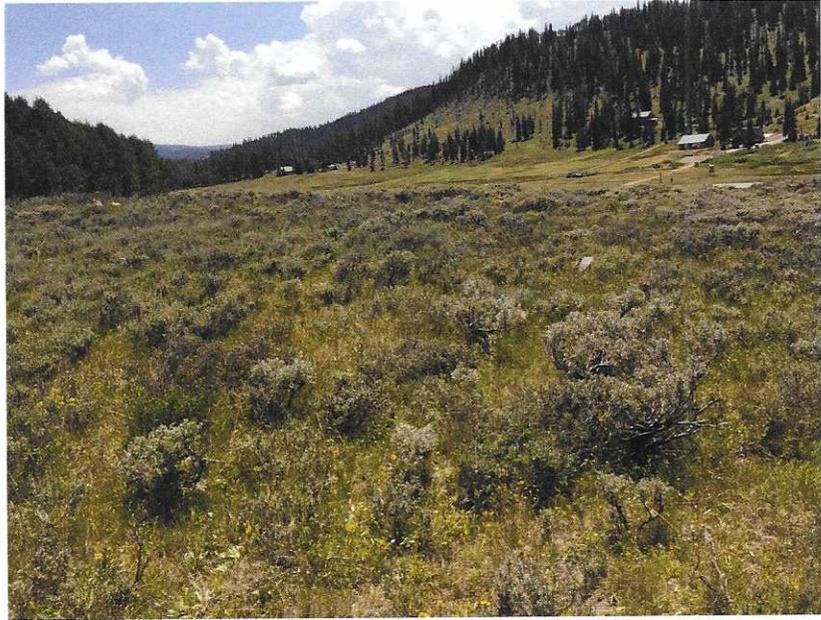
<b>Drill Site 3-18.2 Reference Site</b>		<b>2018</b>
<b>Total Cover and Composition</b>		
	Mean Percent cover	
<b>TOTAL COVER</b>		
Overstory Cover	0	
Understory Cover	84	
Litter	3	
Bareground	12	
Rock	1	
Total Living Cover	84	
<b>% Composition</b>		
Grasses	37.6	
Forbs	49.7	
Shrubs	12.7	

<b>Drill Site 3-18.2 Reference Site</b>		<b>2018</b>
<b>Woody Species Density</b>		
	Number/Acre	
<b>SPECIES (COMMON NAME)</b>		
<i>Artemisia tridentata vaseyana</i> (Mountain Big Sagebrush)	67	
<i>Chrysothamnus viscidiflorus</i> (Yellow Rabbitbrush)	11.4	
<b>TOTAL</b>	78.4	

**Appendix 3- Photos Drill Site 3-18.2**



Drill Site 3-18.2 Belt 1



Drill Site 3-18.2 Belt 2



Drill Site 3-18.2 Belt 3



Drill Site 3-18.2 Belt 4



Drill Site 3-18.2 Belt 5

**Appendix 4- Photos of Drill Site 2-18W Reference**



Drill Site 3-18.2 Reference Belt 1



Drill Site 3-18.2 Reference Belt 2



Drill Site 3-18.2 Reference Belt 3



Drill Site 3-18.2 Reference Belt 4



Drill Site 3-18.2 Reference Belt 5

**Appendix 5- Study Area Map**



3-18.2 Drill Site and Reference Site

**Appendix 6 - UTM Coordinates of 3-18.2 Reference Site**

Drill 3-18.2 Reference      12 S   0477423 E   4388801 N

**Skyline Mine  
Vegetative Analysis of  
Proposed Drill Site 4-18  
and Reference Site 4-18**

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## **Introduction**

The purpose of the proposed drill site 4-18 is part of a conventional rotary/core drilling program. Heavy equipment to be utilized will access the exploration area via existing roads.

Total estimated disturbance area for drill site 4-18 in 2018 is 0.275 acres. Reclamation of the disturb area will occur in the fall of 2018 after completion of the drilling and capping of the well.

Skyline Mine is a coal mine with its surface facilities located about 4 miles southwest of the town of Scofield in Carbon County, Utah. The proposed drill site 4-18 is located approximately 4.1 miles southwest of the surface facilities of the mine. The drill site is located at the bottom of a small canyon in Sanpete County. The vegetation on the drill site is grasses and forbs with a few shrubs and trees. The elevations of the drill sites is 8,971 feet above sea level.

## **Methods**

### **Sampling Standards**

Methodologies used for this analysis were performed in accordance with vegetation guidelines supplied by the State of Utah, Division of Oil, Gas and Mining (DOGGM). In July of 2018, quantitative and qualitative data were collected in the plant communities proposed for drilling activities as well as reference areas that were chosen for future revegetation success standards.

### **Sampling Methodology for Cover, Frequency and Composition**

The areas that is proposed to be disturbed is centered on the proposed drill site. Therefore, the vegetation around the drill site needed to be analyzed. It was determined that the best method to determine vegetative cover frequency and composition on this area would be nested frequency belt lines as described in the U.S. Forest Service Rangeland Ecosystem Analysis and Monitoring Handbook (FSH 2209.21). Five 100 ft. beltlines were established in five different compass directions radiating from the proposed drill site and reference site point. With this methodology the vegetation composition around the proposed drill site and reference site would be determined. The five compass directions used were the following from magnetic North: Belt 1 at 23 degrees, Belt 2 at 121 degrees, Belt 3 at 173 degrees, Belt 4 at 269 degrees and Belt 5 at

296 degrees. Every 5 ft. along each transect line a ½ m<sup>2</sup> nested frequency frame was placed on alternating sides of the transect line. Species composition and frequency were recorded using the frame. Ground cover was also determined using the frame. The percent cover of each species was then estimated within each frame. A total of 100 nested frequency data points were therefore taken at each proposed drill site and each reference site. Plant nomenclature follows the USDA-ARS Plant Database (plants.usda.gov).

### **Placement of Reference Sites**

The reference site was chosen to represent future revegetation success standards. The reference site was chosen by walking far enough away from the proposed drill site so it would not be disturbed during the drilling activity. Locations for the reference site was chosen by visually looking at the site and trying to choose a site that looked similar in vegetative composition to the proposed drill site.

### **Sampling Methodology for Density**

Density estimates for the woody plant species on the proposed drill site and reference areas were made using a distance method called the point-quarter technique. In this method, random points were placed on the sample sites and measured into four quarters. The distance to the nearest woody plant species were then recorded in each quarter. The average point to individual distance was equal to the square root of the mean area per individual.

### **Photographs and Map**

A map was created with the proposed drill site and reference site (Appendix 5). In addition photographs were taken of each belt line from the center point (Appendix 3-4).

### **Threatened, Endangered, Candidate and Sensitive Species**

The inventory of federally listed threatened, endangered and candidate plant species for Emery and Sanpete Counties was consulted prior to field work. Both Emery and Sanpete County lists were consulted because the proposed drill site is close to the Sanpete/Emery County line. In addition the State of Utah, Department of Natural Resource's biodiversity database and the USDA Forest Service Intermountain Region's list of proposed, endangered, threatened and sensitive species for the Manti portion of the Manti-La Sal National Forest was consulted for possible impacts by the proposed project.

If applicable, this information would be used to drive species of concern field surveys if any of the species or habitats were found on or near the proposed project.

## Results

### Drill Site 4-18

The proposed drill site 4-18 is located in the bottom of a small canyon and slopes slightly to the north (Appendix 5). The vegetative community is a grass/forb community. The proposed drill site has been disturbed previously by a logging operation.

There were no overstory species at this site. The most common understory species were Mountain Brome (*Bromus marginatus*), Sedge (*Carex spp.*), American Vetch (*Vicia Americana*) and Slender Wheatgrass (*Elymus trachycaulus*). A list of all species encountered in the sample quadrats is listed in Appendix 1.

Total living cover for this area was estimated at 39%, of which 39% was from understory cover and 0% was from overstory cover (Appendix 1). The composition of the understory cover was 59.6% grasses, 40% forbs and 0.4% shrubs.

### Reference Site 4-18

The proposed reference site 4-18 is located in the bottom of a small canyon and slopes slightly to the north (Appendix 5). The vegetative community is a grass/forb community.

There were no overstory species at this site. The most common understory species were Mountain Brome (*Bromus marginatus*), Sedge (*Carex spp.*) and American Vetch (*Vicia Americana*). A list of all species encountered in the sample quadrats is listed in Appendix 1.

Total living cover for this area was estimated at 66%, of which 66% was from understory cover and 0% was from overstory cover (Appendix 1). The composition of the understory cover was 50.1% grasses, 49.6% forbs and 0.3% shrubs.

**Analysis of Similarities Between Drill Site and Reference Site**

Specific parameters for those plant communities that would be disturbed by the proposed drilling activities were compared statistically using an unpaired t test with the correlating reference area that could be used for revegetation success standard following final reclamation of the site. When total living cover values of the proposed drill site were compared to the corresponding reference site there were significant differences found between the sites. The difference is most likely due to the fact that the proposed drill site is located on a former landing pad and slash poles during the former logging operation. The reference site is in the former logging area but has not been disturbed to the extent as the proposed drill site.

**Threatened, Endangered, Candidate and Sensitive Species**

The following is a table of potential endangered, threatened, candidate and sensitive plant species know to occur in Sanpete and Emery Counties. Next to each species name information is provided about the likelihood of occurrence for each species in the proposed drill site areas.

Federally listed endangered, threatened, candidate and sensitive species for Emery and Sanpete County.	
<b>Endangered</b>	
<i>Pediocactus despainii</i> (San Rafael cactus)	<p>This species is found in open pinyon-juniper communities at 6,000-6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Schoenocrambe barnebyi</i> (Barnaby reed-mustard)	<p>This species is found in mixed shadscale, eriogonum and ephedra communities at 5,600-5,700 ft. elevation.</p>

	<p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species</p>
<i>Sclerocactus wrightiae</i> (Wright fishhook cactus)	<p>This plant is found on the Mancos Shale Formation in salt desert shrub to juniper communities at 4,790-6,120 ft. elevation.</p> <p>The study area is above the elevation range for this species. The vegetative types are very different and there is no Mancos Shale in the study area.</p> <p>The proposed project will not impact this plant species.</p>
<b>Threatened</b>	
<i>Astragalus montii</i> (Heliotrope milk-vetch)	<p>This species is found in alpine on windblown ridges and snowdrift sites at 10,500-11,000 ft. elevation.</p> <p>The study areas are below the elevation range for this species. The habitat is different. The know locations of this species are well South of the study area.</p> <p>The proposed project will not impact this plant species</p>
<i>Cycladenia humilis var jonesii</i> (Jones Cyladenia)	<p>This species is found in cool desert shrub and juniper communities at 4,400-6,000 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p>

	<p>The proposed project will not impact this plant species.</p>
<p><i>Pediocactus despainii</i> (Despain Footcactus)</p>	<p>This species is found in open piyon-juniper communities at 6,000-6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Townsendia aprica</i> (Last Chance townsendia)</p>	<p>This species is found in salt desert shrub and piyon-juniper communities in the Arapien and Mancos Shale formations at 6,100-8,000 ft. elevation.</p> <p>The study areas are not found in the Arapien or Mancos Shale formation. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><b>Candidate/Sensitive</b></p>	
<p><i>Aster kingie var barnebyana</i> (Barneby woody aster)</p>	<p>This species is found in mountain mahogany-oak communities in rock outcrops composed of Precambrian quartzite at 7,345-7,610 ft. elevation.</p> <p>There are not outcrops of Precambrian quartzite in the study areas. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Astragalus consobrinus</i> (Bicknell milkvetch)</p>	<p>This species is found in sagebrush-grassland and piyon-juniper</p>

	<p>communities on the Mancos Shale formation at 5,200-9,000 ft. elevation.</p> <p>The study areas are not found in the Mancos Shale formation. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Astragalus subcinereus</i> var. <i>basalticus</i> (Basalt milkvetch or Silver milkvetch)</p>	<p>This species is found in pinyon-juniper and ponderosa communities at 4,520-7,970 ft. elevation.</p> <p>The vegetative types of the study areas are very different and the know population of this plant are found in southern Emery County.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Cryptantha compacta</i> (Mound cryptanth)</p>	<p>This species is found in salt desert shrub and mixed desert shrub communities at 4,950-9,250 ft. elevation.</p> <p>The vegetative types of the study areas are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Cryptantha creutzfeldtii</i> (Creutzfeldt-flower)</p>	<p>This species is found in mat atriplex communities on the Mancos Shale formation at 5,250-6,495 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p>

	<p>The proposed project will not impact this plant species.</p>
<i>Cymopterus coulteri</i> (Coulter biscuitroot)	<p>This species is found in black sagebrush, shadscale, desert shrub and juniper communities at 4,955-6,000 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Erigeron carringtonae</i> (Carrington daisy)	<p>This species is found in meadows and escarpment margins at 10,000-11,000 ft. elevation.</p> <p>The study areas are below the elevation range.</p> <p>The proposed project will not impact this plant species.</p>
<i>Erigonoum corymbosum</i> var. <i>smithii</i> (Big Flattop buckwheat or Smith wild buckwheat)	<p>This species is found in purple-sage matchweed, ephedra-Indian ricegrass and rabbitbrush communities at 5,200-5,610 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Festuca dasyclada</i> (Sedge fescue)	<p>This species is found on open slopes and ridges in sagebrush, mountain brush, and juniper communities on the Green River Shale Formation and limestone gravels at 6,990-10,000 ft. elevation.</p>

	<p>The study areas are in a different formation.</p> <p>The proposed project will not impact this plant species.</p>
<i>Gilia tenuis</i> (Mussentuchit Gilia)	<p>This species is found in pinyon-juniper woodlands.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<i>Hedysarum occidentale</i> var. <i>canone</i> (Canyon sweetvetch or Coal sweetvetch)	<p>This species is found in pinyon-juniper, sagebrush and wash communities at 5,000-8,000 ft. elevation.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<i>Hymenoxys depressa</i> (Low hymenoxys or Depressed bitterweed)	<p>This species is found in ephedra, sagebrush, shadscale and pinyon-juniper communities at 4,400-7,100 ft. elevation.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<i>Hymenoxys helenioides</i> (Helenium hymenoxys or Intermountain bitterweed)	<p>This species is found in mountain brush, sagebrush, aspen and meadow communities at 8,800-10,700 ft. elevation.</p> <p>Known populations of this species are found at quite a distance south and north of the study site.</p>

	<p>The proposed project will not impact this plant species.</p>
<i>Lygodesmia entrada</i> (Entrada rushpink)	<p>This species is found in mixed desert shrub and juniper communities at 4,400-4,800 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Mentzelia argillosa</i> (Arapien stickleaf)	<p>This species is found in salt desert shrub and pinyon-juniper communities on the Arapien Shale formation at 5,000-6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different. The Arapien Shale formation is not found in the study areas.</p> <p>The proposed project will not impact this plant species.</p>
<i>Mentzelia multicaulis</i> var. <i>librina</i> (Book Cliffs blazing star)	<p>This species is found in sagebrush, rabbitbrush, and pinyon-juniper communities at 6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>

<p><i>Penstemon tidestromii</i> (Tidestrom beardtongue)</p>	<p>This species is found in desert shrub, sagebrush, and pinyon-juniper communities at 5,300-8,200 ft elevation.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Penstemon wardii</i> (Ward beardtongue)</p>	<p>This species is found in desert shrub, pinyon-juniper, sagebrush, shadescale and greasewood communities on the Arapien Shale formation at 5,495-6,810 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Phacelia utahensis</i> (Utah phacelia)</p>	<p>This species is found in salt desert shrub communities on the Arapien Shale Formation at 5,500-5,700 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Psoralea polydenius</i> var. <i>jonesii</i> (Jones indigo-bush or glandular indigo-bush)</p>	<p>This species is found in salt desert shrub communities on Mancos Shale formations at 4,820 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p>

	<p>The proposed project will not impact this plant species.</p>
<p><i>Silene petersonii</i> (Maguire campion, Wasatch limestone catchfly or Peterson catchfly)</p>	<p>This species is found in ponderosa pine, rocky mountain juniper, bristlecone pine, spruce-fier, and aspen-sagebrush communities on open calcareous and igneous gravels at 6,955-11,200 ft. elevation.</p> <p>The study sites have no open calcareous and igneous gravels.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Sphaeralcea psoraloides</i> (Psoralea globemallow)</p>	<p>This species is found in zuckia ephedra communities at 4,000-6,000 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Talinum thompsonii</i> (Thompson talinum)</p>	<p>This species is found on silicious conglomeratic gravels in pinyon-juniper and ponderosa pine communities at 7,500 ft. elevation.</p> <p>The study sites do not contain any silicious conglomeratic gravels.</p> <p>The proposed project will not impact this plant species.</p>

## Summary

Total estimated disturbance area for drill site 4-18 in 2018 is 0.275 acres. Reclamation of the disturb area will occur in the fall of 2018 after completion of the drilling and capping of the well.

Drilling activities will necessitate disturbance to the vegetation in this area. The plant community at the proposed drill site 4-18 has been revegetated before and has been disturbed while reference site 4-18 is in a native condition. The plant community where drilling is proposed was quantitatively sampled, along with a reference area chosen to be used for final revegetation success standards. Additionally, endangered, threatened, candidate and sensitive plant species know to occur in Sanpete and Emery counties will not be impacted by the proposed drilling action.

**Appendix 1- Data Summary Tables for Drill Site 4-18**

<b>Drill Site 4-18</b>		<b>2018</b>
<b>Percent Cover and Percent Frequency by Species</b>		
Species Name (Common Name)	Mean Percent Cover	Percent Frequency
<b>UNDERSTORY</b>		
<b>GRASSES</b>		
<i>Achnatherum nelsonii</i> (Columbia Needlegras)	0.12	0.3
<i>Bromus marginatus</i> (Mountain Brome)	8.92	22.86
<i>Carex</i> ( <i>Carex</i> spp.)	5.76	14.78
<i>Elymus trachycaulus</i> (Slender Wheatgrass)	4.07	10.44
<i>Elymus canadensis</i> (Canada Wildrye)	0.08	0.2
<i>Muhlenbergia richardsoni</i> (Mat Muhly)	0.35	0.89
<i>Phleum pratensis</i> (Timothy)	0.81	2.07
<i>Poa pratensis</i> (Kentucky Bluegrass)	3.15	8.08
<b>FORBS</b>		
<i>Achillea millefolium</i> (Common Yarrow)	2.27	5.81
<i>Fragaria virginiana</i> (Virginia Strawberry)	0.42	1.08
<i>Galium</i> (Bedstraw spp.)	1.61	4.14
<i>Hackelia floribunda</i> (Mayflower Stickseed)	0.81	2.07
<i>Hydrophyllum capitatum</i> (Ballhead Waterleaf)	2.15	5.52
<i>Hymenoxys hoopesii</i> (Orange Sneezeweed)	0.85	2.17
<i>Lupinus alpestris</i> (Great Basin Lupine)	0.23	0.59
<i>Madia glomerata</i> (Mountain Tarweed)	0.58	1.48
<i>Mertensia ciliata</i> (Mountain Bluebell)	0.77	1.97
<i>Penstemon rydbergii</i> (Rydberg's Penstemon)	0.81	2.07
<i>Potentilla gracilis</i> (Slender Cinquefoil)	0.19	0.49
<i>Rudbeckia occidentalis</i> (Western Coneflower)	0.15	0.39
<i>Taraxacum officinale</i> (Common Dandelion)	0.08	0.2
<i>Thalictrum fendleri</i> (Fendler's Meadow-rue)	0.31	0.79
<i>Vicia americana</i> (American Vetch)	4.38	11.23
<b>TREES/SHRUBS</b>		
<i>Ribes montigenum</i> (Gooseberry Currant)	0.15	0.39

<b>Drill Site 4-18</b>		<b>2018</b>
<b>Total Cover and Composition</b>		
	Mean Percent cover	
<b>TOTAL COVER</b>		
Overstory Cover	0	
Understory Cover	39	
Litter	37	
Bareground	23	
Rock	1	
Total Living Cover	39	
<b>% Composition</b>		
Grasses	59.6	
Forbs	40	
Shrubs	0.4	

<b>Drill Site 4-18</b>		<b>2018</b>
<b>Woody Species Density</b>		
	Number/Acre	
<b>SPECIES (COMMON NAME)</b>		
<i>Ribes montigenum</i> (Gooseberry Currant)	23.3	
<b>TOTAL</b>	23.3	

**Appendix 2- Data Summary Tables for Drill Site 4-18 Reference Site**

<b>Drill Site 4-18 Reference Site</b>		<b>2018</b>
<b>Percent Cover and Percent Frequency by Species</b>		
Species Name (Common Name)	Mean Percent Cover	Percent Frequency
<b>UNDERSTORY</b>		
<b>GRASSES</b>		
<i>Achnatherum nelsonii</i> (Columbia Needlegrass)	1.56	2.36
<i>Bromus marginatus</i> (Mountain Brome)	15.24	23.09
<i>Carex</i> ( <i>Carex</i> spp.)	12.43	18.83
<i>Elymus trachycaulus</i> (Slender Wheatgrass)	2.34	3.55
<i>Elymus canadensis</i> (Canada Wildrye)	0.52	0.79
<i>Phleum pratensis</i> (Timothy)	0.16	0.24
<i>Poa pratensis</i> (Kentucky Bluegrass)	0.83	1.26
<b>FORBS</b>		
<i>Achillea millefolium</i> (Common Yarrow)	3.17	4.81
<i>Fragaria virginiana</i> (Virginia Strawberry)	0.42	0.63
<i>Geranium richardsonii</i> (Richardson's Geranium)	1.51	2.29
<i>Hackelia floribunda</i> (Mayflower Stickseed)	4.78	7.25
<i>Hydrophyllum capitatum</i> (Ballhead Waterleaf)	1.82	2.76
<i>Hymenoxys hoopesii</i> (Orange Sneezeweed)	1.25	1.89
<i>Lupinus alpestris</i> (Great Basin Lupine)	3.43	5.2
<i>Mertensia ciliata</i> (Mountain Bluebell)	3.69	5.59
<i>Potentilla gracilis</i> (Slender Cinquefoil)	0.57	0.87
<i>Rudbeckia occidentalis</i> (Western Coneflower)	1.35	2.05
<i>Thalictrum fendleri</i> (Fendler's Meadow-rue)	0.05	0.08
<i>Vicia americana</i> (American Vetch)	10.66	16.15
<b>TREES/SHRUBS</b>		
<i>Ribes montigenum</i> (Gooseberry Currant)	0.21	0.32

<b>Drill Site 4-18 Reference Site</b>		<b>2018</b>
<b>Total Cover and Composition</b>		
	Mean Percent cover	
<b>TOTAL COVER</b>		
Overstory Cover	0	
Understory Cover	66	
Litter	19	
Bareground	14	
Rock	1	
Total Living Cover	66	
<b>% Composition</b>		
Grasses	50.1	
Forbs	49.6	
Shrubs	0.3	

<b>Drill Site 4-18 Reference Site</b>		<b>2018</b>
<b>Woody Species Density</b>		
	Number/Acre	
<b>SPECIES (COMMON NAME)</b>		
<i>Ribes montigenum</i> (Gooseberry Currant)	25.8	
<b>TOTAL</b>	25.8	

**Appendix 3- Photos Drill Site 4-18**



Drill Site 4-18 Belt 1



Drill Site 4-18 Belt 2



Drill Site 4-18 Belt 3



Drill Site 4-18 Belt 4



Drill Site 4-18 Belt 5

**Appendix 4- Photos of Drill Site 4-18 Reference**



Drill Site 4-18 Reference Belt 1



Drill Site 4-18 Reference Belt 2



Drill Site 4-18 Reference Belt 3



Drill Site 4-18 Reference Belt 4



Drill Site 4-18 Reference Belt 5

## Appendix 5- Study Area Map



4-18 Drill Site and Reference Site

## Appendix 6 - UTM Coordinates of 4-18 Reference Site

Drill 4-18 Reference 12 S 0477119 E 4388336 N

**Skyline Mine  
Vegetative Analysis of  
Proposed Drill Site 7-18  
and Reference Site 7-18**

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## **Introduction**

The purpose of the proposed drill site 7-18 is part of a conventional rotary/core drilling program. Heavy equipment to be utilized will access the exploration area via existing roads.

Total estimated disturbance area for drill site 7-18 in 2018 is 0.275 acres. Reclamation of the disturb area will occur in the fall of 2018 after completion of the drilling and capping of the well.

Skyline Mine is a coal mine with its surface facilities located about 4 miles southwest of the town of Scofield in Carbon County, Utah. The proposed drill site 7-18 is located approximately 5.3 miles southwest of the surface facilities of the mine. The drill site is located on a flat area in the bottom of a canyon in Sanpete County. The vegetation on the drill site is grasses and forbs. The elevations of the drill sites is 8,950 feet above sea level.

## **Methods**

### **Sampling Standards**

Methodologies used for this analysis were performed in accordance with vegetation guidelines supplied by the State of Utah, Division of Oil, Gas and Mining (DOGGM). In July of 2018, quantitative and qualitative data were collected in the plant communities proposed for drilling activities as well as reference areas that were chosen for future revegetation success standards.

### **Sampling Methodology for Cover, Frequency and Composition**

The areas that is proposed to be disturbed is centered on the proposed drill site. Therefore, the vegetation around the drill site needed to be analyzed. It was determined that the best method to determine vegetative cover frequency and composition on this area would be nested frequency belt lines as described in the U.S. Forest Service Rangeland Ecosystem Analysis and Monitoring Handbook (FSH 2209.21). Five 100 ft. beltlines were established in five different compass directions radiating from the proposed drill site and reference site point. With this methodology the vegetation composition around the proposed drill site and reference site would be determined. The five compass directions used were the following from magnetic North: Belt 1 at 23 degrees, Belt 2 at 121 degrees, Belt 3 at 173 degrees, Belt 4 at 269 degrees and Belt 5 at

296 degrees. Every 5 ft. along each transect line a ½ m<sup>2</sup> nested frequency frame was placed on alternating sides of the transect line. Species composition and frequency were recorded using the frame. Ground cover was also determined using the frame. The percent cover of each species was then estimated within each frame. A total of 100 nested frequency data points were therefore taken at each proposed drill site and each reference site. Plant nomenclature follows the USDA-ARS Plant Database (plants.usda.gov).

### **Placement of Reference Sites**

The reference site was chosen to represent future revegetation success standards. The reference site was chosen by walking far enough away from the proposed drill site so it would not be disturbed during the drilling activity. Locations for the reference site was chosen by visually looking at the site and trying to choose a site that looked similar in vegetative composition to the proposed drill site.

### **Sampling Methodology for Density**

Density estimates for the woody plant species on the proposed drill site and reference areas were made using a distance method called the point-quarter technique. In this method, random points were placed on the sample sites and measured into four quarters. The distance to the nearest woody plant species were then recorded in each quarter. The average point to individual distance was equal to the square root of the mean area per individual.

### **Photographs and Map**

A map was created with the proposed drill site and reference site (Appendix 5). In addition photographs were taken of each belt line from the center point (Appendix 3-4).

### **Threatened, Endangered, Candidate and Sensitive Species**

The inventory of federally listed threatened, endangered and candidate plant species for Emery and Sanpete Counties was consulted prior to field work. Both Emery and Sanpete County lists were consulted because the proposed drill site is close to the Sanpete/Emery County line. In addition the State of Utah, Department of Natural Resource's biodiversity database and the USDA Forest Service Intermountain Region's list of proposed, endangered, threatened and sensitive species for the Manti portion of the Manti-La Sal National Forest was consulted for possible impacts by the proposed project.

If applicable, this information would be used to drive species of concern field surveys if any of the species or habitats were found on or near the proposed project.

## Results

### Drill Site 7-18

The proposed drill site 7-18 is located on a flat area in the bottom of a canyon and slopes slightly to the east (Appendix 5). The vegetative community is a grass/forb community.

There as one overstory species found at this site was Quaking Aspen (*Populus tremuloides*). The most common understory species were Kentucky Bluegrass (*Poa pratensis*), Sedge (*Carex spp.*) and Common Yarrow (*Achillea millefolium*). A list of all species encountered in the sample quadrats is listed in Appendix 1.

Total living cover for this area was estimated at 45%, of which 44.88% was from understory cover and 0.12% was from overstory cover (Appendix 1). The composition of the understory cover was 50.1% grasses, 48.8% forbs and 1.1% shrubs.

### Reference Site 7-18

The proposed reference site 7-18 is located on a flat area in the bottom of a canyon and slopes slightly to the east (Appendix 5). The vegetative community is a grass/forb community.

There as one overstory species found at this site was Subalpine Fir (*Abies lasiocarpa*). The most common understory species were Kentucky Bluegrass (*Poa pratensis*), Sedge (*Carex spp.*) and Common Yarrow (*Achillea millefolium*). A list of all species encountered in the sample quadrats is listed in Appendix 1.

Total living cover for this area was estimated at 35%, of which 34.92% was from understory cover and 0.08% was from overstory cover (Appendix 1). The composition of the understory cover was 51.1% grasses, 48.7% forbs and 0.2% shrubs.

## Analysis of Similarities Between Drill Site and Reference Site

Specific parameters for those plant communities that would be disturbed by the proposed drilling activities were compared statistically using an unpaired t test with the correlating reference area that could be used for revegetation success standard following final reclamation of the site. When total living cover values of the proposed drill site were compared to the corresponding reference site there were no significant differences found between the sites.

When total woody species density values of the drill site were compared to the reference site there was no significant difference.

## Threatened, Endangered, Candidate and Sensitive Species

The following is a table of potential endangered, threatened, candidate and sensitive plant species know to occur in Sanpete and Emery Counties. Next to each species name information is provided about the likelihood of occurrence for each species in the proposed drill site areas.

Federally listed endangered, threatened, candidate and sensitive species for Emery and Sanpete County.	
<b>Endangered</b>	
<i>Pediocactus despainii</i> (San Rafael cactus)	<p>This species is found in open pinyon-juniper communities at 6,000-6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Schoenocrambe barnebyi</i> (Barnaby reed-mustard)	<p>This species is found in mixed shadscale, eriogonum and ephedra communities at 5,600-5,700 ft. elevation.</p>

	<p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species</p>
<i>Sclerocactus wrightiae</i> (Wright fishhook cactus)	<p>This plat is found on the Mancos Shale Formation in salt desert shrub to juniper communities at 4,790-6,120 ft. elevation.</p> <p>The study area is above the elevation range for this species. The vegetative types are very different and there is no Mancos Shale in the study area.</p> <p>The proposed project will not impact this plant species.</p>
<b>Threatened</b>	
<i>Astragalus montii</i> (Heliotrope milk-vetch)	<p>This species is found in alpine on windblown ridges and snowdrift sites at 10,500-11,000 ft. elevation.</p> <p>The study areas are below the elevation range for this species. The habitat is different. The know locations of this species are well South of the study area.</p> <p>The proposed project will not impact this plant species</p>
<i>Cycladenia humilis var jonesii</i> (Jones Cyladenia)	<p>This species is found in cool desert shrub and juniper communities at 4,400-6,000 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p>

	<p>The proposed project will not impact this plant species.</p>
<p><i>Pediocactus despainii</i> (Despain Footcactus)</p>	<p>This species is found in open piyon-juniper communities at 6,000-6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Townsendia aprica</i> (Last Chance townsendia)</p>	<p>This species is found in salt desert shrub and pinyon-juniper communities in the Arapien and Mancos Shale formations at 6,100-8,000 ft. elevation.</p> <p>The study areas are not found in the Arapien or Mancos Shale formation. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><b>Candidate/Sensitive</b></p>	
<p><i>Aster kingie</i> var <i>barnebyana</i> (Barneby woody aster)</p>	<p>This species is found in mountain mahogany-oak communities in rock outcrops composed of Precambrian quartzite at 7,345-7,610 ft. elevation.</p> <p>There are not outcrops of Precambrian quartzite in the study areas. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Astragalus consobrinus</i> (Bicknell milkvetch)</p>	<p>This species is found in sagebrush-grassland and pinyon-juniper</p>

	<p>communities on the Mancos Shale formation at 5,200-9,000 ft. elevation.</p> <p>The study areas are not found in the Mancos Shale formation. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Astragalus subcinereus</i> var. <i>basalticus</i> (Basalt milkvetch or Silver milkvetch)</p>	<p>This species is found in pinyon-juniper and ponderosa communities at 4,520-7,970 ft. elevation.</p> <p>The vegetative types of the study areas are very different and the know population of this plant are found in southern Emery County.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Cryptantha compacta</i> (Mound cryptanth)</p>	<p>This species is found in salt desert shrub and mixed desert shrub communities at 4,950-9,250 ft. elevation.</p> <p>The vegetative types of the study areas are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Cryptantha creutzfeldtii</i> (Creutzfeldt-flower)</p>	<p>This species is found in mat atriplex communities on the Mancos Shale formation at 5,250-6,495 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p>

	The proposed project will not impact this plant species.
<i>Cymopterus coulteri</i> (Coulter biscuitroot)	<p>This species is found in black sagebrush, shadscale, desert shrub and juniper communities at 4,955-6,000 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Erigeron carringtonae</i> (Carrington daisy)	<p>This species is found in meadows and escarpment margins at 10,000-11,000 ft. elevation.</p> <p>The study areas are below the elevation range.</p> <p>The proposed project will not impact this plant species.</p>
<i>Eriogonum corymbosum</i> var. <i>smithii</i> (Big Flattop buckwheat or Smith wild buckwheat)	<p>This species is found in purple-sage matchweed, ephedra-Indian ricegrass and rabbitbrush communities at 5,200-5,610 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<i>Festuca dasyclada</i> (Sedge fescue)	<p>This species is found on open slopes and ridges in sagebrush, mountain brush, and juniper communities on the Green River Shale Formation and limestone gravels at 6,990-10,000 ft. elevation.</p>

	<p>The study areas are in a different formation.</p> <p>The proposed project will not impact this plant species.</p>
<i>Gilia tenuis</i> (Mussentuchit Gilia)	<p>This species is found in pinyon-juniper woodlands.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<i>Hedysarum occidentale var. canone</i> (Canyon sweetvetch or Coal sweetvetch)	<p>This species is found in pinyon-juniper, sagebrush and wash communities at 5,000-8,000 ft. elevation.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<i>Hymenoxys depressa</i> (Low hymenoxys or Depressed bitterweed)	<p>This species is found in ephedra, sagebrush, shadscale and pinyon-juniper communities at 4,400-7,100 ft. elevation.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<i>Hymenoxys helenioides</i> (Helenium hymenoxys or Intermountain bitterweed)	<p>This species is found in mountain brush, sagebrush, aspen and meadow communities at 8,800-10,700 ft. elevation.</p> <p>Known populations of this species are found at quite a distance south and north of the study site.</p>

	<p>The proposed project will not impact this plant species.</p>
<p><i>Lygodesmia entrada</i> (Entrada rushpink)</p>	<p>This species is found in mixed desert shrub and juniper communities at 4,400-4,800 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Mentzelia argillosa</i> (Arapien stickleaf)</p>	<p>This species is found in salt desert shrub and pinyon-juniper communities on the Arapien Shale formation at 5,000-6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different. The Arapien Shale formation is not found in the study areas.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Mentzelia multicaulis</i> var. <i>librina</i> (Book Cliffs blazing star)</p>	<p>This species is found in sagebrush, rabbitbrush, and pinyon-juniper communities at 6,200 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>

<p><i>Penstemon tidestromii</i> (Tidestrom beardtongue)</p>	<p>This species is found in desert shrub, sagebrush, and pinyon-juniper communities at 5,300-8,200 ft elevation.</p> <p>The study sites have a very different vegetative type.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Penstemon wardii</i> (Ward beardtongue)</p>	<p>This species is found in desert shrub, pinyon-juniper, sagebrush, shadescale and greasewood communities on the Arapien Shale formation at 5,495-6,810 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Phacelia utahensis</i> (Utah phacelia)</p>	<p>This species is found in salt desert shrub communities on the Arapien Shale Formation at 5,500-5,700 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Psoralea polydenius</i> var. <i>jonesii</i> (Jones indigo-bush or glandular indigo-bush)</p>	<p>This species is found in salt desert shrub communities on Mancos Shale formations at 4,820 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p>

	<p>The proposed project will not impact this plant species.</p>
<p><i>Silene petersonii</i> (Maguire campion, Wasatch limestone catchfly or Peterson catchfly)</p>	<p>This species is found in ponderosa pine, rocky mountain juniper, bristlecone pine, spruce-fier, and aspen-sagebrush communities on open calcareous and igneous gravels at 6,955-11,200 ft. elevation.</p> <p>The study sites have no open calcareous and igneous gravels.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Sphaeralcea psoraloides</i> (Psoralea globemallow)</p>	<p>This species is found in zuckia ephedra communities at 4,000-6,000 ft. elevation.</p> <p>The study areas are above the elevation range for this species. The vegetative types are very different.</p> <p>The proposed project will not impact this plant species.</p>
<p><i>Talinum thompsonii</i> (Thompson talinum)</p>	<p>This species is found on silicious conglomeratic gravels in pinyon-juniper and ponderosa pine communities at 7,500 ft. elevation.</p> <p>The study sites do not contain any silicious conglomeratic gravels.</p> <p>The proposed project will not impact this plant species.</p>

## Summary

Total estimated disturbance area for drill site 7-18 in 2018 is 0.275 acres. Reclamation of the disturb area will occur in the fall of 2018 after completion of the drilling and capping of the well.

Drilling activities will necessitate disturbance to the vegetation in this area. The plant community at the proposed drill site 7-18 and reference site 7-18 are in their native condition. The plant community where drilling is proposed was quantitatively sampled, along with a reference area chosen to be used for final revegetation success standards. Additionally, endangered, threatened, candidate and sensitive plant species know to occur in Sanpete and Emery counties will not be impacted by the proposed drilling action

**Appendix 2- Data Summary Tables for Drill Site 7-18**

<b>Drill Site 7-18</b>		<b>2018</b>
<b>Percent Cover and Percent Frequency by Species</b>		
Species Name (Common Name)	Mean Percent Cover	Percent Frequency
<b>OVERSTORY</b>		
<i>Populus tremuloides</i> (Quaking Aspen)	0.12	0.27
<b>UNDERSTORY</b>		
<b>GRASSES</b>		
<i>Achnatherum nelsonii</i> (Columbia Needlegrass)	3.68	8.18
<i>Bromus marginatus</i> (Mountain Brome)	1.16	2.58
<i>Carex</i> ( <i>Carex</i> spp.)	6.44	14.31
<i>Koeleria macrantha</i> (Prairie Junegrass)	0.24	0.53
<i>Phleum pratensis</i> (Timothy)	2.56	5.69
<i>Poa fendleriana</i> (Muttongrass)	0.32	0.71
<i>Poa pratensis</i> (Kentucky Bluegrass)	8.4	18.67
<b>FORBS</b>		
<i>Achillea millefolium</i> (Common Yarrow)	5.2	11.56
<i>Antennaria</i> (Pussytoes spp.)	3.2	7.11
<i>Carduus nutans</i> (Musk Thistle)	0.24	0.53
<i>Erigeron speciosus</i> (Aspen Fleabane)	2.04	4.53
<i>Fragaria virginiana</i> (Virginia Strawberry)	2.4	5.33
<i>Heliomeris multiflora</i> (Showy Goldeneye)	0.64	1.42
<i>Hymenoxys hoopesii</i> (Orange Sneezeweed)	2.88	6.4
<i>Mertensia ciliate</i> (Mountain Bluebell)	0.4	0.89
<i>Potentilla gracilis</i> (Slender Cinquefoil)	0.88	1.96
<i>Taraxacum officinale</i> (Common Dandelion)	0.64	1.42
<i>Veratrum californicum</i> (California False Hellebore)	0.12	0.27
<i>Vicia americana</i> (American Vetch)	3.32	7.38
<b>TREES/SHRUBS</b>		
<i>Ribes montigenum</i> (Gooseberry Currant)	0.16	0.36
<i>Sambucus racemosa</i> (Red Elderberry)	0.2	0.27

<b>Drill Site 7-18</b>		<b>2018</b>
<b>Total Cover and Composition</b>		
	Mean Percent cover	
<b>TOTAL COVER</b>		
Overstory Cover	0.12	
Understory Cover	44.88	
Litter	29	
Bareground	25	
Rock	1	
Total Living Cover	45	
<b>% Composition</b>		
Grasses	50.1	
Forbs	48.8	
Shrubs	1.1	

<b>Drill Site 7-18</b>		<b>2018</b>
<b>Woody Species Density</b>		
	Number/Acre	
<b>SPECIES (COMMON NAME)</b>		
<i>Populus tremuloides</i> (Quaking Aspen)	12.2	
<i>Ribes montigenum</i> (Gooseberry Currant)	18.1	
<i>Sambucus racemosa</i> (Red Elderberry)	14.7	
<b>TOTAL</b>	45	

### Appendix 1- Data Summary Tables for Drill Site 7-18 Reference Site

Drill Site 7-18 Reference site		2018
Percent Cover and Percent Frequency by Species		
Species Name (Common Name)	Mean Percent Cover	Percent Frequency
<b>OVERSTORY</b>		
<i>Abies lasiocarpa</i> (Subalpine Fir)	0.08	0.23
<b>UNDERSTORY</b>		
<b>GRASSES</b>		
<i>Achnatherum nelsonii</i> (Columbia Needlegras)	2.95	8.4
<i>Bromus marginatus</i> (Mountain Brome)	2.17	6.2
<i>Carex</i> ( <i>Carex</i> spp.)	5	14.29
<i>Elymus trachycaulus</i> (Slender Wheatgrass)	0.22	0.63
<i>Phleum pratensis</i> (Timothy)	0.61	1.73
<i>Poa pratensis</i> (Kentucky Bluegrass)	6.95	19.86
<b>FORBS</b>		
<i>Achillea millefolium</i> (Common Yarrow)	5.14	14.68
<i>Antennaria</i> (Pussytoes spp.)	0.96	2.75
<i>Carduus nutans</i> (Musk Thistle)	0.55	1.57
<i>Erigeron speciosus</i> (Aspen Fleabane)	2.09	5.97
<i>Fragaria virginiana</i> (Virginia Strawberry)	0.77	2.2
<i>Galium</i> (Bedstraw spp.)	0.06	0.16
<i>Heliomeris multiflora</i> (Showy Goldeneye)	0.36	1.02
<i>Hymenoxys hoopesii</i> (Orange Sneezeweed)	2.14	6.12
<i>Mertensia ciliate</i> (Mountain Bluebell)	0.25	0.71
<i>Potentilla gracilis</i> (Slender Cinquefoil)	1.13	3.22
<i>Rudbeckia occidentalis</i> (Western Coneflower)	0.06	0.16
<i>Taraxacum officinale</i> (Common Dandelion)	0.3	0.86
<i>Vicia americana</i> (American Vetch)	3.3	9.42

Drill Site 7-18 Reference site		2018
Total Cover and Composition		
	Mean Percent cover	
<b>TOTAL COVER</b>		
Overstory Cover	0.08	
Understory Cover	34.92	
Litter	32	
Bareground	32	
Rock	1	
Total Living Cover	35	
% Composition		
Grasses	51.1	
Forbs	48.7	
Shrubs	0.2	

Drill Site 7-18 Reference site		2018
Woody Species Density		
	Number/Acre	
<b>SPECIES (COMMON NAME)</b>		
<i>Abies lasiocarpa</i> (Subalpine Fir)	9.2	
<b>TOTAL</b>	9.2	

**Appendix 3- Photos Drill Site 7-18**



Drill Site 7-18 Belt 1



Drill Site 7-18 Belt 2



Drill Site 7-18 Belt 3



Drill Site 7-18 Belt 4



Drill Site 7-18 Belt 5

**Appendix 4- Photos of Drill Site 7-18 Reference**



Drill Site 7-18 Reference Belt 1



Drill Site 7-18 Reference Belt 2



Drill Site 7-18 Reference Belt 3



Drill Site 7-18 Reference Belt 4



Drill Site 7-18 Reference Belt 5

## Appendix 5- Study Area Map



7-18 Drill Site and Reference Site

## Appendix 6 - UTM Coordinates of 7-18 Reference Site

Drill 7-18 Reference 12 S 0478914 E 4384840 N

**APPENDIX B  
(CONFIDENTIAL FILES)**

**CULTURAL RESOURCE INVENTORY**

**EPG  
(U-18-TD-0309)**

## **APPENDIX C**

### **SURFACE ACCESS AND USE AGREEMENTS**

**COLLARD FAMILY TRUST  
C.K. COX FAMILY CORP  
COX INC  
CUNNINGHAM et ux  
PACIFICORP**

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**MEMORANDUM OF FIRST AMENDMENT TO UNDERGROUND COAL LEASE**

THIS MEMORANDUM OF FIRST AMENDMENT TO UNDERGROUND COAL LEASE ("Memorandum"), dated effective as of May 30, 2018 ("Effective Date"), is by and between George and Rozella Collard Family Properties, LLC as successor to the Collard Family Trust ("Lessor"), whose mailing address is 6022 Emerald Ridge Cove, Salt Lake City, UT 84121, and Canyon Fuel Company, LLC ("Lessee"), whose mailing address is 225 North 5<sup>th</sup> St., Suite 900, Grand Junction, CO 81501.

**Recitals**

A. WHEREAS, Lessor and Lessee entered into an Underground Coal Lease dated as of May 30, 1998 ("Lease") being recorded in the records of Sanpete County, Utah at Reception number 65656.

B. WHEREAS, Lessor granted to Lessee, among other rights, the exclusive right to prospect, explore, develop, test, and mine by underground mining methods, upon, under and through the following described lands situated in Sanpete County, State of Utah, including all present interest of Lessor, to-wit:

Township 13 South, Range 6 East, SLB&M (surface and coal)

Section 20: NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>

Section 29: NE<sup>1</sup>/<sub>4</sub>; SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>; N<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub>

Township 13 South, Range 6 East, SLB&M (surface)

Section 20: S<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub>; SW<sup>1</sup>/<sub>4</sub>; S<sup>1</sup>/<sub>2</sub>SE<sup>1</sup>/<sub>4</sub>; NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>; Less 46.33 ac to LDS Church

Section 29: SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>; S<sup>1</sup>/<sub>2</sub>

Comprising 1003.67 acres, whether there be more or less.

C. WHEREAS, the parties now desire to enter into this Memorandum for purposes of placing of record a notice of the Lease, as amended, by the First Amendment.

**Memorandum**

NOW, THEREFORE, for and in consideration of the mutual promises, terms and conditions contained in the Lease, as amended, by the First Amendment, the parties agree as follows:

1. Term. The Term of the Lease shall be extended from the initial twenty (20) year period ("Initial Period") for an additional twenty (20) year term through and including May 30, 2038 ("Secondary Period") and for so long thereafter as Coal is being mined, produced, processed or marketed from the Leased Premises, or so long as the Lease may be held in force and effect by some other provision thereof.

2. Ratification. The parties have ratified the Lease, as amended by the First Amendment, and hereby represent that the Lease, as amended, is in full force and effect.

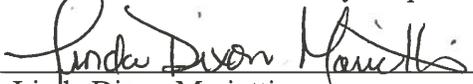
3. Memorandum. This Memorandum is executed for the purpose of placing of record notice of the Lease, as amended, and the terms and provisions thereof. The Lease, as amended, contains terms and conditions that are not set forth in this Memorandum, but which nevertheless are by reference made a part hereof. Nothing herein shall, nor shall it be interpreted to, amend, modify or waive any of the terms and conditions of the Lease, as amended. If there is a conflict between the terms of this Memorandum and the terms of the Lease, the terms of the Lease shall control in all respects.

4. Counterparts. This Memorandum may be executed in counterparts.

IN WITNESS WHEREOF, the Parties have executed this Memorandum effective as of the date set forth above.

**LESSOR:**

George and Rozella Collard Family Properties, LLC

By:   
Linda Dixon Mariotti

Its: Manager

**LESSEE:**

Canyon Fuel Company, LLC

By:   
Gene DiClaudio

Its: Co-CEO and COO

STATE OF \_\_\_\_\_ )

) ss.

COUNTY OF \_\_\_\_\_ )

On this 1 day of JUNE, 2018, personally appeared before me **Linda Dixon Mariotti**, as Manager of **George and Rozella Collard Family Properties, LLC**, a Utah limited liability company, and signer of the above Memorandum of First Amendment to Underground Coal Lease, who duly acknowledged to me that she executed the same on behalf of the company.

WITNESS my hand and official seal.



\_\_\_\_\_  
Notary Public

My Commission expires: 7-7-19



STATE OF COLORADO )

) ss.

COUNTY OF MESA )

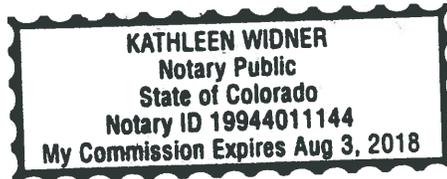
On this 6<sup>th</sup> day of JUNE, 2018, personally appeared before me **Gene DiClaudio** as Co-Chief Executive Officer and Chief Operating Officer of **Canyon Fuel Company, LLC**, a Delaware limited liability company, and signer of the above Memorandum of First Amendment to Underground Coal Lease, who duly acknowledged to me that he executed the same on behalf of the company.

WITNESS my hand and official seal.



\_\_\_\_\_  
Notary Public

My Commission expires: 8-3-18



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*This space reserved for recording*

MEMORANDUM OF SURFACE ACCESS AND EXPLORATION AGREEMENT

NOTICE IS HEREBY GIVEN BY THIS MEMORANDUM (this "Memorandum"), that under and pursuant to a separate agreement entitled Surface Access and Exploration Agreement ("Agreement") dated effective as of \_\_\_\_\_, 2018 ("Effective Date"), by and between **Cox Inc.**, a Utah corporation, with an address of 504 East 3230 North, Provo, UT 84604 ("Owner"), and **Canyon Fuel Company, LLC**, ("CFC") a Delaware limited liability company with an address of 225 North 5<sup>th</sup> Street, Suite 900, Grand Junction, CO 81501.

Whereas, Owner has granted access and use to, and does hereby confirm a grant of access and use to CFC of the surface and mineral estate for the following described lands located in Sanpete County, Utah ("Lands"):

Beginning at the Northeast corner of the Southeast quarter of the Northeast quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian; thence South 40 chains, thence West 5 chains, thence North 30.03 chains, thence South 79°18' East 4 chains, thence North 5 chains, thence North 79°18' West 4 chains, thence North 4.97 chains, thence East 5 chains. Excepting therefrom that part in the state road right of way. (Tax Serial No. 21156)

The Northeast quarter of the Northeast quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian. (Tax Serial No. 21160)

Beginning at the Northwest corner of the Southeast quarter of the Northeast quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian; thence South 40.00 chains, thence East 5.00 chains, thence North 40.00 chains, thence West 5.00 chains to the point of beginning. Excepting therefrom that part in the state road right of way. (Tax Serial No. 21163)

Containing 76.47 acres more or less

The Agreement contains the following principal terms among others:

1. Grant of Use. Owner has granted, and hereby confirms a grant to CFC for the benefit of the Skyline Mine, of a license to enter, upon, access, cross, use and occupy so much of the Lands including the right to drill through and extract coal as needed for coal exploration drilling and water monitoring activities ("Exploration and Monitoring Activities").

2. Term. This Agreement shall be effective as of the Effective Date and shall remain in force to and until CFC has completed its Exploration and Monitoring Activities on the Lands, such term not to exceed Five (5) years from the Effective Date (the "Initial Term"). If at the end of the Initial Term CFC has not completed its Exploration and Monitoring Activities on the Lands, CFC shall have the right, but not the obligation, to renew for Four (4) additional five-year terms upon the same terms and conditions of this Agreement (the "Extended Term").

3. Notice. All notices and other communications to either party shall be delivered as follows:

If to CFC:

Canyon Fuel Company, LLC  
Attn: Land Manager  
225 North 5<sup>th</sup> Street, Suite 900  
Grand Junction, CO 81501  
Phone: (970) 263-5144  
Fax: (970) 263-5161  
Email: rwilson@bowieresources.com

If to Owner:

Cox Inc.  
c/o Gary Mackay  
504 East 3230 North  
Provo, UT 84604  
Email: forwardstuff2@yahoo.com

4. Assignment. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective permitted successors and assigns. Neither party shall assign this Agreement, or any rights or obligations herein, without the prior written consent of the other party, which consent shall not be unreasonably withheld; provided, however, that CFC may assign this Agreement without consent to an affiliate or in connection with sale of all or substantially all of its assets constituting the Skyline Mine.

5. No Waiver or Modification. This Memorandum is executed for the purpose of placing of record notice of the Agreement and the terms and provisions thereof. Nothing herein shall, nor shall it be interpreted to, amend, modify or waive any of the terms and conditions of the Agreement. All capitalized terms used in this Memorandum, not otherwise defined, shall have the meanings assigned to them in the Agreement.

IN WITNESS WHEREOF, the parties have caused this Memorandum to be signed and executed as of the Effective Date.

COX INC.

CANYON FUEL COMPANY, LLC

By: Alice Wakefield  
Alice Wakefield

By: Gene DiClaudio  
Gene DiClaudio

Its: Chief Executive Officer

Its: Co-Chief Executive Officer /Chief Operating Officer

STATE OF Utah )  
 ) ss.  
COUNTY OF Utah )

On this 1 day of May, 2018, personally appeared before me **Alice Wakefield**, as **Chief Executive Officer** of **Cox Inc.**, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that she executed the same on behalf of the corporation.

WITNESS my hand and official seal.

My Commission expires: January 19, 2021

Jennifer Paul  
Notary Public



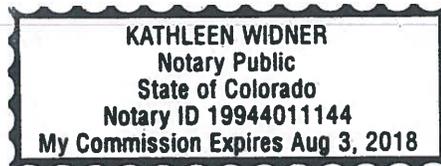
STATE OF COLORADO )  
 ) ss.  
COUNTY OF MESA )

On this 8<sup>th</sup> day of May, 2018, personally appeared before me **Gene DiClaudio**, **Co-Chief Executive Officer** and **Chief Operating Officer** of **Canyon Fuel Company, LLC**, a Delaware limited liability company, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that he executed the same on behalf of the company.

WITNESS my hand and official seal.

My Commission expires: 8-3-18

Kathleen Widner  
Notary Public



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*This space reserved for recording*

MEMORANDUM OF SURFACE ACCESS AND EXPLORATION AGREEMENT

NOTICE IS HEREBY GIVEN BY THIS MEMORANDUM (this "Memorandum"), that under and pursuant to a separate agreement entitled Surface Access and Exploration Agreement ("Agreement") dated effective as of May 29, 2018 ("Effective Date"), by and between **C.K. Cox Family Corporation**, a Utah corporation, with an address of 4356 Glen Hill Circle, West Valley City, UT 84120 ("Owner"), and **Canyon Fuel Company, LLC**, ("CFC") a Delaware limited liability company with an address of 225 North 5<sup>th</sup> Street, Suite 900, Grand Junction, CO 81501.

Whereas, Owner has granted access and use to, and does hereby confirm a grant of access and use to CFC of the surface and mineral estate for the following described lands located in Sanpete County, Utah ("Lands"):

Township 13 South, Range 6 East, S.L.P.M.  
Section 32: E1/2 NW1/4 NE1/4 (Tax Serial No. 21161)

Beginning at the Northwest corner of the Northwest quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian; thence South 25 chains, thence East 8 chains, thence South 2.50 chains, thence East 12 chains, thence North 7.50 chains, thence West 2 chains, thence North 20 chains, thence West 18 chains to the point of beginning. (Portion of Tax Serial No. 21161x)

Beginning 5 chains East of the Northwest corner of the Southeast quarter of the Northeast quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian; thence South 40.00 chains, thence East 10.00 chains, thence North 40.00 chains, thence West 10.00 chains to the point of beginning. Excepting therefrom that part in the state road right of way (Tax Serial No. 21162)

Beginning at the center of the Northeast quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian; thence West 10 chains, thence South to the North line of the State Highway, thence Southeasterly along said highway to a point 8.50 chains South of the point of beginning, thence North 8.50 chains to the point of beginning. (Tax Serial No. 21164)

Beginning at the Southeast corner of the Southwest quarter of the Northeast quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian; thence West 10 chains, thence North 10.50 chains to the South side of a State Highway, thence Southeasterly along the South side of the highway to a point 10 chains North of the point of beginning, thence South 10 chains to the point of beginning. (Tax Serial No. 21164x)

Containing 124.32 acres more or less

The Agreement contains the following principal terms among others:

1. Grant of Use. Owner has granted, and hereby confirms a grant to CFC for the benefit of the Skyline Mine, of a license to enter, upon, access, cross, use and occupy so much of the Lands including the right to drill through and extract coal as needed for coal exploration drilling and water monitoring activities ("Exploration and Monitoring Activities").

2. Term. This Agreement shall be effective as of the Effective Date and shall remain in force to and until CFC has completed its Exploration and Monitoring Activities on the Lands, such term not to exceed Five (5) years from the Effective Date (the "Initial Term"). If at the end of the Initial Term CFC has not completed its Exploration and Monitoring Activities on the Lands, CFC shall have the right, but not the obligation, to renew for Four (4) additional five-year terms upon the same terms and conditions of this Agreement (the "Extended Term").

3. Notice. All notices and other communications to either party shall be delivered as follows:

If to CFC:

Canyon Fuel Company, LLC  
Attn: Land Manager  
225 North 5<sup>th</sup> Street, Suite 900  
Grand Junction, CO 81501  
Phone: (970) 263-5144  
Fax: (970) 263-5161  
Email: [rwilson@bowieresources.com](mailto:rwilson@bowieresources.com)

If to Owner:

C.K. Cox Family Corporation  
c/o Thomas Cox  
4356 Glen Hill Circle  
West Valley City, UT 84120  
Email: [thomas.cox123@comcast.net](mailto:thomas.cox123@comcast.net)

4. Assignment. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective permitted successors and assigns. Neither party shall assign this Agreement, or any rights or obligations herein, without the prior written consent of the other party, which consent shall not be unreasonably withheld; provided, however, that CFC may assign this Agreement without consent to an affiliate or in connection with sale of all or substantially all of its assets constituting the Skyline Mine.

5. No Waiver or Modification. This Memorandum is executed for the purpose of placing of record notice of the Agreement and the terms and provisions thereof. Nothing herein shall, nor shall it be interpreted to, amend, modify or waive any of the terms and conditions of the Agreement. All capitalized terms used in this Memorandum, not otherwise defined, shall have the meanings assigned to them in the Agreement.

**Signatures on Following Page**

IN WITNESS WHEREOF, the parties have caused this Memorandum to be signed and executed as of the Effective Date.

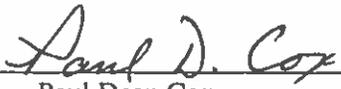
**C.K. COX FAMILY CORPORATION**

By:   
Thomas Cox

Its: President

By:   
Kathleen Jensen

Its: Secretary

By:   
Paul Dean Cox

Its: Treasurer

**CANYON FUEL COMPANY, LLC**

By:   
Gene DiClaudio

Its: Co-CEO and COO

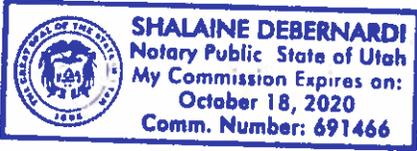
STATE OF Utah )  
 ) ss.  
COUNTY OF Salt Lake )

On this 19<sup>th</sup> day of May, 2018, personally appeared before me **Thomas Cox**, as **President of C.K. Cox Family Corporation**, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that he executed the same on behalf of the corporation.

WITNESS my hand and official seal.

Shalaine DeBernardi  
Notary Public

My Commission expires: \_\_\_\_\_



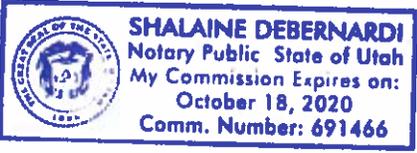
STATE OF Utah )  
 ) ss.  
COUNTY OF Salt Lake )

On this 19<sup>th</sup> day of May, 2018, personally appeared before me **Kathleen Jensen**, as **Secretary of C.K. Cox Family Corporation**, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that she executed the same on behalf of the corporation.

WITNESS my hand and official seal.

Shalaine DeBernardi  
Notary Public

My Commission expires: \_\_\_\_\_



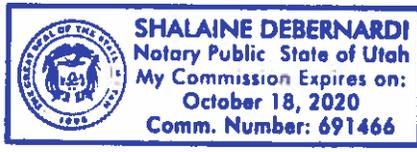
STATE OF Utah )  
 ) ss.  
COUNTY OF Salt Lake )

On this 19<sup>th</sup> day of May, 2018, personally appeared before me **Paul Dean Cox**, as **Treasurer of C.K. Cox Family Corporation**, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that he executed the same on behalf of the corporation.

WITNESS my hand and official seal.

Shalaine DeBernardi  
Notary Public

My Commission expires: \_\_\_\_\_



STATE OF COLORADO )  
 ) ss.

COUNTY OF MESA )

On this 29<sup>th</sup> day of MAY, 2018, personally appeared before me **Gene DiClaudio, Co-Chief Executive Officer and Chief Operating Officer of Canyon Fuel Company, LLC**, a Delaware limited liability company, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that he executed the same on behalf of the company.

WITNESS my hand and official seal.

  
\_\_\_\_\_  
Notary Public

My Commission expires: 8-3-18

**KATHLEEN WIDNER**  
Notary Public  
State of Colorado  
Notary ID 19944011144  
My Commission Expires Aug 3, 2018

*This space reserved for recording*

MEMORANDUM OF SURFACE ACCESS AND EXPLORATION AGREEMENT

NOTICE IS HEREBY GIVEN BY THIS MEMORANDUM (this "Memorandum"), that under and pursuant to a separate agreement entitled Surface Access and Exploration Agreement ("Agreement") dated effective as of May 31, 2018 ("Effective Date"), by and between David G. Cunningham and Rene L. Cunningham, Trustees, of the **David George Cunningham and Rene Annette Launer Cunningham Irrevocable Family Trust**, dated November 25, 2002, with an address of 995 East Hillside Drive, Provo, UT 84604 ("Owner"), and **Canyon Fuel Company, LLC**, ("CFC") a Delaware limited liability company with an address of 225 North 5<sup>th</sup> Street, Suite 900, Grand Junction, CO 81501.

Whereas, Owner has granted access and use to, and does hereby confirm a grant of access and use to CFC of the following described lands located in Emery County, Utah ("Lands"):

Township 14 South, Range 6 East, S.L.P.M.

Section 10: SE $\frac{1}{4}$  NW $\frac{1}{4}$ ; SW $\frac{1}{4}$  NE $\frac{1}{4}$ ; SW $\frac{1}{4}$ ; SW $\frac{1}{4}$  SE $\frac{1}{4}$  NE $\frac{1}{4}$ ; NE $\frac{1}{4}$  SE $\frac{1}{4}$ ;  
(Tax Serial No. 02-0004-0005)

Section 11: SW $\frac{1}{4}$  NW $\frac{1}{4}$  SW $\frac{1}{4}$  (Tax Serial No. 02-0005-0008)

Section 15: NW $\frac{1}{4}$  NE $\frac{1}{4}$ ; N $\frac{1}{2}$  S $\frac{1}{2}$  NE $\frac{1}{4}$ ; W $\frac{1}{2}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$ ; SE $\frac{1}{4}$  NE $\frac{1}{4}$  NE $\frac{1}{4}$ ;  
(Tax Serial No. 02-0009-0006)

Containing 420 acres more or less

The Agreement contains the following principal terms among others:

1. Grant of Use. Owner has granted, and hereby confirms a grant to CFC for the benefit of the Skyline Mine, of a license to enter, upon, access, cross, use and occupy so much of the Lands including the right to drill through and extract coal as needed for coal exploration drilling and water monitoring activities ("Exploration and Monitoring Activities").

2. Term. This Agreement shall be effective as of the Effective Date and shall remain in force to and until CFC has completed its Exploration and Monitoring Activities on the Lands, such term not to exceed Five (5) years from the Effective Date (the "Initial Term"). If at the end of the Initial Term CFC has not completed its Exploration and Monitoring Activities on the Lands, CFC shall have the right, but not the obligation, to renew for Four (4) additional five-year terms upon the same terms and conditions of this Agreement (the "Extended Term").

3. Notice. All notices and other communications to either party shall be delivered as follows:

If to CFC:

If to Owner:

Canyon Fuel Company, LLC  
Attn: Land Manager  
225 North 5<sup>th</sup> Street, Suite 900  
Grand Junction, CO 81501  
Phone: (970) 263-5144  
Fax: (970) 263-5161  
Email: rwilson@bowieresources.com

David and Rene Cunningham  
995 East Hillside Drive  
Provo, UT 84604  
Phone: (801) 226-8272  
Email: bankersrealtyutah@gmail.com

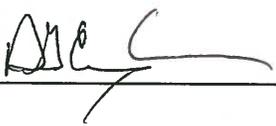
4. Assignment. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective permitted successors and assigns. Neither party shall assign this Agreement, or any rights or obligations herein, without the prior written consent of the other party, which consent shall not be unreasonably withheld; provided, however, that CFC may assign this Agreement without consent to an affiliate or in connection with sale of all or substantially all of its assets constituting the Skyline Mine.

5. No Waiver or Modification. This Memorandum is executed for the purpose of placing of record notice of the Agreement and the terms and provisions thereof. Nothing herein shall, nor shall it be interpreted to, amend, modify or waive any of the terms and conditions of the Agreement. All capitalized terms used in this Memorandum, not otherwise defined, shall have the meanings assigned to them in the Agreement.

IN WITNESS WHEREOF, the parties have caused this Memorandum to be signed and executed as of the Effective Date.

**David G. Cunningham and Rene L. Cunningham  
Irrevocable Family Trust, dated November 25, 2002**

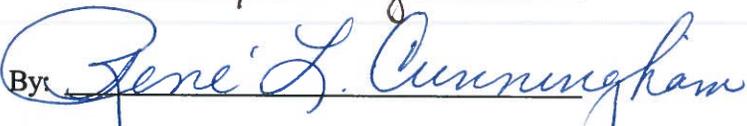
**CANYON FUEL COMPANY, LLC**

By: 

By:   
Gene DiClaudio

Its: member / manager

Its: Co-CEO and COO

By: 

Its: member / manager

STATE OF UT )  
 ) ss.  
COUNTY OF UT )



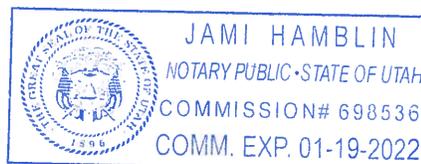
On this 31 day of May, 2018, personally appeared before me **David G. Cunningham**, as **Trustee of the David George Cunningham and Rene Annette Launer Cunningham Irrevocable Family Trust**, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that he executed the same on behalf of the Trust.

WITNESS my hand and official seal.

Jami Hamblin  
Notary Public

My Commission expires: 1/19/22

STATE OF UT )  
 ) ss.  
COUNTY OF UT )



On this 31 day of May, 2018, personally appeared before me **Rene L. Cunningham**, as **Trustee of the David George Cunningham and Rene Annette Launer Cunningham Irrevocable Family Trust**, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that she executed the same on behalf of the corporation.

WITNESS my hand and official seal.

Jami Hamblin  
Notary Public

My Commission expires: 1/19/22

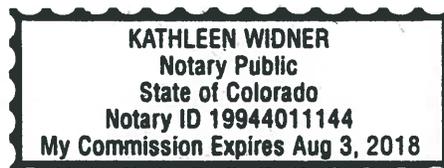
STATE OF COLORADO )  
 ) ss.  
COUNTY OF MESA )

On this 5<sup>th</sup> day of JUNE, 2018, personally appeared before me **Gene DiClaudio**, **Co-Chief Executive Officer and Chief Operating Officer of Canyon Fuel Company, LLC**, a Delaware limited liability company, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that he executed the same on behalf of the company.

WITNESS my hand and official seal.

Kathleen Widner  
Notary Public

My Commission expires: 8-3-18



## **APPENDIX D**

# **APPROVAL FOR MINOR COAL EXPLORATION ON FEE MINERALS**

Director's Actions Date (office use only): 7 May 2018

Fund: SCH

**RIGHT OF MINERAL ENTRY  
FOR MINERAL EXPLORATION**

THIS Non-Exclusive Right of Mineral Entry Permit (“**Permit**”) is made and entered into this 21 day of Aug 2018 (the “**Effective Date**”), between the State of Utah, through the School and Institutional Trust Lands Administration, 675 East 500 South, Suite 500, Salt Lake City, Utah 84102 (“**SITLA**”), and Canyon Fuel Company, 225 North 5<sup>th</sup> Street, Ste. 900, Grand Junction, CO 81501 (the “**Permittee**”).

NOW THEREFORE, in consideration of Permittee’s payment of One Hundred Dollars (\$100.00) (“**ROE Fees**”), SITLA authorizes the following:

**Definitions**

- a. **Permitted Property**: The property generally described and/or depicted in **Exhibit A**
- b. **Commencement Date**: June 1, 2018
- c. **Termination Date**: May 31, 2019
- d. **Authorized Activities**: Permittee will conduct mineral exploration utilizing industry methods, practices and standards that are typical for the Commodity permitted in this Permit. It is expressly understood and agreed that no bulk or commercial size samples or quantities of any mineral substances may be removed from the Permitted Property or stockpiled on or off of the Permitted Property pursuant to this permit.
- e. **Permitted Equipment**: Permittee will have only the equipment necessary to carry out the Authorized Activities on the Permitted Property.
- f. **Commodity**: Coal

**Right of Mineral Entry**. SITLA grants Permittee, its employees, agents, sublessees, assignees, or invitees, the right, on a non-exclusive basis, to enter the Permitted Property for the Authorized Activities. Permittee shall only use those state trust lands identified as the Permitted Property for the Authorized Activities. SITLA grants Permittee the right to enter the Permitted Property on the **Terms and Conditions** listed herein.

[Remainder of page intentionally left blank]

## TERMS AND CONDITIONS

1. **Existing Interests and Conflicts of Use.** This Permit is issued on a non-exclusive basis. Permittee shall be responsible to notify holders of state issued interests in the Permitted Property, as such interests are set forth on **Exhibit B** attached hereto, of Permittee's rights and plans hereunder. Permittee accepts this Permit subject to all such existing interests and accepts responsibility for coordination of its activities with such other interested parties. SITLA reserves the right to issue additional rights-of-entry or convey other interests in property on SITLA land encumbered by existing rights-of-entry without compensation to Permittee.
2. **Term.** This Permit shall commence on the Commencement Date and terminate on the Termination Date, unless otherwise terminated for failure to comply with the terms of this Permit. Permittee agrees to remove all trash and debris from the Permitted Property by the Termination Date.
3. **Permits.** Permittee shall obtain all required permits for surface disturbance from the Utah Division of Oil, Gas & Mining before commencing any surface operations.
4. **Care of Permitted Property.** SITLA reserves the right to inspect the Permitted Property subsequent to the expiration of this agreement and to recall Permittee for correction of any violations of any of the covenants set forth herein. All provisions of this agreement pertaining to the Permittee's responsibilities hereunder shall be deemed to survive the expiration or earlier termination of this agreement.
  - a. **Structures and Surface Disturbance** Permittee agrees that there will be no permanent structures constructed nor shall any surface-disturbing activities be committed upon the Permitted Property other than specifically authorized in this Permit.
  - b. **Use of Existing Roads and Trails** Permittee, its employees, agents, sublessees, assignees, or invitees are allowed to use the existing roads within the Permitted Property unless stated otherwise herein. Any damage done to existing roads within the Permitted Property shall be repaired at Permittee's expense. All roads shall be left in good condition.
  - c. **No Waste, Pollution Prevention** Permittee shall neither commit nor permit any waste on the Permitted Property. Permittee shall take reasonable precautions to prevent pollution or deterioration of lands or waters which may result from the exercise of the privileges granted pursuant to this Permit. Permittee will maintain the Permitted Property in a clean, well maintained condition at all times. Upon completion of activities, Permittee will remove all trash and debris from the Permitted Property.
  - d. **Scraping, Removing Trees and Vegetation Prohibited** Permittee acknowledges that scraping and removing trees or vegetation is prohibited unless specifically authorized by this agreement. In any area wherein scraping is done or the natural condition of the soil is materially disturbed, upon completion of the activity, the soils shall be returned to their natural condition with seeding of grasses and/or native plants as required by SITLA.

- e. Firewood Gathering Prohibited The gathering of firewood is by separate permit only.
- f. Inspection of Property Permittee acknowledges that it has been afforded an opportunity to inspect the Permitted Property and, based upon such inspection, hereby accepts the Permitted Property in its existing, as is condition, subject to all existing hazards to person or property, whether natural or manmade.
- g. Prevention of the Spread of Noxious Weeds Permittee shall comply with R850-41-1310.
- h. Drilling Restoration If drilling is authorized by this permit, any mud used must be properly contained in pits, and upon completion, these pits must be filled and restored to their natural contour with the land left in a restored condition with seeding of grass and native plants as required by SITLA.

5. **Restoration and Reclamation.** All operation which disturbs the surface of lands contained within or on trust lands shall be required to be reclaimed by rehabilitation of the disturbed area as described in the plan of operations approved by the agency, and as required by the laws administered by the UDOGM or as required by any other state or federal agency. Restoration and reclamation shall be pursuant to 8R50-24-700 and will be at Permittee's sole expense.

6. **Fire Prevention.** Permittee shall at all times observe reasonable precautions to prevent fire on the Permitted Property and shall comply with all applicable laws and regulations of any governmental agency having jurisdiction. Permittee agrees to reimburse SITLA for the costs of suppressing fires caused by Permittee or its employees, agents, sublessees, assignees, or invitees. In the event that a fire should occur, immediate suppression action will be taken by Permittee utilizing manpower and equipment available. This action will be at no cost to SITLA. In the event it is necessary that SITLA take action to suppress the fire, all costs associated therewith shall be borne by the Permittee.

7. **Authorized Activities.** Permittee, its employees, agents, sublessees, assignees, and invitees shall only conduct those activities expressly enumerated herein.

8. **Permitted Equipment.** All personnel and participants shall follow the age and education requirements and equipment requirements for the Permitted Equipment, as required by applicable law and the rules established for the Authorized Activities.

9. **Cultural Resources.** A cultural resource survey is required before any ground disturbing activity or undertaking, including seismic survey activity. It is hereby understood and agreed that all treasure-trove, all articles of antiquity, and critical paleontological resources in or upon the Permitted Property are and shall remain the property of the State of Utah. Such articles shall be handled pursuant to 9-8-301 et seq., 79-3-101 et seq. and 76-6-902 of Utah Code Annotated, and Utah Administrative Rules 850-60-100 et seq. Permittee agrees to cease all activity on the Permitted Property and immediately notify the Division of State History and SITLA if any discovery of human remains or a "site" or "specimen," as defined in Section 9-8-302 or 79-3-102

Utah Code Annotated (1953), as amended, is made on the Permitted Property, and continue to cease all construction or maintenance therein until such time as the human remains, "site" or "specimen" in question has been treated to the satisfaction of SITLA.

10. **Reporting.** Permittee agrees to timely provide SITLA a copy of all well logs, geological interpretations, mineral assays, geologic data and other information gathered relative to the Permitted Property by the Permittee or by Permittee's contractors or agents pursuant to activities conducted under this permit.

11. **Default.** If Permittee is in default or otherwise breaches any provisions hereof, under this Permit, SITLA shall provide written notice of such to Permittee and shall permit Permittee to have thirty (30) days to cure such defaults or breach. Failure to cure in this time period may result in SITLA terminating this Permit. Termination shall be effective upon the SITLA's written notice. Upon receipt of such notice, Permittee shall immediately surrender possession of the Permitted Property to SITLA and any improvements (if previously authorized) on the Permitted Property shall, at SITLA's discretion, be forfeited and become the property of the SITLA. In addition, SITLA may exercise any other right or remedy available at law or equity.

12. **Covenant Against Liens.** Permittee shall not suffer or permit to be enforced against the Permitted Property or any parts thereof, and shall indemnify and hold harmless SITLA, its directors, officers, employees and beneficiaries for, from, and against (i) any mechanics', materialman's, contractor's, or subcontractor's liens arising from; and (ii) any claim for damage growing out of the work of, any construction, repair, restoration, replacement, or improvement done by or on behalf of Permittee. Permittee shall pay or cause to be paid all of such liens, claims, or demands before any action is brought to enforce the same against the Permitted Property. If Permittee shall in good faith contest the validity of any such lien, claim, or demand, then Permittee shall, at its expense, defend itself and SITLA against the same and shall pay and satisfy any adverse judgment that may be rendered thereon prior to execution thereof and in the event of any such contest Permittee shall at the request of SITLA provide such security and take such steps as may be required by law to release the Permitted Property and any portion thereof from the effect of such lien.

13. **Insurance.** Permittee, at its sole cost and expense, shall at all times during the term of this Permit maintain in force an insurance policy or policies insuring against all liability resulting from injury or death occurring to persons in or about the Permitted Property arising from or related to the use of the Permitted Property. The limits of the policy shall be no less than \$2,500,000.00, in the aggregate for two or more persons in an occurrence and \$1,000,000 per person in an occurrence, with respect to personal injury, death and property damage. Both SITLA and Permittee shall be listed as insureds on the policy or policies. The original of such policy or policies shall remain in possession of Permittee provided, however, that Permittee shall provide SITLA with a duplicate of the policy at or prior to the execution of this Permit. Notwithstanding the foregoing, Permittee shall have the right to satisfy its insurance obligations hereunder by means of blanket, layered, umbrella, conventional and/or manuscript forms of the required policy or policies. The insurance policies required under this Permit shall contain provisions (i) to the effect that the insurance shall not be canceled or modified without thirty (30) day's prior written notice

to SITLA and (ii) waiving all rights of subrogation against SITLA. All such policies shall be issued by a company or companies rated "A" or better by the most current edition of Best's Insurance Guide, responsible and authorized to do business in the State of Utah, and shall be approved by SITLA.

14. **Liability; Indemnification.** Permittee shall be responsible for all damages and claims incurred in connection with the activities conducted by it on or about the Permitted Property. Accordingly, Permittee agrees to indemnify, defend and hold SITLA, its directors, trustees, officers, employees and beneficiaries harmless from any and all claims, suits, damages, losses, expenses, costs and liabilities (including interest, penalties and attorneys fees) arising out of or in any way related to (i) the use of the Permitted Property by Permittee, its servants, employees, agents, sublessees, assignees, or invitees, including, but not limited to, claims for personal injury, death, property damage; or (ii) breach of the terms of this Permit; or (iii) noncompliance with any law, rule or regulation.

15. **Bonding Provisions.** Prior to the issuance of the Permit, or for good cause shown at any time during the term of the Permit, upon 15 days' written notice, the applicant or Permittee may be required to post with SITLA a bond in the form and amount as may be determined by SITLA to assure compliance with all terms and conditions of the Permit. This bond may be in addition to any bond required by another agency, such as UDOGM. Refer to R850-24-600 for complete bonding rule.

16. **Notice.** Any notice contemplated herein to be served upon Permittee shall be in writing and shall be deemed sufficient if deposited in the United States mail, postage prepaid and certified or registered, and sent to the address first set forth herein or at any such other address as Permittee may from time to time designate by written notice to SITLA. Notices intended for SITLA shall be in writing and shall be deemed sufficient if deposited in the United States mail, postage prepaid and certified or registered, and sent to the address first set forth herein or at any such other address as SITLA may from time to time designate by written notice to Permittee.

17. **Amendments or Modifications.** If Permittee desires to change any of the terms of the Permit, Permittee shall make application following the same procedure as is used to make an application for a new right of mineral entry. An amendment fee pursuant to R850-4 must accompany the amendment request along with other appropriate fees. Any modification of this Permit shall be binding only if evidenced in writing signed by each party or an authorized representative of each party.

18. **Assignments.** A right of mineral entry may be assigned to any person, firm, association, or corporation qualified under R850-3-200, provided that the assignments are first approved by SITLA in writing; and no assignment is effective until approval is given. Any assignment made without such approval is void. Refer to R850-41-1400 for complete assignment rule.

19. **Compliance with Existing Laws.** Permittee, in exercising the privileges granted by this Permit, shall comply with the provisions of all valid federal, state, county, and municipal laws,

ordinances, and regulations which are applicable to the Permitted Property and the Authorized Activities and all operations covered by this Permit.

20. **Utah Law Applies, Successors and Assigns.** This Permit shall be interpreted and governed by the laws of the State of Utah, without regard to its choice or conflicts of laws provisions that may refer the interpretation hereof to the laws of another state, and the provisions hereof shall inure to and be binding upon the successors and assigns of Permittee.

[Remainder of page intentionally left blank]

IN WITNESS WHEREOF, the parties agree to the terms of this Permit.

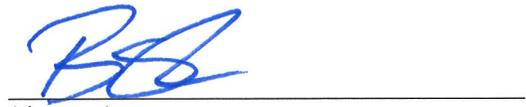
STATE OF UTAH, SCHOOL AND INSTITUTIONAL  
TRUST LANDS ADMINISTRATION (SITLA):

  
\_\_\_\_\_  
(signature)

Thomas B. Fackler  
(print name)

Assistant Director  
(title)

CANYON FUEL COMPANY (PERMITTEE):

  
\_\_\_\_\_  
(signature)

Brian S. Settles  
(print name)

Senior VP, Secretary & General Counsel  
(title)

APPROVED AS TO FORM  
SEAN D. REYES  
ATTORNEY GENERAL

By:   
\_\_\_\_\_  
Special Assistant Attorney General

**EXHIBIT A**

Permitted Property in Sanpete County, State of Utah:

Township 13 South, Range 6 East, SLB&M  
Sec 29: SE $\frac{1}{4}$ SE $\frac{1}{4}$

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containing 40.0 acres, more or less.

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*This space reserved for recording*

MEMORANDUM OF SURFACE ACCESS AND EXPLORATION AGREEMENT

NOTICE IS HEREBY GIVEN BY THIS MEMORANDUM (this "Memorandum"), that under and pursuant to a separate agreement entitled Surface Access and Exploration Agreement ("Agreement") dated effective as of \_\_\_\_\_, 2018 ("Effective Date"), by and between **Cox Inc.**, a Utah corporation, with an address of 504 East 3230 North, Provo, UT 84604 ("Owner"), and **Canyon Fuel Company, LLC**, ("CFC") a Delaware limited liability company with an address of 225 North 5<sup>th</sup> Street, Suite 900, Grand Junction, CO 81501.

Whereas, Owner has granted access and use to, and does hereby confirm a grant of access and use to CFC of the surface and mineral estate for the following described lands located in Sanpete County, Utah ("Lands"):

Beginning at the Northeast corner of the Southeast quarter of the Northeast quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian; thence South 40 chains, thence West 5 chains, thence North 30.03 chains, thence South 79°18' East 4 chains, thence North 5 chains, thence North 79°18' West 4 chains, thence North 4.97 chains, thence East 5 chains. Excepting therefrom that part in the state road right of way. (Tax Serial No. 21156)

The Northeast quarter of the Northeast quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian. (Tax Serial No. 21160)

Beginning at the Northwest corner of the Southeast quarter of the Northeast quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian; thence South 40.00 chains, thence East 5.00 chains, thence North 40.00 chains, thence West 5.00 chains to the point of beginning. Excepting therefrom that part in the state road right of way. (Tax Serial No. 21163)

Containing 76.47 acres more or less

The Agreement contains the following principal terms among others:

1. Grant of Use. Owner has granted, and hereby confirms a grant to CFC for the benefit of the Skyline Mine, of a license to enter, upon, access, cross, use and occupy so much of the Lands including the right to drill through and extract coal as needed for coal exploration drilling and water monitoring activities ("Exploration and Monitoring Activities").

2. Term. This Agreement shall be effective as of the Effective Date and shall remain in force to and until CFC has completed its Exploration and Monitoring Activities on the Lands, such term not to exceed Five (5) years from the Effective Date (the "Initial Term"). If at the end of the Initial Term CFC has not completed its Exploration and Monitoring Activities on the Lands, CFC shall have the right, but not the obligation, to renew for Four (4) additional five-year terms upon the same terms and conditions of this Agreement (the "Extended Term").

3. Notice. All notices and other communications to either party shall be delivered as follows:

If to CFC:

Canyon Fuel Company, LLC  
Attn: Land Manager  
225 North 5<sup>th</sup> Street, Suite 900  
Grand Junction, CO 81501  
Phone: (970) 263-5144  
Fax: (970) 263-5161  
Email: [rwilson@bowierresources.com](mailto:rwilson@bowierresources.com)

If to Owner:

Cox Inc.  
c/o Gary Mackay  
504 East 3230 North  
Provo, UT 84604  
Email: [forwardstuff2@yahoo.com](mailto:forwardstuff2@yahoo.com)

4. Assignment. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective permitted successors and assigns. Neither party shall assign this Agreement, or any rights or obligations herein, without the prior written consent of the other party, which consent shall not be unreasonably withheld; provided, however, that CFC may assign this Agreement without consent to an affiliate or in connection with sale of all or substantially all of its assets constituting the Skyline Mine.

5. No Waiver or Modification. This Memorandum is executed for the purpose of placing of record notice of the Agreement and the terms and provisions thereof. Nothing herein shall, nor shall it be interpreted to, amend, modify or waive any of the terms and conditions of the Agreement. All capitalized terms used in this Memorandum, not otherwise defined, shall have the meanings assigned to them in the Agreement.

IN WITNESS WHEREOF, the parties have caused this Memorandum to be signed and executed as of the Effective Date.

COX INC.

CANYON FUEL COMPANY, LLC

By:   
Alice Wakefield

By:   
Gene DiClaudio

Its: Chief Executive Officer

Its: Co-Chief Executive Officer /Chief Operating Officer

STATE OF Utah )  
 ) ss.  
COUNTY OF Utah )

On this 1 day of May, 2018, personally appeared before me **Alice Wakefield**, as **Chief Executive Officer** of **Cox Inc.**, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that she executed the same on behalf of the corporation.

WITNESS my hand and official seal.

My Commission expires: January 19, 2021

Jennifer Paul  
Notary Public



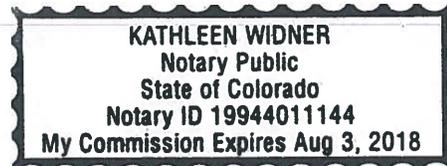
STATE OF COLORADO )  
 ) ss.  
COUNTY OF MESA )

On this 8<sup>th</sup> day of May, 2018, personally appeared before me **Gene DiClaudio**, **Co-Chief Executive Officer** and **Chief Operating Officer** of **Canyon Fuel Company, LLC**, a Delaware limited liability company, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that he executed the same on behalf of the company.

WITNESS my hand and official seal.

My Commission expires: 8-3-18

Kathleen Widner  
Notary Public



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*This space reserved for recording*

MEMORANDUM OF SURFACE ACCESS AND EXPLORATION AGREEMENT

NOTICE IS HEREBY GIVEN BY THIS MEMORANDUM (this "Memorandum"), that under and pursuant to a separate agreement entitled Surface Access and Exploration Agreement ("Agreement") dated effective as of May 29, 2018 ("Effective Date"), by and between **C.K. Cox Family Corporation**, a Utah corporation, with an address of 4356 Glen Hill Circle, West Valley City, UT 84120 ("Owner"), and **Canyon Fuel Company, LLC**, ("CFC") a Delaware limited liability company with an address of 225 North 5<sup>th</sup> Street, Suite 900, Grand Junction, CO 81501.

Whereas, Owner has granted access and use to, and does hereby confirm a grant of access and use to CFC of the surface and mineral estate for the following described lands located in Sanpete County, Utah ("Lands"):

Township 13 South, Range 6 East, S.L.P.M.  
Section 32: E1/2 NW1/4 NE1/4 (Tax Serial No. 21161)

Beginning at the Northwest corner of the Northwest quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian; thence South 25 chains, thence East 8 chains, thence South 2.50 chains, thence East 12 chains, thence North 7.50 chains, thence West 2 chains, thence North 20 chains, thence West 18 chains to the point of beginning. (Portion of Tax Serial No. 21161x)

Beginning 5 chains East of the Northwest corner of the Southeast quarter of the Northeast quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian; thence South 40.00 chains, thence East 10.00 chains, thence North 40.00 chains, thence West 10.00 chains to the point of beginning. Excepting therefrom that part in the state road right of way (Tax Serial No. 21162)

Beginning at the center of the Northeast quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian; thence West 10 chains, thence South to the North line of the State Highway, thence Southeasterly along said highway to a point 8.50 chains South of the point of beginning, thence North 8.50 chains to the point of beginning. (Tax Serial No. 21164)

Beginning at the Southeast corner of the Southwest quarter of the Northeast quarter of Section 32, Township 13 South, Range 6 East, Salt Lake Base and Meridian; thence West 10 chains, thence North 10.50 chains to the South side of a State Highway, thence Southeasterly along the South side of the highway to a point 10 chains North of the point of beginning, thence South 10 chains to the point of beginning. (Tax Serial No. 21164x)

Containing 124.32 acres more or less

The Agreement contains the following principal terms among others:

1. Grant of Use. Owner has granted, and hereby confirms a grant to CFC for the benefit of the Skyline Mine, of a license to enter, upon, access, cross, use and occupy so much of the Lands including the right to drill through and extract coal as needed for coal exploration drilling and water monitoring activities ("Exploration and Monitoring Activities").

2. Term. This Agreement shall be effective as of the Effective Date and shall remain in force to and until CFC has completed its Exploration and Monitoring Activities on the Lands, such term not to exceed Five (5) years from the Effective Date (the "Initial Term"). If at the end of the Initial Term CFC has not completed its Exploration and Monitoring Activities on the Lands, CFC shall have the right, but not the obligation, to renew for Four (4) additional five-year terms upon the same terms and conditions of this Agreement (the "Extended Term").

3. Notice. All notices and other communications to either party shall be delivered as follows:

If to CFC:

Canyon Fuel Company, LLC  
Attn: Land Manager  
225 North 5<sup>th</sup> Street, Suite 900  
Grand Junction, CO 81501  
Phone: (970) 263-5144  
Fax: (970) 263-5161  
Email: [rwilson@bowieresources.com](mailto:rwilson@bowieresources.com)

If to Owner:

C.K. Cox Family Corporation  
c/o Thomas Cox  
4356 Glen Hill Circle  
West Valley City, UT 84120  
Email: [thomas.cox123@comcast.net](mailto:thomas.cox123@comcast.net)

4. Assignment. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective permitted successors and assigns. Neither party shall assign this Agreement, or any rights or obligations herein, without the prior written consent of the other party, which consent shall not be unreasonably withheld; provided, however, that CFC may assign this Agreement without consent to an affiliate or in connection with sale of all or substantially all of its assets constituting the Skyline Mine.

5. No Waiver or Modification. This Memorandum is executed for the purpose of placing of record notice of the Agreement and the terms and provisions thereof. Nothing herein shall, nor shall it be interpreted to, amend, modify or waive any of the terms and conditions of the Agreement. All capitalized terms used in this Memorandum, not otherwise defined, shall have the meanings assigned to them in the Agreement.

**Signatures on Following Page**

IN WITNESS WHEREOF, the parties have caused this Memorandum to be signed and executed as of the Effective Date.

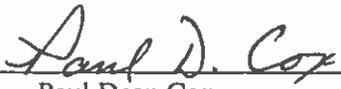
**C.K. COX FAMILY CORPORATION**

By:   
Thomas Cox

Its: President

By:   
Kathleen Jensen

Its: Secretary

By:   
Paul Dean Cox

Its: Treasurer

**CANYON FUEL COMPANY, LLC**

By:   
Gene DiClaudio

Its: Co-CEO and COO

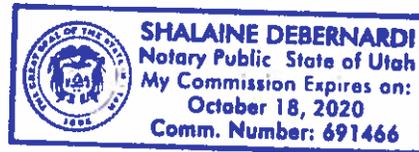
STATE OF Utah )  
 ) ss.  
COUNTY OF Salt Lake )

On this 19<sup>th</sup> day of May, 2018, personally appeared before me **Thomas Cox**, as **President of C.K. Cox Family Corporation**, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that he executed the same on behalf of the corporation.

WITNESS my hand and official seal.

Shalaine DeBernardi  
Notary Public

My Commission expires: \_\_\_\_\_



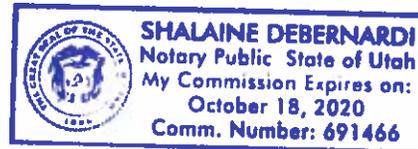
STATE OF Utah )  
 ) ss.  
COUNTY OF Salt Lake )

On this 19<sup>th</sup> day of May, 2018, personally appeared before me **Kathleen Jensen**, as **Secretary of C.K. Cox Family Corporation**, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that she executed the same on behalf of the corporation.

WITNESS my hand and official seal.

Shalaine DeBernardi  
Notary Public

My Commission expires: \_\_\_\_\_



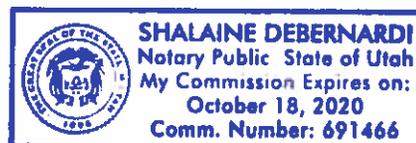
STATE OF Utah )  
 ) ss.  
COUNTY OF Salt Lake )

On this 19<sup>th</sup> day of May, 2018, personally appeared before me **Paul Dean Cox**, as **Treasurer of C.K. Cox Family Corporation**, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that he executed the same on behalf of the corporation.

WITNESS my hand and official seal.

Shalaine DeBernardi  
Notary Public

My Commission expires: \_\_\_\_\_



STATE OF COLORADO )  
 ) ss.

COUNTY OF MESA )

On this 29<sup>th</sup> day of MAY, 2018, personally appeared before me **Gene DiClaudio, Co-Chief Executive Officer and Chief Operating Officer of Canyon Fuel Company, LLC**, a Delaware limited liability company, and signer of the above Surface Access and Exploration Agreement, who duly acknowledged to me that he executed the same on behalf of the company.

WITNESS my hand and official seal.

  
\_\_\_\_\_  
Notary Public

My Commission expires: 8-3-18

**KATHLEEN WIDNER**  
Notary Public  
State of Colorado  
Notary ID 19944011144  
My Commission Expires Aug 3, 2018

## PacifiCorp Non-Exclusive Exploration License

This Non-Exclusive Exploration License (the "License") is made and entered into by and between Rocky Mountain Power, an Unincorporated Division of PACIFICORP, whose address is 1407 West North Temple, Salt Lake City, Utah 84116 (the "Owner") and Canyon Fuel Company, LLC, whose address is 225 N 5<sup>th</sup> St., Suite 900, Grand Junction, CO 81501 (the "Operator").

### RECITALS

**Whereas**, as of the Effective Date (as defined below), Owner owns the surface of the real property shown on Exhibit A, which is attached to and by this reference made a part hereof (the "Property"), located in Emery County, State of Utah, on which certain above-ground and below-ground facilities and improvements exist and on which Owner may construct certain above-ground and below-ground facilities and improvements in the future, including but not limited to electrical energy generation and transportation facilities and improvements, including the adjacent Electric Lake, its tributaries, associated water rights, and appurtenances thereto (collectively, the "Facilities"). The property being further described as:

T. 14 S., R. 6 E., SLB&M  
Section 3: Lot 2, SW $\frac{1}{4}$ NE $\frac{1}{4}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ , E $\frac{1}{2}$ W $\frac{1}{2}$ SE $\frac{1}{4}$   
Section 10: N $\frac{1}{2}$ NE $\frac{1}{4}$

**Whereas**, Owner holds an interest in certain subsurface mineral rights being accessed as part of the Project ("Coal Rights") on adjacent lands, and Operator has requested the non-exclusive right and privilege to prospect and explore the Coal Rights located on, in or under the area shown on Exhibit B and further described as:

T. 14 S., R. 6 E., SLB&M  
Section 10: SW $\frac{1}{4}$

**Whereas**, Operator is performing exploratory drilling projects, including prospecting and exploring for coal ("Project") located on adjacent lands as shown on Exhibit B and desires to use portions of the Property for and including an existing access road, and placement of a temporary above ground water pipeline, and temporary water tank.

**Whereas**, Owner and Operator deem it to be in their mutual interest to enter into this License to provide for compatible use of the Property by each party.

**NOW THEREFORE**, in consideration of the mutual benefits and consideration in hand paid, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. **Right-of-Way.** Owner grants Operator, its employees, contractors, and agents, a non-exclusive right to enter upon and use the Property for the purpose of using existing access roads, more particularly described on Exhibit A subject to the terms of this License. Further, Operator has examined the Premises and accepts it in its present condition, AS-IS, WHERE-IS and with all

faults. Owner makes no representation or warranty as to the present or future condition of the Premises and shall not be required to perform, pay for, or be responsible for any work to ready the Premises for Operator's occupancy or any other work whatsoever throughout the term of this Lease to repair, maintain or improve the Premises.

2. **Consent to Explore Coal Rights.** Owner grants Operator, its employees, contractors, and agents, during the term of this License, the non-exclusive right to conduct such operations as may be necessary, reasonable or proper in connection with the Project upon the terms hereinafter contained, subject to surface use access and permission from the surface owners for the purposes contemplated herein. This License, including any payments made hereunder, shall not be construed as conveying any right, title, interest, right-of-way, or easement to the Property or Coal Rights, or other minerals therein.

2.1 It is understood and agreed that this License is granted solely for the purposes set forth in Sections 1 and 2 hereof and is not to be construed as an agreement or license of future mineral development. In the event of any future mineral development, the provisions and conditions of such development as may be agreed to by the Parties shall be set forth in a separate License at the appropriate time. Operator agrees that no right or option to lease the Property or Coal Rights covered hereby for coal development is granted by this License, either expressly or by implication.

3. **Limitation on Rights.** Unless otherwise agreed to by the Owner in writing, the Property may not be used by Operator in connection with operations on premises located on Owner's land other than the Property without Owner's written consent. Operator and its employees, contractors, and agents shall not disturb, use or travel on any of the property of Owner not subject to this License without Owner's prior consent. Operator shall reasonably limit its activities so as to use only so much of the Property as is necessary for such limited purposes, while allowing Owner or its designees the greatest use of the Property for its own or any other purpose. Operator agrees to reasonably accommodate its activities and use of the Property to Owner for its primary use of the Property. Operator agrees to perform its activities in a manner that will not materially interfere with Owner's use of its Properties whether now or in the future in order that Owner may construct, maintain, repair, replace or add additional Facilities as Owner reasonably deems necessary, without additional material cost, inconvenience, expense, damage or injury to Owner, or its agents, independent contractors and employees. Prior to the commencement of the Project, Operator shall be responsible to coordinate with any easement holder to insure that all existing rights are maintained. Operator shall also require its employees, contractors, agents and representatives who will access the Property pursuant to the permission granted herein to adhere to the terms and conditions of this License.

4. **Non-exclusive Rights.** The rights granted by Owner to Operator are nonexclusive, and Owner reserves the right to use all access roads and all surface and subsurface uses of the Property and the right to grant successive easements therein or across on such terms and conditions as Owner deems necessary or advisable, except that successive easements shall not interfere with or obstruct Operator's rights of access or damage roads or rights-of-way constructed by Operator or materially increase Operator's cost to maintain the right-of-way.

5. **Term.** This License shall be in effect for one hundred and eighty (180) days beginning on the date of full execution by both parties, unless sooner terminated as provided herein.

5.1 **Option to Renew.** Provided that Operator is not in default, Operator shall have an option to renew this License for one (1) additional ninety (90) day period by giving written notice thereof to Owner not less than ten (10) days prior to the expiration date of this License. The renewed term shall be upon the identical terms and conditions contained in this License for the initial term.

6. **Notification.**

6.1 **Planning Phase.** Operator shall contact Owner to request an initial planning conference prior to any activities on the Property.

6.2 **Permitting Phase.** Prior to the commencement of operations, Operator shall apply for and obtain any permits that may be required for the Project with the applicable federal government, the State of Utah or local governmental agencies.

6.3 **Commencement of Operations Phase.** Operator shall notify Owner forty-eight (48) hours prior to commencing its operations on the Property. Such notice shall reasonably specify the type of activity and detail the schedule of operations contemplated. Operator shall not commence any operations until all bonding and insurance requirements have been met by Operator.

7. **Additional Details of Operations.** To the maximum extent possible, Operator will use the existing road on the surface of the Property (as depicted in Exhibit A and as modified by this License) for its operations. Operator shall maintain existing roads as necessary. Operator shall not construct new roads.

8. **Cooperation.** For its part, Owner will cooperate with Operator by providing land-owners consent to the performance of any act or the conduct of any operation where the provisions of applicable law, rule or regulation of any federal, state or local governmental or regulatory agency shall require same. Owner also agrees that it will use the property in a manner that will not interfere with the rights and privileges granted to Operator in this License and agreed to in the Plan of Operations.

9. **Protection of and Restrictions on Use of Property.** Operator shall take reasonable steps to prevent fire and to promptly extinguish fire. Operator shall endeavor to use diesel powered vehicles whenever possible to avoid fires resulting from catalytic converters. Operator may not construct open fires on the property. No trash or timber slash will be burned by Operator on the Property. Operator shall promptly and fully compensate Owner for all damages caused by fire arising out of Operator's operations, including, without limitation, any charges incurred by Owner for fire suppression. Operator shall not permit any of its employees or contractors operating hereunder to bring any firearm, explosive device, weapon, alcoholic beverage, or illegal drug on Owner's property. Operator's employees shall at all times carry identification. Operator's employees will not bring dogs or other animals in vehicles or otherwise on to Owner's lands. Operator shall not place any trash, rubbish or debris on Owner's land. No employee or contractor of Operator shall hunt, prospect for antlers, fossils or antiquities, consume alcoholic beverages or carry on any illegal activities on the Property. Operator shall not establish living quarters for its employees and contractors on the Property. Absent Owner's consent, Operator's equipment, not required for daily operations, shall not be stacked or stored on the Property nor shall equipment be maintained on any of the Property except where a containment area has been constructed to contain any potential fuel leaks from a designated fuel tank or vehicle.

10. **Maintenance.** Operator shall at all times keep the road rights-of-way, and other areas used by Operator, safe and in good order, free of noxious weeds, litter and debris. Operator shall take all steps necessary to prevent the release or discharge of any toxic or hazardous chemicals or wastes on the Property, including vehicular fuel and lubricants. In the event of an accidental discharge, Operator shall contact Owner (Darce Guymon (435) 687-4305) within twenty-four (24) hours of discharge and will mitigate any damage using standard procedures acceptable to Owner for cleanup and restoration of the affected area.

11. **Consolidation.** Whenever possible, Operator will locate their operations in the smallest space possible, where practical. Operator will place all roads in common corridors or rights-of-way, if reasonable. The consolidated facilities may not be used for operations connected to the extent possible with Owner's lands outside the Property without Owner's written permission.

12. **Damage to Improvements and Livestock.** No improvements, including but not limited to fences, gates, and cattle guards, shall be cut, damaged or destroyed by Operator without the prior written consent of Owner and the payment of additional damages or the institution of other safeguards to protect the rights and property of the Owner, including but not limited to cost of replacement or repair of such Facilities, including powerlines and water pipelines. Payments shall be due and payable prior to any such damage or within thirty (30) days if Operator fails to seek prior written consent from the Owner.

13. **Damage to Owner Facilities.** In addition to the other payments provided for in this License, Operator shall pay to Owner all of the costs directly resulting from damage to Owner's Facilities as a result of Operator's activities under this License. Owner shall be contacted immediately upon any event that damages any of Owner's Facilities. Owner shall be responsible to repair the damage and shall send an invoice to Operator for the actual costs associated with the repairs.

14. **Payments by Operator to Owner.** As consideration for the rights granted by Owner hereunder, upon termination of this License, Operator shall furnish to Owner copies of all non-interpretive factual information, obtained by Operator from the Project ("Factual Information"). By way of example and not limitation, said Factual Information would include geologic maps, drill logs, photographs, location and technical data, digitized maps and illustrations, lithologic descriptions of hand samples taken, along with the results of any lithologic, geologic, chemical or market analysis. It is understood and agreed that the Factual Information furnished by Operator to Owner will remain the property of Operator and will be held in confidence by Owner and not provided to any third party by Owner, excepting Owner's affiliates and except as required by law, during the term of this License and for a period of seven (7) years from its termination. Operator's obligation to furnish the Factual Information to Owner shall survive the termination of this License.

15. **Helicopter Use.** Operator acknowledges, and assumes all risk involved with piloting helicopters or other manned or unmanned flying or lighter-than-air equipment on the Property or adjacent lands. Operator shall not operate any helicopter or other manned or unmanned flying or lighter-than-air equipment within 1,000 feet (whether over the Property or not) of Owner's Facilities, including, but not limited to, electrical transmission and distribution lines, meteorological towers (aka met towers), or communication towers.

16. **Liability for Damage.** This License does not relieve Operator from liability for damage caused by Operator's negligence or by spills or discharges of any toxic or hazardous chemicals or wastes due to Operator's operations.
17. **Damage to Lands Owned by Other Landowners.** Operator shall be liable for any damage to other lands or the operations of other landowners, including but not limited to, roads, road crossings, bridges, fences, buildings, other improvements, livestock, crops, groundwater, forage, and hay meadows, resulting from Operator's activities on the Property.
18. **Reclamation.** Operator shall assume the responsibility to reasonably rehabilitate and restore to original condition, as near as reasonable, all areas disturbed by Operator's operations utilizing applicable standards for reclamation.
19. **Termination of Rights.** This License shall become effective when both parties have executed this License (the "Effective Date") and shall remain in full force and effect until complete reclamation and restoration of the surface, according to the standards prescribed herein, and approval of such reclamation by owner or one (1) year, whichever is the shortest amount of time. In addition, in the event of default by Operator of any of the terms and conditions of this License, and the failure of Operator to cure such default within the time specified in this License, Owner may elect to suspend the rights of Operator hereunder until such default is cured, or to terminate this License. Operator shall have a reasonable time thereafter in which to remove its facilities and reclaim the land as near as possible to its condition prior to Operator's entry thereon.
20. **No Warranty.** Owner makes no warranty of title in entering into this License. Owner further makes no representations or warranties as to the use, condition, or suitability of the Property for Operator's operations on the Property.
21. **Enforcement Costs.** If either party defaults under this License, such party shall pay all costs and expenses, including a reasonable attorney's fee, incurred by the other party in enforcing this License.
22. **Indemnification.** Operator shall use the Property at its own risk and, except for the obligations of Owner herein, hereby releases and forever discharges any claims, demands or causes of action it may have against Owner, its officers, directors, employees, subsidiaries, affiliates and contractors arising out of Operator's use of the Property or conducting its activities under this License. In addition Operator shall protect, indemnify and hold harmless Owner, its officers, directors, employees, subsidiaries, affiliates and contractors (collectively, the "Indemnitees") from and against any losses, claims, liens, demands and cause of action of every kind, including the amount of any judgment, penalty, fine, interest, court cost or legal fee incurred by the Indemnitees or any of them in the defense of same, arising in favor of any party, including governmental agencies or bodies, on account of taxes, claims, liens, debts, personal injuries, death or damages to property, violations of Environmental Laws and Regulations, and all other claims or demands of every character to the extent caused by Operator's use of the Property or conduct of its activities under this License (and for the avoidance of doubt, not including any such claims or demands caused by Owner's negligence or intentional misconduct). The terms of this Section 22 shall survive the termination of this License. For purposes of this License, "Environmental Laws and Regulations" shall mean all present and future federal, state and local laws and all rules and regulations promulgated thereunder, relating to pollution or protection of the environment applicable to the Property. Operator shall promptly pay all wages due its workmen and employees

and pay for all materials and supplies furnished for its operations hereunder and shall defend and protect Owner from and against all claims and liabilities resulting in its failure to do so. Operator shall indemnify and hold Owner harmless from all mechanic's, materialmen's and laborer's liens against the Property which may arise by reason of Operator's operations hereunder, and in the event any such liens are filed against the Property, Operator will take such steps as may be necessary to obtain the discharge thereof.

23. **Insurance.** Without limiting any liabilities or any other obligations of Operator, Operator shall procure and continuously carry, with insurers having an A.M. Best's rating of A-VII or better, insurance against claims for injury to persons or damage to property which may arise from or in connection with this License or Operator's use or occupancy of the Property as follows:

23.1 **Workers' Compensation.** Operator shall comply with all applicable Workers' Compensation laws and shall furnish proof thereof satisfactory to Owner prior to commencing any work, use or occupancy of the premises.

23.2 **Employers' Liability.** Operator shall maintain employers' liability insurance with limits not less than \$1,000,000 each accident, \$1,000,000 disease each employee, and \$1,000,000 disease policy limit.

23.3 **Commercial General Liability.** Operator shall maintain commercial general liability insurance on the most recently approved ISO policy form, or its equivalent, written on an occurrence basis, with limits not less than \$1,000,000 per occurrence/\$2,000,000 general aggregate a per location and/or per job basis) and shall include the following coverages::

- a) Premises and operations coverage
- b) Independent contractors' coverage
- c) Contractual liability
- d) Products and completed operations coverage
- e) Coverage for explosion, collapse and underground property damage
- f) Broad form property damage liability
- g) Personal injury liability, with contractual exclusion removed
- h) Sudden and accidental pollution liability

23.4 **Business Automobile Liability.** Operator shall maintain business automobile liability insurance on the most recently approved ISO policy form, or its equivalent, with a minimum single limit of \$1,000,000 each accident for bodily injury and property damage including sudden and accidental pollution liability, with respect to Operator's vehicles whether owned, hired or non-owned, assigned to or used assigned to or used in any way on the Premises..

23.5 **Umbrella Liability.** Operator shall maintain umbrella or excess liability insurance with a minimum limit of \$10,000,000 each occurrence/aggregate where applicable on a following form basis to be excess of the insurance coverage and limits required in employers' liability insurance, commercial general liability insurance and business automobile liability insurance above. Such insurance policies shall be maintained to cover any liability arising from Operator's use of the Property and indemnification as identified in this License. Operator shall provide Notice to Owner.

Owner does not represent that the insurance coverages specified herein (whether in scope of coverage or amounts of coverage) are adequate to protect the obligations of Operator, and Operator shall be solely responsible for any deficiencies thereof.

Except for workers' compensation, the policies required herein shall include provisions or endorsements naming Owner, its parent, divisions, affiliates, subsidiary companies, co-lessees, co-venturers, officers, directors, agents, employees, servants and insurers as additional insureds or loss payees, as applicable to specific insurance coverage. The commercial general liability additional insured endorsement shall be ISO Form CG 20 10 and ISO Form CG 20 37, or their equivalents.

To the extent of Operator's negligent acts or omissions, all policies required by this Contract shall include: (i) provisions that such insurance is primary insurance with respect to the interests of Owner and that any other insurance maintained by Owner (including self-insurance) is excess and not contributory insurance with the insurance required hereunder; and (ii) provisions that the policy contain a cross liability or severability of interest clause or endorsement in the commercial general liability and automobile liability coverage. Unless prohibited by applicable law, all required insurance policies shall contain provisions that the insurer will have no right of recovery or subrogation against Owner, its parent, divisions, affiliates, subsidiary companies, co-lessees or co-venturers, agents, directors, officers, employees, servants, and insurers, it being the intention of the Parties that the insurance as effected shall protect all of the above-referenced entities evidenced by waiver of subrogation wording

A certificate of insurance shall be furnished to Owner confirming the issuance of such insurance prior to use or occupancy of the premises by Operator. Should a loss arise during the term of this License that may give rise to a claim against Operator and/or Owner as an additional insured, Operator shall deliver to Owner (or cause to be delivered to Owner) certified copies of such insurance policies. Operator shall not cancel or reduce limits of liability without (i) ten (10) calendar days prior written Notice to Owner if canceled for nonpayment of premium; or (ii) thirty (30) calendar days prior written Notice to Owner if canceled for any other reason. Lack of notification shall be considered a material breach of this Contract. Operator may meet the insurance requirements listed above with a letter-of-self-insurance.

Operator shall require Subcontractors who perform Work on the premises to carry liability insurance (auto, commercial general liability and excess) and workers' compensation/employer's liability insurance commensurate with their respective scopes of work. Operator shall remain responsible for any claims, lawsuits, losses and expenses included defense costs that exceed any of its Subcontractors' insurance limits or for uninsured claims or losses.

24. **Compliance with Law.** Operator shall comply with all federal, state, and local laws, including all Environmental Laws and Regulations that are applicable to the Property or conduct of its activities. Operator shall also comply with the terms of all permits, licenses, leases,

environmental assessments, conservation recommendations, and any other rules, regulations, actions or orders that are applicable to the Property or the conduct of its activities. Upon request, Operator shall take all reasonable measures to demonstrate to Owner that it has complied with this provision.

25. **Inspection, Breach and Right to Cure.** Subject to the rights of Operator described herein, Owner reserves the right to access and use the Property for its own use and to verify Operator's compliance with the terms of this License. If Operator fails to perform any covenant, term, provision, agreement, or condition of this License, Owner shall give Operator written notice of such breach and Operator shall have thirty (30) days from receipt of such notice to remedy such breach. If Operator fails to remedy the breach within the timeframe provided, Owner may, in addition to any other rights and remedies available to Owner, suspend the right of Operator to enter upon and use the Property until the default is cured or terminate this License. Owner shall have the option, but not the duty, to cure the breach on Operator's behalf. Any reasonable expense incurred by Owner to perform any such cure shall be reimbursed by Operator promptly after receipt of invoice therefore from Owner, in the same manner as other payments are made hereunder. If Owner elects to terminate this License, Operator shall remove all of its property and facilities from the Property and restore and reclaim the Property as required herein.

26. **Successors and Assigns.** This License is binding upon the Owner and Operator and their respective successors and assigns. Operator may not assign its rights or delegate its duties under this License without the written consent of Owner.

27. **Relinquishment.** By written document delivered to Owner, Operator may relinquish its right to use any portion of the Property. By written amendment signed by Owner and Operator the legal description for the Property may be changed.

28. **Notice.** Notice required under this License may be given to either party by depositing the same in the United States mail postage prepaid, duly addressed to the appropriate contact set out below. Such notice shall be deemed delivered when deposited in the United States Mail. Owner designates the following contact people's information for the receipt of notices required under this License and any other communications on matters addressed by this License:

Owner Contact:  
PacifiCorp  
1407 W North Temple, Suite 110  
Salt Lake City, UT 84116  
ATTN: Erik Carlson, Property Management  
(801) 220-7805

Operator designates the following contact person for the receipt of notices required under this License and any other communications on matters addressed by this License:

Operator Contact:  
Canyon Fuel Company, LLC  
225 N 5<sup>th</sup> St., Suite 900  
Grand Junction, CO 81501  
Attn: Ryan Wilson  
(970) 263-5144

29. **Construction of License.** This License shall be construed under the laws of the State of Utah and the parties consent to the jurisdiction of the District Court in and for Emery County, Utah for all disputes arising hereunder.

30. **Entire License: Amendment.** This License embodies the entire License between the parties hereto concerning the subject matter hereof and supersedes all prior conversations, proposals, negotiations, understandings and agreements, whether written or oral. This License may not be amended, altered, changed, modified or supplemented except by written agreement of the parties.

31. **Severability.** In the event any condition, covenant, or other provision herein contained is held to be invalid or void by any court of competent jurisdiction, the same shall be deemed severable from the remainder of this License and shall in no way effect any other covenant or condition contained herein. If such condition, covenant, or other provisions shall be deemed invalid due to its scope or breadth, such provision shall be deemed valid to the extent of the scope or breadth permitted by law.

32. **Representations.** Each party covenants and represents that it has the full right and authority to enter into this License and to carry out the obligations provided for in this License.

33. **No Joint Venture or Partnership.** This License does not constitute or create an agency, joint venture, partnership or similar relationship or status between the Owner and Operator.

34. **Taxes.** Operator shall pay all taxes and assessments of any kind, which shall be levied against the Property by reason of Operator's use, or occupancy thereof, except those being contested in good faith, and shall keep the Property free of any liens that may attach thereto by reason of Operator's use or occupancy thereof.

35. **Jury Trial Waiver.** TO THE FULLEST EXTENT PERMITTED BY LAW, EACH OF THE PARTIES HERETO WAIVES ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF LITIGATION DIRECTLY OR INDIRECTLY ARISING OUT OF, UNDER OR IN CONNECTION WITH THIS LICENSE. EACH PARTY FURTHER WAIVES ANY RIGHT TO CONSOLIDATE ANY ACTION IN WHICH A JURY TRIAL HAS BEEN WAIVED WITH ANY OTHER ACTION IN WHICH A JURY TRIAL CANNOT BE OR HAS NOT BEEN WAIVED.

36. **Counterparts.** This License may be executed in counterparts, each of which shall be deemed an original, but all of which shall constitute one and the same instrument. Said counterparts may be transmitted by one party to the other by facsimile or electronic mail.

37. **Time.** Time is of the essence in this License.

IN WITNESS WHEREOF, the parties to this License have executed this License in duplicate on the last date indicated below.

**OWNER:**

Rocky Mountain Power, an Unincorporated Division of PacifiCorp

Signature: 

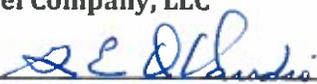
Title: SR. Property Agent

Print Name: ERIK CARLSON

Date: 6/21/18

**OPERATOR:**

Canyon Fuel Company, LLC

Signature: 

Title: Co-CEO & COO

Print Name: Gene E. DiClaudio

Date: 6/12/18

**Exhibit A**  
***(See Attached)***

# Canyon Fuel Access

Exploratory Drillsite

# EXHIBIT "A"

T13S R6E

Road Access on  
PacifiCorp Property -  
existing road (yellow)

Sec 4

Sec 3

Sec 2

T14S R6E

Sec 11

Sec 9

Sec 10

PacifiCorp Surface Ownership (green)

Proposed Drillsite

Google earth

4000 ft





**APPENDIX E**

**TEMPORARY WATER CHANGE**  
**UTAH STATE ENGINEER**



GARY R. HERBERT  
*Governor*  
SPENCER J. COX  
*Lieutenant Governor*

# State of Utah

## DEPARTMENT OF NATURAL RESOURCES

### Division of Water Rights

MICHAEL R. STYLER      KENT L. JONES  
*Executive Director*      *State Engineer/Division Director*

## ORDER OF THE STATE ENGINEER

### For Temporary Change Application Number 91-5010 (t43725)

Temporary Change Application Number 91-5010 (t43725) in the names of Canyon Fuel Company LLC and Price River Water User's Association was filed on May 9, 2018, to change the point of diversion, place of use, and uses of 4.00 acre-feet (af) of water as evidenced by Water Right Number 91-5010. Heretofore, the water has been diverted from the following points located: (1) Well – North 390 feet and East 1730 feet from the SW Corner of Section 17, T13S R7E, SLB&M; (2) Well – North 615 feet and West 200 feet from the S¼ Corner of Section 13, T13S, R6E, SLB&M; (3) Well-South 70 feet and West 370 feet from the NE Corner of Section 24, T13S R6E, SLB&M; (4) Well – North 330 feet and West 1020 feet from the SE Corner of Section 13, T13S, R6E, SLB&M. The water has been used for year-round industrial purposes (uses associated with the operation of the Skyline Mines). The water has been used in all or portion(s) of Section 13, T13S, R6E, SLB&M; and Section 17, T13S, R7E, SLB&M.

Hereafter, it is proposed to divert 4.00 acre-feet of water from points of diversion changed to: (1) Well - North 615 feet and West 200 feet from the S¼ Corner of Section 13, T13S, R6E, SLB&M; (2) Well - North 330 feet and West 1020 feet from the SE Corner of Section 13, T13S, R6E, SLB&M. The water is to be used for other purposes (Exploratory drilling incidental to coal mining) from June 15 to November 30. The place of use of the water is being changed to all or portion(s) of Sections 28, 29, 32, & 33, T13S, R6E, SLB&M; and Sections 5 & 10, T14S, R6E, SLB&M.

Notice of this temporary change application was not published in a newspaper. It is the opinion of the State Engineer that it meets the criteria of Section 73-3-3 and 73-3-8 of the Utah Code for the approval of temporary change applications.

It is the opinion of the State Engineer that this temporary change application can be approved without adversely affecting existing rights.

It is, therefore, **ORDERED** and Temporary Change Application Number 91-5010 (t43725) is hereby **APPROVED** subject to prior rights and the following condition(s):

- 1) **This application shall automatically expire one year from the date of this approval.**
- 2) **No more water may be diverted during the use period than is represented by the stock in the Price River Water User's Association or the equivalent that is approved by the Association in times of shortage.**

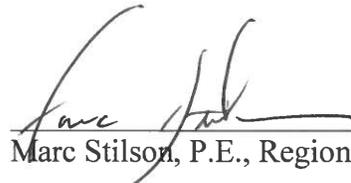
- 3) **Installation of a totalizing water meter(s) at the expense of the applicants is required. Installed water meter(s) shall be available to the Price River Commissioner at the expense of the applicants.**
- 4) **The water being diverted shall be regulated by the Price River Commissioner at the expense of the applicants.**
- 5) **Continued ownership of the stock certificates, which is the basis for the change, shall be required in order to maintain this application.**
- 6) **The annual diversion and depletion limits may not exceed 4.00 acre-feet of water respectively.**

**It is the applicants' responsibility to maintain a current address with this office and to update ownership of their water right. Please notify this office immediately of any change of address or for assistance in updating ownership. Additionally, if ownership of this water right or the property with which it is associated changes, the records of the Division of Water Rights should be updated. For assistance in updating title to the water right please contact the Division at the phone number below.**

Your contact with this office, should you need it, is with the Southeastern Regional Office. The telephone number is 435-613-3750.

This Order is subject to the provisions of Administrative Rule R655-6-17 of the Division of Water Rights and to Sections 63G-4-302, 63G-4-402, and 73-3-14 of the Utah Code which provide for filing either a Request for Reconsideration with the State Engineer or for judicial review with the appropriate District Court. A Request for Reconsideration must be filed with the State Engineer within 20 days of the date of this Order. However, a Request for Reconsideration is not a prerequisite to filing for judicial review. A petition for judicial review must be filed within 30 days after the date of this Order or, if a Request for Reconsideration has been filed, within 30 days after the date the Request for Reconsideration is denied. A Request for Reconsideration is considered denied when no action is taken 20 days after the Request is filed.

Dated this 25 day of JUNE, 2018.

  
\_\_\_\_\_  
Marc Stilson, P.E., Regional Engineer

Mailed a copy of the foregoing Order this 25 day of June, 2018 to:

ORDER OF THE STATE ENGINEER  
Temporary Change Application Number  
91-5010 (t43725)  
Page 3

Canyon Fuel Company LLC  
Attn: Land Department  
225 North 5th Street Sute 900  
Grand Junction CO 81504

Price River Water User`s Association  
375 South Carbon Avenue A-10  
Price, Utah 84501

Derris Jones, River Commissioner  
1636 West Haycock Lane  
Spring Glen, UT 84526

Division of Water Rights  
Distribution Section  
c/o Susan Odekirk  
PRICE RIVER

BY:   
\_\_\_\_\_  
Michele Gabb, Regional Secretary



GARY R. HERBERT  
*Governor*  
SPENCER J. COX  
*Lieutenant Governor*

# State of Utah

DEPARTMENT OF NATURAL RESOURCES

Division of Water Rights

MICHAEL R. STYLER  
*Executive Director*

KENT L. JONES  
*State Engineer/Division Director*

## ORDER OF THE STATE ENGINEER For Temporary Change Application Number 93-228 (t43724)

Temporary Change Application Number 93-228 (t43724) in the names of Canyon Fuel Company and Huntington Cleveland Irrigation Company was filed on May 9, 2018, to change the point of diversion, places of use, and uses of 4.00 acre-feet (af) of water as evidenced by Water Right Number 93-228. Heretofore, the water has been diverted from a surface source located North 960 feet and West 440 feet from the E $\frac{1}{4}$  Corner of Section 15, T17S, R8E, SLB&M. The water has been used in all or portion(s) of Sections 12, 13, 14, 25, & 26, T17S, R8E, SLB&M; Sections 7, 8, 9, 10, 12, 16, 17, 18, 19, 20, 22, 27, 28, 29, 33, & 34, T17S, R9E, SLB&M; and Sections 2, 3, 4, 8, 9, 10, 11, 15, 16, & 17, T18S, R9E, SLB&M.

Hereafter, it is proposed to divert 4.00 acre-feet of water from points of diversion changed to: (1) Surface - South 230 feet and West 700 feet from the NE Corner of Section 10, T14S, R6E, SLB&M; (2) Surface - South 2250 feet and East 1420 feet from the NW Corner of Section 27, T13S, R6E, SLB&M; (3) Surface - South 575 feet and West 1780 feet from the NE Corner of Section 3, T14S, R6E, SLB&M. The water is to be used for year-round industrial purposes (Exploratory drilling incidental to coal mining). The place of use of the water is being changed to all or portion(s) of Sections 28, 29, 32, & 33, T13S, R6E, SLB&M; and Sections 5 & 10, T14S, R6E, SLB&M.

Notice of this temporary change application was not published in a newspaper. It is the opinion of the State Engineer that it meets the criteria of Section 73-3-3 and 73-3-8 of the Utah Code for the approval of temporary change applications.

It is the opinion of the State Engineer that this temporary change application can be approved without adversely affecting existing rights.

It is, therefore, **ORDERED** and Temporary Change Application Number 93-228 (t43724) is hereby **APPROVED** subject to prior rights and the following condition(s):

- 1) This application shall automatically expire one year from the date of this approval.
- 2) No more water may be diverted during the use period than is represented by the stock in the Huntington -Cleveland Irrigation Company, or the equivalent that is approved by the Company in times of shortage.
- 3) The water being changed shall be regulated by the Huntington Creek Commissioner at the expense of the applicants.

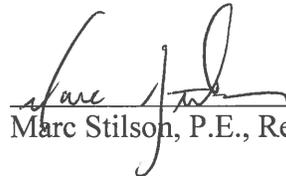
- 4) Continued ownership of the stock certificates, which represent the underlying right for this change application, shall be required in order to maintain this change application.
- 5) The annual diversion and depletion limit may not exceed 4.00 acre-feet of water respectively.

**It is the applicants' responsibility to maintain a current address with this office and to update ownership of their water right. Please notify this office immediately of any change of address or for assistance in updating ownership. Additionally, if ownership of this water right or the property with which it is associated changes, the records of the Division of Water Rights should be updated. For assistance in updating title to the water right please contact the Division at the phone number below.**

Your contact with this office, should you need it, is with the Southeastern Regional Office. The telephone number is 435-613-3750.

This Order is subject to the provisions of Administrative Rule R655-6-17 of the Division of Water Rights and to Sections 63G-4-302, 63G-4-402, and 73-3-14 of the Utah Code which provide for filing either a Request for Reconsideration with the State Engineer or for judicial review with the appropriate District Court. A Request for Reconsideration must be filed with the State Engineer within 20 days of the date of this Order. However, a Request for Reconsideration is not a prerequisite to filing for judicial review. A petition for judicial review must be filed within 30 days after the date of this Order or, if a Request for Reconsideration has been filed, within 30 days after the date the Request for Reconsideration is denied. A Request for Reconsideration is considered denied when no action is taken 20 days after the Request is filed.

Dated this 25 day of JUNE, 2018.

  
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Marc Stilson, P.E., Regional Engineer

Mailed a copy of the foregoing Order this 25 day of June, 2018 to:

Canyon Fuel Company  
Attn: Land Department  
225 North 5th Street, Suite 900  
Grand Junction CO 81501

Huntington Cleveland Irrigation Company

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P.O. Box 327  
Huntington UT 84528

Brett Leamaster, River Commissioner  
PO Box 1478  
320 West 100 South  
Huntington, UT 84528

Division of Water Rights  
Distribution Section  
c/o Susan Odekirk  
HUNTINGTON CREEK

BY: *M Gabb*  
Michele Gabb, Regional Secretary