



**Kerr-McGee Oil & Gas Onshore LP**

**Topsoil Protection Plan**

**Descent Fed 8-22HZ Well Pad and Facility  
SE ¼ NE ¼, Sec 22, T4N, R63W**

**Weld County, Colorado**

**December, 2023**

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**1.0 INTRODUCTION**

Kerr-McGee Oil & Gas Onshore LP (KMOG) has developed this site-specific Topsoil Protection Plan to establish proper planning and management of soil during oil and gas location construction, and subsequent surface reclamation of the disturbed area(s.) All topsoil management shall be in accordance with the Colorado Energy and Carbon Management Commission (ECMC) Series 1000 Reclamation Rules 1001.a, 1002.b and 1002.c requirements.

**2.0 SITE DESCRIPTION**

Operator	Kerr-McGee Oil & Gas Onshore LP
Project / Site Name:	Descent Fed 8-22HZ Well Pad and Facility
Location:	Sec 22, T4N, R63W, Weld County, Colorado
Total Area of Project:	16.60 acres
Topsoil Depth	Approximately 6"
Estimated Topsoil Salvaged	9,006 Cubic Yards
Estimated Topsoil Stored for Final Rec	6,470 Cubic Yards
Description of Existing Vegetation:	Existing vegetation on the subject property is disturbed grassland, primary use is rangeland / pastureland.
Soil Type(s):	70 – Valent sands, 3 to 9 percent slopes, HSG: A
Operator ID:	47120
Reclamation Manager Contact:	Austin Lee, HSE Advisor Occidental Petroleum Corporation Office: (970) 515-1058

**3.0 SITE INVESTIGATION**

National Resources Conservation Service (NRCS) soil survey data has been reviewed to determine sampling intervals and locations to identify topsoil depths, texture, and fertility for development of grading plans, topsoil management, interim reclamation plans, and for final reclamation after plugging and abandonment. Topsoil depth pit excavations and photo reports shall occur twice within each soil map unit within the disturbance area, with additional pits determined by size of unit, topography, land use change or distinct visual surface changes. A minimum of the first 6 inches of depth will be included for analysis on rangeland even if less than 6 inches of topsoil is identified during pre-construction site survey. Refer to Appendices A, B, C, and D for site-specific sampling information.

#### **4.0 PROPOSED SEQUENCE OF MAJOR ACTIVITIES**

##### **4.1. Topsoil Removal**

Depth of each soil horizon will vary with individual soil units, and determination of depth and proper removal will be monitored during construction by physical characteristics of color, density, and texture change of soil, and as determined during Site Investigation. Topsoil may not be removed during wet soil moisture conditions, as field determined considering soil texture.

##### **4.2. Subsoil Horizon Separation**

Lower soil horizons will be stockpiled separately from topsoil where it can be used for contouring during reclamation and preserved in order of original state. Distinctly visible soil horizons or soil types shall be stockpiled separately (i.e., gravel or shale layers). Under no circumstances shall subsoil be mixed with topsoil, nor placed on top of the dedicated topsoil stockpile(s).

##### **4.3. Stockpile Storage and Stabilization**

Best management practices will be implemented for all topsoil stockpiles stored on site to mitigate erosion, compaction, and contamination, and to maintain soil microbial activity for later use during redistribution and reclamation activities. Stabilization will be timed to occur immediately following stockpiling efforts during the construction phase, as practicable, and as ground conditions allow.

##### **4.4. Recontouring and Compaction Relief**

The first material to backfill will be from excavated subsoil materials, and compacted to avoid subsidence, but not restrictive to root growth of plants. The stockpiled soil horizons will be replaced in order and graded with the adjacent undisturbed land. Ripping/subsoiling will be required prior to topsoil redistribution if soil is overly compacted from vehicle or equipment traffic.

##### **4.5. Topsoil Redistribution**

The stockpiled topsoil will be redistributed uniformly and to minimize compaction of soil. Topsoil may not be redistributed during wet soil moisture conditions. Topsoil should be leveled with the adjacent, undisturbed land to match surrounding topography. Special consideration will apply to redistribution and grading of irrigable land to replace designated ditches and channels, and ensure uniform coverage by flood irrigation water.

#### **5.0 TOPSOIL STORAGE REQUIREMENTS**

##### **5.1. Calculations**

Stored topsoil amounts to facilitate subsequent or final reclamation shall be calculated based off areas remaining for production operations and integrated as part of the reclamation area per Rule 1003. Total salvageable topsoil is calculated by converting disturbed acreage into square feet, multiplying by the depth of topsoil identified during a pre-construction environmental survey, and converting square feet to cubic yards.

##### **5.2. Interim Reclamation**

Placement and distribution will be determined by disturbance area boundaries, surface owner input, land use, and topography.

##### **5.3. Topsoil Protection**

Stored topsoil shall be protected from erosion and to maintain soil microbial activity and establish vegetative cover. Management practices include proper design of stockpile depth and contour, seeding, stabilizing with mulch or similar biodegradable product, track walking, perimeter control(s) or any combination. Seeding will occur by broadcast or drill, and will be dependent on mix, soil type, topography, and area of coverage. Seeding will occur during the appropriate season and timed to capitalize on soil

moisture to not compromise germination and establishment. Weeds on stockpiles shall be controlled as to prevent production of weed seed and/or enough biomass that would interfere with redistribution of soil or cause onsite debris.

#### **5.4. Signage and Identification**

Stored topsoil locations will be documented per Rule 407. Form 45, Location Construction Report. Signage identifying topsoil shall be installed, where feasible, based on land use.

### **6.0 STORMWATER CONTROLS/BMPS FOR TOPSOIL STOCKPILE**

Erosion, degradation, sedimentation and topsoil loss from stormwater and snowmelt will be managed by a combination of control measures and best management practices, per phase, and as detailed below.

#### **6.1 Construction Phase**

- *Ditch and berm* shall be installed around the perimeter of the location, and subsequently around all topsoil stockpiles, to intercept and divert stormwater run-on/run-off and sediment from precipitation and melt events.
- *Track packing* all topsoil stockpiles will occur to prevent erosion from stormwater and wind, as well as provide temporary stabilization.
- *Seeding and crimped straw mulch* will be applied to prevent erosion and soil loss from stormwater and wind.
- *Vegetation establishment* through seeding efforts will promote soil health and maintain carbon exchange.
- *Weed control* will occur seasonally and as needed to hinder the spread of weeds throughout the topsoil stockpile(s) and help native grass establishment.

#### **6.2 Drilling Phase**

- *Ditch and berm* shall be installed around the perimeter of the location, and subsequently around all topsoil stockpiles, to intercept and divert stormwater run-on/run-off and sediment from precipitation and melt events.
- *Track packing* all topsoil stockpiles will occur to prevent erosion from stormwater and wind, as well as provide temporary stabilization.
- *Seeding and crimped straw mulch* will be applied to prevent erosion and soil loss from stormwater and wind.
- *Vegetation establishment* through seeding efforts will promote soil health and maintain carbon exchange.
- *Weed control* will occur seasonally and as needed to hinder the spread of weeds throughout the topsoil stockpile(s) and help native grass establishment.

#### **6.3 Production Phase**

- *Vegetation establishment* through seeding efforts will promote soil health and maintain carbon exchange.
- *Weed control* will occur seasonally and as needed to hinder the spread of weeds throughout the topsoil stockpile(s) and help native grass establishment.

Refer to the Site Plan (Appendix D) for additional information on control measures.

## **7.0 INSPECTION AND MAINTENANCE PROCEDURES**

### **7.1. Inspections**

Post-construction stormwater inspections will be conducted in accordance with the Colorado Energy and Carbon Management Commission Rules 1002.f and 1003.e, to document the status of the location, maintenance needs, effectiveness of stormwater control measures, to evaluate pollution sources, to document reclamation / final stabilization progress and necessary weed control. Inspections will be managed by the Reclamation Contact and conducted by their designated representative(s). Inspection forms will document current conditions, including evidence of or potential for off-site erosion, weed control, additional control measures that are needed, or repair and maintenance issues.

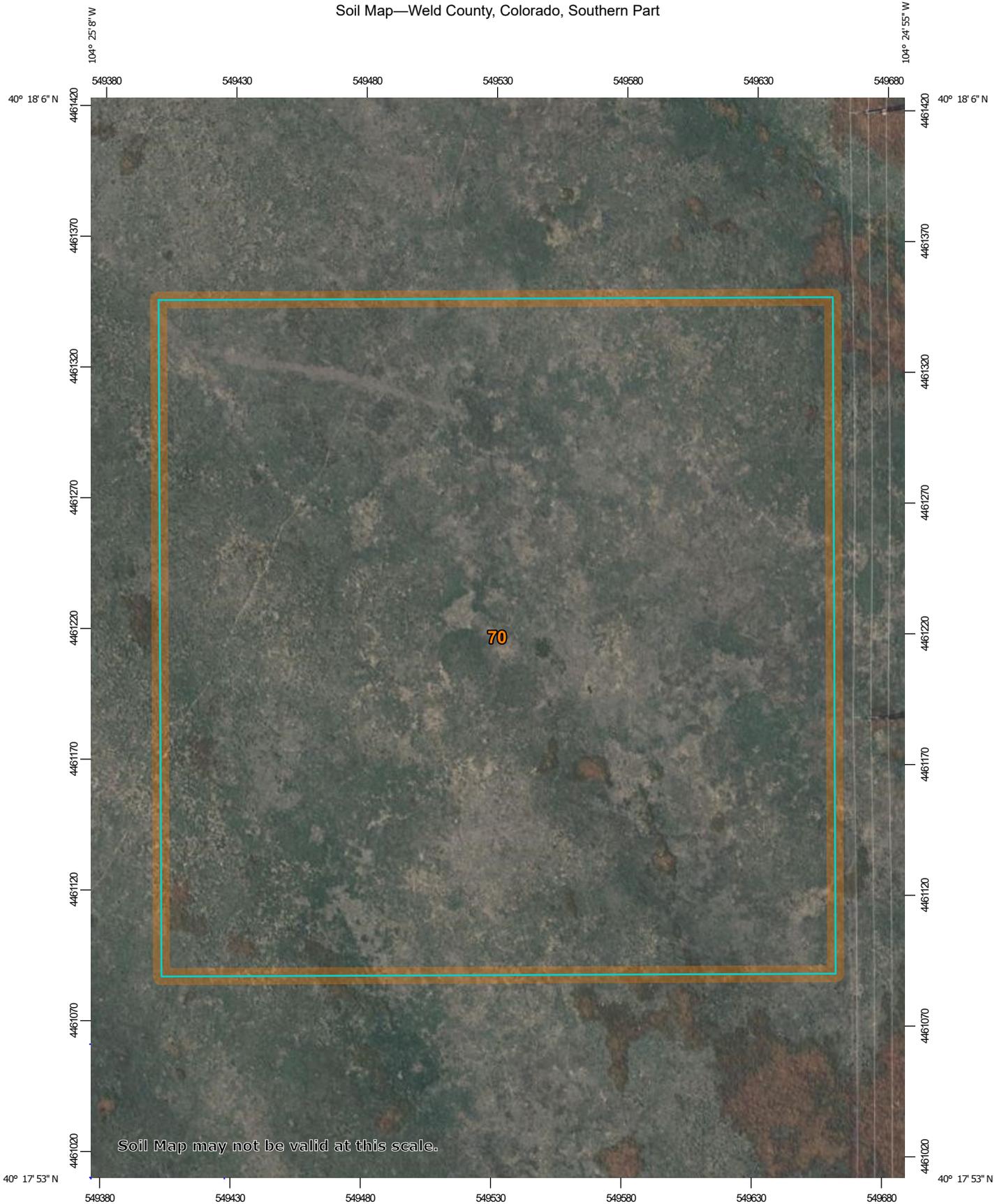
Findings, inspection records and site maps are documented electronically and available within 24 hours of any inspection.

### **7.2. Maintenance**

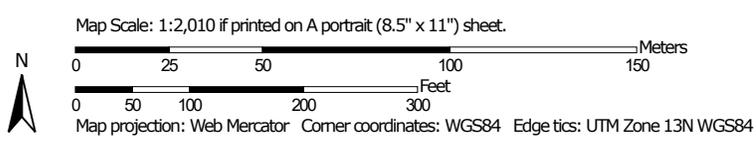
For maintenance items discovered, proposed repairs or upgrades to stormwater control measures to ensure topsoil protections will be documented and coordinated with production crews. Timeline for completion of maintenance items is a priority and will depend on scope; but in all cases, shall not be completed until field conditions allow for safe access, and utility clearance has been confirmed for items requiring ground disturbance / earthwork.

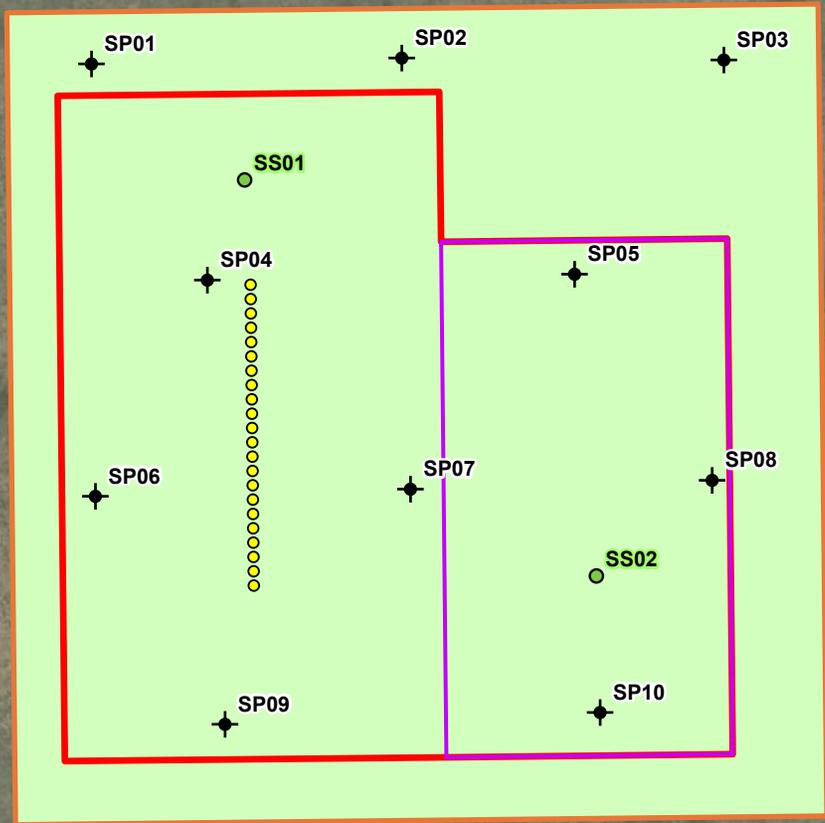
**APPENDIX A**  
**NRCS SOIL SURVEY DATA AND SAMPLING LOCATIONS**

Soil Map—Weld County, Colorado, Southern Part



Soil Map may not be valid at this scale.





**Legend**

- ✦ Soil Pit
- Soil Sample
- Proposed Well
- ▭ Oil & Gas Location
- ▭ Working Pad Surface (WPS)
- ▭ Facility Pad

**NRCS Soils**  
(Map Unit Symbol - Map Unit Name)

- ▭ 70 - Valent sand, 3% to 9% slopes

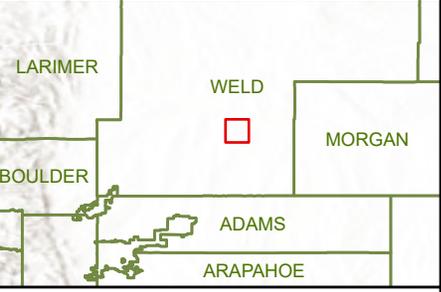
0 100 200 Feet

N

**KERR-MCGEE OIL & GAS**

**Descent Fed 8-22HZ OGD**  
**Rule 304.c.(14) Topsoil Protection Plan**  
Soil Pit Location Map

Disturbance Area: 16.60 Acres  
40.300086, -104.417099  
SENE Qtr-Qtr, Sec 22, T4N, R63W, 6PM  
Weld County, CO



**APPENDIX B**  
**TOPSOIL DEPTH PHOTOLOG**

## **INTRODUCTION**

Per Colorado Oil and Gas Conservation Commission (COGCC) Rule 304.c.(14), a Topsoil Protection Plan (TPP) is required for every Form 2A, Oil & Gas Location Assessment Series consistent with the requirements of Rule 1002.c – the protection of soils disturbed by oil and gas operations.

Quandary Consultants, LLC (Quandary) conducted soil sampling on November 06, 2023, for the Kerr-McGee Oil & Gas Onshore L.P. (KMOG) proposed Descent 8-22HZ Oil & Gas Location. The soil fertility and characteristic evaluations included in this document are intended to supplement the TPP, pursuant with the Rule 304.c.(14) TPP Guidance.

## **SOIL PIT LOG**

Table 1. Soil Pit Sample 01 (SP01) soil characteristics sampled November 06, 2023. No discernible soil horizons could be identified within 1 to 18 inches.

<b>Sample Name (Soil Horizon)</b>	<b>Soil Horizon Delineation Depth (Inches)</b>	<b>Texture</b>	<b>Munsell Color</b>
SP01 (A-C)	>18	Loamy sand	10YR 3/4

Photo 1. SP01.



Table 2. Soil Pit Sample 02 (SP02) soil characteristics sampled November 06, 2023. No discernible soil horizons could be identified within 1 to 18 inches.

Sample Name (Soil Horizon)	Soil Horizon Delineation Depth (Inches)	Texture	Munsell Color
SP02 (A-C)	>18	Loamy sand	10YR 4/3

Photo 2. SP02.



Table 3. Soil Pit Sample 03 (SP03) soil characteristics sampled November 06, 2023. No discernible soil horizons could be identified within 1 to 18 inches.

Sample Name (Soil Horizon)	Soil Horizon Delineation Depth (Inches)	Texture	Munsell Color
SP03 (A-C)	>18	Loamy sand	10YR 4/3

Photo 3. SP03.



Table 4. Soil Pit Sample 04 (SP04) soil characteristics sampled November 06, 2023. No discernible soil horizons could be identified within 1 to 18 inches.

Sample Name (Soil Horizon)	Soil Horizon Delineation Depth (Inches)	Texture	Munsell Color
SP04 (A-C)	>18	Loamy sand	10YR 3/3

Photo 4. SP04.



Table 5. Soil Pit Sample 05 (SP05) soil characteristics sampled November 06, 2023. No discernible soil horizons could be identified within 1 to 18 inches.

Sample Name (Soil Horizon)	Soil Horizon Delineation Depth (Inches)	Texture	Munsell Color
SP05 (A-C)	>18	Loamy sand	10YR 4/3

Photo 5. SP05.



Table 6. Soil Pit Sample 06 (SP06) soil characteristics sampled November 06, 2023. No discernible soil horizons could be identified within 1 to 18 inches.

Sample Name (Soil Horizon)	Soil Horizon Delineation Depth (Inches)	Texture	Munsell Color
SP06 (A)	0-12	Loamy sand	10YR 3/3
SP06 (B-C)	12-18	Sand	10YR 3/4

Photo 6. SP06.



Table 7. Soil Pit Sample 06 (SP07) soil characteristics sampled November 06, 2023. No discernible soil horizons could be identified within 1 to 18 inches.

Sample Name (Soil Horizon)	Soil Horizon Delineation Depth (Inches)	Texture	Munsell Color
SP07 (A-C)	>18	Loamy sand	10YR 3/4

Photo 7. SP07.



Table 8. Soil Pit Sample 08 (SP08) soil characteristics sampled November 06, 2023. No discernible soil horizons could be identified within 1 to 18 inches.

Sample Name (Soil Horizon)	Soil Horizon Delineation Depth (Inches)	Texture	Munsell Color
SP08 (A)	0-10	Loamy sand	10YR 3/4
SP08 (B-C)	10-18	Sand	10YR 3/6

Photo 8. SP08.



Table 9. Soil Pit Sample 09 (SP09) soil characteristics sampled November 06, 2023. No discernible soil horizons could be identified within 1 to 18 inches.

Sample Name (Soil Horizon)	Soil Horizon Delineation Depth (Inches)	Texture	Munsell Color
SP09 (A)	0-14	Loamy sand	10YR 3/4
SP09 (B-C)	14-18	Sand	10YR 3/6

Photo 9. SP09.



Table 10. Soil Pit Sample 10 (SP10) soil characteristics sampled November 06, 2023. No discernible soil horizons could be identified within 1 to 18 inches.

Sample Name (Soil Horizon)	Soil Horizon Delineation Depth (Inches)	Texture	Munsell Color
SP10 (A)	0-12	Loamy sand	10YR 3/4
SP10 (B-C)	12-18	Sand	10YR 3/6

Photo 10. SP10.



**APPENDIX C**  
**SOIL ANALYSIS**

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**Dec 14, 2023**

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4480 GARFIELD STREET  
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IDENTIFICATION  
**CHRIS COOPER  
OXY - DESCENT 8-22HZ**

**SOIL ANALYSIS REPORT**

LAB NUMBER	SAMPLE IDENTIFICATION	ORGANIC MATTER L.O. I. percent RATE	PHOSPHORUS					NEUTRAL AMMONIUM ACETATE (EXCHANGEABLE)				pH		CATION EXCHANGE CAPACITY C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED)						
			P <sub>1</sub> (WEAK BRAY) 1:7		P <sub>2</sub> (STRONG BRAY) 1:7		OLSEN BICARBONATE P	K	Mg		Ca		Na		SOIL pH 1:1	BUFFER INDEX	% K	% Mg	% Ca	% H	% Na
			ppm	RATE	ppm	RATE			ppm	RATE	ppm	RATE									
*426*																					
81337	SS01 0-6	0.7 VL	24 H	41 H			149 VH	72 H	468 M			5.5	6.8	4.5	8.5	13.3	52.0	26.2			
81338	SS01 6-12	0.3 VL	10 L	18 L			130 VH	102 VH	641 H			7.0		4.4	7.6	19.3	73.1	0.0			
81339	SS01 12-18	0.3 VL	8 L	19 L			133 VH	94 VH	589 H			7.3		4.1	8.3	19.1	72.6	0.0			
81340	SS02 0-6	0.3 VL	13 L	28 M			130 VH	109 VH	635 M			6.1	6.9	5.1	6.5	17.8	62.3	13.4			
81341	SS02 6-12	0.1 VL	9 L	24 M			102 H	140 VH	790 H			6.8		5.4	4.8	21.6	73.6	0.0			
81342	SS02 12-18	0.5 VL	5 VL	17 L			100 M	166 VH	862 H			6.9		5.9	4.3	23.4	72.3	0.0			

LAB NUMBER	NITRATE-N (FIA)										SULFUR S ICAP		ZINC Zn DTPA		MANGANESE Mn DTPA		IRON Fe DTPA		COPPER Cu DTPA		BORON B SORB. DTPA		EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/cm RATE	
	SURFACE			SUBSOIL 1			SUBSOIL 2				ppm	RATE	ppm	RATE	ppm	RATE	ppm	RATE	ppm	RATE	ppm	RATE			
	ppm	lbs/A	depth (in)	ppm	lbs/A	depth (in)	ppm	lbs/A	depth (in)	Total lbs/A															
*426*																									
81337	4	7	0-6							7	5 VL	0.6 L	10 M	23 H	0.3 VL	0.1 VL	0.1 VL	0.1 VL	0.1 VL	0.1 VL		0.1 L			
81338	1	2	6-12							2	3 VL	0.1 VL	2 VL	8 L	0.2 VL	0.1 VL	0.1 VL	0.1 VL	0.1 VL	0.1 VL		0.1 L			
81339	1	2	12-18							2	3 VL	0.1 VL	1 VL	5 VL	0.2 VL	0.1 VL	0.1 VL	0.1 VL	0.1 VL	0.1 VL		0.1 L			
81340	2	4	0-6							4	3 VL	0.1 VL	2 VL	11 M	0.3 VL	0.1 VL	0.1 VL	0.1 VL	0.1 VL	0.1 VL		0.1 L			
81341	2	4	6-12							4	2 VL	0.1 VL	1 VL	8 L	0.2 VL	0.1 VL	0.1 VL	0.1 VL	0.1 VL	0.1 VL		0.1 L			
81342	1	2	12-18							2	3 VL	0.1 VL	1 VL	6 L	0.2 VL	0.1 VL	0.1 VL	0.1 VL	0.1 VL	0.1 VL		0.1 L			

REV.10/17

The above analytical results apply only to the sample(s) submitted. Samples are retained a maximum of 30 days. Our reports and letters are for the exclusive and confidential use of our clients and may not be reproduced in whole or in part, nor may any reference be made to the work, the results, or the company in any advertising, news release, or other public announcements without obtaining our prior written authorization.

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**OXY - DESCENT 8-22HZ**

## ADDITIONAL SOIL ANALYSIS

Labnum *426*	Sample ID	Chloride CaNO3 ppm	Ammonia Nitrogen KCl extract ppm	Exchangable Sodium % Calculation
81337	SS01 0-6 <i>Depth: 0-6</i>	1	5	0.04
81338	SS01 6-12 <i>Depth: 6-12</i>	1	3	0.02
81339	SS01 12-18 <i>Depth: 12-18</i>	1	2	0.02
81340	SS02 0-6 <i>Depth: 0-6</i>	1	4	0.04
81341	SS02 6-12 <i>Depth: 6-12</i>	1	2	0.04
81342	SS02 12-18 <i>Depth: 12-18</i>	1	2	0.04

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### SODIUM ADSORPTION RATIO REPORT

Method Lab Number Units	Sample Id	CALCULATED Sodium Adsorption Ratio	SATURATED PASTE EXTRACTION		
			Sodium (Water Soluble) mg/L	Magnesium (Water Soluble) mg/L	Calcium (Water Soluble) mg/L
42681337SS01	0-6	0.2	3	5	21
42681338SS01	6-12	0.1	2	5	18
42681339SS01	12-18	0.1	3	4	18
42681340SS02	0-6	0.2	3	2	9
42681341SS02	6-12	0.2	3	4	14
42681342SS02	12-18	0.2	3	3	14

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## Free Calcium Carbonate Report

Laboratory Number	Sample ID	Level Found
42681337	SS01 0-6	0.51 %
42681338	SS01 6-12	0.60 %
42681339	SS01 12-18	0.33 %
42681340	SS02 0-6	0.39 %
42681341	SS02 6-12	0.10 %
42681342	SS02 12-18	0.03 %

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## SOIL TEXTURE REPORT

Lab Number	Sample Identification	SAND	SILT	CLAY	SOIL TYPE
42681337	SS01 0-6	90%	6%	4%	SAND
42681338	SS01 6-12	90%	4%	6%	SAND
42681339	SS01 12-18	90%	2%	8%	SAND
42681340	SS02 0-6	90%	2%	8%	SAND
42681341	SS02 6-12	88%	2%	10%	LOAMY SAND
42681342	SS02 12-18	88%	2%	10%	LOAMY SAND

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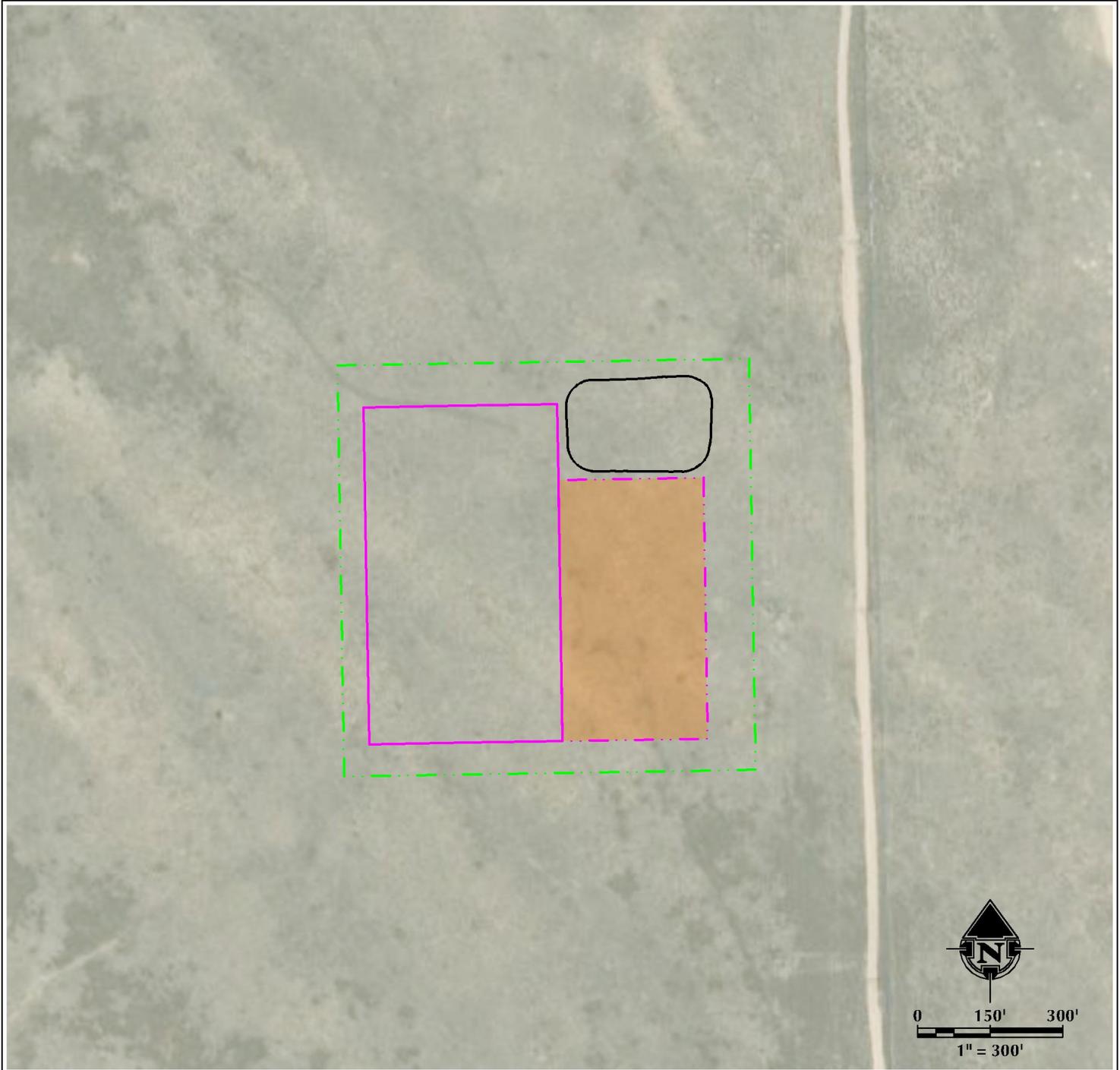
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**APPENDIX D**  
**SITE PLAN**

# TOPSOIL STOCKPILE PLACEMENT EXHIBIT

## DESCENT 8-22HZ

SE1/4 NE1/4 SECTION 22, TOWNSHIP 4 NORTH, RANGE 63 WEST, 6TH P.M., WELD COUNTY, COLORADO



### LEGEND

- PROPOSED OIL & GAS LOCATION
- PROPOSED WELL PAD
- PROPOSED FACILITY PAD
- TOPSOIL STOCKPILE

K:\AMADOR\017\2017\_197\_CERRIL\_RANCH\_T4N\_R63W\DWG\02\_DESCENT.dwg, 11/21/2023 11:48:32 AM, Iscales



**609 CONSULTING, LLC**  
LOVELAND OFFICE  
6706 North Franklin Avenue  
Loveland, Colorado 80538  
Phone: 970-776-4331

SHERIDAN OFFICE  
1095 Saberton Avenue  
Sheridan, Wyoming 82801  
Phone: 307-674-0609

DATE SURVEYED: 9/27/23  
DATE: 11/22/23  
DRAFTER: AMPZ  
REVISED:

DATA SOURCES:  
- AERIAL COURTESY OF NAIP.

PREPARED FOR:

**Kerr-McGee Oil & Gas Onshore LP**

**APPENDIX E**  
**SUMMARY OF SITE-SPECIFIC BMPs FOR TOPSOIL MANAGEMENT AND PROTECTION**

**SUMMARY OF SITE-SPECIFIC TOPSOIL MANAGEMENT PRACTICES FOR CONSTRUCTION, PRODUCTION, AND FINAL RECLAMATION PHASES:**

Topsoil will be managed during construction by a combination of site-specific erosion and sediment control measures including: a temporary diversion ditch & berm around the entire location to manage run-on and run-off. Short term management of topsoil will include track packing to prevent wind and water erosion. Long term management will include seeding with a native seed mix and crimping straw mulch for erosion control and water retention. Vegetation establishment on stockpiles and weed control will reduce erosion as well as maintain microbial activity. During the construction phase topsoil will be stockpiled ~6' tall along the northeastern perimeter of the well pad and facility pad at a 4 to 1 slope to minimize erosion potential. Topsoil managed during interim and production phases will be maintained with BMPs including seeding with a native seed mix and crimped straw mulch and weed monitoring / management. Long-term topsoil stockpiles will be placed along the western and southwestern perimeter of the well pad and facility pad ~6' tall at a 4 to 1 slope to reduce erosion and maintain microbial activity for an extended time. Inspections will review all control measures / BMPs implemented, their status, and whether repair, replacement, or addition is needed, including weed maintenance when necessary. Maintenance and repair will be completed as soon as practicable, immediately in most cases.