Kerr-McGee Oil & Gas Onshore LP

Topsoil Protection Plan

Swartz 2-4HZ Well Pad and Facility
NE ¼, SE ¼, Sec 4, T3N, R67W

Weld County, Colorado

January, 2022

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

Kerr-McGee Oil & Gas Onshore LP (KMOG) has developed this site-specific Topsoil Protection Plan to establish proper planning for reclamation of the land and protection of soil affected by oil and gas location construction and operations. All topsoil management shall be in accordance with Colorado Oil and Gas Conservation Commission (COGCC) 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:	Swartz 2-4HZ Well Pad and Facility
Location:	Sec 4, T3N, R67W, Weld County, Colorado
Total Area of Project:	15.79 acres
Topsoil Depth	12”-20”
Estimated Topsoil Salvaged	17,143 Cubic Yards
Description of Existing Vegetation:	Existing vegetation on the subject property is fallow, land use is agriculture.
Soil Type(s):	38 – Nelson fine sandy loam, 3 to 9 percent slopes, HSG: B 61 – Tassel fine sandy loam, 1 to 20 percent slopes, HSG: D 82 – Wiley-Colby complex, 1 to 3 percent slopes, HSG: B
Operator ID:	47120
Reclamation Manager Contact:	Austin Lee – HSE Advisor Occidental Petroleum Corporation (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 topography, land use change or distinct visual surface changes. Composite samples are gathered within each soil map unit and for every 2 acres of disturbance area at 0 to 6 inches depth, using standard agronomic sampling procedures, and for fertility and texture analysis. Refer to Appendices A, B, C, and D for this 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 removed topsoil stockpile

4.3. Topsoil Protection

If topsoil will be stockpiled for extended periods of time, it shall be protected from degradation due to erosion, compaction and contamination and to maintain soil microbial activity, using best management practices such as stabilizing with mulch, seeding, track walking, perimeter control or a combination of BMPs. 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. Signage shall be installed to identify topsoil stockpiles to facilitate subsequent reclamation and indicate to personnel that the area may not be disturbed during drilling and completion operations.

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, irrigable land being of importance for 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 interim reclamation area per Rule 1003.

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, using a combination of best management practices, such as proper design of stockpile depth and contour, stabilizing with mulch, seeding, track walking, perimeter control, establishment of vegetation and weed control.

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 COGCC 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

Map Scale: 1:2,380 if printed on A portrait (8.5" x 11") sheet.

N

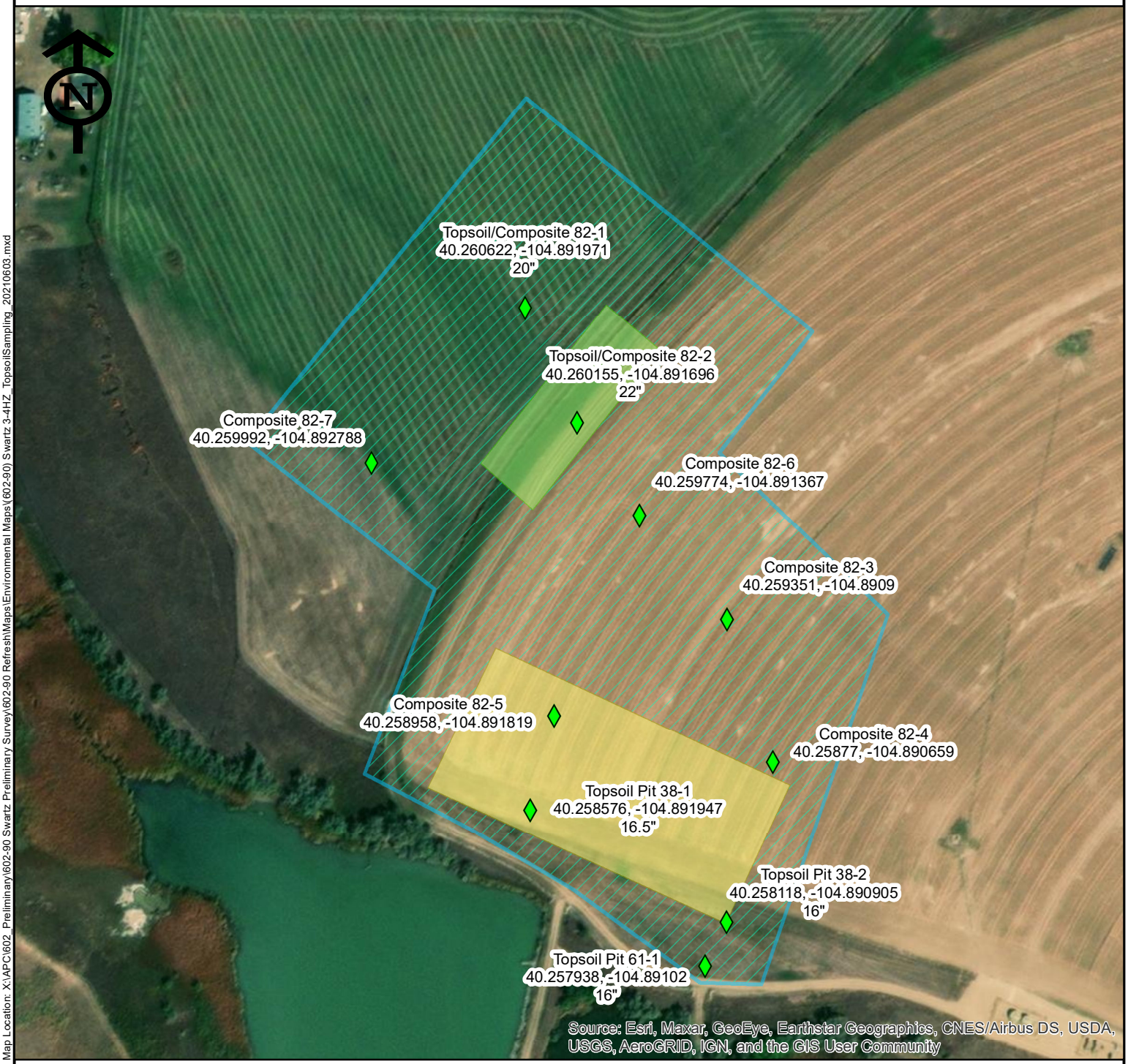
Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

(602-90) Swartz 3-4HZ

SECTION 4, TOWNSHIP 3N, RANGE 67W, 6TH P.M. WELD COUNTY, CO



Map Location: X:\APC\602_Preliminary\602-90 Swartz Preliminary Survey\602-90 Refresh\Maps\Environmental Maps\(602-90) Swartz 3-4HZ_TopsoilSampling_20210603.mxd

Soil Sample Locations

Proposed Facility

Pump Jack Area

Preliminary Survey Area

PREPARED BY:

two dot

7674 Grandview Ave., Ste. 210
Arvada, CO 80002

0 150 300 Feet

SOURCES:
Project Features, 2DOT 2021
and Kerr-McGee 2021.
Source Data Updated: 2/2021

PREPARED FOR:

KerrMcGee

Projection: Nad83 UTM 13N Date: 3/11/2021
Drafted By: SJ Reviewed By: MC

Topsoil/Composite Pit Locations & Topsoil Depths (Inches)
Figure 1

COGCC permit approved after 1/15/2021

Minor Components

Thedalund
Percent of map unit: 10 percent
Hydric soil rating: No

Terry
Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Weld County, Colorado, Southern Part
Survey Area Data: Version 20, Aug 31, 2021

Weld County, Colorado, Southern Part

38—Nelson fine sandy loam, 3 to 9 percent slopes

Map Unit Setting

National map unit symbol: 362j
Elevation: 4,800 to 5,050 feet
Mean annual precipitation: 13 to 15 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 145 to 190 days
Farmland classification: Farmland of local importance

Map Unit Composition

Nelson and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nelson

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 9 inches: fine sandy loam
H2 - 9 to 30 inches: fine sandy loam
H3 - 30 to 34 inches: weathered bedrock

Properties and qualities

Slope: 3 to 9 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: R067BY024CO - Sandy Plains
Hydric soil rating: No

Weld County, Colorado, Southern Part

61—Tassel fine sandy loam, 5 to 20 percent slopes

Map Unit Setting

National map unit symbol: 363c
Elevation: 4,850 to 5,200 feet
Mean annual precipitation: 12 to 19 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 110 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Tassel and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tassel

Setting

Landform: Breaks
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 11 inches: fine sandy loam
H2 - 11 to 15 inches: very fine sandy loam
H3 - 15 to 20 inches: weathered bedrock

Properties and qualities

Slope: 5 to 20 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
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
Calcium carbonate, maximum content: 10 percent
Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R067BY056CO - Sandstone Breaks
Hydric soil rating: No

Minor Components

Otero

Percent of map unit: 8 percent
Hydric soil rating: No

Terry

Percent of map unit: 7 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Weld County, Colorado, Southern Part
Survey Area Data: Version 20, Aug 31, 2021

Weld County, Colorado, Southern Part

82—Wiley-Colby complex, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3643
Elevation: 4,850 to 5,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 135 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Wiley and similar soils: 60 percent
Colby and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wiley

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous eolian deposits

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 60 inches: silty clay loam
H3 - 60 to 64 inches: silty clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R067BY002CO - Loamy Plains

Hydric soil rating: No

Description of Colby

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous eolian deposits

Typical profile

H1 - 0 to 7 inches: loam
H2 - 7 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R067BY002CO - Loamy Plains
Hydric soil rating: No

Minor Components

Weld

Percent of map unit: 4 percent
Hydric soil rating: No

Heldt

Percent of map unit: 4 percent
Hydric soil rating: No

Keith

Percent of map unit: 2 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Weld County, Colorado, Southern Part
Survey Area Data: Version 20, Aug 31, 2021

APPENDIX B
TOPSOIL DEPTH PHOTOLOG

Photograph 1. The topsoil depth observed was 16.5 inches. Measurements were taken from the layers observed above the plowed layer.

Photograph 2. The topsoil depth observed was 16 inches. Measurements were taken from the layers observed above the plowed layer.

Photograph 3. The topsoil depth observed was 16 inches. Measurements were taken from the layers observed above the plowed layer.

Photograph 4. The topsoil depth observed was 20 inches. Measurements were taken from the layers observed above the plowed layer.

Photograph 5. The topsoil depth observed was 22 inches. Measurements were taken from the layers observed above the plowed layer.

APPENDIX C
SOIL ANALYSIS

American Agricultural Laboratory, Inc.

700 West D Street / PO Box 370 / McCook, Nebraska 69001
Office: 308-345-3670 / FAX: 308-345-7880
www.AmAgLab.com

95029
ORIGINS LABORATORY INC
1725 ELK PLACE
DENVER CO 80211

NAME : ORIGINS

DATE RECEIVED: 05/12/2021

DATE REPORTED: 05/14/2021

SOIL TEST RESULTS

LAB NUMBER	FIELD IDENTIFICATION	SAMPLE IDENTIFICATION	Depth Inches	pH 1 : 1 Soil	pH Buffer Woodruff	EL	SOLUBLE SALTS mod. SP mmhos/cm	OM LOI %	NITRATE-N (FIA) ppm	NITRATE-N (FIA) lbs/A	PHOSPHORUS P1 ppm	PHOSPHORUS Bicarb ppm	PHOSPHORUS P2 ppm	PHOSPHORUS M2 ppm	PHOSPHORUS M3 ppm
3333650	UNIT 82 Y105191	01	0-8					2.2	4.9	12		10			

LAB NUMBER	SULFATE-S Ca-P ppm	NH4OAc (Exchangeable) K ppm	Ca ppm	Mg ppm	Na ppm	DTPA Zn ppm	Fe ppm	Mn ppm	Cu ppm	BORON Sorbitol ppm	EST. CATION EXCHANGE CAPACITY (CEC) me/100g	% SATURATION BASE	H	Ca	Mg	K	Na
3333650		219	2460	663	42					1.4	18.6	100	0	66	30	3	1

LAB NUMBER	SOLUBLE (SAT. EXT.) Ca me/L	Mg me/L	Na me/L	SODIUM ADSORPTION RATIO (SAR)	EXCH. SODIUM PERCENT (ESP)	GYPSUM REQ T/A	PARTICLE SIZE ANALYSIS SAND %	SILT %	CLAY %	SOIL TEXTURE	CHLORIDE ppm	CHLORIDE lbs/A	EXCH. NH4-N ppm	EXCH. NH4-N lbs/A	ALUMINUM ppm	TOTAL N %
3333650	3.18	1.80	1.43	0.91	1	0	31	42	27	LOAM						

SUGGESTED FERTILIZER RECOMMENDATIONS

LAB NUMBER	FIELD IDENTIFICATION	SAMPLE IDENTIFICATION	CROP TO BE GROWN	YIELD GOAL	N	P2O5	K2O	S	Zn	MgO	Fe	Mn	Cu	B	Cl	LIME REC 60% ECCE T/A
										lbs/A						
3333650	UNIT 82 Y105191	01														

Approved By: Kevin Grooms

Analysis By: American Agricultural Lab

Recommendations By: American Agricultural Lab

American Agricultural Laboratory, Inc.

700 West D St. / P.O. Box 370 / McCook, Nebraska 69001

Office: 308-345-3670 / FAX: 308-345-7880 / www.AmAgLab.com

"Analysis You Can Grow With"®

ORIGINS LABORATORY INC
1725 ELK PLACE
DENVER, CO 80211

ACCOUNT NO: 95029
DATE RECEIVED: 5/12/2021
DATE REPORTED: 5/14/2021

SATURATED PASTE EXTRACT ANALYSIS

Lab No.	Grower	Field ID	Sample ID	Depth inches	pH s.u.	Soluble Salts mmhos/cm
3333650	ORIGINS	UNIT 82 Y105191	1	0-8	8.0	0.52

Electronically Approved by: Kevin Grooms

APPENDIX D
SITE PLAN

TOPSOIL STOCKPILE PLACEMENT EXHIBIT

SWARTZ 2-4HZ

NE1/4 SECTION 4, TOWNSHIP 3 NORTH, RANGE 67 WEST, 6TH P.M. WELD COUNTY, COLORADO

LEGEND

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

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:	11/8/21
DATE:	11/24/21
DRAFTER:	GLK
REVISED:	

DATA SOURCES:
- AERIAL COURTESY OF NEARMAP

PREPARED FOR:
Kerr-McGee Oil & Gas Onshore L.P.

K:\ANADARKO\2018\2018_193_SWARTZ_T3N_R67W_SEC_4\DWG\SWARTZ_16_WELL_OPTION.DWG, 11/24/2021 3:31:26 PM, steven