

SITE-SPECIFIC QUALITY ASSURANCE & QUALITY CONTROL AUDIT



Permit Closure Type – Final

PERMIT CLOSURE REPORT – RANGELAND

Location ID 330783

Location Name COLORADO ENERGY FEDERAL-610N64W/14NWSW

Report Date

29 Nov 2024

Soil Sage has conducted a thorough data audit as part of our Quality Assurance and Quality Control (QA/QC) protocols.

Quality Assurance & Quality Control Audit

Auditor	Soil Sage
Audit Date	05/30/2023

Audit Methodology

The following source materials were consulted during the QA and QC audit process:

- ✓ Site Permit Closures provided by CIVITAS Resources
- ✓ Colorado Oil & Gas Information System – COGIS Database
- ✓ On-site Evaluation and Proprietary Soil Sage Drone Imagery data collection
- ✓ Review of legacy imagery for site location and facility parameters

All pertinent data, imagery, and materials are included at the end of this report.

Site Description

Name	COLORADO ENERGY FEDERAL-610N64W/14NWSW		
Location ID	330783		
Operator / #	HIGHPOINT OPERATING CORPORATION / 10071		
Field	PAWNEE PIONEER 67805		
County, State	WELD, CO		
Lat/Long	40.832551 / -104.520257		
	X	Planned Location	As Drilled
Facility Status	AC	Location	NWSW 14 10N64W
Facility Status Date	01/06/2021	Access Road	Oil & Gas Access
Facility Entities	X	Tank Battery	Pits
	X	Wells	X Off-Location Flowlines (Form 44)
		Domestic Taps	X On-Location Flowlines (Form 42)
Equipment Remaining on Site	X	None	Debris or Non-Oil & Gas
		List of Equipment:	
Environment Incidents & Remediation	X	None	Spill or Release (Form 19)
		Remediation (Form 27/27A)	
Inspection Corrective Actions (CA)s	<p>Corrective Actions (CA)s were detected during the QA & QC Audit.</p> <p>CA Overall Status: 11 of 11 Completed</p> <p>4 CAs:</p> <p>CA-Approving Inspection Doc # & Date: 696104745 & 07/22/2021</p> <ul style="list-style-type: none"> ○ Inspector: Erica Petrie <p>Form FIRR Doc # & Submittal Date: 696300232 & 06/05/2019</p> <ul style="list-style-type: none"> ○ Overall Status: CAC ○ Originating Field Inspection Report (FIR) Doc #: 697600273 ○ CA#: 12216 Date Completed: 02/28/2019 Wellhead sign has been installed to Rule 210.e. COGCC Decision: Approved pending re-inspection ○ CA#: 12217 Date Completed: 02/28/2019 Door from pump jack shed has been corrected to comply- Rule 603.f. COGCC Decision: Approved pending re-inspection ○ CA#: 12218 Date Completed: 02/28/2019 Fencing has been corrected to comply with Rule 603.f. COGCC Decision: Approved pending re-inspection ○ CA#: 12219 Date Completed: 02/28/2019 		

	<p>Soil and oily waste has been properly treated and disposed of in accordance with Rule 907.e.</p> <p>COGCC Decision: Approved pending re-inspection</p> <p>All corrective actions have been completed. Site ready for re-inspection.</p> <hr/> <p>7 CAs:</p> <p>CA-Approving Inspection Doc # & Date: 697600273 & 02/05/2019</p> <ul style="list-style-type: none"> ○ Inspector: Brittani Santistevan <p>Form FIRR Doc # & Submittal Date: 401503841 & 03/07/2018</p> <ul style="list-style-type: none"> ○ Overall Status: CAC ○ Originating Field Inspection Report (FIR) Doc #: 689300095 ○ CA#: 96049 Date Completed: 12/01/2017 Signage has been updated to read Fifth Creek Energy. COGCC Decision: Approved pending re-inspection ○ CA#: 96050 Date Completed: 09/22/2017 All valves, pipes, and fittings have been securely fastened. COGCC Decision: Approved pending re-inspection ○ CA#: 96051 Date Completed: 09/01/2017 The 5-gallon bucket has been removed. COGCC Decision: Approved pending re-inspection ○ CA#: 96052 Date Completed: 11/01/2017 The unused rods and tubing have been removed. COGCC Decision: Approved pending re-inspection ○ CA#: 96053 Date Completed: 09/01/2017 Debris in treater house has been cleaned up. COGCC Decision: Approved pending re-inspection ○ CA#: 96054 Date Completed: 09/22/2017 All stained soil has been cleaned up. COGCC Decision: Approved pending re-inspection ○ CA#: 96055 Date Completed: 09/29/2017 All Lock Out Tag Out (LOTO) has been completed. COGCC Decision: Approved pending re-inspection <p>All corrective actions have been completed. Site ready for re-inspection.</p> <p>Complete COGCC Inspection Search Results: Link</p>
<p>Sundry Notice (Form 4)</p>	<p>Form 4s were detected during the QA & QC Audit. See individual scout card data for details.</p>
<p>On Location Flowlines (Form 42)</p>	<p>Form 42s were detected during the QA & QC Audit. See individual scout card data for details.</p>

<p>Off-Location Flowlines (Form 44)</p>	<p>Flowline Name: COLORADO ENERGY FEDERAL FLOWLINE</p> <p>FACILITY ID: 464018</p> <ul style="list-style-type: none"> ○ Status & Date: AC & 01/06/2021 ○ Lat/Long: 40.832551 / -104.520257 <p>Form 44 Doc # & Date: 402532103 & 01/06/2021</p> <ul style="list-style-type: none"> ○ Purpose: Flowline Abandonment Verification ○ Operator Comments: Operator abandoned the majority of this flowline system in place with two exceptions. The first exception was the operator abandoned the portion of the flowline associated with Location 330688. The second exception was the operator removed (rather than abandoning in place) the western half of the flowline for Location 409326 that is on private property in accordance with the landowner on 09/17/2020. ○ Note: This flowline serves multiple Locations. ○ Attachments: Two Verification Letters of Abandonment provide additional specifics: Doc # 402532123 and Doc # 402532124.
<p>Field Inspection Form (Form INSP)</p>	<p>Form INSP Doc # & Date: 696104745 & 07/22/2021</p> <ul style="list-style-type: none"> ○ Status Summary: No Follow Up Inspection Required ○ Inspected Facilities: Well COLORADO ENERGY FEDERAL #14-4, Abandoned, Centralized Tank Battery serving Locations 330782, 330783, and 330784. ○ Inspection Status: PA ○ Inspection Date & Inspector: 07/21/2021 by Bret Evins ○ Comments: Plugged and Abandoned Well COLORADO ENERGY FEDERAL #14-3 appears to be cut/capped. Form 6 Doc # 402437973 indicates plugging, cut/cap date of 07/10/2020. Approved. Observed abandoned centralized Tank Battery serving three locations (330782, 330783, and 330784) and confirmed all equipment removed. GPS coordinates for Tank Battery: 40.839987 / -104.518626). Overall, during this inspection, NO possible compliance issues were observed. ○ Attachments: Inspection Photos Doc # 696104746. Photos show Well COLORADO ENERGY FEDERAL #14-3 as well as the Centralized Tank Battery for 3 Locations (330782, 330783, and 330784). <hr/> <p>Form INSP Doc # & Date: 696300232 & 06/05/2019</p> <ul style="list-style-type: none"> ○ Status Summary: This is a Follow Up Inspection. No Follow Up

Inspection Required

- **Findings:** 11 Comments, 0 Corrective Actions
- **Inspected Facilities:** Well COLORADO ENERGY FEDERAL #14-3
- **Inspection Status:** PR
- **Inspection Date & Inspector:** 06/04/2019 by Erica Petrie
- **Comments:** The following compliance issues were resolved from previous Inspection Doc # [697600273](#): Fencing was in despair, now fencing is fixed. Stained soil inside Pump Jack shed has been cleaned up. Pump Jack shed door has been re-installed. Wellhead signage has been updated to current operator. No further action is required at this time.
- **Attachments:** Inspection Photos: Pump Jack Doc # [696300233](#) and Tank Battery Photos Doc # [696300235](#).

Form INSP Doc # & Date: [697600273](#) & 02/05/2019

- **Status Summary:** This is a Follow Up Inspection. Follow Up Inspection Required.
- **Findings:** 6 Comments, 4 Corrective Actions (CAs)
- **Inspected Facilities:** Well COLORADO ENERGY FEDERAL #14-3
- **Inspection Status:** SI
- **Inspection Date & Inspector:** 01/29/2019 by Brittani Santistevan
- **Corrective Actions:** 1) Signs/Marker: Wellhead sign not updated to reflect current operator. 2) Good Housekeeping: Debris - Door from pump jack shed is off and on the ground. 3) Fencing: Inadequate fencing or fencing in disrepair. 4) Equipment: Pump jack shed – At time of inspection, what appears to be stained soil inside pump jack shed around prime mover.
- **Attachments:** Inspection Photos Doc # [679600277](#)
- **Note:** See Corrective Actions report section above for details on the completion of 4 CAs.

Form INSP Doc # & Date: [689300095](#) & 09/05/2017

- **Status Summary:** Follow Up Inspection Required
- **Findings:** 16 Comments, 7 Corrective Actions
- **Inspected Facilities:** Well COLORADO ENERGY FEDERAL #14-3
- **Inspection Status:** SI
- **Inspection Date & Inspector:** 08/29/2017 by Shaun O'Donnell

	<ul style="list-style-type: none"> ○ Corrective Actions: 1) Housekeeping: Leaking drain south side of west crude oil tank, stained soil. Leaking oil valve in heater treater. CA: Securely fasten all valves, pipes and fittings to ensure good mechanical condition. Inspect at regular intervals and maintain in good mechanical condition. 2) 5-gallon bucket in center skid of pump jack is approximately half full of what appears to be used motor oil with no wildlife protection. CA: Install or repair wildlife protection equipment. 3) Unused rods south side of pump jack motor shed, unused tubing south side of pump jack. CA: Comply with Rule 603.f. 4) Trash in heater treater shed on northeast, southwest, southeast edge along wall. Comply with Rule 603.f. 5) Stained soil inside of pump jack skid, stained soil around pump jack motor, free standing fluid on north side of pump jack. Stained soil around wellhead, north side of west middle crude tank, north side of east produced water tank. Stained soil under leg in heater treater shed, on north/northeast edge. CA: Control and contain spills/releases and clean up per Rule 906.a. immediately to stop and clean up 24 hours to remove free fluids; 30-days to remove stained soil. 6) Equipment: 2-2" unused/unmarked steel risers south side of east produced water tank, 1-1" unused/unmarked steel riser south side of east middle produced water tank, 3-1" unused/unmarked steel risers in heater treater shed. CA: For unused, unmarked flowline risers 24 hours to lock out tag out. 30 days to remove riser. 7) Tanks and Berms: East crude oil tank has no NFPA label, west crude tank NFPA label is not legible. CA: Install sign to comply with Rule 210.d. ○ Attachments: Inspection Photos Doc # 689300096 ○ Note: See Corrective Actions report section above for details on the completion of 7 CAs.
<p>COGIS Tank Facilities Information (Scout Card)</p>	<p>No Tank Battery documents were detected during this QA/QC Audit. However, the Tank Battery is referenced an Inspection for Location 330783 Doc # 696104745. It is a Centralized Tank Battery serving 3 Locations: 330782, 330783, and 330784. GPS coordinates: 40.839987 / -104.518626.</p>
<p>COGIS Well Information (Scout Card)</p>	<p>Well Name: COLORADO ENERGY FEDERAL #14-3 API#: 05-123-19617 FACILITY ID: 251813</p> <ul style="list-style-type: none"> ○ Status & Date: PA & 07/10/2020 ○ Lat/Long As Drilled: 40.832910 / -104.520380 ○ Form 6 Doc # & Date: 402437973 & 01/26/2021

	<ul style="list-style-type: none"> ○ Form 42 Doc # & Date: 402433016 & 06/28/2020 Purpose: Start of Plugging Operations ○ Form 4 Doc # & Date: 402322008 & 03/19/2020
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COGCC Abbreviations: [Location & Facility Status Codes](#), [Inspection Types & Statuses](#) and [COGCC Help](#).

Audit Key Findings – Designation Land Use Observations

PREVIOUS LAND USE	CURRENT LAND USE
Reference Imagery for Infrastructure: Landsat/Copernicus 2013	Remotely Sensed Imagery: 05/25/2023
Designation: Oil & Gas Facility	Designation: Rangeland

The following imagery sources were reviewed during this audit:

EarthExplorer, DRCOG 2002 - 2014, NAIP Imagery 2011, 2013, 2015, 2017, 2019, 2021, ESRI Maxar and Remotely Sensed Imagery Sep 2022

Closure Information

This is the Location of plugged and abandoned Well COLORADO ENERGY FEDERAL #14-3. The well’s off-site, centralized Tank Battery (Lat/Long. 40.839987 / -104.518626) is abandoned and shared with Locations 330782 and 330784. This Location is one of multiple locations connected to the COLORADO ENERGY FEDERAL Flowline (ID 464018) that was abandoned in place on 09/17/2020.

Corrective action annotated at Location 330368 applies to this site.

Site Photo

Site Investigation and Photos Date

26 Aug 2024

Cardinal directional photos of the site



North



East



South



West

ATTACHMENTS

Reclamation Plan

Site Specific Reclamation Plan
Soil Analytical Spreadsheet
Ward Laboratory Analysis
Forest Service Seed Mix

Maps and Figures

Area Maps

Current Site Overview
Reclaim Area

SITE-SPECIFIC RECLAMATION PLAN



Permit Closure Type – Final

Failed Reclamation Inspection

Site Description

Name	COLORADO ENERGY FEDERAL-610N64W/14NWSW
Location ID	330783
Operator / #	HIGHPOINT OPERATING CORPORATION / 10071
Field	PAWNEE PIONEER 67805
County, State	WELD, CO

Report Date

30 Jan 2025 - Revision

29 Nov 2024

Site Evaluation

Investigator: Soil Sage

Investigation Date: 26 Aug 2024

Previous Investigation Date: 30 May

Reference Soil Information: The Pawnee area contains six primary soil types and three secondary soil types.

Primary Map Units

- MU 4 – Ascalon Fine Sandy Loam
 - This soil is formed from wind-reworked alluvium and/or calcareous sandy eolian deposits. Landform is interfluvial, with the Sandy Plains Ecological Site. Soils are well drained with a moderate water holding capacity, and slope 0 to 6 percent.
- MU 5 – Ascalon Sandy Loam
 - This soil is formed from wind-reworked alluvium and/or calcareous sandy eolian deposits. Landform is interfluvial, with the Sandy Plains Ecological Site. Soils are well drained with a moderate water holding capacity, and slope 5 to 9 percent.

Secondary Map Units

- MU 51 – Peetz Gravelly Sandy Loam
 - This soil is formed from calcareous gravelly alluvium. Landform is ridges and breaks, with the Gravel Breaks Ecological Site. Soils are somewhat excessively drained with a low water holding capacity, and slope 5 to 20 percent.

Soil chemical properties within the rooting zone to 50 inches is described in the Soil Properties – USDA Soil Properties section of this report.

Current Land Use in Reference Area: Range land

Observations

Overall, for the Pawnee cluster the site is on federal land with cattle grazing rights. Intermixed with wildlife grazing. The road system is currently being used.

Weed pressure has occurred along the roads and at each site.

Site Soils

During the field investigation, Soil Sage collected soil samples from 0-8 inches within the reclamation area. These soils were analyzed to establish current soil physicochemical properties for reclamation planning. See spreadsheet attachment Table 1 for site specific soil characterizations, that include the previous soil analysis and the associated reference soils. Reference USDA Soils and Ecological Site Description for historical properties.

Site Specific Soil Characterization Data

Sample Date: 26 Aug 2024

Sampling Date: 30 May 2023

Soil Analytical Summary

The soil sampling design was based upon the land use type and the number of soil types, referred to as soil Map Units.

Summary of the average analytical soil results for the Site.

Physical and Chemical Properties for the topsoil and subsoil

Depth inches	Texture	pH	EC	OM %	SAR
Topsoil 8	Clay Loam	7.1	1.2	2.6	1.1
Previous Site Topsoil 12 (avg)	Clay Loam	7.9	0.72	2.6	1.1
Reference 3 Topsoil	Sandy Clay	7.9	0.34	3.9	0.2

Plant Available Chemical Properties for topsoil and subsoil

Depth inches	Nitrogen (N) ppm	Phosphorus (P) ppm	Potassium (K) ppm	N Lbs/A
Topsoil 8	47	30	541	112
Previous Site Topsoil 12 (avg)	20	19	415	36
Reference 3 Topsoil	2	7	525	4

Plant Nutrients Salts topsoil and subsoil

Depth inches	Sodium (Na) ppm	Chloride (Cl) ppm	Sulfates (S) ppm
Topsoil 8	91	19	17
Previous Site Topsoil 12 (avg)	76	4	12
Reference 3 Topsoil	10	5	9

This site has elevated values for Electric Conductivity (EC) and Sodium Absorption Ratio (SAR*), which is indicated by the elevated concentration of Sodium. SAR values that approach and exceed 1, indicate the presence of naturally occurring salts or the accumulation of salts based on other factors.

In addition, the analysis performed at the laboratory identified the presence of two additional salts – Chloride and Sulfate. These salts at elevated concentrations, typically above 100 ppm, can impede plant growth depending on environmental conditions, previous land use activities and other soil properties.

*Sodium Adsorption Ratio - SAR is a measure of the ratio of sodium (Na+) relative to calcium (Ca2+) and magnesium (Mg2+) in the water extract (solution phase) from a saturated soil paste.

Vegetation

Site vegetation observations took place in Aug within the reclamation extent. Weeds are the primary vegetation during the site visit.

Weeds

Weed Summary

Common Name	Weed List Type
Lambs quarter (previous)	Common
Amaranth	Common
Buffalo-Bur	Common
Russian Thistle	Common
Puncturevine	List C

Weed Inventory Criteria

- Each site is accessed for noxious weeds and common weeds
- Data are aggregated using point locations coupled with percent cover assessments and area measurements as needed
- Governance - Colorado Department of Agriculture - Colorado Noxious Weeds List, effective October 2020
- List A - Designated for eradication, List B - Designated to stop the continued spread, List C - Facilitate more integrated effective weed management, Watch List - Determined to pose a potential threat to agriculture and natural productivity.
- Common - designates weeds that do not fall within the Colorado Department of Agriculture lists
- Other - designates other identified weeds at the site

Site Characteristics

Soil/Erosion

Exposed soils have moderate susceptibility to water erosion and are in the high susceptible group for wind erosion due to ecosystem dynamics and vegetative cover.

Summary Acreage Table

Description	Acres
Total Disturbance Extent	0.7
○ Reclaim Extent	0.7
○ Road*	included

*Road from Location ID 330784 to USFS road.

Road reference overview map for the full road extent.

Site Recommendation and Re-Evaluation

Replacement Soil Requirements

Texture: Clay Loam

Organic Matter: 3%

pH: 7.7 - 7.9

Nitrate N: less than 11 ppm

Sodium: less than 90 ppm

Chloride Cl: less than 10 ppm

Sulfate S: less than 18 ppm

Soil tests must be submitted to Luke Kelly (lkelly@civiresources.com) and Sam Streeter (sam@soilsage.com) for approval prior to use on the project. Certified Weed Free Straw must be used, and evidence must be supplied to Luke Kelly and Sam Streeter. Soil Sage will be performing inspections during reclamation activities and after work is complete to ensure success. Schedule of reclamation activities (approximate) must be submitted before reclamation starts and any changes to the schedule must be communicated via email to Luke Kelly and Sam Streeter.

Seed Mix - NRCS

Vegetation Seed Mix

Forest Service has provided a seed mix to Civitas.

Seed mix included in the attachment section.

Soil Amendments

New soil specifications are outlined above.

Application of soil amendments for this prairie ecosystem will be limited to UREA (46-0-0) 50 lbs./acre for plant establishment.

Reclamation Activities and Notes:

- Continuous bare ground on road and pad
- Weed impact primarily broadleaf weeds
- Bermuda grass found in the area between the pad and the boundary of the disturbance extent
- Recommendations
 - Remove, replace, decompact, disc, seed, and crimp straw with USFS seed mix that is adjusted to work with the entire site

Road

- Seed to USFS road.

Reclaim Area Protocol

Step	Description	Complete Date
1 – Soil Samples	Collection of soil samples from the site	26 Aug 2024
2 – Remove Exclusion Fence	Removal of fences as per reclamation plan	Week of April 1, 2025
3 – Soil Removal to Mapped Extent 0.2 acres	Removal of non-compliant soil 12 inches within the reclaim extent.	Week of April 1, 2025
4 – Soil Removal Inspection	In-person inspection and confirmation with soil sampling	Week of April 1, 2025
5 – Imported Soil Sample Test Results Review*	Verification of imported soil with current lab test results	Week of April 7, 2025
6 – Soil Import	Import soil as specified in the plan	Week of April 14, 2025
7 – Seeding	Planting appropriate seed mix for reclamation 20 PLS/sq ft	Week of April 28, 2025
8 – Straw Spread and Crimp	Spreading and crimping straw to stabilize soil apply 2 tons/acre	Week of May 5, 2025
9 – Monitor	Continuous monitoring post reclamation	2025 - 2027
10 – Weed Management	Monthly monitoring is recommended with appropriate herbicide control	Jun 9 – Oct 6

*Soil Import Properties – reference Soil Replacement Requirements

Site Photos – Soil 5 -330783

Lat/Long: 40.832965 / -104.520378

Nearest Facility #: 330783

Date: 26 Aug 2024

Photo locations correspond with the overview map and soil table.



North



East



South

West



North and Ground

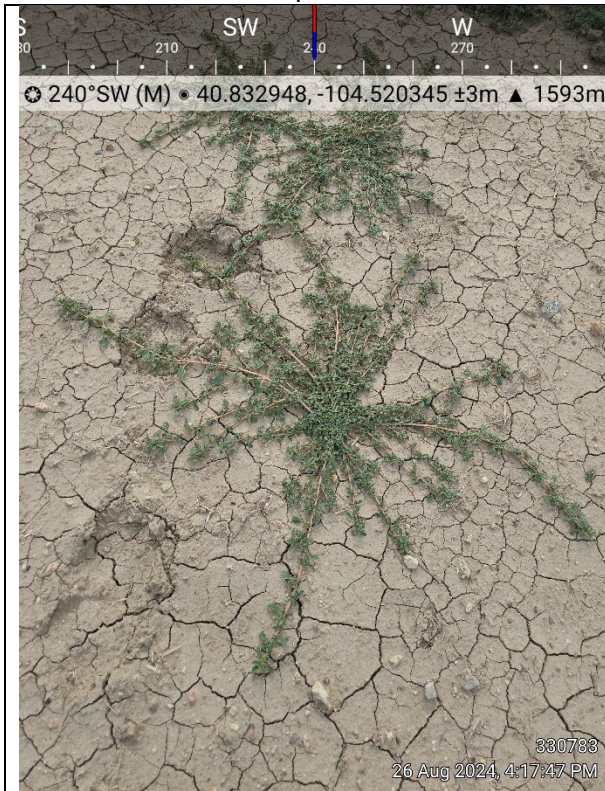
Site Photos – Vegetation 330783

Lat/Long: 40.832948 / -104.520342

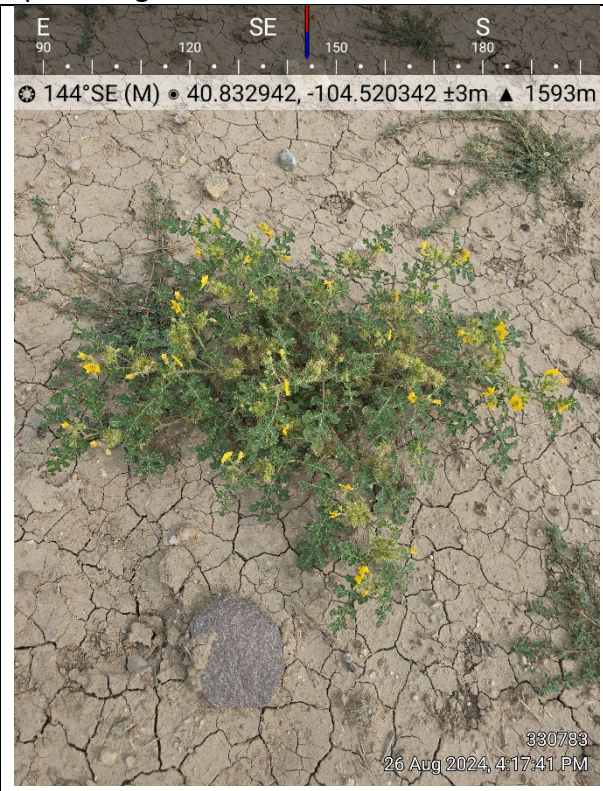
Nearest Facility #: 330783

Date Range: 26 Aug 2024

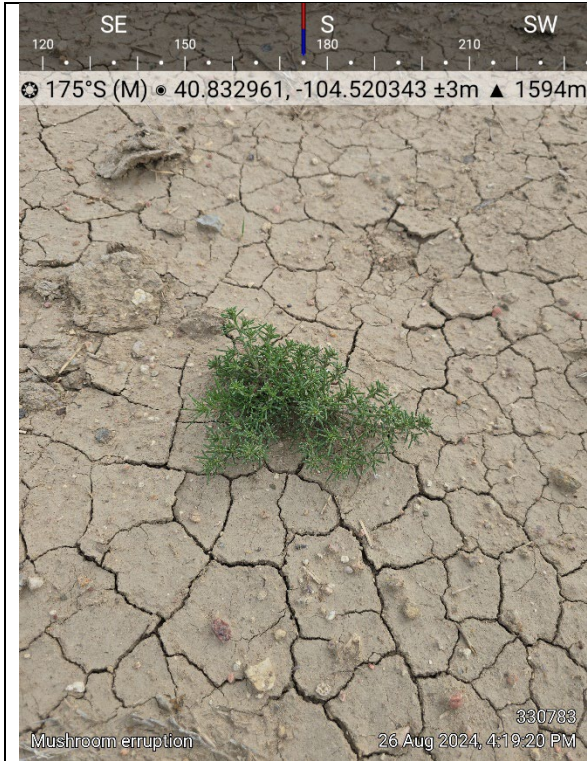
Photo locations correspond with the overview map and vegetation table.



Amaranth (*Genus Amaranthus*)



Buffalo-bur (*Solanum rostratum*)



Russian Thistle (*Salsola tragus*)

Puncturevine (*Tribulus terrestris*) List C



Mushrooms

Mushrooms

Site Photos – Soil 5 -330783

Lat/Long: 40.832965 / -104.520378

Nearest Facility #: 330783

Date: 26 Aug 2024

Photo locations correspond with the overview map and soil table.



North



East



South

West



North and Ground

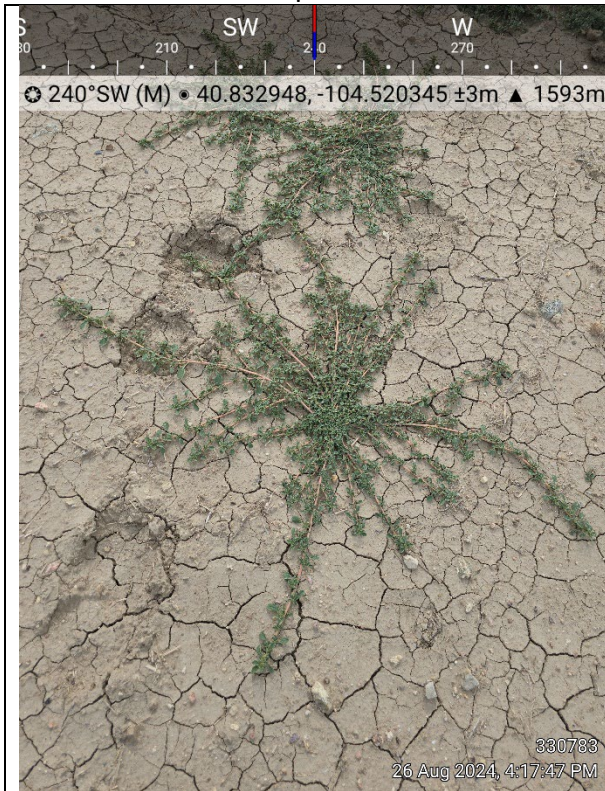
Site Photos – Vegetation 330783

Lat/Long: 40.832948 / -104.520342

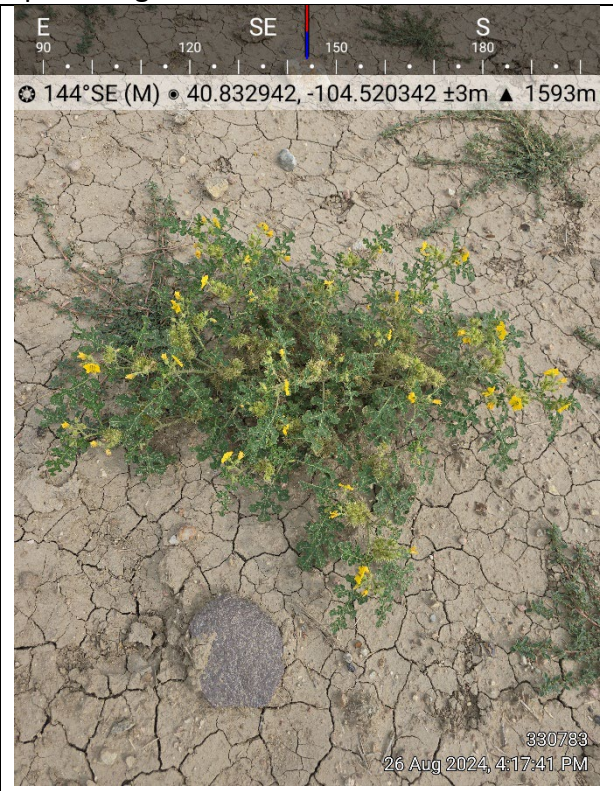
Nearest Facility #: 330783

Date Range: 26 Aug 2024

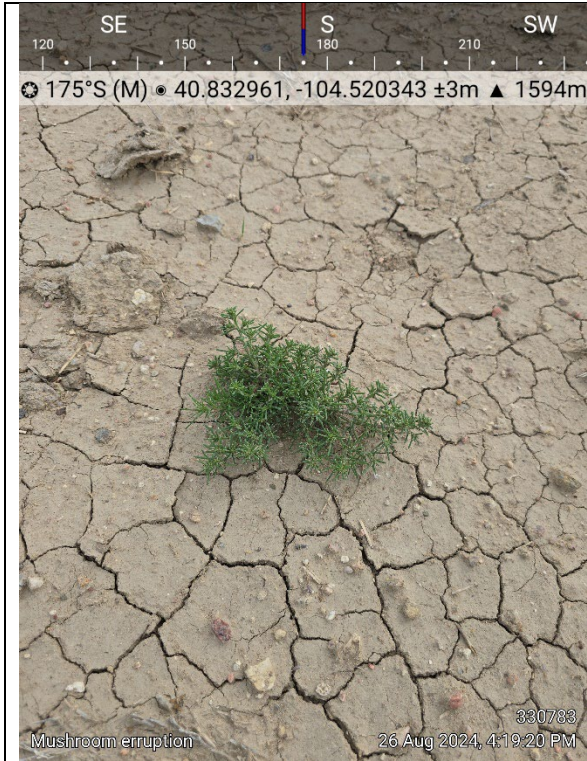
Photo locations correspond with the overview map and vegetation table.



Amaranth (*Genus Amaranthus*)



Buffalo-bur (*Solanum rostratum*)



Mushroom eruption



Mushroom eruption

Russian Thistle (*Salsola tragus*)

Puncturevine (*Tribulus terrestris*) List C



Mushrooms



Mushrooms

TABLE 1: Soil Report

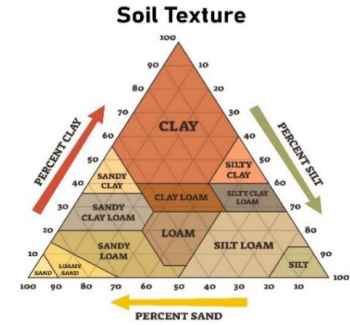
Client	Civitas		
Operator	Bonanza Creek	Date	26-Aug-24
Location ID - Name	Pawnee	Ward	20240903
Type	Location Topsoil replacement		



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SOIL REPORT

Location	Soil Profile			Physical Properties			Texture Hydro
	Top Depth (in)	Bottom Depth (in)	Soil Thickness (in)	Partical Size			
				Sand %	Silt %	Clay %	
CIV-330368-SOIL 1	0	8	8	34	22	44	Clay
CIV-330502-SOIL 2	0	8	8	46	24	30	Sandy Clay Loam
CIV-330688-SOIL 3	0	8	8	54	18	28	Sandy Clay Loam
CIV-330782-SOIL 4	0	8	8	44	20	36	Clay Loam
CIV-330783-SOIL 5	0	8	8	44	18	38	Clay Loam
CIV-330784-SOIL 6	0	8	8	54	16	30	Sandy Clay Loam
CIV-431982-SOIL 7	0	8	8	44	18	38	Clay Loam



Location	Soil Profile			Chemical Properties					Calcium Carbonate	
	Top Depth (in)	Bottom Depth (in)	Soil Thickness (in)	pH Sat Paste	ECe mmhos/cm	CEC meq/100g	Excess Lime	Organic Matter (LOI) %	SAR	%
CIV-330368-SOIL 1	0	8	8	7.6	1.58	52.6	HIGH	2.9	10.1	2.1
CIV-330502-SOIL 2	0	8	8	7.2	2.08	39.9	HIGH	2	1.4	1.5
CIV-330688-SOIL 3	0	8	8	7.3	1.96	44.2	HIGH	2	1.4	2.9
CIV-330782-SOIL 4	0	8	8	6.9	1.43	23.2	LOW	1.8	0.8	0.1
CIV-330783-SOIL 5	0	8	8	7.4	1.22	50.8	HIGH	2.6	1.1	6.6
CIV-330784-SOIL 6	0	8	8	7.5	1.16	47.4	HIGH	1.8	1.3	3.6
CIV-431982-SOIL 7	0	8	8	7.4	1.23	39.2	HIGH	3.1	0.6	0.8
ECMC Table 915-1				6-8.3	<4				<6	

Extraction Method

Location	Soil Profile			Extraction Method			Nitrate - N Lbs/A
	Top Depth (in)	Bottom Depth (in)	Soil Thickness (in)	KCL Nitrate-N ppm	M3 Phosphorus P ppm	NH4OAc Potassium K ppm	
CIV-330368-SOIL 1	0	8	8	24.2	28	798	58
CIV-330502-SOIL 2	0	8	8	67.4	32	541	162
CIV-330688-SOIL 3	0	8	8	35.4	87	329	85
CIV-330782-SOIL 4	0	8	8	46.6	26	363	112
CIV-330783-SOIL 5	0	8	8	46.8	30	541	112
CIV-330784-SOIL 6	0	8	8	38.2	13	580	92
CIV-431982-SOIL 7	0	8	8	44.2	20	712	106



Location	Soil Profile			Plant Available			Hot Water	Ca-NO3	M3 Sulfate	AB-DTPA	Iron	Manganese	Zinc
	Top Depth (in)	Bottom Depth (in)	Soil Thickness (in)	NH4OAc Calcium	NH4OAc Magnesium	NH4OAc Sodium							
				Ca ppm	Mg ppm	Na ppm							
CIV-330368-SOIL 1	0	8	8	8408	411	1174	5.83	76	14.3	0.43	1.1	1.7	0.35
CIV-330502-SOIL 2	0	8	8	7035	351	96	0.57	45.8	25.8	0.33	2	2	0.26
CIV-330688-SOIL 3	0	8	8	7453	668	125	1.01	36.6	108	0.62	5.9	2.5	2.17
CIV-330782-SOIL 4	0	8	8	3757	394	54	0.35	16.6	15.2	0.45	2.7	2.8	0.33
CIV-330783-SOIL 5	0	8	8	9125	404	91	0.89	18.7	16.6	0.31	1.2	1.8	0.95
CIV-330784-SOIL 6	0	8	8	8517	348	91	0.4	15.4	11.3	0.21	1.1	1	2.15
CIV-431982-SOIL 7	0	8	8	6744	413	54	0.48	24.2	14.1	0.32	1.3	1.3	0.31

ECMC Table 915-1

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Terms Defined

- pH: A measure of the acidity or basicity (alkalinity) of a soil. pH is defined as the negative logarithm (base 10) of the activity of hydronium ion in a solution
- ECe: The Electrical Conductivity of a saturated soil Extract that measures salinity
- Alkalinity: Alkalinity indicates a solution's power to react with acid and buffer its pH - the power to keep its pH from changing. The higher the Alkanility, the higher the buffering capacity against pH change.
- CEC - Cation Exchange Capacity: The measure of how many cations can be retained on soil particle surfaces.
- CEC Ranges:
 - Range 11-50: High Clay, more lime to correct a given pH, greater capacity to hold nutrients, physical effects of high clay content, high water-holding capacity
 - Range 1-10: High Sand, Nitrogen and potassium leaching, less lime to correct a given pH, physical effects of high sand content, low water-holding capacity

Optimal pH range for plant growth

6.0 -7.0



Typical Soil Concentrations sufficient for plant growth

Element	Symbol	mg/kg	percent	Relative number of atoms
Nitrogen	N	15,000	1.5	1,000,000
Potassium	K	10,000	1	250,000
Calcium	Ca	5,000	0.5	125,000
Magnesium	Mg	2,000	0.2	80,000
Phosphorus	P	2,000	0.2	60,000
Sulfur	S	1,000	0.1	30,000
Chlorine	Cl	100	--	3,000
Iron	Fe	100	--	2,000
Boron	B	20	--	2,000
Manganese	Mn	50	--	1,000
Zinc	Zn	20	--	300
Copper	Cu	6	--	100
Molybdenum	Mo	0.1	--	1
Nickel	Ni	0.1	--	1

- Notes:
 - Root Formation
 - Chlorophyll Formation
 - Proteins & NPK Uptake
 - Chlorophyll catalyst
 - Absorption Calcium
 - Photosynthesis & Respiration - correlated with %OM
 - Fixation of Organic Nitrogen

Reference Key

- Low
- Medium
- High
- Optimal
- Neutral
- No Reference
- Analytical Error

Source: E.Epstein, 1965

Ag Testing - Consulting

Account No. : 19356

Soil Analysis Report

DANIELS, JUDY
SOIL SAGE LLC
8323 DEPEW WAY
ARVADA

CO 80003

Invoice No. : 1430856
Date Received : 08/29/2024
Date Reported : 09/03/2024

Results For : CIV
 Location : PAWNEE

Lab No. : 90066 Depth : 0 - 8
 ID : CIV-330783-SOIL 5

1:1 Soil pH	8.1
Soluble Salts 1:1, mmho/cm	0.43
Excess Lime Rating	HIGH
Organic Matter LOI, %	2.6
Nitrate-N KCl, ppm N	46.8
Nitrate-N, lbs N / Acre	112
Phosphorus M3, ppm P	30
Potassium NH ₄ OAc, ppm K	541
Sulfate M-3, ppm S	16.6
Zinc DTPA, ppm Zn	0.95
Iron DTPA, ppm Fe	1.2
Manganese DTPA, ppm Mn	1.8
Copper DTPA, ppm Cu	0.31
Calcium NH ₄ OAc, ppm Ca	9125
Magnesium NH ₄ OAc, ppm Mg	404
Sodium NH ₄ OAc, ppm Na	91
Chloride Ca-NO ₃ , ppm Cl	18.7
Boron Hot Water, ppm B	0.89
Calcium Carbonate, %	6.6

Sum of Cations, me/100g	% Saturation				
	H	K	Ca	Mg	Na
50.8	0	3	89	7	1

Saturated Soil Paste Analysis (SAR)

Saturation, %	49
Sat Paste pH	7.4
Sat Paste ECe, mmho/cm	1.22
HCO ₃ , ppm	127
Cl, ppm	27
Ca, ppm	146
Mg, ppm	17
Na, ppm	54
S, ppm	20.0

Reviewed By : Nick Ward

9/6/2024

Copy : 1

Page 9 of 14

Account No. : 19356

Soil Analysis Report

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8323 DEPEW WAY
ARVADA CO 80003

Invoice No. : 1430856
Date Received : 08/29/2024
Date Reported : 09/03/2024

Results For : CIV
Location : PAWNEE

Sodium Adsorption Ratio			1.1
Soil Texture	Sand, %	Silt, %	Clay, %
Clay Loam	44	18	38

Scientific Binomial	Common Name	Season	Seeds/lb	Percent of mix	Total Pounds PLS Per Acre	Variety
<i>Pascopyrum smithii</i>	western wheatgrass	Cool	110,000	0.3	11.88	
<i>Bouteloua curtipendula</i>	side-oats grama	Warm	191,000	0.15	3.42	Butte or Trailway
<i>Buchloë dactyloides</i>	buffalograss	Warm	56,000	0.15	11.67	Cody or Tatanka
<i>Chondrosum gracile</i>	blue grama	Warm	825,000	0.15	0.79	Alma or Hachita
<i>Nassella viridula</i>	green needlegrass	Warm	181,000	0.05	1.20	
<i>Sporobolus cryptandrus</i>	sand dropseed	Warm	5,398,000	0.05	0.04	
<i>Hesperostipa comata</i>	needle-and-thread	Cool	115,000	0.1	3.79	Canbar or High Plains
<i>Cleome serrulata</i>	Rocky Mtn beeplant	NA	65,900	0.03	2.0	
<i>Sphaeralcea coccinea</i>	scarlet globemallow	NA	500,000	0.02	0.17	
			TOTAL	1	34.95	

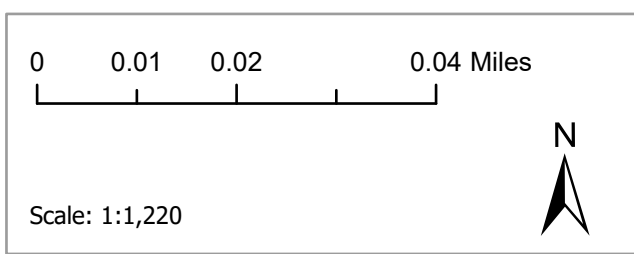
PLS = Pure, Live Seed



**CIV - 330783 - Colorado Energy Federal
610N64W/14NWSW
Map Extent - Reclaim Extent**

Imagery: RS Orthomosaic & DSM
 Imagery Date: 26 Aug 2024
 Map Date: 02 Dec 2024
 Datum: NAD_1983_UTM_Zone_13N
 POC: Soil Sage

- ◆ Oil and Gas Locations
- Soil Sample Point
- ▭ Disturbance Boundary
- ▭ Soil Removal & Replace



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 Bureau, USDA, USFWS





**CIV - 330783 - Colorado Energy Federal
610N64W/14NWSW
Map Extent - Reclaim Extent**

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 Map Date: 02 Dec 2024
 Datum: NAD_1983_UTM_Zone_13N
 POC: Soil Sage

- ◆ Oil and Gas Locations
- ▭ Disturbance Boundary
- ▭ Seed Boundary

0 0.01 0.02 0.04 Miles

Scale: 1:1,220

Service Credits - Maxar, Microsoft, Esri
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