

# Carrier BCU 0993-16-07 Well Pad

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## NRCS Map Unit Description CECMC Rule 304.b.(10)



**Laramie Energy, LLC**  
**760 Horizon Drive, Suite 101**  
**Grand Junction, CO 81506**

# Currier BCU 0993-16-07 Well Pad NRCS Map Unit Description CECMC Rule 304.b.(10).



## 1. INTRODUCTION – CECMC RULE 304.b.(10)

The following Soils Report addresses the requirements for Colorado Energy Carbon Management Commission (referred to hereinafter as CECMC or the Commission) Rule 304.b.(10) NRCS Map Unit Description under 300 Series of the Commission’s rules as required for a Form 2A Location Assessment. The Currier BCU 0993-16-07 NRCS Map Unit Description includes NRCS soil reports and soil maps.

## 2. CURRIER BCU 0993-16-07 WELL PAD

Laramie Energy, LLC (Laramie) (Operator # 10433) is pursuing a Form 2A for an Oil and Gas Location Assessment permit in Mesa County, Colorado. The Currier BCU 0993-16-07 (Currier 16-07) is a proposed, new location. Laramie is proposing to drill twenty-three (23) new directional wells at the Currier 16-07. The proposed well pad will be located within the North Vega operations area and will be tied into to existing infrastructure to minimize traffic impacts and surface disturbance proposed in the 2023 Currier BCU 0993-16-07 Oil and Gas Development Plan (OGDP). Laramie operates facilities in the area that will support operations at the Currier.

Laramie will utilize a closed-loop drilling system at the Currier 16-07. Only water-based bentonite drilling fluids, not oil-based fluids, will be utilized for the twenty-three (23) new directional natural gas wells. The site will operate in accordance with applicable local, state, and Federal regulations.

**OGDP Title:** 2023 Currier BCU 0993-16-07 OGDP

**Location Name:** Currier BCU 0993-16-07

**Legal Description:** SWNE of Section 16, Township 9 South, Range 93 West, 6<sup>th</sup> P.M.

**Location Coordinates:** Latitude: 39.277789°; Longitude: -107.773701°

**Elevation:** 7456 feet

**County:** Mesa

**General Location:** 9.5 mapped miles east of Collbran, Colorado.

**Zone District:** Agricultural, Forestry, Transitional District (AFT)

Operations will be conducted in the following phases at the Currier 16-07: construction, drill rig mobilization, drilling, production installation, completions and flowback (including equipment mobilization, staging, and demobilization), production, interim reclamation, inspections, and final grading/reclamation of the site. Inspection activities will occur during the lifespan of the site. Laramie anticipates that the well pad will remain in production for approximately 30 years, based on the average lifespan of producing wells in the area.

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**Table 1. Disturbance Acreage**

<b>Well Pad</b>		<b>Disturbance in Acres</b>	
Area of Disturbance		9.0	
Working Pad Surface		4.1	
Area to be Interim Reclaimed		6.9	
Production Pad Surface (after Interim Reclamation)		2.1	
<b>Access Road</b>		<b>Disturbance in Acres</b>	
Proposed Access Road Acreage (New) (890 feet)		1.0	
<b>Pipeline</b>		<b>Disturbance in Acres</b>	
Proposed Pipeline* (781-foot Segment) (Installed in Previously Disturbed Pipeline ROW)		0.9	
<b>Disturbance Totals - Acres</b>			
<b>New</b>	<b>Previously Disturbed</b>	<b>Short-term</b>	<b>Long Term</b>
<b>10</b>	<b>0.9</b>	<b>10.9</b>	<b>3.1</b>

**3. SOILS – NRCS MAP UNIT DESCRIPTION**

A soils report from the Natural Resource Conservation Service (NRCS) indicates the Currier 16-07 Area of Disturbance, Working Pad Surface, pipeline and access road are composed of two NRCS Map Units as described below in **Table 2** and **Table 3**.

**Table 2. NRCS Map Unit and Disturbance**

<b>Disturbance</b>	<b>Map Unit</b>	<b>NRCS Soil Description</b>	<b>Disturbance Per NRCS Soil Map Unit (Acres)</b>
<b>Area of Disturbance (Well Pad)</b>	34	Empedrado loam, 25 to 45 percent slopes	6.9
	47	Hesperus-Empedrado, moist-Pagoda complex 5 to 35 percent slopes	2.1
<b>Access Road</b>	34	Empedrado loam, 25 to 45 percent slopes	0.9
	47	Hesperus-Empedrado, moist-Pagoda complex 5 to 35 percent slopes	0.1
<b>Pipeline Segment</b>	34	Empedrado loam, 25 to 45 percent slopes	.10
	47	Hesperus-Empedrado, moist-Pagoda complex 5 to 35 percent slopes	.8

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**Table 3. Total Disturbance Per NRCS Map Unit**

Map Unit	NRCS Soil Description	Total Disturbance Per Map Unit
34	Empedrado loam, 25 to 45 percent slopes	8.0
47	Hesperus-Empedrado, moist-Pagoda complex 5 to 35 percent slopes	2.9
<b>Total Acreage Disturbance</b>		<b>10.9</b>

**4. EMPEDRADO LOAM, 25 TO 45 PERCENT SLOPES: NRCS MAP UNIT 34**

The Empedrado loam, 25 to 45 percent slopes, is composed of Empedrado and similar soils (80%) and minor components (20%). The Empedrado loam occurs in elevation of 7,400 to 7,900 feet and is classified as not prime farmland. Classified as hydrologic soil group B with a high runoff class. The depth to water table is more than 80 inches.

The Empedrado loam is a well drained clay loam with a high available water supply. The setting landform is mountains and parent material is mixed rock colluvium derived from sedimentary rock.

**Table 4. Empedrado Loam (Map Unit 34) Profile**

Site Feature	Typical Profile			
Area of Disturbance, Working Pad Surface, Pipeline, and Access Road	A - 0 to 10 inches: <b>loam</b>	Bt- 10 to 21 inches: <b>clay loam</b>	Bk1 - 21 to 28 inches: <b>gravelly sandy clay loam</b>	Bk2 - 28 to 60 inches: <b>loam</b>

The Empedrado loam, 25 to 45 percent slopes, is within the following proposed disturbed areas of the Currier 16-07: Area of Disturbance, Working Pad Surface, Pipeline and Access Road.

**5. HESPERUS-EMPEDRADO, MOIST - PAGODA COMPLEX: NRCS MAP UNIT 47**

The Hesperus-Empedrado, moist -Pagoda complex 5 to 35 percent slopes, is identified as Map Unit 47. The Hesperus-Empedrado, moist - Pagoda complex is composed of Hesperus and similar soils (35%) and Empedrado and similar soils (30%), the Pagoda and similar soils (20%), and minor components (15%). The Hesperus-Empedrado, moist-Pagoda complex occurs in elevation of 6,200 to 8,500 feet and is classified as not prime farmland. The depth to water table is more than 80 inches. The available water supply is rated high with a high to very high runoff class.

The Hesperus soil is a well drained clay loam. Hesperus is classified as hydrologic soil group C. The setting landform is mountainsides. The parent material is residuum weathered from sandstone and shale.

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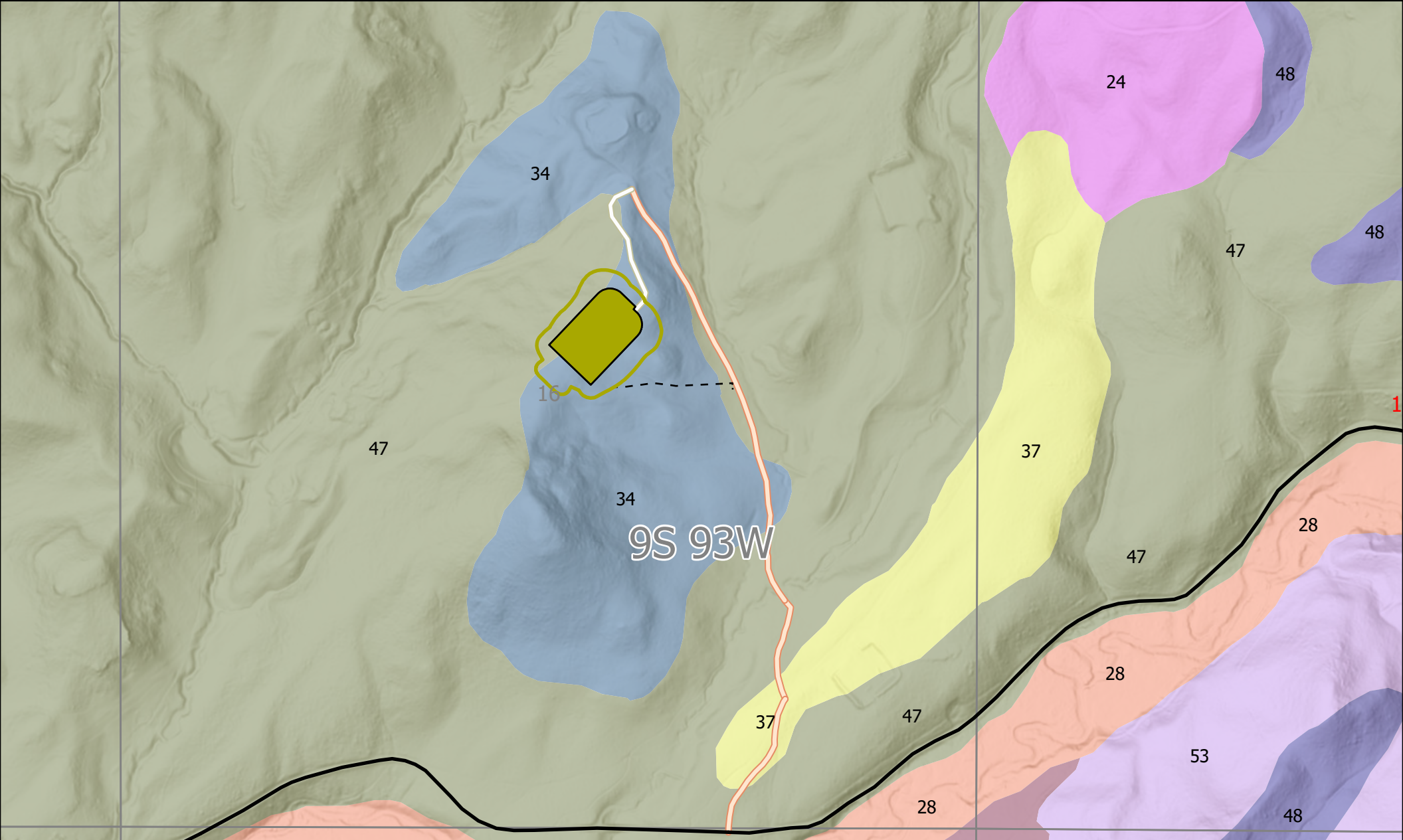


The Empedrado, moist soil is a well drained loam/ gravelly sandy clay loam. Empedrado, moist is classified as hydrologic soil group B The setting landform is benches. The parent material is colluvium derived from sandstone and shale and/or residuum weathered from sandstone and shale.

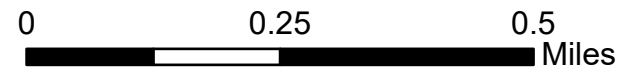
The Pagoda soil is a well drained clay loam/clay and is classified as hydrologic soil group C. The setting landform is mountains & benches and the parent material is colluvium derived from shale.

**Table 5. Hesperus-Empedrado, moist -Pagoda complex (Map Unit 47) Profile**

Site Feature	Composition	Typical Profile			
Area of Disturbance, Working Pad Surface, Pipeline, and Access Road	Hesperus	H1 - 0 to 7 inches: <b>loam</b>		H2 -7 to 60 inches: <b>clay loam</b>	
	Empedrado	H1 - 0 to 10 inches: <b>loam</b>	H2 - 10 to 21 inches: <b>clay loam</b>	H3 - 21 to 28 inches: <b>gravelly sandy clay loam</b>	H4 - 28 to 60 inches: <b>loam</b>
	Pagoda	H1 - 0 to 6 inches: <b>clay loam</b>	H2 - 6 to 17 inches: <b>clay loam</b>	H3 - 17 to 27 inches: <b>clay</b>	H4 - 27 to 60 inches: <b>clay</b>



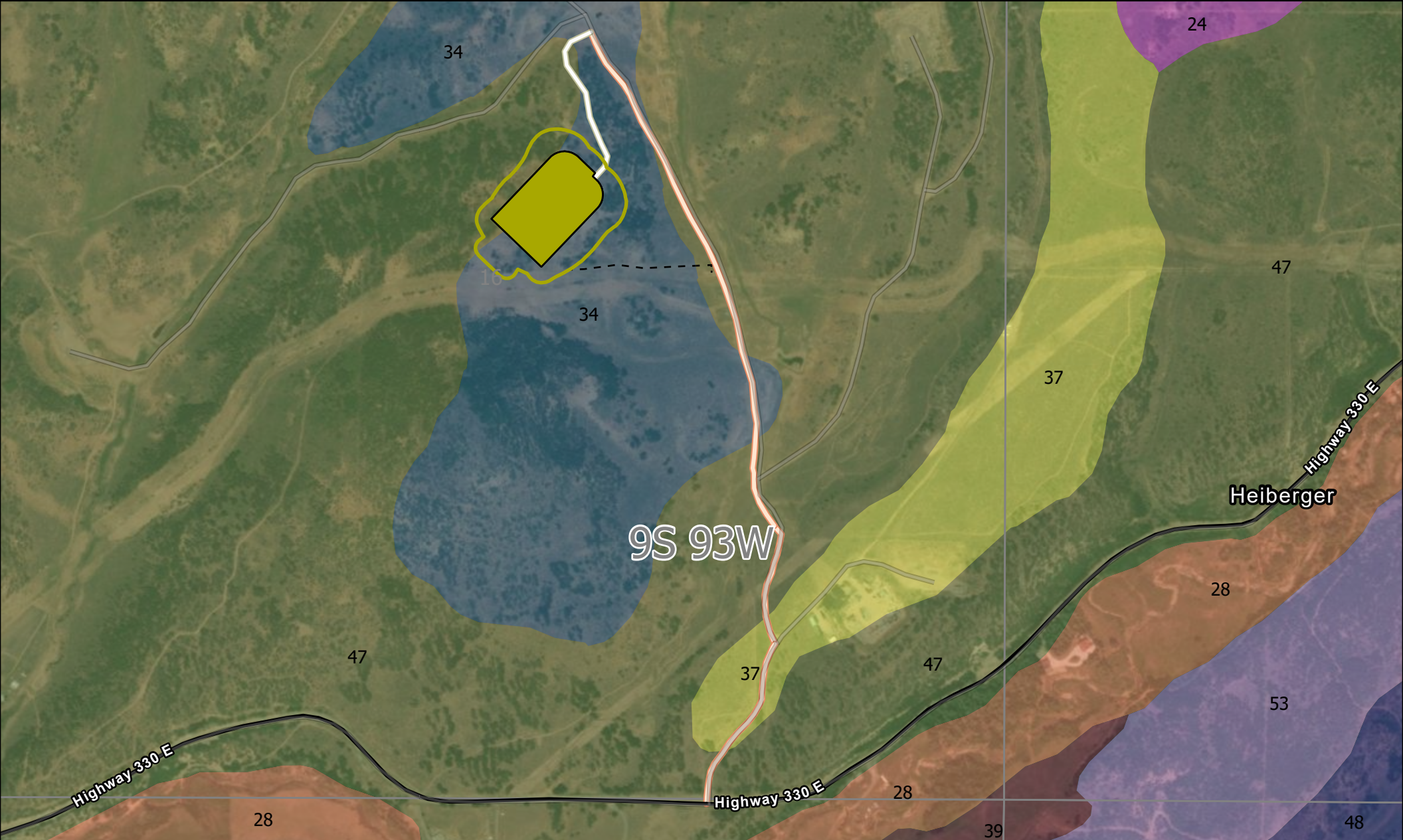
- - Proposed Pipeline
- Proposed Access Road
- Existing Access Road
- Public Roads
- ▭ Pad Boundary
- ▭ Pad Disturbance
- ▭ Working Pad Surface
- Borollic Calciorthids, 25 to 50 percent slopes
- Cochetopa-Clayburn complex, 12 to 40 percent slopes
- Cumulic Haploborolls, 1 to 3 percent slopes
- Empedrado loam, 25 to 45 percent slopes
- Fughes clay loam, 2 to 6 percent slopes
- Fughes-Hesperus complex, 3 to 12 percent slopes
- Hesperus-Empedrado, moist-Pagoda complex 5 to 35 percent slopes
- Hesperus-Empedrado, moist-Pagoda complex, 35 to 55 percent slopes
- Pagoda-Hesperus complex, 12 to 40 percent slopes



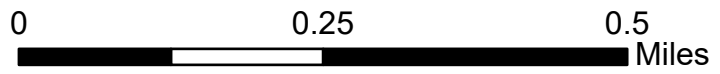
**NRCS MAP- Soils Map**  
CECMC Rule 304.b(10)

**Currier BCU 0993-16-07**  
SWNE, SECTION 16,  
T9S, R93W, 6th P.M.  
Mesa County, CO  
7/10/2023





- - Proposed Pipeline
- Proposed Access Road
- Existing Access Road
- Public Roads
- ▭ Pad Boundary
- ▭ Pad Disturbance
- ▭ Working Pad Surface
- Borollic Calciorthids, 25 to 50 percent slopes
- Cochetopa-Clayburn complex, 12 to 40 percent slopes
- Cumulic Haploborolls, 1 to 3 percent slopes
- Empedrado loam, 25 to 45 percent slopes
- Fughes clay loam, 2 to 6 percent slopes
- Fughes-Hesperus complex, 3 to 12 percent slopes
- Hesperus-Empedrado, moist-Pagoda complex 5 to 35 percent slopes
- Hesperus-Empedrado, moist-Pagoda complex, 35 to 55 percent slopes
- Pagoda-Hesperus complex, 12 to 40 percent slopes



**NRCS MAP- Soils Map**

ECMC Rule 304.b(10)

**Currier BCU 0993-16-07**

SWNE, SECTION 16,

T9S, R93W, 6th P.M.

Mesa County, CO

7/10/2023



## Douglas-Plateau Area, Colorado, Parts of Garfield and Mesa Counties

### 34—Empedrado loam, 25 to 45 percent slopes

#### Map Unit Setting

*National map unit symbol:* jnvf  
*Elevation:* 7,400 to 7,900 feet  
*Mean annual precipitation:* 16 to 20 inches  
*Mean annual air temperature:* 42 to 44 degrees F  
*Frost-free period:* 85 to 100 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Empedrado and similar soils:* 80 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Empedrado

##### Setting

*Landform:* Mountains  
*Landform position (two-dimensional):* Backslope, footslope  
*Landform position (three-dimensional):* Mountainflank  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Mixed rock colluvium derived from sedimentary rock

##### Typical profile

*A - 0 to 10 inches:* loam  
*Bt - 10 to 21 inches:* clay loam  
*Bk1 - 21 to 28 inches:* gravelly sandy clay loam  
*Bk2 - 28 to 60 inches:* loam

##### Properties and qualities

*Slope:* 25 to 45 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 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:* High (about 9.7 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* B

*Ecological site:* R048AY238CO - Brushy Loam

*Hydric soil rating:* No

### **Minor Components**

#### **Pagoda**

*Percent of map unit:* 10 percent

#### **Cathedral**

*Percent of map unit:* 5 percent

#### **Veatch**

*Percent of map unit:* 5 percent

## **Data Source Information**

Soil Survey Area: Douglas-Plateau Area, Colorado, Parts of Garfield and Mesa  
Counties

Survey Area Data: Version 15, Sep 6, 2022

## Douglas-Plateau Area, Colorado, Parts of Garfield and Mesa Counties

### 47—Hesperus-Empedrado, moist-Pagoda complex 5 to 35 percent slopes

#### Map Unit Setting

*National map unit symbol:* jnvw  
*Elevation:* 6,200 to 8,500 feet  
*Mean annual precipitation:* 18 to 20 inches  
*Mean annual air temperature:* 42 to 44 degrees F  
*Frost-free period:* 85 to 100 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Hesperus and similar soils:* 35 percent  
*Empedrado, moist, and similar soils:* 30 percent  
*Pagoda and similar soils:* 20 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Hesperus

##### Setting

*Landform:* Mountainsides  
*Landform position (three-dimensional):* Mountainflank  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Residuum weathered from sandstone and shale

##### Typical profile

*H1 - 0 to 7 inches:* loam  
*H2 - 7 to 60 inches:* clay loam

##### Properties and qualities

*Slope:* 5 to 35 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Very high  
*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  
*Available water supply, 0 to 60 inches:* High (about 11.2 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* C  
*Ecological site:* R048AY238CO - Brushy Loam

*Hydric soil rating:* No

### **Description of Empedrado, Moist**

#### **Setting**

*Landform:* Benches

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Colluvium derived from sandstone and shale  
and/or residuum weathered from sandstone and shale

#### **Typical profile**

*H1 - 0 to 10 inches:* loam

*H2 - 10 to 21 inches:* clay loam

*H3 - 21 to 28 inches:* gravelly sandy clay loam

*H4 - 28 to 60 inches:* loam

#### **Properties and qualities**

*Slope:* 5 to 35 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water  
(Ksat):* Moderately high to high (0.57 to 1.98 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:* High (about 9.7 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* B

*Ecological site:* R048AY238CO - Brushy Loam

*Hydric soil rating:* No

### **Description of Pagoda**

#### **Setting**

*Landform:* Mountains, benches

*Landform position (three-dimensional):* Mountainflank

*Down-slope shape:* Concave, linear

*Across-slope shape:* Linear

*Parent material:* Colluvium derived from shale

#### **Typical profile**

*H1 - 0 to 6 inches:* clay loam

*H2 - 6 to 17 inches:* clay loam

*H3 - 17 to 27 inches:* clay

*H4 - 27 to 60 inches:* clay

### **Properties and qualities**

*Slope:* 5 to 35 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Very high

*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:* 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 10.9 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* C

*Ecological site:* R048AY238CO - Brushy Loam

*Hydric soil rating:* No

### **Minor Components**

#### **Cathedral**

*Percent of map unit:* 10 percent

*Hydric soil rating:* No

#### **Veatch**

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

## **Data Source Information**

Soil Survey Area: Douglas-Plateau Area, Colorado, Parts of Garfield and Mesa Counties

Survey Area Data: Version 15, Sep 6, 2022