



# Interim Reclamation Plan

De Nova Project

Washington County, Colorado

*January 2022, Revised September 2022*

## PRESENTED TO

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**Carbon America**

5525 W 56th Ave. Suite 200  
Arvada, CO 80002

## PRESENTED BY

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**Tetra Tech, Inc.**

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**TABLE OF CONTENTS**

**1.0 INTRODUCTION..... 4**

**2.0 CONSTRUCTION ACTIVITY INFORMATION ..... 5**

    2.1 Project Description and Location .....5

    2.2 Earth Disturbance.....5

    2.3 Construction Dates.....5

**3.0 EXISTING CONDITIONS..... 6**

    3.1 Soils.....6

    3.2 Vegetation.....6

**4.0 RECLAMATION ..... 7**

    4.1 Removal of Drilling, Re-entry, Completion Equipment and all Associated Debris and Waste Materials (1003.a) .....7

    4.2 Management of Waste Material .....7

    4.3 Identification of Interim Reclamation Areas no Longer in Use (1003.b) .....7

    4.4 Compaction Alleviation (1003.c).....7

    4.5 Final Grade.....7

    4.6 Establish Desired Self-Perpetuating Plant Community (1003.e).....7

    4.7 Seedbed Preparation and Seeding (1003.e).....8

    4.8 Management of Invasive Plants (1003.f).....8

    4.9 Reclamation Monitoring, Inspection, Maintenance, and Reporting .....8

    4.10 Interim Reclamation Completion Notice, Form 4 (1003.e.(3)).....8

    4.11 Site-Specific Interim Reclamation BMPs .....8

**LIST OF FIGURES**

- Figure 1: Site Location Map Site
- Figure 2: Plan Maps
- Figure 3: Soils Map
- Figure 4: Topsoil Stockpile Area

**APPENDICES**

- Appendix A: COGCC Form 4 Sundry Notice

**ACRONYMS/ABBREVIATIONS**

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<b>Acronyms/Abbreviations</b>	<b>Definition</b>
BMP	Best Management Practice
CO2	Carbon Dioxide
COGCC	Colorado Oil and Gas Conservation Commission
Project	De Nova Project
SWMP	Stormwater Management Plan

## 1.0 INTRODUCTION

Tetra Tech, Inc. (Tetra Tech) on behalf of Carbon America, has drafted this Interim Reclamation Plan to describe the principles, procedures and management of the reclamation best management practices (BMPs) required by the Denova Project (Project). The Interim Reclamation Plan has been prepared in accordance with Colorado Oil and Gas Conservation Commission (COGCC) Rule 304.c.(16) and Rule 1003.

## 2.0 CONSTRUCTION ACTIVITY INFORMATION

### 2.1 PROJECT DESCRIPTION AND LOCATION

Applicant wishes to locate and drill a stratigraphic test well to obtain geologic samples to evaluate the suitability of deep formations for injection and sequestration of CO<sub>2</sub>. The well location is anticipated to be located approximately 9 miles southwest of Yuma, Colorado in Washington County. The Project area is in rural, grazing lands on vegetated sand dunes.

See attached Figures for maps and additional location detail. Legal location descriptions crossed by the project detailed below in Table 1.

**Table 1. Project legal description**

Project Location	Section	Township	Range
40.027439, -102.851636	27, 28	1N	49W

### 2.2 EARTH DISTURBANCE

Ground disturbance associated with the Project will largely consist of temporary access roadbed preparation and construction, temporary workspace for well pad construction, and staging/laydown areas. Estimated disturbance areas are located in Table 2 below.

**Table 2. Project Disturbance Areas**

Project Component	Disturbance Area (Acres)	Interim Reclamation Area (Acres)
Existing Road	4.63	N/A
New Road	3.43	N/A
Well Pad	2.57	0.50
<b>TOTAL</b>	<b>10.63</b>	<b>0.50</b>

Construction will require the use of many different types of construction equipment including cranes, backhoes, drill rigs, dump trucks, front-end loaders, bucket trucks, bulldozers, flatbed tractor-trailers, flatbed trucks, pickup trucks, concrete trucks, and various trailers or other hauling equipment. Excavation equipment is often set on wheeled or track-driven vehicles. Construction crews will attempt to use equipment, when opportunities are available, that minimize impacts to lands.

Construction staging areas may be established for the Project. Staging involves delivering the equipment and materials necessary to construct the new facilities. See Figure 2 for site plan and layout details.

### 2.3 CONSTRUCTION DATES

The road and pad construction and subsequent stratigraphy well activities are anticipated to take approximately 6 weeks. Construction will begin after regulatory approvals are obtained and necessary property easements are acquired. The precise timing of construction will be dictated by agency permit conditions, environmental restrictions, and available workforce and materials.

## 3.0 EXISTING CONDITIONS

### 3.1 SOILS

Detailed soil characteristics were identified and assessed using the National Resource Conservation Service’s (NRCS) Web Soil Survey (<http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx> accessed January 26, 2021). Soil types and their locations on-site are identified in Figure 3. The Project area is located within rural grazing lands on vegetated sand dunes.

Project area soils and their characteristics are detailed below in Table 1.

**Table 3. Soil Types**

Map Unit Name	K Factor <sup>1</sup>	Erosion Hazard <sup>2</sup>	Rutting Hazard <sup>3</sup>	Hydrologic Group <sup>4</sup>
Valent sand, rolling	.02	Severe	Moderate	A
Valent sand, 3-9% slopes	.02	Moderate	Moderate	A
Haxtun loamy sand, 0-3%	.15	Slight	Moderate	C

<sup>1</sup> K Factor indicates the susceptibility of a soil to sheet and rill erosion by water. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptibility there is to erosion.

<sup>2</sup> Slight = erosion is unlikely under ordinary climatic conditions; Moderate = some erosion is likely and that erosion-control measures may be needed; Severe = erosion is very likely and Very Severe = significant erosion is expected.

<sup>3</sup> Soil rutting interpretation indicates the hazard of surface rut formation through the operation of overland equipment and machinery. The hazard is described as slight, moderate, or severe, with “slight” indicating little to no threat of rutting and “severe” indicating that ruts may form readily.

<sup>4</sup> Hydrologic Soil Groups are used to estimate runoff from precipitation: A = high infiltration rate, low runoff potential; B = moderate infiltration rate; C = slow infiltration rate; D = very slow infiltration rate, high runoff potential.

### 3.2 VEGETATION

Tetra Tech performed a site visit on January 6, 2022, and confirmed that vegetation within the Project area consists primarily of upland rangeland vegetation including alkali sacaton (*Sporobolus airoides*), rubber rabbitbrush (*Ericameria nauseosa*), silver sagebrush (*Artemisia cana*), and soapweed yucca (*Yucca glauca*). There are currently no known weed infestations at the Project area.

## 4.0 RECLAMATION

### 4.1 REMOVAL OF DRILLING, RE-ENTRY, COMPLETION EQUIPMENT AND ALL ASSOCIATED DEBRIS AND WASTE MATERIALS (1003.A)

Once drilling operations are completed, all debris and waste will be removed from location by the contractor and disposed of properly in commercial waste containers. All excavations unnecessary for operations will be backfilled per industry standards.

### 4.2 MANAGEMENT OF WASTE MATERIAL

No pits are proposed for this location. All cuttings will be removed from location and hauled offsite for commercial disposal by a licensed third-party transportation company.

### 4.3 IDENTIFICATION OF INTERIM RECLAMATION AREAS NO LONGER IN USE (1003.B)

Carbon America will begin interim reclamation on the access road and pad as soon as possible, but no later than 3 months following the drilling rig moving off the stratigraphy well location. This will allow for continued safe operations around the well pad and equipment while maximizing the interim reclamation efforts of areas unnecessary to operations.

### 4.4 COMPACTION ALLEVIATION (1003.C)

Once the location is ready for interim reclamation, non-working surface areas the will be ripped to alleviate compaction and allow for successful seeding.

### 4.5 FINAL GRADE

The location will be recontoured and sloped gently to match the surrounding topography. Erosion control best management practices will occur along the western edge of the well pad to keep potential soil erosion from leaving location. Topsoil will be reincorporated into the interim reclamation as much as possible to ensure successful revegetation.

The location will be recontoured to allow for drainage around the well pad as the previously disturbed area had flowed. The soils will be reseeded as quickly as feasible after construction to stabilize the soils, keep stockpiles and construction-exposed soils in place, and keep the microbial ecosystems viable for future reseeding (Figure 4). See Project SWMP for additional details.

### 4.6 ESTABLISH DESIRED SELF-PERPETUATING PLANT COMMUNITY (1003.E)

Carbon America will utilize a seed mix approved by the landowner to insure the viability of the soils for the continued agricultural use of the surface.

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#### **4.7 SEEDBED PREPARATION AND SEEDING (1003.E)**

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Proper site preparation will be ensured by spreading of stored and salvaged topsoil or topsoil. Replacement to an adequate depth will be accomplished by ripping, tilling, disking, harrowing, and dozer track imprinting as appropriate.

#### **4.8 MANAGEMENT OF INVASIVE PLANTS (1003.F)**

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During drilling, testing, and reclamation operations, field personnel will be trained on identifying typical noxious weeds in the area and will inspect the location for noxious weeds monthly at a minimum. If invasive plants are identified during an inspection, Carbon America will consult with the local weed control agency and weed control measures will be conducted in compliance with the Colorado Noxious Weed Act.

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#### **4.9 RECLAMATION MONITORING, INSPECTION, MAINTENANCE, AND REPORTING**

Erosion and sediment control devices will be installed to minimize sediment transport. Once the Project has undergone the initial reclamation process, monitoring and inspections will occur monthly. If an issue with the reclamation process is identified during the monthly inspections, Carbon America will assess the concern and modify the practices as necessary. These modifications may include fertilizer or soil additives to enhance seed germination and plant growth based on landowner request and approval.

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#### **4.10 INTERIM RECLAMATION COMPLETION NOTICE, FORM 4 (1003.E.(3))**

Carbon America will submit a Sundry Notice Form 4 (Appendix A) which describes the interim reclamation procedures and any associated mitigation measures performed, any changes, if applicable in the landowner's designated final land use, and at a minimum four photographs taken during the growing season facing each cardinal direction which document the success of the interim reclamation and one photograph which documents the total cover of live perennial vegetation of adjacent or nearby undisturbed land or the reference area. Each photograph shall be identified by date taken, well name, GPS location, and direction of view.

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#### **4.11 SITE-SPECIFIC INTERIM RECLAMATION BMPS**

All surface disturbance would be reclaimed to a condition consistent with COGCC and surface owner requirements. Topsoil will be segregated during construction to be redistributed during interim reclamation. Disturbed areas would be reseeded in accordance with the specific requirements of the landowner. Reseeding will occur as soon as possible after the well proposed on this location is drilled and completed. The objective of interim reclamation is to achieve stability objectives to insure erosion control and continued viability of the soils for future land use. The long-term objective of final reclamation is to return the land to approximately pre-project conditions. Erosion control would be deemed sufficient when adequate vegetation cover is reestablished, water naturally infiltrates into the soil, the site complies with the approved SWMP and when gullying, headcutting, slumping, and deep or excessive drilling is not observed. Proper site preparation would be ensured by spreading of stored and salvaged topsoil or topsoil replacement to an adequate depth and by

ripping, tilling, disking, harrowing, and dozer track imprinting where appropriate. Once well pad has been completed, interim reclamation would occur. This would consist of minimizing the footprint of disturbance through recontouring and revegetation of all disturbed areas not needed for operations (including cut/fill slopes). After the topsoil has been returned to these areas and prepared for seeding, a landowner-approved weed-free seed mix would be planted to prevent erosion, preserve soil integrity, and resist weeds. Prior to interim reclamation, Carbon America would meet with the private landowner to inspect the disturbed area, review the reclamation plan, and agree on any revisions.

## FIGURES

Carbon America  
Denova Project

Figure 1  
Site Location

SW4NW4 SEC 27; NE4, SE4NW4, NE4SW4,  
NW4SE4 SEC 28; T1N R49W of the 6th PM,  
Washington County, CO

Project Features

-  Pad Site
-  Access Road 15-foot Corridor

Transportation

-  US Highway
-  State Highway

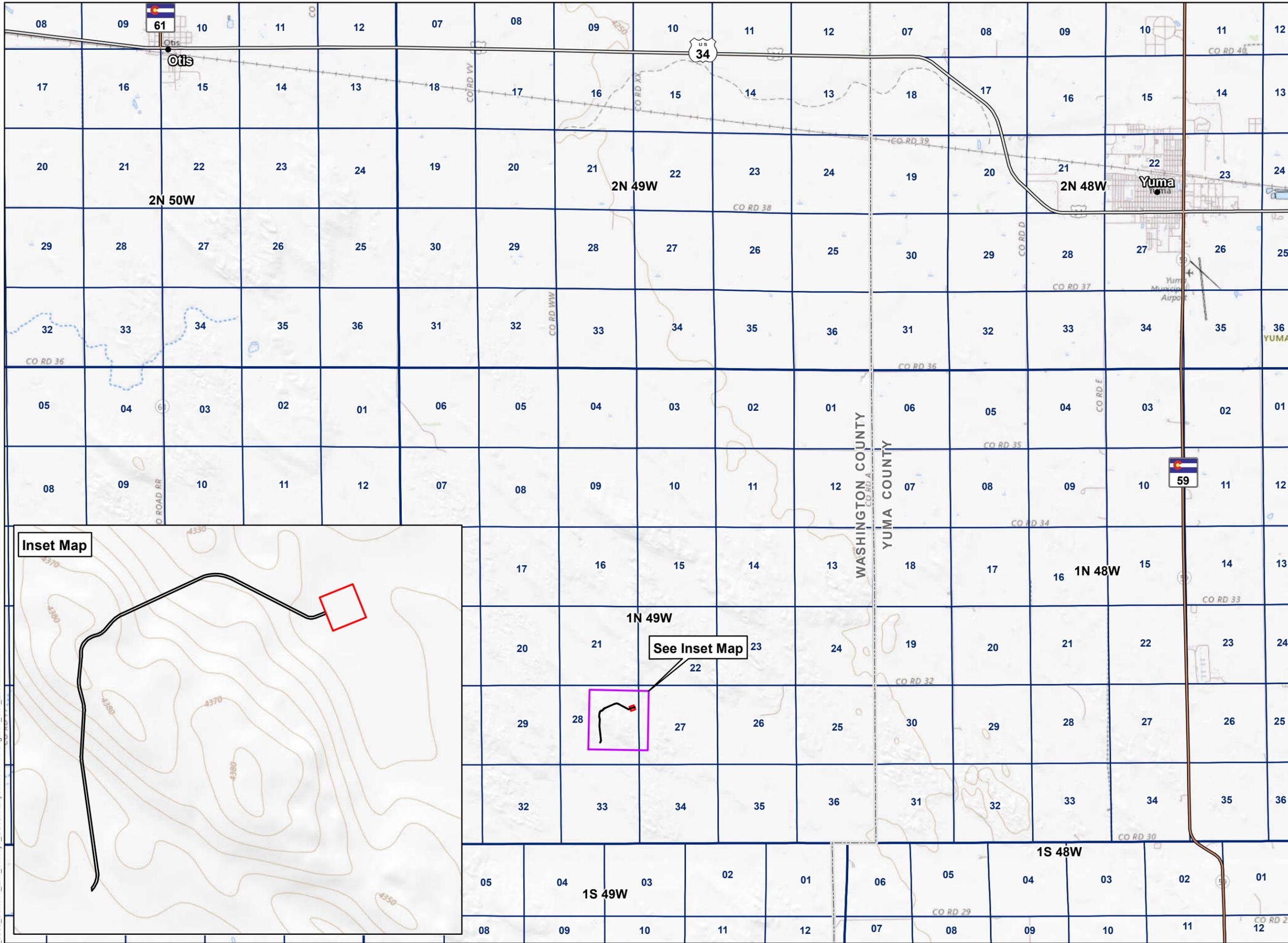
Boundaries

-  County Boundary
-  PLSS Township
-  PLSS Section



NOT FOR CONSTRUCTION

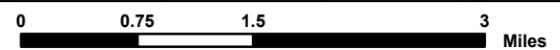
Reference Map



Inset Map

See Inset Map

1:75,000 NAD 1983 StatePlane Colorado North FIPS 0501 Feet



Source: ESRI, USGS US TOPO MAPS, BTS, US CENSUS, BLM PLSS

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**Carbon America  
Denova Project**

**Figure 2  
Site Plan**

SW4NW4 SEC 27; NE4, SE4NW4, NE4SW4,  
NW4SE4 SEC 28; T1N R49W of the 6th PM,  
Washington County, CO

**Project Features**

-  Pad Site
-  Access Road 15-foot Corridor

**Transportation**

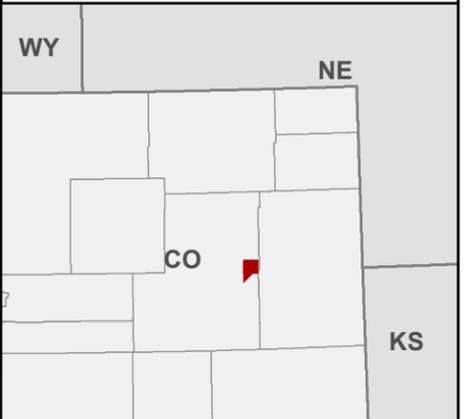
-  Existing Two-Track Path

- Soil stabilization will be initiated wherever grading activity permanently or temporarily ceases and in no case later than 14 days
- Perimeter sediment controls (silt fence, biologs, or equivalent) will be installed downgradient of all areas of soil disturbance -- including temporary stockpiles.
- ROW access from roads/driveways will not track sediment or dirt onto paved public roads
- Erosion control blanket stabilization and a culvert to maintain ditch flows will be installed at the access road entrance if widening or access improvements take place. Downstream ditch checks (biologs, rock checks or equivalent) will be installed in ditch line as needed to prevent downstream impacts.
- Staging/laydown areas TBD at the time of plan preparation.
- Plan will be updated to reflect latest project details, layout, and BMPs



**NOT FOR CONSTRUCTION**

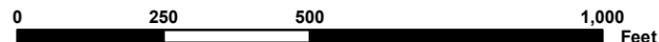
Reference Map



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**1:3,750 NAD 1983 StatePlane Colorado North FIPS 0501 Feet**



Source: ESRI, USDA NAIP, BTS, US CENSUS

**Carbon America  
Denova Project**

**Figure 3  
Natural Resources Conservation  
Service (NRCS) Soils**

SW4NW4 SEC 27; NE4, SE4NW4, NE4SW4,  
NW4SE4 SEC 28; T1N R49W of the 6th PM,  
Washington County, CO

**Project Features**

-  Pad Site
-  Access Road 15-foot Corridor

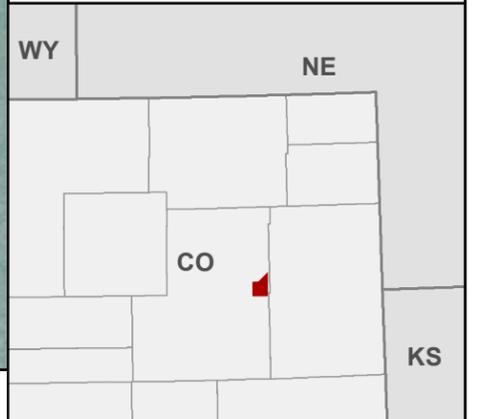
**Soil Types**

-  Valent sand, rolling
-  Valent sand, 3-9% slopes
-  Haxtun loamy sand, 0-3% slopes



**NOT FOR CONSTRUCTION**

Reference Map



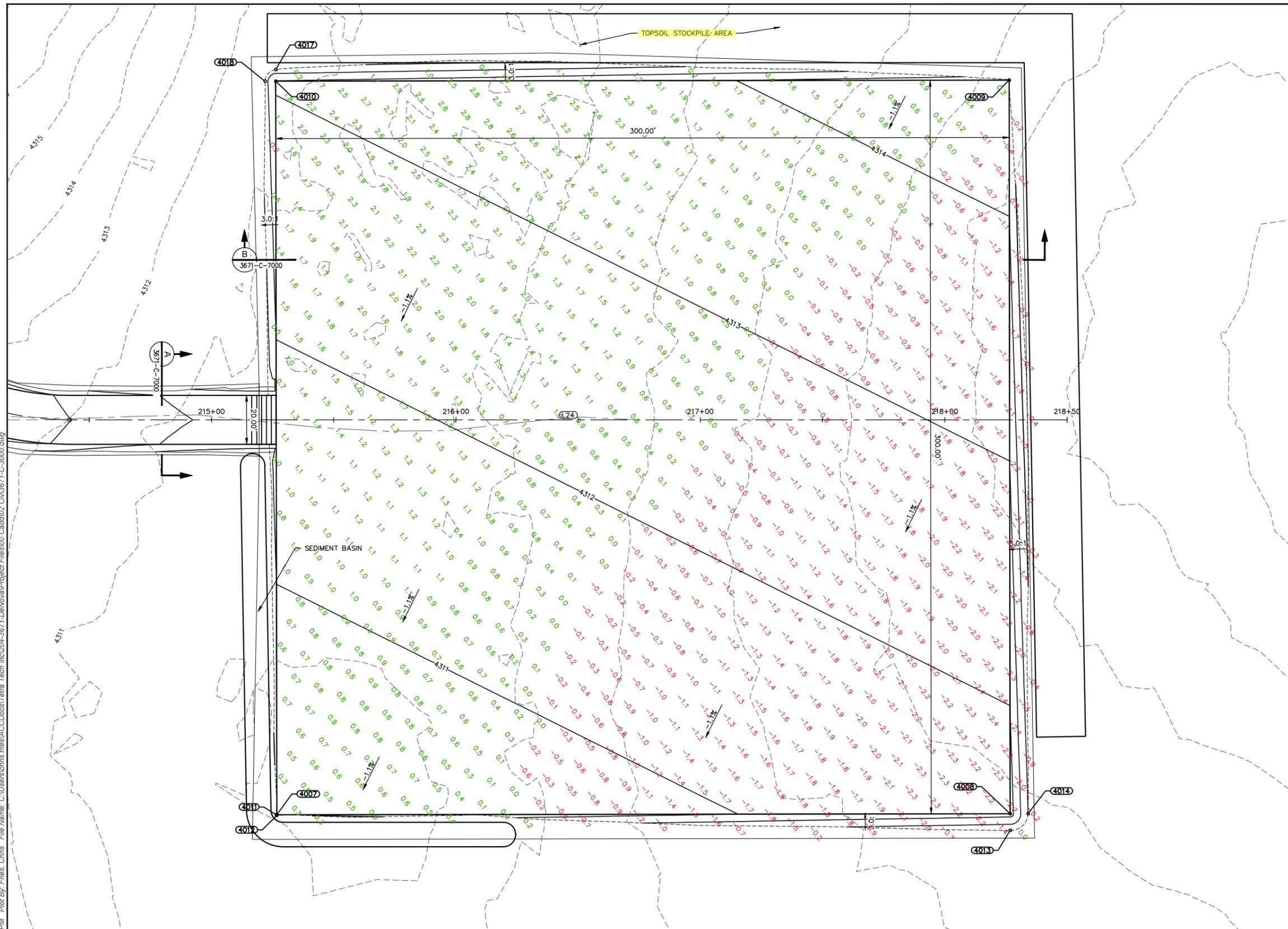
**1:4,000 NAD 1983 StatePlane Colorado North FIPS 0501 Feet**



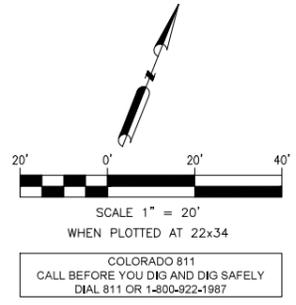
Source: ESRI, USDA NAIP, NRCS

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Plot Date: 3/29/2022 12:59:21 PM Plot By: Chris File Name: C:\Users\chris.fries\OneDrive\Documents\3671-DeNova\Project Files\00\_Cadd\02\_Civ\3671-C-3000.dwg



FINAL GRADE POINTS			
POINT #	ELEVATION	NORTHING	EASTING
4001	4308.80	1254807.41	3740523.75
4002	4308.84	1254829.27	3740498.32
4003	4308.86	1254844.90	3740495.18
4004	4308.86	1254839.55	3740475.91
4005	4308.97	1254836.48	3740476.70
4006	4310.40	1254805.65	3740453.02
4007	4310.06	1263721.64	3741455.76
4008	4311.56	1263832.23	3741734.64
4009	4314.56	1264111.10	3741624.05
4010	4313.06	1264000.51	3741345.18
4011	4310.14	1263721.55	3741455.55
4012	4310.13	1263721.43	3741455.85
4013	4313.83	1263825.89	3741737.15
4014	4313.99	1263834.92	3741741.43
4017	4311.48	1264004.92	3741343.43
4018	4311.60	1263998.90	3741341.11



REFERENCE DRAWINGS	
DWG. NO.	DESCRIPTION

REVISIONS					
NO.	DESCRIPTION	BY	DATE	CHK	DATE
B	ISSUED FOR REVIEW - ROADWAY ADDITION	CEF	03-28-2022	RML	03-28-2022
A	ISSUED FOR REVIEW	CEF	02-10-2022	RML	02-10-2022

**Carbon America**

**TETRA TECH ROONEY**  
(303) 792-5911

Washington, County Colorado

DENOVA CIVIL  
GRADING PLAN

**Figure 4: Topsoil Stockpile Area**

SCALE: 1" = 20' DWG. NUMBER: 3671-C-3000 REV: B

**APPENDIX A: COGCC FORM 4 SUNDRY NOTICE**

State of Colorado Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303)894-2100 Fax:(303)894-2109



Table with 4 columns: DE, ET, CE, ES

SUNDRY NOTICE

Submit original plus one copy. This form is to be used for general, technical and environmental sundry Information. For proposed or completed operations, describe in full on Technical Information Page (Page 2 of this form.)

Form with fields: 1. OGCC Operator Number, 2. Name of Operator, 3. Address, 4. Contact Name, 5. API Number, 6. Well/Facility Name, 7. Well/Facility Number, 8. Location, 9. County, 10. Field Name, 11. Federal, Indian or State Lease Number. Includes checkboxes for Survey Plat, Directional Survey, Surface Eqpmt Diagram, Technical Info Page, Other.

General Notice

General Notice section with checkboxes for: CHANGE OF LOCATION, CHANGE SPACING UNIT, CHANGE OF OPERATOR, CHANGE WELL NAME, ABANDONED LOCATION, NOTICE OF CONTINUED SHUT IN STATUS, SPUD DATE, REQUEST FOR CONFIDENTIAL STATUS, SUBSEQUENT REPORT OF STAGE, SQUEEZE OR REMEDIAL CEMENT WORK, RECLAMATION.

Technical Engineering/Environmental Notice

Technical Engineering/Environmental Notice section with checkboxes for: Notice of Intent, Report of Work Done, Intent to Recomplete, Request to Vent or Flare, E&P Waste Disposal, Change Drilling Plans, Repair Well, Beneficial Reuse of E&P Waste, Gross Interval Changed, Rule 502 variance requested, Status Update/Change of Remediation Plans, Casing/Cementing Program Change, Other.

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct and complete.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_ Email: \_\_\_\_\_
Print Name: \_\_\_\_\_ Title: \_\_\_\_\_

COGCC Approved: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

CONDITIONS OF APPROVAL, IF ANY: