

Topsoil Protection Plan – 304.c.(14)

PCU Fed A27 197 Oil and Gas Location

New Location

March 2023



RULE 1001. INTRODUCTION

Caerus Piceance LLC (hereafter “Caerus”) has developed the following topsoil protection plan (hereafter “Plan”) to address compliance with Federal, State, and local requirements regarding topsoil management and preservation during construction of the PCU Fed A27 197 CDP pad, pipeline and access road corridor. Proper management of topsoil from oil and gas locations during initial site construction is necessary to ensure topsoil is preserved for site reclamation—following completion of development of the well pad and pipeline and access road corridor—and to ensure adequate organic material for the re-establishment of desirable vegetation is available at reclamation (restoring the land as nearly as practicable to its condition at commencement of drilling and production operations).

RULE 1002. SITE PREPARATION AND STABILIZATION

There are three components of the PCU Fed A27 197 reclamation plan that require removal and temporary storage of topsoil: construction of the proposed CDP pad (5.692 acres), access road corridor (3.003 acres), and pipeline construction corridor (11.498 acres). Topsoil stripped during initial construction of these project components will be managed according to use and duration of development.

Prior to separation and storage of the topsoil horizon, or top six (6) inches, from the well pad facility and pipeline and access road corridor, woody vegetation will be mulched and stormwater control measures properly installed to control erosion and sedimentation during precipitation events. (The facility’s stormwater management plan includes details on stormwater control measures planned for use.) When separating soil horizons, Caerus will segregate each horizon based upon noted changes in physical characteristics, such as organic content, color, texture, density, or consistency.

To the extent feasible, stockpiled soils will be protected from degradation due to contamination, compaction, and from wind and water erosion during drilling and production operations. Surface roughening, temporary seeding and mulching, erosion control blankets, or soil binders will be used, and best management practices implemented, immediately after topsoil is stockpiled to prevent weed establishment and to maintain soil microbial activity. A seed mix that complies with 1000 Series Rules for interim and final reclamation is included in Attachment 3 of this Plan and site-specific Best Management Practices (BMPs) are included in Attachment 4.

PCU Fed A27 197 CDP Pad

During construction of the pad, the earthwork contractor will strip the topsoil horizon within the proposed disturbance area. Topsoil will be stripped to a depth no less than six inches (6”) and stockpiled along the perimeter of the proposed pad. Topsoil will be segregated from other subsurface materials disturbed during construction activities and no topsoil will be used for building the location or left in place and covered by subsoil in a cut and fill situation. To control sedimentation, and segregate topsoil from subsoils, wattles will be properly installed around the base of topsoil stockpiles and stockpile locations will be identified on associated site drawings and construction plats (available on-site throughout construction operations). Upon completion of construction activities, hydro-seed/mulch will be applied to topsoil stockpiles to stabilize the soils and promote the growth of desirable plants until interim reclamation can be completed and topsoil redistributed.

- Quantity of topsoil that will be disturbed: approximately 4,400 cubic yards (based on 6" average depth).
- Location of topsoil that will be disturbed: indicated on Colorado Oil and Gas Conservation Commission (COGCC) Form 2A and Bureau of Land Management (BLM) Application for Permit to Drill (APD).

When earthwork operations and recontouring of the site are complete (as described in the Interim Reclamation Plan), topsoil will be moved from the stockpile area and placed over the facility's interim reclamation area. Topsoil will be spread to approximate pre-disturbance depths, with greater volumes to be placed around the pad surface for use during final reclamation. The reclamation area will be seeded and mulch will be applied to stabilize soils and promote the growth of desirable vegetation. Drill seeding will be used on slopes less than 3:1 and steeper slopes will be seeded using broadcast or hydro-seeding methods. The facility's Interim Reclamation Plan provides specific details about the materials and methods to be used for interim reclamation.

Proposed Access Road Corridor

During construction of the proposed access road corridor, the contractor will strip the topsoil horizon within the thirty-foot (30') construction right-of-way (ROW) width and place the material along the up-slope side. Topsoil will be stripped to a depth between six and seven inches (6"-7"). Topsoil will be segregated from all other subsurface materials disturbed during access road construction and no topsoil will be used for building the location nor will be left in place and covered by subsoil in a cut and fill situation.

- Quantity of topsoil that will be disturbed: approximately 2,415 cubic yards (based on 6"-7" average depth).
- Location of topsoil that will be disturbed: topsoil will be stripped from the construction area and windrowed along the up-hill side of the ROW.

Following the replacement of topsoil to approximate pre-disturbance depths, the access road ROW will be seeded and mulched to stabilize the soil and promote growth of desirable vegetation. The project's Reclamation Plan provides specific details about the reclamation materials and methods to be used for the corridor.

Interim reclamation of the access road corridor will begin following construction of the access road driving surface. Windrowed topsoil along the corridor will be re-placed over cut and fill slopes. Upon completion of topsoil placement, the reclamation areas will be seeded and mulch will be applied to stabilize topsoil and promote the establishment of desirable vegetation. The facility's Interim Reclamation Plan provides specific details about the materials and methods to be used for interim reclamation of the pipeline and access road corridor.

Proposed Pipeline Corridor

During construction of the pipeline corridor, the pipeline construction contractor will strip the topsoil horizon within the construction right-of-way (ROW) width and place the material uphill of the disturbance. Topsoil will be segregated from subsurface materials excavated during pipeline installation. When construction is complete and the pipeline ROW has been re-contoured to pre-construction slopes, stripped topsoil will be uniformly replaced across the disturbance.

- Quantity of pipeline corridor topsoil that will be disturbed: approximately 9,275 cubic yards (based on 6" average depth across the 60-foot construction area).
- Location of topsoil that will be disturbed: topsoil will be stripped from the 60-foot width construction area of the pipeline ROW and windrowed along the up-slope side of the ROW.

Following the uniform placement of topsoil, the pipeline ROW will be hydro-seeded/mulched to stabilize the soil and promote growth of desirable vegetation. The project's Reclamation Plan, attached to Form 2A, provides specific details about the reclamation materials and methods to be used for the pipeline corridor.

ATTACHMENT 1: TOPSOIL SALVAGE SITE DIAGRAM

PCU FED A27 197 CDP & FRAC PAD - Topsoil Salvage Site Diagram



Pit #1 - 7" Topsoil

91

6

73

70

91

40

LEGEND

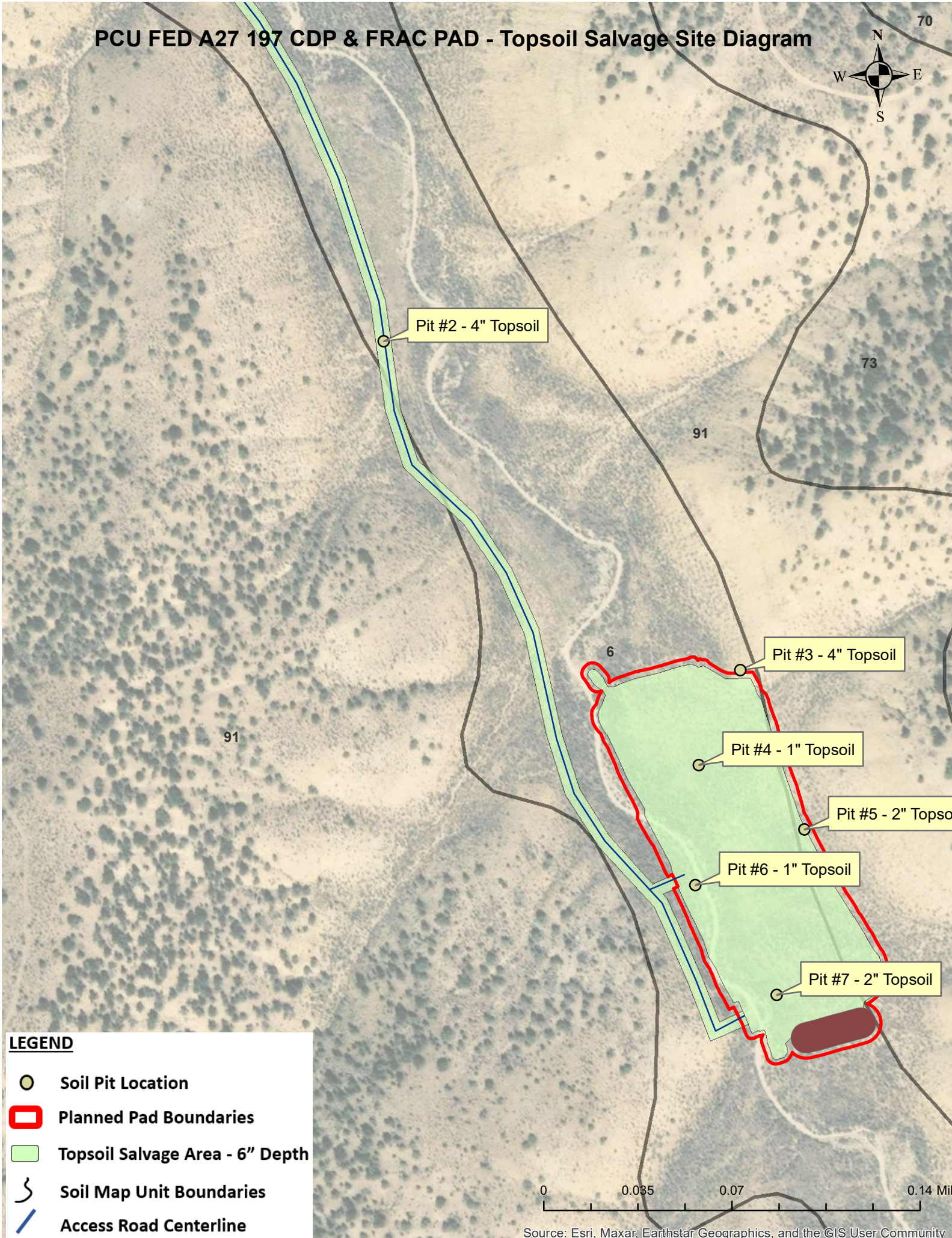
- Soil Pit Location
- Topsoil Salvage Area - 7" Depth
- Topsoil Salvage Area - 6" Depth
- Preexisting Road (No Topsoil Present)
- Soil Map Unit Boundaries
- Access Road Centerline

Pit #2 - 4" Topsoil

0 0.045 0.09 0.18 Miles

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

PCU FED A27 197 CDP & FRAC PAD - Topsoil Salvage Site Diagram



LEGEND

- Soil Pit Location
- Planned Pad Boundaries
- Topsoil Salvage Area - 6" Depth
- Soil Map Unit Boundaries
- Access Road Centerline

0 0.035 0.07 0.14 Miles
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

PCU FED A27 197 CDP & FRAC PAD - Topsoil Salvage Site Diagram



PCU FED A27 197 Pipeline - Topsoil Salvage Site Diagram



Pit #2 - 4" Topsoil

Pit #8 - 4" Topsoil

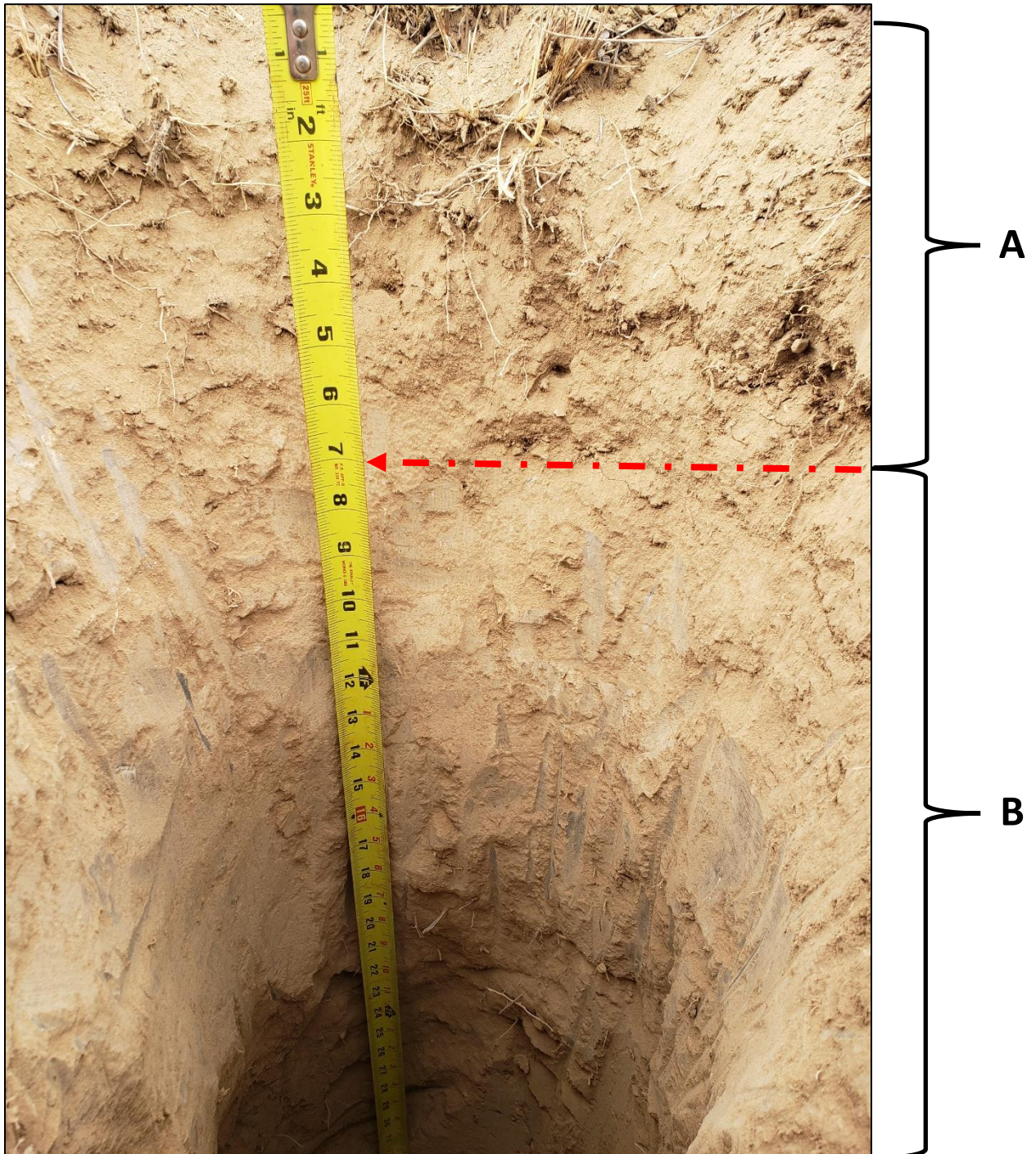
LEGEND

- Soil Pit Location
- Planned Pad Boundaries
- Topsoil Salvage Area - 6" Depth
- Pipeline Centerline
- Soil Map Unit Boundaries
- Pre-Existing Gathering Pad

ATTACHMENT 2: PHYSICAL CHARACTERISTICS OF SOIL HORIZONS

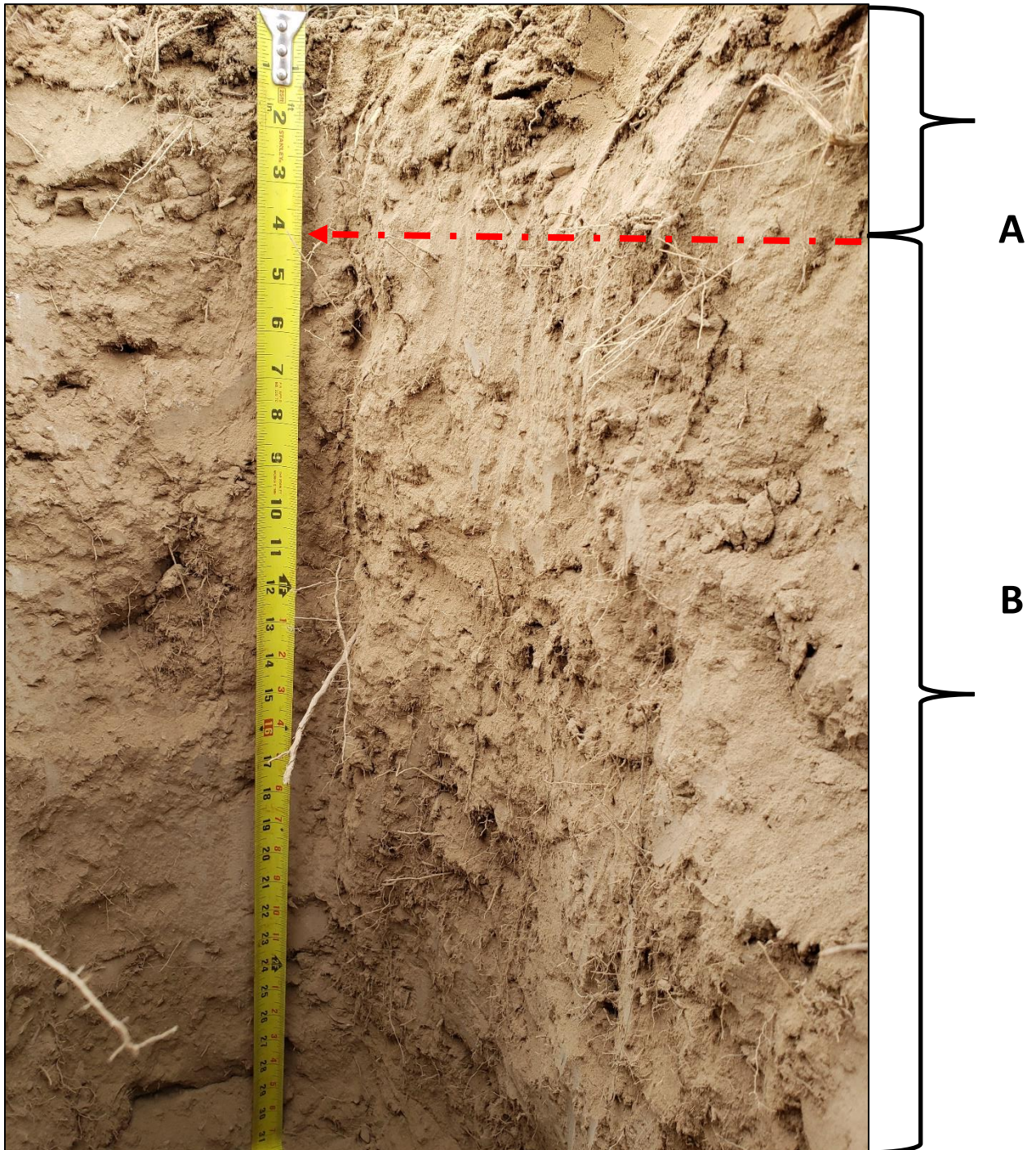
Soil Pit 1: D28T1

- Location Coordinates: 39.950999, -108.279762
- USDA NRCS Soil Type 6: Barcus channery loamy sand
- Texture: Sandy loam; clay 6.8%, sand 69.2%, silt 24.0%
- Munsell Color: 7.5 YR 4/4
- Organic Matter: 2.5%
- A Horizon: surface to 7", channery loamy sand
- B Horizon: 7"-33", channery sand to stratified very channery sand to very channery loamy fine
- Total Depth: 33"



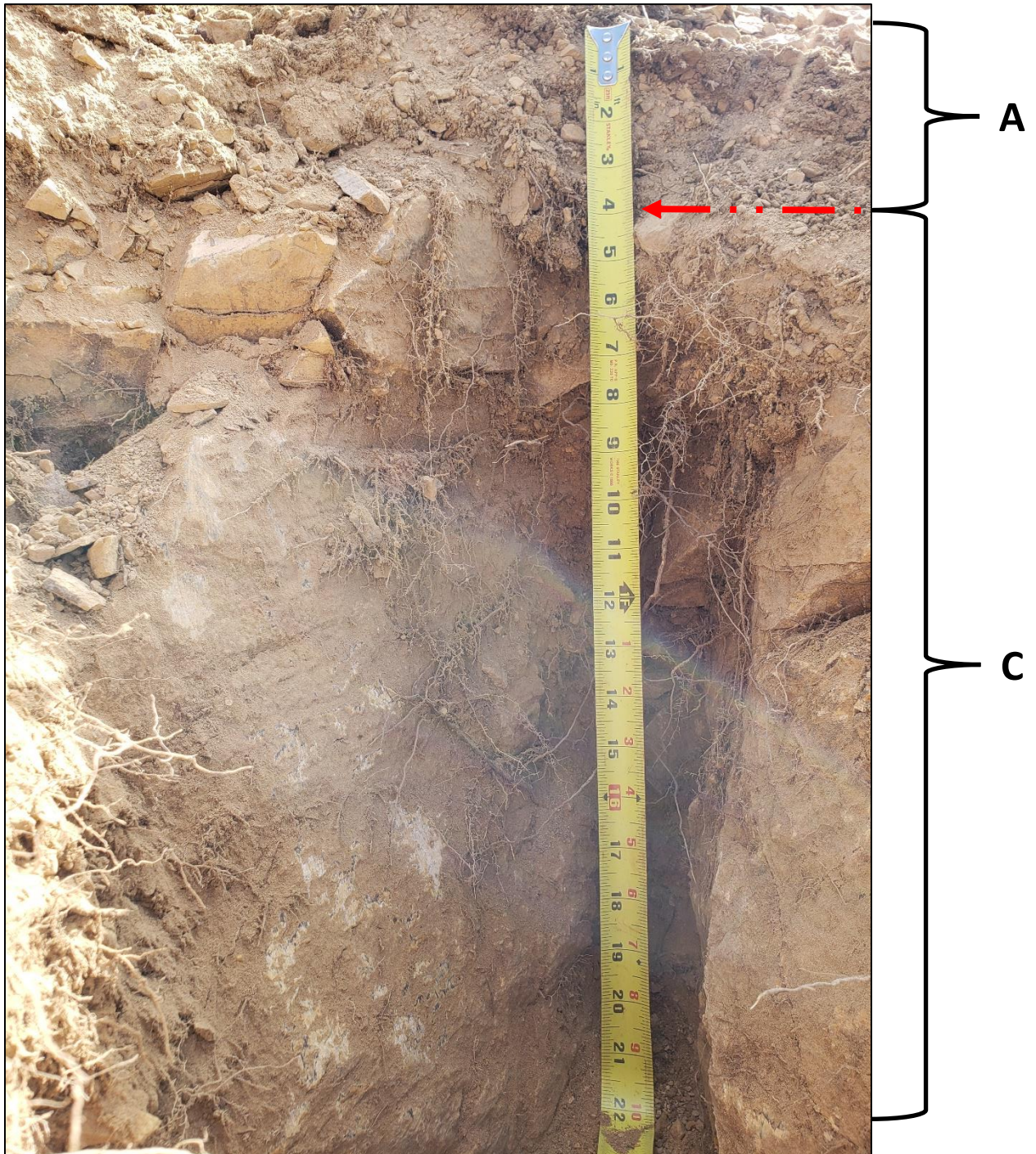
Soil Pit 2: D28T2

- Location Coordinates: 39.943598, -108.276805
- USDA NRCS Soil Type 6: Barcus channery loamy sand
- Texture: Sandy loam; clay 4.8%, sand 73.2%, silt 22.0%
- Munsell Color: 7.5 YR 5/4
- Organic Matter: 1.7%
- A Horizon: surface to 4", channery loamy sand
- C Horizon: 4"-32", alluvium
- Total Depth: 32"



Soil Pit 3: A27T1

- Location Coordinates: 39.941770, -108.274378
- USDA NRCS Soil Type 6: Barcus channery loamy sand
- Texture: Loamy sand; clay 4.8%, sand 77.2%, silt 18.0%
- Munsell Color: 7.5 YR 4/4
- Organic Matter: 2.7%
- A Horizon: surface to 4", channery loamy sand
- C Horizon: 4"-22", channery sand to weathered bedrock
- Total Depth: 22"



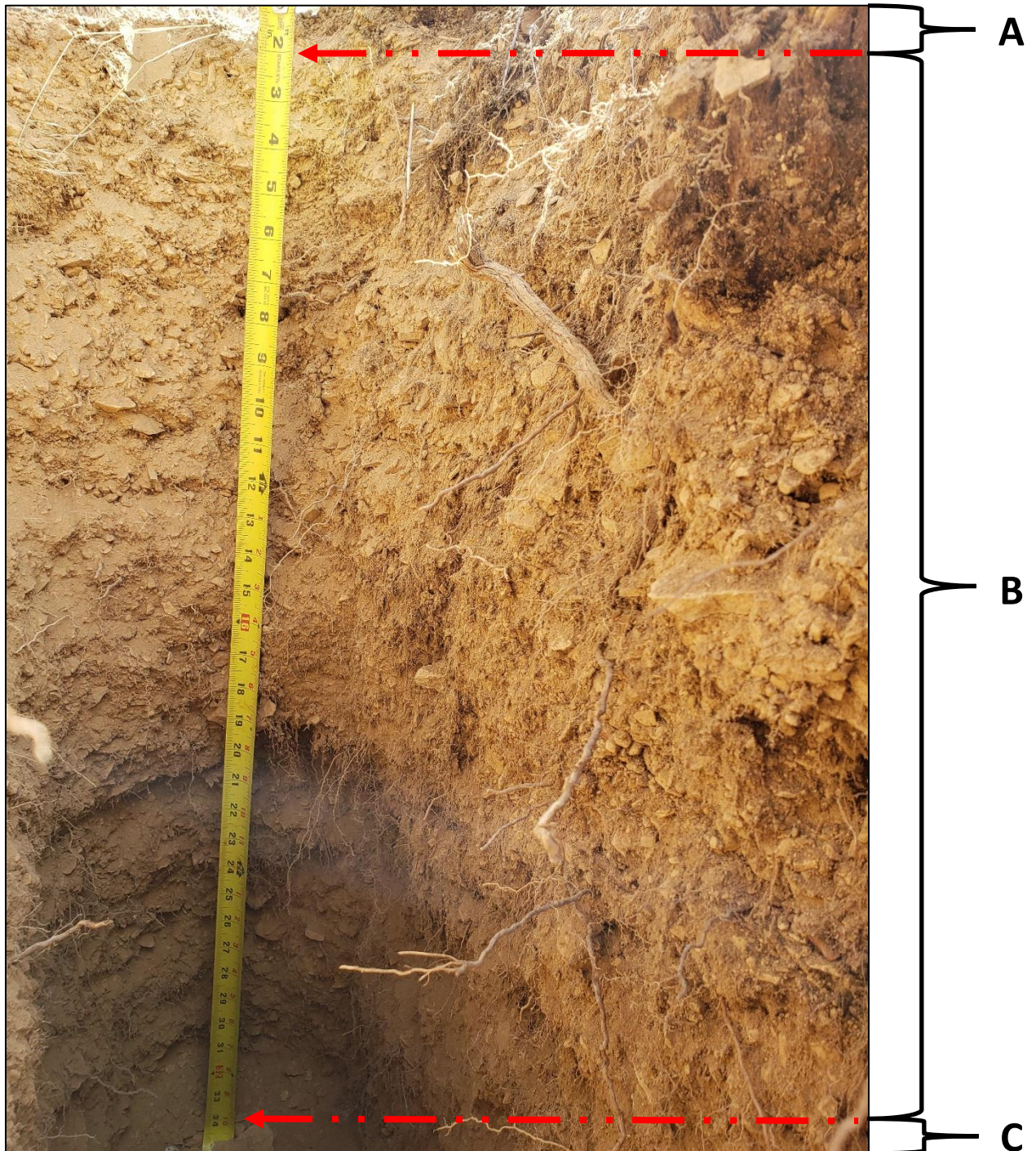
Soil Pit 4: A27T2

- Location Coordinates: 39.941266, -108.274689
- USDA NRCS Soil Type 6: Barcus channery loamy sand
- Texture: Loamy sand; clay 7.6%, sand 70.8%, silt 21.6%
- Munsell Color: 7.5 YR 4/3
- Organic Matter: 2.3%
- A Horizon: surface to 1", channery loamy sand
- B Horizon: 1"-34", alluvium
- C Horizon: 34", stratified very channery sand to very channery loamy fine sand
- Total Depth: 34"



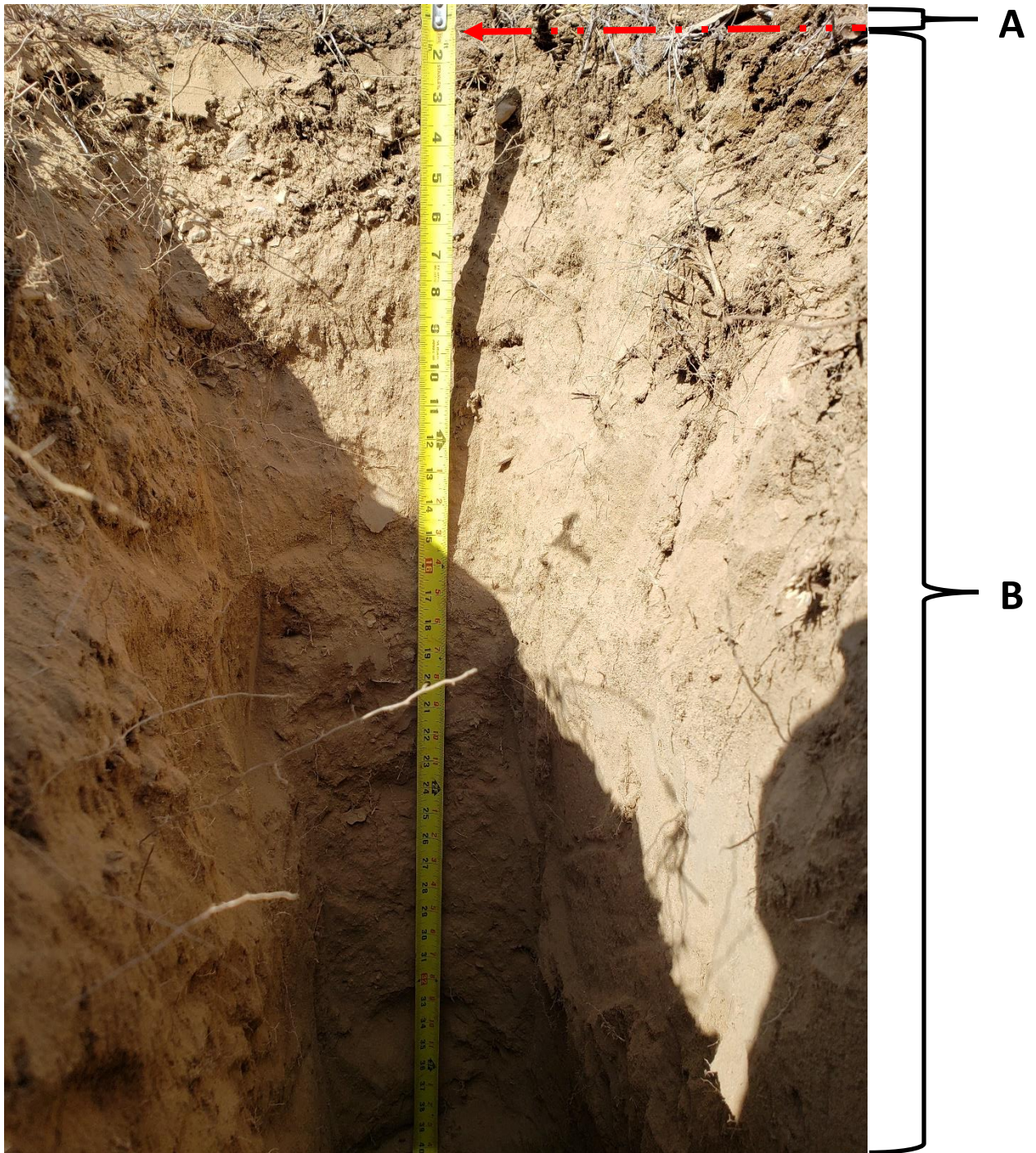
Soil Pit 5: A27T3

- Location Coordinates: 39.940902, -108.273963
- USDA NRCS Soil Type 91: Torriorthents-Rock outcrop complex
- Texture: Sandy loam; clay 5.6%, sand 72.8%, silt 21.6%
- Munsell Color: 7.5 YR 4/4
- Organic Matter: 2.6%
- A Horizon: surface to 2", channery loam
- B Horizon: 2"-34", alluvium
- C Horizon: 34", very channery loam
- Total Depth: 34"



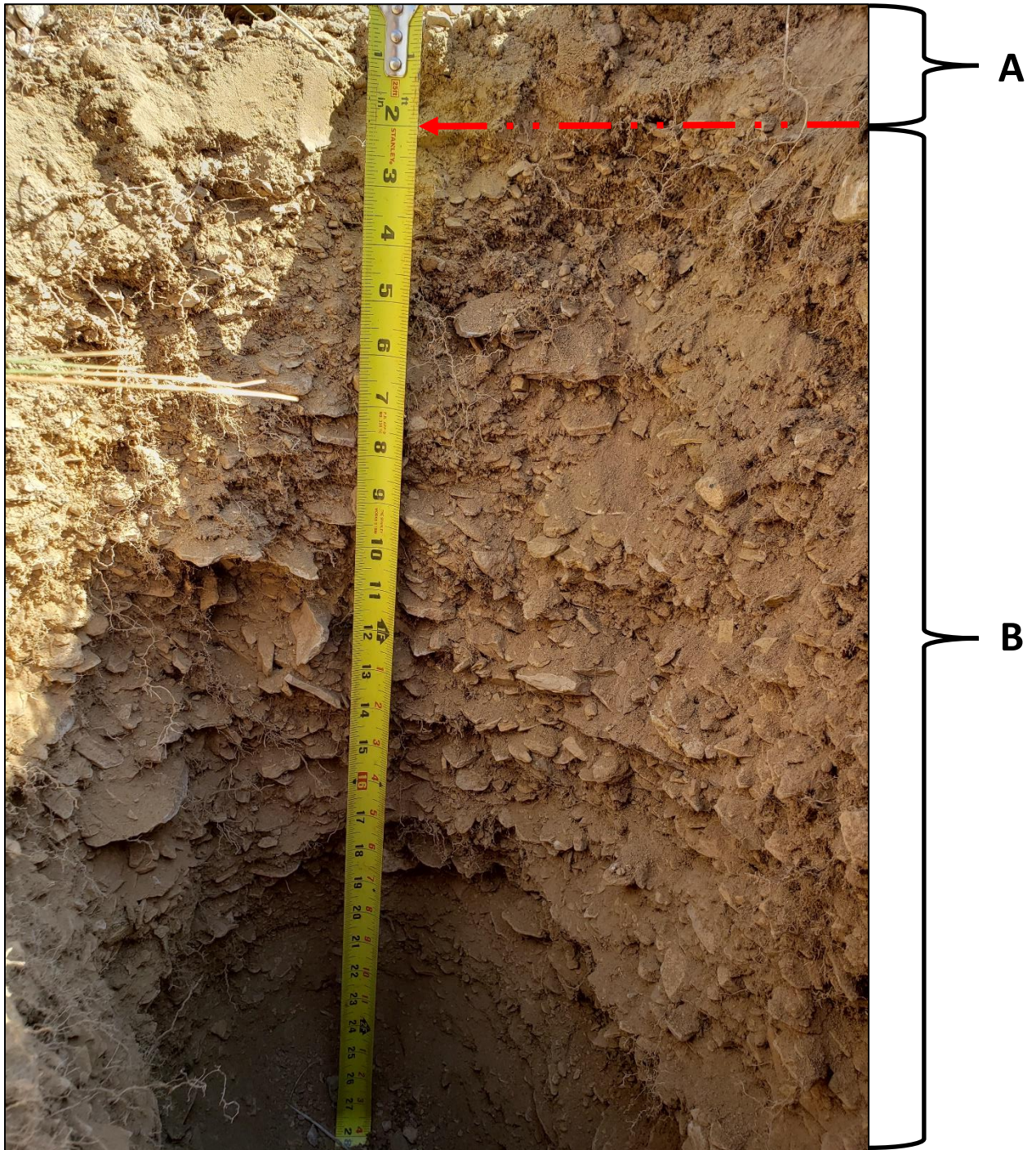
Soil Pit 6: A27T4

- Location Coordinates: 39.940620, -108.274739
- USDA NRCS Soil Type 6: Barcus channery loamy sand
- Texture: Loamy sand; clay 3.6%, sand 82.8%, silt 13.6%
- Munsell Color: 7.5 YR 4/4
- Organic Matter: 1.6%
- A Horizon: surface to 1", channery sandy loam
- B Horizon: 1"-41", alluvium
- Total Depth: 41"



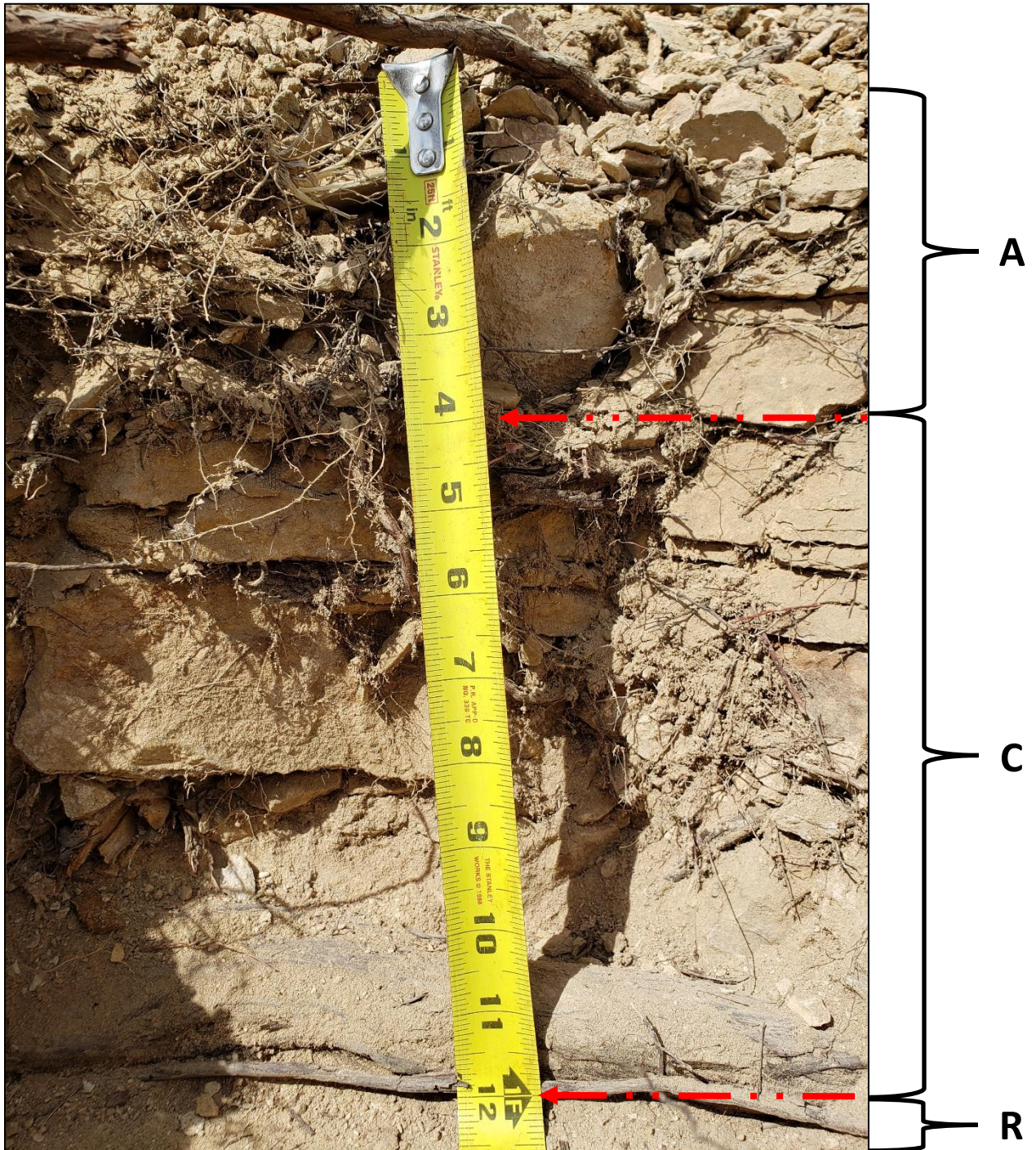
Soil Pit 7: A27T5

- Location Coordinates: 39.940016, -108.274192
- USDA NRCS Soil Type 6: Barcus channery loamy sand
- Texture: Loamy sand; clay 4.8%, sand 81.2%, silt 14.0%
- Munsell Color: 7.5 YR 4/4
- Organic Matter: 2.5%
- A Horizon: surface to 2", channery sandy loam
- B Horizon: 2"-28", alluvium
- Total Depth: 28"



Soil Pit 8: D28T9

- Location Coordinates: 39.936757, -108.277700
- USDA NRCS Soil Type 91: Torriorthents-Rock outcrop complex
- Texture: Loamy sand; clay 2.8%, sand 77.2%, silt 20.0%
- Munsell Color: 7.5 YR 5/4
- Organic Matter: 2.3%
- A Horizon: surface to 4", channery loam
- C Horizon: 4"-12", very channery loam to weathered bedrock
- R Horizon: 12", unweathered bedrock
- Total Depth: 12"



ATTACHMENT 3: SEED MIX

BLM WRFO Seed Mix # 3 + Cover Crop

Cultivar	Species	Scientific Name	Application Rate (lbs. PLS/Acre)
Rosana	Western Wheatgrass	<i>Pascopyrum smithii</i>	4
Rimrock	Indian Ricegrass	<i>Achnatherum hymenoides</i>	3
Whitmar	Bluebunch Wheatgrass	<i>Pseudoroegneria spicata ssp. inermis</i>	3.5
Maple Grove	Lewis Flax	<i>Linum lewisii</i>	1
Critana	Thickspike Wheatgrass	<i>Elymus lanceolatus ssp. lanceolatus</i>	3
VNS	Sulphur Flower Buckwheat	<i>Eriogonum umbellatum</i>	1.5
VNS	Needle and Thread	<i>Elymus lanceolatus ssp. lanceolatus</i>	2.5
VNS	Scarlet Globemallow	<i>Sphaeralcea coccinea</i>	0.5
Cover Annual			
Triticale (Fall Planting) or Oats (Spring Planting)			10
Total lbs. PLS/Acre			29

ATTACHMENT 4: SITE-SPECIFIC BMPs

Topsoil Protection Best Management Practices

Pre-disturbance Soil Evaluation

- The Oil and Gas Location spans two Soil Map Units (SMU):
 1. SMU 6: Barcus channery loamy sand, 2-8% slopes, and
 2. SMU 91: Torriorthents-Rock outcrop complex, 15-90% slopes.
- Soil pits were evaluated to determine pre-disturbance soil horizon depths.
- Topsoil samples were collected for laboratory analysis to determine pre-disturbance agronomic characteristics.
- Pre-disturbance topsoil depth was used to estimate topsoil salvage volumes.

Topsoil Protection Procedures

- Topsoil will be salvaged from the construction area to a depth of six to seven inches (6"-7").
- Topsoil will be stockpiled with slopes no greater than 3:1 when soil volume and stockpile space allows.
- Stockpile locations will be marked and clearly identified on site maps and construction drawings available on-site until the soils are redistributed during interim reclamation.
- Salvaged topsoil will be seeded and stabilized with mulch while stockpiled.
- Caerus employees and contractors will monitor topsoil stockpiles for erosion and establishment of undesirable and noxious weeds.
- Weeds will be treated mechanically when feasible. Chemical treatment of weeds will use broad-leaf herbicides only. Soil sterilant and non-selective herbicides will not be used.
- Erosion will be repaired as soon as practicable and additional control measures will be installed as necessary to prevent reoccurrence.
- During reclamation, topsoil will be redistributed throughout the interim reclamation area and contoured to match pre-disturbance topography.
- The interim reclamation area will be seeded with a mix approved by the surface owner and temporarily stabilized with crimped straw mulch.
- Topsoil will be monitored throughout all phases of development to identify potential degradation and make repairs as soon as practicable.