BISON
IV OPERATING

TOPSOIL PROTECTION PLAN

747 Pad

Contents

Appendices

1. Introduction

Bison IV Operating, LLC (Bison) contracted H2E Incorporated (H2E) to prepare this document to satisfy the requirements of ECMC Rules 304.c.(14) for developing a topsoil protection plan in accordance with the requirements of ECMC Rule 1002.c, accompanying the Form 2A to demonstrate the Commission's Rules for the operation of the proposed oil and gas location in a manner that protects and minimizes adverse impacts to public health, safety, welfare, the environment, and wildlife resources.

H2E field staff are experienced and competent in describing and classifying field soils and determining suitable topsoil depth. This document was reviewed by H2E's Reclamation Program Manager, Clay Wood, a Certified Professional in Rangeland Management (CPRM #CP20-001) and a Certified Ecological Restoration Practitioner (CERP #0392).

2. Desktop Classification of Soils

To determine anticipated site characteristics for the location, Geographic Information System (GIS) data from the Natural Resource Conservation Service (NRCS) along with aerial photography was overlain on the site's proposed disturbance boundary to derive potential ecological site descriptions (ESDs) and NRCS soil map units. A desktop review of the proposed project area indicates the presence of one soil map unit – 100% of the project area consists of Platner loam (0 to 3 percent slopes).

The Platner loam (0 to 3 percent slopes) soil map unit typical profile shows an anticipated Ap horizon depth of 0 to 6 inches consisting of loam, where it transitions to a Bt1 horizon (6 to 11 inches) consisting of clay. The depth to a restrictive feature is more than 80 inches. The drainage class is well drained, and the available water capacity is moderate (about 8.1 inches). This soil type has a hydrologic soil group classification of Group C - soils having slow infiltration rates when thoroughly wetted, consisting chiefly of (1) soils with a layer that impedes the downward movement of water, or (2) soils with moderately fine or fine textures and slow infiltration rate. These soils have a slow rate of water transmission.

Slopes in the project area range from 0 to 3 percent. The risk of susceptibility to erosion/runoff is high based on K factor values; the overall erosion hazard is slight.

See Appendix A for soils/erosion maps. The NRCS soils reports can be found as an attachment to the form 2A.

3. Field Classification & Methodology

H2E field staff excavated soil test pits by hand to determine actual topsoil depths across the proposed project location. At least one test pit is excavated within each NRCS soil type across the project area, with a minimum of at least two test pits. There was potential for the proposed pad to be situated in a new/different soil type to the south, so a second Platner loam test pit was excavated very near the boundary of those two soils types on the southern edge of the proposed pad boundary. Soil samples were collected from the topsoil and subsoil horizons at each test pit location for laboratory analysis. Test pits were used as a starting point to compare NRCS soil data regarding topsoil depth with field-verified topsoil depths and determine the amount of salvageable topsoil. The methodology involves considering

ecological site descriptions, plant communities, apparent soil depths, and any other indicators that soil type and depth characteristics are changing and digging additional test pits as needed to ascertain soil types or depths. Based on field conditions and developments, a representative number of soil samples are also taken throughout the areas of the planned disturbance using a one-piece probe soil sampler (push probe) to confirm test pit findings and to ascertain more precise boundaries of topsoil types and depths.

3.1. Test Pit #1 Platner Loam (0 to 3 percent slopes)

Test pit #1 was excavated to a depth of 14 inches. A very distinct texture change was identified at a depth of 6 inches where the loam topsoil horizon transitioned to a clay subsoil horizon and the ground became more compacted and much harder to dig/excavate. A subtle color change was also noted from brown (10YR 5/3) to grayish brown (10YR 5/2) at this depth. The NRCS soil report predicted an Ap topsoil horizon ranging from 0-6 inches consisting of loam, which then transitions to a clay Bt1 subsoil horizon (6-11 inches), which coincides with field observations. Field observations are indicative of a topsoil horizon depth of 6 inches.

3.2. Test Pit #2 Platner Loam (0 to 3 percent slopes)

Test pit #1 was excavated to a depth of 14 inches. A very distinct texture change was identified at a depth of 6 inches where the loam topsoil horizon transitioned to a clay subsoil horizon and the ground became more compacted and much harder to dig/excavate. A subtle color change was also noted from brown (10YR 5/3) to grayish brown (10YR 5/2) at this depth. The NRCS soil report predicted an Ap topsoil horizon ranging from 0-6 inches consisting of loam, which then transitions to a clay Bt1 subsoil horizon (6-11 inches), which coincides with field observations. Field observations are indicative of a topsoil horizon depth of 6 inches.

3.3. Test Pit Findings Summary

The 747 pad test pit and push probe field observations are indicative of a consistent topsoil horizon depth of 6 inches across the project area, with a topsoil Munsell color of brown (10YR 5/3) and a loam texture.

Locations of the test pits, push-probe points, and overall topsoil depth across the project area are shown in Appendix B – Test Pit Location Map. Soil sample lab analytical results can be found in Appendix C. See Appendix D for the test pit photo documentation, and Appendix E for the Test Pit and Soil Probe Field Form, which documents field observations.

3.4. Total Estimated Topsoil Salvage

The estimated total volume of topsoil to be salvaged at a depth of 6 inches can be seen in the layout drawings that are submitted with the Form 2a.

4. Topsoil Stockpile and Protection

ECMC regulations for topsoil stockpile construction state, “All stockpiled soils shall be protected from degradation due to contamination, compaction and, to the extent practicable, from wind and water erosion during drilling and production operations. Best management practices to prevent weed establishment and to maintain soil microbial activity shall be implemented.”

During initial pad construction, the topsoil will be stripped from the disturbance area and stored onsite (along the east/southeast sides and northeast corner of the pad) for future use during pad pull-back and interim reclamation. The topsoil stockpiles vary in height throughout but are 12 feet or less and have 3:1 slopes. All stockpiled topsoil will be protected from degradation due to contamination, compaction, and, to the extent practicable, from wind and water erosion. This will be achieved initially by applying cat-tracking to the topsoil piles and using additional BMPs if needed. Bison will maintain a weed mitigation maintenance schedule to prevent the establishment of weeds on the topsoil piles. Bison will consult with the landowner and coordinate with the local weed authority/agency as needed if/when conducting weed management activities in compliance with the Colorado Noxious Weed Act. During pad pull-back and interim reclamation phases, the topsoil pile will be respread over the non-working surface. The reclaimed area will be ripped and returned to landowner for agricultural-use. A topsoil pile will remain onsite following interim reclamation along the east/southeast edge of the pad, which will be seeded/mulched for long-term stabilization and will be used at the time of final reclamation of the location. See the Layout Drawings, that are submitted with the Form 2a, for the specific location of the topsoil stockpiles during the construction and interim phases.

5. Seedbed Preparation & Seeding

All reclaimed areas will be ripped and returned to landowner for agricultural-use.

6. BMPs

Site-specific BMPs related to topsoil at the location are consolidated and provided in this section. The following list of BMPs are anticipated to be employed at the subject location.

- Cat-tracking/equipment-tracking will be used as a temporary stabilization measure of the topsoil piles.
- Seed/mulch will be used as a permanent stabilization measure of the topsoil piles.
- Weed mitigation will be performed (mowing and/or spraying) on a routine basis per Bison's seasonal schedule and on an ad-hoc basis when necessary. Routine inspection throughout the life of the pad will be used to identify when action is needed beyond the routine weed mitigation schedule. Bison will also coordinate with the local weed authority/agency, when necessary, in compliance with the Colorado Noxious Weed Act.
- Compaction will be limited to maintain microbial activity within the topsoil piles, and the topsoil stockpiles will be seeded/mulched to promote vegetation growth.

Appendix A

Soils Maps

BISON IV OPERATING

Stormwater Management Plan
Soils Map

747 Pad

N W E S

Date: 10/31/2024

0 0.28 0.55

Miles

1:17,000

Prepared by:

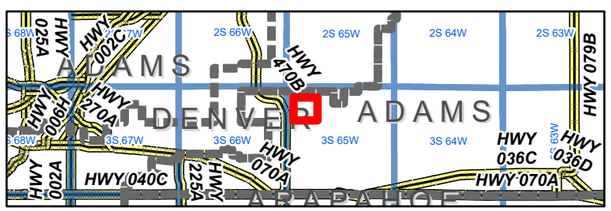
Access Road
NHD Flowline
Area of Potential Impact
Wetland
Major Road

Map Unit Name:

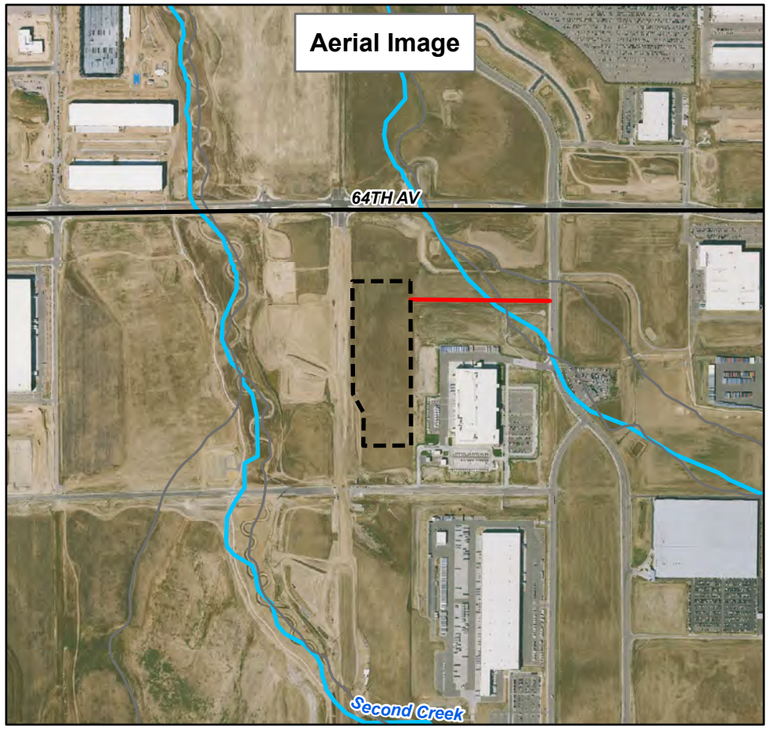
- Adena-Colby association, gently sloping
- Loamy alluvial land
- Nunn loam, 1 to 3 percent slopes
- Platner loam, 0 to 3 percent slopes
- Platner loam, 3 to 5 percent slopes
- Renohill loam, 3 to 9 percent slopes
- Weld loam, 1 to 3 percent slopes
- Wiley-Adena-Renohill complex, 3 to 20 percent slopes

K Factor Value Groupings (Approximate):

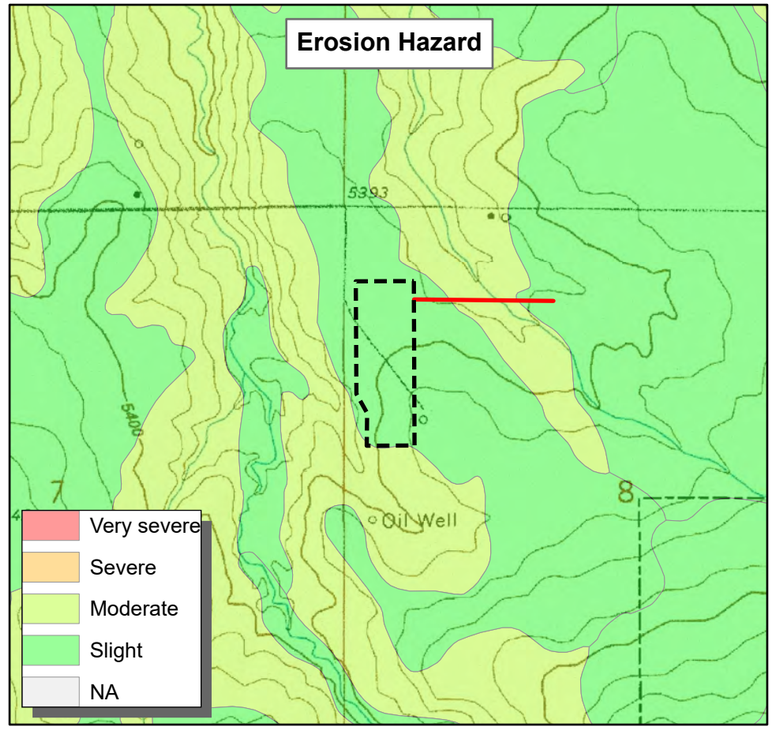
Low susceptibility to erosion/runoff: ≤ 0.2
Moderate susceptibility to erosion/runoff: > 0.2 - 0.4
High susceptibility to erosion/runoff: > 0.4

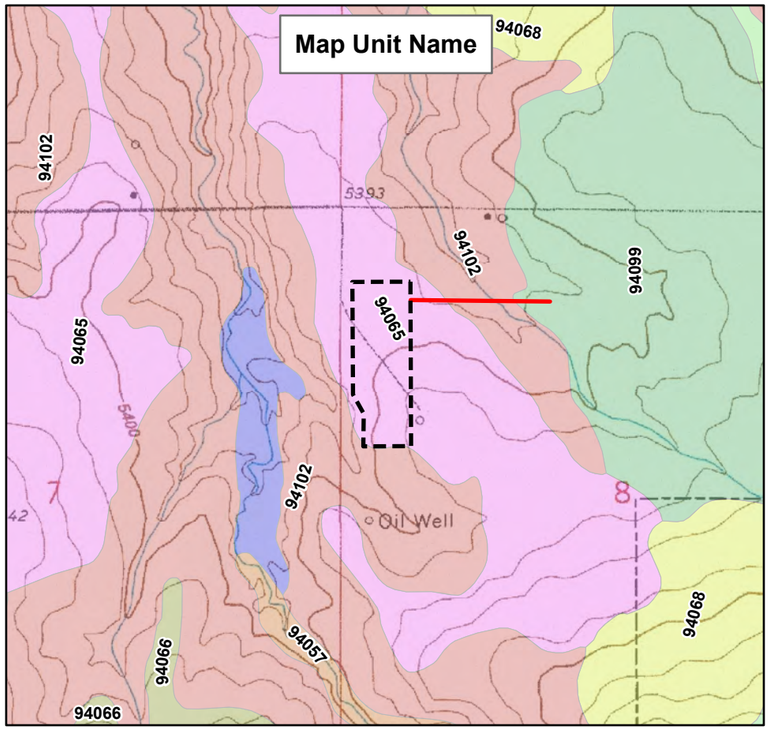


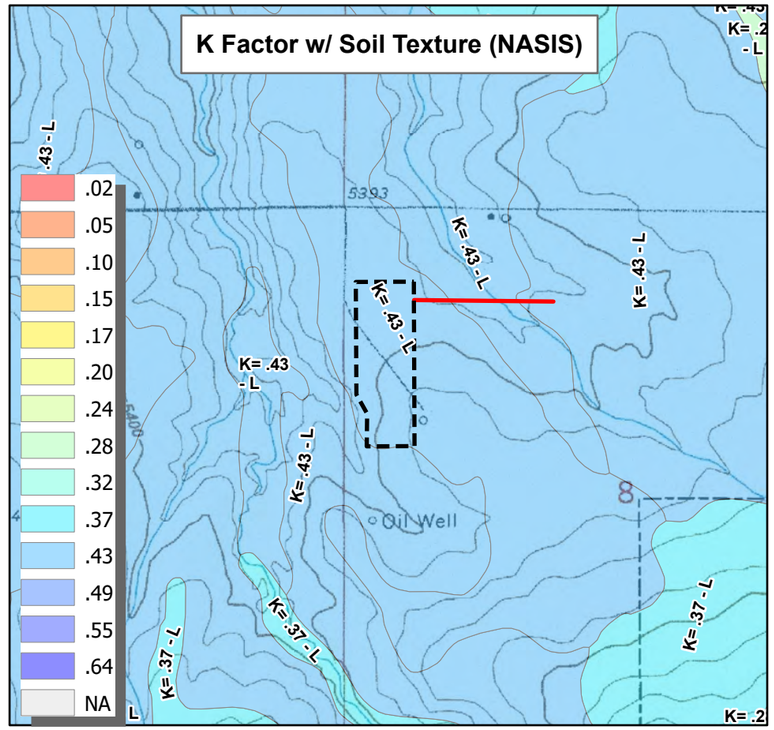
Document Name: BOG_Soils_v1 User Name: nwilson



All data is from the NRCS soil surveys and is useful for overview purposes only. Onsite verifications are required to confirm accuracy when used for planning.







Appendix B

Test Pit Location Map

BISON IV OPERATING

Topsoil Management Plan

747 Pad

Prepared by:

N W E S

0 365 730

Feet

Editor: nwilson

File: BOG_Soils_MGMT_v1

Scale: 1:3,260

Date: 10/31/2024

Soil Test Pit
Soil Probe Point
Road - Proposed
Construction Boundary
Waterway
Riverine

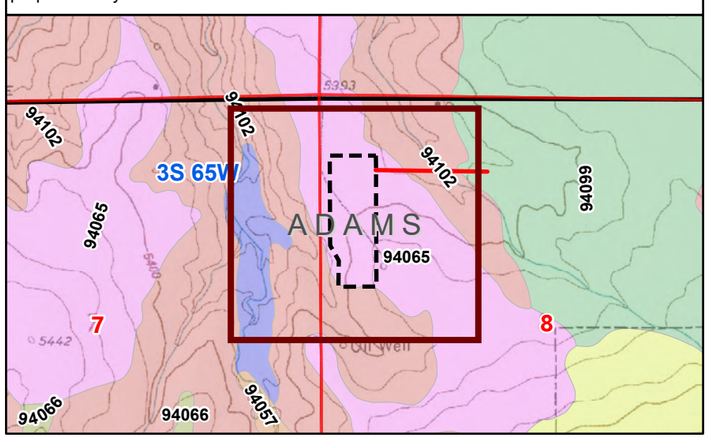
Topsoil Depths

6"

Map Unit Name

- Adena-Colby association, gently sloping
- Loamy alluvial land
- Nunn loam, 1 to 3 percent slopes
- Platner loam, 0 to 3 percent slopes
- Platner loam, 3 to 5 percent slopes
- Renohill loam, 3 to 9 percent slopes
- Weld loam, 1 to 3 percent slopes
- Wiley-Adena-Renohill complex, 3 to 20 percent slopes

Note: Disturbance boundary's scale is approximate and primarily for representation purposes only.



Appendix C

Soil Sample Analytical

Division of Environmental Testing
2115 N Scranton St Suite 3040A
Aurora, CO 80045
800-440-5184

September 24, 2024

7100 Broadway Bld 1, Suite C-PH
Denver CO 80221
630-824-8716
shockett@h2eincorporated.com

Project Manager :	Cameron Denison
Project Name :	Bison-Friendly Skies Pad
Project Number :	N/A

Attached are the analytical results for Bison-Friendly Skies Pad N/A received by Elevation Diagnostics, Division of Environmental Testing on September 16, 2024. This is associated with Elevation's number AA12145 .

The results were analyzed under the guidelines of various methods. These methods are identified in the report as follows: "SW" is referring to the EPA's SW-846 Compendium; "EPA" is referring to 40 CFR part 136; "HACH" is referring to a method which was validated by HACH®; "SM" is referring to a revision of the Standard Methods For the Examination of Water and Wastewater; and "ASTM" is referring to the standard test method set forth by ASTM International.

The analytical results in this report apply specifically to the samples listed in the attached Chain of Custody. This report may only be duplicated in full.

Any deviations to sample integrity, method specifications, or Elevation Diagnostics's standard operating procedures are documented in the report below.

Please contact us for any questions or comments concerning the content of this report.

Thank you,

Elevation Diagnostics, Division of Environmental Testing

Chain of Custody Form

Elevation Diagnostics

2115 North Scranton Street Suite 3040A Aurora, CO 80045
800.440.5184

Client: H2E Incorporated
Address: 7100 Broadway, Bld 1, Suite C-PH
City/State/ZIP: Denver, CO 80221
Phone: 224-399-5586
Project Contact: Cameron Denison

Project Name: Bison-Friendly Skies Pad
Project Location: DIA
Collector Name: William Sweeney

					Preservative				Matrix			Analysis Requested									Notes
Sample ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO_3	None	Other ___	Water	Soil	Other ___	SAR, EC, ESP, CEC	pH, Organic Matter	NO3-N, NH4	CaCO3, Texture	HWS Boron	Chloride	Cu, Fe, Mn, P, K, Zn			
1	Pit #1 Topsoil	9/11/24	2PM	1			x			x											
2	Pit #1 Subsoil	9/11/24	2 PM	1			x			x											
3	Pit #2 Topsoil	9/11/24	3 PM	2			x			x											
4	Pit #2 Subsoil	9/11/24	3PM	1			x			x											
5																					
6																					
7	AA12145-1 AA12146-1 AA12147-1 AA12148-1																				
8																					
9																					
10																					

Relinquished By: William Sweeney
Date/Time: 9/16/24 1:30 PM

Relinquished By:
Date/Time:

Relinquished By:
Date/Time:

Scan to Deliver Samples

Lab Use Only

Observed Temperature Upon Receipt: 23.3°C
Corrected Temperature Upon Receipt: 24.6°C
Thermometer #: EDXEQ238
Correction Factor: +1.3°C

Samples Intact: (Yes) No
pH Checked: Yes (No)
pH Adjusted: Yes (No)
Name/Lot Number of Adjustment:

2024-09-16-006

Division of Environmental Testing
2115 N Scranton St Suite 3040A
Aurora, CO 80045
800-440-5184

FINAL RESULTS REPORT

Report Date : 9/24/2024
Report Time : 15:29

Project Manager: Cameron Denison **Project Name:** Bison-Friendly Skies Pad **Project Number:** N/A

Sample ID / Analyte Name	Customer ID	Collected / Analysis Start		Dilution	Result	Units	MDL	Method Ref. / Recovery
AA12145-1	Pit #1 Topsoil	**Collected :**	09/11/2024 14:00					
AB-DTPA Metals - Copper		09/18/2024	11:02	10.00	<50.00 - RL1	ppm	50.000	AB-DTPA
AB-DTPA Metals - Iron		09/18/2024	11:02	10.00	36.21	ppm	0.500	AB-DTPA
AB-DTPA Metals - Manganese		09/18/2024	11:02	10.00	16.17	ppm	0.500	AB-DTPA
AB-DTPA Metals - Phosphorous		09/18/2024	11:02	10.00	11.18	ppm	0.500	AB-DTPA
AB-DTPA Metals - Potassium		09/18/2024	11:02	10.00	880.17	ppm	0.500	AB-DTPA
AB-DTPA Metals - Zinc		09/18/2024	11:02	10.00	Not Detected	ppm	5.000	AB-DTPA
Ammonia-Nitrogen, Soil		09/20/2024	15:19		<1.00	mg/kg	1.00	
Calcium Carbonate		09/19/2024	13:29		3.38	%	0.5	Gravimetric
Cation Exchange Capacity		09/20/2024	15:26		0.09	NH4/L	0.00	
Chloride, Soils		09/20/2024	14:37		18.83	mg/kg	5.00	HACH 10291
ESP		09/20/2024	15:44		0	%		Soil Paste Extraction
Hot Water Soluble Boron		09/24/2024	11:13		0.32	mg/kg	0.050	Boron Hot Water Extraction
Nitrate-Nitrogen, Soil		09/20/2024	16:41		13.31	mg/kg	0.30	HACH 10206
Organic Matter		09/24/2024	12:30		0.89	%OC	0.26	Walkley Black
pH, Soils Temperature		09/18/2024	15:11		19.9	°C		
pH, Soils		09/18/2024	15:11		8.25	SU	0.01	EPA 9045D
SAR - Calcium		09/19/2024	11:59	10.00	8.45	mEq/L		EPA 6020B
SAR - Magnesium		09/19/2024	11:59	10.00	0.87	mEq/L		EPA 6020B
SAR - Sodium		09/19/2024	11:59	10.00	0.29	mEq/L		EPA 6020B
SAR - Sodium Adsorption Ratio		09/19/2024	11:59	10.00	0.13	No Unit		EPA 6020B
Soil Conductivity		09/18/2024	11:08		0.95	mmhos/cm	0.0005	USDA 60
Soil Texture		09/20/2024	14:05		Clay			Hydrometer
AA12146-1	Pit #1 Subsoil	**Collected :**	09/11/2024 14:00					
AB-DTPA Metals - Copper		09/18/2024	11:02	10.00	<50.00 - RL1	ppm	50.000	AB-DTPA
AB-DTPA Metals - Iron		09/18/2024	11:02	10.00	45.93	ppm	0.500	AB-DTPA
AB-DTPA Metals - Manganese		09/18/2024	11:02	10.00	<5.00 - RL1	ppm	5.000	AB-DTPA
AB-DTPA Metals - Phosphorous		09/18/2024	11:02	10.00	<5.00 - RL1	ppm	5.000	AB-DTPA
AB-DTPA Metals - Potassium		09/18/2024	11:02	10.00	461.48	ppm	0.500	AB-DTPA
AB-DTPA Metals - Zinc		09/18/2024	11:02	10.00	Not Detected	ppm	5.000	AB-DTPA
Ammonia-Nitrogen, Soil		09/20/2024	15:19		<1.00	mg/kg	1.00	
Calcium Carbonate		09/19/2024	13:29		5.80	%	0.5	Gravimetric
Cation Exchange Capacity		09/20/2024	15:26		0.09	NH4/L	0.00	
Chloride, Soils		09/20/2024	14:37		<5.00	mg/kg	5.00	HACH 10291
ESP		09/20/2024	15:44		0	%		Soil Paste Extraction
Hot Water Soluble Boron		09/24/2024	11:13		0.28	mg/kg	0.050	Boron Hot Water Extraction
Nitrate-Nitrogen, Soil		09/20/2024	16:41		<0.30	mg/kg	0.30	HACH 10206
Organic Matter		09/24/2024	12:30		0.36	%OC	0.26	Walkley Black
pH, Soils Temperature		09/18/2024	15:11		19.8	°C		
pH, Soils		09/18/2024	15:11		8.47	SU	0.01	EPA 9045D
SAR - Calcium		09/19/2024	11:59	10.00	4.53	mEq/L		EPA 6020B
SAR - Magnesium		09/19/2024	11:59	10.00	0.74	mEq/L		EPA 6020B

Division of Environmental Testing
2115 N Scranton St Suite 3040A
Aurora, CO 80045
800-440-5184

FINAL RESULTS REPORT

Report Date : 9/24/2024
Report Time : 15:29

Project Manager: Cameron Denison **Project Name:** Bison-Friendly Skies Pad **Project Number:** N/A

Sample ID / Analyte Name	Customer ID	Collected / Analysis Start		Dilution	Result	Units	MDL	Method Ref. / Recovery
SAR - Sodium		09/19/2024	11:59	10.00	0.96	mEq/L		EPA 6020B
SAR - Sodium Adsorption Ratio		09/19/2024	11:59	10.00	0.59	No Unit		EPA 6020B
Soil Conductivity		09/18/2024	11:08		0.60	mmhos/cm	0.0005	USDA 60
Soil Texture		09/20/2024	14:05		Silty Clay			Hydrometer
AA12147-1	Pit #2 Topsoil	**Collected :** 09/11/2024	15:00					
AB-DTPA Metals - Copper		09/18/2024	11:02	10.00	<50.00 - RL1	ppm	50.000	AB-DTPA
AB-DTPA Metals - Iron		09/18/2024	11:02	10.00	42.88	ppm	0.500	AB-DTPA
AB-DTPA Metals - Manganese		09/18/2024	11:02	10.00	26.95	ppm	0.500	AB-DTPA
AB-DTPA Metals - Phosphorous		09/18/2024	11:02	10.00	23.39	ppm	0.500	AB-DTPA
AB-DTPA Metals - Potassium		09/18/2024	11:02	10.00	1548.61	ppm	0.500	AB-DTPA
AB-DTPA Metals - Zinc		09/18/2024	11:02	10.00	Not Detected	ppm	5.000	AB-DTPA
Ammonia-Nitrogen, Soil		09/20/2024	15:19		<1.00	mg/kg	1.00	
Calcium Carbonate		09/19/2024	13:29		1.65	%	0.5	Gravimetric
Cation Exchange Capacity		09/20/2024	15:26		0.13	NH4/L	0.00	
Chloride, Soils		09/20/2024	14:37		22.62	mg/kg	5.00	HACH 10291
ESP		09/20/2024	15:44		0	%		Soil Paste Extraction
Hot Water Soluble Boron		09/24/2024	11:13		0.38	mg/kg	0.050	Boron Hot Water Extraction
Nitrate-Nitrogen, Soil		09/20/2024	16:41		14.99	mg/kg	0.30	HACH 10206
Organic Matter		09/24/2024	12:30		1.05	%OC	0.26	Walkley Black
pH, Soils Temperature		09/18/2024	15:11		19.7	°C		
pH, Soils		09/18/2024	15:11		8.10	SU	0.01	EPA 9045D
SAR - Calcium		09/19/2024	11:59	10.00	6.82	mEq/L		EPA 6020B
SAR - Magnesium		09/19/2024	11:59	10.00	1.60	mEq/L		EPA 6020B
SAR - Sodium		09/19/2024	11:59	10.00	0.89	mEq/L		EPA 6020B
SAR - Sodium Adsorption Ratio		09/19/2024	11:59	10.00	0.43	No Unit		EPA 6020B
Soil Conductivity		09/18/2024	11:08		1.01	mmhos/cm	0.0005	USDA 60
Soil Texture		09/20/2024	14:05		Clay Loam			Hydrometer
AA12148-1	Pit #2 Subsoil	**Collected :** 09/11/2024	15:00					
AB-DTPA Metals - Copper		09/18/2024	11:02	10.00	<50.00 - RL1	ppm	50.000	AB-DTPA
AB-DTPA Metals - Iron		09/18/2024	11:02	10.00	44.76	ppm	0.500	AB-DTPA
AB-DTPA Metals - Manganese		09/18/2024	11:02	10.00	5.43	ppm	0.500	AB-DTPA
AB-DTPA Metals - Phosphorous		09/18/2024	11:02	10.00	7.53	ppm	0.500	AB-DTPA
AB-DTPA Metals - Potassium		09/18/2024	11:02	10.00	470.79	ppm	0.500	AB-DTPA
AB-DTPA Metals - Zinc		09/18/2024	11:02	10.00	Not Detected	ppm	5.000	AB-DTPA
Ammonia-Nitrogen, Soil		09/20/2024	15:19		<1.00	mg/kg	1.00	
Calcium Carbonate		09/19/2024	13:29		3.60	%	0.5	Gravimetric
Cation Exchange Capacity		09/20/2024	15:26		0.12	NH4/L	0.00	
Chloride, Soils		09/20/2024	14:37		<5.00	mg/kg	5.00	HACH 10291
ESP		09/20/2024	15:44		1.84	%		Soil Paste Extraction
Hot Water Soluble Boron		09/24/2024	11:13		0.30	mg/kg	0.050	Boron Hot Water Extraction

Division of Environmental Testing
2115 N Scranton St Suite 3040A
Aurora, CO 80045
800-440-5184

FINAL RESULTS REPORT

Report Date : 9/24/2024
Report Time : 15:29

Project Manager: Cameron Denison **Project Name:** Bison-Friendly Skies Pad **Project Number:** N/A

Sample ID / Analyte Name	Customer ID	Collected / Analysis Start		Dilution	Result	Units	MDL	Method Ref. / Recovery
Nitrate-Nitrogen, Soil		09/20/2024	16:41		<0.30	mg/kg	0.30	HACH 10206
Organic Matter		09/24/2024	12:30		0.65	%OC	0.26	Walkley Black
pH, Soils Temperature		09/18/2024	15:11		19.8	°C		
pH, Soils		09/18/2024	15:11		8.82	SU	0.01	EPA 9045D
SAR - Calcium		09/19/2024	11:59	10.00	2.37	mEq/L		EPA 6020B
SAR - Magnesium		09/19/2024	11:59	10.00	0.88	mEq/L		EPA 6020B
SAR - Sodium		09/19/2024	11:59	10.00	2.71	mEq/L		EPA 6020B
SAR - Sodium Adsorption Ratio		09/19/2024	11:59	10.00	2.13	No Unit		EPA 6020B
Soil Conductivity		09/18/2024	11:08		0.66	mmhos/cm	0.0005	USDA 60
Soil Texture		09/20/2024	14:05		Clay			Hydrometer

Division of Environmental Testing
2115 N Scranton St Suite 3040A
Aurora, CO 80045
800-440-5184

FINAL RESULTS REPORT

Report Date : 9/24/2024
Report Time : 15:29

Project Manager: Cameron Denison **Project Name:** Bison-Friendly Skies Pad **Project Number:** N/A

QC Report

QC	Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%Rec	% REC Limits	RPD	RPD Limit
AMMONIA_NITROGEN-4892										
DUP	AA12145	<1.00	1.00	mg/kg						
MB	AA12354	-0.41		mg/kg						
LCS	AA12355	1.97		mg/kg	2.00		98.5	80 - 120		
LCS	AA12356	11.12		mg/kg	11.00		101	80 - 120		
BORON-4856										
DUP	AA12145	0.29	0.050	mg/kg					9.8361	-15 - 15
MB	AA12267	0.01		mg/kg						
LCS	AA12268	0.97		mg/kg	1.00		97.0	80 - 120		
LCS	AA12269	9.27		mg/kg	9.00		103	80 - 120		
CALCIUM_CARBONATE-4868										
DUP	AA12145	5.76	0.5	%					4.4366	
Matrix Spike	AA12145	5.51	0.5	%	2		106			
CHLORIDE_SOILS-4915										
DUP	AA12145	17.07	5.00	mg/kg					9.8050	-15 - 15
MB	AA12380	-1.62	5	mg/L						
LCS	AA12381	10.72	5	mg/L	10.00		107	80 - 120		
LCS	AA12382	89.54	5	mg/L	90.00		99.5	80 - 120		
ECSOIL_MMHOS-4831										
DUP	AA12073	7.23		mmhos/cm					0.82645	
LCS	AA12184	9.78		mmhos/cm	10.00		97.8			
LCS	AA12185	9.96		mmhos/cm	10.00		99.6			
NITRATE_NITROGEN-4922										
DUP	AA12145	13.87	0.30	mg/kg					4.1207	-15 - 15
MB	AA12386	-0.92		mg/kg						
LCS	AA12387	1.78	0.30	mg/kg	1.50		119	80 - 120		
LCS	AA12388	12.85	0.30	mg/kg	12.00		107	80 - 120		
ORGANIC_MATTER-4870										
DUP	AA12145	1.53							2.5806	
Matrix Spike	AA12145	1.57		mg						
MB	AA12302	-0.36		%						
PH_S-4840										
DUP	AA12073	8.40	0.01	S.U.					0.2383790226	-5 - 5
LCS	AA12211	6.88	0.01	S.U.	6.86		100	95 - 105		
LCS	AA12212	6.91	0.01	S.U.	6.86		101	95 - 105		
SOIL_TEXTURE-4883										
DUP	AA12145	Clay								

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Project Manager: Cameron Denison **Project Name:** Bison-Friendly Skies Pad **Project Number:** N/A

QC Report

QC	Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%Rec	% REC Limits	RPD	RPD Limit
METALS_ABDTPA-4830										
AA12145										
Dup	Copper	<50.00	50.000	ppm		<50.00				
Dup	Iron	34.66	0.500	ppm		36.21			4.37	
Dup	Manganese	15.38	0.500	ppm		16.17			5.01	
Dup	Phosphorous	10.47	0.500	ppm		11.18			6.56	
Dup	Potassium	886.76	0.500	ppm		880.17			0.746	
Dup	Zinc	Not Detected	0.500	ppm		Not Detected				
AA12179										
MB	Copper	0.02		ppm						
MB	Iron	-0.01		ppm						
MB	Manganese	0.00		ppm						
MB	Phosphorous	-0.03		ppm						
MB	Potassium	0.01		ppm						
MB	Zinc	-0.85		ppm						
AA12181										
LCS	Copper	51.50		ppm			85.8			
LCS	Iron	63.44		ppm			106			
LCS	Manganese	55.90		ppm			93.2			
LCS	Phosphorous	57.74		ppm			96.2			
LCS	Potassium	54.88		ppm			91.5			
LCS	Zinc	56.78		ppm			94.6			
AA12182										
LCS	Copper	50.92		ppm			84.9			
LCS	Iron	60.81		ppm			101			
LCS	Manganese	58.73		ppm			97.9			
LCS	Phosphorous	55.65		ppm			92.8			
LCS	Potassium	56.37		ppm			94.0			
LCS	Zinc	56.07		ppm			93.4			
SAR-4864										
AA12073										
Dup	Calcium	11.10		mEq/L	11.10	10.82			2.55	
Dup	Magnesium	8.52		mEq/L	8.52	8.31			2.50	
Dup	Sodium	47.08		mEq/L	47.08	46.14			2.02	
Dup	Sodium Adsorption Ratio	15.03		mEq/L	15.03	14.92			0.735	
AA12282										
MB	Calcium	0.00		mEq/L						
MB	Magnesium	0.00		mEq/L						
MB	Sodium	0.01		mEq/L						
MB	Sodium Adsoprtion Ratio	0.00								
AA12283										
LCS	Calcium	9.41		ppm			94.1			
LCS	Magnesium	8.93		ppm			89.3			
LCS	Sodium	8.47		ppm			84.7			
LCS	Sodium Adsorption Ratio	0.47		ppm			88.7			

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Project Manager: Cameron Denison **Project Name:** Bison-Friendly Skies Pad **Project Number:** N/A

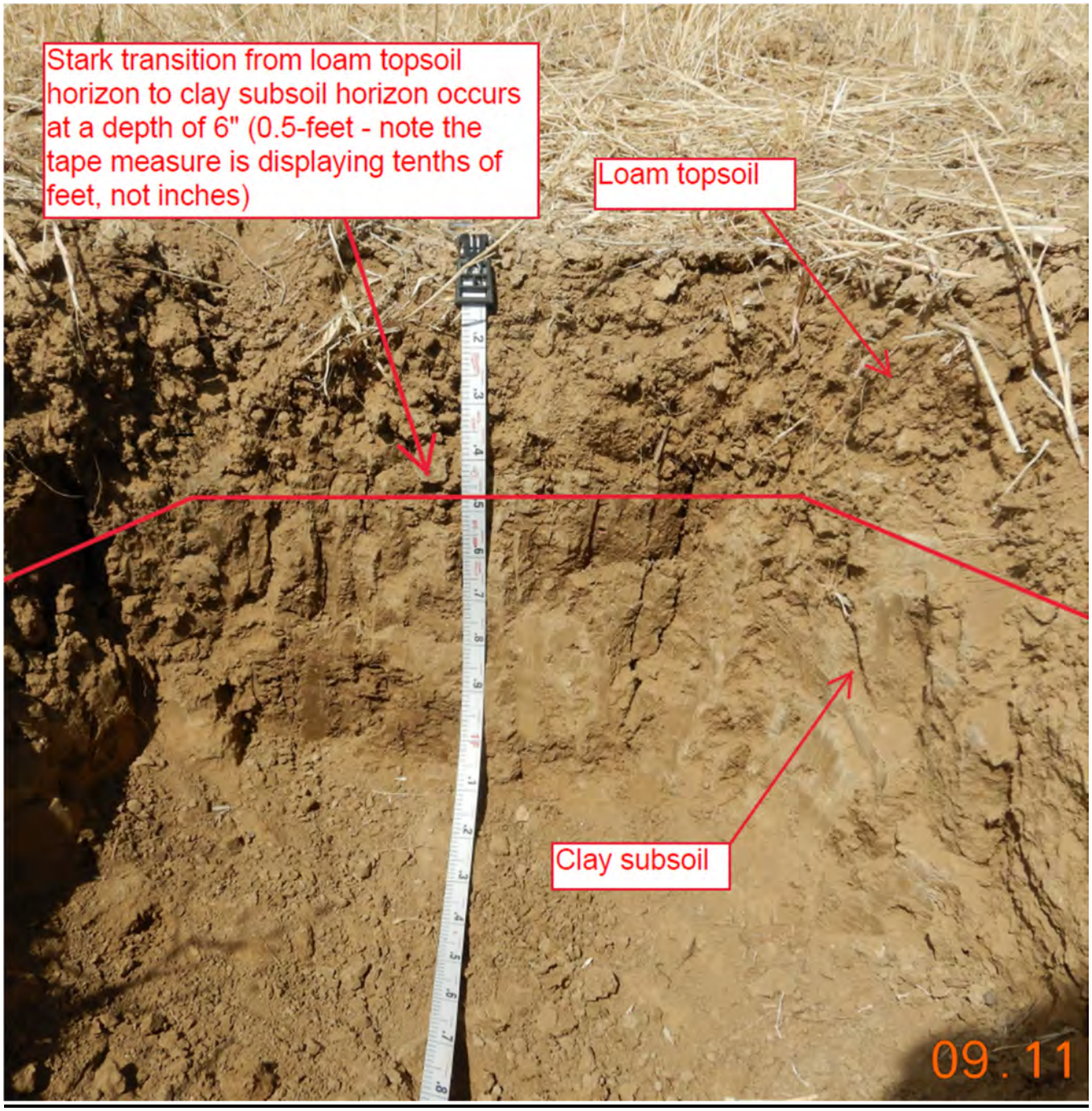
QC Report

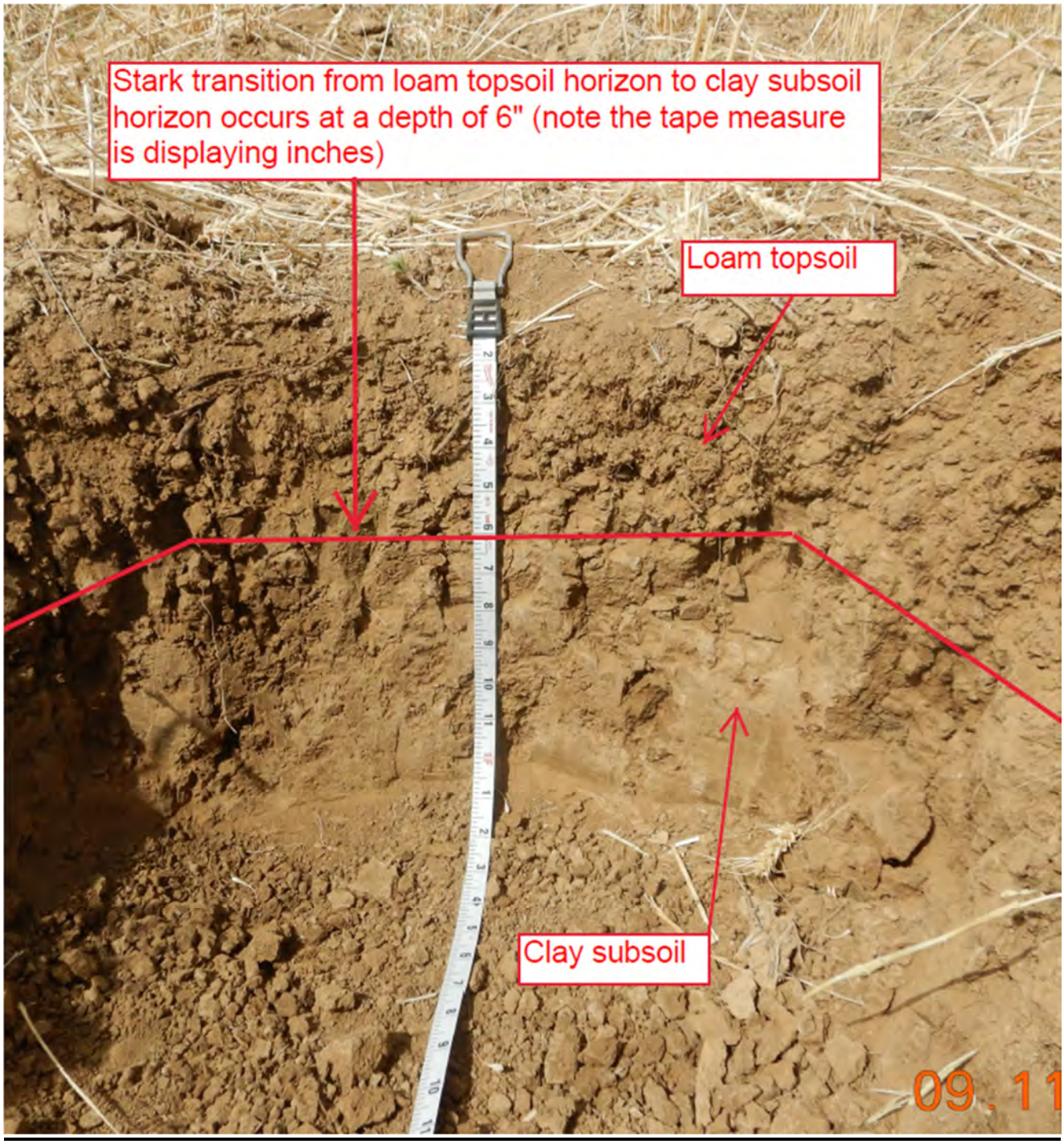
QC	Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%Rec	% REC Limits	RPD	RPD Limit
AA12284										
LCS	Calcium	447.59		ppm			89.5			
LCS	Magnesium	460.43		ppm			92.1			
LCS	Sodium	459.19		ppm			91.8			
LCS	Sodium Adsorption Ratio	3.64		ppm			96.3			

Qualifier	Explanation
H1	Sample received outside of regulatory holding time.
H2	Sample analyzed outside of regulatory holding time due to a laboratory error.
P1	Sample received outside temperature requirements, 0-6°C.
P2	Sample received unpreserved.
P3	Broken or leaking sample container.
P4	Sample improperly collected
P5	Sample incorrectly preserved
B1	Blank failed high, indicating possible high bias in sample results.
B2	Blank failed low, indicating possible low bias in sample results.
MS	Matrix Spike / Matrix Spike Duplicate recovery and/or RPD limit exceeded, indicating potential matrix interference.
D1	Duplicate RPD limit exceeded due to low sample concentration.
D2	Duplicate RPD limit exceeded due to matrix interference.
S	Surrogate recovery failed, indicating potential matrix interference.
RL1	Reporting limits raised due to matrix interference.
RL2	Reporting limits raised due to limited sample.
U	Sample result less than method detection limit.
J	Sample result less than reporting limit but higher than method detection limit.
E	Electronic loss or corruption of data.
I	Subcontracted sample

Appendix D

Soil Test Pit Photos




Stark transition from loam topsoil horizon to clay subsoil horizon occurs at a depth of 6" (note the tape measure is displaying inches)
Loam topsoil
Clay subsoil
09.11

Appendix E

Test Pit/Probe Soils Field Log

Soil Test Pit/Probe Field Form

Facility/Site Name: 747 Pad (Friendly Skies OGDP)
Operator: Bison IV Operating
Date: 9/11/2024
Eval. Company: H2E Incorporated
Number of test pits: 2

TEST PIT 1 (Platner loam, 0 to 3 percent slopes)

Pit Depth: 14"

H1 Horizon
- **Horizon Depth:** 6"
- **Ribbon Length:** <2.5 cm
- **Feel:** neither smooth nor gritty
- **Texture:** loam
- **Munsell Color [dry]:** 10YR 5/3 (brown)

H2 Horizon
- **Horizon Depth:** 6-14"
- **Ribbon Length:** 7.5 cm
- **Feel:** neither smooth nor gritty
- **Texture:** clay
- **Munsell Color [dry]:** 10YR 5/2 (grayish brown)

- **Horizon Change Description:** stark and obvious texture change from loam topsoil horizon to compacted clay subsoil horizon at 6" depth, and subtle color change from brown to grayish brown at 6"
- **Method of Excavation:** shovel
- **Weather Conditions:** 85F, Partly cloudy, 5 mph winds
- **Ground Surface Slope:** 0 to 3 percent slopes

NRCS Soils Report
Ap - 0 - 6" loam
Bt1 - 6 - 11" clay
Bt2 - 11 - 20" clay
Topsoil (A) Munsell Color (typical):
grayish brown (10YR 5/2) dry
very dark grayish brown (10YR 3/2) moist
Typical Range:
Hue: 10YR or 2.5Y
Value: 4 to 5 dry, 2 to 3 moist
Chroma: 2 to 3

Subsoil (Bt) Munsell Color (typical):
grayish brown (10YR 5/2) dry
very dark grayish brown (10YR 3/2) moist
Typical Range:
Hue: 2.5Y to 7.5YR
Value: 4 to 6 dry, 3 to 5 moist
Chroma: 2 to 4

TEST PIT 2 (Platner loam, 0 to 3 percent slopes)

Pit Depth: 14"

H1 Horizon
- **Horizon Depth:** 6"
- **Ribbon Length:** <2.5 cm
- **Feel:** neither smooth nor gritty
- **Texture:** loam
- **Munsell Color [dry]:** 10YR 5/3 (brown)

H2 Horizon
- **Horizon Depth:** 6-14"
- **Ribbon Length:** 7 cm
- **Feel:** neither smooth nor gritty
- **Texture:** clay
- **Munsell Color [dry]:** 10YR 5/2 (grayish brown)

- **Horizon Change Description:** stark and obvious texture change from loam topsoil horizon to compacted clay subsoil horizon at 6" depth, and subtle color change from brown to grayish brown at 6"
- **Method of Excavation:** shovel
- **Weather Conditions:** 85F, Partly cloudy, 5 mph winds
- **Ground Surface Slope:** 0 to 3 percent slopes

NRCS Soils Report
Ap - 0 - 6" loam
Bt1 - 6 - 11" clay
Bt2 - 11 - 20" clay
Topsoil (A) Munsell Color (typical):
grayish brown (10YR 5/2) dry
very dark grayish brown (10YR 3/2) moist
Typical Range:
Hue: 10YR or 2.5Y
Value: 4 to 5 dry, 2 to 3 moist
Chroma: 2 to 3

Subsoil (Bt) Munsell Color (typical):
grayish brown (10YR 5/2) dry
very dark grayish brown (10YR 3/2) moist
Typical Range:
Hue: 2.5Y to 7.5YR
Value: 4 to 6 dry, 3 to 5 moist
Chroma: 2 to 4

Probe Log: list changes in color and or texture include at what depth changes occur

Number of soil probes: 12

Probe 1:	Texture change at 6"	**Soil Probe 11:**	clay at 5"
Probe 2:	Compacted clay at 6"	**Soil Probe 12:**	compacted clay at 4-6"
Probe 3:	Texture change at 4-6"	**Soil Probe 13:**	
Probe 4:	Compacted clay at 6"	**Soil Probe 14:**	
Probe 5:	Texture change at 4-6"	**Soil Probe 15:**	
Probe 6:	Compacted clay at 6"	**Soil Probe 16:**	
Probe 7:	Compacted clay at 6"	**Soil Probe 17:**	
Probe 8:	Texture change at 4-6"	**Soil Probe 18:**	
Probe 9:	Compacted clay at 6"	**Soil Probe 19:**	
Probe 10:	Texture change at 4-6"	**Soil Probe 20:**	