



February 4, 2025

Mr. Clayton Wein  
Environmental Protection Specialist  
Colorado Division of Reclamation, Mining and Safety  
1313 Sherman Street, Room 215  
Denver, CO 80203

**RE: New Horizon North Mine  
Permit No. C-2010-089  
2024 Annual Reclamation Report**

Dear Mr. Wein,

Tri-State Generation and Transmission Association, Inc. (Tri-State), is the parent company to Elk Ridge Mining and Reclamation, LLC New Horizon North Mine. The New Horizon North Mine operates under the Colorado Division of Reclamation, Mining, and Safety Permit No. C-2010-089.

In accordance with Rule 2.04.13(1), by February 15, or other such date as agreed on, each permittee shall file an annual reclamation report covering the previous calendar years for all areas under bond. New Horizon North Mine by permit is required to submit the report annually by March 15. Therefore, enclosed please find the Annual Reclamation Report for the calendar year 2024 as required.

If you should have any additional questions or concerns, please feel free to contact Tony Tennyson at (970) 824-1232 at your convenience.

Sincerely,

DocuSigned by:  
  
4BE980BE59E442F...  
Chris Gilbreath  
Senior Manager  
Remediation and Reclamation

CG:TT

Enclosure

Cc: Tony Tennyson (via email)  
C.F. 11.1 - G474-11.3(21)c-9

# **Elk Ridge Mining & Reclamation, LLC**

**PERMIT C-2010-089**

## **NEW HORIZON NORTH MINE**

**2024 ANNUAL RECLAMATION REPORT**

**JANUARY 1, 2024 to DECEMBER 31, 2024**

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## **A. Rule Requirements**

Rule 2.04.13(1)(a-f) states, by February 15, or such date agreed on, each permitted shall file an annual reclamation report covering the previous calendar year for all areas under bond. The report shall include, but are not limited to, text, discussion and maps which address:

- the name and address of the permittee and permit number
- location and number of acres disturbed during that year
- location and number of acres backfilled and graded during that year
- location and number of acres topsoiled during that year
- the species, location and number of acres of vegetation planted during that year, including any augmented seeding or cultural practices
- location, number of acres and date of planting for all previously revegetated areas

Per Section 2.04.13 of Permit No. C-2010-089 the New Horizon North Mine submits the annual reclamation report annually by March 15. Additional requirements for contents of this annual reclamation report can be found in Section 2.05.4(2)(d), Section 2.05.4(2)(e), and Section 2.05.6(2).

## **B. Permittee**

Elk Ridge Mining and Reclamation, LLC  
New Horizon North Mine  
Permit No. C-2010-089  
PO Box 628  
Nucla, CO 81424

## **C. Disturbed Areas**

During 2024, 0.0 acres of new disturbance occurred at the New Horizon North Mine.

At the end of 2024, the total disturbance was 155.9 acres. Of this, 0.0 acres are in long-term mining, reclamation, or facilities. All of the active mining areas have been backfilled, graded, and topsoiled. Therefore, there are no active mining areas exist at the New Horizon North Mine.

## **D. Backfill and Grading**

During 2024, 0.0 acres were backfilled and graded.

## **E. Reclamation Activities**

### **1. Spoil Quality**

The spoil sampling and analysis program for the New Horizon North Mine is described in Section 2.05.4(2)(d), Table 2.05.4(2)(d)-1 of the approved permit. All areas for spoil quality (Bench 1) have been sampled for the entire mine site. Please see previous annual reclamation reports for the results of the analyses.

### **2. Topsoil**

During 2024, 0.0 acres were topsoiled. Table 1 provides the overall stockpile volumes for the mine.

### **3. Seeding**

The New Horizon North Mine permanently seeded 0.0 acres in 2024. Please see Table 2 for specific details on each reclamation unit, and Map 1 for the reclamation areas seeded to date.

### **4. Soil Fertility Testing and Fertilizer Application**

The landowner conducted soil testing in 2024. The results of the test are presented in Attachment 1.

The landowner ordered and fertilized reclamation unit NHN-04 in 2024. Documentation of the fertilizer used by the surface landowner is presented in Attachment 2.

### **5. Irrigation**

The Colorado Cooperative Company commenced water deliveries on April 25, 2024, and New Horizon North Mine began irrigation operations shortly thereafter. The Colorado Cooperative Company discontinued water delivery for the irrigation season on October 18, 2024.

### **6. Irrigated Pasture Yields**

In 2024, the first cutting from reclamation unit NHN-04 yielded 210 tons, the second cutting produced 142 tons, and the third cutting produced 137 tons.

## **F. Wildlife Monitoring and Mitigation**

No wildlife monitoring nor mitigation occurred in 2024.

### **G. Interim Revegetation Report**

Interim vegetation monitoring occurred on reclamation unit NHN-06 in 2024, and a report with the monitoring results is presented in Attachment 3.

### **H. Weed Management**

During 2024, various areas within the permit boundary were treated for noxious weeds by spot spraying and/or hand removal. The actual treatment sites were generally small and random and thus too small to accurately depict on a map.

Target species for noxious weeds included Knapweed(s), Thistle(s), White Top, Russian-olive, saltceder/tamarisk, burdock, mullein, halogeton, purple loosestrife, and Western whorled milkweed. Other target species are included in the Montrose County (2010) and San Miguel County (2002) Noxious Weed lists.

**Table 1 – Stockpile Volumes at the End of Report Year**

<u>Stockpile Type</u>	<u>Volume (Cubic Yards)</u>
Topsoil Pile 3 - Progresso	16,580

**Table 2 – New Horizon North Reclamation Table**

New Horizon North Reclamation Table							
Area	Reclamation Period		Status				Notes:
	Year	Acreage	Revegetated Years	Bond Release			
				Phase 1	Phase 2	Phase 3	
NHN-01	2017	3.7	8	2017	2022	2022	3.7 acres planted to Dryland Pasture
NHN-02	2017	2.7	8	2017	2022		2.7 Acres planted to Dryland Pasture
NHN-03	2018	20.6	7	2017	2022		20.6 Acres planted to Dryland Pasture
NHN-04	2019	88.3	6	2017	2022		88.3 Acres planted to Irrigated Pasture
NHN-05	2019	4.9	6	2017	2022		4.9 Acres planted to Dryland Pasture
NHN-06	2020	0.6	5	2024			0.6 Acres planted to Dryland Pasture
NHN-07	2023	34.0	2	2024			34.0 Acres planted to Dryland Pasture - Reclaimed Sediment Control Structures
Total		154.8					

## Figure 1 - CDRMS Annual Reclamation Report Form

## Colorado Division of Reclamation, Mining and Safety

Annual Reclamation Report for Calendar Year – 2024

New Horizon North Mine	C-2010-089	Elk Ridge Mining & Reclamation, LLC.
Mine Name	Permit Number	Permittee
P.O Box 628 – 27646 W. 5 <sup>th</sup> Street Nucla, CO 81424		
Address		

This report, required by Rule 2.04.13, is due by February 15 of each year, or other date, as agreed upon by the Division. It should include text, discussion, and maps, at a minimum, in addition to any other reclamation monitoring data as required by the approved permit. The location of the acreage reported under each land status category and year of seeding (if applicable) should be clearly identified on a map included with the report.

Land Category	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Acreage in Active Mining Areas <sup>1</sup>	0	0	0	=	0

Land Category	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Acres Disturbed <sup>2</sup>	157.1	0	1.2*	=	155.9
Acres Backfilled and Graded	117.0	0	0	=	117.0
Acres Topsoiled	154.8	0	0	=	154.8

Acreage in Long-term Facilities <sup>3</sup>	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Non-Permanent Facilities	0	0	0	=	0
Permanent Facilities (permitted)	0	0	0	=	0
Totals	0			=	0

Acres Seeded (permanent)	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
9 Years and Less	154.8	0	0	=	154.8
10 Years and Greater	0	0	0	=	0
Totals	154.8			=	154.8

Bond Release	Last Year's Cumulative Total (from last year's ARR)	This Calendar Year			Cumulative Total
		Acres Added (+)	Acres Subtracted (-)		
Phase I Released	120.2	34.0	0	=	154.2
Phase II Released	118.6	0	0	=	118.6

## New Horizon North Mine

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Phase III Released	3.7	0	0	=	3.7
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<sup>1</sup>Includes pits, topsoil stripped areas in advance of pits, and spoil not backfilled and graded

<sup>2</sup>Surface Mine Acres Disturbed = B&G + Long-Term Facilities + Active Mining Areas; Underground Mine Acres Disturbed = B&G + Long-Term Facilities; Separately-permitted Loadouts = B&G + Long-Term Facilities

<sup>3</sup>Includes haul, access and light-use roads, temporary dams and impoundments; permanent dams and impoundments; diversion and collector ditches, water and air monitoring sites; topsoil stockpiles; overburden stockpiles; repair, storage and construction areas; office area, repair shops, and parking; coal stockpiles, loading, and processing areas; railroads; coal conveyors; refuse piles and coal mine waste impoundments; head-of-hollow fills; valley fills; ventilation shafts and entryways; and non-coal waste disposal area (garbage dumps and coal combustion by-products disposal areas).

\*The 1.2 acres subtracted from disturbance was a Phase III released area removed from the permit boundary in 2024.

**Attachment 1**  
**Soil Testing Report**

## SOIL ANALYSIS REPORT

CLIENT:	DUSTIN GARVEY
56904	PO BOX 646
	NUCLA, CO 81424



www.servitech.com

1602 Park West Dr.  
PO Box 169  
Hastings, NE 68902  
800.557.7509  
402.463.3522  
Fax 402.463.8132

LAB NO:	108981
INVOICE NO:	605316
DATE RECEIVED:	03/12/2024
DATE REPORTED:	04/01/2024

SOIL ANALYSIS RESULTS FOR: DUSTIN GARVEY															FIELD ID: COAL MINE PIVOT														
METHOD USED:			1:1 Water-Soil		XSL(i)	LOI(r)	Cd Reduction		Bicarb P	Mehlich 3 ICP						Calculated DTPA	Mehlich 3 ICP												
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	Nitrogen lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B									
108981	COAL MINE	0 - 8	7.8		Hi	0.9	9.3	22	6	171	49	118	10700	535	23	4.8	85.0	41.2	3.2	1.1									
METHOD USED:			Hg Thiocyanate																										
Lab Number	Sample ID	Sample Depth	Chloride ppm	lb. Cl/A																									
108981	COAL MINE	0 - 8	3	7.2																									
FERTILIZER RECOMMENDATIONS:															POUNDS ACTUAL NUTRIENT PER ACRE										Cation Exchange Capacity				
Lab Number	Sample ID	Crop To Be Grown	Yield Goal	Lime, ECC Tons/A to raise pH to:			N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Zn	S	Mn	Cu	MgO	B	Ca	Cl	CEC	%H	%K	%Ca	%Mg	%Na						
108981	COAL MINE	ALFALFA NEW SEEDING	6 tons	6.0	6.5	7.0	0	100	50	0	0	0		0	1.5	0		30	0	1	83	15	0						
SPECIAL COMMENTS AND SUGGESTIONS:																													
Lab Number(s): 108981 FORAGE LEGUMES (alfalfa or clover), NEW SEEDING: Applying 15 to 20 lb. of nitrogen can aid in establishing legumes, if soil nitrate is low. Do not apply excess nitrogen or it may stimulate competition from grassy weeds.																													
Lab Number(s): 108981 The CEC value calculated by cation summation has been adjusted to compensate for the presence of excess lime (reactive carbonates).																													
Lab Number(s): 108981 ZINC: The "c-DTPA-Zinc" equivalent was calculated from the Mehlich-3 ICP zinc value. Zinc fertilizer recommendations were calculated using the Mehlich-3 ICP zinc value.																													

Analyses are representative of the samples submitted      Samples are retained 30 days after report of analysis      Explanations of soil analysis terms are available upon request

Reviewed and      Hans Burken      *Hans Burken*      Page 1 of 1  
Approved By:      Lab Manager      04/01/2024 3:32 pm

The reported analytical results apply only to the sample as it was supplied. The report may not be reproduced, except in full, without permission of ServiTech.

Your opinion is valuable to us. Please let us know what you think about our services! Send an email to [feedback@servitech.com](mailto:feedback@servitech.com).

## **Attachment 2**

### **Fertilizer**

InfoTrac 1-800-535-5053

FERTILIZER ORDERS

31396

# 428-2244

Date Ordered: 4/2/24

Landlord:

Dustin Garvey

Delivery Date: April 11<sup>th</sup>

Acres:

88

PPA:

283

GA:

0

Density:

Comments:

Alfalfa

Product	CWT		Price/CWT	Total
11-52-0	173.10	11-52-0	8650	
<del>46-0-0</del>	<del>15.00</del>			
<del>0-0-60</del>	<del>75.00</del>			
0-0-60	75.00	(0-0-60)	3750	
Sulfur			12400	
82-0-0				
32-0-0		Baron	70	
8-20-5-5-.5			12470	
Baron	1.40			
Rental	249.50	Spinner	\$15/AC	
Spread Fee				
Totals				

X2

PAT

Location:

Nucla - call him.

**Attachment 3**  
**Interim Revegetation Monitoring Report**

# **New Horizon North Mine**

Permit No. C-2010-089

## **2024 REVEGETATION MONITORING REPORT**

February, 2025



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# New Horizon North Mine

## Permit: C-2010-089

### 2024 INTERIM REVEGETATION EVALUATION

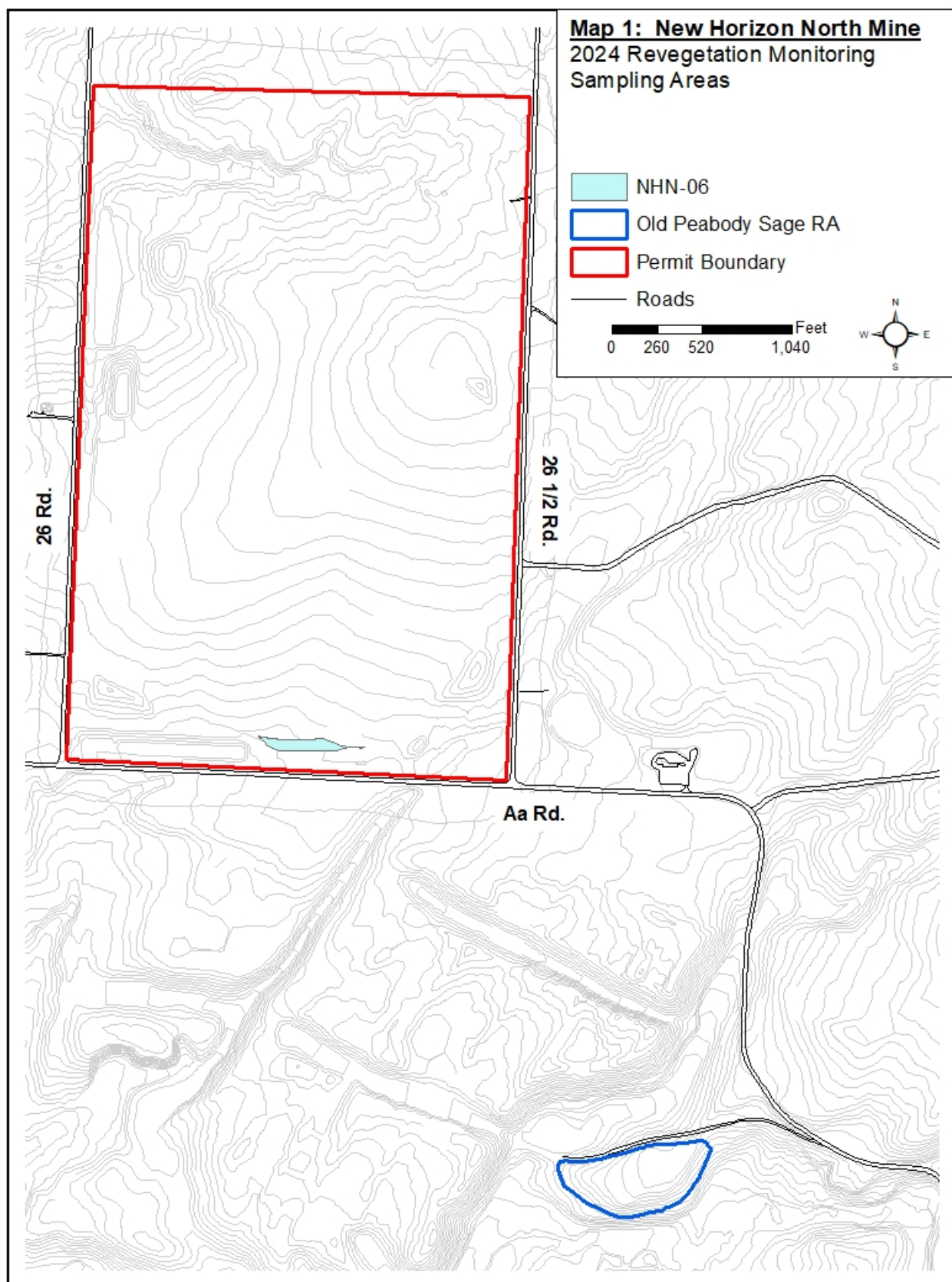
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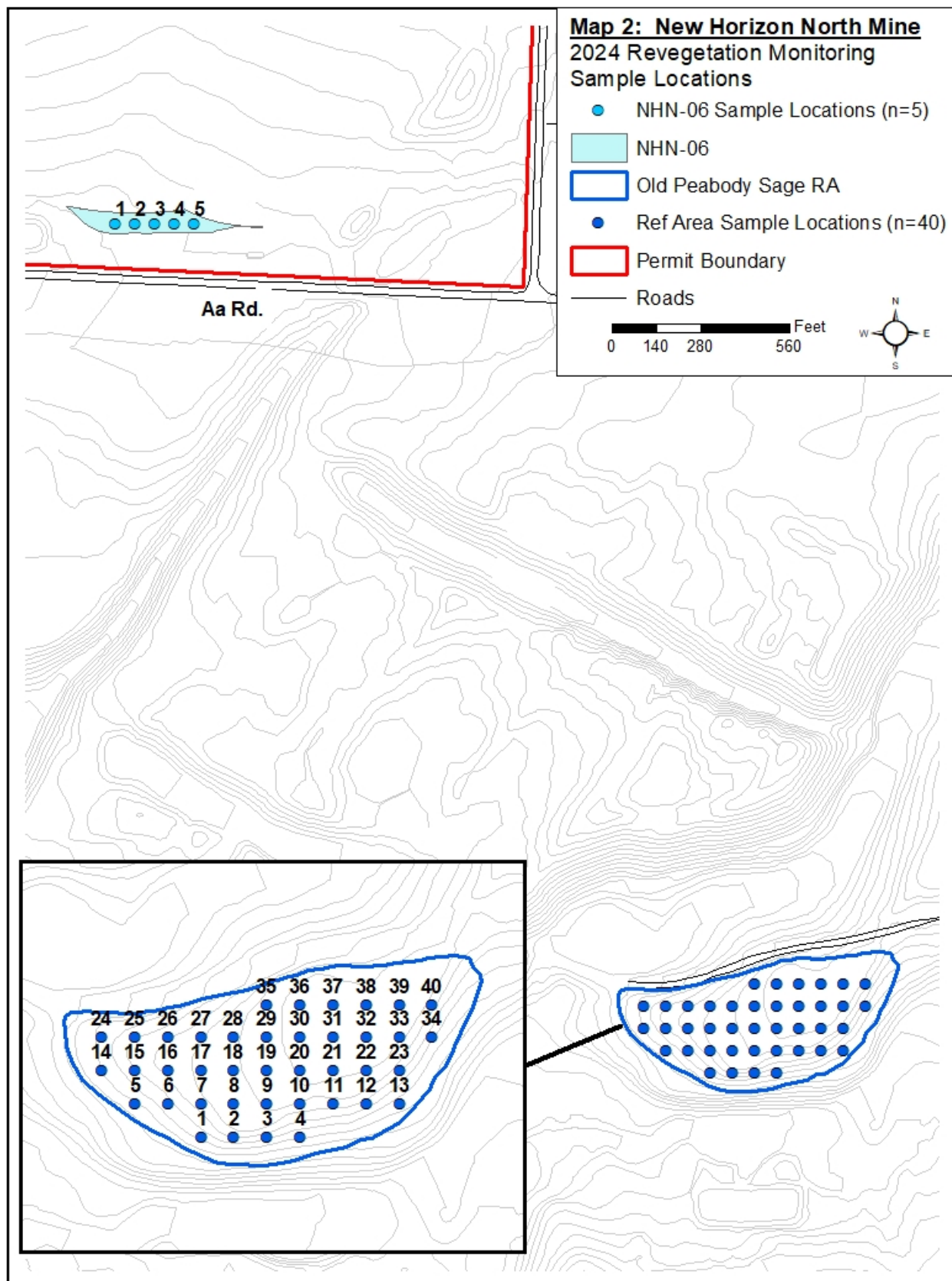
#### 1.0 INTRODUCTION

Cedar Creek Associates, Inc. (Cedar Creek) was contracted in 2024 by the New Horizon North Mine (NHN) to conduct interim vegetation monitoring within selected reclamation units. Monitoring was conducted in one reclamation unit (NHN-06, 0.6ac.) for annual compliance and to assess the performance of the revegetation unit as it pertains to bond release standards. At the time of sampling, revegetation within the evaluated unit had experienced 4 growing seasons following completion of seeding in 2020. In general, revegetation is classified into two types of post mining land use at New Horizon North; Irrigated Pasture and Dryland Pasture. Reclamation in NHN-06 has the post mining land use of Dryland Pasture (Section 2.05.4(2)(e), Section 3.0 Permit No. C-2010-089). As stated in the permit, interim monitoring will occur any year before the fifth growing season at NHN for irrigated pastureland and dryland pasture (Section 6.0 of Permit). It is anticipated that bond release evaluations will occur in years 9 and 10.

Field sampling for the directly measurable variables of ground cover and production were conducted in the NHN-06 Unit and the associated Old Peabody Sage Reference Area (Reference Area). Field efforts occurred on June 7, 2024, and were conducted under the direct supervision of Cedar Creek's Senior Reclamation Ecologist and Soil Specialist, Mr. Jesse H. Dillon. Monitoring areas and sample sizes are provided in Table W. Sample Areas and locations are shown on Maps 1 and 2. Data collection was performed in accordance with Permit Section 2.05.4(2)(e) and Colorado Division of Minerals and Geology's Regulations of the Colorado Mined Land Reclamation Board for Coal Mining (Section 4.15). Methodologies used for the revegetation evaluation are presented in Appendix B, with Raw Data presented in Appendix A, and representative field photos in Appendix C.

<b>Table W. New Horizon North Workload - 2024</b>				
<b>Revegetation Monitoring</b>				
	Growing Seasons	Acres	Cover	Production
NHN-06 Dryland Pasture	4	0.6	5	5
Old Peabody Sage Reference Area	-	-	20	40
<b>Total Monitoring</b>		<b>0.6</b>	<b>25</b>	<b>45</b>





## **1.1 Climate Data**

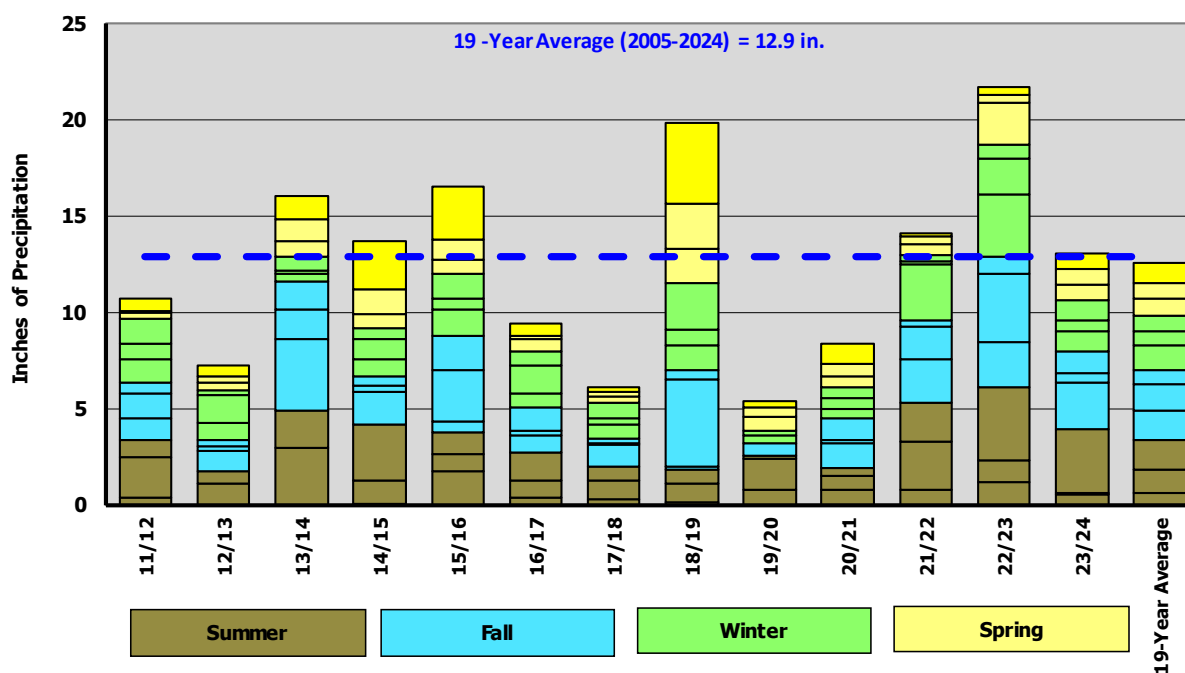
Precipitation data was historically collected from the NOAA station in Uravan, CO, 10.5 miles to the northwest of the mine (2005-2015). In 2016, data was unavailable at the Uravan site, prompting a weather data transformation from a station in Gateway, Colorado (2016-2017). Data from the Gateway station was no longer available in 2018, prompting a second data transformation from a station in Paradox, Colorado, 10 miles west of the Uravan station (2018-present). The data transformation utilized a conversion factor derived from a ratio of monthly average precipitation between the two sites for years 2006 to 2015. Due to the spatial variability of precipitation and the inherent flaws associated with measurements of precipitation at specific locations, the transformed data can be utilized in the manner all weather data should be viewed, as an indicator of general trends. The most recent year's data (2012 to present) are provided on Table P and Charts P1 and P2 and are compared to a 19-year long term average (2005-2024).

Precipitation for the 2023-2024 growing season (June 2023 through May 2024) was determined to be 104% of average when compared to the 19-year average (13.1 in. vs. 12.6 in.). Perusal of Chart P2 indicates that summer (3.95 inches) and autumn (4.03 inches) precipitation of 2023 was above average with 117% and 111% of the 19-year average for the same period, respectively. The following season, winter of 2024, was just below average with 2.62 inches (92% of the 19-year average for the same period). Finally, in spring of 2024, the most important season for vegetative growth, the precipitation fell just below average with 2.49 inches (92% of the 19-year average for the same period). For revegetation communities relying on precipitation (Dryland Pasture), the 2023/2024 precipitation would support average vegetation production and vigor.

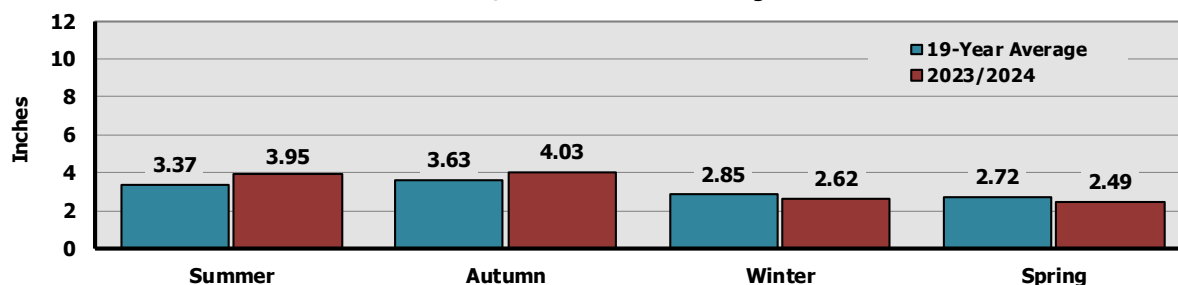
**Table P - Annual Precipitation at Uravan, CO, 2012-2024**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
<b>2012</b>	0.86	1.27	0.29	0.09	0.66	0.00	1.09	0.65	1.09	0.19	0.35	0.85	<b>7.39</b>
<b>2013</b>	1.47	0.28	0.35	0.33	0.60	0.00	2.96	1.91	3.69	1.59	1.47	0.38	<b>15.05</b>
<b>2014</b>	0.14	0.75	0.82	1.07	1.23	0.01	1.27	2.88	1.70	0.32	0.52	0.83	<b>11.55</b>
<b>2015</b>	1.09	0.54	0.76	1.29	2.52	1.74	0.92	1.08	0.59	2.64	1.83	1.33	<b>16.33</b>
<b>2016*</b>	0.58	1.26	0.72	1.11	2.72	0.34	0.94	1.43	0.90	0.26	1.17	0.72	<b>12.15</b>
<b>2017*</b>	1.49	0.73	0.62	0.19	0.66	0.28	0.96	0.73	1.14	0.09	0.24	-	<b>7.13</b>
<b>2018†</b>	0.33	0.80	0.33	0.25	0.23	0.16	0.91	0.77	0.15	4.52	0.48	1.31	<b>10.24</b>
<b>2019†</b>	0.76	2.48	1.79	2.32	4.21	0.80	1.59	0.20	0.59	0.00	0.00	0.00	<b>14.74</b>
<b>2020†</b>	0.41	0.22	0.76	0.48	0.36	0.76	0.71	0.44	1.26	0.16	1.17	0.47	<b>7.19</b>
<b>2021†</b>	0.53	0.62	0.58	0.65	1.03	0.81	2.43	2.05	2.28	1.69	0.30	2.89	<b>15.87</b>
<b>2022†</b>	0.15	0.32	0.64	0.40	0.17	1.15	1.16	3.79	2.37	3.52	0.91	3.19	<b>17.77</b>
<b>2023†</b>	1.92	0.69	2.19	0.44	0.40	0.54	0.07	3.33	2.40	0.51	1.12	1.00	<b>14.61</b>
<b>2024†</b>	0.61	1.00	0.81	0.86	0.82	0.97	1.13	2.44	1.71	1.88	3.94	0.32	<b>16.49</b>
<b>2005-2024 Avg.</b>	<b>0.79</b>	<b>0.87</b>	<b>0.92</b>	<b>0.76</b>	<b>1.05</b>	<b>0.64</b>	<b>1.17</b>	<b>1.61</b>	<b>1.55</b>	<b>1.40</b>	<b>0.88</b>	<b>1.25</b>	<b>12.90</b>

**Chart P1  
Seasonal Precipitation (June - May) at Uravan, CO, 2011-2024**



**Chart P2 - Seasonal Precipitation at Uravan, CO  
2023/2024 vs. 19-Year Average**



\*2016 and 2017 data derived from Gateway, CO weather data transformation

†2018 to present data derived from Paradox, CO weather data transformation

## **2.0 REVEGETATION SUCCESS STANDARDS**

According to New Horizon's North permit, reclamation success will be assessed against each of the post-mining vegetation/land use types separately. Measured performance standards differ for each post-mining vegetation/land use type. A summary of the permit requirements for the post-mining land use of Dryland Pasture is presented below [full explanation can be found in permit section 2.05.4 (2) (e)].

### **Dryland Pasture:**

1. Ground Cover - Revegetation will be deemed adequate if vegetation cover at the reclaimed site is at least **90%** of the vegetative cover at the reference area (exclusive of noxious weeds). [2.05.4 (2) (e) Section 4.2]
2. Herbaceous Production - Revegetation will be deemed adequate if herbaceous production at the reclaimed site is at least **90%** of the herbaceous production at the reference area (exclusive of noxious weeds). [2.05.4 (2) (e) Section 4.2]
3. Forage Quality - At least **75%** of the relative production will be comprised of seeded species or species of comparable quality as livestock forage (exclusive of annuals, biennials, and noxious weeds). [2.05.4 (2) (e) Section 4.2]

### **3.0 RESULTS**

#### **3.1 Dryland Pasture**

Revegetation monitoring for Dryland Pasture consisted of the NHN-06 unit (0.6 ac.) and the Old Peabody Sage Reference Area to provide a performance comparison. In 2024, the NHN-06 Unit has existed for four years.

##### **3.1.1 NHN-06 Unit (Year 4)**

A total of 8 species were encountered within the NHN-06 Unit in 2024. Species consisted of 5 grass taxa and 3 forb taxa (Table 1). Ground cover consisted of 28.0% live vegetation, 2.2% rock, 53.8% litter, and bare ground exposure of 16.0% (Chart 1 and Table 1). Perennial cover across the unit averaged 22.2% (79.3% relative cover), with annual/biennial forb cover averaging 3.6% absolute cover (12.9% relative cover). Noxious weed cover averaged 2.2% (7.9% relative cover). Dominant taxa alfalfa (*Medicago sativa*), bluebunch wheatgrass (*Pseudoroegneria spicata*), and crested wheatgrass (*Agropyron cristatum*) with 7.0%, 6.4%, and 6.0%, respectively.

Total production within the NHN-06 Unit averaged 576.8 pounds per acre in 2024, comprised entirely of desirable species. Perennial grasses contributed 571.5 pounds per acre and perennial forbs contributed 5.3 pounds per acre. Relative production of desirables (100%) exceeds the Forage Quality criteria of 75% relative production (Tables 2 and 3 and Chart 3).

##### **3.1.2 Old Peabody Sage Reference Area**

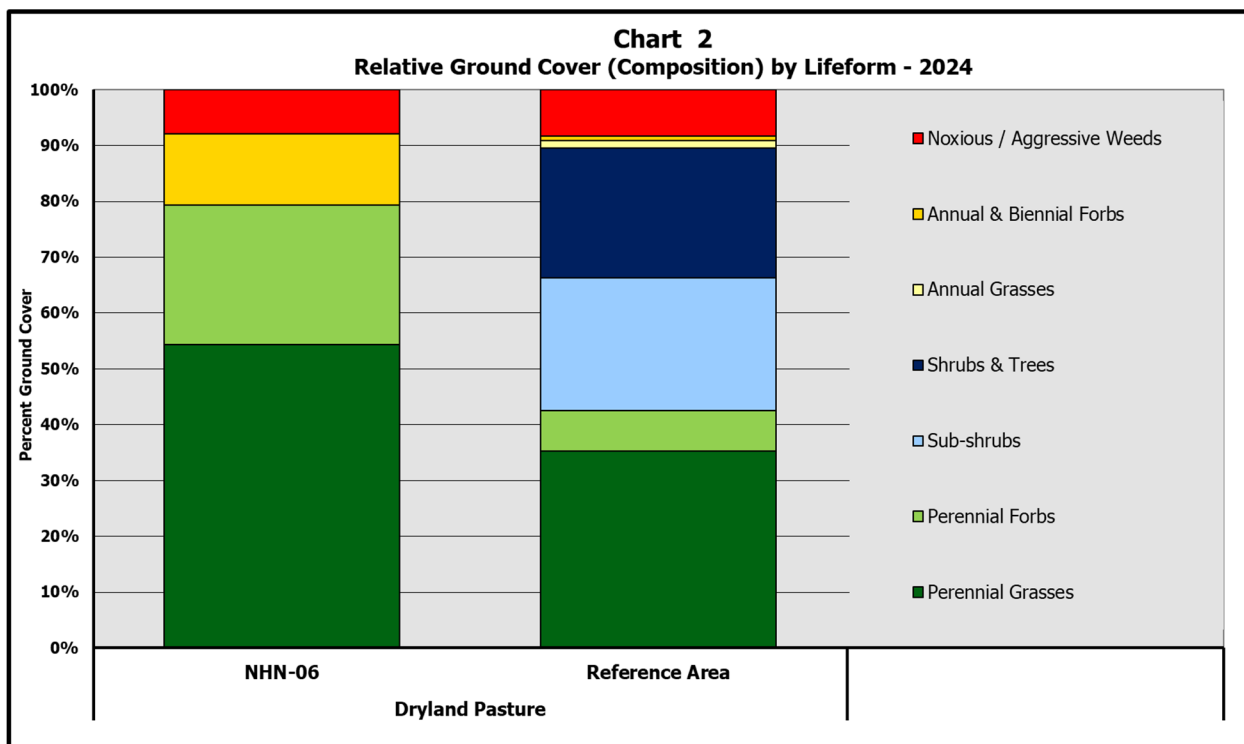
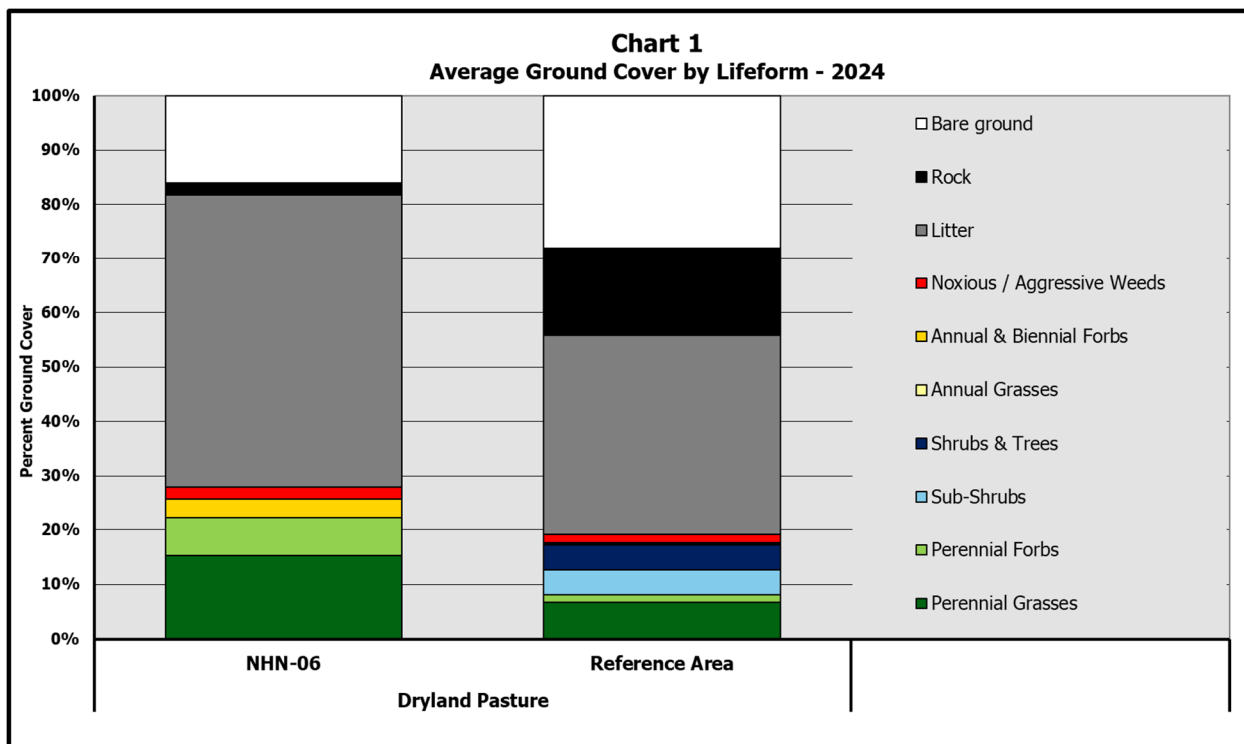
A total of 19 species were encountered within the Reference Area in 2024. Species consisted of 9 grass taxa, 4 forb taxa, 1 sub-shrub taxa, and 5 shrub taxa (Table 1). Ground cover consisted of 19.2% live vegetation, 16.1% rock, 36.7% litter, and bare ground exposure of 28.1% (Chart 1 and Table 1). Perennial cover across the unit averaged 17.2% (89.6% relative cover), with annual grass cover averaging 0.3% and annual/biennial forb cover averaging 0.2% absolute cover (2.1% relative cover). Noxious weed cover averaged 1.6% (8.4% relative cover). Dominant taxa were broom snakeweed (*Gutierrezia sarothrae*), big sagebrush (*Artemisia tridentata*), James' Galleta (*Hilaria jamesii*), and needle and thread (*Hesperostipa comata*) with 4.6%, 3.0%, 2.7%, and 2.7%, respectively.

Total production within the Reference Area averaged 384.5 pounds per acre in 2024. Most of which were comprised of desirable species. Perennial grasses contributed 157.3 pounds per acre and perennial forbs contributed 48.2 pounds per acre. Sub-shrubs also contributed similar amounts with 176.9 pounds per acre. Annual production contributed 2.0 pounds per acre (Table 2 and Chart 3).

Table 1 New Horizon North - Vegetation Cover - 2024					
Average Cover Summary					
Post-Mining Vegetation/Land Use Type -->			Dryland Pasture		
Unit -->			NHN-06	Reference Area	
Grasses and Grass-likes					
N	P	Agropyron cristatum	Crested Wheatgrass	6.0	-
N	P	Agropyron smithii	Western Wheatgrass	2.0	-
N	P	Aristida purpurea	Purple Threewawn	-	0.1
N	P	Bouteloua gracilis	Blue Grama	-	1.2
X	A	Bromus tectorum	Cheatgrass	2.2	1.6
I	P	Dactylis glomerata	Orchardgrass	0.8	-
N	P	Elymus elymoides	Squirreltail	-	0.1
N	P	Hesperostipa comata	Needle and Thread	-	2.7
N	P	Hilaria jamesii	James' Galleta	-	2.7
N	P	Oryzopsis hymenoides	Indian Ricegrass	-	0.1
X	P	Poa bulbosa	Bulbous Bluegrass	-	0.1
N	P	Pseudoroegneria spicata	Bluebunch Wheatgrass	6.4	-
N	A	Vulpia octoflora	Six-weeks Fescue	-	0.3
Forbs					
N	B	Erigeron divergens	Spreading Fleabane	-	0.1
I	A	Kochia scoparia	Kochia	2.6	-
I	P	Medicago sativa	Alfalfa	7.0	-
N	P	Phlox longifolia	Longleaf Phlox	-	0.1
I	A	Salsola tragus	Pacific Blacksnakeroot	1.0	-
I	A	Sisymbrium altissimum	Tumble Mustard	-	0.1
N	P	Sphaeralcea coccinea	Scarlet Globemallow	-	1.4
Sub-Shrubs					
N	P	Gutierrezia sarothrae	Broom Snakeweed	-	4.6
Shrubs & Trees					
N	P	Artemisia tridentata	Big Sagebrush	-	3.0
N	P	Atriplex canescens	Four-wing Saltbush	-	1.1
N	P	Echinocereus sp.	Hedgehog Cactus	-	0.1
N	P	Juniperus osteosperma	Utah Juniper	-	0.1
N	P	Opuntia polyacantha	Plains Pricklypear	-	0.2
Total Plant Cover			28.0	19.2	
Rock			2.2	16.1	
Litter			53.8	36.7	
Bare ground			16.0	28.1	
Desirable Perennial Cover (Excluding Noxious Weeds)			22.2	17.2	
Summary by Lifeform:					
Perennial Grasses			15.2	6.8	
Annual Grasses			-	0.3	
Perennial Forbs			7.0	1.4	
Annual & Biennial Forbs			3.6	0.2	
Noxious / Aggressive Weeds			2.2	1.6	
Sub-Shrubs			-	4.6	
Shrubs & Trees			-	4.5	
Sample Adequacy Calculations					
Mean=			28.0	19.2	
Variance=			53.5	36.0	
n=			5	20	
n_min=			16	17	

N=Native, I=Introduced

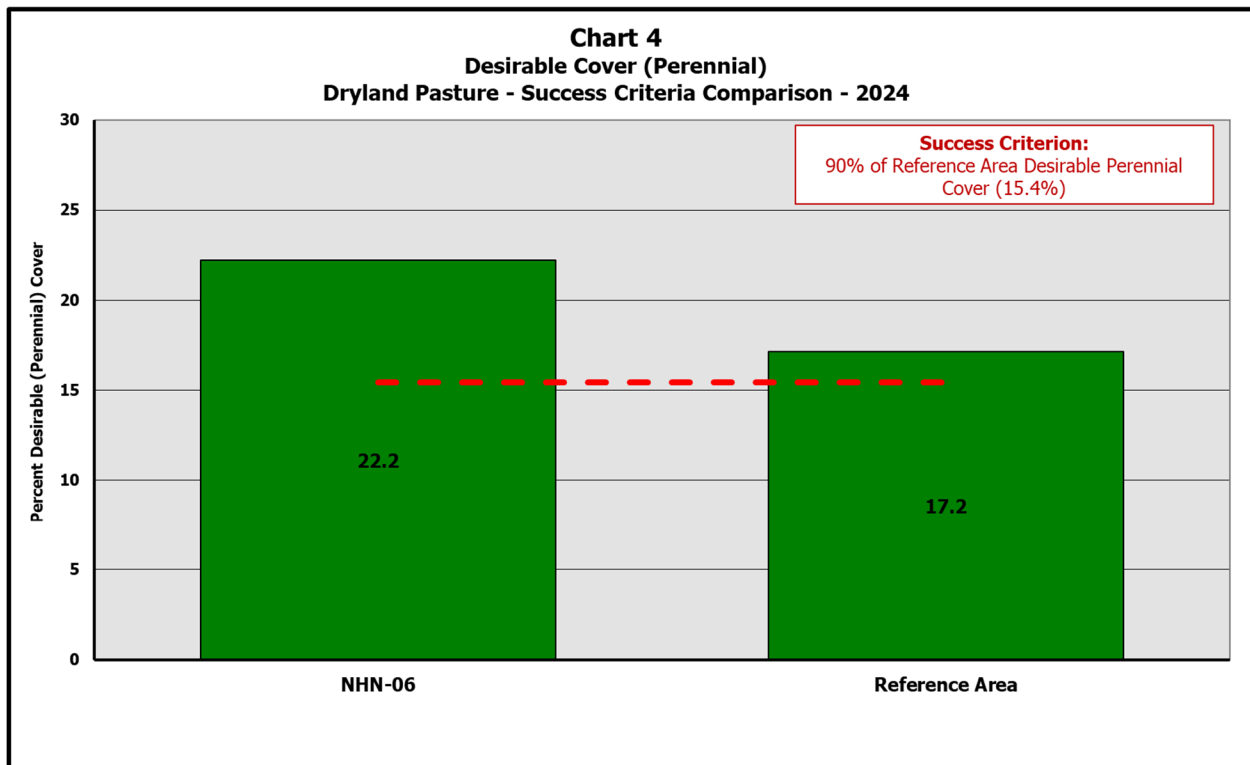
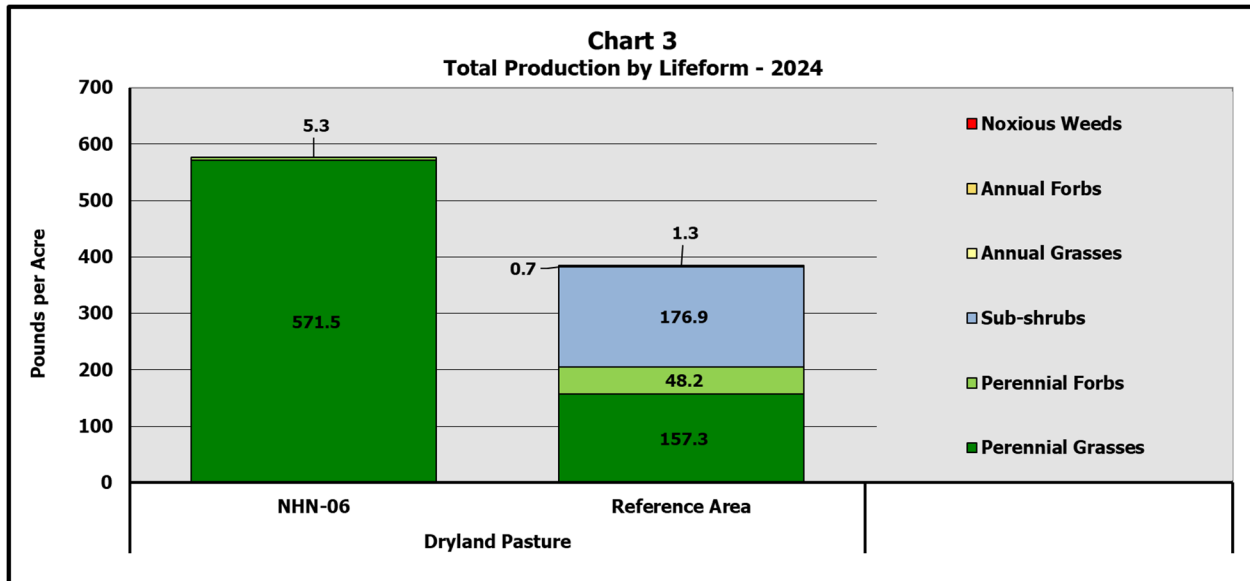
A=Annual, B=Biennial, P=Perennial, X=Noxious



**Table 2 New Horizon North - Vegetation Production - 2024**

Average Production Summary									
Area	Perennial Grasses	Perennial Forbs	Sub- shrubs	Annual Grasses	Annual Forbs	Noxious Weeds	Pounds (lbs) per Acre		
							TOTAL		
							lbs / ac	Desirable* lbs / ac	Perennial lbs / ac
Dryland Pasture - NHN-06 Unit	571.5	5.3	-	-	-	-	576.8	576.8	576.8
Old Peabody Sage Reference Area	157.3	48.2	176.9	0.7	1.3	-	384.5	205.6	382.5

\* Desirable includes perennial grasses and perennial forbs



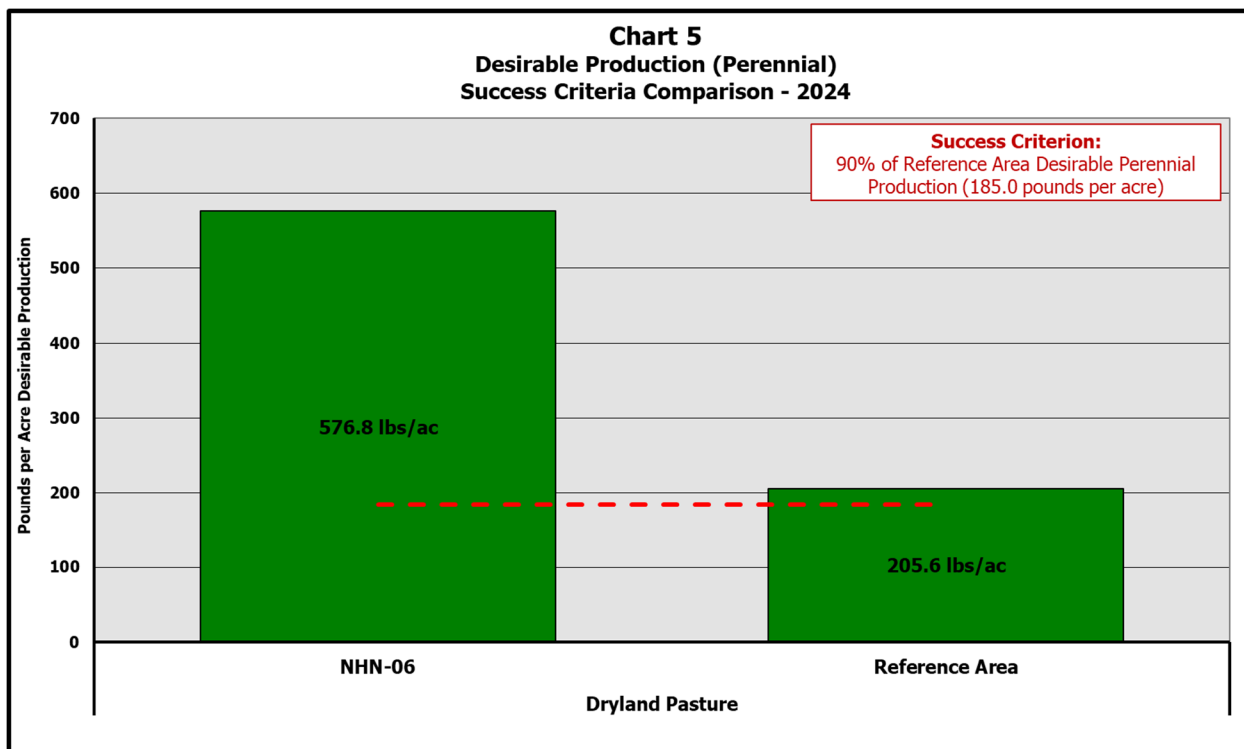


Table 3 Forage Quality Summary				
Reclamation Monitoring - NHN-06 Unit				
Year -->		2024		
		Production Results (lbs/acre)	Relative Production	Test Result
<b>Desirable Production</b>	Perennial Grasses	571.5	100.0%	Pass >75%
	Perennial Forbs	5.3		
<b>Undesirable Production</b>	Sub-shrubs	-	0.0%	
	Annual Grasses	-		
	Annual Forbs	-		
	Noxious Weeds	-	0.0%	
<b>Total</b>		<b>576.8</b>	<b>100.0%</b>	

## 4.0 CONCLUSIONS AND RECOMMENDATIONS

Review of the data indicates that reclamation in the NHN-06 Unit has established vegetation in amounts greater than those found in the Reference Area. Desirable perennial cover in NHN-06 was 22.2% versus 17.2% in the Dryland Pasture Reference Area (DPRA). Cover in NHN-06 and the DPRA were comprised of comparable amounts of desirable species with 79.3% relative cover and 89.6% relative cover, respectively. Desirable perennial production in NHN-06 was 576.8 pounds per acre versus 205.6 pounds per acre in the reference area. Total production in the reclamation was comprised entirely of desirable species (100% relative production). This unit borders an irrigated pasture seeded with alfalfa which is encroaching marginally into the unit and this is reflected in the results.

In 2024, the Dryland Pasture NHN-06 Unit is performing as expected for four growth seasons and is already passing bond release standards for cover and production (Charts 4 and 5). The composition of desirable production (perennial grasses and perennial forbs) far exceeds the 75% forage quality standard (Table 3). It is expected that desirable species will continue to establish within the unit and progress towards meeting the performance criteria in years 9 and 10.

The noxious weed cheatgrass (*Bromus tectorum*) was present with 2.2% cover in NHN-06. Cheatgrass and bulbous bluegrass (*Poa bulbosa*) were present in the reference area with 1.6% and 0.1% cover. There were no noxious weeds captured with production in 2024. Noxious weeds should be monitored and treated as needed.

# **Appendix A**

## **Raw Data**

Table 1      New Horizon - Vegetation Cover - 2024											
NHN-06 Unit - Dryland Pasture											
Raw Data				Percent Ground Cover Based on Point-Intercept Sampling							
Transect No.——>				1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes											
N	P	Agropyron cristatum	Crested Wheatgrass	5	3	9	8	5	6.0	21.4	100
N	P	Agropyron smithii	Western Wheatgrass		5	3		2	2.0	7.1	60
X	A	Bromus tectorum	Cheatgrass		8	3			2.2	7.9	40
I	P	Dactylis glomerata	Orchardgrass					4	0.8	2.9	20
N	P	Pseudoroegneria spicata	Bluebunch Wheatgrass	10	8	6	4	4	6.4	22.9	100
Forbs											
I	A	Kochia scoparia	Kochia			6	7		2.6	9.3	40
I	P	Medicago sativa	Alfalfa	3	4	6	2	20	7.0	25.0	100
I	A	Salsola tragus	Pacific Blacksnakeroot			2	3		1.0	3.6	40
									Mean		
Total Plant Cover				18	28	35	24	35	28.0		
Rock				3	3	1	4		2.2		
Litter				58	52	51	45	63	53.8		
Bare ground				21	17	13	27	2	16.0		
Total Perennial Cover (Excluding Noxious Weeds)				18	20	24	14	35	22.2		
Sample Adequacy Calculations				Plant Cover Mean = 28.0							
				Variance = 53.500							
				t= 1.533							
				n = 5							
				n <sub>min</sub> = 16							

N=Native, I=Introduced

A=Annual, B=Biennial, P=Perennial, X=Noxious

Table 2 New Horizon - Vegetation Cover - 2024																										
Old Peabody Sage Reference Area																										
Raw Data																										
Transect No.——>		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	Average Cover	Relative Cover	Freq.		
Grasses and Grass-like																										
N	P	<i>Aristida purpurea</i>	Purple Threeawn					1													1	0.1	0.5	10		
N	P	<i>Bouteloua gracilis</i>	Blue Grama	2	3	3	3	7		1	1	3										1.2	6.0	40		
X	A	<i>Bromus tectorum</i>	Cheatgrass		4				18	1	2			2	1			2	1			1.6	8.1	40		
N	P	<i>Elymus elymoides</i>	Squirreltail							1												0.1	0.3	5		
N	P	<i>Hesperostipa comata</i>	Needle and Thread		2	2				3	3			5	8	5	6	4		3	9	3	2.7	13.8	60	
N	P	<i>Hilaria jamesii</i>	James' Galleta	4	5		2	2				8	1	2	3		4	3	3	1	3	4	9	2.7	14.1	75
N	P	<i>Oryzopsis hymenoides</i>	Indian Ricegrass					1										1				0.1	0.5	10		
X	P	<i>Poa bulbosa</i>	Bulbous Bluegrass															1				0.1	0.3	5		
N	A	<i>Vulpia octoflora</i>	Six-weeks Fescue					1						2						1		0.3	1.3	20		
Forbs																										
N	B	<i>Erigeron divergens</i>	Spreading Fleabane															1		1		0.1	0.5	10		
N	P	<i>Phlox longifolia</i>	Longleaf Phlox																1			0.1	0.3	5		
I	A	<i>Sisymbrium altissimum</i>	Tumble Mustard						1													0.1	0.3	5		
N	P	<i>Sphaeralcea coccinea</i>	Scarlet Globemallow	1		2	5	5				5			3	1				1		1	3	1.4	7.0	50
Sub-Shrubs																										
N	P	<i>Gutierrezia sarothrae</i>	Broom Snakeweed		4	6		4	3	5	10	1	5	11	6		4	6	5	1	5	4	11	4.6	23.8	85
Shrubs & Trees																										
N	P	<i>Artemisia tridentata</i>	Big Sagebrush	5	2					9	6	3		1	2		6		12	10		3	1	3.0	15.7	60
N	P	<i>Atriplex canescens</i>	Four-wing Saltbush	6					3	4	1						5	3						1.1	5.7	30
N	P	<i>Echinocereus sp.</i>	Hedgehog Cactus		2																			0.1	0.5	5
N	P	<i>Juniperus osteosperma</i>	Utah Juniper														2							0.1	0.5	5
N	P	<i>Opuntia polyacantha</i>	Plains Pricklypear							1									2					0.2	0.8	10
																						Mean				
Total Plant Cover				18	22	13	10	20	25	26	23	20	6	14	19	13	25	20	27	17	15	21	29	19.2		
Rock				35	30	14	21	15	10		3	22	12	27	10	10	6	8	27	4	26	18	23	16.1		
Litter				35	40	40	39	44	49	33	42	34	42	29	32	24	35	47	19	50	43	25	32	36.7		
Bare ground				12	8	33	30	21	16	41	32	24	40	30	39	53	34	25	27	29	16	36	16	28.1		
Total Perennial Cover (Excluding Noxious Weeds)				18	18	13	10	19	6	25	21	20	6	14	19	9	24	20	25	15	12	21	28	17.2		
Sample Adequacy Calculations				Plant Cover Mean = 19.15										t= 1.33					n = 20							
				Variance = 36.0															n <sub>min</sub> = 17							

N=Native, I=Introduced

A=Annual, B=Biennial, P=Perennial, X=Noxious



Old Peabody Sage Reference Area	
Raw Data	Air Dry Weight (grams per 0.5 square meter)

<b>Sampling Adequacy:</b>	<b>t = 1.304</b>	<b>var. = 70.172</b>
<b>n= 40</b>	<b>Mean = 21.6</b>	<b>n<sub>min</sub> = 25.6</b>

$$n_{\min} = 25.6$$

# **Appendix B**

## **Vegetation Sampling Methodology**

# Vegetation Sampling Methodology

## Sample Site Selection / Location

The sample layout protocol for revegetation evaluations in 2024 generally followed procedures described in Permit Section 2.05.4(2)(e). The generated coordinates were then loaded into the GPS unit to facilitate sample site location in the field. All transects were kept within the designated sample unit boundaries.

## Determination of Ground Cover

Ground cover was evaluated in accordance with Rule 4.15.11 (1) (a) (i) by sampling along a 10-meter transect tape on all evaluated units. In 2024, a laser bar was used to collect ground cover. At ten-centimeter intervals along the laser bar, one meter in width, the plant species encountered by the laser was recorded. In this manner, a total of 100 intercepts per transect were recorded resulting in 1 percent cover per intercept. If no plant cover was encountered, then the observation was recorded as to the presence of plant litter, rock, bare ground, or non-vascular (lichen or moss). Plant material produced in each respective growing season which was still attached to the plant was considered as living plant material whereas all plant material produced in prior years, which was dead or which had fallen to the ground was considered to be litter.

## Sample Adequacy Determination

Sampling within each unit was conducted to a minimum of 5 samples. From these preliminary efforts, sample means and standard deviations for total non-overlapping vegetation ground cover were calculated. The Cochran formula (below) for determining sample adequacy was used to calculate **n<sub>min</sub>**, whereby the population is estimated to within 10% of the true mean ( $\mu$ ) with 90% confidence.

When the inequality (**n<sub>min</sub>** ≤ **n**) is true, sampling is deemed adequate; and **n<sub>min</sub>** is determined as follows:

$$n_{min} = (t^2 s^2) / (0.1 \bar{x})^2$$

where:

**n** = the number of actual samples collected

**t** = the value from the one-tailed *t* distribution for 90% confidence with **n**-1 degrees of freedom;

**s<sup>2</sup>** = the variance of the estimate as calculated from the initial samples;

**$\bar{x}$**  = the mean of the estimate as calculated from the initial samples.

## **Appendix C**

### **Representative Field Photos**



**Photograph 1. New Horizon North, Dryland Pasture, NHN-06 Unit, 2024**



**Photograph 2. New Horizon North, Old Peabody Sage RA, 2024**