## Bowie Resources, LLC.

# Bowie #1 Mine East Mine

Phase II Bond Release Revegetation Evaluation Report 2016

OCTOBER 2016



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# Bowie #1 Mine - East Mine Revegetation

## PHASE II BOND RELEASE EVALUATION REPORT - 2016

## **1.0 INTRODUCTION**

## 1.1 General

Cedar Creek Associates, Inc. (Cedar Creek) was contracted in 2016 by J. E. Stover and Associates, Inc. on behalf of Bowie Resources, LLC. to evaluate one revegetated area, East Mine, of the Bowie #1 Mine for Phase II Bond Release. Data collection was performed in the interest of ascertaining progress toward revegetation success in general accordance with Rule 3.03, Release of Performance Bonds. The location of the reclaimed area and sample points are provided on Map 1. Field sampling for the directly measurable variable of ground cover was systematically conducted on June 30<sup>th</sup>, 2016 as the vegetation was reaching its peak production period. Field efforts in 2016 were conducted by Cedar Creek's Senior Plant Ecologist, Mr. Erik M. Mohr; and Range Ecologist, Mr. Scott Benton. Raw data tables and photographs are presented at the end of the document.

## **1.2 Precipitation**

Precipitation data presented on Table P and Charts P1 and P2 was recorded at a weather station (Paonia, CO) that is approximately 3 miles southeast of the mine. This weather station is nearest to the site and provides a rough comparison of long-term trends in precipitation in the region. However, the location of this weather station is considerably lower in elevation and so precipitation totals are not likely to be completely accurate. Therefore, precipitation data is not presented, but only used for a discussion on precipitation trends. Based on this data and current vegetation in the reclaimed areas, precipitation totals appear to have been above average for the Bowie #1 Mine in 12 months preceding evaluation in June 2016.

## 1.3 Background, Success Standards, and Evaluation

Information regarding dates of reclamation earthwork activities and seeding dates should be provided in other supporting documents.

The bond release success standards for the eventual release of reclaimed areas at the Bowie #1 Mine are based on vegetation cover, annual herbaceous production, and woody plant density values of reclaimed areas compared with the success criteria. Diversity, production and woody plant density success



	Table	e <b>P - A</b>	nnual	Precip	itatior	ו for P	aonia,	Colora	ado 2	005 -	2016		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2005	2.05	1.38	1.93	1.37	1.22	1.64	0.40	1.71	2.84	2.11	0.84	1.47	18.96
2006	0.81	0.28	1.58	0.83	0.17	0.50	3.06	0.87	2.32	5.08	1.39	0.65	17.54
2007	0.68	0.92	1.39	1.20	1.18	0.99	0.85	1.16	3.20	1.37	0.00	4.20	17.14
2008	1.67	1.10	0.54	0.77	0.64	0.67	0.24	2.07	0.62	0.74	0.91	1.55	11.52
2009	0.91	1.00	0.89	1.09	2.73	0.63	0.27	0.33	0.32	0.58	0.77	1.36	10.88
2010	0.42	1.66	1.20	0.51	1.68	0.55	1.44	2.09	1.15	1.84	0.58	1.91	15.03
2011	0.49	0.87	1.22	1.68	0.83	0.32	1.74	0.46	1.20	1.55	0.96	1.01	12.33
2012	1.22	1.41	0.30	0.62	0.09	0.05	1.26	2.35	0.92	0.64	0.61	1.41	10.88
2013	1.82	0.89	1.14	1.30	1.24	0.00	1.37	0.78	3.28	2.12	0.91	0.69	15.54
2014	0.66	2.16	0.77	1.31	1.71	0.21	1.11	2.13	2.96	1.17	0.65	1.56	16.40
2015	1.02	1.00	0.76	1.75	3.86	1.05	2.43	1.96	1.20	1.94	1.48	2.70	21.15
2016	0.90	0.85	1.44	1.35	1.33	0.51	0.80	1.81	1.07	-	-	-	10.06
89 Year Avg.	1.20	1.19	1.44	1.35	1.41	0.74	1.09	1.34	1.51	1.60	1.24	1.34	15.63

Red Values indicate average values due to lack of data from weather station





comparisons are applicable only to Phase III Bond Release and thus are not discussed in this Phase II Bond Release evaluation. Noxious weed cover may not count towards vegetation success standards. A determination regarding noxious weed status is based on the Delta County noxious weed list.

Success criteria for **Phase II Bond Release** are as follows:

• For the East Mine Unit, Phase II Bond Release requirements state that Total Plant Cover must exceed 40%. The Total Plant Cover may not include noxious weeds, and annual and biennial species cover is limited (see discussion below).

Success criteria for **Phase III Bond Release** in the East Mine unit are as follows:

- Achieve a Total Plant Cover greater than 40%.
- Achieve a woody plant density of between 800 and 1,000 stems per acre.
- Achieve annual herbaceous production levels of  $\geq$  90% of 400 pounds per acre (360).
- Achieve a species diversity of ≥ 5 native, perennial herbaceous species (4 native cool season grasses and one native forb) with between 3% and 60% relative cover. The five species combined will not exceed 90% relative cover or production.
- Achieve a species diversity of ≥ 2 native shrub species, not exceeding a relative cover value of ≥ 80%.

Success evaluations involve a direct comparison and, where necessary, statistical testing of the ground cover parameter. A total of perennial, biennial and annual (non-noxious) vegetation cover is stated as the approved success standard, however there is a limitation to the amount of annual and biennial cover that can be included in this total. According to guidance provided by CDRMS, annuals and biennials can only contribute 10% relative cover to the comparison. Implementation of this method initially requires noxious weeds to be removed from total cover. Next, annual and biennial absolute cover must be converted into relative cover. Any annual and biennial cover exceeding 10% relative cover must be removed from the total cover of annual and biennial vegetation. The resulting data can then be used in a direct comparison against a standard.

In 2016, Cedar Creek was able to make direct comparisons between the Phase II sampling effort and standard (because of statistically adequate sampling), thus a standard statistical t-test was not required.

#### 2.0 METHODOLOGY FOR VEGETATION SAMPLING

#### 2.1 Sample Site Selection / Location

The sample layout protocol for revegetation evaluations in 2016 largely followed Colorado Division of Reclamation, Mining, and Safety (CDRMS) approved procedures developed by Cedar Creek to provide unbiased, representative, and cost-effective data for evaluation of revegetation. These procedures are designed to better account for the heterogeneous expression of vegetation within the various reclaimed areas while precluding bias in the sample site selection process. By design, the procedure is initiated randomly, and thereafter, samples are located in a systematic manner, along grid coordinates spaced at fixed distances (e.g. 275 ft., as demonstrated in Figure 1 and/or Map 1). In this manner, representation from across the entire reclaimed area is forced rather than risking the chance that significant pockets (or seedings) are entirely missed, or overemphasized as often happens with simple random sampling.

The systematic procedure for sample location in the revegetated areas occurred in the following stepwise manner. First, a fixed point of reference was selected for the unit to facilitate location of the systematic grid in the field. Second, a systematic grid of appropriate dimensions was selected to provide a reasonable number of coordinate intersections (e.g. 30) that could then be used for the set of sample sites. Third, a scaled representation of the grid was overlain on a computer-generated map of the target area extending along north/south and east/west lines. Fourth, the initial placement of this grid was implemented by selection of two random numbers (an X and Y distance) used for locating the first coordinate from the fixed point of reference, thereby making the effort unbiased. Fifth, utilizing a mobile Garmin GPS unit, the sample points were located in the field.

Once a selected grid point was located in the field, ground cover sampling transects were always oriented in the direction of the next site to be physically sampled to further limit any potential bias while facilitating sampling efficiency. This orientation protocol is indicated on Figure 1. Depending on logistics, timing, and access points to the target sampling area, the field crew would occasionally layout a set of points along coordinates in one direction and then sample them in reverse order. However, orientation protocol was always maintained (i.e. in the direction of the next point to be physically sampled). If the boundary of the area was encountered before reaching the full length of a transect, the orientation of the transect was turned 90° in the appropriate direction so the transect could be completed. In this manner, boundary transects were retained entirely within the target unit by "bouncing" off the boundaries.

#### 2.2 Determination of Ground Cover

Ground cover at each sample point was determined utilizing the point-intercept methodology as illustrated on Figure 1. As indicated on this figure, Cedar Creek utilizes state-of-the-art instrumentation it has pioneered to facilitate much more rapid and accurate collection of data. A transect of 10 meters length was extended in the direction of the next sampling location from the flagged center of each systematically located sample point. At each one-meter interval along the transect, a laser point bar was situated parallel to, and approximately 4.5 to 5.0 feet vertically above the ground surface. A set of 10 readings was taken specifically to record hits on vegetation (by species), litter, standing dead, rock (>2mm), or bare soil. Hits were determined at each meter interval by activating 10 low-energy specialized lasers<sup>\*\*</sup> situated along the bar at 10 centimeter intervals and recording the variable intercepted by each of the narrowly focused (0.02″) beams (Figure 1). In this manner, a total of 100 intercepts per transect were recorded resulting in 1 percent cover per intercept. This methodology and instrumentation facilitates the collection of the most unbiased, repeatable, and precise ground cover data possible. Identification and nomenclature of plant species follows <u>Colorado Flora: Western Slope</u> (Weber and Wittman, 1996).

## 2.3 Sample Adequacy Determination

Sampling within each unit was conducted to 30 samples for Phase II area sampling. From these preliminary efforts, sample means and standard deviations for total non-overlapping vegetation ground cover were calculated. For non-monitoring applications, the typical procedure is that sampling continues until an adequate sample,  $\mathbf{n}_{min}$ , has been collected in accordance with the Cochran formula (below) for determining sample adequacy, whereby the population is estimated to within 10% of the true mean ( $\mu$ ) with 90% confidence.

<sup>&</sup>lt;sup>\*\*</sup> Lasers utilized for this instrument are state-of-the-art and of specialized design to emit a unique electro-magnetic wavelength visible under full sunlight, a condition previously not possible with portable low-energy lasers.

When the inequality  $(n_{min} \le n)$  is true, sampling is deemed adequate; and  $n_{min}$  is determined as follows:

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

where: n = the number of actual samples collected (initial size = 30)

- t = the value from the one-tailed t distribution for 90% confidence with n-1 degrees of freedom;
- $s^2$  = the variance of the estimate as calculated from the initial samples;
- $\overline{x}$  = the mean of the estimate as calculated from the initial samples.

If the initial samples do not provide a suitable estimate of the mean (i.e., the inequality is false), additional samples would be collected until the inequality  $(\mathbf{n}_{\min} \leq \mathbf{n})$  becomes true.



Sampling Procedure at a Systematic Sample Site Location

#### 3.0 RESULTS

#### 3.1 Summary

The revegetation evaluated for Phase II Monitoring comprised approximately 59 acres. A total of 40 plant taxa were observed within the revegetation area evaluated in 2016. These species included 12 grass taxa, 22 forbs, 2 sub-shrub, and 4 shrubs (Table 1). With regard to the Phase II Bond Release success standard, the East Mine's total perennial cover of 50.27% with an additional 5.03% contributed from annual and biennial cover (equates to the maximum of 10% relative cover allowable) equates to a Total Plant Cover of 55.34% (Chart 1). This value comfortably exceeds the success criterion of 40% Total Plant Cover.



#### 3.2 East Mine Revegetation

The East Mine Unit is approximately 59 acres in extent (Map 1). Ground cover consisted of 66.5% live vegetation, 6.3% rock, 17.1% litter, and bare soil exposure of 10.2% (Table 2). Perennial species exhibited an average cover of 50.3% and a relative cover of 75.6%. Annual and biennial species exhibited an average cover of 11.3% and a relative cover of 17.1%. Noxious weeds exhibited average cover of 4.9%, and a relative cover of 7.3%. Found in relatively small quantities were the state-listed noxious

weeds, cheatgrass (*Anisantha tectorum*), whitetop (*Cardaria draba*), Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), and field bindweed (*Convovulus arvensis*). In addition, the ubiquitous, invasive species Japanese brome (*Bromus japonicus*) was also present in small quantities. Dominant taxa were thickspike wheatgrass (*Elymus lanceolatus var. l.*), cicer milkvetch (*Astragalus cicer*), and alfalfa (*Medicago sativa*) with an average cover of 21.0%, 10.9%, and 10.7% respectively. With regard to diversity, the East Mine unit exhibited a total of four perennial herbaceous species with between 3% and 60% relative cover, two of which were native cool-season perennial grasses. A total of six native shrubs were observed, although none were intercepted.

## 4.0 CONCLUSIONS

Chart 1 exhibits the results from the direct comparison made between the East Mine Phase II Monitoring area and the Success Criterion. Total Plant Cover (excluding noxious weeds) for the East Mine was 55.3%.

For the East Mine Unit, the Total Plant Cover Standard is greater than 40%. <u>Therefore, the East</u> <u>Mine Unit (55.3% plant cover) is greater than the success criterion (40%), resulting in the</u> <u>conclusion that the area sampled for Phase II Monitoring could readily pass the ground cover</u> <u>requirement for Phase II Bond Release.</u>

This review of collected data demonstrates the success and utility of the Revegetated Areas, especially given the levels of vegetative ground cover and favorable results with regard to diversity and vegetation cover. Overall, the area appears to be able to surpass Phase II bond release requirements and is capable of supporting post-mining land uses. The existence of a few noxious weeds should (and has) triggered managerial action to establish control of these undesirable populations.

## 5.0 LITERATURE CITED

- Colorado Division of Mined Land Reclamation. 1990. *Guideline for Management of Noxious Weeds on Coal Mine Permit Areas*.
- Colorado Division of Minerals and Geology. 1995. *Guideline Regarding Selected Coal Mine Bond Release Issues.*
- Weber, W.A. and Wittman, R.C., 1996. Colorado Flora: Western Slope Revised Edition. University Press of Colorado. 496 p.

Tal	ole	1 Bowie #1 - East Mir	ne - Phase II - 2016	
		Observed Species		
Gras	ses	and Grass-likes	Synonyms	Common Name
Ν	Р	Achnatherum hymenoides	Orozopsis hymenoides	Indian Ricegrass
NxW	А	Anisantha tectorum	Bromus tectorum	Cheatgrass
Ι	Α	Bromus japonicus		Japanese Brome
Ν	Ρ	Bromus marginatus		Mountain Brome
Ι	Ρ	Dactylis glomerata		Orchardgrass
Ν	Ρ	Elymus lanceolatus var. lanceolatus	Agropyron dasystachyum	Thickspike Wheatgrass
Ν	Ρ	Elymus trachycaulus	Agropyron trachycaulum	Slender Wheatgrass
N	Ρ	Pascopyron smithii	Agropyron smithii	Western Wheatgrass
N	P	Poa agassizensis / Poa pratensis	Poa pratensis ssp. pratensis	Bluegrass
N	Р	Poa secunda	Poa sandbergii	Sandberg's Bluegrass
N	Р	Pseudoroegneria spicatum spicatum	Agropyron spicatum spicatum	Bluebunch Wheatgrass
I	Ρ	Thinopyrum intermedium	Agropyron trichophorum	Intermediate Wheatgrass
Forb	-			
Ι	Α	Alyssum desertorum		Desert Alyssum
Ι	Ρ	Astragalus cicer		Cicer Milkvetch
NxW	Р	Cardaria draba	-	Whitetop
NxW	Р	Cirsium arvense	Breea arvense	Canada Thistle
		Cirsium vulgare		Bull Thistle
NxW	P	Convolvulus arvensis		Bindweed
N	P	Cuscuta sp.		Dodder Dodder
I	A	Erodium cicutarium		Redstem Stork's bill
N	A B	Gayophytum ramosissimum		Groundsmoke
N N	D P	Grindelia squarrosa Heterotheca villosa		Curlycup Gumweed Hairy False Golden Aster
I	В	Lactuca serriola		Prickly Lettuce
N	P	Linum lewisii		Lewis Flax
N	B	Machaeranthera canescens		Hoary Aster
I	P	Medicago sativa		Alfalfa
I	B	Melilotus alba		White Sweetclover
I	B	Melilotus officinalis		Sweetclover
Ň	P	Penstemon strictus		Rocky Mountain Penstemon
I	P	Rumex crispus		Curly Dock
I	P	Sanguisorba minor		Small Burnet
N	P	Spharalcea coccinea		Scarlet Globemallow
Ι	Ρ	Taraxicum officinale		Dandelion
Tree	s, S	Shrubs, and Sub-Shrubs		
Ν	S	Atriplex canescens		Fourwing Saltbush
	SS	Krascheninnikovia lanata	Ceratoides lanata	Winterfat
		Lepidium montanum		Mountain Pepperweed
Ν	S	Purshia tridentata		Bitterbrush
N	S S	Quercus gambelii Basa waadsii		Scrub Oak
N	-	Rosa woodsii		Wood's Rose
-	101	al Counts by Lifeform: Perennial	Grassos	10
——		Perennial		10 14
		Sub-Shi		2
		Shrubs &		4
		Annual Gr		2
		Annual / Bien		8
		Total Species E		• <b>40</b>
				40

## Table 2Bowie #1 - East Mine - Phase II - 2016

Ground	Cover	Summary	
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Area ->         Average Cover         Relative Cover           Grasses and Grass-likes         Indian Ricegrass         3.43         5.17           NW A Anisantha tectorum         Cheatgrass         3.43         5.17           1 A Bronus japonicus         Japanees Brome         0.73         1.10           1 P Dactylis glomerata         Orchardgrass         0.03         0.05           N P Pass lancolatus var. lanceolatus         Thickspike Wheatgrass         0.40         0.60           N P Passeunda         Sandberg 7 Blugrass         0.13         0.20         0.10           N P Passeunda         Sandberg 7 Blugrass         0.07         0.10           N P Passeunda esertorum         Desert Alyssum         6.97         10.48           N P Astragulus cicer         Cicer Milkvetch         1.07         1.55           NW P Cardonia draba         Whitetop         0.37         0.55           NW P Cardonia draba         Whitetop         0.37         0.55           NW P Cardonia draba         Whitetop         0.37         0.55           NW P Cardonia draba         Winterwed         0.03         0.05           N A Grayophytum ranoissimum         Growandsmoke         0.03         0.35           NW P Cardonia		Ground Cover Summar	Y Percent Ground Cove	er Based on Point-I	ntercept Sampling
Grasses and Grass-likes         Netrage Cover         Relative Order           N         A Achnatherum hymenoides         Indian Ricegrass         0.55         0.75           N/W         A Achnathe tectorum         Cheatgrass         3.43         5.17           I         A Bromus japonicus         Japanese Brome         0.73         1.10           I         P Detrykile glomerata         Orchardgrass         0.03         0.055           N         P Elymus fanceolatus var. Ianceolatus         Thicksplike Wheatgrass         0.40         0.60           N         P Pascopyron smithi         Western Wheatgrass         0.10         0.10           N         P Pascopyron smithi         Bluedprass         0.07         0.10           N         P Readescraft         Sandberg's Bluegrass         0.07         0.10           I         P Abragalus cicer         Cicer Milkvetch         10.67         0.16           N         P exactura indecora         Dodder         0.03         0.055           NWW         Cardinia draba         Wintetop         0.37         0.55           NWW         Cardinia draba         Wintetop         0.33         0.05           N         Grandatraba         Cirkycuy Gumered					
NEW A         Anisantha tectorum         Cheatgrass         3.43         5.17           I         A Bronus japonicus         Japanese Brome         0.73         1.10           I         P Dachils glomerata         Orchardgrass         0.03         0.05           N         P Eymus lrachycaulus         Slender Whestgrass         0.40         0.60           N         P Rescupron smithi         Western Whestgrass         0.13         0.20           N         P Pos agasztensis / Poa pratensis         Biluegrass         0.07         0.10           N         P Pos accunda         Sandberg's Bluegrass         0.07         0.10           N         P Pos accunda         Sandberg's Bluegrass         0.07         0.10           Forbs         Intermediate Whestgrass         0.07         0.10           Forbs         Intermediate Whestgrass         0.07         0.10           N         P Astragalus cicer         Cicer Milkvetch         10.37         0.55           NW         Carderid acha         Whitetop         0.37         0.55           N         G cynothymu ramosissimum         Gronulsmoke         0.03         0.05           N B         Grindelia squarosa         Curlycup Gumweed         0.90	Grasses	and Grass-likes	71100 2	Average Cover	Relative Cover
NEW A         Anisantha tectorum         Cheatgrass         3.43         5.17           I         A Bronus japonicus         Japanese Brome         0.73         1.10           I         P Dachils glomerata         Orchardgrass         0.03         0.05           N         P Eymus lrachycaulus         Slender Whestgrass         0.40         0.60           N         P Rescupron smithi         Western Whestgrass         0.13         0.20           N         P Pos agasztensis / Poa pratensis         Biluegrass         0.07         0.10           N         P Pos accunda         Sandberg's Bluegrass         0.07         0.10           N         P Pos accunda         Sandberg's Bluegrass         0.07         0.10           Forbs         Intermediate Whestgrass         0.07         0.10           Forbs         Intermediate Whestgrass         0.07         0.10           N         P Astragalus cicer         Cicer Milkvetch         10.37         0.55           NW         Carderid acha         Whitetop         0.37         0.55           N         G cynothymu ramosissimum         Gronulsmoke         0.03         0.05           N B         Grindelia squarosa         Curlycup Gumweed         0.90			Indian Discourses	0.50	0.75
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I         P         Dactylis glomerata         Orchardgrass         0.03         0.05           N         P         Fildspike Wheatgrass         20.97         31.54           N         P         Slender Wheatgrass         0.40         0.60           N         P         Pascopyron smithi         Western Wheatgrass         0.13         0.20           N         P         Pas agassizenis placatum splacatum         Bluegrass         0.07         0.10           N         P         Pas agassizenis placatum splacatum         Bluegrass         0.07         0.10           Forbs         T         A Ayssum desertorum         Desert Alyssum         6.97         10.48           I         A Ayssum desertorum         Desert Alyssum         6.97         10.48           NW P         Canolvulus arvensis         Bindweed         1.07         1.60           NW P         Canolvulus arvensis         Bindweed         0.03         0.05           N A         Gardaria draba         Whitelyou Guardenia draba         0.01         1.05           N B         Dactoral Medora         0.03         0.05         1.35           N M         Convolvulus arvensis         Curdaria draba         Prensterial draba <td< td=""><td></td><td></td><td></td><td></td><td></td></td<>					
N         P. Elymus ianceolatus var. lanceolatus Siender Wheatgrass         20.97         31.54           N         P. Pascapyron smithi         Western Wheatgrass         5.50         8.27           N         P. Pas agassizensis / Poa pratensis         Sandberg's Bluegrass         0.07         0.10           N         P. Pase accunda         Sandberg's Bluegrass         0.07         0.10           N         P. Paseudorosgneria spicatum spicatum Bluebunch Wheatgrass         0.07         0.10           Forbs         I. A. Alyssum desertorum         Desert Alyssum         6.97         10.48           NWP         Controlvulus arrensis         Bindweed         1.07         1.60           NWP         Controlvulus arrensis         Bindweed         0.07         1.60           NWP         Controlvulus arrensis         Bindweed         0.07         1.60           N A         Gayophytum ramosissimum         Groundsmoke         0.03         0.05           N B         Grindelia aguarrosa         Curlycup Gumweed         0.90         1.45           N B         Machaeranthera canescens         Hoary Aster         0.10         0.15           I B         Adlatas athera white Sweetclover         0.17         0.20         0.20					
N         P         Elymus trachycaulus         Slender Wheatgrass         0.40         0.60           N         P         Pao agassiensis / Poa pratensis         Bluegrass         0.13         0.20           N         P         Poa agassiensis / Poa pratensis         Sandberg's Bluegrass         0.07         0.10           N         P         Pseudoroegneria spicatum spicatum         Bluebunch Wheatgrass         0.07         0.10           Forbs         T         A Alyssum desertorum         Desert Alyssum         6.97         10.48           I         A Alyssum desertorum         Desert Alyssum         6.97         10.48           NWP         Cardaria draba         Whitetop         0.37         0.55           NWP         Cardaria draba         Whitetop         0.37         0.55           NWP         Cardaria draba         Whitelweeto         0.37         0.055           N A         Gayaphytum ramosissimum         Groudsmoke         0.03         0.065           I         A Erodium cicutarium         Redstem Stork's bill         0.17         0.25           N B         Kaichearanthera canescens         Curtycup Gumweed         0.00         1.35           I         B Meliotus aba         White Word<					
N         P         Pascapyron sinithi         Western Wheatgrass         5.50         8.27           N         P         Poa agassizensis         Analysizensis         0.13         0.20           N         P         Prazeudorosgnerais spicatum Bluebunch Wheatgrass         0.07         0.10           P         Prinzopyrum intermedium         Intermediate Wheatgrass         0.07         0.10           Forbs         I         A         Alyssum desertorum         Desert Alyssum         6.97         10.48           P         Patagalus cicer         Cicer Milkvecth         10.87         16.35           NW P         Canciaria draba         Whitetop         0.37         0.55           NW P         Canciar Indecora         Redstem Stork's bill         0.17         1.020           N A         Grayophytum ramosismum         Groundsmoke         0.03         0.05           N A         Grayophytum ramosismum         Groundsmoke         0.13         0.13           N B         Schadaga sativa         Afafa         10.73         16.15           N B         Brodium cicutarium         Redsten Stork's bill         0.17         0.25           N B         Brodiaga sativa         Afafa         10.73         16					
N         P         Pac agassiennis / Pap pratensis         Bluegrass         0.13         0.20           N         P         Pase-scunda         Sandberg's Bluegrass         0.07         0.10           N         P         Thinopyrum Intermedium         Intermediate Wheatgrass         0.07         0.10           Forbs         Forbs         6.97         10.48           I         A. Alyssum desertorum         Desert Alyssum         6.97         10.48           NW P         Cardaria draba         Whitetop         0.37         0.55           NWW P         Canodrium cicutarium         Redstem Stork's bill         0.17         0.25           N A         Gayophytum ramosissimum         Groundorulus arvensis         0.00         1.35           N B         Lactura serriola         Prickly Lettuce         0.97         1.45           N B         Jactura serriola         Prickly Lettuce         0.97         1.45           N B         Machaeranthera canescens         Hoary Aster         0.10         0.15           N B         Machaeranthera canescens         White Sweetclover         0.30         0.20           N S S         Krascheninnikovia lanata         Winter Sweetclover         0.20         0.70		, ,			
N         P         Pass securids         Sandberg's Bluegrass         0.07         0.10           N         P         Prevedoreogener's pictum spicatum         Bluebunch Wheatgrass         0.07         0.10           Forbs         I         A         Alyssum desertorum         Desert Alyssum         6.97         10.48           I         P         Astragalus cicer         Cicer Milkvetch         10.87         16.35           NWW         P Cardaria draba         Whitetop         0.37         0.55           NWW         P Cardaria draba         Whitetop         0.37         0.55           NWW         Cardaria draba         Whitetop         0.37         0.55           NWW         Cardaria draba         Whitetop         0.37         0.55           N B         Schudecora         Dodder         0.03         0.05           N B         Grindelia squarrosa         Curlycup Gumwed         0.90         1.35           N B         Machaeranthera canescens         Hoary Aster         0.10         0.15           N B         Melilous officinalis         Sweetclover         0.17         0.25           N B         Melilous officinalis         Sweetclover         1.30         1.96					-
N         P         Peseudoroegneria spicatum         Bluebunch Wheatgrass         0.07         0.10           I         P         Thinopyrum intermedium         Intermediate Wheatgrass         0.07         0.10           Forbs         I         A Alyssum desertorum         Desert Alyssum         6.97         10.48           I         P         Astragalus cicer         Cicer Milkvetch         10.87         16.35           NWP         Cardaria draba         Whitetop         0.37         0.55           NWP         Cardaria draba         Whitetop         0.37         0.55           NWP         Cardual indecora         Dodder         0.03         0.055           NWP         Cardual indecora         Dodder         0.03         0.055           N         A Gayaphytum ramosissimum         Groundsmoke         0.00         0.05           N         B dachearanthera canescens         Hoary Aster         0.10         0.15           N         B Machaeranthera canescens         Hoary Aster         0.10         0.15           N         B Mealiotus officinalis         Sweetclover         0.17         0.25           N         B Mealiotus officinalis         Sweetclover         0.13         0.20 </td <td></td> <td></td> <td></td> <td></td> <td></td>					
I         P         Thinopyrum intermedium         Intermediate Wheatgrass         0.07         0.10           Forbs         I         A         Alyssum desertorum         Desert Alyssum         6.97         10.48           I         P         Astragalus cicer         Cicer Milkvetch         10.87         16.35           NW P         Cardaria draba         Whitetop         0.37         0.55           NW P         Cardaria draba         Whitetop         0.37         0.55           NW P         Cardaria draba         Whitetop         0.33         0.05           N         F cadium cicutanium         Redstem Stork's bill         0.17         0.25           N         B         Grindelia squarrosa         Curlycup Gumweed         0.90         1.35           I         B         Mediotus astiva         Alfafa         10.73         16.15           I         B         Mediotus astiva         White Sweetclover         1.30         1.96           N         P sensemon strictus         ocky Mountain Penstemon         0.07         0.10           I         P         Mediacus astiva         Mountain Penstemon         0.20         0.20           N         SS         Krascheninnikovia lan					
Forbs         I         A. Alyssum desertorum         Desert Alyssum         6.97         10.48           I         P. Astragalus cicer         Cleer Milkvetch         10.87         16.35           NW P         Caradra draba         Whitetop         0.37         0.55           NW P         Convolvulus arvensis         Bindweed         1.07         1.60           N P         Cuscula indecora         Dodder         0.03         0.055           N A         Gayophytum ramosissimum         Redstem Stork's bill         0.17         0.25           N A         Gayophytum ramosissimum         Groundsmoke         0.03         0.055           N B         Grindelia squarrosa         Curlycup Gumweed         0.90         1.35           I B         Lactuca seriola         Prickly Lettuce         0.97         1.45           N B         Machaeranthera canescens         Hoary Aster         0.10         0.15           I B         Melilotus aba         White Sweetclover         0.10         0.15           I P         Sarguisoba minor         Small Burnet         0.50         0.75           Trees, Shrubs, and Sub-Shrubs         Mountain Pepperweed         0.20         0.30           N SS         Lepidium mont					
I         A         Alyssum desertorum         Desert Alyssum         6.97         10.48           I         P         Astragalus cicer         Cicer Milkvetch         10.37         16.35           NWP         Cardaria draba         Whittetop         0.37         0.55           NW P         Convolvulus arvensis         Bindweed         1.07         1.60           N         P         Cuscuta indecora         Dodder         0.03         0.05           N         A         Gayophytum ramosissimum         Groundsmoke         0.03         0.05           N         B         Grindelia squarosa         Curlycup Gumweed         0.90         1.35           N         B         Lactuca serriola         Prickly Lettuce         0.97         1.45           N         B         Medicago sativa         Alfalfa         10.73         16.15           N         P         Medicago sativa         Alfalfa         10.07         0.10           N         P         Penstemon strictus         2cky Mountain Penstemon         0.07         0.10           N         P         Penstemon strictus         2cky Mountain Pepperweed         0.20         0.30           N         S         Karsch		Thinopyrum interneurum		0.07	0.10
I         P         Astragalus cicer         Cicer Milkvetch         10.67         16.35           NWW P         Candaria draba         Whitetop         0.37         0.55           NW P         Canvalvulus arvensis         Bindweed         1.07         1.60           N         P         Cuscuta indecora         Dodder         0.03         0.05           N         A         Gradum cicutarium         Redstem Stork's bill         0.17         0.25           N         A         Gradular second         0.90         1.35           I         B         Cartycup Gumweed         0.90         1.35           N         B         Grindela squarrosa         Curtycup Gumweed         0.97         1.45           N         B         Melicago sativa         Afafafa         10.73         16.15           I         P         Melicutas oficinalis         Sweetolover         1.17         0.25           I         B         Melicutas oficinalis         Sweetolover         1.03         1.96           N         P         Penstemon strictus         ocky Mountain Penstemon         0.07         0.10           N         S         Krascheninnikovia lanata         Winterfat         0.13<					
NxW P         Candaita draba         Whitetop         0.37         0.55           NxW P         Canodivulus arvensis         Bindweed         1.07         1.60           N P         Cuscuta indecora         Redstem Stork's bill         0.17         0.25           N A         Gayophytum ramosissimum         Groundsmoke         0.03         0.05           N B         Grindella squarrosa         Curlycup Gumweed         0.90         1.35           I B         Eactuca serinia         Prickly Lettuce         0.97         1.45           N B         Machaeranthera canescens         Hoary Aster         0.10         0.15           I P         Medicago sativa         Afalfa         10.73         16.15           I B         Melilotus alba         White Sweetclover         1.30         1.96           N P         Pasternion strictus         ocky Mountain Pensternon         0.07         0.10           N SS         Krascheninnikovia lanata         Winterfet         0.20         0.20           N SS         Lactud montanum         Mountain Pepperweed         0.20         0.20           N SS         Lactud montanum         Mountain Pepperweed         0.20         0.20           St Lepidium montanum					
New P         Convolvulus arvensis         Bindweed Dodder         1.07         1.60           N P         Cuscuta indecora         Dodder         0.03         0.05           N A         Gayophytum ranosissimum         Groundsmoke         0.03         0.05           N A         Gayophytum ranosissimum         Groundsmoke         0.03         0.05           N B         Grindelia squarrosa         Curlycup Gumweed         0.90         1.35           I B         Lactuca serriola         Prickly Lettuce         0.97         1.45           N B         Machaeranthera canescens         Hoary Aster         0.10         0.15           I B         Melliotus alba         White Sweetclover         0.17         0.25           I B         Melliotus officinalis         Sweetclover         1.30         1.96           N P Pensternon strictus         ocky Mountain Pensternon         0.07         0.10           I P Sanguisorba minor         Sweetclover         1.30         0.20         0.30           N SS         Krascheninnikovia lanata         Winterfat         0.13         0.20         0.30           N SS         Lepidum montanum         Mountain Pepperweed         0.20         0.30         0.31 <td< td=""><td></td><td></td><td></td><td></td><td></td></td<>					
N         P         Cuscuta indecora Evolum cicutarium         Dodder         0.03         0.05           I         A         Erodium cicutarium         Redstem Stork's bill         0.17         0.25           N         A         Grouphytum ranssismum         Groundsmoke         0.03         0.05           N         B         Grindella squarosa         Curlycup Gumwed         0.90         1.35           I         B         Lactuca seriola         Prickly Lettuce         0.97         1.45           N         B         Machaeranthera canescens         Hoary Aster         0.10         0.15           I         P         Medicago sativa         Alfaffa         10.73         16.15           I         B         Melliotus adha         White Sweetclover         1.30         1.96           N         P         Penstemon strictus         ocky Mountain Penstemon         0.07         0.10           N         S         Krascheninnikovia lanata         Winterfat         0.13         0.20           N         S         Krascheninnikovia lanata         Winterfat         0.13         0.20           N         S         Krascheninnikovia lanata         Winterfat         0.13         0.20 <td></td> <td></td> <td></td> <td></td> <td></td>					
I         A         Erodium cicutarium         Redstem Stork's bill         0.17         0.25           N         A         Gayophytum ramosissimum         Groundsmoke         0.03         0.05           N         B         Grindelia squarrosa         Curlycup Gumweed         0.90         1.35           N         B         Lactuca serricla         Prickly Lettuce         0.97         1.45           N         B         Machaeranthera canescens         Hoary Aster         0.10         0.15           N         B         Melliotus alba         White Sweetclover         0.17         0.25           N         P         Penstemon strictus         ocky Mountain Penstemon         0.07         0.10           N         P         Penstemon strictus         ocky Mountain Penstemon         0.07         0.10           N         SS         Krascheninnikovia lanata         Winterfat         0.13         0.20         0.30           N         SS         Krascheninnikovia lanata         Mountain Pepperweed         0.20         0.30           N         SS         Krascheninnikovia lanata         Mountain Pepperweed         0.20         0.30           N         SS         Lepidium montanum         Mountain Pe					
N         A         Gayaphyltum ramosissimum         Groundsmoke         0.03         0.05           N         B         Grindelia squarrosa         Curlycup Gumweed         0.90         1.35           I         B         Acticuas seriola         Prickly Lettuce         0.97         1.45           N         B         Machaeranthera canescens         Hoary Aster         0.10         0.15           I         P         Medidus officinalis         Sweetclover         0.17         0.25           I         B         Melilotus officinalis         Sweetclover         1.30         1.96           N         P         Pastemon strictus         ocky Mountain Penstemon         0.07         0.10           I         P SS         Krascheninnikovia lanata         Winterfat         0.13         0.20         0.30           N         SS         krascheninnikovia lanata         Mountain Pepperweed         0.20         0.30           N         SS         krascheninnikovia lanata         Mountain Pepperweed         0.20         0.30           Vinterfat         17.07         Bare ground         10.20         75.63           Annual Cover (excluding noxious weeds)         50.27         75.63           Annu					
N         B         Grindelia squarrosa         Curlycup Gumweed         0.90         1.35           I         B         Lactuca serriola         Prickly Lettuce         0.97         1.45           N         B         Machaeranthrea canescens         Hoary Aster         0.10         0.15           I         P         Medicago sativa         Alfalfa         10.73         16.15           I         B         Melilotus officinalis         Sweetclover         1.30         1.96           N         P         Penstemon strictus         ocky Mountain Penstemon         0.07         0.10           I         P         Singuisorba minor         Small Burnet         0.13         0.20           N         SS         Krascheninnikovia lanata         Winterfat         0.13         0.20           N         SS         Litter         17.07         Bare ground         10.20           N         SS         Rock         6.27         Litter         17.07           Bare ground         10.20         0         0         0         0           N         SS         Lifeform:         Native Perennial Cover (excluding noxious weeds)         50.27         75.63           Manual & Biennia					
I       B       Lactuca seriola       Prickly Lettuce       0.97       1.45         N       B       Machaeranthera canescens       Hoary Aster       0.10       0.15         I       P       Medicago sativa       Alfalfa       10.73       16.15         I       B       Melilotus alba       White Sweetclover       0.17       0.25         I       B       Melilotus officinalis       Sweetclover       1.30       1.96         N       P       Penstemon strictus       ocky Mountain Penstemon       0.07       0.10         I       P       Sanguisorba minor       Sweetclover       0.20       0.30         N       SS       Krascheninnikovia lanata       Winterfat       0.13       0.20         N       SS       Krascheninnikovia lanata       Mountain Pepperweed       0.20       0.30         N       SS       Krascheninnikovia lanata       Mountain Pepperweed       0.20       0.30         N       SS       Krascheninnikovia lanata       Mountain Pepperweed       0.20       0.30         N       Stepidium montanum       Mountain Pepperweed       0.20       0.30       0.30         N       Total Plant Cover (excluding noxious weeds)       50.27					
N         B.         Machaeranthera canescens         Hoary Aster Alfalfa         0.10         0.15           I         P         Medicago sativa         Alfalfa         10.73         16.15           I         B.         Melilotus alba         White Sweetclover         0.17         0.25           I         B.         Melilotus officinalis         Sweetclover         1.30         1.96           N         P.         Penstemon strictus         ocky Mountain Penstemon         0.07         0.10           I         P.         Sanguisorba minor         Sweetclover         0.13         0.20           Trees, Shrubs, and Sub-Shrubs          0.13         0.20         0.30           N         SS         Kraschen/innikovia lanata         Winterfat         0.13         0.20           N         SS         Kraschen/innikovia lanata         Winterfat         0.20         0.30           Visitie         17.07         Bare ground         10.20         0.30           Total Plant Cover (excluding noxious weeds)         61.60         92.68           Perennial Cover (excluding noxious weeds)         50.27         75.63           Annual & Biennial Cover (excluding noxious weeds)         11.33         17.05					
I       P       Medicago sativa       Alfalfa       10.73       16.15         I       B       Melilotus alba       White Sweetclover       0.17       0.25         I       B       Melilotus alba       Sweetclover       1.30       1.96         I       B       Melilotus officinalis       Sweetclover       1.30       1.96         I       P       Penstemon strictus       ocky Mountain Penstemon       0.07       0.10         I       P       Sanguisorba minor       Small Burnet       0.50       0.75         Treees, Shrubs, and Sub-Shrubs        0.13       0.20       0.30         N       SS       Krascheninnikovia lanata       Winterfat       0.13       0.20         N       SS       krascheninnikovia lanata       Winterfat       0.13       0.20         N       SS       krascheninnikovia lanata       Winterfat       1.13       0.20         N       SS       krascheninnikovia lanata       Winterfat       0.13       0.20         N       SS       krascheninnikovia lanata       Winterfat       0.20       0.20         Rock       G.27       Katis       filter       17.07         Bare ground       <			,		
I         B         Melliotus alba         White Sweetclover         0.17         0.25           I         B         Melliotus officinalis         Sweetclover         1.30         1.96           N         P         Penstemon strictus         ocky Mountain Penstemon         0.07         0.10           I         P         Sanguisorba minor         Small Burnet         0.50         0.75           Trees, Shrubs, and Sub-Shrubs         0.13         0.20         0.30           N         SS         Krascheninnikovia lanata         Winterfat         0.13         0.20           N         SS         Krascheninnikovia lanata         Mountain Pepperweed         0.20         0.30           Itter         Total Plant Cover         66.47         Rock         66.27           Litter         17.07         Bare ground         10.20           Total Plant Cover (excluding noxious weeds)         50.27         75.63           Annual & Biennial Cover (excluding noxious weeds)         51.60         92.68           Perennial Cover (excluding noxious weeds)         51.33         17.05           Summary by Lifeform:         Native Perennial Grosses         0.73         1.10           Annual Grasses         0.10         0.15					
I         B         Melilotus officinalis         Sweetclover         1.30         1.96           N         P         Penstemon strictus         ocky Mountain Penstemon         0.07         0.10           I         P         Sanguisorba minor         Small Burnet         0.50         0.75           Trees, Shrubs, and Sub-Shrubs          0.13         0.20         0.30           N         SS         Krascheninnikovia lanata         Mountain Pepperweed         0.20         0.30           Image: Signal Subistry Matter Signal Subistry Matter Signal Subistry Matter Signal Subistry					
N         P         Penstemon strictus Sanguisorba minor         ocky Mountain Penstemon Small Burnet         0.07         0.10           Trees, Shrubs, and Sub-Shrubs					
I         P         Sanguisorba minor         Small Burnet         0.50         0.75           Trees, Shrubs, and Sub-Shrubs         N         SS         Krascheninnikovia lanata Mountain Pepperweed         0.13         0.20         0.30           N         SS         Lepidium montanum         Mountain Pepperweed         0.20         0.30           Total Plant Cover         66.47           Rock         6.27         Litter         17.07           Bare ground         10.20         0.20         0.30           Total Plant Cover (excluding noxious weeds)         61.60         92.68           Perennial Cover (excluding noxious weeds)         50.27         75.63           Annual & Biennial Cover (excluding noxious weeds)         50.27         75.63           Summary by Lifeform:         11.33         17.05           Summary by Lifeform:         0.10         0.15           Annual Grasses         0.73         1.10           Native Perennial Forbs         0.00         0.155           Native Perennial Forbs         0.03         0.055           Introduced Perennial Forbs         1.00         1.50           Native Perennial Forbs         0.03         0.050           Notiou Perennial Forbs<					
Trees, Shrubs, and Sub-Shrubs           N SS Krascheninnikovia lanata         Winterfat Mountain Pepperweed         0.13         0.20         0.30           Total Plant Cover         66.47         Rock         6.27         Litter         17.07           Bare ground         10.20         0.30         0.20         0.30           Total Plant Cover         66.47         Rock         6.27         Litter         17.07           Bare ground         10.20         0.20         92.68         92.68           Perennial Cover (excluding noxious weeds)         61.60         92.68         92.68           Perennial Cover (excluding noxious weeds)         50.27         75.63         41.57           Annual & Biennial Cover (excluding noxious weeds)         50.27         75.63         41.57           Summary by Lifeform:         Native Perennial Grosses         0.10         0.15           Native Perennial Forbs         0.10         0.15         0.00         0.50           Native Perennial Forbs         0.00         0.50         0.03         0.05         0.03         0.05           Introduced Perennial Forbs         1.00         1.50         0.33         0.50         0.33         0.50           Native Annual Forbs         0.03					
N         SS         Lepidium montanum         Mountain Pepperweed         0.20         0.30           Total Plant Cover         66.47           Rock         6.27         17.07           Bare ground         10.20         0.30           Total Plant Cover (excluding noxious weeds)         61.60         92.68           Perennial Cover (excluding noxious weeds)         50.27         75.63           Annual & Biennial Cover (excluding noxious weeds)         11.33         17.05           Summary by Lifeform:         11.33         17.05           Native Perennial Cool Grasses         0.10         0.15           Annual & Biennial Cover (excluding noxious weeds)         0.10         0.15           Mative Perennial Grasses         0.10         0.15           Mative Perennial Grasses         0.73         1.10           Native Perennial Forbs         0.10         0.15           Native Annual Forbs         0.03         0.05           Introduced Perennial Forbs         2.43         3.66           Introduced Annual Forbs         2.43         3.65           Introduced Annual Forbs         7.32         7.32           Noxious Weeds         4.87         7.32           Sub-Shrubs	Trees, S				
Total Plant Cover         66.47           Rock         6.27           Litter         17.07           Bare ground         10.20           Total Plant Cover (excluding noxious weeds)         61.60         92.68           Perennial Cover (excluding noxious weeds)         50.27         75.63           Annual & Biennial Cover (excluding noxious weeds)         11.33         17.05           Summary by Lifeform:           41.57           Introduced Perennial Grasses         0.73         1.10           Native Perennial Forbs         0.10         0.15           Native Perennial Forbs         0.10         0.150           Native Perennial Forbs         0.00         0.05           Introduced Perennial Forbs         0.00         0.05           Introduced Perennial Forbs         0.03         0.05           Introduced Perennial Forbs         2.210         33.25           Introduced Annual Forbs         7.13         10.73           Noxious Weeds         4.87         7.32           Sub-Shrubs         0.33         0.50           Shrubs         -         -           Trees         -         -           Sample Adequacy Calculations:         -	N SS	Krascheninnikovia lanata			0.20
Rock Litter         6.27 17.07 Bare ground         17.07 10.20           Total Plant Cover (excluding noxious weeds)         61.60         92.68           Perennial Cover (excluding noxious weeds)         50.27         75.63           Annual & Biennial Cover (excluding noxious weeds)         11.33         17.05           Summary by Lifeform:         11.33         17.05           Summary by Lifeform:         0.10         0.15           Annual Grasses         0.73         1.10           Native Perennial Grasses         0.73         1.10           Native Perennial Forbs         0.10         0.15           Native Perennial Forbs         0.00         0.03           Native Annual Forbs         0.03         0.03           Introduced Perennial Forbs         2.43         3.66           Introduced Annual Forbs         2.43         3.66           Introduced Annual Forbs         7.32         3.073           Sub-Shrubs         0.33         0.50           Shrubs         -         -           Sample Adequacy Calculations:         -         -           Narious Weeds         -         -           Sample Adequacy Calculations:         -         -           Nariance         70.7	N SS	Lepidium montanum	Mountain Pepperweed	0.20	0.30
Litter Bare ground         17.07 10.20           Total Plant Cover (excluding noxious weeds)         61.60         92.68           Perennial Cover (excluding noxious weeds)         50.27         75.63           Annual & Biennial Cover (excluding noxious weeds)         11.33         17.05           Summary by Lifeform:         0.10         0.15           Summary by Lifeform:         0.10         0.15           Native Perennial Grasses         0.73         1.10           Native Perennial Forbs         0.10         0.15           Annual Grasses         0.73         1.10           Native Perennial Forbs         0.03         0.05           Native Annual Forbs         0.03         0.05           Native Annual Forbs         2.210         33.25           Introduced Perennial Forbs         2.43         3.66           Introduced Annual Forbs         7.13         10.73           Noxious Weeds         4.87         7.32           Sub-Shrubs         0.33         0.50           Shrubs         -         -           Total Plant Edequacy Calculations:         -         -           Mean =         66.47         -           Variance =         70.74         - <td></td> <td></td> <td></td> <td></td> <td></td>					
Bare ground10.20Total Plant Cover (excluding noxious weeds)61.6092.68Perennial Cover (excluding noxious weeds)50.2775.63Annual & Biennial Cover (excluding noxious weeds)11.3317.05Summary by Lifeform:27.6341.57Native Perennial Cool Grasses Introduced Perennial Grasses0.100.15Annual Grasses0.731.10Native Perennial Forbs0.100.15Native Biennial Forbs0.030.05Introduced Perennial Forbs0.030.05Introduced Perennial Forbs2.1033.25Introduced Perennial Forbs2.1033.25Introduced Perennial Forbs2.1033.25Introduced Annual Forbs2.1310.73Noxious Weeds4.877.32Sub-Shrubs0.330.50ShrubsTreesSample Adequacy Calculations:n =30Nariance =70.74					
Total Plant Cover (excluding noxious weeds)61.6092.68Perennial Cover (excluding noxious weeds)50.2775.63Annual & Biennial Cover (excluding noxious weeds)11.3317.05Summary by Lifeform:Native Perennial Cool Grasses Annual Grasses27.6341.57Introduced Perennial Grasses0.100.15Annual Grasses0.731.10Native Perennial Forbs0.100.15Annual Grasses0.731.10Native Perennial Forbs0.100.15Native Perennial Forbs0.030.05Introduced Perennial Forbs2.1033.25Native Annual Forbs2.1033.25Introduced Perennial Forbs2.1033.25Introduced Annual Forbs7.1310.73Noxious Weeds4.877.32Sub-ShrubsSample Adequacy Calculations:n =30Mean =66.47Variance =70.74			Litter	17	.07
Perennial Cover (excluding noxious weeds)         50.27         75.63           Annual & Biennial Cover (excluding noxious weeds)         11.33         17.05           Summary by Lifeform:			Bare ground	10	.20
Annual & Biennial Cover (excluding noxious weeds)         11.33         17.05           Summary by Lifeform:		Total Plant Cove	r (excluding noxious weeds)		
Summary by Lifeform:         Native Perennial Cool Grasses         27.63         41.57           Introduced Perennial Grasses         0.10         0.15           Annual Grasses         0.73         1.10           Native Perennial Forbs         0.10         0.15           Native Perennial Forbs         0.10         0.15           Native Biennial Forbs         0.00         1.50           Native Annual Forbs         0.03         0.05           Introduced Perennial Forbs         2.43         3.66           Introduced Annual Forbs         2.43         3.66           Introduced Annual Forbs         2.43         3.66           Introduced Annual Forbs         7.13         10.73           Noxious Weeds         4.87         7.32           Sub-Shrubs         0.33         0.50           Shrubs         -         -           Trees         -         -           Sample Adequacy Calculations:         -         -           Nationa         66.47         -           Variance         70.74         -		Perennial Cove	r (excluding noxious weeds)		
Native Perennial Cool Grasses         27.63         41.57           Introduced Perennial Grasses         0.10         0.15           Annual Grasses         0.73         1.10           Native Perennial Forbs         0.10         0.15           Native Perennial Forbs         0.00         1.50           Native Biennial Forbs         0.03         0.05           Native Annual Forbs         0.03         0.05           Introduced Perennial Forbs         2.10         33.25           Introduced Perennial Forbs         2.43         3.66           Introduced Annual Forbs         2.43         3.66           Introduced Annual Forbs         7.13         10.73           Noxious Weeds         4.87         7.32           Sub-Shrubs         0.33         0.50           Shrubs         -         -           Trees         -         -           Sample Adequacy Calculations:         -         -           Variance         70.74         -	-		r (excluding noxious weeds)	11.33	17.05
Introduced Perennial Grasses         0.10         0.15           Annual Grasses         0.73         1.10           Native Perennial Forbs         0.10         0.15           Native Biennial Forbs         1.00         1.50           Native Annual Forbs         0.03         0.05           Introduced Perennial Forbs         0.03         0.05           Introduced Perennial Forbs         2.43         3.66           Introduced Annual Forbs         2.43         3.66           Introduced Annual Forbs         7.13         10.73           Noxious Weeds         4.87         7.32           Sub-Shrubs         0.33         0.50           Shrubs         -         -           Trees         -         -           Sample Adequacy Calculations:         -         -           Variance         70.74         -	Summa			27.62	41.57
Annual Grasses         0.73         1.10           Native Perennial Forbs         0.10         0.15           Native Biennial Forbs         1.00         1.50           Native Annual Forbs         0.03         0.05           Introduced Perennial Forbs         22.10         33.25           Introduced Perennial Forbs         2.43         3.66           Introduced Annual Forbs         7.13         10.73           Noxious Weeds         4.87         7.32           Sub-Shrubs         0.33         0.50           Shrubs         -         -           Trees         -         -           Sample Adequacy Calculations:         n =         30           Mean =         66.47         -           Variance =         70.74         -					
Native Perennial Forbs         0.10         0.15           Native Biennial Forbs         1.00         1.50           Native Annual Forbs         0.03         0.05           Introduced Perennial Forbs         22.10         33.25           Introduced Annual Forbs         2.43         3.66           Introduced Annual Forbs         7.13         10.73           Noxious Weeds         4.87         7.32           Sub-Shrubs         0.33         0.50           Sub-Shrubs         -         -           Sample Adequacy Calculations:         n =         30           Mean =         66.47         70.74		Intro			
Native Biennial Forbs         1.00         1.50           Native Annual Forbs         0.03         0.05           Introduced Perennial Forbs         22.10         33.25           Introduced Biennial Forbs         2.43         3.66           Introduced Annual Forbs         7.13         10.73           Noxious Weeds         4.87         7.32           Sub-Shrubs         0.33         0.50           Shrubs         -         -           Trees         -         -           Sample Adequacy Calculations:         n =         30           Mean =         66.47         -           Variance =         70.74         -					
Native Annual Forbs         0.03         0.05           Introduced Perennial Forbs         22.10         33.25           Introduced Biennial Forbs         2.43         3.66           Introduced Annual Forbs         7.13         10.73           Noxious Weeds         4.87         7.32           Sub-Shrubs         0.33         0.50           Shrubs         -         -           Trees         -         -           Sample Adequacy Calculations:         -         -           Variance         70.74         -					
Introduced Perennial Forbs         22.10         33.25           Introduced Biennial Forbs         2.43         3.66           Introduced Annual Forbs         7.13         10.73           Noxious Weeds         4.87         7.32           Sub-Shrubs         0.33         0.50           Shrubs         -         -           Trees         -         -           Sample Adequacy Calculations:         n =         30           Mean =         66.47         -           Variance =         70.74         -					
Introduced Biennial Forbs         2.43         3.66           Introduced Annual Forbs         7.13         10.73           Noxious Weeds         4.87         7.32           Sub-Shrubs         0.33         0.50           Shrubs         -         -           Trees         -         -           Sample Adequacy Calculations:         n =         30           Mean =         66.47         -           Variance =         70.74         -		T			
Introduced Annual Forbs         7.13         10.73           Noxious Weeds         4.87         7.32           Sub-Shrubs         0.33         0.50           Shrubs         -         -           Trees         -         -           Sample Adequacy Calculations:         n =         30           Mean =         66.47         Variance =         70.74		10			
Noxious Weeds         4.87         7.32           Sub-Shrubs         0.33         0.50           Shrubs         -         -           Trees         -         -           Sample Adequacy Calculations:         n =         30           Mean =         66.47         Variance =         70.74					
Sub-Shrubs Shrubs Trees         0.33 - -         0.50 - -           Sample Adequacy Calculations:         -         -           n = Mean = Variance =         30 -         -					
Shrubs Trees- -Sample Adequacy Calculations:n =30Mean =66.47Variance =70.74					
Trees-Sample Adequacy Calculations:-n =30Mean =66.47Variance =70.74				0.33	0.30
Sample Adequacy Calculations: n = 30 Mean = 66.47 Variance = 70.74				-	-
n = 30 Mean = 66.47 Variance = 70.74	Sample	Adequacy Calculations:	11665		l
Mean = 66.47 Variance = 70.74			n =	3	0
Variance = 70.74				-	-
			n <sub>min</sub> =		





Table 3 Bowie #1 - East Mine -	- East Mine - Phase II - Vegetation Cover	tation Cover -	2016					Γ
	ccess Roads Reve	getation			Perce	Percent Ground Cover Based on Point-Intercept Sampling	on Point-Interce	pt Sampling
Transect>	12345	678910	11 12 13 14 15	16 17 18 19 20	21 22 23 24 25	26 27 28 29 30	Average Relative	ive Freg.
Grasses and Grass-likes								-
N P Actinatherum hymenoides NxW A Anisantha tectorum	2 18 1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		4 1 9 3	5		0.50 0.75 3.43 5.17	<u> </u>
I A Bromus japonicus		m		2				
I P Dactylis glomerata N P Elymus lanceolatus var. lanceolatus N P Elymus trachvcaulus	23 34 3 4 12 2	27 31 3 77 44	51 46 39 47 18	13 20 26 10	10 17 10 7 7 5	1 40 7 10	0.03 0.05 20.97 31.54 0.40 0.60	2 4 0 7 87 7
N P Pascopyron smithii	19 9 13 7 2	8 2 2	13	6 5	5 9 14 7 1	10 33		
N P <i>Poa agassizensis / Poa pratensis</i> N P <i>Poa secunda</i>	1 1					4	0.13 0.20 0.20 0.10	
N P Pseudoroegneria spicatum I P Thinopyrum intermedium					1 1	2	0.07 0.10 0.07 0.10	× ۳
Forbs								
I A Alyssum desertorum	4 1 5 1 1 11 11 5 1 1	3 3 4 13 4 11	3 1 11 2 8 2 1 12 8	16 11 4 6	7 8 6 3 16 20 25 42 47 0	44 2 3 12 11 13	6.97 10.48	
I P Astragalus cicer NXW P Cardaria draba	CT 7C CT TT	_		04	/T 24 CC			
∠ ı >		3 4	, 2	1 1 15 6				
N P <i>Cuscuta indecora</i> I A <i>Erodium cicutarium</i>	1	ſ	1		1		0.03 0.05 0.05 0.17 0.25	
-								_
N B Grindella squarrosa I B Lactuca serriola	4 1	1 2 1	1	1 2 13	9 1 1 3 4	6 1 1 2		
N B Machaeranthera canescens I P Medicago sativa I B Mellihrus alha	1 7 14	2	14 3 19 24 10	3 28 15 5 18 5	3 8 22 21	10 18 16 14 50	0.10 0.15 10.73 16.15 0.17 0.25	5 73 3 73
	7 14	-		<u>, , , , , , , , , , , , , , , , , , , </u>			+	+
	LT 7	ч Ю		4 6	$\begin{array}{ccc} 1 & 1 \\ 1 & 1 \end{array}$	1		5 7 5
Trees, Shrubs, and Sub-Shrubs								
N SS Krascheninnikovia lanata N SS Lepidium montanum			4		9		0.13 0.20 0.20 0.30	m m
							Mean	
Total Plant Cover	62 76 59 67 43	67 64 55 77 63	68 52 69 74 69	69 60 58 73 67	70 74 80 66 65	77 74 64 56 76	66.47	
	4 7 6 7 35	8 5 5 8	6 11 0 4 17 77 70 4	5 11 4 33 36 45	4 0 2 1	14 5 5	6.27	
Bare ground	1/ 11 1/ 13 / 17 6 18 13 15	21 11 11 C1 12 8 13 25 4 13	1/ 2/ 9 10	12 13 2 8 7	16 19 14 15	10 12 22 21 / 10 0 9 16 16	10.20	
Perennial Cover (excl. noxious weeds) Annual & Biennial Cover (excl. noxious weeds)	54 56 36 63 41 3 6 2 23 4 1	<u>39 53 10 77 46</u> 3 7 8 0 16	65 51 58 72 58 3 1 11 2 9	45         45         32         66         18           22         14         2         4         43	45 66 74 62 43 20 8 6 4 22	<u>23 71 60 29 50</u> 54 3 4 23 15	50.27 75.63% 11.33 17.05%	<u>%</u>
Samla Adomination	ncoM	Varianco –	t- 1 21	- 30 - 1	376		11.	
Sample Auequacy Calculations			5					



Photo 3 - Bowie #1 Mine - East Mine - Circa #5 - 2016







Photo 7 - Bowie #1 Mine - East Mine - Circa #21 - 2016





Photo 5 - Bowie #1 Mine - East Mine - Circa #16 - 2016







Photo 9 - Bowie #1 Mine - East Mine - Circa #24 - 2016



Photo 11 - Bowie #1 Mine - East Mine - Circa #30 - 2016



Photo 10 - Bowie #1 Mine - East Mine - Circa #30 - 2016