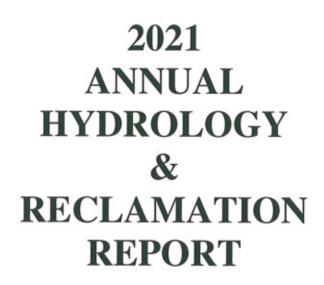
COORS ENERGY COMPANY

PO Box 4030 Golden, CO 80402



Prepared for: COLORADO DIVISION OF RECLAMATION, MINING & SAFETY

PERMIT NO. C-1981-028

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VEGETATION MONITORING 2021

VEGETATION ACTIVITIES

The Habitat Management report is included.

2021 Vegetation Monitoring Report Reclamation Areas 25, 29, 30, 31, 32, 33, 34, 37, and 44

Coors Energy Company Keenesburg Mine Keenesburg, Colorado



October 2021

Prepared by:



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EXECUTIVE SUMMARY

Quantitative vegetation monitoring of Reclamation Areas 25, 29, 30, 31, 32, 33, 34, 37, and 44 at the Coors Energy Company (CEC) Keenesburg Mine was conducted in August 2021. Vegetation cover, herbaceous production, and species composition were evaluated. Comparisons were made between vegetation cover and herbaceous production means from the reclamation areas and predicted values calculated from the approved final revegetation success equations based on onsite precipitation from September 2020 to July 2021. The predictive equations for vegetation cover and herbaceous production were modified in Technical Revisions 43 and 46 to the Colorado Division of Reclamation Mining and Safety (DRMS) Mining and Reclamation Permit C-1981-028. The calculated final revegetation success vegetation cover standard value was 27.2%. The total herbaceous production standard was 21.0 g/m².

Reclamation Areas 29, 30, and 31 were evaluated based on the guidelines for Phase III bond release. Reclamation Area 30 has not yet received Phase II bond release, but it was reclaimed more than 10 years ago and is eligible for the first year of Phase III monitoring. All three areas met the Phase III standards and will be eligible for release if they pass the standards for a second time within the next two years.

Reclamation Areas 25, 30, 34, 37, and 44 were evaluated for Phase II bond release. Only Area 30 met both the vegetation cover and species composition standards and is eligible for Phase II release this year. Phase II bond release guidelines only require that four perennial grasses be present to meet the species composition technical standard and this requirement was met for all Phase II Reclamation Areas. While Phase II bond release does not require a production standard, Reclamation Areas 34 was sampled using the interim production methodology and would have met the Phase III production standard.

Reclamation Areas 32 and 33 were evaluated using interim reclamation monitoring guidelines. They were compared to the Phase III bond release standards to measure their progress towards future release. Reclamation Areas 32 and 33 met both the cover and production standards, but neither area met the species composition standard.

Quarterly inspections of the entire permitted area were conducted during 2021 to monitor for the presence and impacts of noxious weeds, pests, or disease to the revegetation. No pests or diseases were identified during these inspections. The primary noxious weed observed during these inspections was cheatgrass which is pervasive on the reclamation and is being aggressively treated by CEC.

1 INTRODUCTION

Coors Energy Company (CEC) operated the Keenesburg Mine for coal extraction from 1980 to 1988 and is now conducting reclamation activities under Colorado Division of Reclamation Mining and Safety (DRMS) Mining and Reclamation Permit C-1981-028. Reclamation activities include backfilling, grading, topsoiling, and revegetation in accordance with CEC's approved DRMS reclamation plan. Vegetation monitoring of reclaimed areas is required by DRMS. This report presents the results of annual reclamation monitoring conducted on August 9 – 13, 2021 by Habitat Management, Inc. (Habitat Management). Quantitative information in this report characterizes the vegetative condition of Reclamation Areas 25, 29, 30, 31, 32, 33, 34, 37, and 44. Vegetation sampling was performed in compliance with Colorado Mined Land Reclamation Board Surface Coal Mining Rules 2.04.10 and 4.15 and currently accepted methods for vegetation sampling.

The Keenesburg Mine is in Weld County, Colorado, approximately seven miles north of the town of Keenesburg and is accessed by Weld County Road 59. In 2002, the Keenesburg Mine assigned numerical designations to each reclamation area starting in the northeast corner of the permit area and continuing clockwise through the reclaimed areas. Newly reclaimed areas are assigned consecutive numbers as needed (Figure 1). Reclamation Areas monitored in 2021 are summarized in Table 1.

Table 1: Reclamation Areas Monitored in 2021

Reclamation	Seeding		Bond Release	Monitoring Guidelines		
Area	Acres	Date	Status	Cover	Production	
25	12.6	2012	Phase I	Phase II	n/a	
29*	8.8	2003 (2002*)	Phase II	Phase III	Phase III	
30	9.7	2006	Phase I	Phase II/III	Phase III	
31	11.9	2009	Phase II	Phase III	Phase III	
32	5.5	2015	Phase II	Interim	Interim	
33	12.5	2015	Phase II	Interim	Interim	
34	6.9	2016	Phase I	Phase II	Interim	
37	9.13	2019	None	Phase II	n/a	
44	27.39	2019	None	Phase II	n/a	

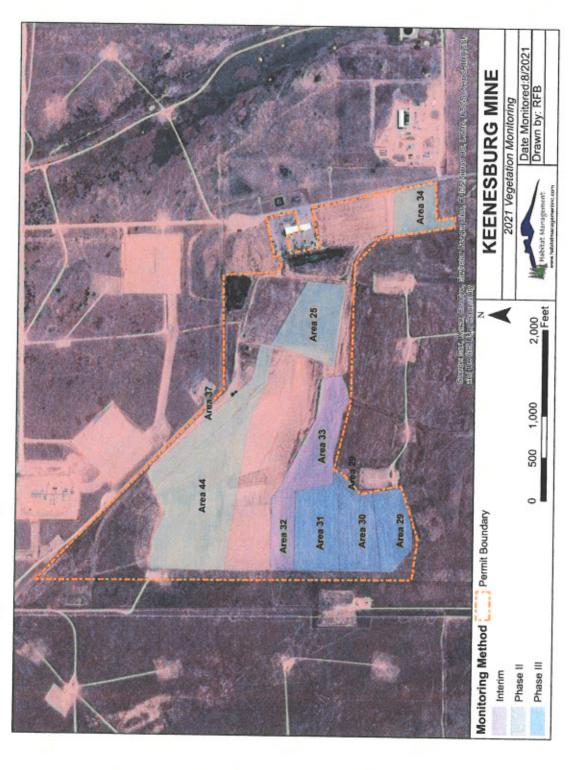
 ^{*} Includes the previously separated Reclamation Area 23.

Reclamation Areas 29, 30, and 31 were monitored using the guidelines for Phase III bond release. Reclamation Areas 25, 34, 37 and 44 were monitored using the guidelines for Phase II bond release. Reclamation Areas 32 and 33 were monitored using the guidelines for interim vegetation monitoring. All of these Reclamation Areas were last monitored in 2020.

2 METHODS

The monitoring methods and revegetation standards used to evaluate these areas are those currently in effect under the Colorado Surface Coal Mining Reclamation Act (CRS 34-33-101) and the Keenesburg Mining and Reclamation Permit.

Figure 1: Keenesburg Mine Site Map



Habitat Management, Inc.

2.1 Sampling Design

Thirty sample points were located prior to going into the field using mapping software to create a square grid overlaid on each Reclamation Area being sampled. The sample points were located at the intersection of each square created by the grid. The grid size was adjusted to create the appropriate number of sample locations within each Reclamation Area. Sample numbers (1-30) were randomly assigned to each generated sample point along with a randomly generated azimuth (Figure 2, Figure 4, Figure 5, and Figure 6). A minimum of 15 vegetation cover samples were collected in Reclamation Areas 25, 29, 30, 31, 34, 37, and 44 with additional samples collected, if necessary, to meet sample adequacy in any area per DRMS guidelines. Ten cover samples were collected in Reclamation Areas 32 and 33 per CEC's interim reclamation monitoring guidelines. The maximum of 30 herbaceous production samples were collected from Reclamation Areas 29, 30, and 31 and 15 production samples were collected in Reclamation Areas 32, 33, and 34.

2.2 Sample Timing

Vegetation monitoring occurred on August 9-13, 2021 which was consistent with the timing of monitoring in previous years. Monitoring also coincided with maximum vegetation development of most plant species found in the reclaimed and adjacent native areas.

2.3 Vegetation Cover

Point-intercept methods were used to collect vegetation and ground cover, as well as species composition data. Each 25-meter transect represents a single sampling unit. Two data points were recorded at one-meter intervals along each transect, 0.5 m to each side of and at a right angle to the transect. A laser bar was used to determine intercepts, with the beam projected vertically to the ground surface. Each point-intercept represented an absolute cover value of 2%.

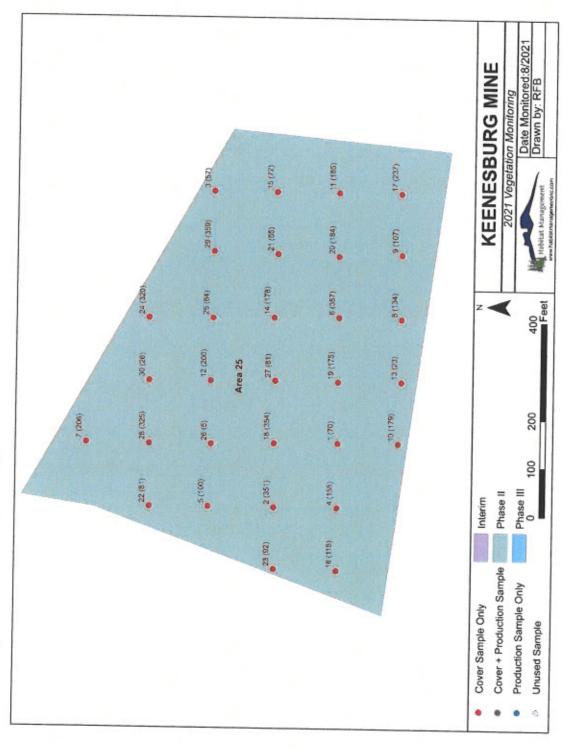
"First-hit" point-intercepts (the first item that the laser beam intercepts) were recorded as either: live vegetation (by plant species), litter, rock, or bare ground. Litter includes all dead plant material. Subsequent "hits" on vegetation (prior to interception of the ground) were also recorded. Vegetation cover was reported in absolute percentages from the point-intercept data using all 50 first-hit observations for each sample point. Additional interceptions were used to calculate relative cover of individual plant species and life forms. The quantitative cover data also provided the basis for calculation of species composition and relative importance.

2.4 Herbaceous Production

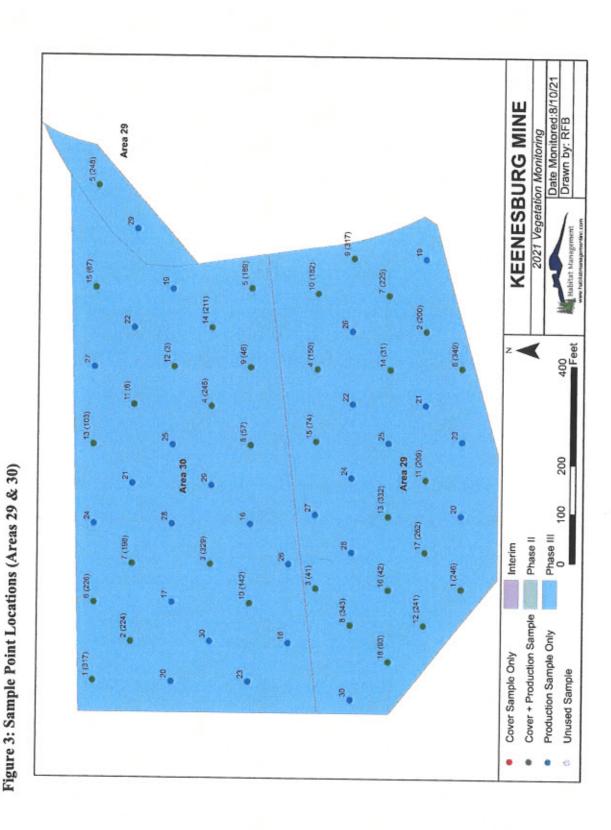
Herbaceous production was sampled using 0.5-square meter circular plots. For samples where cover data was also collected, the plots were located adjacent to the start point to the right of the transect. Additional production samples were collected with the plot centered on the sample point.

All herbaceous non-noxious growth within each plot's vertical projection was clipped, separated by growth form, and placed in labeled paper bags. Current year's herbaceous growth of shrubs was collected in the same manner, but no woody tissue was harvested. The bags containing the clipped material were returned to the Habitat Management office and dried at 30 degrees Celsius until weights stabilized to within 0.1 gram. Herbaceous production was reported in grams per square meter.





Keenesburg Mine 2021 Vegetation Monitoring Report



Keenesburg Mine 2021 Vegetation Monitoring Report

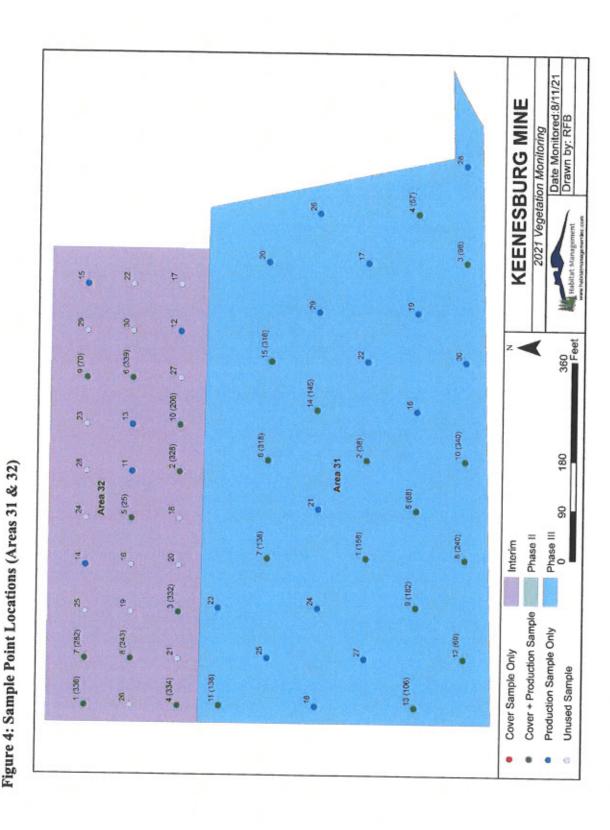


Figure 5: Sample Point Locations (Area 33)

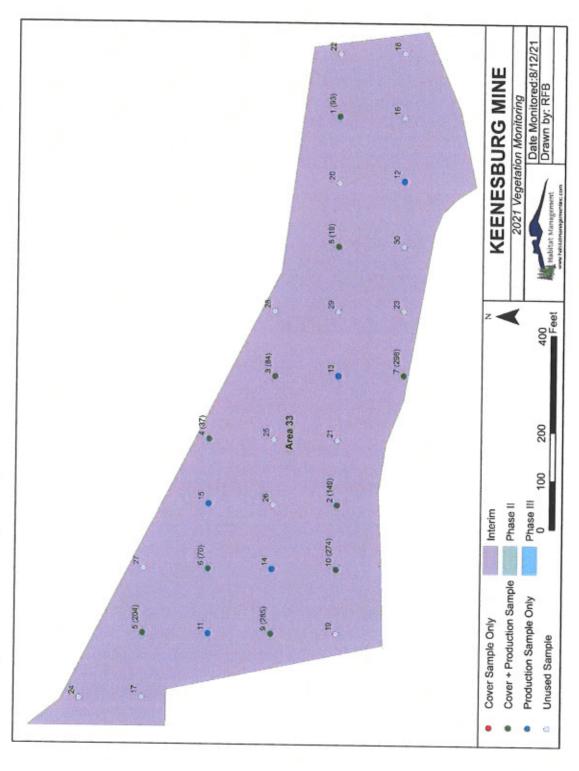
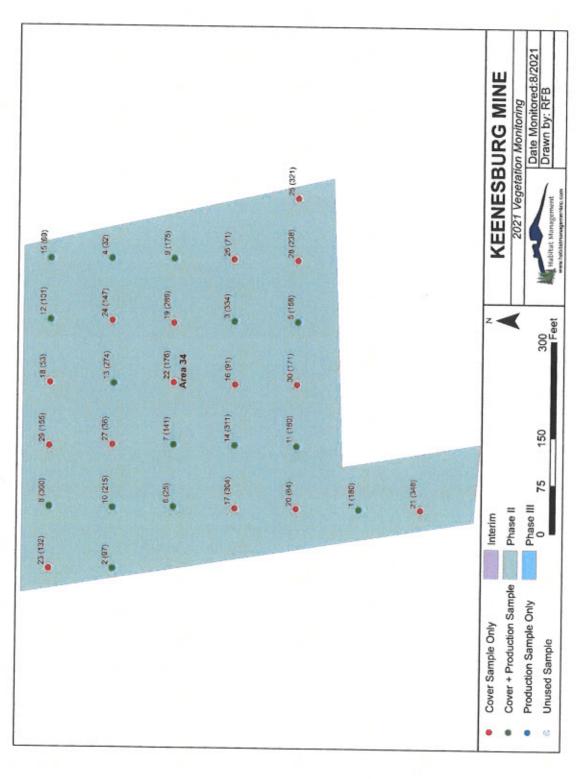
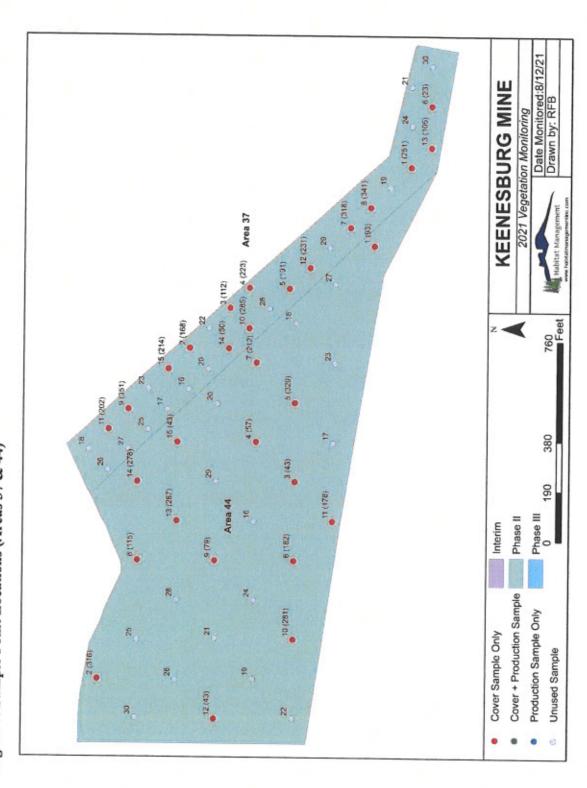


Figure 6: Sample Point Locations (Area 34)



Habitat Management, Inc.

Figure 7: Sample Point Locations (Areas 37 & 44)



2.5 Species Composition

During cover sampling, all plant species occurring within one meter of either side of the cover sample transect were noted as present within each sample. These species are presented in the data tables for each Reclamation Area (Appendix A) as well as on the complete species list (Appendix C).

Species composition information for comparison to the final revegetation success criterion was derived from quantitative relative vegetation cover data. The total hits (first hits and subsequent hits) for each non-noxious species were used to calculate relative cover as a basis for evaluation of the importance of each encountered plant species and life form.

2.6 Photographs

A photograph was taken at the start point of each cover transect looking along the length of the transect. These photos are presented in Appendix E.

2.7 Species Identification and Nomenclature

Species that were not readily identified in the field were collected for later identification. Specimens were identified using floral keys including Weber and Wittmann (2001) and Wingate (1994). Nomenclature follows the NRCS Plants Database (2019).

3 RECLAMATION SUCCESS STANDARDS

The Keenesburg Mine Reclamation Permit includes a species composition standard and predictive equations to determine the success standards for vegetation cover and herbaceous production. Both the vegetation cover and herbaceous production equations use the previous year's precipitation (September – July) to predict the success standard for any given year. These equations are as follows, where x is equal to the cumulative September – July precipitation:

Vegetation Cover Standard =
$$-0.0127x^3+0.2115x^2+2.1772x$$

Herbaceous Production Standard = $0.4666x^{2.1405}$

When these equations were developed, species listed by the Colorado Department of Agriculture as noxious weeds were not excluded from the data. In 2012, DRMS approved a Technical Revision (TR43) to the Keenesburg Mine Reclamation Permit to update the equations to remove noxious plant species from both the cover and production standards. The vegetation cover standard was again updated in a Minor Revision (MR46) to the permit.

To meet the reclamation standard specified in the permit, data are subjected to hypothesis testing as described in the DRMS Regulations of the Colorado Mined Land Reclamation Board for Coal Mining (DRMS 2005). Per this guideline, Reclamation Areas meet the success standard if the dataset is not significantly different from 90% of the standard using a one-sample T-test with a one-tailed confidence interval of 90%. Noxious species cover or production is removed as well as annual vegetation cover in excess of 10% of the overall average for each Reclamation Area to derive the allowable vegetation cover value used for hypothesis testing per the DRMS Guideline Regarding Selected Coal Mine Bond Release Issues (DRMS 1995).

Species composition is considered an indicator of successful vegetation establishment and a diverse vegetation community. The species composition standard for the Keenesburg Mine was modified in 2020 with a Technical Revision to the permit (TR47). The revised standard requires

that there be at least four perennial grass species, each of which comprise between 3% and 40% relative cover. Any perennial grass species, native or introduced, that is not defined as a noxious species may be used in the calculation of species composition.

The Phase III bond release guidelines require that vegetation cover, herbaceous production, and species composition meet the standards for two years. Phase II bond release guidelines require vegetation cover to meet the standard and that four perennial grass species be present in the community to potentially meet the species composition standard in the future.

3.1 2021 Revegetation Success Standards

The following standards were calculated for vegetation cover and herbaceous production using the September 2020 through July 2021 precipitation (9.8 inches) in the permitted predictive equations.

- Vegetation Cover Standard = 27.2% (90% Standard = 24.5%)
- 2. Herbaceous Production Standard = 21.0 g/m² (90% Standard = 18.9 g/m²)

4 2020-2021 PRECIPITATION

The climate of the mine and surrounding area is typical of the region and characterized by cold winters and hot, dry summers. Average precipitation is generally lowest during the late fall and winter (October through March) and peaks in April through June (Figure 8).

The Keenesburg Mine Reclamation Permit specifies the use of onsite precipitation from September to July for calculating the vegetation cover and herbaceous production standards. CEC collected precipitation data at the mine from 1984 through August 2020 using a manual rain gauge checked daily by on-site personnel. In January 2021, a solar-powered NOAH IV Total Precipitation Measurement System was installed in the reclamation with a cellular connection to measure precipitation in the absence of on-site personnel. However, no data were collected from September 2020 – January 2021.

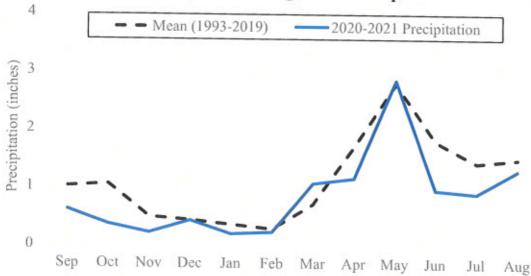
Due to insufficient on-site data for the part of previous 11-month period, alternative data were used for the statistics presented in this report. The Community Collaborative Rain, Hail & Snow Network (CoCoRaHS 2021) created by the Colorado Climate Center at Colorado State University in 1998 has three consistent monitoring locations within 16 miles of the Keenesburg Mine located near Greeley, Hudson, and Kersey. These stations have data going back to 2004, 2005, and 2010, respectively. Using correlation statistics on these three datasets and their average were compared to the pre-closure manual data and the data from the new cellular measurement system installed in January. The average of the monthly precipitation from the three CoCoRaHS locations was very highly correlated with both on-site datasets with R-values greater than 0.9 in both cases (Table 2). Thus, these average monthly values were substituted for the missing September 2020 – January 2021 data.

Total cumulative precipitation for the period from September 2020 – July 2021 was 8.6 inches. This represents 74% of the average precipitation amount for the same period (1993-2019). The pattern and timing of the precipitation was very consistent with the average (Figure 8). However, the September-November 2020 precipitation was only 57% of average and summer June-July 2021 was only 46% of average. All data from 1993 – 2021 are presented in Appendix D.

Table 2: Correlation Statistics for On-Site and CoCoRaHS Precipitation Data

	Pre-Closure Manual Data (2004-2020)			New Cellular Measurement System (2021)		
Station	Pearson Correlation (R)	Significance (2-tailed)	N	Pearson Correlation (R)	Significance (2-tailed)	N
Greeley 10.5 SSE (10.1 miles NW)	0.900	0.000	195	0.754	0.050	7
Hudson 4.8 WSW (15.8 miles SW)	0.801	0.000	195	0.950	0.001	7
Kersey 4.5 E (13.4 miles N)	0.876	0.000	126	0.794	0.033	7
CoCoRaHS Average	0.902	0.000	126	0.933	0.002	7

Figure 8: 2020-2021 Precipitation and Average Annual Precipitation



5 2021 PEST & DISEASE INSPECTIONS

Habitat Management was contracted to completed quarterly pest and disease inspections at the Keenesburg Mine in 2021. The first three inspections were completed on March 31st, June 23rd, September 8th, and the reports from each inspection are included in Appendix F. The 4th quarter inspection has not yet been completed as of this report; however, it will be completed before the end of the quarter.

6 RESULTS

Vegetation cover, species composition, and herbaceous production results for each Reclamation Area are summarized below. Results for Reclamation Areas monitored for Phase III bond release (Areas 29, 30, and 31) are presented first followed by those areas monitored for Phase II bond release (Areas 25, 34, 37, and 44) and then those areas monitored for interim evaluation (Areas 32 and 33).

Complete vegetation cover and herbaceous production data for each Reclamation Area are presented in Appendix A and Appendix B, respectively. A complete species list for all Reclamation Areas is presented in Appendix C.

6.1 Phase III Reclamation Monitoring

Reclamation Areas 29, 30, and 31 were monitored for Phase III bond release. Because Reclamation Area 30 has not yet received Phase II bond release, it was evaluated using both the Phase II and Phase III bond release guidelines.

6.1.1 Reclamation Area 29

Reclamation Area 29 is an 8.1-acre parcel that was formerly part of the B Pit mining area. This area was graded to blend into the undisturbed area to the west and the reclaimed mining and operational areas to the east resulting in a gentle, east-facing slope. Final revegetation seeding with the DRMS-approved permanent seed mixture took place in 2003. Per approval from DRMS, Reclamation Area 23 was combined with Reclamation Area 29 in 2019. Reclamation Area 23 is a 0.7-acre parcel, formerly part of the B Pit mining area, that was graded to blend into the reclaimed mining and operational areas to the east resulting in an almost flat, east-facing slope. Final revegetation seeding with the DRMS-approved permanent seed mixture took place in November 2002. The total area included in the Reclamation Area 29 sampling was 8.8 acres.

Total vegetation cover averaged 38.3% (Table 3, Appendix A) which was a substantial increase from the 27.6% cover observed in 2020. Non-noxious vegetation cover was 35.9% up from only 11.4% observed in 2020. However, allowable vegetation cover was only 29.1% due to an average annual relative cover that was 28.8% of the total. Area 29 met sample adequacy with 18 samples.

Total non-noxious herbaceous production averaged 70.4 g/m 2 in 2021 (Table 3, Appendix A) which is a substantial increase from the 22.2 g/m 2 production observed in 2020. Annual species accounted for 38.1% of this production so the average allowable herbaceous production was only 53.8 g/m 2 .

The only species observed on all 18 transects was sand dropseed (*Sporobolus cryptandrus*) which contributed 23.1% of the overall relative cover. Cheatgrass (*Bromus tectorum*) which contributed 57.0% of the overall relative cover in 2020, only contributed 6.6% in 2021. With cheatgrass removed, four perennial grass species contributed more than 3% of the relative cover including (in decreasing order): sand dropseed, sand bluestem (*Andropogon hallii*), prairie sandreed (*Calamovilfa longifolia*), and blue grama (*Bouteloua gracilis*). Two forb species, redroot amaranth (*Amaranthus retroflexus*) and common sunflower (*Helianthus annuus*) also contributed more than 3% of the relative cover.

Table 3: Reclamation Area 29 Summary Statistics

	Area	29
Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	81.1	2.8
Total Vegetation Cover	38.3	2.8
Non-Noxious Vegetation Cover	35.9	2.3
Allowable Vegetation Cover	29.1	2.3
Grass Cover	27.0	3.5
Forb Cover	10.3	1.8
Woody Cover	1.0	0.4
Non-Noxious Relative Cover Statis	tics (%)	
Grass Cover	67.7	5.8
Forb Cover	29.4	5.4
Woody Cover	2.8	1.1
Herbaceous Production Statistics (g/m^2	
Total Production	70.4	16.9
Allowable Production	53.8	16.5
Perennial Production	43.6	12.5
Annual Production	26.8	13.5

Twenty species from seven life forms contributed to the cover data and another 14 species were encountered along the transects (Table 4, Appendix C). Twelve grasses, 20 forbs, and two woody species were recorded, 26 of which were native or desirable and eight were introduced. There were 16 perennial species and 18 annual species.

Table 4: Reclamation Area 29 Species Composition

Life Form	Cover Data	Present
Graminoids		
Perennial	8	9
Annual	1	3
Native	8	10
Introduced	1	2
Cool Season	1	1
Warm Season	7	8
Total	9	12
Forbs		
Perennial	0	5
Annual	10	15
Native	7	14
Introduced	3	6
Total	10	20
Woody Plants	1	2
Total Species	20	34

Both the allowable vegetation cover and the allowable herbaceous production passed the technical standard when subjected to hypothesis testing (Table 5). Additionally, four perennial grass species contributed greater than 3% and less than 40% of the non-noxious relative cover. Thus, the Phase III bond release success criteria were met.

Table 5: Reclamation Area 29 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	29.1	27.2	24.5	Yes
Allowable Production (g/m ²)	53.8	21.0	18.9	Yes
Species Composition (perennial grass)	4	4		Yes

6.1.2 Reclamation Area 30

Reclamation Area 30 is a 9.7-acre parcel that was formerly part of the B Pit mining area. This area was graded to blend into the undisturbed area to the west and the reclaimed mining and operational areas to the east resulting in a gentle, east-facing slope. Final revegetation seeding with the DRMS-approved permanent seed mixture took place in November 2006. This Reclamation Area has previously received Phase I bond release but has not received Phase II release.

Total vegetation cover averaged 36.8% (Table 6, Appendix A) which was a slight increase from the 34.3% cover observed in 2020. However, non-noxious vegetation cover was 30.5% up from only 17.1% observed in 2020. Allowable vegetation cover met sample adequacy with 15 samples. Nine annual species (two grasses and seven forbs) contributed a total of 17.0% of the non-noxious relative cover which exceeded the allowable 10% to be used in final hypothesis testing. Thus, the average allowable vegetation cover was 27.5% up from 15.0% in 2020.

Total non-noxious herbaceous production averaged 50.5 g/m 2 (Table 6, Appendix A) which is substantially more than the 20.9 g/m 2 production observed in 2020. Annual species accounted for 24.5% of this production. Thus, the average allowable herbaceous production was only 43.5 g/m 2 .

Sand dropseed and sand bluestem were present along all 15 transects and contributed to the cover on 13 and 14 of them, respectively. Together these two species contributed 55.5% of the overall relative cover. Cheatgrass was also present on all 15 transects and contributed 16.6% of the relative cover down from 48.1% in 2020. With cheatgrass removed, five species contributed more than 3% of the relative cover including (in decreasing order): sand bluestem, sand dropseed, redroot amaranth, prairie sandreed, and false buffalograss (*Munroa squarrosa*).

Nineteen species from seven life forms contributed to the cover data and another 11 species were encountered along the transects (Table 7, Appendix C). Fourteen grasses, 14 forbs, and two woody species were recorded, 24 of which were native or desirable and six were introduced. There were 13 perennial species and 17 annual species.

Table 6: Reclamation Area 30 Summary Statistics

	Area	30
Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	82.4	1.8
Total Vegetation Cover	36.8	2.6
Non-Noxious Vegetation Cover	30.5	2.2
Allowable Vegetation Cover	27.5	2.2
Grass Cover	32.1	2.6
Forb Cover	4.7	0.9
Woody Cover	0.0	0.0
Non-Noxious Relative Cover Statis	tics (%)	
Grass Cover	84.1	2.5
Forb Cover	15.3	2.5
Woody Cover	0.6	0.4
Herbaceous Production Statistics (g/m^2	
Total Production	50.5	7.0
Allowable Production	43.5	6.9
Perennial Production	38.1	6.3
Annual Production	12.4	4.1

Table 7: Reclamation Area 30 Species Composition

Life Form	Cover Data	Present
Graminoids		
Perennial	8	10
Annual	3	4
Native	10	12
Introduced	1	2
Cool Season	0	1
Warm Season	8	9
Total	11	14
Forbs		
Perennial	1	1
Annual	7	13
Native	6	10
Introduced	2	4
Total	8	14
Woody Plants	0	2
Total Species	19	30

Both the allowable vegetation cover and the allowable herbaceous production passed the technical standard when subjected to hypothesis testing (Table 8). Additionally, four perennial grass species contributed greater than 3% and less than 40% of the non-noxious relative cover. With these results, both the Phase II and Phase III bond release success criteria were met.

Table 8: Reclamation Area 30 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	27.5	27.2	24.5	Yes
Allowable Production (g/m²)	43.5	21.0	18.9	Yes
Species Composition (perennial grass)	4	4		Yes

6.1.3 Reclamation Area 31

Reclamation Area 31 is an 11.9-acre parcel that was also part of the B Pit mining area. This area was graded to blend into the undisturbed area to the west and the reclaimed mining and operational areas to the east resulting in a gentle, east-facing slope. Final revegetation seeding with the DRMS-approved permanent seed mixture took place in the fall of 2009.

Total vegetation cover averaged 38.0% (Table 9, Appendix A) which was a substantial increase from the 27.9% cover observed in 2020. Non-noxious vegetation cover was 37.7% which was a larger increase from the 9.6% observed in 2020. Allowable vegetation cover in Reclamation Area 31 met sample adequacy with the minimum 15 samples. No excess annual cover was recorded; thus, the non-noxious cover was used for hypothesis testing.

Total non-noxious herbaceous production averaged 63.3 g/m 2 (Table 9, Appendix A) which was substantially more than the 29.9 g/m 2 production observed in 2020. Annual species accounted for 16.7% of this production. Thus, the average allowable herbaceous production was only 59.0 g/m 2 .

Prairie sandreed contributed to the cover on all 15 transects and comprised 39.5% of the total relative cover. Sand dropseed and redroot amaranth were also observed on all 15 transects and contributed 20.4% and 5.4% of the relative cover, respectively. Cheatgrass comprised only 1.0% of the total relative cover down from 64.9% in 2020. With cheatgrass removed five species contributed more than 3% of the relative cover including (in decreasing order): prairie sandreed, sand bluestem, sand dropseed, redroot amaranth, and sideoats grama (*Bouteloua curtipendula*).

Fourteen species from six life forms contributed to the cover data and 13 more species were encountered along the transects (Table 10). Thirteen grasses, 11 forbs, and three woody species were recorded, 22 of which were native or desirable and five were introduced. There were 13 perennial species and 14 annual species.

Both the allowable vegetation cover and the allowable herbaceous production passed the technical standard when subjected to hypothesis testing (Table 11). Additionally, four perennial grass species contributed greater than 3% and less than 40% of the non-noxious relative cover. Thus, the Phase III bond release success criteria were met.

Table 9: Reclamation Area 31 Summary Statistics

	Area	31
Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	80.9	2.4
Total Vegetation Cover	38.0	2.6
Non-Noxious Vegetation Cover	37.7	2.5
Allowable Vegetation Cover	37.7	2.5
Grass Cover	34.8	2.8
Forb Cover	3.2	0.9
Woody Cover	0.0	0.0
Non-Noxious Relative Cover Statis	tics (%)	
Grass Cover	90.9	2.9
Forb Cover	9.1	2.9
Woody Cover	0.0	0.0
Herbaceous Production Statistics ((g/m^2)	
Total Production	63.3	7.5
Allowable Production	59.0	7.5
Perennial Production	52.7	7.1
Annual Production	10.6	3.5

Table 10: Reclamation Area 31 Species Composition

Life Form	Cover Data	Present
Graminoids		
Perennial	7	9
Annual	2	4
Native	8	11
Introduced	1	2
Cool Season	0	1
Warm Season	7	8
Total	9	13
Forbs		
Perennial	1	1
Annual	4	10
Native	4	8
Introduced	1	3
Total	5	11
Woody Plants	0	3
Total Species	14	27

Table 11: Reclamation Area 31 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	37.7	27.2	24.5	Yes
Allowable Production (g/m ²)	59.0	21.0	18.9	Yes
Species Composition (perennial grass)	4	4		Yes

6.2 Phase II Monitoring

Reclamation Areas 25 and 34 were monitored for Phase II bond release. While no production sampling is required as a part of Phase II monitoring, 15 production samples were collected and evaluated for Area 34 based on the Phase III standards as a measure of this area's progress towards future Phase III release.

6.2.1 Reclamation Area 25

Reclamation Area 25 is a 12.6-acre parcel east of the long-term spoil area. This area was graded to blend into the reclaimed areas resulting in a gentle, southwest-facing slope. Revegetation seeding with the DRMS-approved permanent seed mixture took place in 1995, but it was repeated in 2002 and 2012 due to insufficient vegetation cover.

Total vegetation cover averaged 45.9% (Table 12, Appendix A) which was a substantial increase from the 20.2% cover observed in 2020. Non-noxious vegetation cover was also 45.9% up from the 9.9% observed in 2020. However, substantial excess annual cover was recorded, and the allowable cover used for hypothesis testing was only 16.9%. Reclamation Area 25 required the maximum number of 30 samples to meet sample adequacy.

Table 12: Reclamation Area 25 Summary Statistics

	Area	25
Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		THE STATE
Total Ground Cover	73.1	2.1
Total Vegetation Cover	45.9	2.7
Non-Noxious Vegetation Cover	45.9	2.7
Allowable Vegetation Cover	16.9	2.7
Grass Cover	11.9	1.4
Forb Cover	33.9	3.6
Woody Cover	0.1	0.1
Non-Noxious Relative Cover Statis	tics (%)	
Grass Cover	32.2	4.3
Forb Cover	67.4	4.5
Woody Cover	0.4	0.3

The only species observed along all 30 transects Russian thistle (*Salsola tragus*) which comprised 66.6% of the relative cover. An additional 17.0% was contributed by sand dropseed, 5.5% was contributed by prairie sandreed, 3.7% was contributed by sand bluestem, 3.1% was contributed by common sunflower, and the other 4.1% was contributed by 14 different species.

Cheatgrass which comprised 49.4% of the relative cover in 2020, was almost completely absent from this Reclamation Area in 2021 due to successful fall pre-emergent herbicide treatment in 2020; however, Russian thistle appears to have filled in to replace it.

Thirty-five species from 11 life forms were encountered along the transects (Appendix C). Eight grasses, nine forbs, two woody species contributed to the cover data; 16 of which were native or desirable, two were introduced annuals, and one was noxious (Table 13). There were 13 perennial species and six annual species observed.

Table 13: Reclamation Area 25 Species Composition

Life Form	Cover Data	Present
Graminoids		
Perennial	7	11
Annual	1	4
Native	8	14
Introduced	0	1
Cool Season	3	4
Warm Season	4	7
Total	8	15
Forbs		
Perennial	4	6
Annual	5	11
Native	6	10
Introduced	3	7
Total	9	17
Woody Plants	2	3
Total Species	19	35

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 14). Eleven perennial grasses were observed along the transects which meets the Phase II bond release success criteria. No production data were collected in the area in 2021.

Table 14: Reclamation Area 25 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	16.9	27.2	24.5	No
Allowable Production (g/m²)	n/a	n/a	n/a	n/a
Species Composition (perennial grass)	11	4		Yes

6.2.2 Reclamation Area 34

Reclamation Area 34 is a 6.9-acre parcel that was formerly part of Topsand piles A and B. This area was graded to blend into the reclaimed mining and operational areas to the south resulting in an almost flat area. Final revegetation seeding with the DRMS-approved permanent seed mixture took place in October 2016.

Total vegetation cover averaged 33.3% up from 14.1% in 2020 and non-noxious vegetation cover averaged 32.6% compared to 12.5% in 2020 (Table 15, Appendix A). Ten annual species (one grass and nine forbs) contributed a total of 46.1% of the non-noxious relative cover which exceeded the allowable 10% to be used in final hypothesis testing. Thus, the average allowable vegetation cover was 20.6% up from 12.5% in 2020. Reclamation Area 34 required the maximum number of 30 samples.

Total non-noxious herbaceous production averaged 70.4 g/m² (Table 15, Appendix A) which was substantially more than the 42.9 g/m² observed in 2020. However, annual species accounted for 58.7% of this production resulting in only 41.4 g/m². of allowable herbaceous production.

Table 15: Reclamation Area 34 Summary Statistics

	Area	34
Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	56.1	3.2
Total Vegetation Cover	33.3	2.4
Non-Noxious Vegetation Cover	32.6	2.2
Allowable Vegetation Cover	20.6	2.2
Grass Cover	18.1	2.2
Forb Cover	14.9	2.2
Woody Cover	0.2	0.1
Non-Noxious Relative Cover Statis	stics (%)	
Grass Cover	55.9	4.3
Forb Cover	43.4	4.4
Woody Cover	0.7	0.4
Herbaceous Production Statistics ((g/m^2)	
Total Production	70.4	11.3
Allowable Production	41.4	10.4
Perennial Production	29.1	5.1
Annual Production	41.3	9.1

The only species observed on all 30 transects was sand dropseed which contributed 30.8% of the overall relative cover. Cheatgrass contributed to the cover on three transects and only contributed 2.1% of the overall relative cover down from 11.2% in 2020. When cheatgrass was removed five species contributed more than 3% of the relative cover including (in decreasing order): sand dropseed, Russian thistle, prairie sandreed, common sunflower, and Jerusalem oak goosefoot (*Dysphania botrys*).

Twenty-eight species from eight life forms contributed to the cover data and 34 other species were encountered along the transects (Table 16, Appendix C). Twenty-three grasses, 35 forbs, and four woody species were recorded, 49 of which were native or desirable and 13 were introduced. There were 36 perennial species and 26 annual species.

Table 16: Reclamation Area 34 Species Composition

Life Form	Cover Data	Present
Graminoids		
Perennial	12	19
Annual	2	4
Native	13	21
Introduced	1	2
Cool Season	5	9
Warm Season	7	10
Total	14	23
Forbs		
Perennial	3	13
Annual	9	22
Native	9	24
Introduced	3	11
Total	12	35
Woody Plants	2	4
Total Species	28	62

The allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 17). However, 19 perennial grasses were observed along the transects which does meet the Phase II bond release species composition standard. While 30 production samples would have been required for Phase III hypothesis testing, the calculated allowable production based on the 15 samples collected did meet the production standard.

Table 17: Reclamation Area 34 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	20.6	27.2	24.5	No
Allowable Production (g/m²)	41.4	21.0	18.9	Yes
Species Composition (perennial grass)	19	4		Yes

6.2.3 Reclamation Area 37

Reclamation Area 37 is a 9.1-acre parcel where the northern topsand pile was previously located. This area was graded to blend into the reclaimed areas resulting in a gentle, east-facing slope. Revegetation seeding with the DRMS-approved permanent seed mixture took place in 2019. This area has not yet received Phase I bond release

Total vegetation cover averaged 25.1% (Table 18, Appendix A) and non-noxious vegetation cover was 24.8%. Substantial excess annual cover was recorded; thus, the allowable cover used for hypothesis testing was only 10.9%. While the maximum number of 30 samples would have been required to meet sample adequacy, only the minimum 15 samples were collected due to the obvious lack of sufficient cover to meet the Phase II standards.

Table 18: Reclamation Area 37 Summary Statistics

No. of the Control of	Area	37
Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	39.6	5.3
Total Vegetation Cover	25.1	3.8
Non-Noxious Vegetation Cover	24.8	3.7
Allowable Vegetation Cover	10.9	3.7
Grass Cover	9.6	2.3
Forb Cover	15.5	4.7
Woody Cover	7.0	1.2
Non-Noxious Relative Cover Statis	tics (%)	
Grass Cover	44.5	9.8
Forb Cover	55.5	9.8
Woody Cover	7.0	1.2

There were three dominant species observed along at least 14 of the 15 transects: Indian ricegrass (*Achnatherum hymenoides*), Russian thistle, and redroot amaranth (Appendix C). These species comprised 29.7%, 25.6%, and 8.2%, respectively, of the relative cover. An additional 9.7% each was contributed by prostrate knotweed (*Polygonum aviculare*) and common sunflower, and the other 17.1% was contributed by nine other species. Cheatgrass was the only noxious species observed and only comprised 1.0% of the relative cover.

Twenty-eight species from seven life forms were encountered along the transects (Appendix C). Six grasses and eight forbs contributed to the cover data; nine of which were native or desirable, four were introduced annuals, and one was noxious (Table 19). There were three perennial species and 11 annual species observed. Three of the species included in the seed mixture were observed along the transects and contributed 30.3% of the relative cover.

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 20). Seven perennial grasses were observed along the transects which meets the Phase II bond release success criteria. No production data were collected in the area in 2021.

Table 19: Reclamation Area 37 Species Composition

Life Form	Cover Data	Present
Graminoids		
Perennial	3	7
Annual	3	5
Native	5	10
Introduced	1	2
Cool Season	2	6
Warm Season	1	1
Total	6	12
Forbs		
Perennial	0	4
Annual	8	12
Native	4	10
Introduced	4	6
Total	8	16
Woody Plants	0	0
Total Species	14	28

Table 20: Reclamation Area 37 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	10.9	27.2	24.5	No
Allowable Production (g/m²)	n/a	n/a	n/a	n/a
Species Composition (perennial grass)	7	4		Yes

6.2.4 Reclamation Area 44

Reclamation Area 44 is a 27.4-acre parcel encompassing the northern portions of the B Pit and long-term spoils areas. This area was graded to blend into the reclaimed areas resulting in a gentle, east-facing slope. Revegetation seeding with the DRMS-approved permanent seed mixture took place in 2019. This area has not yet received Phase I bond release

Total vegetation cover averaged 31.7% (Table 21, Appendix A) and non-noxious vegetation cover was 26.8%. Substantial excess annual cover was recorded; thus, the allowable cover used for hypothesis testing was only 10.6%. Only the minimum 15 samples were required to meet sample adequacy.

There were seven dominant species observed along at least 10 of the 15 transects and comprising 87.9% of the relative cover: Russian thistle, common sunflower, cheatgrass, sand dropseed, Indian ricegrass, bushy knotweed (*Polygonum ramosissimum*), and redroot amaranth (Appendix C). An additional 8.5% was contributed by kochia and the other 3.6% was contributed by seven other species. Cheatgrass was the only noxious species observed and comprised 16.2% of the relative cover.

Table 21: Reclamation Area 44 Summary Statistics

	Area	44
Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	46.5	3.6
Total Vegetation Cover	31.7	2.2
Non-Noxious Vegetation Cover	26.8	1.9
Allowable Vegetation Cover	10.6	1.8
Grass Cover	12.8	3.0
Forb Cover	18.9	2.8
Woody Cover	0.0	0.0
Non-Noxious Relative Cover Statis	tics (%)	
Grass Cover	31.4	8.7
Forb Cover	68.6	8.7
Woody Cover	0.0	0.0

Thirty-three species from eight life forms were encountered along the transects (Appendix C). Six grasses and nine forbs contributed to the cover data; 10 of which were native or desirable, four were introduced annuals, and one was noxious (Table 22). There were four perennial species and 11 annual species observed. Four of the species included in the seed mixture were observed along the transects and contributed 10.5% of the relative cover.

Table 22: Reclamation Area 44 Species Composition

Life Form	Cover Data	Present		
Graminoids				
Perennial	3	4		
Annual	3	6		
Native	5	8		
Introduced	1	2		
Cool Season	2	2		
Warm Season	1	2		
Total	6	10		
Forbs				
Perennial	1 3			
Annual	8	19		
Native	5	14		
Introduced	4	8		
Total	tal 9 22			
Woody Plants	0	1		
Total Species	15	33		

Allowable vegetation cover did not pass the technical standard when subjected to hypothesis testing (Table 23). Four perennial grasses were observed along the transects which meets the Phase II bond release success criteria. No production data were collected in the area in 2021.

Table 23: Reclamation Area 44 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	10.6	27.2	24.5	No
Allowable Production (g/m²)	n/a	n/a	n/a	n/a
Species Composition (perennial grass)	4	4		Yes

6.3 Interim Monitoring

Reclamation Areas 32 and 33 were monitored under the interim evaluation guidelines. The interim monitoring guidelines call for the collection of 10 cover samples and 15 production samples which were not a statistically adequate sample sizes for hypothesis testing. However, to evaluate the progress of reclamation establishment on these sites, the data were compared to the Phase III standards anyway.

6.3.1 Reclamation Area 32

Reclamation Area 32 is a 5.5-acre parcel that was formerly part of the B Pit mining area. This area was graded to blend into the undisturbed area to the west and the reclaimed mining and operational areas to the east resulting in a gentle, east-facing slope. Final revegetation seeding with the DRMS-approved permanent seed mixture took place in November 2015.

Total vegetation cover averaged 45.6% (Table 24, Appendix A) which was an increase from the 24.2% cover observed in 2020. Non-noxious vegetation cover was 43.4% up from 16.8% in 2020. Five non-noxious annual species (one grass and four forbs) contributed a total of 26.7% of the non-noxious relative cover which exceeded the allowable 10% to be used in final hypothesis testing. Thus, the average allowable vegetation cover was only 36.1% up from 16.1% in 2020.

Total non-noxious herbaceous production averaged 67.5 g/m 2 (Table 24, Appendix A) up from 48.5 g/m 2 in 2019. Annual species accounted for 13.5% of this production. Thus, the average allowable herbaceous production was 65.1 g/m 2 .

The only species contributing to cover in all 10 transects was prairie sandreed which contributed 53.4% of the overall relative cover. Cheatgrass was observed on nine transects but contributed only 4.7% of the total relative cover down from 29.8% in 2020. When cheatgrass was removed five species contributed more than 3% of the relative cover including (in decreasing order): prairie sandreed, redroot amaranth, Russian thistle, blue grama, and sand bluestem.

Thirteen species from seven life forms contributed to the cover data and 10 other species were encountered along the transects (Table 25, Appendix C). Fourteen grasses, eight forbs, and one woody species were recorded, 18 of which were native or desirable and five were introduced. There were 12 perennial species and 11 annual species.

Table 24: Reclamation Area 32 Summary Statistics

200	Area 32	
Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	79.2	2.6
Total Vegetation Cover	45.6	1.8
Non-Noxious Vegetation Cover	43.4	1.7
Allowable Vegetation Cover	36.1	1.7
Grass Cover	34.2	4.6
Forb Cover	11.4	4.4
Woody Cover	0.0	0.0
Non-Noxious Relative Cover Statis	tics (%)	
Grass Cover	74.3	10.1
Forb Cover	25.2	9.9
Woody Cover	0.5	0.5
Herbaceous Production Statistics (g/m^2	
Total Production	67.5	5.2
Allowable Production	65.1	5.2
Perennial Production	58.4	5.8
Annual Production	9.1	2.6

Table 25: Reclamation Area 32 Species Composition

Life Form	Cover Data	Present		
Graminoids				
Perennial	7	11		
Annual	2	3		
Native	8	13		
Introduced	1	1		
Cool Season	1	4		
Warm Season	6	7		
Total	9	14		
Forbs				
Perennial	0	0		
Annual	4	8		
Native	2	4		
Introduced	2	4		
Total	4 8		tal 4 8	
Woody Plants	0	1		
Total Species	13	23		

The interim monitoring guidelines call for the collection of 10 cover samples and 15 production samples. This was an adequate sample for the cover data; however, sample adequacy would have required 30 production samples. Both the allowable cover and allowable herbaceous production calculated from the samples collected exceeded the technical standard (Table 26). Only two perennial grass species contributed greater than 3% and less than 40% of the non-noxious relative cover and a third species contributed more than 40% of the relative cover.

Table 26: Reclamation Area 32 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	36.1	27.2	24.5	Yes
Allowable Production (g/m ²)	65.1	21.0	18.9	Yes
Species Composition (perennial grass)	2	4		No

6.3.2 Reclamation Area 33

Reclamation Area 33 is a 12.5-acre parcel that was formerly part of the Long-Term Spoil Area. This area was graded to blend into the reclaimed mining and operational areas to the west resulting in an almost flat, east-facing slope. Final revegetation seeding with the DRMS-approved permanent seed mixture took place in November 2015.

Total vegetation cover averaged 53.6% (Table 27, Appendix A) up from 27.8% in 2020. Non-noxious vegetation cover was 40.6% up from 22.8% in 2020. Four non-noxious annual forb species contributed a total of 15.8% of the non-noxious relative cover which exceeded the allowable 10% to be used in final hypothesis testing. Thus, the average allowable vegetation cover was only 38.3% up from 22.8% in 2020.

Total non-noxious herbaceous production averaged 88.0 g/m^2 (Table 27, Appendix A) up from 47.0 g/m^2 in 2020. Annual species accounted for 17.5% of this production; thus, the average allowable herbaceous production was 81.4 g/m^2 .

The only species contributing to cover in all 10 transects was prairie sandreed which contributed 47.1% of the overall relative cover. Cheatgrass was also observed on all 10 transects and contributed 24.1% of the total relative cover up from 17.7% in 2020. When cheatgrass was removed six species contributed more than 3% of the relative cover including (in decreasing order): prairie sandreed, blue grama, redroot amaranth, switchgrass (*Panicum virgatum*), Russian thistle, and bushy knotweed.

Fourteen species from six life forms contributed to the cover data and 12 other species were encountered along the transects (Table 28, Appendix C). Sixteen grasses and 10 forbs were recorded, 23 of which were native or desirable and three were introduced. There were 14 perennial species and 12 annual species.

Sample adequacy would have required 21 cover samples and 30 production samples. Both the allowable cover and allowable herbaceous production calculated from the samples collected exceeded the technical standard (Table 29). Only two perennial grass species contributed greater than 3% and less than 40% of the non-noxious relative cover and a third species contributed more than 40% of the relative cover.

Table 27: Reclamation Area 33 Summary Statistics

	Area	33
Summary Statistics	Mean	SE
Absolute Cover Statistics (%)		
Total Ground Cover	84.8	3.9
Total Vegetation Cover	53.6	4.2
Non-Noxious Vegetation Cover	40.6	4.2
Allowable Vegetation Cover	38.3	4.2
Grass Cover	47.2	5.5
Forb Cover	6.4	3.4
Woody Cover	4.5	1.0
Non-Noxious Relative Cover Statis	tics (%)	
Grass Cover	85.3	7.7
Forb Cover	14.8	7.7
Woody Cover	0.0	0.0
Herbaceous Production Statistics (g/m^2	120
Total Production	88.0	7.3
Allowable Production	81.4	7.3
Perennial Production	72.6	6.4
Annual Production	15.4	9.1

Table 28: Reclamation Area 33 Species Composition

Life Form	Cover Data	Present
Graminoids		
Perennial	9	13
Annual	1	3
Native	9	15
Introduced	1	1
Cool Season	2	5
Warm Season	7	8
Total	10	16
Forbs		
Perennial	0	1
Annual	4	9
Native	3	8
Introduced	1	2
Total	4	10
Woody Plants	0	0
Total Species	14	26

Table 29: Reclamation Area 33 Success Criteria

Reclamation Success Criteria	Reclamation Area	Technical Standard	90% Technical Standard	Pass?
Allowable Cover (%)	38.3	27.2	24.5	Yes
Allowable Production (g/m ²)	81.4	21.0	18.9	Yes
Species Composition (perennial grass)	2	4		No

7 DISCUSSION

Reclamation Areas 29, 30, and 31 were previously monitored in 2015, 2016, 2018, 2019 and 2020, Reclamation Area 25 was monitored in 2016, 2018, 2019, and 2020 and Reclamation Areas 32, 33, and 34 were monitored in 2018, 2019, and 2020. Reclamation Areas 37 and 44 were monitored for the first time in 2021 No data were collected in 2017 due to a hailstorm on August 10, 2017, that destroyed the above-ground vegetation.

7.1 Vegetation Cover

Based on the results of the quantitative sampling, five of the nine Reclamation Areas had allowable vegetation cover that passed the success standard (Table 30). This included all of the Phase III and interim monitoring areas. The Phase II Reclamation Areas (25, 34, 37, and 44) all would have passed using the total non-noxious cover including the excess annuals. Most of the Phase II areas (Reclamation Areas 34, 37, and 44) are recently reclaimed and would be expected to have more annual cover. Typically, it takes several years for the perennial vegetation to establish and begin to displace the early seral annual species. Reclamation Area 25, while older reclamation, was treated with a pre-emergent herbicide in 2020 to control the cheatgrass. This treatment effectively treated the cheatgrass, but this left substantial bare areas for the invasion of other annual species. It may take a few years for the perennial grasses to fill in.

Table 30: Vegetation Cover Success Standard Comparison

		Phase II onitori		Ph	ase II N	Ionitor	ing	100000000000000000000000000000000000000	erim toring
	Area	Area	Area	Area	Area	Area	Area	Area	Area
Vegetation Cover	29	30	31	25	34	37	44	32	33
Average Vegetation Cover	38.3	36.8	38.0	45.9	33.3	25.1	31.7	45.6	53.6
Average Non-Noxious Cover	35.9	30.5	37.7	45.9	32.6	24.8	26.8	43.4	40.6
Average Allowable Cover	29.1	27.5	37.7	16.9	20.6	10.9	10.6	36.1	38.26
N	18	15	15	30	30	15	15	10	10
Nmin (non-noxious)	13	14	12	18	24	62	13	3	21
Stdev Allowable Cover	9.9	8.5	9.6	14.6	12.0	14.4	7.0	5.5	13.3
Standard					27.2				
90% of Standard					24.5				
T (one-tail, α=0.9)	1.333	1.345	1.345	1.311	1.311	1.345	1.345	1.383	1.383
Standard Passed?	Yes	Yes	Yes	No	No	No	No	Yes*	Yes*

Desirable vegetation cover increased from 2020 to 2021 in all previously monitored Reclamation Areas after a steady decrease from 2018 to 2020 (Figure 9). In most of the Reclamation Areas (all except for Area 25), the desirable perennial cover is almost back to its 2019 level. The desirable cover in Reclamation Area 37 and 44 was lower than all other aeras; however, this was only the second growing season for these two areas (seeded in fall 2019). Thus, their cover was expected to be lower. Several portions of both these areas were identified for interseeding in fall 2021 to enhance their success.

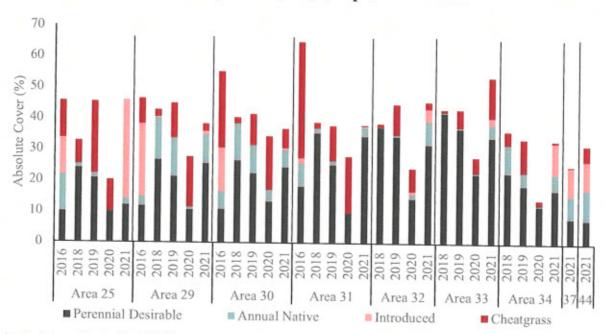


Figure 9: Absolute Cover of Native and Introduced Species 2016 - 2021*

Cheatgrass cover decreased markedly from 2020 to 2021 in all Reclamation Areas except Area 33 (Figure 10). In fall 2020, several Reclamation Areas were treated with herbicide for cheatgrass mitigation which appears to have been very successful. Reclamation Areas 33 and 34 had the lowest 2020 cheatgrass cover and were not treated. However, Reclamation Area 33 may benefit from a future treatment.

^{*} No data collected in 2017

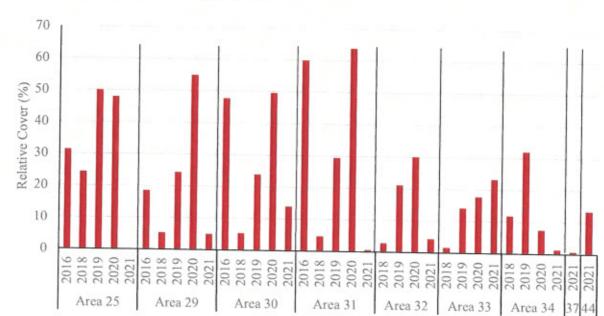


Figure 10: Cheatgrass Relative Cover 2016 - 2021*

7.2 Herbaceous Production

Based on the results of the herbaceous production sampling, all Reclamation Areas passed the calculated production success standard (Table 31). Overall, non-noxious herbaceous production increased from 2020 to 2021 in all areas (Figure 11). Allowable herbaceous production increased in all areas except for Area 34. None of the areas have rebounded to the levels that were observed in 2018. However, continued drought conditions did result in a reduced production standard as well.

Table 31: Herbaceous Production Success Standard Comparison

	1 3000	Phase II Ionitori		M	Interin Ionitori	
Herbaceous Production	Area 29	Area 30	Area 31	Area 32	Area 33	Area 34
Average Total Production	70.4	50.5	63.3	67.5	88.0	70.4
Average Allowable Production	53.8	43.5	59.0	65.1	81.4	41.4
N	30	30	30	15	15	15
Nmin (non-noxious)	298	99.5	72.8	32.1	37.3	139.2
Stdev Allowable Production	90.5	38.0	41.2	28.4	40.0	56.9
Standard			21	.0		00.5
90% of Standard				.9		
T (one-tail, α=0.9)	1.311	1.311	1.311	1.345	1.345	1.345
Standard Passed?	Yes	Yes	Yes	Yes*	Yes*	Yes*

^{*} Only sampled to the minimum sample size

^{*} No data collected in 2017

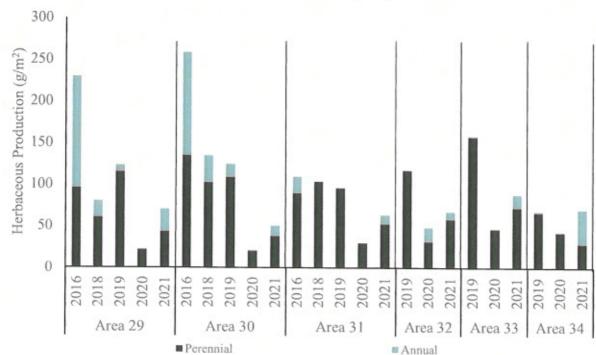


Figure 11: Non-Noxious Herbaceous Production by Life Form 2016 - 2021*

7.3 Species Composition

The Phase III species composition bond release standard requires that four perennial grass species each contribute a minimum of 3% and a maximum of 40% of the relative non-noxious vegetation cover. All of the reclamation areas monitored for Phase III release met this standard. The species composition standard for Phase II bond release is that a sufficient number of species be present to meet the future Phase III bond release cover requirements. All four of the reclamation areas monitored for Phase II release exhibited at least four perennial grasses in the data. The two areas monitored using the interim monitoring methods each exhibited at least 11 perennial grass species, but neither one has yet met the Phase III standard.

8 SUMMARY

Quantitative monitoring revealed that Reclamation Areas 29, 30, and 31 all met the revegetation success standards for Phase III bond release (Table 32). This was the first year that these areas have met the standard, so they are not eligible for release until next year. Reclamation Area 30 also met the standard for Phase II bond release and would be eligible for Phase II release this year. Reclamation Areas 25, 34, 37, and 44 were also monitored under the Phase II bond release guidelines, but none of the areas met the vegetation cover standard. They did all meet the Phase II species composition standard and Area 34 met the interim monitoring production standard. Both Reclamation Areas 32 and 33 were monitored under the interim monitoring program and both met the herbaceous production standards. However, neither area met the vegetation cover or species composition standards. All nine reclamation areas will require additional sampling in 2022.

^{*} No data collected in 2017

Table 32: Success Standard Summary

		Phase I Ionitori				Phase I Ionitori				erim oring*
Reclamation Standard	Area 29	Area 30	Area 31	Area 25	Area 30	Area 34	Area 37	Area 44	Area 32	Area 33
Vegetation Cover	Yes	Yes	Yes	No				No	Yes	Yes
Herbaceous Production	Yes	Yes	Yes	n/a	n/a	Yes*	n/a	n/a	Yes	Yes
Species Composition	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Eligible for Release	Next Year	Next Year	Next Year	No	Yes	No	No	No	n/a	n/a

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Keenesburg Mine 2021 Vegetation Monitoring Report

Appendix A: Vegetation Cover Data

Keenesburg Mine 2021 Vegetation Monitoring Report

Scientific Name	Common Name	1 1st 2nd	Z, H	3 3 2nd 1st	2nd ls:	2nd le	5 2nd 1st	6 2nd	7 2nd	00 2	9	01 2	= 2							=
Grass: Annual Native		100000		100	100	139		25100	2000		100	11-0		1		181 280	151 2nd	d 1st 2nd	d list 2nd	lst Znd
Cenchrus Joneispinus	mat candlane	L	L	L	H	1	l	t	T	T	I			1		1				
Munroa squarrosa	false buffalograss			_	_			_		d,										
Panicum capillare	witcherass	2								Д.		e.		o,	-	Д				-
Subtotal	200	,	1	1	+	+	+	1	1	1					1	1	1			1
Grass: Annual Introduced		-	S. (0.640-10)			-	-		1	4		4		4	-	4				-
Secretar factorism	1	1	1	1	-	+		1	1								No. of Street, or other			200,000
Subtotal	cheatgrass	1	1	1	+	+	+	+	1	d								L	L	L
Suprocean Description of the Control	4 9				+	+	+	+	1	d										
Orass: rerennial Desirable (Cool)	(C00I)			2000	1000			0000		200000000000000000000000000000000000000	200000	Shipping	327 TAG	2000000	2007/000	2000	Softman			100000
Achnatherum hymenoides	Indian ricegrass					-	-	-						L	L	٥	c	L	L	L
Hesperostipa comata	needle and thread			_	_	_														
Pascopyrum smithii	western wheatgrass		Д		O.	_										6				
Pseudoroegneria spicata	bluebunch wheatgrass					_						_				4				
Subtotal			Д	L	0	-		-				-								1
Grass: Perennial Desirable (Warm)	(Warm)		Received a	The Charles		000	100	0.000	0.000000	100 Part of pa	-	STATE OF THE PARTY OF	\$13 CK P. IA			-	4			
Andropogon hallii	sand bhestem	e	L	L	1	1	ŀ	1	1	1	1	I				1			3	
Bouteloua gracilis	blue grama						•	2 6			4 6		1		Д,	7				
Calamovilfa longifolia	prairie sandreed	-	-		_		-	_			4 6		d,		Д.				n	
Panicum virgatum	switchgrass				_		_			<u>.</u>		<u>.</u>			0			•		-
Schizachyrium scoparium	little bluestem				_						à.								9	
Sorghastrum nutans	Indiangrass	D.			_				_										۵.	
Sporobolus cryptandrus	sand dropseed	3		12	2	2	9	4	2	_	5	2	12 2	4	-	*	4		,	
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Total Grass Cover		4	1 0	12	2 0	1 2	1 7	0 5	2	0	0 1	3 0	17 7	0 0	18	0 4		2 .	7 71	7 .
Forbs: Annual & Biennial Native	Vative	Reserve	Consistent		1000	100	1000	-							Н			8	8	6
Amaranthus retroflexus	redroot amaranth	L		L	2	1	+	-	f	ľ		I				L				
Argemone polyanthemos	crested pricklypoppy	Д	-	-		_	0									1	,	<u>.</u> -		а, -
Chenopodium desiccatum	aridland goosefoot	5			_	_			-	-				4		4	4	-	a,	-
Croton texensis	Texas croton						_		_											
Erigeron bellidiastrum	western daisy fleabane						_										d,			
Helianthus annuus	common sunflower	0	-	3	0	-	_	-	_		_	-		_			c			
Subtotal		0	2	4	2	-	6	1	t	t	t						7 6	۵.	4	۵.
Forbs: Annual & Biennial Introduced	ntroduced	100000	1000000	696720	Copy of	- 100	1	1	9000	000	1		4	-	-	4	7	-	۵	_
Amaranthus bihoides	mat amaranth	L		L	L	H	H	1	1	1	T	T								
Bassia scoparia	burningbush	0	0		p	0	0	2	2000	_		,		1						
Dysphania botrys	Jerusalem oak goosefoot		è					-						7			4		-	
Salsola tragus	prickly Russian thistle	23	50	4	23	36	1 9	14	17		12	32	2	12	20	12	00	20	-	00
Tribulus terrestris	puncturevine					_	_							!			0		2	8
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Forbs: Perennial Native	College William Party Control of the	100	Section 8	Common Common	Statement	Section of the last	0.0000000	100		1	18				4		×	181 007	H Bu7
Ambrosia psilostachya Physalis hispida Rumex venosus Symphyotrichum falcatum	Cuman ragweed prairie groundcherry veiny dock white prairie aster	4-												-		-			
Subtotal		-										1	1	1	1	+	+	-	+
Forbs: Perennial Introduced	pa participation pa	100	Season a	2000	N. S. Carlo	Service and	SALES GARACT		2000000	discussion.	2000000	1		Д				100	-
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Subshrubs/Shrubs/Succulents: Perennial Native	nts: Perennial Native	D.F.			100					10			9	0 17 0	13	0 10	0 30	0 14	0 21
Artemisia filifolia	sand sagebrush	L				T						-		1	-		-	1	1
Opuntia phacacantha Yucca glauca	tulip pricklypear soapweed vucca		17187				D.									Д		_	
Subtotal		L											1	1	1	+	+	+	+
Total Shrub Cover		0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	1	0	0	4	0	-	4	+
Rock							1								-	+		0	0
Litter		6	2	22	-	-		10	8	15	0	36	14	9	10	0.0		90	2
Bare Ground		13	16	00	24	10	15	21	23	14	4	3 0	. «	9	3 2	10	1	8 4	2 5
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Total Vegetation Cover		56 2	64 0	40 4	50 2	78 4	0	4					36	-	36	28		2 2	-
Non-Noxious Vegetation Cover	over	56 2	64 0	40 4	50 2	78 4	32 0	38 4	42 0	42 0	74 0	30 4	36	52	36	28	99	525	-
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Grass: Annual Native	STATE OF STATE STATE OF STATE	\$100 St. St. St.	13						DU7 %1	007 20	1st Znd	lat 2nd	1st 2nd	1st All	Cover(%)	Cover (%)	Cover (%)
Cenchrus longispinus	mat sandbur	L	L	L		L								1			
Munroa squarrosa	false buffalograss	Д												0 0	0.0	0.0	0.0
Panicum capillare	witchgrass								1	2,					0.1	0.3	0.3
Subtotal		6		L					1	T				1	0.0	0.0	0.0
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Bromus tectorum	cheaterass	L		1						I	I					\$300 cm or 50 cm	SHEET STATES
Subtotal		-					1							1	0.0	0.0	
Grass: Perennial Desirable (Cool)	(Cool)	0.000	1000000	d	and the second	1								0 0	0.0	0.0	0.0
Achnatherum hymenoidee	Indian singuation			1									300000000000000000000000000000000000000	Sept Market		Service Services	
Hesperostipa comata	needle and thread		ο, ε												0.1	0.1	0.1
Pascopyrum smithii	Western wheaterase		Д					100						0 0	0.0	0.0	0.0
Pseudoroegneria spicata	bluebunch wheaterass											m			0.2	0.4	0.4
Subtotal	00000	L							1	1				-	0.1	0.1	0.1
Grass: Perennial Desirable (Warm)	(Warm)	2000000		200000	1	1						2		5 5	0.3	0.7	0.7
Androposon hallii	sand bheetem			1										Part of the last	delinik observes	Service and a service of the service	
Boutelous gracilis	bhe grama		- 1	ŧ -			4						S	24 26	1.6	3.7	3.7
Calamovilfa longifolia	prairie candreod		Д	-	:		Д,	Д							0.3	9.0	9.0
Panicum virgatum	cwitchernee	+			=	7	4		d.	2					2.3	5.5	5.5
Schizachyrium scoparium	little bhestem													0 0	0.0	0.0	0.0
Sorghastrum nutans	Indiapprass														0.0	0.0	0.0
Sporobolus cryptandrus	sand dronseed	-	4		-	,	,						8		0.0	0.0	0.0
Subtotal		-	9 1		4:		+ 5	000		7	1	7	00	_	7.3	17.0	17.0
Total Grass Cover			- 1	101		- 18	-10	-11	1	. 1	- 1	-	1	- 1	11.4	26.7	26.7
Forbs: Annual & Biennial Native	iative		9	90 H2	0 11	1 6	0 71	0 0	0 1	0 4	0 1	9 1	13 0	178 197	11.9	7.72	27.7
Amaranthus retroflexus	redroot amaranth	,			1	1		T.		1		1	T	1			William Street
Argemone polyanthemos	crested prickbroomy	4			a. s	2		д,	d,	_			Ь		0.3	9.0	9.0
Chenopodium desiccatum	aridland goosefoot		4		4			<u>a</u>			<u> </u>				0.3	9.0	9.0
Croton texensis	Texas croton														0.0	0.0	0.0
Erigeron bellidiastrum	western daisy fleabane					2							۵	0	0.0	0.0	0.0
Helianthus annuus	common sunflower				,					1				0 0	0.0	0.0	0.0
Subtotal			6	,	,	4 6	9 6	t	Ť		†	Ť	Ť		1.5	3.1	3.1
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Amaranthus bitoides	mat amaranth						I	T	ľ			1	1				
Bassia scoparia	burningbush		-		_				_	Д.					0.0	0.0	0.0
Dysphania botrys	Jentsalem oak soose foot					d.					g,			2	0.3	0.7	0.7
Sakola tragus	prickly Russian thirtle	n	4		1 01	,									0.0	0.0	0.0
Tribulus terrestris	puncturevine	1	+	n		7 75	7	×	17	16	71	9	9	0	31.3	9.99	66.7
O. Land.														0	0.0	-	

Scientific Name	Common Name	19 1st 2nd	20 1st 2nd	21 1st 2md	22 1s 2nd	23 14 2nd	24 lst 2nd	25	26	27	28	29	9 7	7	Average	Average Relative	Non-Noxious Relative
Forbs: Perennial Native		50 NY 60050	27.74			1		3					7 FEB	N VIII	Cover (%)	Cover (%)	Cover (%)
Ambrosia psilostachya	Cuman ragweed	a.	L							_	T	4	T	-	0.1	0.1	0.1
Physals hispida	prartie groundcherry														0.1	0.1	0.1
Symphyotrichum falcatum	white prairie aster									<u>a</u>				0 .	0.0	0.0	0.0
Subtotal		0				T	T		T	1.	1	1	T		0.1	0.1	0.1
Forbs: Perennial Introduced	pa	0.00	STATE	100000	Sept.	The second		4	a design	-		d		3 3	0.2	0.4	0.4
Cardaria draba	whitetop							T	1	1	T	T	İ	1			
Convolvulus arvensis	field bindweed													0 .	0.0	0.0	
Subtotal		-			1	1	1	+	1	1	†	T	1	-	0.1	0.1	
Total Forb Cover		33 0	4 0	0 3	11 1	+		4	4	1	1				0.1	0.1	0.0
Substante Chunko Kucantonte: Bananici Nota	meter Damentel Medica			H	-	7	0 0	0 8	0 /1	18 0	0 17	0 8	9 0 9	509 513	33.9	72.1	72.0
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Artemsia filifolia	sand sagebrush													-	0.1	0.1	0.1
Opuntia phaeacantha	tulip pricklypear	d,					ь	d,		Д			-	-	0.1	0.1	0.1
Yucca glauca	soapweed yucca				1	1		Б						0 0	0.0	0.0	0.0
Subtotal		. 1	- 1			1	D	Б		р			-	2 2	0.1	0.3	0.3
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KOCK													-	0 0	0.0		
Liner		15	17						16	_	80		19 4	408 408	27.2		
Bare Ground		9	22	10	91	9 1	10	-		9 2		8	11	403 403	26.9		
Iotal Hits		50 1	50 0	50 1	50 1	50 3 5	50 0 5	50 0 8	50 0 8	50 0 5	50 0 8	50 1 5	50 0 13		100.0		
Fotal Vegetation Cover		58 2	22 0	30 2 0	64 2 7	74 6 3	34 0 3	32 0 3	36 0 4	44 0 4	44 0 3	34 2 4	40 0		45.0	100.0	1000
Non-Noxious Vegetation Cover	over	58 2	22 0	30 2 (64 2 7	74 6 3	34 0 3	32 0 3	36 0 4	44 0 4	44 0 3	-	40 0	Ī	45.9		2000
Total Ground Cover		88	98	80	89	82	80	78	89	82	09	3	90	Ī	73.1		
Allowable Ventation Course	Designation of the last of the	100															

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Scientific Name Common Name	1 1st 2nd	. E	2 3 1st 2nd 1st	3 4 1st 2nd 1st 2nd	2nd 1st	S 2nd la	one las	7 2nd lie	oc page 1	2nd Ist	2nd lst	7	- 1	- al	1 12	5 16 2nd lst 21	- 2	7	Total Hits		Absolute 1	Average Relative	Non-Noxious Relative
Grass: Annual Native			1000	1000	100	S 2574	200	2000	10.00	B100 5000		1				13			-	+		OACT (70)	COVET (70)
Munroa squarrosa false buffalograss		L	a	L	-	+	H	0	-	1	-	L	1	1	1	1	1	1	ŀ	L	1	1	
Subtotal			6	-	9	+	-	1	-		-	1	1	+	-	1	+	1	0	1	0.0	0.0	0.0
Grass: Annual Introduced	The second second	200		1000	1	60.00	200	4	100	-		1	1	2000	100				0	0	0.0	0.0	0.0
Bromus tectorum cheatgrass	0	L	100	0	9	2	ľ	ľ	1	-	+	1	ŀ	1	Į.	1	1	1	1				
s cilianensis								-				<u>.</u>		d	n	<u>a</u>	7	Д	7 <	2 0	5.4	9.6	0
Subtotal	d	L	0	0	6	2	0	6		-	-	6	-	1		,	,	1	3	1	,	0.0	0.0
Grass: Perennial Desirable (Cool)	ACCOUNT SOUTH	100		Selection and	2018	900	1	1	Section Section		Spirit State	4	100	4	1	4	7	6	77	7 77	5.4	9.9	0.0
Pascopynum smithii western wheaterass	-	L	-	-	H	1	1	+	1	1	+	ŀ	1	1	1		1	1	1	1	1		
	-	1	+	+	+	+	+	+	1	+	+	4	+	+	1	1	4	1	2	3	0.3	8.0	6.0
Grass: Perennial Desirable (Warm)	- CO	1	1000	Section Contract	100	100	1000	1	4	1000	200	7	100						3		0.3	8.0	6.0
Andropogon hallii sand bluestem		1	1	-	=	-	91	-	ľ	0				1	1	1		1	1			Carrier Contract	Section Section
Boutelous curtipendula sideoats grama			2	_	_	-	2		_		q		_	1		_	_	0	0	80 8.3	5	22.0	23.6
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Forbs: Annual & Biennial Native	Section of the section of				100	-		-	-	,	-			*	-	1		14	543		0	71.1	0.69
Amaranthus retroflexus redroot amaranth	12	9	-	~	2	10	-	-	-	2	~	١	٠	1	-		2	-	\$	L	1	,,,,	1
Ambrosia artemisiifolia annual ragweed	ğ	1		_			_	_		-				6			1		-	200	0 =	0.3	0.5
		Ω.	Д	_		0.		_	24		-	_	0						- 0"	4 0.3		57	200
Chamaesyce glyptosperma ribseed sandmat	G.		-	_	_	_	0	_				_								_			7.0
Chenopodium leptophyllum narrowkaf goosefoot			0	_	_		_	_	_		_			_				-			_	50	0.3
Comyza canadensis Canadian horseweed	_			_	_		_	_	_		0				£							000	0.0
Erigeron belidiastrum western daisy fleabane					_	Д	_		_		_			_	_				0 0			0.0	0.0
Helianthus annuus common sunflower	73	2	-	m	_	m	0	0	-	0	-	2	2	6	-	4	6	-	3 6			6.3	0.0
Polygonum ramosissimum bushy knotweed		Ŋ,	<u></u>	-		_		-						_					9 .	200		2 %	0.0
Subtotal	14	00	3	1	2	~	-	-	4	-	-		٠		,			,	4 5	1	1	070	970
Forbs: Annual & Biennial Introduced	CONTRACTOR OF THE PARTY OF THE		Control of	oth Space	180			100	100	No. of Street,	1	The state of		4	7	,	2	2	28	276		23.4	25.1
Amaranthus bilioides mat amaranth	L	L	а	L	L	H	2	1	-	-	-	L	1	1		,	1		,	200	1	1	00
Bassia scoparia burningbush					2			_		_	_	_										6.0	6.0
20	_			_		_	_	_		10	_			_				_	- 0		_	0.3	0.3
			_	6	_	6	_	_		_				_	Д.			_				0.0	0.0
			2	-	0	-		-	2 5		-		6	_	,	G. 1				0.0		0.0	0.0
tris	_		6	_						_		a.	2	_	7	<u>a</u>	<u>.</u>		0 0	0.7		7.7	.8

Scientific Name Common Name	- 1	1 2 3 lst 2nd lst 2nd lst 2nd	3 3 2 10	4 kl	2 200	9 200	7 200	œ 2	6 1	0 7	= 3	27	E 7	4					al Hits		Average Relative	Non-Noxious Relative
Forbs: Perennial Native	STATE STATE	SCHOOL ST	September 1	10000		NA.							- 1	Tue Island	Tue Tue	Zud ist	280 18	286 180	W	Cover (%)	Cover (%)	Cover (%)
Lithospermum incisum narrowleaf stoneseed				L			a		T		-		-	H	\vdash	\vdash	4	0	0	0.0	0.0	0.0
											Δ.	3.11				_	_	0 0	0 0	0.0	0.0	0.0
Physals hispida prairie groundcherry Ratibida columnifera unrisht mairie consfourer	_			ь			Δ.			_	Д.				_	_		0	-	0.0	0.3	0.3
				-		T	1	1	1	+	4	1	+	+	+	+	+	0	0	0.0	0.0	0.0
Total Forb Cover	14 0	8 0	6 0	4	0	1 4.1	+	4			-	1	1	1	-	+	-	-	-	0.0	0.3	0.3
Subshrubs/Shrubs/Succulents: Perennial Native		0	1			1 61	-	0 7	0 0	30	8 0 3	0 2	0	0 4	9 0	0 3	0	0 93	96	10.3	26.4	28.3
Artemisia filifolia sand sazebrush	-			,		-	T	1	-	1.	1	+	+	+	1	-	-					Sheep Arts
Opuntia phaeacantha tulip pricklypear								_		, ,	-	-			_		a.	9 (6	1.0	2.5	2.7
Subtotal	-			,			1	t	t	1	-	+	4	1	+	+	+	0	0	0.0	0.0	0.0
Total Shrub Cover		4	- 10	1	н	п	-	1	1		1	- 1	-	а	-	+	D.	6	6	1.0	2.5	2.7
Rock	8		0	0 7	0 0	0	0 0	0 0	0 0	3 0 0	0 0 0	0 1	0 0	0 0	0 1	0 0	0 0	6 0	6	1.0	2.5	2.7
Litter	22	ţ	9					Т							_		-	-	-	0.1		
Bare Ground	4	i «	. 4	14	8 -	14	2 0		61	23 29	6 .	17			22 :	28	16	384		42.7		
Total Hits	98	1	-	5	. 5	9	ŀ	ŀ	r	ŀ	1	ŀ	Ť	1	0 9	n :	9 :	2	0/1	6.8		
Cotal Vegetation Cover		8	98	-	4 4	4			7		00 1 00	N 00	2 30	0 00	200	-	-	1 200	918	0000		
Von-Noxious Vegetation Cover	46 0	30 0	30 0	30 2	7	77	~	2	7	-	1 "	1	,	9	0 20	4 6	2 24	١,		38.3	100.0	100.0
Fotal Ground Cover	100	84	89	72	86	72	82	-	٥		4	1 2	2			1	1		1	25.9	Ī	
Allowable Vegetation Cover	101	33.3		40.0				ı	l	-	ł	ł	ł	ł	1		1			Title		

Keenesburg Mine 2021 Vegetation Monitoring Report

Scientific Name	Common Name	_ ×	2nd	2 1st 2nd	3 1st 2nd	4 g	S Is 2nd	6 24	7 200	00 2	6	0 7	-	12	13	4	-	=		Average Relative	Non-Noxious Relative
Grass: Annual Native	SAN SAN CONTRACTOR SAN ESTATE OF		13	250000	100	100	1000	100			-	DU7 161	9U7 W	547 SI	N 2nd	lst Znd	St 2nd	Ist All	Cover (%)	Cover (%)	Cover (%)
Munroa squarrosa	fake buffalograss	-	Д		3	-		_	_	_		3	_						13	3.5	.,
V urpat Octoriora	strweeks fescue	+	+	+	+										. 74			2 2	0.3	0.0	y o
monoral and a second		+	а	1	3		Д	_	1	D d	d.	3	a	0		6		1	16	43	000
orass: Annual introduced		150		183	STATE OF THE PERSON NAMED IN	SECOND .	Collection.	SCHOOL STATE	9962549	Section 2	2000	Sec. 1999	No. of Street	Action Sides	0				0.1	4.4	3.1
Bromus tectorum	cheatgrass	s	9	F	F		0	,	,	t	l,	1	1	T	t	1		1			
Eragrostis cilianensis	stinkgrass	ρ	. 0		_							۵,		Д,	7	d,	6	47 47	6.3	16.6	
Subtotal		5	-	-	ļ.		0	t	1	Ť	Ť	1	1	1	†	1			0.0	0.0	0.0
Grass: Perennial Desirable (Cool)	le (Cool)	100	1	ALC: NO.	State of the last	1000	Section 1		0000	4		Ь		d	6	b d	3	47 47	6.3	16.6	0.0
Pascopyrum smithii	western wheaterass	H	H	t	1	1	1	1	1	-			1			1		1			
Subtotal			-	+	+	1	1	1		1	d	1	1	1	1	1		0	0.0	0.0	0.0
Grass: Perennial Desirable (Warm)	e (Warm)		0.00	98	Service Co.	State of	00000	C. Shakes	50000	CO. COLUMN CO.	d	1			1	1		0	0.0	0.0	0.0
Andropogon halfii	sand bhestem	1	ŀ	ľ	t	t	t	t	T	Ì	t	1		1			CONT.	STATISTICS OF	Recognition of the		SANGE SCHOOL
Aristida purpurea	pumble threesawn	4	t	0		0 -	8	_	0	4	3	6	2	=	00		00	z z	12.5	33.2	39.8
Boutelous curtipendula	sideoats erama	6	_	,	_				0-									1	0.1	0.4	0.4
Boutelous gracifis	blue grama		r	4							c							2 2	0.3	0.7	0.8
Calamovilfa longifolia	prairie sandreed	la .	L m	_				2 6		0.0									0.1	0.4	0.4
Panicum virgatum	switchgrass			-											д,	-	d		2.3	0.9	7.2
Schizachyrium scoparium	little bluestem	_		4	_				000	_		_		d.				0	0.0	0.0	0.0
Sporobolus airoides	alkali sacaton	_								_		_							6.0	2.5	3.0
Sporobolus cryptandrus	sand dropseed	00	1 p	40		100	-	4	5	8	2 2		-	- 6	,		_		0.1	0.4	0.4
Subtotal		00	1 7	13	13	t	-		ľ	t	,	t	Ť	T.	Ť	Ť	t	П	67	22.3	26.7
Total Grass Cover			1 7	0 17	0	0	-	0	0	0	, ,	0	0					- 11	24.3	65.7	78.8
Forbs: Annual & Biennial Native	Native		100	-	-			,	,	•	,	•		0 6	0 67	15 0 1	15 0 2	241 245	32.1	9.98	83.9
Amaranthus retroflexus	redroot amaranth	-	٩	-	H	f	t	,	1	f	t	T	t		1	1		8			Rough Spanished
Ambrosia artemisiifolia	annual ragweed	_			-	4			_	_	Δ,		2	-	4	_			2.7	7.4	6.8
Argemone polyanthemos	crested pricklypoppy			-	_														0.1	0.4	0.4
Chamaesyce glyptosperma	ribseed sandmat	_	_	-	_												a,		0.3	0.7	8.0
Chenopodium leptophyllum	narrowleaf goosefoot	Д	_	. 0										_	d,				0.0	0.0	0.0
Conyza canadensis	Canadian horseweed	2	-		_	-		-		-				93					0.0	0.0	0.0
Croton texensis	Texas croton		_		_	_	4 6			2.	-	Δ,		n.	Д.				0.5	1.4	1.7
Erigeron bellidiastrum	western daisy fleabane		_	_			_	_								e,			0.0	0.0	0.0
Helianthus annuus	common sunflower	_					6	_							<u>C.</u>	_			0.0	0.0	0.0
Subtotal		6	-	-	"	1	2 6	t	Ť	-	+	Ť	†	1	1	1	+		0.4	1.1	1.3
Forbs: Annual & Biennial Introduced	Introduced	0.000	100	1000	Section Control	4	100		4	-	d	2	1	5		9		30 31	4.0	11.0	13.1
Amaranthus bitoides	mat amaranth	L	L	-	1	+	1	ľ	t	1	1000	000000			1			1		MCM Color	State of the state of
Lactuca serriola	prickly lettuce	_	_	-	5			D, 5				20							0.0	0.0	0.0
Meliotus officinalis	sweetclover	_	_	_	4 6					_	-	Д							0.1	0.4	0.4
Salsola tragus	prickly Russian thistle				. a					_	2 6	6		5	1	-		0 0	0.0	0.0	0.0
Subtatal					-		-							4					4.0		-

43

	-	2	т	4	8	9	7	00	6	10	=	12	13	4	15	Total Hits	Average	Average	Non-Noxious Relative
Scientific Name Common Name	Ist 2n	Ist 2nd 1st 2nd 1st	nd 1st 2nd	d lst 2nd	1st 2nd	1st 2nd	1st 2nd	1st 2nd	1st 2nd	1g 2nd	1st 2nd	lst 2nd	lst 2nd	P	P	Is All	Cover (%)	Cover (%)	Cover (%)
Forbs: Perennial Native	Administration or select	10000	A GREEN	STATE OF THE PARTY	100000	Section 8	Manage	Str. and	C. Attent	ON COLUMN	Service of the last	Contract of	100	3		13	(2)	(0/) 13100	Core (/0)
Ambrosia psilostachya Cuman ragweed	d	L	-	L	L						I	T	T	I	T	-		1	,,
Subtotal	Д		-									T	1	1		-	0.0	9.0	4.0
Total Forb Cover	3 0	-	3 0	3 0	0 0	2 0	2 0	0 0		2 0	2 0	2 0	4		0	LIS.	0.1	4,0	0.4
Subshrubs/Shrubs/Succulents: Perennial Native	STATE STREET,	100000			В	10	10	п	H	,		,	-	1	,	30 00	4.1	17.7	15.3
Artemisia filifotia sand sagebrush	D	L	L						I	T	1	T	1	1	T				
Opuntia phaeacantha tulip pricklypear				6		,											0.0	0.0	0.0
		1	-			-	4	-		1		1			<u>a</u>	0 2	0.0	0.7	8.0
0 1 5 1	1			d		d	G.	D I		Б	D		p 1	d		0 2	0.0	0.7	0.8
Total Surub Cover	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 0	1	0 0	0 0	0 2	0.0	0.7	8.0
Rock																0	00		
Litter	25	53	18	21	22	26	22	18	23	24 2	28		18	22	24		45.6		
Bare Ground	80	13	12	12	2	10	=	=======================================	1			1 9					17.6		
Total Hits	50 1	50 1 50 1 50	90 0	50 0	50 1	50 0	50 0	50 1	2	0	0	c	E	0	6	1.	1000		
Total Vegetation Cover	34 2	2 16 2	2 40 0	0 34 0	52 2		0	2	4	0	0	0	- 62				36.8	1000	1000
Non-Noxious Vegetation Cover	24 2	2 16 2	2 38 0	0 34 0	14 2	28 0	26 0	42 2	30 4	36 0 2	24 0 3	36 0 4	24	0			30.5		0.001
Total Ground Cover	84	74	92	92	96	80	78	78	98	84	82	80	-	,	10		82.4		
Allowable Vegetation Cover	20.9	12.9	34.0	30.0	10.0	24.0	0 00	The second	and the same of	ł				t	ı			-	

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è	Ñ	
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Scientific Name	Common Name	_ =	lst 2nd lst	2nd In	2nd le	4 puc	5	9 7	. 3		6 7		= 2	27	13	4	15	100	Average	Average Relative	Non-Noxious Relative
Grass: Annual Native	The discount of the second of the	100	100		1	7100	1			1	1,000	ISI DU7	zug I it	Zud 1st	Znd 1st	Zug	lit 2nd	ist All	Cover (%)	Cover (%)	Cover (%)
Munroa squarrosa	false buffalograss	-	0.	a,	\vdash	-	Δ.	6.	-	-	100	100	ŀ	f	l'	t	Ī,	1	0.3	0.7	200
Panicum capillare	witchgrass	4	-							α.					_			0 0	0.0	0.0	0.0
Subtotal		-	D.	Д		-	0	Ω	0	g	0	0	6	6	2	T			0.3	0.0	0.0
Grass: Annual Introduced	des accessors and accessors	(A) (S) (A)	Sec. 2015	100	25 A 10 A 1	100	100	250 9 622	H245 LIST		10 Sec.	CORE GREE	20000	300	2000	100	Special S	1	60	6.7	0.7
Bromus tectorum	cheatgrass	£	-	a	H	-	-	-	6	1	-	1	l'	ŀ	t	ľ	П	L			
Eragrostis cilianensis	stinkgrass		_						4	_		_	Δ,				- d.	2 0	0.3	1.0	
Subtotal		0		6	-	-	+	+	1	+	+	+	+	t	+	+	1		0.0	0.0	0.0
Grass: Perennial Desirable (Cool)	de (Cool)		China See	1	See See	-	Seed Start	200	4	2000	Action and a	100	4	-		d.	-	2 3	0.3	1.0	0.0
Achnatherum hymenoides	Indian ricegrass	L	H	1	1	ŀ	1	+	+	1	1	+	+	1	+	1		1			
Subtotal		-	-	+	+	2 1	2 (+	+	+	+	+	+	+	+	6	1		0.0	0.0	0.0
Grass: Perennial Desirable (Warm)	le (Warm)		100	2000	100	1	1	0.000	State State	000				-	-	4		0 0	0.0	0.0	0.0
Andropogon hallii	sand blactem	1	ŀ	0	ŀ	+	1	1	1	1	1	+			1	1				that and interfer	
Boutelons curtinendula	cideonte orrano	1	n -	0	n		-	^	7	4	10	90	2	13	1 2	23		02 69	9.2	23.8	24.1
Boutelons oracile	blue means	_					_	_	_	m	-	-	Ω,	2	_				1.2	3.1	3.1
Calamovilla Ionarifolia	mention conduced	- 4	- 0	- \	0.	- '	Д	ρ, ;		a,	Ω,	<u>a</u>	d,		-				0.7	1.7	1.7
Panicum viroshum	pour le salament	0	7	0	•	0	m	=	10	7	00	=	6	10	13		-	115 116	15.3	39.5	39.9
Schizacharium sconorium	Swincinguess Sells bluestern		_		_					_	n,	_	Д	-	_	_			0.4	1.0	1.0
Sorehastrum nutans	Indianasco		_	D			_	-		Q.		_	_	-				-	0.1	0.3	0.3
Sporobolis crontandrie	cond demond				_	(_	Q.		D.			_						0.0	0.0	0.0
Subtotal	nasedom nume	0 2	+	- 8	4 5	× :	- :	۵.	m :	2	m :	4	1	1	7	7	7		7.3	20.4	20.6
Total Grass Cover		100	1 15	0 33	1 13	0		01	01	+	77	-		1	-		2	- 1	34.3	868	90.7
Forbs: Annual & Biennial Native	Native			-	1	-		0	0	0	77 0	67 0	0 17	0 30	1 17	0 19	4	261 269	34.8	91.5	91.4
Amaranthus retroflexus	reduced sensengly	ŀ	1	,	1	+	1	+	+	1	1	1	-			1			2.20.0.20.00.0.4	Ped months	
Chamaestee eluntoenerma	ribosod conduct	4 -	Ь	7	-	d,	n	C.	d	m	D.	_	-	D.	ď	_		91 91	2.1	5.4	5.5
Chenonodium desireatum	and an annual and an annual and	-	3	Д			_			_	_	D,	_	-					0.4	1.0	1.0
Chenopodium betselville	arkiland gooseloot	_	c.	_			_		p,	-	_		_		£,				0.0	0.0	0.0
Care a construction of the	narrowiear gooseroot	-		_	-	_	_			_		_	_	C.	_	D.			0.0	0.0	0.0
nyza canadensis	Canadian horseweed	c.	_		g,	Д	_	-	P.	d	_	_	0		_	_			0.0	0.3	0 3
Helianthus annuus	common sunflower		_	_	d,	_	-		G			_		_	6	-			0.0	0.3	000
Polygonum ramosissimum	bushy knotweed									_	_	_	-			_				000	0.0
Subtotal		е	0	2	-	6	9	6	6	A	-	-	-	-	1	-	1	I.	0.0	0.0	0.0
Forbs: Annual & Biennial Introduced	Introduced		200	200	100	1	Steel Dear	State Contract			18			-	4	-	10000	17 07	7.7	7.1	7.2
Amaranthus bitoides	mat amaranth	٥	L	L	H	H	1	1	1	1	H	1	+	-	+	-	,	ı		STORY STORY	
Lactuca serriola	prickly lettuce		_	_		1	_	_				O.		_	_	_			0.0	0.0	0.0
Salsola tragus	prickly Russian thistle	r	£		£	2, 6		-	-	_		_	Ω, .	_		_		0 0	0.0	0.0	0.0
Subtotal			1	1	1	1	1	1	- -	+	+	+	+	+	+	+	-	1	0.4	1.0	1.0
Forbs: Perennial Native		1	1	4	4	4	4	d	-	The second	2000	۵	-	-	-	-	-	3 3	0.4	1.0	1.0
Physalis hispida	prairie groundcherry	L	1	,	1	1	-	+	-	1	-	1	+	+	1	1					
Subtotal		L	-		1	1	+	+	+	4	4	+	0.	+	+	-	1		0.1	0.3	0.3
Total Forb Cover				4		1	1			2	0	_	0	_	_	-		-	0.1	0.3	0.3

		_	2		4		,	0	0	5	-	2	:	:			ı		Non-Noxious
Scientific Name Common Name	18	2 2nd 1st	1st 2nd 1st 2nd 1st 2nd	=	2nd 1st	2nd 1st	2nd le	pd ls	pd ld	2nd le 2nd	- 3	31 12	51 70	47	- 2	lotal		Relative	Relative
Subshrubs/Shrubs/Succulents: Perennial Native	Manager and	1000	The state	Sept.	9	100								1		IIV XII	Cover (%)	Cover (%)	Cover (%)
Artemisia filifolia sand sagebrush		-	а	H	\vdash	-		H	L	L	L	L	L		L	0	00	0.0	00
cantha			_	C.	D.	D.	£.	_	a.		- 75	D,				0 0	0.0	0.0	0.0
Tucca glauca soapweed yucca	1	+	+	+	+	+	+						а			0 0	0.0	0.0	0.0
Subfotal		-	0.	0	Д	р	Д		0.			n	0			0 0	00	00	00
Total Shrub Cover	0	0 0 0	0 0 0	0 0	0 0	0 0	0 0	0 0	0 0 0	0 0 0	0 0	0 0 0	0 0	0 0	0 0		0.0	0.0	0.0
Rock				_			-			L						0 0	0.0		
Litter	27	7 23	3 21	23	30	16	27	16	28	18	13	23	15	22	20	3	42.9	177	
Bare Ground	3	12	2	14	9	17	7	11	7	10	12	13	4	==	90		16.1		
Total Hits	90	0 1 50	50 1 50 0 50	1 50	0 50	1 50	0 50	0 50	0 50 1	1 50 0	50 0	0 80 0	50 1	50 0	50 4	1.	100.0		
Total Vegetation Cover	40	40 2 30	0 48 2	2 26	0 34	2 34	0 32	0 34	0 30 2	44 0	50 0	28 0					38.0	100.0	100.0
Non-Noxious Vegetation Cover	40	2 30	40 2 30 0 48	2 26	0 32	2 34	0 32	0 34 (0 30 2	44 0	50 0	28 0	60 2	34 0	44 6		37.7		
Total Ground Cover		94	92	7 06	72 9.	94 6	98 99	99 9	98	80	92	74	92	78	84		80.9		
Allowable Vegetation Cover		40.0	30.0 48	48.0 26.0	.0 32.0	34.0	0.0 32.0	0 34.0	30.0	44.0	50.0	28.0	0.09	34.0	44.0		37.7		

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Scientific Name	Common Name	1st 2nd	1 Ist 2nd	1st 2nd	1st 2nd	1st 2nd	1st 2nd	1st 2nd	1st 2nd	1st 2nd	1st 2nd	1st All	Cover (%)	Cover (%)	Relative
Grass: Annual Native		September 1	2000000	\$5-45 A		\$45.528A	Sections	48.52.54B	100000	Section (Sept.	100	18	(61)	(6/) (3/)	Melanite
Munroa squarrosa	false buffalograss	L	۵	a	a	0	0			Ī	,	0	00	00	00
Panicum capillare	witchgrass	Д	-	_							_		0.0	0.0	0.0
Subtotal		0	-	c	-								2.0	0.4	0.4
Grass: Annual Introduced	pa			The state of	1715		Section	(Contract)		72,075,022	1	-	7.0	0.4	0.4
Bromus tectorum	cheatgrass	a	0	٥		000	-	-	,	,	1	1:	22		
Subtotal						0			,			1	7.7	4.7	
Grass: Perennial Desirable (Cool)	able (Cool)		2000		Scott Section	0		-	d	4			2.2	4.7	0.0
Agropyron cristatum	crested wheaterass	L					1		0000000					Taken Salar Salar	
Bromus inermis	smooth heams						Д,						0.0	0.0	0.0
Elymnis lanceolatus	this benda usbantones						a,						0.0	0.0	0.0
Pseudoroemeria snicata	hhebmch wheatgrass				d,	Ь		Д				0 0	0.0	0.0	0.0
Subtotal	CONTRACT ALICANO	-					T	Ī	1	3			9.0	1.3	1.3
Grass: Perennial Desirable (Worm)	thle (Worm)	200000000000000000000000000000000000000			d	4	а	Д	1	3	1	3 3	9.0	1.3	1.3
adeconomic balli	, mm)	1							Section 2		The section of	Edith Class	Recolusio (selected	Service Services	\$100 MARKETS
Antalogogon nami	sand bluestern	4			2	Γ		4		d	Ь	7 7	1.4	3.0	3.1
Podiciona cumpendual	sideoats grama	_	G,	3	Ь	8		g,				-	0.2	0.4	0.4
Bourelous gracilis	blue grama		4	2	р	_	Д	_	3	<u>d</u>	5	16 16	3.2	8.9	7.2
Calamovilfa longifolia	prairie sandreed	7	16	16	-	13	17 1	15	13	13 1	17	123 125	24.6	53.4	56.1
Pamcum virgatum	switchgrass	_	d,	_	д	_		2	Б				1.2	2.6	2.7
Schizachyrum scoparum	little bluestem		d,	۵							Д		0.0	0.0	0.0
Sporobolus cryptandrus	sand dropseed				_	1	Б		0.	Д		3	9.0	1.3	1.3
Subtotal		4	20	19	5	91	18 1	22		-	23	[31.2	513	2W 0
Total Grass Cover		4 0	21 0	0 61	0	24 0	1 61	0	0	-	0	122	347	73.0	73.6
Forbs: Annual & Biennial Native	al Native	20 CO CO	SCHOOL SECTION	Sec. and	2000	2000000	1000000		T					13.7	0.77
Amaranthus retroflexus	redroot amaranth	=	0		2		,,	t	4	,	T,			100	
Chenopodium desiccatum	aridland goosefoot	Q		4		_	,			4	_	00 00	7.7	15.4	10.1
Helianthus annuus	common sunflower		6		,								0.0	0.0	0.0
Solanum triflorum	cutleaf nightshade	0	1		_		1	_		d,	<u> </u>	- 0	0.5	0.4	0.4
Subtotal		12	0	6	15	ļ.		t	-	,	T,	ľ	0.0	0.0	0.0
Forbs: Annual & Biennial Introduced	al Introduced		a Campa			September 1	100		0.0	1000	4		4.4	15.8	16.6
Dysphania botrys	Jerusalem oak goosefoot	-			T	t	T	t	t	T	T	,	0.0	00	00
Melilotus officinalis	sweetclover									1 0			00	0.0	6.0
Salsola collina	slender Russian thistle	Д											0.0		1.0
Salsola tragus	prickly Russian thistle	S			1		2		_	10 1	-	19 20	0 00	000	0.0
Subtotal		6 1			_		2		-	0	T		40	0.0	0.0
Total Forb Cover		18 1	0 0	0 0	16 0	2 0	0	0 0	4 0 1	1 .		67 69	4.0	30.0	10.3

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Scientific Name Con	Common Name	lat 2nd	1st 2nd	1st 2nd	1	3	0 200	1	0	,	- :	lotal		Relative	Noxious
Subshrubs/Shrubs/Succulents: Perennial Native	erennial Native	Postania (=	puz gi	IN AII	Cover (%)	Cover (%)	Relative
Artemisia filifolia	cand canabrach				I			I							
	in an early and an early an early and an early an early and an early an early and a	4			-							0 1	0.0	0.4	0.4
Subrotal		а			p 1							0 1	0.0	0.4	0.4
Total Shriib Cover		0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0.0	0.4	0.4
Rock												0	00		
Litter		14	15	25	22	12	19	4	25	5	17	_	11.6		
Bare Ground		14	14	9	7	12	-	13		12	. 0		0.00		
Cotal Hits		9	1		П	1	1	1		- 1	- 1	- 1	20.8		
Patent Management - Co.		- 0	- 1	20 0	200	000	8	90	20 0	50 3	0 09	200 506	100.0		
oth vegetation Cover		44 2	42 0	38 0	42 2	52 0	48 2	46 0	40 0	9 99	48 0		45.6	100.0	100.0
Non-Noxious Vegetation Cover		44 2	42 0	38 0	42 2	36 0	46 2	44 0	40 0	9 99	46 0		43.4		
Fotal Ground Cover		7.2	72	88	98	92	98	74	06	99	82		79.2		
Allowable Vegetation Cover		36.7	34.7	30.7	34.7	28.7	38.7	36.7	32.7	48.7	38.7		191		

Scientific Name	Common Name	- Ist	2 1st 2nd	3 Ist 2nd	4 lst 2nd	5 lst 2nd	6 1st 2nd	7 1st 2nd	8 2nd 2nd	9 2md	10 10	Total Hits	Absolute	Average Relative	Non-Noxious Relative
Grass: Annual Native		Season's		2000	200000	1201-1204	2700000	-35	1328	100	100	1 g	(0/) 13100	Cover (78)	COVET (76)
Munroa squarrosa	false buffalograss	L	L	L						_	Γ		0.0	0.0	0.0
Vupta octoriora	stxweeks fescue	1								Ь	р 1	0 1	0.0	0.3	0.5
Subtotal										d.	D 1	0 1	0.0	0.3	
Grass: Annual Introduced	D.			Service Co.		10000	September 1	STATES A	\$50.545G	B100000	district of			The Address of	Acres (Special Control
Bromus tectorum	cheatgrass	Д	4 1	18	9	13 1	9	2	8 2	0	- 8	07 59	13.0	24.1	
Subtotal		0	4	18	9	13	9	2	1			06 39	12.0	24.1	00
Grass: Perennial Desirable (Cool)	ble (Cool)	STORY OF	Section 1	Section 2	1000000	Sec. Name		4	13	S. Constant	0	18	13.0	24.1	0.0
Achnatherum hymenoides	Indian ricegrass	٩	L	L		Ī	Ī	Ī	T	,	I	1	00	00	00
Agropyron cristatum	crested wheatgrass			-						<u>,</u>			0.0	0.0	0.0
Bromus inermis	smooth brome			1,	. r				4				0.0	0.0	0.0
Elymus lanceolatus	thickspace wheaterass	(*)		£	_							0 0	0.0	0.0	0.0
Pseudoroegneria spicata	bluebunch wheaterass			1					_				0.0	1.0	1.4
Subtotal	0	,				T	1	T		1	Ī		0.2	0.3	0.5
Grass: Perennial Desirable (Warm)	ole (Warm)	9	000000000000000000000000000000000000000	d	d	2000000	1			d		4	0.8	1.4	1.8
Andronoma halls	and bluestern				Ī	Ī	1	1	1	1		1			
Routelous custinendule	same onesical	Ь						Д		d			0.0	0.0	0.0
Boutelous cumpendus	skieogis grama							_		Д		-	0.2	0.3	0.5
Columnial gracins	one grama		m :	D.	_	2	-	Д		9	4		4.0	8.2	10.9
marriovina ioriginona	prame sandreed	×0	13	00	1 1	16 2	13 1	10	8 1	-	21 2	129 137	25.8	47.1	62.0
Cahimahainan	SWIChgrass		2			Б	2			2	3		1.8	3,8	5.0
Schizachyrum scoparum	ittle bluestem							ь					0.2	0.3	0.5
Sorgnastrum nutans	Indiangrass		Д	Д	e.		_	6	-		2	2 2	0.4	0.7	6.0
Subtotal	sand dropseed		- 1	2	1	1	-	7	d		Д	_ 1	1.0	2.1	2.7
Total Grass Cover		2 11	7 17	01	12 1	- 13	-	•		4	2	- 10	33.4	62.5	82.4
Forbs: Annual & Biennial Native	I Native	18	8	2 3	1	0	1	0 61	11 3 3	30 4 3	38 4	730 731	47.2	88.3	84.6
Amaranthus retroflexus	redroot amaranth				6		t	ľ		I	T	1	2.0	.,	
Ambrosia artemisiifolia	annual ragweed									,			00	f	e o
Chenopodium desiccatum	aridland goosefoot	-						_	-	<u>.</u>			0.0	0.0	0.0
Chenopodium leptophyilum	narrowleaf goosefoot						-						0.0	0.0	0.0
Cleome serrulata	Rocky Mountain beeplant			0	-								0.0	0.0	0.0
Helianthus annuus	common sunflower	-	Q				-	_		_			0.0	0.0	0.0
Polygonum ramosissimum	bushy knotweed	7 2					_		1 -			01 8	1.6	3.5	0.0
Subtotal		8 2	D	Q		0	9	-	01			I.	4.3	20	701
Forbs: Annual & Biennial Introduced	Introduced		Sections.	The state of		20,000	0.000000	28 00 200	See S	The season	Section 2	9	4.5	1.3	10.4
Alyssum sp.	madwort		Ь				r				T	1	0.0	0.0	0.0
Salsola tragus	prickly Russian thistle	3			4	0		4	_	_				0 0	
Line A. I		-											7.7	3.8	3.0

Scientific Name	Common Name	la 2nd	2 24 244		4 7	. 1	1				-	Total		Average Relative	Non-Noxious Relative
Forbs: Perennial Native			1	:		100	997 151	Ist Znd	=	2nd ist 2nd	lst 2nd	Ist All	Cover (%)	Cover (%)	Cover (%)
Ratibida columnifera	maringly merining comments													Contract Con	
Subtotal	Springer Marks Constitution						a					0	0.0	0.0	0.0
President Comments							Д					0 0	0.0	0.0	00
Total Ford Cover		11 2	0 0	0 0	7 0	0 0	0 0	0 0	14 0	0 0	0 0	32 34	6.4	117	15.4
Kock												0	00		
Litter		7	23	14	15	=	23	36	۰	10	9				
Bare Ground		21	,		1 2	: 0		9:	0 :		21				
Potal Wite			- 1	-	2	0	7	=	=	-	7	26 76	15.2		
otal mis		20 2	50 3	80 0	50 1	50 3	50 3	50 0	50 3	50 4	50 4	500 523	100.0		
I otal Vegetation Cover		44 4	9 09	98 0	50 2	62 6	9 05	26 0	62 6	8 09	76 8		L	1000	1000
Non-Noxious Vegetation Cover	over	44 4	42 4	20 0	38 2	36 4	38 6	0					40.6	100.0	100.0
Fotal Ground Cover		88	96	84	80	84	9	_	1 00	1 8	119		0.00		
Allowable Vegetation Cover	-	41.7	107	144	15.7	23.44	2 44	20.00					04.0		
			37.1	1111	35.1	33.1	35.7	19.7	43.7	57.7	57.7	The same of the same of	38.3		

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Reclamation Area 34 Vegetation Cover Data

Scientific Name	Common Name	1s 2nd	d lat 2nd	la 2nd	la 2nd	la 2nd	200		0 1	,	0 !						_	_	
Grass: Annual Native	Edypter Control of the Control of th		3	3		100				7007		18 280	18 Zud	lat 2nd	Lat 2nd	lst 2nd	lik 2nd	lat 2nd	1st 2nd
Cenchrus longispirus	mat sandbur	L	L					T	I	T		T		1					
Munros squarrosa	false buffalograss		G.	-			а		0.	0.			64	~ 4	0	_			
Grass: Annual Introduced			d	-			Д		4	0			2	4		-			
1									200000	1000	Sec. 9.55	\$100 PEST 200	134312FC	Brighter	B-120167-0	Same and		SCALL PARTY	Section 2
ectorum cikanensis	cheatgrass	۵.				2				ь	Д	4 4		a.					
Subtotal		0				2			1	Ť	1		T		T				
Grass: Perennial Desirable (Cool)	Cool)	A11.348.00	860.80	St. Steel	20000	of Capital	Service S	0.000	Contract of				1	4				0	
oides	Indian ricegrass		L	-	۵				1.	1.	1	-	1-	-	1				
tham	crested wheatgrass	c.	0												4	4	Д,		۵.
	smooth brome	e.	a.				<u>a</u>		_										
2	Schweinitz's flatsedge				G.				2				0						
	squirreltail		d.				6	6			0				-	h			
	needle and thread	Д																	
	western wheatgrass																		
Pseudoroegneria spicata	bluebunch wheatgrass								,										
	intermediate wheatgrass																		
Subtotal				-		T	1	t	t	ш	1	1	1	1	1	Ī	1		
Grass: Perennial Desirable (Warm)	Warmil			-		1	d	4		-				_	_	2	р	-	Д
A STATE OF THE PARTY OF THE PAR	mann)					Sec. (1) (1) (1)	Servician Services	Security S	SANTA N	925 Turk	CONTRACTOR OF THE PERSON OF TH	N. 9 206	Separate Separate	S. S	Sec. of	56.05033	10 per 10	S-55000	SPSicold.
	sand bluestern	m							0								Ī	,	l
	purple threeawn																	ų	
dub	sideosts grama	_																	
	blue grama	-	2	0											а.		۵.		
Calamovilla longifolia	prairie sandreed	20		. 7				_										۵.	
Distichlis spicata	salgrass	6			,					<u></u>				<u>_</u>		2		2	7
Panicum virgatum	pwitchgrass																		
parium	little bluestem	_						_											
	Indianorases								_		d,								
300	cand dronound	۰,	·	,		,													
	panala mana	30			1	7	Ť	-	1	1	1	7	1			_	∞	16	_
Total Grass Cover		0 00		0 0	-	2		Ī			1	1	- 1	-	1	6 2	00	20	- 00
Forbs: Annual & Biennial Native	live	11:3	1	н		6 61	0 7	0 0 71	6 0	-	0 9	12 1	8 0	0 9	0 6	9 2	0 8	21 0	8 1
A management of the contract of		1		1		1					C CASA		4-12-112) II	S24/450	Sept. 25	Services:	State State	Stantie	School Services
	regroot amaranta	d.		6.	d.				_					Д		0		Г	a
,	amma ragweed				ь			G.	_	1	_ d	d		а				0.	
8	ressen prendykapyy				Д				D.			_	d	Д	_	Б	0.		
	Toseed sandmit								_		_	- d							
	andland goosefoot												0						
populytum	narrow eaf goosefoot	<u> </u>								_									
	Texas croton		۵.		6							-							
	common sunflower	Д	2	g.	0.	90	-	2	m	_				_			9		
	common pepperweed							_			_						,		2
	Bigelow's tansyaster						_				- 1	2, 6							
simum	bushy knotweed							_			_	_							
Verbena bracteata bi	bigbract verbens							_				_							
														,					

October 2021

Habitat Management, Inc.

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Reclamation Area 34 Vegetation Cover Data (continued)

Scientific Name		- 3	4	г.	4		-		-					13	4	8	91	-		19
E Biennial Introdu	The second second			1	6	8	91 907	100 Miles	18 780	987 81	IN IN	in 2nd	18 280	10 200	In Jac	a 2nd	1st 2nd	1st 2sd	lat 25st	la Jud
		0.		а			_													
Jerusa prickly sweet	ulem cak geosefoot y lettuce clover		d. d.	а.	p,	0.	4	-	-	14	e,	0.0	_	_	<u>a</u>	g.	_			_
Pobygomm aviculare prostrate knotweed Salsola collesa skender Russian thirds Salsola tragus perkky Russian thirds Transmoored admiss vellow salsife	경의	0. 0	a.	9	4	m	- 4	0.	9	9	-		7	24	6.	18 2	_			- 5
Native					4	-	1 2	-	=		-	15	8	3	0.	18 2	2	2		9
ı		T		L		1	1	1	1	1		I	I	1	1	t	1	1	1	I
um Im Banus 1 pirmatifida	ming-glory ar	α,	0.								0.	۵					_	в.		6.6
Mirabilis hispida hairy four o'clock Physalis hispida prairie groundcher	our o'clock groundcherry									let year							0.0			
ifforum													-233					_		۵.
Rumex venosus very dock	d conciower b						-											а,		
falcatum	aster p																			
	e.		0.		L	-	-				0		T	T		1	-		+	1
Forbs: Perennial Introduced	Charles of Contract of	200	2000	ASSESSED	Control of	100	THE STATE	B 000000	Sec. 19	2000	10000	Section Section	Same of the same o	The same	No. of Control	SAME.	State of the	7000	20.00	
Taraxacum officinale common dandelon	debon	П					a								1	t	T	I	t	Γ
Subtotal							0.									-	t	-		Γ
Total Forb Cover	0	0	2 0	0 9	4 0	12	2 3 0	0 4 0	12 0	12 0	2 0	17 1	0 9	5 0	2 0 1	18 2 9	0 6	2 0 1	8 0	7 1
Subshrubs/Shrubs/Socculents: Perennial Native	Native	NAME OF	Section 2	0.0000	25.80	1	Second Second	STORY B	STATE OF	A100000	-	450000	(perfection)	2000	Sec. of	O SHOW	Total Park	A distant	10000	Salar B
Artemisis filiolis sand sagebrush Cylindroguntia whipplei Whipple cholis Opuntia phaesaeantha tulip pricklypear Yucca glauca soapweed yucca	sh sar sar cea						g,					0. 0						-		
	В	П					d					0.			-	1	-			
Total Shrub Cover	O DESCRIPTION OF THE OWNER, OR SHOULD BE ADDRESS.	0	0 0	0 0	0 0	0	0 0 0	0 0	0 0	0 0	0	0 0	0 0	0 0	0 0	0 0	0 0	0 0 0	0	0 0
Rock Litter Bare Ground	19		25 25	27 25	92	22 %	2.2	00 25	6 %	= =	<u>\$</u> £	4 '	0 %	- 0 %						
Total Hits	80	0	0 05	20 0	50	1	5 50 0	-	+	- 8	20 0	50 2	0	0	0	4	0	0	-	2
Total Vegetation Cover	88	0	22 0	28 0	16 2	54	10 10 0			42 2	1	7	0	0	0	00		0	~	4
Non-Noxious Vegetation Cover	288	0	22 0	28 0	16 2	80	10 10 0	32 0	34 0	42 2	16 0	50 2	28 0 2	22 0 2	22 0 5	54 8 3	34 0 4	46 0 32	2 2 24	4
Total Ground Cover		96	80	52	36	-	_	-	_	64	54	98	48	Н	80	0.9	44	88	38	38
Allowable Vegetation Cover		45.9	6'6	15.9	3.9	37.9	0.0	6'61	21.9	562	3.9	37.9	15.9	6.6	6.6	41.9	21.9	33.9	6.61	11.9

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Scientific Name	Common Name	19 1s 2sd	20 1st 2sd	21 1st 2nd	22 1st 2nd	23 14 2nd	24	25 24	26	27	28	29	8 3	Total Hits	Absolute	Average	Non-Noxious Relative
Grass: Annual Native		Second S	Section .		1			1			3				Cover (78)	Cover (78)	Cover (76)
Cenchrus longispinus	mat sandbur	L	L											П	00	00	00
Munroa squarrosa	false buffalograss	a			Д	Д		0.	0.	_	0.	G		6	900	1.7	000
Subtotal	- 1	а			р	Д		0	2	-					9.0	1.7	8
Grass: Annual Introduced	And the second second second second	0.000	570000	100000		Constant.	1000	P. I. S. S.	2000	100000	1000000	Section 2	100000	18		The second second	0
Bromus tectorum	cheatgrass		G.				g.	a					4	10	0.7	2.1	
Eragrostis cilianensis	stinkgrass													0	0.0	0.0	00
Subtotal			6				d	a					4	1	0.7	2.1	00
Grass: Perennial Desirable (Cool)	e (Cool)	A Service Se	200	200	de saint	300,000	800017588	800000	Section 2	200000	S. C. College	Contract of	-	1		-	000
Achnatherum hymenoides	Indian ricegrass	۵	L			ū	-			2		٥		10 12	0.7	2.5	11
Agropyron cristatum	crested wheatgrass					. 0									00	00	00
Bromus mermis	smooth brome		-	£.		. 7									0.2	9.0	96
Cyperus schweinizzii	Schweiniz's flatsodge	_								0.		0.	G.		0.2	9'0	0.6
Elymus elymoides	squirreltail		d.		а				-				. 6	2 2	0.1	0.4	0.4
Hesperostipa comata	needle and thread		S											0 0	0.0	0.0	0.0
Pascopyrum smithii	western wheatgrass			m											0.2	9.0	9'0
Pseudoroegneria spicata	bluebanch wheatgrass														0.0	0.0	0.0
Thinopyrum intermedium	intermediate wheatgrass			0											0.0	0.0	0.0
Subtotal		_	-	3	G.	G.			-	2 1		0	9	21 23	1.4	44	4.5
Grass: Perennial Desirable (Warm)	: (Warm)	Service and	2000	20000000	The same	200000	Sharry	2009,000	S. Cheese	Mary Par	Sales and the			18	Street Section	OF THE PERSON NAMED IN	
Andropogon halfii	sand bluestem	L	4	2								,		=	0.7	3.1	;
Aristida purpurea	purple threeawn											4			00	100	100
Boutelous curtipendals	skleouts grama			р		_									0 0	0.0	0.0
Boutelous gracilis	blue grama			_		e.				0.		G			0.3	0.8	0.8
Calamovilfa longifolia	prairie sandreed		4	10	_								2		3.9	611	12.1
Distichlis spicata	sulgrass													0 0	0.0	0.0	0.0
Panicum virgatum	switchgrass		c.	1		d								0 0	0.0	0.0	0.0
Schizachyrium scoparium	little bluestern					G,				d.		£.			0.2	0.8	0.8
Sorghastrum nutans	Indiangrass		9								1			3 3	0.2	9.0	9.0
sporobolus cryptandrus	sand dropseed	+	9	_	9		2	2 2	-	4	4	7 1	10	150 161	10.0	30.8	31.4
Subtotal		4	- 1	15 1	7		2		-	s	4	8	12		15.5	47.2	48.2
Total Grass Cover		5 1	12 0	18 1	7 0	7 2	3 0	2 2	2 0	8 1	4 1	8 1	16 0	272 290	18.1	55.4	54.5
Forbs: Annual & Biennial Native	Native	Special production	95500	Service A	909-909	P.C. (1997)	Section 1	10000	\$00.00 P	6000000	SCHOOL ST	V-HOLES	20000000	SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS	STATE STATE OF	Single property and an	SECURITY SECTION
Amaranthus retroflexus	redroot amaranth	р	ь		р	ф	d	_	0	0	a	d		3 3	0.2	9.0	9'0
Ambrosia artemisiifolia	annual ragweed		d.		2		_	Д	D.	d.	3	-		2 2	0.1	0.4	0.4
Argemone polyanthemos	crested pricklypoppy	g,	c.		ь	d,		a.	_						0.1	0.2	0.2
Chamaesyce glyptosperma	ribseed sandmat							8						0 1	0.0	0.2	0.2
Chenopodium desiccatum	aridland goosefoot			-11										0 0	0.0	0.0	0.0
Chenopodium leptophyllum	narrowleaf goosefoot			a.						d				0 0	0.0	0.0	0.0
Croton texensis	Texas croton	_			£.		۵	۵.	d	d			_	7 7	0.5	1.3	1.4
Helanthus annuus	common sunflower	д	д	_	3	3		6	9	_	2	р	2	\$5 \$5	3.7	10.5	10.7
Lepidum densiflorum	common pepperweed													0 0	0.0	0.0	0.0
Machaeranthera bigelovii	Bigelow's tansyaster									G,				0 0	0.0	0.0	0.0
Polygonum ramosissimum	bushy knotweed													-	0.1	0.2	0.2
Verberra bracteata	bigbract verbena				a	1								0 0	0.0	0.0	0.0
Suprotati		-	0	_	m						,						

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Forbs: Annual & Biennial Introduced	Common Name	19 and all	20 18 2nd	21	21 2	2 2	2 2	n	28	2	28	50	8	=	Absolute	Average Relative	Non-Noxious Relative
	Introduced		1111		8	100	1	13			11.00	780	200	18	Cover (%)	Cover (%)	Cover (%)
Bassia scoparia	burningbush	L	L			4	T	T	T	T		I		0	00	00	00
Cardaus nutans	nodding plumeless thistle														0.0	00	0.0
Chenopodium album	lambsquarters														00	00	000
Dysphania botrys	Jerusalem oak goosefoor	-			6	6	9	_	-	_	_				1.3	9 6	0.5
Lactuca serriola	prickly lettuce						_					_			7 6	0 0	5.9
Mellotus officinalis	sweetclover														000	0.0	0.0
Polygonum aviculare	prostrate knotweed														0.0	0.0	0.0
Salsola collina	slender Russian thirtle		4												6	0.2	0.2
Salsola trages	periodely Bussian shints	,	٠						_			a.			0.0	0.0	0.0
Francount debine	suffers solvies	-	^			5	9	=	00	2	7	_		-	86 80 80 80 80 80 80 80 80 80 80 80 80 80	26.0	56.6
Cohestal	yearw sabity	1	d			1	1	1	1	1	1			- 1	0.0	0.0	0.0
Corber Banemint Marine		0	2		4	6	12	12	0	3			d	152 157	10.1	30.0	30.7
SATISFIED THE SAME										10000	1000	(A-1-4)	1883	Section 1	SELECTION OF STREET	ACTUAL CARLORS	Section Section
Ambrosia psilostachya	Cuman ragweed													0 0	0.0	0.0	0.0
Circum undulatum	wavyteaf thistle	g,						_	_					0 0	0.0	0.0	00
Evolvulus nuttallianus	shaggy dwarf morning-glory	n.												0 0	0.0	0.0	00
Machaeranthera pinnatifida	lacy tansyaster								_	_					0.1	0.2	0.5
Mentzelia nuda	bractless blazingstar									_				0	00	00	
Mirabilis hirsuta	hairy four o'clock						_	_							000	000	0 0
Physalis hispida	prairie groundcherry						_			_					0.0	0 0	0.0
Psoralidum tenuiflorum	simflower scuribea	0												0 0	0.0	000	0.0
Rathida columnifera	upright prairie coneflower		0	0	-	_	_			_					0.0	0 0	0.0
Rumex venosus	veiny dock						_									200	0.5
Symphyotrichum falcatum	white prairie aster							_				_				200	0.2
Tradescantia occidentalis	prairie spiderwort									_				9 0	0.0	0.0	0.0
Subtotal					,	1	f	ľ	1	+	†	f	1	1	0.0	0.0	000
Forbs: Perennial Introduced	P	Spins			-	1		4				2000	0.	2	0.2	9.0	0.6
Taraxacum officinals	common dendellon				T	1	1	t	1	1	1	1	1	1			
Subtotal	The second second				T	1	+	+	+	+	1	+	+	-1	0.0	0.0	0.0
Total Forb Cover		7 1	4 6		2 0	13 0	12 0 0	4	-	4			-		0.0	0.0	0.0
Subshrubs/Shrubs/Succulents:	sts: Perennial Native	100			•			2 0 1/	0 /	0 0	•	0 7	3 0 2	224 230	14.9	44.0	44.9
Artemisia falfolia	cand canhoush				1	1	t	1	1	1	1	1	1				
Cylindrogentia whitpolei	Whitele chells									_					0.1	0.2	0.2
Opuntia phacacantha	tulin prickboses								600						0.0	0.0	0.0
Yucca elanca	sommon discussion		2					D.			_		_		0.1	0.4	0.4
Subtotal	property and a second	T	1	1	1	0.	+	+	+	+	+	1	1	1	0.0	0.0	0.0
Total Chush Course		н	м	-	1	1	1	1	1	1	1	- 1	-	3 3	0.2	9.0	9.0
the Stirled Cover		0 0	0 0	0 1	0 1	0 0	0 0 0	0 0	0 0	0 0	0	0 0	0 1	3 3	0.2	9.0	9.0
Kock									-					2 2	0.1		
Dan Count		- :	œ :	6	0	6.	3 14	12		13	9			341 341	22.7		
Total Hits		6 05	2 5	- 45	1	1	-	1	Ť	1	1	7	7	859 859	43.9		
Total Vesetation Cover				1	-	4	9	4	9	-	-	-	9	1500 1524	100.0		
Newford Manager			1	1	1	-	=	•	-1	2 28	02 2 8	0 2 40	0 0		33.3	100.0	100.0
Total Control of Control of Control		t 47	34 0	.,			20	4 38	8 0 24	2 28	~	20 2 32	2 0		32.6		
Lotal Ground Cover		38	70	78	34	98	38	78	62	42	54	38	99		56.1		

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Scientific Name	Common Name	- 3	2 2 2	- 2	. 3	- 2	• !		- 1		- :	-			-	=	=		Average	Non-Noxious Relative
Grass: Annual Native	COMPANIES SANDOMANIES			1		1	1	-	10 204	e lik Shd	Del Jed	In Ind	Tot Zood	le 3ad	10.0	In Sed	In All	Cover (%)	Cover (%)	Cover (%)
Conchrus longispinus	mat sandbur	L	L	L	0.	-	L	L	L	L	L	L		1			0	00	00	40
Murroa squarrora Paricum cardiare	false buffalsgrass		n. 1	4	-	6.				-	р.	-	. a		n.	1	9	0.8	3.1	3.5
Subtotal		1	4 0		1-	1	1	1	1	.,	1	a .			4	1	- 1	0.3	1.0	1.0
Grass: Annual Introduced							Section 1			-	0	-	8	2000000		9	*	17	7	7
Bromus tectorum	cheargeass	-	L	L	L	L	-	ŀ	ŀ		L						1	1		
Eragrostis chanensis	strikgrass		1		4	1				-				A.			0 0	0.0	00	00
Grass: Perennial Desirable (Cool)	de (Cool)	-		1			-	e,	4	4				0			П	0,3	1.0	0.0
Achtutherum hymenoides		1	1	1	1	ŀ	1								1		The second	State of the state	The second	Section 18
Agropyron eristanam	crested wheateness	0. 0	,	9	-	-4	_	с.	n.	,	2	15	7	d	-	s		2.6	29.7	30.1
Cyperus schwenitzii																		0.0	0.0	0.0
Elymai lancoolatus	thickspace wheatgrass	-					_								n.		0 .	0.0	0.0	0.0
Pascopyrum smithi	western wheatgrass	_	_		_	_	_										- 0	0.0	0.5	0.5
Pou sp.	blacgrass		4							e.								0.0	000	000
Supposed		-	7	m	-	~		n.	d	8	7	12	7 1	0		s	Ι.	2.2	303	300
Orasi: Percental Desirable (Warm)	se (warm)						Sec. of	Section.	2000	10	Section .	Contract.	Section 1	To Steel	To the last	1	13	0.0000000000000000000000000000000000000		
Sperobolus cryptandrus	sand dropiced		4	4	6.	a	4			3		-	a				4	0.5	12	3.1
Subtotal			4	a	e.	0.	d			2		-					L	0.5	10	
Fotal Grass Cover	The state of the s	2 0	7 0	3 0	24	0 2 0	1 0	0 0	0 0	11 0	7 0	14 0	1	0 0	3 6	4 8	ľ	9.6	1	77
Forbs: Annual & Biennial Native	4 Native	1	200	1000	1000	100		1					-	80	100	123		2.0	37.4	20.00
Amananhus retroflens	redroot ameranth	4	0.	2	2	3	6.			5 1	-			Ī,	-		35	95		
Chambesyce glyptosperma			a									. a.			0		0	0.0	00	000
Chome semilite	namowical goosefoot	-	D.			e.	m		g,			4		4	£.	6			41	7
Croton texensis	Texas croion	a.				d.								9			9 9	0.8	3.1	3.1
Helanthus armusi	continon sunflower			64	-		-	6								a		0.0	0.0	0.0
Subtotal		-		4		\vdash	4	64		2 -	-			91	0	۵.	1	23	7.6	86
Forbs: Armusi & Biennial Introduced	Introduced	Name of	1		100	-								0		-	60 49	9	25.1	25.4
Bassis scoperia	burningbush	2		_	L	L	,,							-	I			100		
Chenepodium abum	bmbiquariers	۵															10	0.0		0.0
Dysphania botrys	Jerusalem oak goosefoot		c.	0.	a	-					6								9.0	0.0
Mellorus officinalis	sweetclover											a			9		. 0	00	9 6	60
Polygonum avroulane	prestrate knotwood	=			-	-		_	a		**			E				3.6	0 0	0.0
Saltola tragus	prickly Russian thinte	10	a	п	D,	٩	80	7	0		0,	6.		13 3	6	a	-	63	25.6	25.9
Supplier Demonded Norther		2	0.	E.	-	2	01	00	6		2	0,	d	17 3	0,	a	1	9.3	37.4	37.8
Annual and Annual and											2000		1000	-		1000	Section 2	100000000000000000000000000000000000000		Charles of the
Cucuta induces	Current ragwood			a														0.0	0.0	0.0
Mentzella meda	braciles blasinestar										4		6.					0.0	0.0	0.0
Rathida columnifera	unight prairie coneflower			n.								-					0	0.0	0.0	0.0
Subtestal							I			0	1	-		1	1	1	1	0.0	00	0.0
Total Forb Cover		22 0	0 0	4 0	7	0 9	14.0	0.00		d 4	- 10	a .		- 41	- 8	1		0.0	0.0	0.0
Rock					-	и.	-	-	88		9	0	0	33 3		1 0		15.5	62.6	63.2
Litter Bare Ground		9 9	5 P	• 7	w 2	- 5	2 3	9 9	0. 5	4	10	4	2	80		8		14.5		
Total Hits		0 05	9 9	4 5	-	24				T	- 1	1	7	1	32	7	453 453	60.4		
Total Vegetation Cover					-		200	0 0	9	1	0	0	-	~	-	0	750 757	0.000		
Non-Noxious Vegetation Cover					2		т		0 0	3 2 2	•	-	-		~			25.1	100.0	100.0
							-			36 40	0 07	30 0	77 77	9 99	2	0 81		24.8		
Total Ground Cover		00	2.0	0.0		11	0.7		1	1	1	I	ı	t	İ		ı	200		

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October 2021

Scientific Name	Common Name	1 1st 2nd	2nd lst	2 2	3 2nd	4 k	5 18 2nd	9 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	, n	8 Jac 2nd 14 2nd	6 2	0 3	- 3	2 3	- 1	- 1	- :	1	700	Average	Average	Non-Noxious Relative
Grass: Annual Native				100		100	98	3			1			4		81 807	8	181 DUZ	Y.	Cover (%)	Cover (%)	Cover (%)
Cenchrus longispinus	mat sandbur	L	\vdash	\vdash	Γ			L	L	-	L	-	L	L	6	1	1	1	1	0.3	80	91
Murroa squarrosa	false buffalograss	_	_	_		_			_	g.			G	p		_	6	-		0.0	0.0	0.5
Panicum capillare	witchgrass	_	_					p,	C.	. 0.		-	. 0.	. 0		0		0	0	0.0	00	00
Vulpia octoflora	sixweeks fescue		+	+							2000	g.			_			0		0.0	00	00
Subtotal						_		Ω	Д	-	L	-	0	6	6	6			L	0.4	1.3	2.0
Grass: Annual Introduced		2000	100	100	Section 2	SCHOOL S	September 2	Section 2	T Charles		100000	Section 8			-	1		1	18		4.4	1.4
Bromus tectorum	cheatgrass	_	00	1	r	3	∞	L	a	6 2	2	L	L	,	4	ķ	1	2		100	16.0	
Eragrostis cilianensis	stinkgrass		_								_		£	1.	-	-		9	7 <		707	0
Subtotal			90	-	T	en	90		0	6 2	2			6	4	4	+	200	П	0.0	0.0	0.0
Grass: Perennial Desirable (Cool)	le (Cool)	10000	100	Stood St	100000	1000	A CHARLES	1	Samon	13	1	Section 1			1		00000	30		4.3	10.2	0.0
Achnatherum hymenoides	Indian ricegrass	٥	H	f	1		-		ļ	1	,	,	1	ŀ	1	1	1	1				
Elymus lanceolatus	thicksnike wheaterass		_					1.	1		4	- 1		4	n.	_	٥.	ţ .	Q.	3.2	10.1	12.1
Subtotal			+	1	f			1		1		۵,	1	1	1	+	-	1	-1	0.1	0.4	0.5
Grass: Perennial Desirable (Warm)	e (Warm)	4	3	-			-	4	^		7	-	4	2	a	1	7	23	56	3.3	10.5	12.6
Act. Sect.		1	+	1	1	I												13	100000	STABOUR PERCEN	ASSESSED BOOK OF	100000000000000000000000000000000000000
Catamoviila longitolia	prame sandreed										c,							0	0	0.0	0.0	0.0
Sporobous cryptandrus	sand dropseed	1	7	+		_		Д	G.	=	р	Д	d	0.	=	-	_	31	31	1.4	12.6	15.0
Subtotal			7			_		р	d	=	d	0	a	0	=	-		31	31	4.1	12.6	150
lotal Grass Cover		0	0 15	1	0	5 0	0 6	0 0	5 0	18 2	4 0	8 0	0	0 2	1 15	0 7	0 7 (96 0	100	12.8	40.5	200
Forbs: Annual & Biennial Native	Native	2000		1000	10000	Septimen	9400000	SEC 300	200000	200000	SPS/SPS		13	-	133			٠	H.S		Cipt	0.64
Amaranthus retroflexus	redroot amaranth	-	-	a	r			'n	6				ŀ	0	١	1	1	2	ш		3	6.5
Argemone polyanthemos	crested pricklypoppy	_	p.										Y		la .	_	١.	2		00	200	0.0
Chenopodium desiccatum	aridland goosefoot		ρ.	_						0	6		-		8	_	_			0.0	0.0	0.0
Chenopodium sp.	goosefoot	Ω		0.		0	0			4	4	1.			7	_	_	- 0	- 0		4.0	000
Cleome serrulata	Rocky Mountain beeplant		_	_											_	_		0 0		0.0	0.0	0.0
Conyza canadensis	Canadian horseweed							4		,						_	C.	0 0		0.0	0.0	0.0
Croton texensis	Texas crotom		_	_						d					D.			0		0.0	0.0	0.0
Eriosonism annusm	onemal backwheat		_							d.		c,				_	a.	0		0.0	0.0	0.0
Helianthus annuas	Control of the Party of the Par	·		_					,	۵.							-	0		0.0	0.0	0.0
diminis diminis	Common sunnower	n	•	_		7	d,	12	m	-	Д	49	-	۳	Ω,	S	7	43	43	5.7	17.4	20.8
r lantago paragomes	woolly puntum						c.											0	0	0.0	0.0	0.0
Polygonum ramosissimum	bushy knotweed	3	4	٩	1	р	2	Д	3		2	p 1	Д			4	۵	14	15	1.9	6.1	7.2
Subtotal		6	4	-	. 4	2	2	17	9	-	2	90	3	S	0	6	2	-	22	30	20.1	34.8
Forbs: Annual & Biennial Introduced	Introduced	2001		Section Section	Shake di	200	\$45 CM	SECOND.	distant	800000000	40000000	GEN 1230	10000	500000	September 1	0.000	The same		27 27 20	Salar Colorest		-
Ambrosia artemisiifolia	annual ragweed		0.	\vdash	1			0	L	0		e		L	L	-	L	-	1-	100	200	30
Bassia scoparia	burningbush	7		0		7	3		0		r		-		_	- 6	_	. 8			t 0	000
Dysphania botrys	Jerusalem oak goosefoot	0		-					4 6			•		_	_	2 6	_	3 -	4 -	140	2 :	10.1
Lactuca serriols	prickly lettuce			_	-	,		4	4			4			_	Д,		- 0	- 0	0.1	0.4	0.5
Mellotus officinalis	Sweetelmer		_		-	_							Δ,					0 (0	0.0	0.0	0.0
Polygonium axiculare	prostrate brackstone			_														0	0	0.0	0.0	0.0
Salsola collina	obrider Process shield		D,		_									_				0	0	0.0	0.0	0.0
Salsola tragus	prickly Russian thirtle	- v		-	,	-	. ,	,	0. 1			,	a 4				٦.	0 !	0	0.0	0.0	0.0
	The same of the sa			-			1	0	*			6	,	0		•	_	47	Ş	2 3	000	543

Habitat Management, Inc.

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		-	2	6	4	8	9		90	0	01	=	12	13	4	15		Total Hie	Average	Average	Non-Noxious Polotico
Scientific Name Co	Common Name	1st 2n	2nd lst 2nd	had 1st 2nd	tr.	2nd 1st 2	2nd 1ss	2nd 1st	2nd 1st 2	2nd 1st 2	2nd lat 2nd	H	ad le	nd let	nd le	1 10	3	_	Cover (%)	Course (94)	Course (0/)
Forbs: Perennial Native	STATES OF THE PARTY OF THE PART	100000	1	100	Section 197	STATE OF	100	7	1	2		100	1	3					(6/)	Cover (70)	Cover (70)
Cuscuta indecora big Mentzelia nuda bra	bigseed alfalfa dodder bractless blazingstar		-71	_			-	\vdash		_			0. 0	-		-	0 0	0 0	0.0	0.0	0.0
ohumnifera	upright prairie coneflower		_		_				Д							_	0	0	0.0	0.0	0.0
Subtotal			7						۵	-		L	۵	-	-	-	2	2	0.3	80	1.0
Total Forb Cover	The second secon	16 1	9	0 14	0 11	11 11	2 17	0 10		0 14 (0 14 1	10	0 5	0 0	0 10	0 3	0 142	lin.	18.9	505	21.0
Subshrubs/Shrubs/Succulents: Perennial Native	Perennial Native	1	1000	1		1	100 States	NAME OF	The second	No.	A COUNTY	1	1		-	-	-				0.11
Yucca glauca so:	soapweed yucca		4	H	-	L	L	-	L	L	L	L		L	L	L	0	0	00	00	00
Subtotal			D	_			-	-	-		-		-	-		-	0	0	00	00	000
Total Shrub Cover		0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0 0	0	0 0	0 0	0 0	0 0	0	0	0.0	0.0	0.0
Rock		-		-			L	-	-	L	L	L	Ŀ	L	L	-	۰	,	0.3	0.0	0.0
Litter		2	6	9	45	7	12	4	14	12	٣	-	2	4	00	1	109	_	14.5		
Bare Ground		28	20	59	50	23	21	31	17	20	25	39	40	21	52	33	401		53.5		
Total Hits		50 1	20	1 50 (0 50	1 50	2 50	0 80	0 50	2 50 (0 50 1		0 50	l_			0 750		100.0		
Total Vegetation Cover		32 2	2 42 2	2 30 (0 32 2	2 40	4 34	0 30	0 38	4 36 (0 44 2	20	0 14			20	1		31.7	100.0	100.0
Non-Noxious Vegetation Cover		32 2	2 26 (0 30 (0 26 2	2 24	4 34	0 30	0 26 (0 32 (0 44 2	20	0 14	2 22 0	0 22	0 20	0	-	26.8		
Total Ground Cover		44	09	42	42	54	58	38	99 8	09	50	22	20	28	20	34	L	-	46.5		
Allowable Vegetation Cover	THE RESERVE THE PERSON NAMED IN	15.6	9.6	13,6	9.6	7.6	17.6	6 13.6	9.6 9.6	15.6	27.6	3.6	0.0	5.6	5.6	3.6			10.6		

Non-Noxious Annual Cover Excess Annual Cover

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Appendix B: Herbaceous Production Data

Reclamation Area 29 Herbaceous Production Data

		baceous Pr	oduction (g	(/m2)
	Annual	Perennial		
Sample	Species	Species	Total	Allowable
1	2	355.8	357.8	338.0
2	0	17	17	0.0
3	105.4	35.8	141.2	121.4
4	0	7.3	7.3	0.0
5	0	23.3	23.3	3.5
6	381.7	0	381.7	361.9
7	0	15.1	15.1	0.0
8	0	11	11	0.0
9	0	2.5	2.5	0.0
10	0	29.7	29.7	9.9
11	0	20.7	20.7	0.9
12	0	71.6	71.6	51.8
13	100.9	54.2	155.1	135.3
14	0	24.1	24.1	4.3
15	0	166.9	166.9	147.1
16	0	54.2	54.2	34.4
17	0	35.4	35.4	15.6
18	0	2.8	2.8	0.0
19	47.9	0.8	48.7	28.9
20	61.6	19.3	80.9	61.1
21	0	99.2	99.2	79.4
22	0	13.6	13.6	0.0
23	81.5	0	81.5	61.7
24	1.1	43.5	44.6	24.8
25	0.6	61.1	61.7	41.9
26	0	57.3	57.3	37.5
27	0	8.8	8.8	0.0
28	0	4.7	4.7	0.0
29	21.7	14.8	36.5	16.7
30	0	57.4	57.4	37.6
verage	26.8	43.6	70.4	53.8

Excess Annual Production 19.8

Reclamation Area 30 Herbaceous Production Data

	Her	baceous Pr	oduction (g	g/m2)
	Annual	Perennial		
Sample	Species	Species	Total	Allowable
1	0	6.2	6.2	0.0
2	16.9	31.7	48.6	41.3
3	8.7	15.6	24.3	17.0
4	13.8	46.6	60.4	53.1
5	0	0	0	0.0
6	6.7	23.4	30.1	22.8
7	24.3	44.5	68.8	61.5
8	0	141.5	141.5	134.2
9	22.5	75.1	97.6	90.3
10	11.6	44.8	56.4	49.1
11	3.8	22	25.8	18.5
12	2.6	3.9	6.5	0.0
13	3	81.5	84.5	77.2
14	0	43.9	43.9	36.6
15	6.1	16.1	22.2	14.9
16	5.2	55.8	61	53.7
17	120.1	26.2	146.3	139.0
18	0	136.1	136.1	128.8
19	0	44	44	36.7
20	0	68.5	68.5	61.2
21	10.1	15.1	25.2	17.9
22	0	54.7	54.7	47.4
23	5.5	28.4	33.9	26.6
24	38	6.4	44.4	37.1
25	29.4	16.4	45.8	38.5
26	6.1	30.5	36.6	29.3
27	23.1	20.8	43.9	36.6
28	1.6	7.9	9.5	2.2
29	11.7	24	35.7	28.4
30	0	11.5	11.5	4.2
verage	12.4	38.1	50.5	43.5

Excess Annual Production 7.3

Reclamation Area 31 Herbaceous Production Data

		baceous Pr	oduction (g/m2)
	Annual	Perennial		
Sample	Species	Species	Total	Allowable
1	82.8	21.3	104.1	99.8
2	3.3	50.9	54.2	49.9
3	0.6	40.9	41.5	37.2
4	4.8	12.8	17.6	13.3
5	0	158.4	158.4	154.1
6	0	47.9	47.9	43.6
7	0	29.1	29.1	24.8
8	0	63.8	63.8	59.5
9	13.7	66.4	80.1	75.8
10	9.5	60.6	70.1	65.8
11	17	148.8	165.8	161.5
12	59.5	23.4	82.9	78.6
13	1.3	48.7	50	45.7
14	2.3	25.5	27.8	23.5
15	0	39.7	39.7	35.4
16	42.3	31.5	73.8	69.5
17	0	101.3	101.3	97.0
18	27.7	135.2	162.9	158.6
19	0	13.9	13.9	9.6
20	0	45.6	45.6	41.3
21	0	92.3	92.3	88.0
22	0	35	35	30.7
23	8.5	23.9	32.4	28.1
24	7.9	7.7	15.6	11.3
25	1.5	42	43.5	39.2
26	0	45	45	40.7
27	0	68.3	68.3	64.0
28	20	39.4	59.4	55.1
29	0.4	30.5	30.9	26.6
30	14.6	31.5	46.1	41.8
verage	10.6	52.7	63.3	59.0

Excess Annual Production 4.3

Reclamation Area 32 Herbaceous Production Data

	Hei	rbaceous Pro	duction (g/m2)
Sample	Annual Species	Perennial Species	Total	Allowable
1	12.9	52	64.9	62.6
2	0	54.7	54.7	52.4
3	0	61.6	61.6	59.3
4	14.7	70.3	85	82.7
5	0.3	25.6	25.9	23.6
6	0	59.8	59.8	57.5
7	0	127.9	127.9	125.6
8	0	103.5	103.5	101.2
9	13.6	91.8	105.4	103.1
10	0.1	76.9	77	74.7
11	11.4	40.6	52	49.7
12	0.7	41.1	41.8	39.5
13	0	28	28	25.7
14	38.1	28.6	66.7	64.4
15	44.4	13.6	58	55.7
Average	9.1	58.4	67.5	65.1

Excess Annual Production	2.3
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Reclamation Area 33 Herbaceous Production Data

	Hei	baceous Pro	duction (g/m2)
Sample	Annual Species	Perennial Species	Total	Allowable
1	36	37.7	73.7	67.1
2	0	59.6	59.6	53.0
3	0	114.2	114.2	107.6
4	191.8 2.2 194	194	187.4	
5	3.1	125.4	128.5	121.9
6	0	97.8	97.8	91.2
7	0	61.9	61.9	55.3
8	0	52.1	52.1	45.5
9	0	76.3	76.3	69.7
10	0 130.8 130.8 12	124.2		
11		30.8		
12	0	58.4	58.4	51.8
13	0	81.5	81.5	74.9
14	0	71.2	71.2	64.6
15	0	83	83	76.4
Average	15.4	72.6	88.0	81.4

Excess Annual Production	6.6
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Reclamation Area 34 Herbaceous Production Data

	Hei	baceous Pro	duction (g/m2)
Sample	Annual Species	Perennial Species	Total	Allowable
1	0.6	81.7	82.3	48.0
2	0.4	32.6	33	0.0
3	0	30.9	30.9	0.0
4	5.7	2.9	8.6	0.0
5	0	5.9	5.9	0.0
6	9	28.8	37.8	3.5
7	0	13.8	13.8	0.0
8	72	0.4	72.4	38.1
9	138.9	86.4	225.3	191.0
10	0	42	42	7.7
11	104.3	3.5	107.8	73.5
12	88.5	57.1	145.6	111.3
13	44.2	3.4	47.6	13.3
14	114.3	30.4	144.7	110.4
15	42.1	16.3	58.4	24.1
Average	41.3	29.1	70.4	41.4

Excess Annual Production	34.3
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Keenesburg Mine 2021 Vegetation Monitoring Report

Appendix C: Complete Species List

Scientific Name	Common Name	Area 25	Area 29	Area 30	Area 31	Area 32	Area 33	Area 34	Area 37	Area 44
Grass: Annual Native										
Cenchrus longispinus	mat sandbur	3.3						3.3	13.3	20.0
Munroa squarrosa	false buffalograss	33.3	22.2	100.0	93.3	70.0	10.0	0.09	66.7	40.0
Panicum capillare	witchgrass	3.3			13.3	20.0			26.7	46.7
Vulpia octoflora	sixweeks fescue			13.3			20.0			6.7
Grass: Annual Introduced										
Bromus tectorum	cheatgrass	6.7	88.9	100.0	46.7	90.0	100.0	36.7	33.3	66.7
Eragrostis cilianensis	stinkgrass		5.6	13.3	6.7			3.3	6.7	6.7
Grass: Perennial Desirable (Cool)	(Cool)									
Achnatherum hymenoides	Indian ricegrass	13.3			20.0		20.0	66.7	93.3	80.0
Agropyron cristatum	crested wheatgrass					10.0	30.0	10.0	6.7	
Bromus inermis	smooth brome					10.0	10.0	23.3		
Cyperus schweinitzii	Schweinitz's flatsedge				5-1-6			33.3	6.7	
Elymus elymoides	squirreltail							30.0		
Elymus lanceolatus	thickspike wheatgrass					30.0	20.0		6.7	26.7
Hesperostipa comata	needle and thread	3.3				105		3.3		
Pascopyrum smithii	western wheatgrass	13.3	16.7	6.7				3.3	6.7	
Poa sp.	bluegrass								13.3	
Pseudoroegneria spicata	bluebunch wheatgrass	3.3	_ =			10.0	10.0	3.3		
Thinopyrum intermedium	intermediate wheatgrass							3.3		
Grass: Perennial Desirable (Warm)	(Warm)									
Andropogon hallii	sand bluestem	43.3	77.8	100.0	93.3	50.0	30.0	23.3		
Aristida purpurea	purple threeawn			13.3				3.3		
Bouteloua curtipendula	sideoats grama		11.1	26.7	40.0	40.0	20.0	20.0		
Bouteloua gracilis	blue grama	30.0	88.9	40.0	86.7	0.06	80.0	30.0		
Calamovilfa longifolia	prairie sandreed	26.7	83.3	0.09	100.0	100.0	100.0	53.3		6.7
Distichlis spicata	saltgrass							"		

October 2021

Scientific Name	Common Name	Area 25	Area 29	Area 30	Area 31	Area 32	Area	Area	Area 37	Area
Grass: Perennial Desirable (Warm)	(Warm)						3	5	10	F
Panicum virgatum	switchgrass	3.3	5.6	20.0	33.3	0 08	50.0	67		
Schizachyrium scoparium	little bluestem	3.3	11.1	53.3	20.0	30.0	20.00	23.3		
Sorghastrum nutans	Indiangrass	3.3	5.6		13.3		70.0	23		
Sporobolus airoides	alkali sacaton			6.7)		25			
Sporobolus cryptandrus	sand dropseed	0.06	100.0	100.0	100.0	0 09	80.0	1000	66.7	72.2
Forbs: Annual & Biennial Native	Vative						0.00	0001	000.1	(13.3)
Amaranthus retroflexus	redroot amaranth	43.3	83.3	86.7	100.0	0 06	30.0	0.09	1000	008
Ambrosia artemisiifolia	annual ragweed		16.7	6.7			10.0	43.3	0.001	0.00
Argemone polyanthemos	crested pricklypoppy	46.7	38.9	20.0			2	40.0		13.3
Chamaesyce glyptosperma	ribseed sandmat		16.7	13.3	33.3			33	20.0	0.01
Chenopodium desiccatum	aridland goosefoot	3.3			20.0	20.0	20.0	3.3		467
Chenopodium leptophyllum	narrowleaf goosefoot		11.1	13.3	13.3		10.0	10.0	2.99	
Chenopodium sp.	goosefoot									767
Cleome serrulata	Rocky Mountain beeplant						20.0		20.0	13.3
Conyza canadensis	Canadian horseweed		22.2	80.0	40.0					13.3
Croton texensis	Texas croton	10.0		13.3				0.09	20.0	200
Erigeron bellidiastrum	western daisy fleabane	3.3	5.6	6.7						2
Eriogonum annuum	annual buckwheat									67
Helianthus annuus	common sunflower	86.7	94.4	33.3	33.3	70.0	0.09	2.96	100 0	100 0
Lepidium densiflorum	common pepperweed							33		
Machaeranthera bigelovii	Bigelow's tansyaster							6.7		
Plantago patagonica	woolly plantain							;		67
Polygonum ramosissimum	bushy knotweed		22.2		13.3		30.0	3 3		73.3
Solanum triflorum	cutleaf nightshade					10.0		1		
Verbena bracteata	bigbract verbena							23		

Area 44

33.3 0.09

October 2021

13.3

6.7

3.3 3.3 6.7

33.3

5.6

3.3

prairie groundcherry

slimflower scurfpea

Psoralidium tenuiflorum

bractless blazingstar

lacy tansyaster

Machaeranthera pinnatifida

hairy four o'clock

Mirabilis hirsuta Physalis hispida

Mentzelia nuda

6.7

Keenesburg Mine Reclan	Keenesburg Mine Reclamation Species List 2021 (continued)	tinued)								
Scientific Name	Common Name	Area 25	Area 29	Area 30	Area 31	Area 32	Area 33	Area 34	Area 37	
Forbs: Annual & Biennial Introduced	I Introduced									1000
Alyssum sp.	madwort						10.0			-
Amaranthus blitoides	mat amaranth	3.3	22.2	6.7	13.3					
Ambrosia artemisiifolia	annual ragweed									
Bassia scoparia	burningbush	53.3	11.1					3.3	46.7	
Carduus nutans	nodding plumeless thistle							3.3		
Chenopodium album	lambsquarters							3.3	13.3	
Dysphania botrys	Jerusalem oak goosefoot	3.3	5.6			10.0		80.0	46.7	
Lactuca serriola	prickly lettuce		22.2	26.7	13.3			6.7		
Melilotus officinalis	sweetclover			13.3		10.0		3.3	13.3	
Polygonum aviculare	prostrate knotweed							6.7	0.09	
Salsola collina	slender Russian thistle					10.0		3.3		
Salsola tragus	prickly Russian thistle	100.0	61.1	40.0	66.7	0.09	40.0	0.06	93.3	
Tragopogon dubius	yellow salsify							6.7		
Tribulus terrestris	puncturevine	3.3	11.1							
Forbs: Perennial Native										-0.00
Ambrosia psilostachya	Cuman ragweed	20.0		13.3	20.0			10.0	6.7	
Cirsium undulatum	wavyleaf thistle							10.0		
Cuscuta indecora	bigseed alfalfa dodder								13.3	
Evolvulus nuttallianus	shaggy dwarf morning-glory							3.3		
Lithospermum incisum	narrowleaf stoneseed		11.1							
Lygodesmia juncea	rush skeletonplant		5.6							
Market A. C. L. C.	•									

40.0 13.3 6.7 6.7 20.0 86.7

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