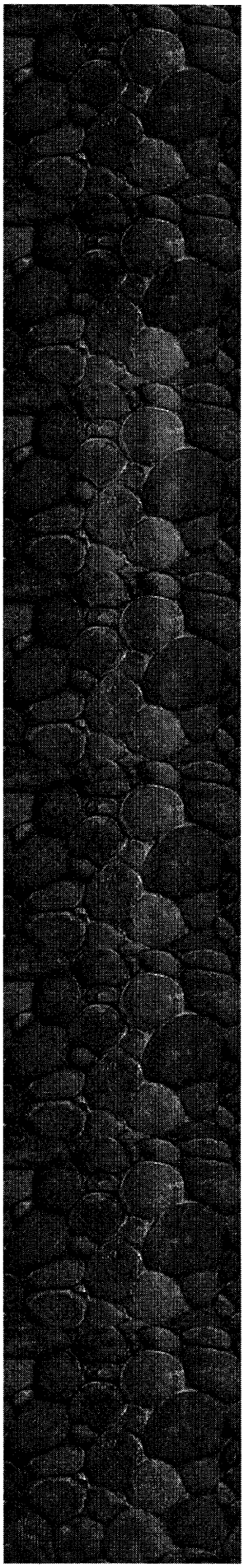

2000 ANNUAL REPORT

CASTLE GATE MINE

PERMIT NO. C/007/004

CASTLE GATE HOLDING COMPANY

RAG

PLATEAU MINING CORPORATION

Willow Creek Mine
847 NW Hwy 191
Helper, Utah 84526
(435) 472-0475
Fax: (435) 472-4780

An affiliate of RAG

February 7, 2001

Ms. Pamela Grubaugh-Littig
Department of Natural Resources
Utah Division of Oil, Gas and Mining
1594 West North Temple
Suite 1210
Salt Lake City, UT 84114-5801

RE: Annual Report, Castle Gate Mine, C/007/004, Castle Gate Holding Company

Dear Ms. Grubaugh-Littig,

Please find enclosed two copies of the 2000 annual report for the Castle Gate Mine.

If you have any questions, please do not hesitate to call.

Sincerely yours,

Vicky S. Miller

Vicky S. Miller
Environmental Specialist

Enclosures

RECEIVED
FEB 12 2001
DIVISION OF
OIL, GAS AND MINING

0001

2000 ANNUAL REPORT

CASTLE GATE MINE

PERMIT NO. C/007/004

RECEIVED
FEB 12 2001
DIV OF OIL GAS & MINING

CASTLE GATE HOLDING COMPANY

RAG

GENERAL INFORMATION

1. Permit Number	C/007/004
2. Mine Name	CASTLE GATE
3. Permittee Name	CASTLE GATE HOLDING COMPANY
4. Operator Name (if other than Permittee)	
5. Permit Expiration Date	DECEMBER 24, 2004
6. Permit Number	C/007/004
7. Company Representative, Title	JOHNNY PAPPAS, SR. ENVIRONMENTAL ENGINEER
8. Phone Number	(435) 472-4741
9. Fax Number	(435) 472-4782
10. E-mail Address	jpappas@rag-american.com
11. Mailing Address	CASTLE GATE HOLDING COMPANY
	847 NORTHWEST HIGHWAY 191
	HELPER, UTAH 84526
12. Resident Agent, Title	C.T. CORPORATION
13. Mailing Address	50 WEST BROADWAY
	SALT LAKE CITY, UTAH 84101
14. Number of Binders Submitted	1 Binder - 2 Copies

IDENTIFICATION OF OTHER PERMITS

Identify other permits which are required in conjunction with mining and reclamation activities.

Permit Type	ID Number	Description	Expires on
1. MSHA Mine ID(s)	4200165	LEGAL IDENTITY	
	4201202	LEGAL IDENTITY	
2. MSHA Impoundment(s)	N/A		

3. NPDES/UPDES Permit(s) (water)	UTG040012	UPDES PERMIT	4/30/03
4. PSD (Air) Permit(s)	N/A		
5.			
6.			

CERTIFIED REPORTS

List the certified inspection reports as required by the rules and under the approved plan which must be periodically submitted to the Division. Specify whether the information is included as APPENDIX A to this Annual Report or currently ON FILE with the Division.

Certified Reports:	Reports Required?		INCLUDED or ON FILE w/DOGM?		Comments
	YES	NO	Included	ON FILE	
1. Excess Spoil Piles		X			
2. Refuse Piles		X			
3. Impoundments	X		X		
4.					
5.					

REPORTING OF OTHER TECHNICAL DATA

List other technical data and information as required under the approved plan which must be periodically submitted to the Division. Specify whether the information is included as APPENDIX B to this Annual Report or currently ON FILE with the Division.

Technical Data:	Reports Required?		INCLUDED or ON FILE w/DOGM?		Comments
	YES	NO	Included	ON FILE	
1. Climatological Data		X			
2. Subsidence Monitoring Data	X		X		
3. Vegetation Monitoring Data		X			
4. Raptor Survey		X			
5. Soils Monitoring Data		X			
6. Water Monitoring Data	X				
First Quarter Report	X			X	

Second Quarter Report	X			X	
Third Quarter Report	X			X	
Fourth Quarter Report	X			X	
7. Geological/Geophysical Data		X			
8. Engineering Data		X			
9. Other Data					
10. Sowbelly Slump Monitoring	X			X	Appendix 3.2J
11. Sowbelly Reclamation Vegetation		X	X		

LEGAL, FINANCIAL, COMPLIANCE AND RELATED INFORMATION

Changes in administration or corporate structure can often bring about necessary changes to information found in the mining and reclamation plan. The Division is requesting that each permittee review and update the legal, financial, compliance and related information in the plan as part of the Annual Report. Provide the Department of Commerce, Annual Report of Officers, or other equivalent information as necessary to ensure that the information provided in the plan is current. Provide any other changes as necessary regarding land ownership, lease acquisitions, legal results from appeals of violations, or other changes as necessary to update information required in the mining and reclamation plan. Include any certified financial statements, audits or worksheets which may be required to meet bonding requirements. Specify whether the information is currently ON FILE with the Division or included as APPENDIX C to this Annual Report.

Legal/Financial Data:	Report Required?		INCLUDED or ON FILE w/DOGM?		Comments
	YES	NO	Included	ON FILE	
1. Department of Commerce, Annual Report of Officers	X			X	
2. Other					
LIST OF OFFICERS AND DIRECTORS	X		X		

MINE MAPS

Copies of mine maps, current and up-to-date through at least December 31, 1998, are to be provided to the Division as APPENDIX D to this Annual Report in accordance with the requirements of R645-301-525.270. These map copies shall be made in accordance with 30 CFR 75.1200, as required by MSHA. Upon request, mine maps shall be kept confidential by the Division.

Map Number(s)	Map Title / Description	Confidential?
NO MINING CONDUCTED		

OTHER INFORMATION

Please provide any comments or further information to be included as part of the Annual Report. Any other attachments are to be provided as APPENDIX E to this Annual Report. If information is submitted as a group rathe then by individual mine. Please identify each of the mines data in the list below.

Additional attachments to this report? **XX** No ☐ Yes

APPENDIX A

Certified Reports

Excess Spoil Piles
Refuse Piles
Impoundments

as required under R645-301-514

CONTENTS

ANNUAL SEDIMENT POND CERTIFICATION

Plateau Mining Corporation

2000 Sediment Pond Certification

I hereby certify that I am a Registered Professional Engineer in the State of Utah. I certify that I have made an inspection of Sediment Ponds at Plateau Mining Corporation's Willow Creek Mine. All of the pond embankments appear to be stable and in good physical condition. There are no apparent structural weaknesses or other hazardous conditions. I certify that I have reviewed the documentation pertaining to Attachment A, and that to the best of my knowledge the information shown thereon is accurate.

W. John Borla

W. John Borla

Date: 11/22/01

REGISTERED PROFESSIONAL ENGINEER
W. JOHN BORLA
No. 172351
STATE OF UTAH

Attachment A
Sediment Ponds Storage Capacities

Pond	Date	Decant Elevation	Sediment Storage Capacity in A.F.	Sediment Storage Volume Used in %	Sediment Storage Volume Remaining in A.F.
1	12/13/00	6163.7	4.6	26	3.4
2	12/13/00	6154.8	0.052	2.0	0.051
10*	12/13/00	94.6	0.017	15	0.014
11	12/13/00	6140.7	0.35	34	0.23
12A	12/13/00	6103.6	0.64	22	0.50
12B	12/13/00	6095.05	0.35	0	0.23
13	12/13/00	6205.0	3.14	41	1.84
14*	12/13/00	95.3	0.72	25☆	0.54
15*	12/13/00	98.2	0.45	5	0.42

*Elevation relative to open spillway elevation of 100.0.

☆Based on estimate due to water in the bottom of pond.

APPENDIX B

Reporting of Technical Data

including monitoring data, reports, maps, and other information
as required under the approved plan
or as required by the Division

in accordance with the requirements of R645-301-130 and R645-301-140.

CONTENTS

SUBSIDENCE MONITORING
VEGETATION MONITORING FOR PHASE II BOND RELEASE IN SOWBELLY CANYON

CASTLE GATE COMPANY
SUBSIDENCE MONITORING
BEAR CANYON

STATION	LOCATION	ELEVATION			CHANGE	
		05/81	09/16/99	10/06/00	Last	Acc.
TRP-1	Price Canyon	6319.85	6319.85	6319.85	(Control Point)	
BZ-60	Bear Canyon	6508.00	6508.00	6508.00	(Control Point)	
BZ-52	Bear Canyon	6713.78	6713.78	6713.78	(Control Point)	
Sub-34	Bear Canyon	6744.44	-	-	(See Note Below)	
Sub-38	Bear Canyon	6700.59	6700.12	6700.15	0.03	-0.44
Sub-63	Bear Canyon	6546.54	6546.02	6546.00	-0.02	-0.54
Sub-64	Bear Canyon	6406.63	6406.15	6406.18	0.03	-0.45
Sub-71	Price Canyon	6400.99	6401.12	6401.07	-0.05	0.08

Notes:

(1) *The above referenced points represent the only subsidence and control points located within Bear Canyon and subsequently verified by survey.*

(2) *Sub-34 is no longer visible due to large trees and has been eliminated.*

(3) *There were no fractures, slumps, rock falls or other subsidence-related effects noted within the canyon during this survey.*

UTAH REGISTERED
#154168
DAN W. GUY
10/6/00
PROFESSIONAL ENGINEER

VEGETATION MONITORING FOR PHASE II BOND RELEASE IN SOWBELLY CANYON

2000

FOR
PLATEAU MINING CORPORATION

Prepared by

MT. NEBO SCIENTIFIC, INC.
330 East 400 South, Suite 6
P.O. Box 337
Springville, Utah 84663
(801) 489-6937

for

PLATEAU MINING CORPORATION
847 Northwest Highway 191
Helper, Utah 84526

Patrick Collins, Ph.D.

Fieldwork: August 2000
Report: February 2001

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VEGETATION MONITORING FOR PHASE II BOND RELEASE IN SOWBELLY CANYON

INTRODUCTION

Objectives for Monitoring

Disturbed areas of Sowbelly Canyon (also known as Sowbelly Gulch) have been reclaimed and reseeded with the 'final' plant seed mixture. The vegetation has been established to a level that may warrant Phase II bond release through the State of Utah, Division of Oil, Gas and Mining (DOGM). Vegetation sampling was conducted in the growing season of 2000 as a means to monitor the success of the revegetation and to determine whether or not Phase II bond release would be plausible.

Brief History

Sowbelly Canyon is located within the Wasatch Plateau approximately 4 miles west-northwest of the city of Helper, Utah. This canyon has been the site of mining activities for nearly 100 years. Spring Canyon Coal Company was one of the first mining companies in the canyon, conducting their operations between 1890 and 1970. Subsequently, McCulloch Oil purchased the site followed by Franklin Real Estate, Price River Coal and Castle Gate Coal Company. Plateau

Mining Corporation currently owns the property. In recent years the disturbed areas of Sowbelly Canyon have been reclaimed with final seeding accomplished in Fall 1995.

General Site Description

The average elevation of the Reclaimed and Reference Areas of Sowbelly Canyon is approximately 7,000 ft above sea level. The canyon sides are dominated by pinyon-juniper and Gambel's oak/grass plant communities. Most of the Reclaimed Areas are located near the canyon bottoms that, prior to disturbance, were probably once dominated by Gambel's oak, sagebrush and grass communities. During reclamation activities, a drainage channel has also been recreated at the canyon bottoms. The Reclaimed Areas were seeded with native plant seeds. In addition, containerized plant species such as serviceberry (*Amalanchier utahensis*), chokecherry (*Prunus virginiana*), willows (*Salix* spp.), and Wood's rose (*Rosa woodsii*) have been transplanted along this channel.

Reference Area

A general Reference Area to be used as a standard for final revegetation success was chosen at a much earlier date. The Mining and Reclamation Plan (MRP) states that "the AML Reference Areas shown on Exhibit 9-6 will be used to evaluate previously mined areas". Because the AML (Abandoned Mined Lands) areas are relatively extensive, at least to be sampled as one Reference Area, a biologist from DOGM along with an official from Plateau Mining Corp., chose a subset

portion of the AML areas that would be representative and therefore be used as the Reference Area for the reclaimed site in Sowbelly Canyon. This Reference Area was located down-canyon (or south) and very close to the Reclaimed Areas.

METHODS

Quantitative and qualitative data were taken from the vegetation of the Reclaimed and Reference Areas in Sowbelly Canyon. Sampling was conducted in August 2000. Methodologies used for sampling were performed in accordance with the guidelines supplied by DOGM.

Transect and Quadrat Placement

Random/regular placement of sample quadrats were designed as an attempt to provide unbiased accuracy of the data compiled. This was accomplished by establishing one long transect line along the entire length of the Reclaimed Area. This line was placed in the lowest portion of the reclaimed drainage system. At regular intervals along the drainage transect line, random numbers were generated and used to measure distances at right angles from the drainage and to determine sample locations. Whether these random numbers were odd or even determined which side of the drainage (east or west) a given quadrat was placed. The random number selected could be high enough to place quadrats to the lateral limits of the Reclaimed Areas and all areas in-between. This insured that the sample quadrats were placed randomly over the entire study area

in an attempt to adequately represent the site as a whole. The sample points that were placed randomly in the drainage (or potential riparian area) were marked on the raw data sheets so they could be studied separately if desired.

Cover, Frequency and Composition

Cover estimates were made using ocular methods with meter square quadrats. Species composition and relative frequencies were also assessed from the quadrats. Additional information recorded on the raw data sheets were: estimated precipitation, slope, exposure, grazing use, animal disturbance and other appropriate notes. Plant nomenclature follows "A Utah Flora", (Welsh et al. 1993).

Sample Size & Adequacy

Sampling adequacy was calculated using formula given below.

$$nMIN = \frac{t^2 s^2}{(dx)^2}$$

where,

nMIN	= minimum adequate sample
t	= appropriate confidence t-value
s	= standard deviation
x	= sample mean
d	= desired change from mean

The values used for "t" and "d" insured that sample adequacy was met with 90% confidence

within a 10% deviation from the true mean.

Diversity & Similarity Indices

There are several well-documented methods to assess diversity and similarities in plant communities. The "Motyka Index" is a modified form of the "Sorenson Index", both similarity indices. This index was used on the data and the equation is shown below:

$$IS_{MO}=\left(\frac{2MW}{MA+MB}\right)x100$$

where,

MW = $\sum$ of the smaller quantitative values of species of two communities,
MA = $\sum$ of the quantitative values of all species in one community,
MB = $\sum$ of the quantitative values of all species in another community.

Two diversity indices have been reported in this document for the Reclaimed and Reference Areas. MacArthur's Diversity Index is an effective diversity measurement and is computed using the following equation:

$$1/\sum pi^2$$

where,

pi is the proportion of sum frequency contributed by the *i*th species in the sample area of concern.

The proportional contribution of each species is then squared and the values for all species in the sample areas are summed. This index integrates the number of species and the degree to which

frequency of occurrence was equitably distributed among those species.

Another diversity measurement was provided that shows the average number of species encountered at each quadrat – or a measure of species diversity.

Photographs

Color photographs of each sample area were taken at the time of sampling and submitted with this report.

Raw Data

The raw data for total cover, cover by species, frequency and composition were also submitted in the Appendix of this report which should facilitate future scrutiny of the data and further statistical testing if desired.

RESULTS

Reclaimed Area

Results from sampling the vegetation of the Reclaimed Area demonstrates that the total living plant cover was 47.44% and comprised of 53% grasses, 37% forbs and 10% shrubs (Table 1).

Although many species contributed to the total living cover, the dominate forbs were yellow sweet clover *(Melilotus officinalis)*, blueleaf aster (*Aster glaucodes*) and Louisiana wormwood (*Artemisia ludiviciana*). The dominate grasses present in the quadrats were thickspike wheatgrass (*Elymus lanceolatus*), western wheatgrass (*E. smithii*) and bluebunch wheatgrass (*E. spicatus*). The dominate shrub by a wide margin was rubber rabbitbrush (*Chrysothamnus nauseosus*). For a list of the species present in the quadrats that shows percent cover and frequency, refer to Table 2.

Reference Area

The Reference Area chosen to be a standard for revegetation success had a mean cover of 49.25%. Like the Reclaimed Areas, grasses dominated the site comprising nearly 60% of the total living cover. However, unlike the Reclaimed Areas, shrubs at 23% were the next most common lifeform followed by forbs at 18% (Table 3). The most common of all species was western wheatgrass followed by several other grasses including thickspike wheatgrass, and Indian ricegrass (*Stipa hymenoides*). The most common shrub species was fourwing saltbush (*Atriplex canescens*) followed closely by rubber rabbitbrush. Finally, the most common forb was Louisiana wormwood (Table 4).

Data Set Comparisons

Comparisons were made between the data of the Reclaimed and Reference Areas. Initially,

statistical tests were implemented comparing the total living plant cover of the two areas. A "Student's t-test" analysis suggested there was no significant difference between the Reclaimed Area cover when it was compared to the Reference Area ($p<.005$, Fig. 1).

FIG. 1. STUDENT'S T TEST - A Comparison Between the Reclaimed and Reference Areas at Sowbelly Canyon.

Reclaimed Area: $\bar{x}=47.33$; $s=12.92$; $n=80$

Reference Area: $\bar{x}=49.25$; $s=14.25$; $n=40$

$t=-0.699$; $df=118$, $SL=p<.005$

Next, although achievement of final diversity standards are not required during this phase of bond release, the regulatory agencies usually requires some type of discussion about it as a means of monitoring species diversity. The Motyka Index was recommended to be used to compare species diversity in the Plateau's Mining and Reclamation Plan (MRP). Although this index is more of a 'similarity index' than a 'diversity index', it has been employed to compare the data sets. The MRP assigned the following categories to be used for comparisons in the Motyka Index:

Non-Weedy Shrub Cover,
Weedy Shrub Cover,
Native Perennial Grass Cover,
Introduced Perennial Grass Cover,
Non-Weedy Forb & Grass Cover,
Weedy Forb & Grass Cover.

When using the above categories and employing the Motyka Index, the similarity value between the two communities was 89.73% (Fig. 2).

FIG. 2. MOTYKA INDEX - A Comparison Between the Reclaimed and Reference Areas at Sowbelly Canyon.

$$IS_{MO}=\left(\frac{2MW}{MA+MB}\right)x100=89.728$$

MacArthur's Diversity Index was also employed to the data sets of the Reclaimed and Reference Areas. This comparison suggests that the total diversity of the Reclaimed Area is greater than that of the Reference Area (Fig. 3).

FIG. 3. MacARTHUR'S INDEX - A Comparison Between the Reclaimed and Reference Areas at Sowbelly Canyon.

$1/\sum pi^2 =$

Reclaimed Area: 11.379

Reference Area: 8.347

Still another method of comparing species diversity of two areas is to simply calculate the mean number of species present in the sample quadrats. This method also suggests that the Reclaimed Area is more diversity with respect to species than the Reference Area (Fig. 4).

FIG. 4. AVERAGE NUMBER OF SPECIES PER SQUARE METER- A Comparison Between the Reclaimed and Reference Areas at Sowbelly Canyon.

$\bar{x}$ NO. SPP/M^2 =

Reclaimed Area: 3.86

Reference Area: 3.15

DISCUSSION

Approval by the State of Utah of the Phase II bond release is dependent on several factors. One of the most important conditions is probably whether or not the reclaimed site is controlling erosional sediments, or as stated by the State Rules: "*No part of the bond or deposit will be released under this paragraph so long as the lands to which the release would be applicable are contributing suspended solids to streamflow or runoff outside the permit area in excess of the requirements set by UCA 40-10-17(j) of the Act and by R645-301-751*". Comparing "background" conditions (or in this case the approved Reference Area), it has been shown that the cover values, paramount to erosion control, of the Reclaimed Area is not statistically dissimilar than the Reference Area.

The State of Utah also encourages the collection of quantitative data that can indicates which plant species are growing on the Reclaimed Areas and how much (quantity) of each of these species are becoming established. Reporting cover by species and frequency enables one to portray this information as well as calculate community similarity, community diversity, and species diversity. One community similarity index suggested that the Reclaimed Area is quite similar to the Reference area with respect to cover of shrubs, perennial grasses, combined herbaceous species, and weeds. Two diversity indices suggested that the Reclaimed Area had greater diversity the Reference Area. These data analyses suggests that the revegetation at Sowbelly Canyon is progressing well and with the statistical, similarity, and diversity comparisons described above, Phase II bond reduction through the State of Utah is probably warranted.

TABLE 1: Total cover and composition summary for the Reclaimed Areas in Sowbelly Canyon.

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE
Living Cover	47.44	12.92	80
Litter	11.65	9.48	80
Bareground	25.04	14.08	80
Rock	15.88	12.47	80
COMPOSITION			
Shrubs	10.06	18.44	80
Forbs	37.16	27.88	80
Grasses	52.79	28.58	80

TABLE 2: Species cover and frequency summary for the Reclaimed Areas in Sowbelly Canyon.

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY
TREES & SHRUBS				
Artemisia tridentata	0.39	1.54	80	7.50
Atriplex canescens	0.44	2.98	80	2.50
Ceratoides lanata	0.31	1.99	80	2.50
Chrysothamnus nauseosus	3.50	8.42	80	21.25
Gutierrezia sarothrae	0.06	0.56	80	1.25
Kochia prostrata	0.19	1.67	80	1.25
FORBS				
Achillea millefolium	0.13	3.90	80	2.50
Artemisia ludoviciana	1.00	5.83	80	6.25
Aster glaucodes	4.73	11.33	80	23.75
Descurainia pinnata	0.06	0.56	80	1.25
Epilobium halleanum	0.06	0.56	80	1.25
Grindelia squarrosa	0.44	2.12	80	5.00
Hedysarum boreale	0.06	0.56	80	1.25
Kochia scoparia	1.63	6.46	80	10.00
Linum lewisii	1.91	3.90	80	27.50
Melilotus officinalis	7.48	11.59	80	60.00
Penstemon palmeri	0.44	1.62	80	7.50
Salsola pestifer	0.06	0.56	80	1.25
Sanguisorba minor	0.13	1.11	80	1.25
GRASSES				
Agropyron cristatum	0.38	1.73	80	5.00
Bromus carinatus	0.19	1.24	80	2.50
Elymus cinereus	3.88	7.42	80	33.75
Elymus lanceolatus	5.88	7.11	80	56.25
Elymus smithii	5.06	8.82	80	38.75
Elymus spicatus	5.00	9.05	80	35.00
Elymus trachycaulus	1.75	7.79	80	6.25
Hordeum jubatum	0.13	1.11	80	1.25
Poa secunda	1.81	5.43	80	17.50
Stipa hymenoides	0.38	1.73	80	5.00

TABLE 3: Total cover and composition summary for the Reference Area in Sowbelly Canyon.

TOTAL COVER	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE
Vascular Plants	49.25	14.25	40
Nonvascular Plants*	0.13	0.78	40
Litter	21.75	10.81	40
Bareground	10.70	10.77	40
Rock	18.30	14.96	40
COMPOSITION			
Shrubs	22.68	20.09	40
Forbs	17.73	20.53	40
Grasses	59.59	18.13	40

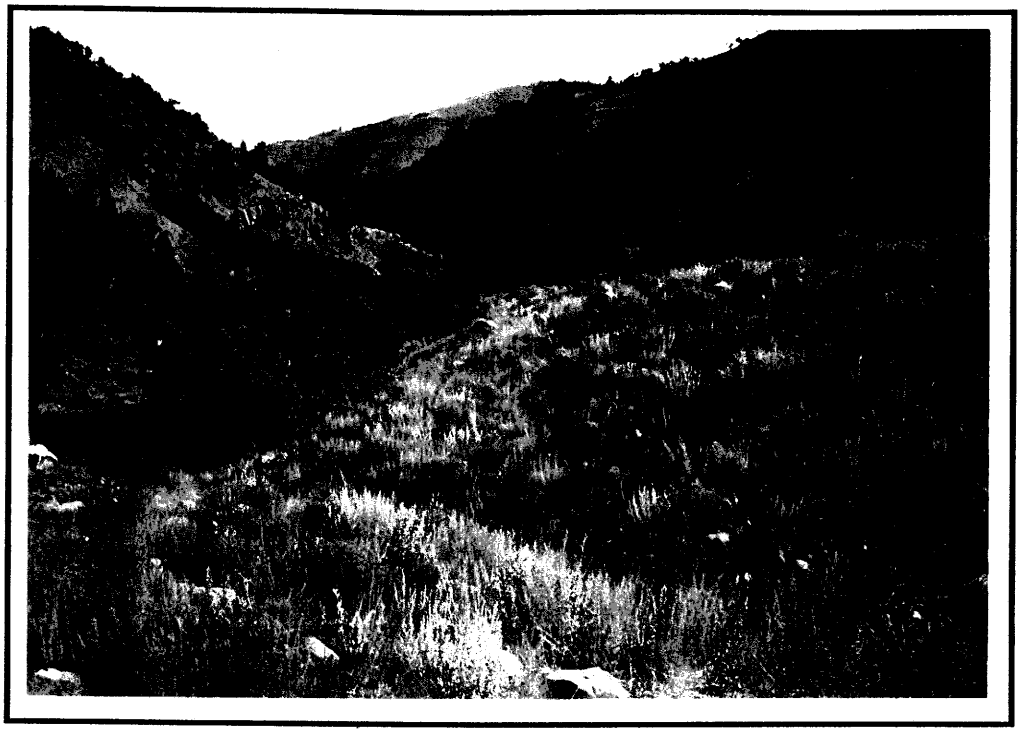
* Includes fungi.

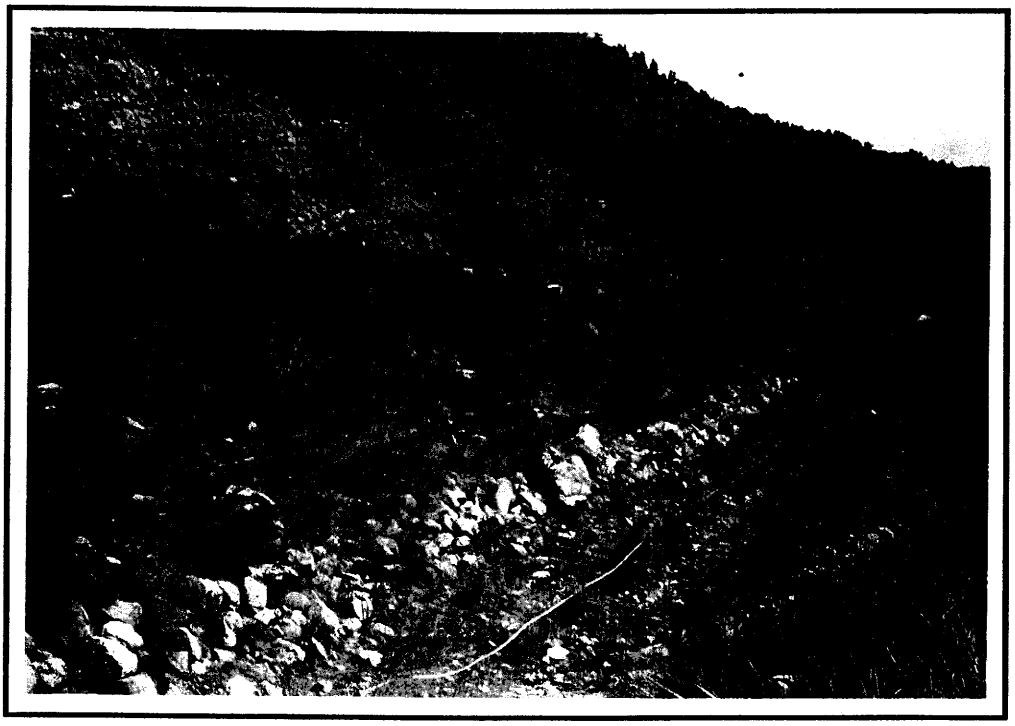
TABLE 4: Species cover and frequency summary for the Reference Area in Sowbelly Canyon.

SPECIES	% MEAN COVER	STANDARD DEVIATION	SAMPLE SIZE	RELATIVE FREQUENCY	
TREES & SHRUBS					
Artemisia tridentata	0.25	1.09	40	5.00	shrubs 11.88
Atriplex canescens	6.25	8.86	40	40.00	
Chrysothamnus nauseosus	5.38	9.58	40	37.50	weedy 0
FORBS					
Aster glaucodes	1.38	5.12	40	7.50	Forbs 7.88
Artemisia ludoviciana	6.25	8.20	40	42.50	
Descurainia pinnata	0.38	1.73	40	5.00	weedy
Grindelia squarrosa	0.13	0.78	40	2.50	
Medicago sativa	0.25	1.09	40	5.00	~~0.51~~ 2.39
GRASSES					
Bromus tectorum	1.88	6.77	40	12.50	NPG 26.62
Dactylis glomerata	0.50	2.45	40	5.00	
Elymus hispidus	0.50	1.87	40	7.50	
Elymus lanceolatus	6.50	9.10	40	55.00	EPG
Elymus salinus	1.25	7.81	40	2.50	0.50
Elymus smithii	11.38	12.89	40	52.50	
Elymus spicatus	0.13	0.78	40	2.50	
Poa secunda	0.63	3.90	40	2.50	
Stipa hymenoides	6.25	12.18	40	30.00	

COLOR PHOTOGRAPHS

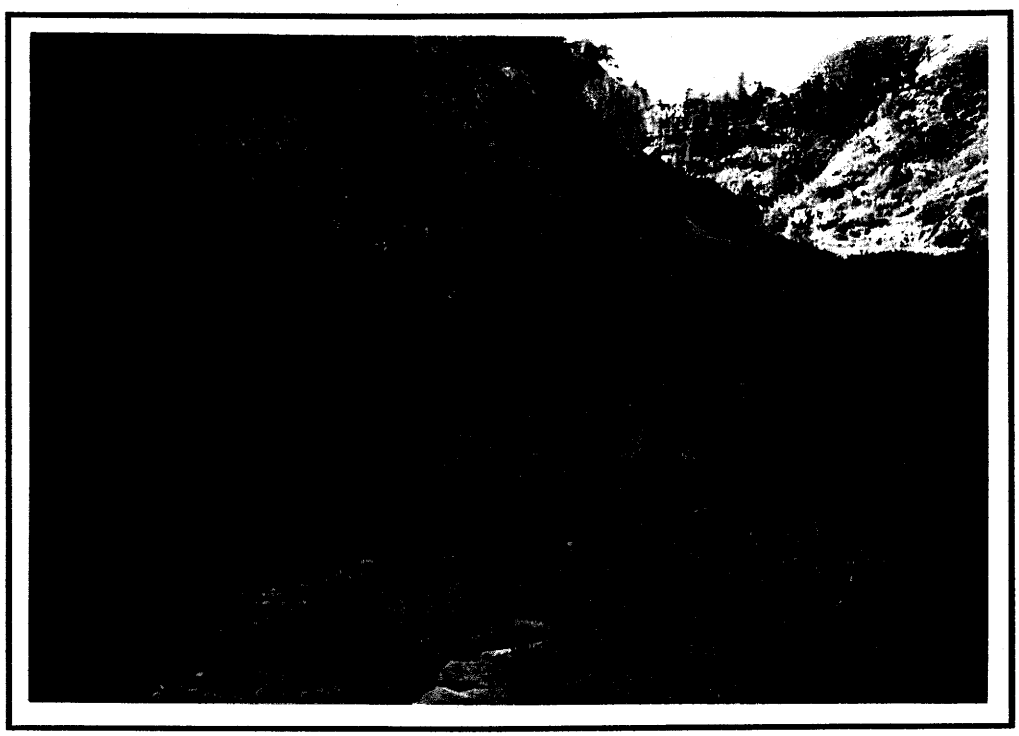
Reclaimed Areas





COLOR PHOTOGRAPHS

Reference Area



Sowbelly
Reclaimed Area
Exposure: Variable
Slope: Variable
Sample Date: 23 Aug ' 00

R = Riparian

	1.00	2.00	R 3.00	4.00	5.00	6.00	7.00	8.00
TREES & SHRUBS								
Artemisia tridentata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Atriplex canescens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ceratoides lanata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysothamnus nauseosus	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
Gutierrezia sarothrae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kochia prostrata	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FORBS								
Linum lewisii	5.00	5.00	0.00	0.00	10.00	0.00	0.00	0.00
Achillea millefolium	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
Artemisia ludoviciana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aster glaucodes	0.00	0.00	2.00	45.00	40.00	0.00	0.00	0.00
Descurainia pinnata	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
Epilobium halleanum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grindelia squarrosa	10.00	15.00	0.00	0.00	0.00	5.00	0.00	0.00
Hedysarum boreale	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kochia scoparia	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
Melilotus officinalis	0.00	0.00	3.00	0.00	0.00	10.00	25.00	15.00
Penstemon palmeri	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salsola pestifer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sanguisorba minor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRASSES								
Agropyron cristatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bromus carinatus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus cinereus	0.00	0.00	0.00	5.00	0.00	10.00	0.00	15.00
Elymus lanceolatus	5.00	10.00	30.00	5.00	0.00	0.00	25.00	15.00
Elymus smithii	0.00	0.00	0.00	0.00	10.00	5.00	0.00	0.00
Elymus spicatus	5.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus trachycaulus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hordeum jubatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa secunda	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stipa hymenoides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COVER								
Total Living Cover	45.00	40.00	40.00	70.00	60.00	50.00	50.00	45.00
Litter	10.00	10.00	30.00	20.00	5.00	10.00	10.00	15.00
Bareground	35.00	35.00	5.00	5.00	25.00	30.00	35.00	30.00
Rock	10.00	15.00	25.00	5.00	10.00	10.00	5.00	10.00
% COMPOSITION								
Shrubs	33.33	0.00	0.00	0.00	0.00	40.00	0.00	0.00
Forbs	33.33	50.00	25.00	85.71	83.33	30.00	50.00	33.33
Grasses	33.33	50.00	75.00	14.29	16.67	30.00	50.00	66.67

9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	5.00	0.00	5.00	5.00	5.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	50.00	30.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	5.00	5.00	0.00	5.00	0.00	0.00	0.00	0.00	5.00	10.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	15.00	0.00	0.00	0.00	10.00	0.00	0.00	5.00	0.00
0.00	15.00	0.00	10.00	0.00	0.00	10.00	0.00	10.00	20.00	0.00
30.00	0.00	5.00	0.00	0.00	0.00	15.00	0.00	10.00	0.00	10.00
10.00	0.00	0.00	15.00	50.00	0.00	0.00	0.00	0.00	0.00	10.00
0.00	0.00	0.00	0.00	0.00	45.00	0.00	45.00	20.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55.00	25.00	75.00	55.00	60.00	50.00	40.00	50.00	60.00	50.00	70.00
25.00	20.00	5.00	30.00	30.00	40.00	50.00	5.00	30.00	10.00	15.00
10.00	10.00	10.00	10.00	5.00	5.00	5.00	40.00	5.00	15.00	5.00
10.00	45.00	10.00	5.00	5.00	5.00	5.00	5.00	5.00	25.00	10.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	57.14
9.09	40.00	73.33	54.55	16.67	10.00	12.50	10.00	8.33	20.00	14.29
90.91	60.00	26.67	45.45	83.33	90.00	87.50	90.00	66.67	80.00	28.57

20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00	28.00	R 29.00	R 30.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	5.00	5.00	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	2.00	20.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	5.00	5.00	5.00	0.00	3.00	0.00	35.00	0.00	5.00	10.00
0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.00	5.00	0.00	10.00	5.00	0.00	15.00	10.00	5.00	0.00
5.00	0.00	10.00	0.00	0.00	5.00	5.00	0.00	10.00	5.00	0.00
0.00	25.00	0.00	20.00	0.00	0.00	5.00	10.00	20.00	15.00	0.00
10.00	0.00	5.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	20.00
5.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	10.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
45.00	35.00	40.00	35.00	50.00	35.00	40.00	75.00	50.00	30.00	30.00
5.00	10.00	10.00	5.00	10.00	50.00	5.00	15.00	15.00	5.00	10.00
40.00	20.00	10.00	50.00	25.00	10.00	45.00	5.00	25.00	25.00	10.00
10.00	35.00	40.00	10.00	15.00	5.00	10.00	5.00	10.00	40.00	50.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
33.33	28.57	25.00	42.86	10.00	14.29	50.00	46.67	0.00	16.67	33.33
66.67	71.43	75.00	57.14	90.00	85.71	50.00	33.33	100.00	83.33	66.67

31.00	32.00	33.00	34.00	35.00	36.00	37.00	38.00	39.00	40.00	41.00
5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	1.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
25.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	5.00	25.00	15.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00	0.00	5.00	5.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	10.00	5.00	25.00	0.00	10.00	20.00	0.00	0.00	14.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	5.00	0.00	10.00	30.00	5.00	0.00	5.00	5.00	0.00	5.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	20.00	0.00	5.00	0.00	35.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	5.00	0.00	10.00
10.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	5.00	0.00	0.00
0.00	0.00	10.00	0.00	0.00	15.00	5.00	0.00	5.00	10.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
0.00	5.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60.00	20.00	35.00	55.00	35.00	40.00	65.00	35.00	45.00	50.00	35.00
15.00	5.00	5.00	10.00	10.00	5.00	20.00	5.00	10.00	10.00	10.00
10.00	20.00	5.00	25.00	40.00	15.00	5.00	15.00	35.00	25.00	20.00
15.00	55.00	55.00	10.00	15.00	40.00	10.00	45.00	10.00	15.00	35.00
50.00	0.00	0.00	9.09	0.00	0.00	0.00	0.00	55.56	52.00	42.86
16.67	75.00	14.29	63.64	85.71	62.50	38.46	42.86	11.11	28.00	14.29
33.33	25.00	85.71	27.27	14.29	37.50	61.54	57.14	33.33	20.00	42.86

42.00	R 43.00	44.00	45.00	46.00	R 47.00	48.00	49.00	50.00	51.00	52.00
0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	15.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	5.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	10.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	5.00	10.00	0.00	0.00	5.00	12.00	15.00	30.00	30.00	15.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	5.00	0.00	15.00	0.00	20.00	5.00	0.00	0.00	0.00	25.00
5.00	5.00	15.00	0.00	5.00	0.00	10.00	5.00	10.00	0.00	10.00
10.00	10.00	5.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
0.00	0.00	0.00	0.00	0.00	10.00	0.00	15.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50.00	25.00	45.00	60.00	50.00	40.00	45.00	40.00	40.00	30.00	65.00
10.00	10.00	5.00	10.00	20.00	5.00	15.00	5.00	10.00	15.00	10.00
20.00	20.00	35.00	20.00	15.00	40.00	25.00	45.00	35.00	30.00	5.00
20.00	45.00	15.00	10.00	15.00	15.00	15.00	10.00	15.00	25.00	20.00
0.00	0.00	33.33	0.00	80.00	0.00	11.11	0.00	0.00	0.00	7.69
60.00	20.00	22.22	16.67	10.00	25.00	55.56	50.00	75.00	100.00	23.08
40.00	80.00	44.44	83.33	10.00	75.00	33.33	50.00	25.00	0.00	69.23

53.00	54.00	55.00	56.00	57.00	58.00	59.00	60.00	61.00	62.00	63.00
0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	20.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	20.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.00	50.00	10.00	5.00	5.00	0.00	65.00	5.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	5.00	0.00	5.00	0.00	0.00	0.00	10.00	0.00
5.00	10.00	0.00	20.00	25.00	20.00	5.00	0.00	5.00	0.00	10.00
5.00	25.00	10.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	10.00
0.00	0.00	0.00	0.00	5.00	0.00	10.00	0.00	25.00	35.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30.00	55.00	60.00	45.00	45.00	35.00	25.00	65.00	40.00	50.00	45.00
10.00	5.00	15.00	15.00	10.00	5.00	5.00	5.00	5.00	5.00	5.00
40.00	25.00	10.00	30.00	30.00	50.00	55.00	25.00	45.00	35.00	40.00
20.00	15.00	15.00	10.00	15.00	10.00	15.00	5.00	10.00	10.00	10.00
16.67	36.36	0.00	0.00	0.00	14.29	40.00	0.00	0.00	0.00	44.44
50.00	0.00	83.33	22.22	11.11	14.29	0.00	100.00	12.50	10.00	11.11
33.33	63.64	16.67	77.78	88.89	71.43	60.00	0.00	87.50	90.00	44.44

64.00	65.00	66.00	67.00	68.00	69.00	70.00	71.00	72.00	73.00	74.00
0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	10.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	20.00	0.00	5.00	0.00	15.00	0.00	10.00	10.00
5.00	0.00	0.00	30.00	5.00	0.00	0.00	0.00	10.00	25.00	10.00
0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	35.00	5.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	5.00	10.00	5.00	10.00	0.00	25.00	0.00	0.00
5.00	0.00	5.00	0.00	5.00	5.00	50.00	0.00	0.00	0.00	0.00
20.00	20.00	15.00	5.00	0.00	5.00	10.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
0.00	10.00	5.00	0.00	0.00	0.00	0.00	0.00	5.00	15.00	0.00
0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50.00	45.00	35.00	65.00	45.00	55.00	75.00	35.00	40.00	50.00	30.00
5.00	5.00	10.00	5.00	10.00	5.00	5.00	15.00	10.00	10.00	5.00
35.00	40.00	45.00	25.00	35.00	30.00	10.00	40.00	40.00	35.00	55.00
10.00	10.00	10.00	5.00	10.00	10.00	10.00	10.00	10.00	5.00	10.00
0.00	11.11	0.00	0.00	55.56	0.00	0.00	0.00	0.00	0.00	33.33
30.00	22.22	0.00	84.62	11.11	9.09	0.00	57.14	25.00	70.00	66.67
70.00	66.67	100.00	15.38	33.33	90.91	100.00	42.86	75.00	30.00	0.00

Sowbelly
Reclaimed Area
Exposure: V
Slope: Variable

75.00	76.00	77.00	R 78.00	79.00	80.00	Mean	SDev	Freq	Sample Date
									TREES & S
0.00	0.00	0.00	0.00	0.00	0.00	0.39	1.54	7.50	*Artemisia trid*
0.00	0.00	0.00	0.00	0.00	0.00	0.44	2.98	2.50	*Atriplex cane*
0.00	0.00	0.00	0.00	0.00	0.00	0.31	1.99	2.50	*Ceratoides lanata*
0.00	10.00	0.00	0.00	5.00	0.00	3.50	8.42	21.25	*Chrysotham*
0.00	0.00	0.00	0.00	5.00	0.00	0.06	0.56	1.25	*Gutierrezia s*
0.00	0.00	0.00	0.00	0.00	0.00	0.19	1.67	1.25	*Kochia prostrata*
									FORBS
0.00	0.00	0.00	0.00	25.00	10.00	1.91	3.90	27.50	*Linum lewisii*
0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.78	2.50	*Achillea mille*
50.00	15.00	0.00	0.00	5.00	0.00	1.00	5.83	6.25	*Artemisia lud*
0.00	45.00	0.00	30.00	0.00	0.00	4.73	11.33	23.75	*Aster glaucodes*
0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.56	1.25	*Descurainia*
0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.56	1.25	*Epilobium hal*
0.00	0.00	0.00	0.00	0.00	0.00	0.44	2.12	5.00	*Grindelia squ*
0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.56	1.25	*Hedysarum*
0.00	0.00	50.00	0.00	0.00	0.00	1.63	6.46	10.00	*Kochia scoparia*
10.00	0.00	0.00	0.00	0.00	0.00	7.48	11.59	60.00	*Melilotus offi*
0.00	0.00	0.00	0.00	0.00	5.00	0.44	1.62	7.50	*Penstemon*
0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.56	1.25	*Salsola pestifer*
0.00	0.00	0.00	0.00	0.00	0.00	0.13	1.11	1.25	*Sanguisorba*
									GRASSES
0.00	0.00	0.00	0.00	0.00	0.00	0.38	1.73	5.00	*Agropyron cr*
0.00	0.00	0.00	0.00	0.00	0.00	0.19	1.24	2.50	*Bromus carinatus*
0.00	0.00	0.00	0.00	0.00	5.00	3.88	7.42	33.75	*Elymus cinereus*
10.00	5.00	0.00	0.00	0.00	0.00	5.88	7.11	56.25	*Elymus lanc*
0.00	0.00	0.00	0.00	0.00	0.00	5.06	8.82	38.75	*Elymus smithii*
0.00	0.00	0.00	25.00	0.00	0.00	5.00	9.05	35.00	*Elymus spicatus*
0.00	0.00	0.00	0.00	0.00	0.00	1.75	7.79	6.25	*Elymus trach*
0.00	0.00	0.00	0.00	0.00	0.00	0.13	1.11	1.25	*Hordeum jub*
0.00	0.00	0.00	0.00	5.00	40.00	1.81	5.43	17.50	*Poa secunda*
0.00	0.00	0.00	0.00	0.00	0.00	0.38	1.73	5.00	*Stipa hymen*
									COVER
70.00	75.00	50.00	55.00	45.00	60.00	47.44	12.92		Total Living
2.00	5.00	5.00	5.00	5.00	10.00	11.65	9.48		Litter
3.00	15.00	35.00	30.00	35.00	20.00	25.04	14.08		Bareground
25.00	5.00	10.00	10.00	15.00	10.00	15.88	12.47		Rock
									% COMPOS
0.00	13.33	0.00	0.00	22.22	0.00	10.06	18.44		Shrubs
85.71	80.00	100.00	54.55	66.67	25.00	37.16	27.88		Forbs
14.29	6.67	0.00	45.45	11.11	75.00	52.79	28.58		Grasses

Sowbelly Reference Area
AML Reclaimed Site
Exposure: Variable
Slope: Variable
Sample Date: 23 Aug ' 00

R = Riparian

	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
TREES & SHRUBS								
Artemisia tridentata	0.00	0.00	0.00	0.00	0.00	0.00	5.00	5.00
Atriplex canescens	10.00	20.00	0.00	20.00	15.00	25.00	5.00	15.00
Chrysothamnus nauseosus	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
FORBS								
Artemisia ludoviciana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aster glaucodes	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Descurainia pinnata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grindelia squarrosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medicago sativa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRASSES								
Bromus tectorum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dactylis glomerata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus hispidus	0.00	0.00	5.00	0.00	5.00	0.00	0.00	0.00
Elymus lanceolatus	25.00	0.00	5.00	10.00	0.00	10.00	0.00	0.00
Elymus salinus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elymus smithii	0.00	30.00	20.00	30.00	40.00	30.00	25.00	20.00
Elymus spicatus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poa secunda	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stipa hymenoides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COVER								
Total Living Cover	35.00	50.00	40.00	60.00	65.00	65.00	35.00	40.00
Litter	20.00	40.00	45.00	25.00	20.00	20.00	10.00	15.00
Bareground	5.00	5.00	5.00	5.00	5.00	5.00	45.00	35.00
Crypto	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rock	40.00	5.00	10.00	10.00	10.00	10.00	10.00	10.00
% COMPOSITION								
Shrubs	28.57	40.00	0.00	33.33	30.77	38.46	28.57	50.00
Forbs	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00
Grasses	71.43	60.00	75.00	66.67	69.23	61.54	71.43	50.00

9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	25.00	10.00	0.00	10.00	15.00	10.00	0.00	0.00	15.00	20.00
0.00	5.00	0.00	0.00	0.00	35.00	0.00	30.00	5.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	15.00	10.00	5.00	5.00	0.00	10.00	10.00	0.00	5.00	5.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	20.00	10.00	15.00	15.00	20.00	40.00	30.00	5.00	25.00	20.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30.00	65.00	30.00	25.00	35.00	70.00	60.00	70.00	30.00	45.00	45.00
10.00	20.00	10.00	10.00	5.00	20.00	30.00	20.00	5.00	35.00	35.00
35.00	10.00	35.00	15.00	5.00	5.00	5.00	5.00	40.00	5.00	5.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.00	5.00	25.00	50.00	55.00	5.00	5.00	5.00	25.00	15.00	15.00
16.67	46.15	33.33	0.00	28.57	71.43	16.67	42.86	16.67	33.33	44.44
0.00	0.00	0.00	20.00	14.29	0.00	0.00	0.00	50.00	0.00	0.00
83.33	53.85	66.67	80.00	57.14	28.57	83.33	57.14	33.33	66.67	55.56

R

20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00	28.00	29.00	30.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	10.00	5.00	5.00	30.00	0.00	20.00	5.00	0.00	0.00	20.00
5.00	10.00	5.00	0.00	15.00	25.00	0.00	15.00	20.00	25.00	0.00
0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	15.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00
0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	0.00	35.00	0.00	5.00	35.00	25.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00
0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00
0.00	5.00	0.00	50.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00
70.00	50.00	35.00	55.00	60.00	60.00	60.00	40.00	55.00	60.00	70.00
20.00	25.00	45.00	30.00	20.00	30.00	15.00	10.00	15.00	25.00	15.00
5.00	10.00	10.00	5.00	10.00	5.00	5.00	5.00	5.00	10.00	5.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.00	15.00	10.00	10.00	10.00	5.00	20.00	45.00	25.00	5.00	10.00
42.86	20.00	14.29	9.09	50.00	0.00	33.33	12.50	0.00	0.00	28.57
7.14	70.00	14.29	0.00	25.00	41.67	0.00	37.50	36.36	41.67	0.00
50.00	10.00	71.43	90.91	25.00	58.33	66.67	50.00	63.64	58.33	71.43

31.00	32.00	33.00	34.00	35.00	36.00	37.00	38.00	39.00	40.00	Mean
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.25
10.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	5.00	0.00	5.38
20.00	5.00	15.00	0.00	15.00	0.00	15.00	15.00	15.00	15.00	6.25
25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.38
0.00	10.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
0.00	40.00	0.00	0.00	0.00	0.00	5.00	5.00	0.00	0.00	1.88
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
5.00	0.00	10.00	5.00	0.00	5.00	0.00	0.00	0.00	0.00	6.50
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.38
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63
0.00	15.00	10.00	25.00	35.00	5.00	10.00	15.00	25.00	40.00	6.25
70.00	70.00	35.00	35.00	50.00	35.00	30.00	35.00	45.00	55.00	49.25
25.00	20.00	10.00	45.00	40.00	20.00	10.00	20.00	20.00	15.00	21.75
4.00	9.00	15.00	5.00	5.00	5.00	10.00	10.00	10.00	5.00	10.70
0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.13
1.00	1.00	40.00	15.00	5.00	40.00	50.00	35.00	25.00	25.00	18.30
14.29	0.00	0.00	0.00	0.00	71.43	0.00	0.00	11.11	0.00	22.68
64.29	21.43	42.86	14.29	30.00	0.00	50.00	42.86	33.33	27.27	17.73
21.43	78.57	57.14	85.71	70.00	28.57	50.00	57.14	55.56	72.73	59.59

Sowbelly Reference Area
AML Reclaimed Site
Exposure: Variable
Slope: Variable
Sample Date: 23 Aug ' 00

SDev	Freq	
		TREES & SHRUBS
1.09	5.00	*Artemisia tridentata*
8.86	40.00	*Atriplex canescens*
9.58	37.50	*Chrysothamnus nauseosus*
		FORBS
8.20	42.50	*Artemisia ludoviciana*
5.12	7.50	*Aster glaucodes*
1.73	5.00	*Descurainia pinnata*
0.78	2.50	*Grindelia squarrosa*
1.09	5.00	*Medicago sativa*
		GRASSES
6.77	12.50	*Bromus tectorum*
2.45	5.00	*Dactylis glomerata*
1.87	7.50	*Elymus hispidus*
9.10	55.00	*Elymus lanceolatus*
7.81	2.50	*Elymus salinus*
12.89	52.50	*Elymus smithii*
0.78	2.50	*Elymus spicatus*
3.90	2.50	*Poa secunda*
12.18	30.00	*Stipa hymenoides*
		COVER
14.25		Total Living Cover
10.81		Litter
10.77		Bareground
0.78		Crypto
14.96		Rock
		% COMPOSITION
20.09		Shrubs
20.53		Forbs
18.13		Grasses

The most frequently used index of similarity is the Motyka (also called Bray and Curtis) index of similarity (Motyka, Dobrzanski, and Zawadski, 1950). The formula for this index is:

$$IS_{mo} = \frac{2w}{a + b} \times 100$$

w = sum of the lesser values in common between area A and area B

a = sum of the values for area A

b = sum of the values for area B

Similarity values as low as 45% (based on species cover) have been used to denote similarity between communities (Steward and Webber, 1981) and similarities above 85% (based on species cover) can be assumed to reflect samples from a homogeneous sample location (Bray and Curits, 1957).

Growth-forms Used for Evaluation of Reclamation

When the similarity index is used to evaluate reclamation success, evaluation should be based on the number of growth-forms the reclaimed area has in common with the reference area and the cover and production of each of those growth-forms. Reclamation success should be evaluated at the growth-form level because it allows some flexibility in the selection of species to be used in reclamation while retaining the essential character of the vegetation types disturbed. Cover and production may be evaluated as separate attributes or they may be converted to relative values and combined into an importance value.

The use of grasses, shrubs, and forbs different from those found in an area prior to mining is not uncommon. The proposed post-mining land use may be greatly enhanced by the use of species not native to the area or that may be uncommon due to poor management practices. Requiring similarity at the growth-form level helps to ensure that utilization of environmental resources by the vegetation will not differ greatly between the reference and reclaimed area communities.

APPENDIX C

Legal, Financial, Compliance and Related Information

Annual Report of Officers
as submitted to the Utah Department of Commerce

and other changes in ownership and control information
as required under R645-301-110.

CONTENTS

LIST OF OFFICERS AND DIRECTORS

September 30, 2000

RAG AMERICAN COAL HOLDING, INC.

(Formerly Ruhrkohle-Stinnes Corporation; name change to Ruhr-American Coal Corporation 10/1/75; name change to RAG American Coal Corporation 2/22/98; name change to RAG American Coal Holding, Inc. 6/18/99)

Principal Operating Office:	999 Corporate Blvd. Linthicum Heights, MD 21090
Telephone:	410/689-7500
Incorporation:	
State	Delaware The Corporation Trust Company, 1209 Orange Street, Wilmington, DE 19801
Date	October 31, 1974
Existence	Perpetual
Qualified to Do Business In:	West Virginia, Colorado and Maryland
Ownership – Percentage:	RAG Coal International Aktiengesellschaft (5/30/2000) – 100%
IRS Identification Number:	13-2793319

Officers:

Title	Name	Social Security #	Date Assumed Office
President and Chief Executive Officer	James F. Roberts	[redacted]	March 1, 1999
Executive Vice President	John M. DeMichiei	[redacted]	March 1, 2000
Senior Vice President	John R. Tellmann	[redacted]	March 1, 2000
Senior Vice President, General Counsel and Secretary	Greg A. Walker	[redacted]	August 24, 1999
Vice President, West Virginia Operations	Randy Hansford	[redacted]	March 1, 2000
Vice President, Development	James A. Olsen	[redacted]	March 1, 2000
Vice President, Human Resources	Michael R. Peelish	[redacted]	March 1, 2000
Vice President, Treasurer and Controller	Frank J. Wood	[redacted]	March 1, 2000
Assistant Treasurer	Gary G. Pearson	[redacted]	March 1, 2000

Directors:

Chairman	Jürgen W. Stadelhofer	German	September 9, 1997
Vice Chairman	Karl F. Jakob	German	July 1, 1999
	Christoph Danzer-Vanotti	German	September 18, 2000
	Heribert Protzek	German	September 18, 2000
	James F. Roberts	[redacted]	March 1, 1999
	Manfred Warda	German	September 18, 2000
	Anthony Williams	Withheld	March 22, 2000
	Fritz Ziegler	German	September 18, 2000

[redacted]

RAG AMERICAN COAL HOLDING, INC.

Resignations

Title	Name	Social Security No.	Date Resigned
Secretary and Treasurer	Roy West	[redacted]	August 24, 1999
Vice President, Finance and Treasurer	J. Alan Link		April 1, 2000
Director	Rainer Benning	German	September 30, 2000

September 30, 2000

RAG AMERICAN COAL COMPANY

Principal Operating Office: 999 Corporate Blvd.
Linthicum Heights, MD 21090

Telephone: 410/689-7500

Incorporation:

State	The Corporation Trust Company, 1209 Orange Street, Wilmington, DE 19801
Date	June 18, 1999
Existence	Perpetual

Qualified to Do Business In: Colorado, Maryland

Ownership - Percentage: RAG American Coal Holding, Inc. (6/30/99) – 100%
999 Corporate Blvd., Linthicum Heights, MD 21090

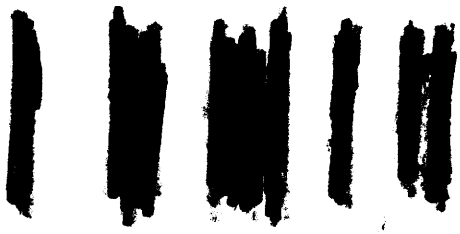
IRS Identification Number: 54-1947356

OFFICERS:

Title	Name	Social Security #	Date Assumed Office
President, CEO	James F. Roberts	[redacted]	June 24, 1999
Executive Vice President, Chief Operating Officer	John M. DeMichiei	[redacted]	June 30, 1999
Senior Vice President, General Counsel And Secretary	Greg A. Walker	[redacted]	June 30, 1999
Vice President	James A. Olsen	[redacted]	September 18, 2000
Vice President and Controller	Darrell H. Roland	[redacted]	March 1, 2000
Vice President and Treasurer	Frank J. Wood	[redacted]	June 30, 1999/March 1, 2000
Vice President, Planning	Klaus-Dieter Beck	German	July 7, 1999
Vice President, Human Resources	Michael R. Peelish	[redacted]	July 7, 1999
Assistant Treasurer	Gary G. Pearson	[redacted]	March 1, 2000

DIRECTORS:

Karl F. Jakob	German	September 30, 2000
James F. Roberts	[redacted]	June 18, 1999
Jurgen W. Stadelhofer	German	July 20, 1999



RAG AMERICAN COAL COMPANY

Resignations (since incorporation):

Title	Name	Social Security No.	Date Resigned
Assistant Secretary	J. Alan Link	[redacted]	June 30, 1999
Secretary, Treasurer	Roy West	[redacted]	June 30, 1999
Senior Vice President, Sales and Marketing	Nicholas P. Moros	[redacted]	August 11, 1999
Assistant Secretary	Susan E. Chetlin	[redacted]	December 31, 1999
Controller	Frank J. Wood	[redacted]	March 1, 2000
Senior Vice President, Development	Richard D. Mills	[redacted]	March 31, 2000
Director, Vice President and Treasurer	J. Alan Link	[redacted]	April 1, 2000
Senior Vice President, Western Operations	George E. Vajda	[redacted]	May 16, 2000
Vice President, Process Management	Randall J. Scott	[redacted]	June 30, 2000
Director	Rainer Benning	German	September 30, 2000

June 30, 2000

RAG MIDWEST HOLDING COMPANY

(Formerly Cyprus Amax Midwest Holding Company, name change 6/30/99)

Principal Operating Offices:	999 Corporate Blvd. Linthicum Heights, MD 21090
Telephone:	410/689-7500
Incorporation:	
State	Delaware, The Corporation Trust Company, 1209 Orange Street, Wilmington, DE 19801
Date	April 2, 1998
Existence	Perpetual
Qualified to Do Business In:	Illinois, Indiana, Utah
Ownership – Percentage:	RAG American Coal Company (successor by merger to Cyprus Amax Coal Company 6/30/99) – 100% 999 Corporate Blvd., Linthicum Heights, MD 21090
IRS Identification Number:	84-1456626

OFFICERS:

Title	Name	Social Security #	Date Assumed Office
President	John M. DeMichiei	[redacted]	October 8, 1998
Senior Vice President, General Counsel and Secretary	Greg A. Walker	[redacted]	June 30, 1999
Vice President and Controller	Darrell H. Roland	[redacted]	March 1, 2000
Vice President and Treasurer	Frank J. Wood	[redacted]	April 2, 1998/March 1, 2000
Assistant Treasurer	Gary G. Pearson	[redacted]	March 1, 2000
Assistant Secretary	C. Corwin Bromley	[redacted]	January 1, 2000
Assistant Secretary	Sharon J. Fetherhuff	[redacted]	January 1, 2000
Assistant Secretary	William M. Hartzler	[redacted]	January 1, 2000

DIRECTORS

James F. Roberts	[redacted]	June 30, 1999
John M. DeMichiei	[redacted]	June 30, 1999
Frank J. Wood	[redacted]	June 30, 1999

June 30, 2000

RAG MIDWEST HOLDING COMPANY

Resignations since Incorporation:

Title	Name	Social Security #	Date Resigned
Assistant Secretary	Morris W. Kegley	[redacted]	July 15, 1998
President	Randall J. Scott	[redacted]	October 8, 1998
Director	Garold R. Spindler	[redacted]	June, 30, 1999
Director	Gerald J. Malys	[redacted]	June, 30, 1999
Director	Philip C. Wolf	[redacted]	June, 30, 1999
Senior Vice President	Gerald J. Malys	[redacted]	June, 30, 1999
Senior Vice President, General Counsel and Secretary	Philip C. Wolf	[redacted]	June 30, 1999
Vice President	Patrick J. Panzarino	[redacted]	June 30, 1999
Vice President and Treasurer	Farokh S. Hakimi	[redacted]	June 30, 1999
Assistant Treasurer	J. M. Coyner	[redacted]	June 30, 1999
Director of Tax	J. David Flemming	[redacted]	June 30, 1999
Assistant Secretary	Sharon J. Fetherhuff	[redacted]	June 30, 1999
Assistant Secretary	Greg A. Walker	[redacted]	June 30, 1999
Assistant Secretary	Dale E. Huffman	[redacted]	June, 30, 1999
Senior Vice President, Sales and Marketing	Nicholas P. Moros	[redacted]	August 11, 1999
Assistant Secretary	Susan E. Chetlin	[redacted]	December 31, 1999
Controller	Frank J. Wood	[redacted]	March 1, 2000
Vice President and Treasurer	J. Alan Link	[redacted]	April 1, 2000

June 30, 2000

CASTLE GATE HOLDING COMPANY

Principal Operating Offices:	999 Corporate Blvd. Linthicum Heights, MD 21090
Telephone:	410/689-7500
Incorporation:	
State	Delaware, The Corporation Trust Company, 1209 Orange Street, Wilmington, DE 19801
Date	April 2, 1998
Existence	Perpetual
Qualified to Do Business In:	Utah
Ownership - Percentage:	RAG Midwest Holding Company - 100% 999 Corporate Blvd., Linthicum Heights, MD 21090
IRS Identification Number:	84-1456620

OFFICERS:

Title	Name	Social Security #	Date Assumed Office
President	John M. DeMichiei	[redacted]	October 8, 1998
Senior Vice President, General Counsel And Secretary	Greg A. Walker	[redacted]	June 30, 1999
Vice President and Controller	Darrell H. Roland	[redacted]	March 1, 2000
Vice President and Treasurer	Frank J. Wood	[redacted]	April 2, 1998/March 1, 2000
Assistant Treasurer	Gary G. Pearson	[redacted]	March 1, 2000
Assistant Secretary	C. Corwin Bromley	[redacted]	January 1, 2000
Assistant Secretary	Sharon J. Fetherhuff	[redacted]	January 1, 2000
Assistant Secretary	William M. Hartzler	[redacted]	January 1, 2000

DIRECTORS:

James F. Roberts	[redacted]	June 30, 1999
John M. DeMichiei	[redacted]	June 30, 1999
Frank J. Wood	[redacted]	June 30, 1999

[redacted]

CASTLE GATE HOLDING COMPANY

Resignations since Incorporation

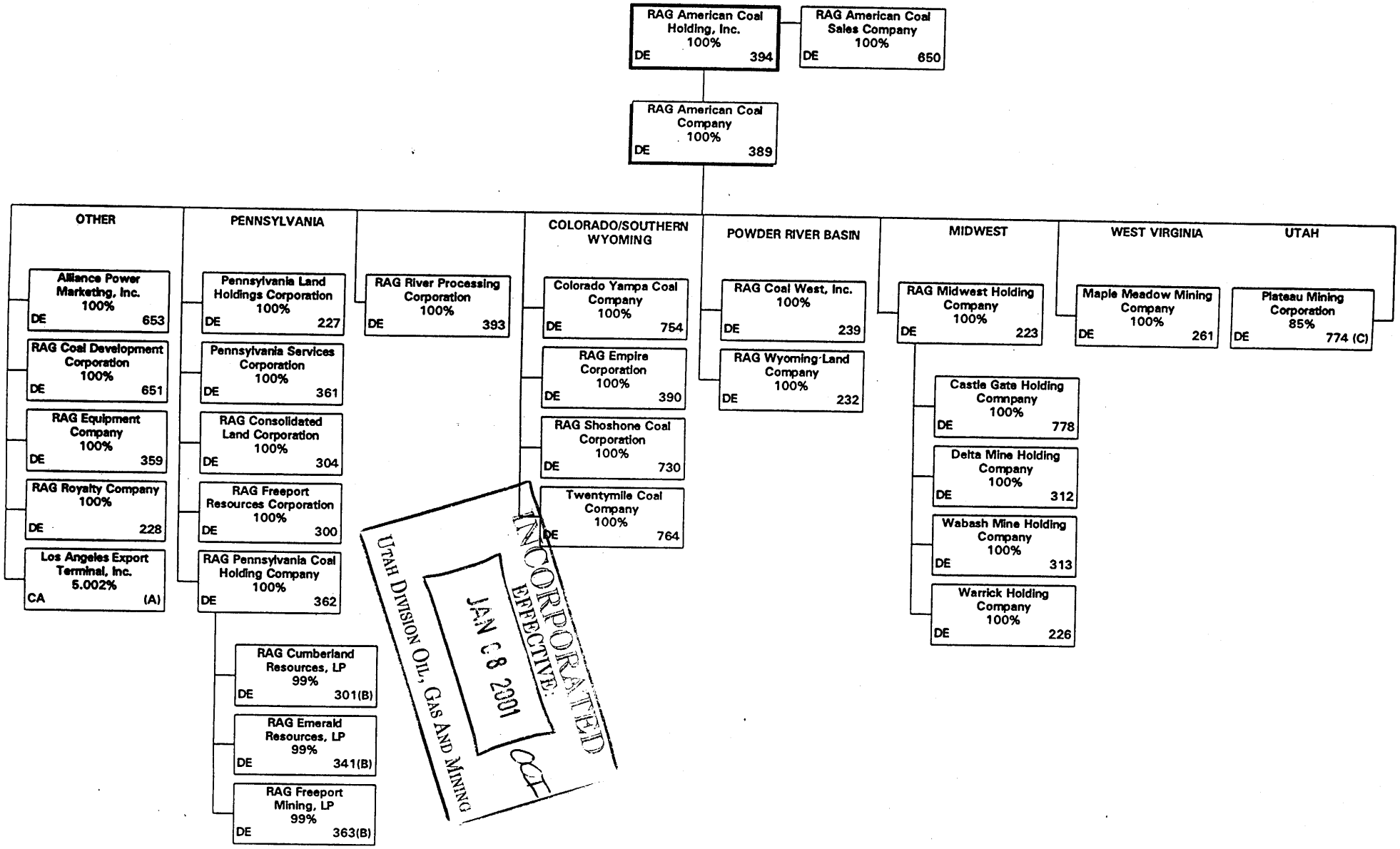
Assistant Secretary	Morris W. Kegley	July 15, 1998
President	Randall J. Scott	October 8, 1998
Director	Garold R. Spindler	June 30, 1999
Director	Gerald J. Malys	June 30, 1999
Director	Philip C. Wolf	June 30, 1999
Senior Vice President	Gerald J. Malys	June 30, 1999
Senior Vice President, General Counsel and Secretary	Philip C. Wolf	June 30, 1999
Vice President	Patrick J. Panzarino	June 30, 1999
Vice President and Treasurer	Farokh S. Hakimi	June 30, 1999
Assistant Treasurer	J. M. Coyner	June 30, 1999
Director of Tax	J. David Flemming	June 30, 1999
Assistant Secretary	Sharon J. Fetherhuff	June 30, 1999
Assistant Secretary	Greg A. Walker	June 30, 1999
Assistant Secretary	Dale E. Huffman	June 30, 1999
Senior Vice President, Sales and Marketing	Nicholas P. Moros	August 11, 1999
Assistant Secretary	Susan E. Chetlin	December 31, 1999
Controller	Frank J. Wood	March 1, 2000
Vice President and Treasurer	J. Alan Link	April 1, 2000

[redacted]

RAG AMERICAN COAL HOLDING, INC. - Summary of Organization

March 29, 2000

FIGURE 2.1-1. U.S. CORPORATE ORGANIZATION



INCORPORATED
EFFECTIVE:
JAN 08 2001
UTAH DIVISION OIL, GAS AND MINING

(A) 94.998% owned by approximately 35 shareholders
(B) 1% owned by Pennsylvania Services Corporation, General Partner
(C) 12% owned by Mitsubishi Development Pty. Ltd.: 3% owned by Mitsubishi International Corporation

APPENDIX E

Other Information

in accordance with the requirements of R645-301 and R645-302.

CONTENTS

NOT APPLICABLE