From: Dennis Ware <dware@alphanr.com>
To: "ogmcoal@utah.gov" <ogmcoal@utah.gov>
CC: "stevedemczak@utah.gov" <stevedemczak@utah.gov>
Date: 3/23/2011 2:17 PM
Subject: FW: Annual Report
Attachments: StarPoint 2010 Annual Report.pdf; Attachment A - Ownership andControl Plateau Mining Corporation.pdf; Year 8 Veg.Starpoint.MapA.fnl.pdf; Year 8 Veg.Starpoint.MapB.fnl.pdf; Year 8 Veg.Starpoint.MapC.fnl.pdf

This is the first of two email containing the Star Point Mine 2010 Annual Report

-----Original Message-----
From: Dennis Ware
Sent: Tuesday, March 22, 2011 10:02 AM
To: 'ogmcoal@utah.gov'
Cc: 'Steve Demczak'
Subject: Annual Report
Importance: High

Annual Report

The attached file is the filled-out form. Please open it to review the data.

Annual Report for Plateau Mining Corporations Star Point Mine C/007/0006 The attachments to this report are part of the report.
Please contact me to confirm that the report was and attachments were received.

Thanks,
Dennis N. Ware
Office 435-472-0475
Cell 435-650-2951

Submit by Email | Print Form | Reset Form

Annual Report

Date: 3/23/11

This Annual Report shows information the Division has for your mine. Submit the completed document and any additional information identified in the Appendices to the Division by **March 31, 2011**. During a complete inspection an inspector will check and verify the information.

GENERAL INFORMATION

Company Name	Plateau Mining Corporation	Mine Name	Star Point Mine
Permit Number	C/007/0006	Permit expiration Date	2012-01-28
Operator Name	Plateau Mining Corporation	Phone Number	+1 (435) 472-0475
Mailing Address	P.O. Box 30	Email	dware@alphanr.com

City: Helper State: UT Zip Code: 84526

CERTIFIED REPORTS

		DOGM File Location or Annual Report Location
Excess Spoil Piles	☐ Required ☒ Not Required	
Refuse Piles	☐ Required ☒ Not Required	
Impoundments	☐ Required ☒ Not Required	
Other:		

OPERATOR COMMENTS

REVIEWER COMMENTS ☐ Met Requirements ☐ Did Not meet Requirements

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 an attachment to this report or currently on file with the Division.

Please List Attachments:

Year Eight Vegetation Study (Attachemnet "B" including Map A,. Map B and Map C)

REVIEWER COMMENTS ☐ Met Requirements ☐ Did Not meet Requirements

LEGAL, FINANCIAL, COMPLIANCE AND RELATED INFORMATION

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. Please 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 change 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 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 an attachment to the report.

LEGAL/ FINANCIAL UPDATE	Included	DOGM File Location or Annual Report Location
Ownership and Control	☑	Attachment A
	☐	
	☐	
	☐	

REVIEWER COMMENTS ☐ Met Requirements ☐ Did Not meet Requirements

MAPS

Copies of mine maps, current and up-to-date through at least December 31, 2010, are to be provided to the Division as an attachment to this report in accordance with the requirements of R 645-301-525.240. The map copies shall be made in accordance with 30 CFR 75.1200 as required by MSHA. Mine maps are not considered confidential.

Map Name	Map Number	Included		Confidential	
		Yes	No	Yes	No
Annual Subsidence Map	Not Required	☐	☒	☐	☒
Mine Map	Not Required	☐	☒	☐	☒
		☐	☐	☐	☐
		☐	☐	☐	☐
		☐	☐	☐	☐

REVIEWER COMMENTS ☐ Met Requirements ☐ Did Not meet Requirements

OTHER INFORMATION

Please provide any comments of further information to be included as part of the Annual Report. Any other attachments are to be provided as an attachment to this report. If information is submitted as a group rather then by individual mine, please identify each of the mine's data in the list below.

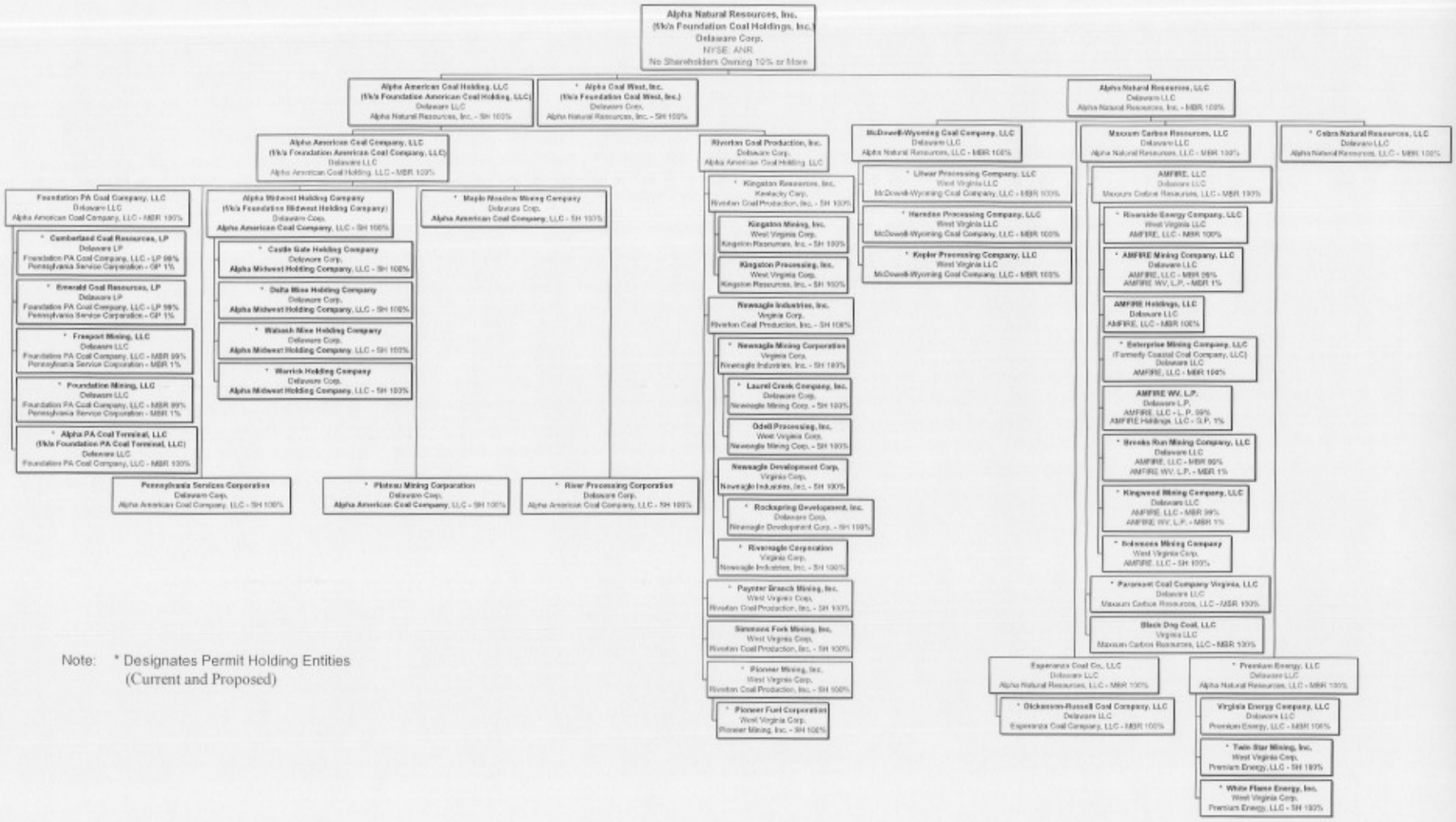
Please List Attachments:

REVIEWER COMMENTS

Attachment "A"

Organizational Structure Chart

Alpha Natural Resources



Note: * Designates Permit Holding Entities
(Current and Proposed)

W:\PERMITS\Alpha\VA-OC\03-11OC\Alpha_Organizational_Chart_03-15-2011_11x17.wpd

Attachment 1.6 Report Generated: 03/15/2011 - 10:47

Alpha Natural Resources, Inc. (New Alpha) AVS Entity No. (249455)
One Alpha Place, P.O. Box 2345
Abingdon, Virginia 24212

Phone: (276)619-4410 Fax:(276)628-3116 Employer ID. No. 42-1638663

Incorporated: Delaware 07/19/2004 as FC 1 Corp.
08/10/2004 - Changed name to Foundation Coal Holdings, Inc.
08/17/2004 - Foundation Coal Holdings, LLC merged into Foundation Coal Holdings, Inc.
07/31/2009 - Alpha Natural Resources, Inc. (AVS Entity 156135), a DE corp, restated 02/11/05, merged into Foundation Coal Holdings, Inc. and changed its name to Alpha Natural Resources, Inc. FC2 Corp. merged into Alpha Natural Resources, Inc. on 07/31/2009. Foundation Coal Corporation merged into Alpha Natural Resources, Inc. on 08/01/2009.
Qualified to do Business: MD - 10/20/2004, VA - 08/07/2009, CO - 08/07/2009.
Publicly traded company, NYSE: ANR
Registered Agent: Corporation Service Company
2711 Centerville Road, Suite 400
Wilmington, DE 19808

OFFICER INFORMATION

Entity No.	Officer	Title	Begin Date	End Date
246727	Todd C. Allen	VP - Investor & Media Relations	09/17/2007	07/31/2009
155645	James L. Anderson, Jr.	Corporate Controller	12/15/2004	07/31/2009
155645	James L. Anderson, Jr.	Vice President	09/13/2007	07/31/2009
151264	James J. Bryja	Senior VP - Operations	06/18/2007	07/31/2009
249094	Philip J. Cavatoni	Chief Strategy Officer	07/31/2009	
249094	Philip J. Cavatoni	Executive Vice President	07/31/2009	
155646	William J. Crowley, Jr.	Director	12/01/2004	
133477	Kevin S. Crutchfield	Chief Executive Officer	07/31/2009	
133477	Kevin S. Crutchfield	Director	07/31/2009	
125703	Dr. E. Linn Draper, Jr.	Director	07/31/2009	
156408	Glenn A. Eisenberg	Director	07/31/2009	
155282	David I. Foley	Director	08/17/2004	07/31/2009
* 155588	John W. Fox, Jr.	Director	07/31/2009	01/05/2011
157755	P. Michael Giftos	Director	12/07/2005	
142102	Vaughn R. Groves	Executive Vice President	07/31/2009	
142102	Vaughn R. Groves	General Counsel	07/31/2009	
142102	Vaughn R. Groves	Secretary	07/31/2009	
155454	Edythe C. Katz	Assistant Secretary	10/07/2004	07/31/2009
151265	Kurt D. Kost	Chief Operations Officer	01/01/2008	07/31/2009
151265	Kurt D. Kost	Director	02/26/2009	07/31/2009
151265	Kurt D. Kost	President	01/01/2008	
153201	Alex T. Krueger	Director	08/17/2004	07/31/2009
140380	Randy L. McMillion	Chief Administrative Officer	07/31/2009	

Alpha Natural Resources, Inc. (New Alpha) - Officer Information (Continued)

Entity No.	Officer	Title	Begin Date	End Date
140380	Randy L. McMillion	Executive Vice President	07/31/2009	
110529	Eddie Walter Neely	Chief Risk Officer	07/31/2009	
110529	Eddie Walter Neely	Executive Vice President	07/31/2009	
125073	James A. Olsen	Chief Information Officer	12/13/2007	07/31/2009
125073	James A. Olsen	Senior Vice President	12/13/2007	07/31/2009
158301	A. Scott Pack, Jr.	Executive VP - Sales	09/14/2009	
158301	A. Scott Pack, Jr.	Senior VP - Sales & Marketing	05/18/2006	07/31/2009
149019	Gary G. Pearson	Treasurer	08/17/2004	07/31/2009
128401	Michael R. Peelish	Chief Sustainability Officer	07/31/2009	
128401	Michael R. Peelish	Executive Vice President	07/31/2009	
128401	Michael R. Peelish	Senior VP - Safety & HR	08/17/2004	07/31/2009
153548	Joachim V. Porco	Chief Commercial Officer	07/31/2009	09/04/2009
153548	Joachim V. Porco	Executive Vice President	07/31/2009	09/04/2009
086508	Michael Jack Quillen	Chairman	01/01/2010	
086508	Michael Jack Quillen	Director	07/31/2009	
086508	Michael Jack Quillen	Executive Chairman	07/31/2009	12/31/2009
110318	Joel Richards, III	Director	03/08/2005	
110318	Joel Richards, III	Lead Independent Director	04/01/2006	07/31/2009
147479	James F. Roberts	Chairman of the Board	04/01/2006	07/31/2009
147479	James F. Roberts	Chief Executive Officer	08/17/2004	07/31/2009
147479	James F. Roberts	Director	08/17/2004	
119621	Robert Charles Scharp	Director	12/07/2005	07/31/2009
014012	Thomas V. Shockley, III	Director	04/01/2006	07/31/2009
128409	Greg A. Walker	General Counsel	08/17/2004	07/31/2009
128409	Greg A. Walker	Secretary	08/17/2004	07/31/2009
* 128409	Greg A. Walker	Senior Vice President	08/17/2004	01/28/2011
085433	Frank J. Wood	Assistant Secretary	07/31/2009	
085433	Frank J. Wood	Chief Financial Officer	08/17/2004	
085433	Frank J. Wood	Executive Vice President	07/31/2009	
085433	Frank J. Wood	Senior Vice President	08/17/2004	07/31/2009
085433	Frank J. Wood	Treasurer	07/31/2009	
157937	Ted G. Wood	Director	07/31/2009	

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Alpha American Coal Company, LLC AVS Entity No. (249467)
One Alpha Place, P.O. Box 2345
Abingdon, Virginia 24212

Phone: (276)619-4410 Fax:(276)628-3116 Employer ID. No. 54-1947356

Formed: Delaware 06/18/1999
Qualified to do business: Colorado 07/01/99, withdrew 03/20/01; Maryland 06/29/99, withdrew 09/14/05; Virginia 12/29/09
Formerly RAG American Coal Company, a corporation. Converted to a limited liability company 3/10/04 - RAG American Coal Company LLC; name changed to Foundation American Coal Company, LLC 7/30/04; name changed to Alpha American Coal Company, LLC 7/31/09
Registered Agent: Corporation Service Company
2711 Centerville Road, Suite 400
Wilmington, DE 19808

OFFICER INFORMATION

Entity No.	Officer	Title	Begin Date	End Date
* 249465	Carlette R. Allen	Assistant Secretary	07/31/2009	12/31/2010
155645	James L. Anderson, Jr.	Controller	05/01/2005	03/31/2010
133477	Kevin S. Crutchfield	Director	07/31/2009	09/28/2010
133477	Kevin S. Crutchfield	Manager	09/28/2010	
133477	Kevin S. Crutchfield	President	07/31/2009	
155146	Wanda K. Fields	Assistant Secretary	07/31/2009	
142102	Vaughn R. Groves	Secretary	07/31/2009	
142102	Vaughn R. Groves	Vice President	07/31/2009	
107084	Roger D. Ketron	Assistant Treasurer	02/15/2010	
159078	Brian L. Miller	Treasurer	02/15/2010	
149019	Gary G. Pearson	Treasurer	03/27/2001	02/15/2010
147479	James F. Roberts	Chief Executive Officer	07/30/2004	07/31/2009
147479	James F. Roberts	President	07/30/2004	07/31/2009
* 128409	Greg A. Walker	Assistant Secretary	07/31/2009	01/28/2011
128409	Greg A. Walker	Secretary	07/30/2004	07/31/2009
085433	Frank J. Wood	Director	07/30/2004	09/28/2010
085433	Frank J. Wood	Vice President	06/30/1999	

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Alpha American Coal Company, LLC AVS Entity No. (249467)
One Alpha Place, P.O. Box 2345
Abingdon, Virginia 24212

Phone: (276)619-4410 Fax:(276)628-3116 Employer ID. No. 54-1947356

Formed: Delaware 06/18/1999
Qualified to do business: Colorado 07/01/99, withdrew 03/20/01; Maryland 06/29/99, withdrew 09/14/05; Virginia 12/29/09
Formerly RAG American Coal Company, a corporation. Converted to a limited liability company 3/10/04 - RAG American Coal Company LLC; name changed to Foundation American Coal Company, LLC 7/30/04; name changed to Alpha American Coal Company, LLC 7/31/09
Registered Agent: Corporation Service Company
2711 Centerville Road, Suite 400
Wilmington, DE 19808

OWNER INFORMATION

Entity No.	Owner Name	Ownership Type		Begin Date	End Date
249466	Alpha American Coal Holding, LLC	Member	100%	07/31/2009	
156694	Foundation American Coal Holding, LLC	Member	100%	08/19/2005	07/31/2009

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Alpha American Coal Holding, LLC AVS Entity No. (249466)
One Alpha Place, P.O. Box 2345
Abingdon, Virginia 24212

Phone: (276)619-4410 Fax:(276)628-3116 Employer ID. No. 13-2793319

Formed: Delaware 10/31/1974
Qualified to do business: Colorado 07/13/99; Maryland 08/23/05
(Formerly Ruhrkohle-Stinnes Corporation; name change to Ruhr-American Coal Corporation 10/01/75; name change to RAG American Coal Corporation 12/22/98; name change to RAG American Coal Holding, Inc. 6/18/99; name change to Foundation Coal Holding, Inc. 7/30/04; stock acquired by Foundation Coal Corporation 7/30/04; name change to Foundation American Coal Holding, Inc. 8/9/04; converted to Foundation American Coal Holding, LLC 8/19/05; name change to Alpha American Coal Holding, LLC 7/31/09)
Registered Agent: Corporation Service Company
2711 Centerville Road, Suite 400
Wilmington, DE 19808

OFFICER INFORMATION

Entity No.	Officer	Title	Begin Date	End Date
* 249465	Carlette R. Allen	Assistant Secretary	07/31/2009	12/31/2010
155645	James L. Anderson, Jr.	Controller	05/01/2005	03/31/2010
133477	Kevin S. Crutchfield	Director	07/31/2009	09/10/2010
133477	Kevin S. Crutchfield	Manager	09/10/2010	
133477	Kevin S. Crutchfield	President	07/31/2009	
155146	Wanda K. Fields	Assistant Secretary	07/31/2009	
142102	Vaughn R. Groves	Secretary	07/31/2009	
142102	Vaughn R. Groves	Vice President	07/31/2009	
107084	Roger D. Ketron	Assistant Treasurer	02/15/2010	
159078	Brian L. Miller	Treasurer	02/15/2010	
149019	Gary G. Pearson	Treasurer	03/27/2001	02/15/2010
147479	James F. Roberts	Chief Executive Officer	08/19/2005	07/31/2009
147479	James F. Roberts	Director	08/19/2005	07/31/2009
147479	James F. Roberts	President	08/19/2005	07/31/2009
* 128409	Greg A. Walker	Assistant Secretary	07/31/2009	01/28/2011
128409	Greg A. Walker	Secretary	08/19/2005	07/31/2009
085433	Frank J. Wood	Chief Financial Officer	03/02/2004	
085433	Frank J. Wood	Director	07/30/2004	09/10/2010
085433	Frank J. Wood	Senior Vice President	03/02/2004	

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Alpha American Coal Holding, LLC AVS Entity No. (249466)
One Alpha Place, P.O. Box 2345
Abingdon, Virginia 24212

Phone: (276)619-4410 Fax:(276)628-3116 Employer ID. No. 13-2793319

Formed: Delaware 10/31/1974
Qualified to do business: Colorado 07/13/99; Maryland 08/23/05
(Formerly Ruhrkohle-Stinnes Corporation; name change to Ruhr-American Coal Corporation 10/01/75; name change to RAG American Coal Corporation 12/22/98; name change to RAG American Coal Holding, Inc. 6/18/99; name change to Foundation Coal Holding, Inc. 7/30/04; stock acquired by Foundation Coal Corporation 7/30/04; name change to Foundation American Coal Holding, Inc. 8/9/04; converted to Foundation American Coal Holding, LLC 8/19/05; name change to Alpha American Coal Holding, LLC 7/31/09)
Registered Agent: Corporation Service Company
2711 Centerville Road, Suite 400
Wilmington, DE 19808

OWNER INFORMATION

Entity No.	Owner Name	Ownership Type		Begin Date	End Date
249455	Alpha Natural Resources, Inc. (New Alpha)	Member	100%	07/31/2009	
155270	Foundation Coal Corp.	Member	100%	08/19/2005	07/31/2009

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* Plateau Mining Corp. AVS Entity No. (147847)
P.O. Box 30
Helper, Utah 84526
847 NW HWY 191
Helper, Utah 84526

Phone: (435)472-4737 Fax:(000)000-0000 Employer ID. No. 95-3761213

Incorporated: Delaware 08/26/1982 as Plateau Mining Company. 06/08/1987 - changed name to Cyprus Plateau Mining Company. 07/06/1987 - Cert. of Correction to reflect correct name of Cyprus Plateau Mining Corporation. 06/30/1999 - changed name to Plateau Mining Corporation.
Qualified to do business: Utah - 09/13/1982
Registered Agent DE: Corporation Service Company
2711 Centerville Road, Suite 400
Wilmington, DE 19808
Registered Agent UT: Corporation Service Company
2180 South 1300 East, Suite 650
Salt Lake City, UT 84106

OFFICER INFORMATION

Entity No.	Officer	Title	Begin Date	End Date
* 249465	Carlette R. Allen	Assistant Secretary	07/31/2009	12/31/2010
155645	James L. Anderson, Jr.	Controller	05/01/2005	03/31/2010
151264	James J. Bryja	President	12/01/2007	
148924	Larry M. Deal	VP - Sales & Marketing	05/01/2005	
155146	Wanda K. Fields	Assistant Secretary	07/31/2009	
142102	Vaughn R. Groves	Secretary	07/31/2009	
142102	Vaughn R. Groves	Vice President	07/31/2009	
107084	Roger D. Ketron	Assistant Treasurer	02/15/2010	
151265	Kurt D. Kost	Director	07/31/2009	
159078	Brian L. Miller	Treasurer	02/15/2010	
149019	Gary G. Pearson	Treasurer	12/13/2002	02/15/2010
147479	James F. Roberts	Director	06/30/1999	07/31/2009
* 128409	Greg A. Walker	Assistant Secretary	07/31/2009	01/28/2011
128409	Greg A. Walker	Secretary	06/30/1999	07/31/2009
085433	Frank J. Wood	Director	06/30/1999	
085433	Frank J. Wood	Vice President	12/20/1993	

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* Plateau Mining Corp. AVS Entity No. (147847)
P.O. Box 30
Helper, Utah 84526
847 NW HWY 191
Helper, Utah 84526

Phone: (435)472-4737 Fax:(000)000-0000 Employer ID. No. 95-3761213

Incorporated: Delaware 08/26/1982 as Plateau Mining Company. 06/08/1987 - changed name to Cyprus Plateau Mining Company. 07/06/1987 - Cert. of Correction to reflect correct name of Cyprus Plateau Mining Corporation. 06/30/1999 - changed name to Plateau Mining Corporation.
Qualified to do business: Utah - 09/13/1982
Registered Agent DE: Corporation Service Company
2711 Centerville Road, Suite 400
Wilmington, DE 19808
Registered Agent UT: Corporation Service Company
2180 South 1300 East, Suite 650
Salt Lake City, UT 84106

OWNER INFORMATION

Entity No.	Owner Name	Ownership Type		Begin Date	End Date
249467	Alpha American Coal Company, LLC	Stockholder	100%	07/31/2009	
155221	Foundation American Coal Company, LLC	Stockholder	100%	07/30/2004	07/31/2009

Revegetation Monitoring
at the
Star Point Mine
Year Eight
2010

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

by

Patrick Collins, Ph.D.

for

PLATEAU MINING CORPORATION
P.O. Box 92
Orangeville, Utah 84537

March 2010

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INTRODUCTION

Scope

This document contains sampling results from monitoring the vegetation on the reclaimed areas at the Star Point Mine in 2010 (Year 8), or eight years after final seeding was conducted there. Earlier documents reported monitoring results from sampling in 2006 (Year 4) and 2008 (Year 6). Although the complete datasets from Year 4 and Year 6 have *not* been included in this report, important parameters from those years *have* been included in figures to enable year-to-year comparisons.

History

The Star Point Mine is located on the east side of the Wasatch Plateau on Gentry Mountain approximately 23 miles southwest of Price, Utah. Historically, coal mining at the Star Point Mine began in 1916. Coal was shipped to the town of Wattis by 1917 when a railroad was completed there. In 1967, a company called Plateau Limited opened a new mine in the area. By 1971, another company, United Nuclear, purchased the mine. Finally, in 1980, Plateau Mining Company bought and mined the properties. The current permittee, Plateau Mining Corporation, began final reclamation of the mine site in 2001, with final seeding for revegetation finalized by 2003.

The Star Point Mining & Reclamation Plan (MRP) divided the disturbed areas into three main types based on the native plant communities that existed in the area prior to the disturbance by coal mining activities. The three types were called: 1) **Sagebrush Area**, 2) **Mountain Grassland Area**, and 3) **Saltbush Area**. At final reclamation these areas were seeded with seed mixtures developed specifically for each area. Additionally, **reference areas**, or areas chosen in undisturbed plant communities to represent final revegetation success standards, were chosen for each disturbed type. Reference areas were *not* sampled in Year 6 or

Year 8, but *were* sampled in Year 4 following reclamation.

METHODS

Methodologies used for sampling were performed in accordance with the guidelines provided by the State of Utah, Division of Oil, Gas & Mining (DOGM). The Sagebrush, Mountain Grassland, and Saltbush areas were sampled separately. Additionally, because the reclaimed mine site contained so much acreage, the three types were also further subdivided into smaller areas. This method allows for closer scrutiny of the reclaimed mine site on a smaller, area-by-area basis.

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 several transect lines along the entire length of each reclaimed area. At regular intervals along the transect lines, random numbers were generated and used to measure distances at right angles from the line to determine sample locations. Whether these random numbers were odd or even determined which side of the transect line a given quadrat was placed. The random numbers selected were high enough to place quadrats to the lateral limits of each sample area and all areas in-between. This insured that the sample quadrats were placed randomly over the entire study area in an attempt to adequately address and represent the site as a whole.

Cover, Frequency and Composition

Cover estimates were made employing 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: slope, exposure, grazing use, animal disturbance and other appropriate

notes. Plant nomenclature follows "A Utah Flora" (Welsh et al. 2008).

Density

Density estimates for the woody plant species on the reclaimed areas were made using a distance method called the point-quarter method. In this method, random points were placed on the sample sites and measured into four quarters. The distances to the nearest woody plant species were then recorded in each quarter. The average point-to-individual distance was equal to the square root of the mean area per individual.

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

However, sample size was also based on the size of each subdivision within each reclaimed type, resulting in more samples taken in larger areas.

Photographs

Color photographs of the sample areas were taken at the time of sampling and a subset of them have been submitted with this report.

Vegetation Sample Maps

The locations of the sample areas were mapped during the field work. These locations were then placed on "as-built" reclamation maps prepared previously by *Earthfax Engineering*, resulting in three Vegetation Sample Area maps that have been submitted in this report.

RESULTS

Reclaimed Areas

As mentioned above, there were three disturbance types delineated at the mine site. Additionally, these types were further subdivided into smaller areas to allow closer scrutiny of the specific sites (see *VEGETATION SAMPLE AREA MAPS* and *COLOR PHOTOGRAPHS OF THE SAMPLE AREAS*). The following table shows the three types and subdivisions within them.

Table 1: Sample area subdivisions of each reclaimed type.

Reclaimed Sagebrush	Reclaimed Mtn. Grassland	Reclaimed Saltbush
Area A	Area E	Area I
Area B	Area F	
Area C	Area G	
~~Area D~~ *(area was sold and removed from the permit area)*		
Area H		

Reference Areas

The three reference areas, or areas chosen previously to represent future standards for revegetation success of the three disturbance types are shown in Table 2. As mentioned, these reference areas were *not* sampled in 2010, but will be sampled and compared to the reclaimed areas for Phase III Bond Release through the State of Utah.

Table 2: Reference areas and their respective reclaimed areas *(not sampled in 2010)*.

Reference Areas	**Reclaimed Areas**
Sagebrush	Area A Area B Area C Area H
Mtn. Grassland	Area E Area F Area G
Saltbush	Area I

Sample Results

Comparisons of the 2010 data can be made by reviewing the summary tables that have been provided for the sample results of each reclaimed area (Tables 4 through 27). Table 3 shows the number of the appropriate table for each parameter in all sample areas of the study.

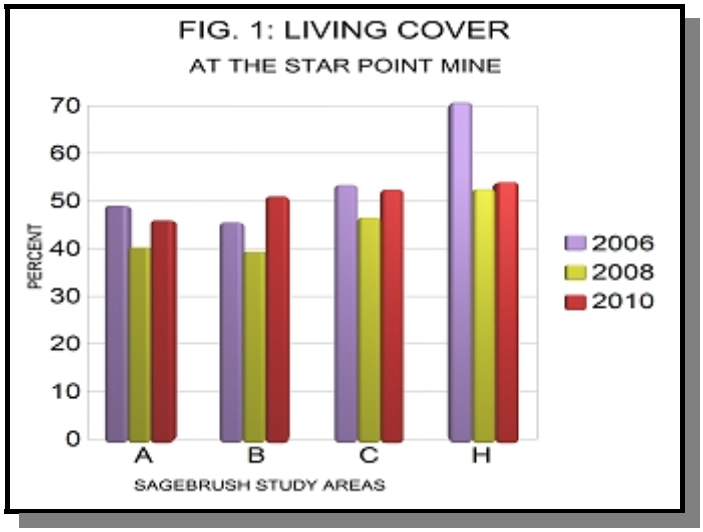
Table 3: Data locator.

SAMPLE AREA	Sub-Division	Cover by Species	Total Cover	Composition	Woody Species Density
Reclaimed Sagebrush	A	Table 4	Table 5 (A)	Table 5 (B)	Table 6
Reclaimed Sagebrush	B	Table 7	Table 8 (A)	Table 8 (B)	Table 9
Reclaimed Sagebrush	C	Table 10	Table 11 (A)	Table 11 (B)	Table 12
Reclaimed Sagebrush	H	Table 13	Table 14 (A)	Table 14 (B)	Table 15
Mtn. Grassland	E	Table 16	Table 17 (A)	Table 17 (B)	Table 18
Mtn. Grassland	F	Table 19	Table 20 (A)	Table 20 (B)	Table 21
Mtn. Grassland	G	Table 22	Table 23 (A)	Table 23 (B)	Table 24
Saltbush	I	Table 25	Table 26 (A)	Table 26 (B)	Table 27

DISCUSSION

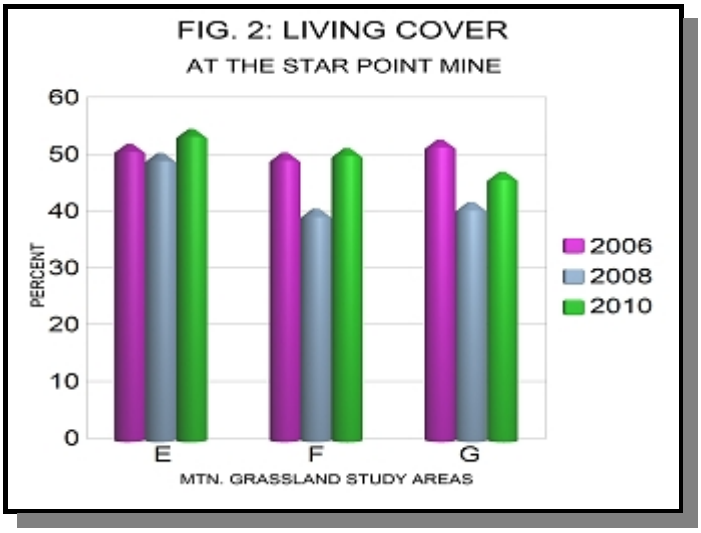
Total Living Cover

Although the total living cover values of the **reclaimed sagebrush areas** were somewhat lower in 2008 when compared to 2006, they increased in 2010 (Fig. 1). The vegetation in reclaimed areas is more dynamic with changes common from year to year until they become more established and stable. Examining the summary tables for cover by species, it is apparent that many of the plant species that

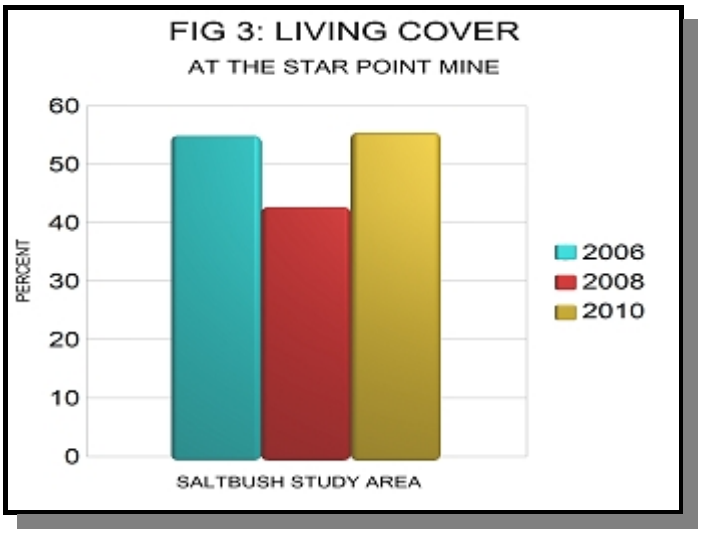


are becoming reestablished are more desirable perennial species and the "weedy" exotics seem to be decreasing over time.

The total living cover of the **reclaimed mountain grassland areas** had similar results as the sagebrush areas – the cover decreased when compared from 2006 to 2008, but increased in 2010. The cover values of Areas E and F were highest in 2010; Area G was highest in 2006, but increased in 2010 when compared to 2008 (Fig. 2). The summary tables for these areas also indicate that many desirable plant species are continuing to become established in these areas too.

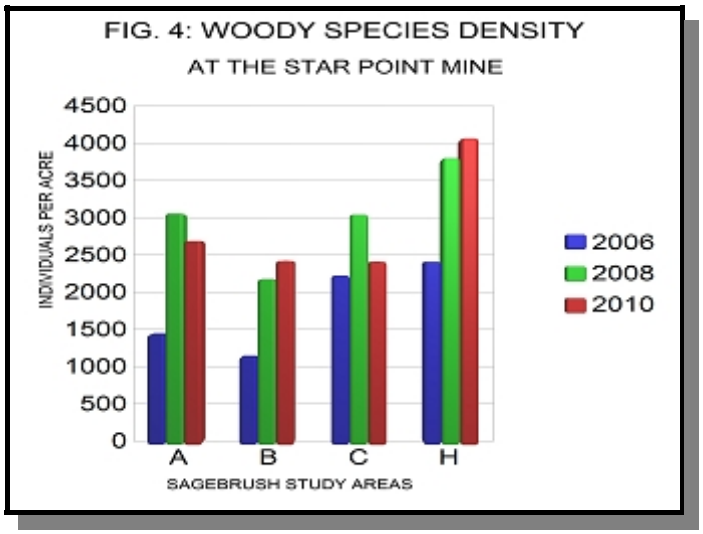


Finally, the total living cover in the **reclaimed saltbush area** continued to be doing well, especially when considering that the growth medium is composed of a great deal of saline clay from the Mancos Shale formation. Like the other areas, the total living cover values in the reclaimed saltbush areas decreased from 2006 to 2008, but increased in 2010 to its highest value to-date (Fig. 3).

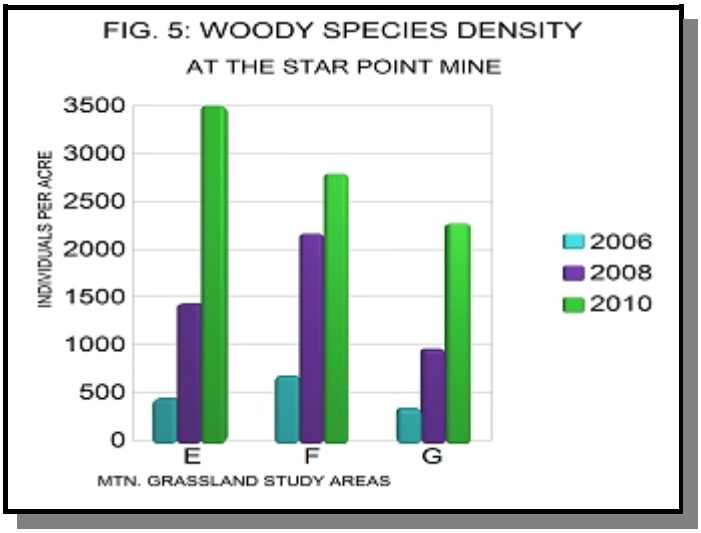


Woody Species Density

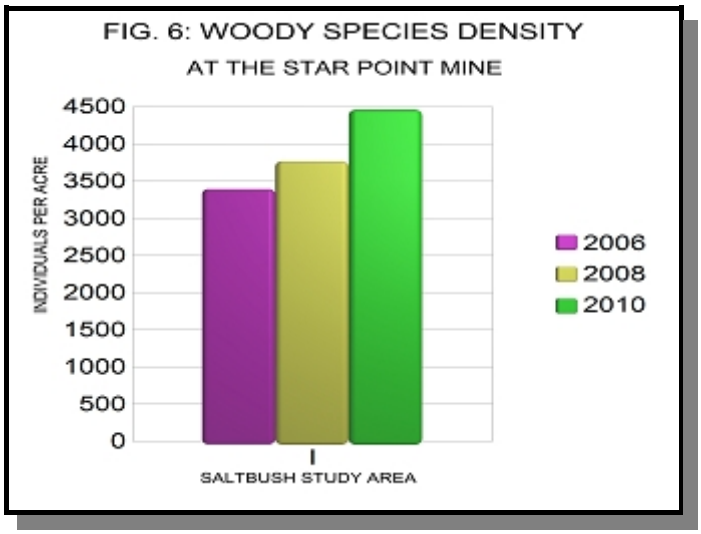
Perhaps the most noteworthy change from 2006 to 2008 was the dramatic increases in woody species density values for the **reclaimed sagebrush areas**. One-half of these areas (Areas B and H) increased again in 2010 and the other half (Areas A and C) decreased somewhat, but all areas continue to be substantially higher than the 2006 figures (Fig. 4).



The **mountain grassland** study areas (Areas E, F and G) have had significant density increases each year (Fig. 5).



The **saltbush area** has also had increases in woody species density each sample year (Fig. 6).



SUMMARY

Final seeding in the reclaimed areas of the Star Point Mine site was conducted in 2003. Vegetation monitoring has been accomplished by quantitative sampling the revegetated areas in 2006, 2008 and 2010. This document describes the results of the 2010 sample period. It also includes data from 2006 and 2008 in the figures to enable year-to-year comparisons.

The Mining and Reclamation Plan (MRP) for the Star Point Mine divides the reclaimed areas into three study types: 1) Sagebrush Areas, 2) Mountain Grassland Areas, and 3) Saltbush Area. Total living cover, cover and frequency by species, lifeform composition and woody species density were recorded in each study area.

Total living cover decreased between 2006 and 2008, then increased in all study areas in 2010. Species present in the sample areas remained fairly constant between years, however "weedy" exotics seem to be decreasing over time in favor of more perennial native plant species. Lifeform composition of the living cover has been dynamic over time – grasses appear to be increasing.

Woody species density increased between 2006 and 2008, and had mixed results in 2010, but mostly increased. That said, all areas have had an overall increase in density since 2006.

Plant establishment in the reclaimed areas of the Star Point Mine is progressing well and, based on the sample parameters measured, is expected to meet revegetation success standards for final bond release in the next few years.

DATA SUMMARY TABLES

Table 4: Star Point Mine. Living Cover and Frequency by Plant Species (2010).

Reclaimed Sagebrush Area A			n=60
SHRUBS	**Mean Percent**	**Standard Deviation**	**Percent Frequency**
Amelanchier utahensis	0.50	2.84	3.33
Artemisia tridentata	0.17	1.28	1.67
Atriplex canescens	1.17	6.54	3.33
Atriplex confertifolia	0.67	4.52	3.33
Ceratoides lanata	1.08	2.90	13.33
Cercocarpus ledifolius	1.92	7.75	10.00
Cercocarpus montanus	0.25	1.42	3.33
Chrysothamnus nauseosus	8.22	11.79	43.33
FORBS			
Artemisia dracunculus	0.88	2.71	11.67
Aster chilensis	0.50	1.76	8.33
Grindelia squarrosa	0.08	0.64	1.67
Hedysarum boreale	0.58	2.43	6.67
Linum lewisii	1.02	2.71	15.00
Machaeranthera canescens	0.08	0.64	1.67
Melilotus officinalis	1.92	5.56	15.00
Penstemon palmeri	4.10	6.47	45.00
Penstemon sp.	0.08	0.64	1.67
Salsola tragus	0.33	2.56	1.67
GRASSES			
Agropyron cristatum	2.87	6.68	23.33
Bromus carinatus	2.33	7.88	10.00
Elymus cinereus	1.08	6.06	5.00
Elymus lanceolatus	6.05	9.70	38.33
Elymus salinus	0.50	3.25	3.33
Elymus smithii	0.17	1.28	1.67
Elymus spicatus	7.50	12.43	35.00
Stipa comata	0.17	1.28	1.67
Stipa hymenoides	1.53	5.30	11.67

Table 5: Star Point Mine.
Total Cover and Composition (2010).

Reclaimed Sagebrush Area A		n=60
A. TOTAL COVER	**Mean Percent**	**Standard Deviation**
Total Living Cover	45.75	13.87
Litter	9.83	4.56
Bareground	19.58	10.58
Rock	24.83	11.97
B. % COMPOSITION		
Shrubs	29.83	29.68
Forbs	23.60	25.98
Grasses	46.57	32.27

Table 6: Star Point Mine . Woody Species Density (2010).

SPECIES	**Individuals Per Acre**
Reclaimed Sagebrush Area A	n=60
Amelanchier utahensis	78.27
Artemisia tridentata	167.73
Atriplex canescens	178.91
Atriplex confertifolia	134.18
Ceratoides lanata	503.19
Cercocarpus ledifolius	134.18
Cercocarpus montanus	44.73
Chrysothamnus nauseosus	1442.49
TOTAL	**2683.70**

Table 7: Star Point Mine. Living Cover and Frequency by Plant Species (2010).

Reclaimed Sagebrush Area B			n=15
TREES & SHRUBS	**Mean Percent**	**Standard Deviation**	**Percent Frequency**
Atriplex canescens	6.80	13.86	26.67
Atriplex confertifolia	3.33	11.21	13.33
Ceratoides lanata	0.33	1.25	6.67
Chrysothamnus nauseosus	0.67	2.49	6.67
Chrysothamnus viscidiflorus	1.67	6.24	6.67
Eriogonum corymbosum	0.53	2.00	6.67
FORBS			
Artemisia dracunculus	0.67	2.49	6.67
Bassia scoparia	0.33	1.25	6.67
Hedysarum boreale	2.33	6.55	13.33
Iva axillaris	0.33	1.25	6.67
Linum lewisii	1.67	2.98	26.67
Penstemon palmeri	1.33	2.21	26.67
GRASSES			
Agropyron cristatum	6.67	8.10	53.33
Bromus tectorum	1.00	3.74	6.67
Elymus lanceolatus	11.33	14.08	53.33
Elymus salinus	4.00	14.97	6.67
Elymus spicatus	3.33	6.24	26.67
Stipa hymenoides	4.33	11.38	13.33

Table 8: Star Point Mine.
Total Cover and Composition (2010).

Reclaimed Sagebrush Area B		n=15
A. TOTAL COVER	**Mean Percent**	**Standard Deviation**
Total Living Cover	50.67	16.62
Litter	12.67	7.27
Bareground	25.00	14.83
Rock	11.67	8.50
B. % COMPOSITION		
Shrubs	23.61	28.14
Forbs	15.13	21.82
Grasses	61.26	26.51

Table 9: Star Point Mine . Woody Species Density (2010).

Reclaimed Sagebrush Area B	n=15
SPECIES	**Individuals Per Acre**
Amelanchier utahensis	40.33
Artemisia nova	40.33
Artemisia tridentata	40.33
Atriplex confertifolia	483.97
Atriplex confertifolia	725.95
Ceratoides lanata	161.32
Cercocarpus ledifolius	40.33
Cercocarpus montanus	40.33
Chrysothamnus nauseosus	725.95
Chrysothamnus viscidiflorus	40.33
Eriogonum corymbosum	40.33
Gutierrezia sarothrae	40.33
TOTAL	**2419.85**

Table 10: Star Point Mine. Living Cover and Frequency by Plant Species (2010).

Reclaimed Sagebrush Area C			n=15
TREES & SHRUBS	**Mean Percent**	**Standard Deviation**	**Percent Frequency**
Artemisia tridentata	1.33	4.99	6.67
Atriplex canescens	2.00	5.42	13.33
Cercocarpus montanus	0.67	2.49	6.67
Chrysothamnus nauseosus	5.00	8.56	33.33
FORBS			
Bassia scoparia	3.33	12.47	6.67
Grindelia squarrosa	0.33	1.25	6.67
Hedysarum boreale	0.67	2.49	6.67
Linum lewisii	0.67	2.49	6.67
Melilotus officinalis	0.67	2.49	6.67
Penstemon palmeri	1.67	3.50	20.00
GRASSES			
Agropyron cristatum	8.67	8.84	60.00
Bromus carinatus	1.67	6.24	6.67
Elymus cinereus	1.00	3.74	6.67
Elymus lanceolatus	10.67	12.63	53.33
Elymus salinus	5.67	14.48	13.33
Elymus spicatus	4.67	16.17	13.33
Stipa hymenoides	3.33	8.50	13.33

Table 11: Star Point Mine. Total Cover and Composition (2010).

Reclaimed Sagebrush Area C		n=15
A. TOTAL COVER	**Mean Percent**	**Standard Deviation**
Total Living Cover	52.00	14.24
Litter	10.33	4.99
Bareground	16.67	9.60
Rock	21.00	10.03
B. % COMPOSITION		
Shrubs	17.76	21.95
Forbs	14.49	21.09
Grasses	67.75	28.58

Table 12: Star Point Mine . Woody Species Density (2010).

Reclaimed Sagebrush Area C	n=15
SPECIES	**Individuals Per Acre**
Artemisia tridentata	281.19
Atriplex canescens	562.39
Atriplex confertifolia	40.17
Ceratoides lanata	723.07
Cercocarpus montanus	40.17
Chrysothamnus nauseosus	763.24
TOTAL	**2410.23**

Table 13: Star Point Mine. Living Cover and Frequency by Plant Species (2010).

Reclaimed Sagebrush Area H			n=7
TREES & SHRUBS	**Mean Percent**	**Standard Deviation**	**Percent Frequency**
Atriplex canescens	4.29	7.28	28.86
Atriplex confertifolia	4.29	10.50	14.29
Ceratoides lanata	3.57	8.75	14.29
Chrysothamnus nauseosus	7.14	9.20	42.86
FORBS			
Bassia scoparia	2.14	5.25	14.29
GRASSES			
Agropyron cristatum	9.29	6.23	85.71
Bromus tectorum	4.29	7.28	28.57
Elymus lanceolatus	14.29	11.47	71.43
Elymus smithii	4.29	10.50	14.29

Table 14: Star Point Mine.
Total Cover and Composition (2010).

Reclaimed Sagebrush Area H		n=7
A. TOTAL COVER	**Mean Percent**	**Standard Deviation**
Total Living Cover	53.57	6.93
Litter	9.29	1.75
Bareground	25.71	5.62
Rock	11.43	7.42
B. % COMPOSITION		
Shrubs	35.42	10.98
Forbs	4.29	10.50
Grasses	60.30	18.86

Table 15: Star Point Mine . Woody Species Density (2010).

Reclaimed Sagebrush Area H	n=7
SPECIES	**Individuals Per Acre**
Artemisia tridentata	143.84
Atriplex canescens	1006.85
Atriplex confertifolia	287.67
Ceratoides lanata	1006.85
Chrysothamnus nauseosus	1582.19
TOTAL	**4027.40**

Table 16: Star Point Mine. Living Cover and Frequency by Plant Species (2010).

Reclaimed Mtn./Grass Area E			n=60
TREES & SHRUBS	**Mean Percent**	**Standard Deviation**	**Percent Frequency**
Artemisia tridentata	4.75	10.39	30.00
Cercocarpus ledifolius	0.67	3.22	5.00
Cercocarpus montanus	0.17	1.28	1.67
Chrysothamnus nauseosus	4.42	10.88	18.33
Chrysothamnus viscidiflorus	0.08	0.64	1.67
Eriogonum corymbosum	3.92	10.80	18.33
Pseudotsuga menziesii	0.08	0.64	1.67
Purshia tridentata	1.75	5.39	15.00
FORBS			
Achillea millefolium	1.25	5.05	8.33
Aster chilensis	2.92	6.85	25.00
Cynoglossum officinale	0.08	0.64	1.67
Grindelia squarrosa	0.08	0.64	1.67
Linum lewisii	3.50	4.68	41.67
Machaeranthera canescens	0.58	2.06	8.33
Penstemon palmeri	0.42	1.66	6.67
GRASSES			
Agropyron cristatum	1.25	4.25	8.33
Bromus carinatus	1.75	3.27	25.00
Elymus cinereus	11.42	18.82	48.33
Elymus lanceolatus	6.58	10.51	48.33
Elymus salinus	1.50	6.54	6.67
Elymus spicatus	5.83	10.25	40.00
Stipa comata	0.08	0.64	1.67
Stipa hymenoides	1.00	4.26	8.33

Table 17: Star Point Mine.
Total Cover and Composition (2010).

Reclaimed Mtn./Grass Area E		n=60
A. TOTAL COVER	**Mean Percent**	**Standard Deviation**
Total Living Cover	54.08	13.46
Litter	12.08	7.09
Bareground	13.58	7.48
Rock	20.25	10.93
B. % COMPOSITION		
Shrubs	29.17	27.42
Forbs	17.99	19.41
Grasses	52.84	32.19

Table 18: Star Point Mine . Woody Species Density (20010).

Reclaimed Mtn./Grass Area E	n=60
SPECIES	**Individuals Per Acre**
Amelanchier utahensis	72.25
Artemisia tridentata	1228.31
Cercocarpus ledifolius	101.16
Cercocarpus montanus	14.45
Chrysothamnus nauseosus	520.23
Chrysothamnus viscidiflorus	14.45
Eriogonum corymbosum	664.73
Gutierrezia sarothrae	28.90
Populus tremuloides	14.45
Pseudotsuga menziesii	101.16
Purshia tridentata	708.09
TOTAL	**3468.18**

Table 19: Star Point Mine. Living Cover and Frequency by Plant Species (2010).

Reclaimed Mtn/Grass Area F			n=20
TREES & SHRUBS	**Mean Percent**	**Standard Deviation**	**Percent Frequency**
Artemisia nova	0.50	1.50	10.00
Artemisia tridentata	3.25	8.98	20.00
Atriplex canescens	2.00	8.72	5.00
Cercocarpus ledifolius	2.75	10.89	10.00
Chrysothamnus nauseosus	6.84	10.03	35.00
Pseudotsuga menziesii	0.25	1.09	5.00
Purshia tridentata	2.75	7.82	20.00
FORBS			
Aster chilensis	0.50	1.50	10.00
Hedysarum boreale	2.00	5.79	15.00
Iva axillaris	0.25	1.09	5.00
Linum lewisii	4.00	4.36	55.00
Melilotus officinalis	6.50	5.27	70.00
Penstemon palmeri	2.50	4.33	30.00
GRASSES			
Bromus carinatus	5.00	10.95	25.00
Elymus cinereus	6.50	8.82	45.00
Elymus lanceolatus	1.25	4.44	10.00
Elymus salinus	0.25	1.09	5.00
Elymus smithii	1.25	5.45	5.00
Elymus spicatus	2.75	5.36	25.00

Table 20: Star Point Mine.
Total Cover and Composition (2010).

Reclaimed Mtn/Grass Area F		n=20
A. TOTAL COVER	**Mean Percent**	**Standard Deviation**
Total Living Cover	50.75	11.76
Litter	10.25	3.70
Bareground	20.75	10.52
Rock	18.25	9.65
B. % COMPOSITION		
Shrubs	33.36	23.13
Forbs	32.82	22.78
Grasses	33.82	22.61

Table 21: Star Point Mine . Woody Species Density (2010).

Reclaimed Mtn/Grass Area F	n=20
SPECIES	**Individuals Per Acre**
Artemisia nova	138.45
Artemisia tridentata	553.79
Atriplex canescens	34.61
Ceratoides lanata	34.61
Cercocarpus ledifolius	138.45
Cercocarpus montanus	34.61
Chrysothamnus nauseosus	1246.02
Pseudotsuga menziesii	69.22
Purshia tridentata	519.17
TOTAL	**2768.93**

Table 22: Star Point Mine. Living Cover and Frequency by Plant Species (2010).

Reclaimed Mtn/Grass Area G			n=40
TREES & SHRUBS	**Mean Percent**	**Standard Deviation**	**Percent Frequency**
Artemisia tridentata	6.30	11.39	32.50
Cercocarpus ledifolius	0.68	3.28	5.00
Purshia tridentata	1.43	3.83	17.50
Symphoricarpos oreophilus	0.88	3.33	7.50
FORBS			
Aster chilensis	3.38	11.75	12.50
Hedysarum boreale	0.63	2.29	7.50
Linum lewisii	5.13	4.94	60.00
Penstemon palmeri	2.08	3.59	27.50
Viguiera multiflora	0.13	0.78	2.50
Machaeranthera canescens	0.25	1.56	2.50
Melilotus officinalis	0.13	0.78	2.50
GRASSES			
Bromus carinatus	0.75	3.46	5.00
Elymus spicatus	10.03	7.60	72.50
Elymus cinereus	14.68	11.71	77.50
Stipa hymenoides	0.20	1.25	2.50

Table 23: Star Point Mine.
Total Cover and Composition (2010).

Reclaimed Mtn/Grass Area G		n=40
A. TOTAL COVER	**Mean Percent**	**Standard Deviation**
Total Living Cover	46.63	13.01
Litter	11.13	3.95
Bareground	15.55	8.26
Rock	26.70	10.83
B. % COMPOSITION		
Shrubs	19.03	22.88
Forbs	24.93	21.73
Grasses	56.04	24.37

Table 24: Star Point Mine . Woody Species Density (2010).

Reclaimed Mtn/Grass Area G	n=40
SPECIES	**Individuals Per Acre**
Artemisia tridentata	1157.44
Cercocarpus ledifolius	155.27
Chrysothamnus nauseosus	197.61
Pseudotsuga menziesii	56.46
Purshia tridentata	395.22
Symphoricarpos oreophilus	296.42
TOTAL	**2258.42**

Table 25: Star Point Mine. Living Cover and Frequency by Plant Species (2010).

Reclaimed Saltbush Area I			n=10
TREES & SHRUBS	**Mean Percent**	**Standard Deviation**	**Percent Frequency**
Artemisia nova	3.00	7.48	20.00
Atriplex canescens	4.50	9.07	30.00
Atriplex confertifolia	4.50	13.50	10.00
Atriplex corrugata	0.50	1.50	10.00
Atriplex gardneri	1.50	4.50	10.00
Chrysothamnus nauseosus	9.00	12.41	50.00
FORBS			
Aster chilensis	3.50	7.43	30.00
Grindelia squarrosa	0.50	1.50	10.00
GRASSES			
Agropyron cristatum	1.00	3.00	10.00
Elymus elymoides	1.00	3.00	10.00
Elymus lanceolatus	8.50	10.01	50.00
Elymus salinus	1.00	3.00	10.00
Elymus smithii	5.50	10.59	30.00
Elymus spicatus	10.00	17.46	40.00
Stipa hymenoides	1.00	3.00	10.00

Table 26: Star Point Mine. Living Cover and Frequency by Plant Species (2010).

Reclaimed Saltbush Area I		n=10
A. TOTAL COVER	**Mean Percent**	**Standard Deviation**
Total Living Cover	55.00	9.49
Litter	9.30	3.35
Bareground	25.50	10.59
Rock	10.20	6.42
B. % COMPOSITION		
Shrubs	40.83	22.58
Forbs	9.92	21.26
Grasses	49.25	17.57

Table 27: Star Point Mine . Woody Species Density (2010).

Reclaimed Saltbush Area I	n=10
SPECIES	**Individuals Per Acre**
Artemisia nova	552.62
Atriplex canescens	442.09
Atriplex confertifolia	1657.85
Atriplex confertifolia	442.09
Atriplex gardneri	110.52
Chrysothamnus nauseosus	994.71
Eriogonum corymbosum	221.05
TOTAL	**4420.94**

COLOR PHOTOGRAPHS
OF THE
SAMPLE AREAS

SAMPLE AREA A

Photo 1

Photo 2

Photo 3

AREA A (continued)

Photo 4

Photo 5

Photo 6

AREA A (continued)

Photo 7

Photo 8

Photo 9

AREA B

Photo 10

Photo 11

Photo 12

AREA C

Photo 13

Photo 14

AREA E

Photo 15

Photo 16

Photo 17

AREA E (continued)

Photo 18

Photo 19

Photo 20

AREA E (continued)

Photo 21

Photo 22

AREA F

Photo 23

Photo 24

Photo 25

AREA G

Photo 26

Photo 27

Photo 28

AREA G (continued)

Photo 29

Photo 30

Photo 31

AREA H

Photo 32

AREA I

Photo 33

Photo 34

Photo 35

VEGETATION SAMPLE AREA MAPS

(INSERT MAP A HERE)

(INSERT MAP B HERE)

(INSERT MAP C HERE)