C/007/0019
Task ID #4800
Received 2/17/15

ANDALEX
RESOURCES, INC.

P.O. Box 910, East Carbon, Utah 84520
Telephone (435) 888-4000 Fax (435) 888-4002

March 2, 2015

Utah Division of Oil, Gas & Mining
Utah Coal Program
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, UT 84114-5801

Attn: Daron Haddock
Permit Supervisor

Re: Andalex Resources, Inc. C/007/019
2014 Annual Report

Dear Mr. Haddock,

Attached you will find the 2014 Annual Report for the Tower (Centennial) Mine.

If you have any questions, or need any additional information regarding this submittal, please contact me directly at 435-888-4000.

Sincerely,

David Hibbs
UtahAmerican Energy, Inc.
President/Chief Engineer

2014

Annual Report

General Information

Print Form | Submit by Email | Reset Form

Annual Report

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 the date specified in the cover letter. During a complete inspection an inspector will check and verify the information.

GENERAL INFORMATION

Company Name	Andalex Resources INC	Mine Name	Centennial Mine
Permit Number	C/007/0019	Permit expiration Date	
Operator Name		Phone Number	
Mailing Address		Email	
City			
State		Zip Code	

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

OPERATOR COMMENTS

Tower mine was inactive during 2014

REVIEWER COMMENTS ☐ Met Requirements ☐ Did Not meet Requirements

COMMITMENTS AND CONDITIONS

The Permittee is responsible for ensuring annual technical commitments in the Mining and Reclamation Plan and conditions accepted with the permit are completed throughout the year. The Division has identified these commitments below and has provided space for you to report what you have done during the past year for each commitment. If additional written response is required, it should be filed as an attachment to this report.

Title: FIRE SUPPRESSION
Objective: Andalex will commit to prevent, control and suppress range forest and coal fires within the permit area.
Frequency: To the extent possible
Status: Ongoing
Reports: Report if range fires have occurred on the permit area during the year.
Citation: Volume 1, Chapter 3, page 3-10, paragraph 5

Operator Comments

No range fires occurred on the permit area during 2014.

Reviewer Comments ☐ Met Requirements ☐ Did Not Meet Requirements

Title: SUBSIDENCE MONITORING
Objective: Determine subsidence effects from mining.
Frequency: Annually
Status: Ongoing
Reports: Provide annual subsidence monitoring data **and MAP** and report of impacts in annual report.
Citation: Volume 1, Chapter 5, Page 5-150a, 5-151.

Operator Comments

Subsidence information is included.

Reviewer Comments ☐ Met Requirements ☐ Did Not Meet Requirements

Title: GAS VENT HOLE STATUS UPDATE

Objective: To keep the Division apprised of the status of all wells drilled above the Aberdeeen mine including any future venting of existing wells and / or development of non GVH pads and to ensure that reclamation of each disturbance is accomplished in a timely manner once the wells are no longer in use. "Provide a spreadsheet showing the progress of reclamation at each drill pad, indicating the date of interim or final grading; the date of seeding and mulching; stating whether the well is still producing; stating whether there is Blue Tip equipment (solar arrays, valves) still on site.

Please comment on the status of plugging wells and removal of Blue Tip Energy equipment from these sites.

The landowner requested that final reclamation include construction of water bars on the road down to GVH 13. Please comment on the status of water bar construction.

App. X Section 341.200 states that wood fiber mulch is to be applied on top of the seed with hydroseeding equipment at the rate of 2,000 lbs/ac and anchored with a tackifier. Where work differed from this plan, please comment on the type and rate of mulch applied to each site.

Roads constructed to GVH 4, GVH 5A, GVH 6, GVh 8, GVH 8A, GVH 11, GVH 12, GVH 16, and GVH 17 will be reclaimed as shown on Figure 1-1. Please comment on the status of road reclamation.

Frequency: Annually

Status: Ongoing

Reports: Annual report item

Citation: Appendix X, page 1-2

Operator Comments

GVH update included. Wells 12, 13, and 14 were plugged, fenced and seeded in the summer of 2014. 15, 16, and 17 were never drilled, therefore they were fenced and seeded. Water bar construction and all road reclamation will be completed upon final reclamation of the GVH Pads. No road reclamation was done in 2014.

Reviewer Comments ☐ Met Requirements ☐ Did Not Meet Requirements

FUTURE COMMITMENTS AND CONDITIONS

The following commitments are not required for the current annual report year, but will be required by the permittee in the future as indicated by the "status" field. These commitments are included for information only, and do not currently require action. If you feel that the commitment is no longer relevant or needs to be revised, please contact the Division.

Title: SAGE GROUSE NEST SITE EVALUATION
Objective: Prior to development of the well site, a Sage Grouse nest site evaluation will be conducted by a knowledgeable wildlife biologist. If nests are located, an alternative drill site location will be determined.
Frequency: Based on the need to drill additional de-gas wells.
Status: Required in future if new de-gas wells are proposed.
Reports: Send with application
Citation: Appendix X, Chapter 3, page 3-5, paragraph 1

Title: RECLAMATION SUCCESS
Objective: Determine reclamation success.
Frequency: Reclaimed areas will be monitored monthly for the first two growing seasons following reclamation.
Status: Check at reclamation.
Reports: When monitoring commences.
Citation: Volume 1, Chapter 3, page 3-17 paragraph 5.

Title: RECLAMATION ENHANCEMENT MEASURES
Objective: Andalex will consult with the Division of Wildlife Resources, at the time of final reclamation, to determine exactly what reclamation designs, planting arrangements, and artificial structures would best enhance wildlife habitat.
Frequency: Once
Status: Will be required prior to final reclamation
Reports: Report reclamation plans to Division for incorporation into MRP
Citation: Volume 1, Chapter 3, page 3-23, paragraph 1

Title: SEALING OF WELLS
Objective: Permanent closure of wells using measures required by the Division to prevent access and contamination of groundwater.
Frequency: When wells are no longer needed.
Status: Throughout mining
Reports: Report in Annual report the year when wells are completed.
Citation: Gob Gas Vent Wells: Appendix X R645-301.542.700 All other exploration and water wells: MRP - 301.529.100 301.755

OPERATOR COMMENTS (Optional)

REVIEWER COMMENTS:

REPORTING OF OTHER TECHNICAL DATA

Please list other technical data or information that was not included in the form above, but is required under the approved plan, which must be periodically submitted to the Division.

Please list attachments:

Reviewer Comments

MAPS

Copies of mine maps, current and up-to-date, are to be provided to the Division as an attachment to this report in accordance with the requirements of R645-301-525.240. 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
Mine Map		☒	☐	☐	☒
		☐	☐	☐	☐
		☐	☐	☐	☐
		☐	☐	☐	☐
		☐	☐	☐	☐

Reviewer Comments ☐ Met Requirements ☐ Did Not Meet Requirements

2014

Annual Report

Sediment Information

IMPOUNDMENT INSPECTION AND CERTIFIED REPORT			Page 1 of
Permit Number	C/007/0019	**Report Date**	November 19, 2014
Mine Name	Tower Mine		
Company Name	UtahAmerican Energy, Inc.		
Impoundment Identification	**Impoundment Name**	B, C & E	
	Impoundment Number	None	
	UPDES Permit Number	UTG040029	
	MSHA ID Number	NA	

IMPOUNDMENT INSPECTION

Inspection Date	November 19, 2014
Inspected By	Karin Odendahl
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)	4th Quarter and Annual

1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.

Ponds B, C & E

No instability, structural weaknesses, or visible hazards were observed at time of inspection.

Required for an impoundment which functions as a SEDIMENTATION POND.

2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.

Sediment Elevations (Per Approved MRP):

Cell B1 (South Cell) Max Water Level 7077'	Cell B2 60% 7081'	Cell B3 Max Water and Sed. Level 7087'
Cell B4 (North Cell) Max Water and Sed Level 7091'	Pond C 60% 7046.9' 100% 7048.7'	Pond E 60% 6947.5' 100% 6949.3'

Cleaning of all B Cells must take place when sediment level reaches 7081' in Cell B2.

See section 5 for current sediment levels.

3. **Principle and emergency spillway elevations.**

Pond (B2 Cell 3)		Pond (C)		Pond (E)	
Principle	7081.0'	Principle	7053.1'	Principle	6957.6'
(Bottom of the culvert)		Emergency	7056.05'	Emergency	6958.6'

4. **Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on outslopes of embankments, etc.

Sediment markers visible in ponds E And C.

Pond E contains approximately 3 feet of water from rainfall.

No water in C or B ponds at time of inspection.
No discharge has occurred from the pond UPDES, therefore no samples were taken.
No observable problems exist at the inlets or outlets.
No observable conditions were apparent that could affect the stability or function of the structure.
Vegetation on out-slopes of pond embankments growing well.
Decant visible and operational.

5. **Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

No changes in geometry have occurred. No change has occurred to the structure that would affect its stability or function.

There is no water within the ponds, except pond E which has two feet of water, therefore no discharging is anticipated within the near future.

Current Sediment Levels (approximate):

Pond (B2 Cell 3)	Pond (C)	Pond (E)
7073.1'	7046'	6942'

Sediment levels surveyed November 2014

Qualification Statement

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: _____ **Date:** 11·19·14

CERTIFIED REPORT

IMPOUNDMENT EVALUATION (If NO, explain under Comments)	YES	NO
1. Is impoundment designed and constructed in accordance with the approved plan?	XXXXX	
2. Is impoundment free of instability, structural weakness, or any other hazardous condition?	XXXXX	
3. Has the impoundment met all applicable performance standards and effluent limitations from the previous date of inspection?	XXXXX	

COMMENTS AND OTHER INFORMATION

Pond as built drawings were reviewed in 2/2014 to confirm clean-out elevations and spillway elevations by RJM

Certification Statement:

REGISTERED PROFESSIONAL ENGINEER #152606 R. JAY MARSHALL STATE OF UTAH 11/19/14

(PE Cert. Stamp)

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself or under my direction and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability in accordance with the Utah R645 Coal Mining Rules.

By: Robert Jay Marshall Engineer
(Full Name and Title)

Signature: R. Jay Marshall Date: 11/19/14

P.E. Number & State: 152606 utah

2014

Annual Report

Subsidence Information

TOWER RESOURCES, INC.

2014 RTK GPS SUBSIDENCE SURVEY

11/3/2014

STATION	NORTHING (FEET)	EASTING (FEET)	2003 ELEVATION	2007 ELEVATION	2008 ELEVATION	2009 ELEVATION	2010 ELEVATION	2011 ELEVATION	2012 ELEVATION	2013 ELEVATION	2014 ELEVATION	NOTES
Rebar on ridge	505,141.92	2,217,261.07	8,241.62	8,241.62	8,241.62	8,241.62	8,241.62	8,241.62	8,241.62	8,241.62	8,241.62	CONTROL
Yellow Rebar	507,073.59	2,223,128.18	8,534.90	8,534.90	8,534.90	8,534.90	8,534.90	8,534.90	8,534.90	8,534.90	8,534.90	CONTROL
S-10	507,824.28	2,217,196.61	8,594.59	8,594.59	8,594.59	8,594.59	8,594.59	8,594.59	8,594.59	8,594.59	8,594.59	CONTROL
S16	508,650.48	2,210,725.70	8,809.53	8,809.64	8,809.75	8,809.71	8,809.72	8,809.70	8,809.68	8,809.69	8,809.68	---
S17	508,190.63	2,213,802.51	8,624.48	8,624.43	8,624.43	8,624.44	8,624.43	8,624.45	8,624.46	8,624.44	8,624.46	---
99-1	508,942.12	2,215,063.90	8,572.35	8,572.13	8,572.14	8,572.12	8,572.14	8,572.13	8,572.13	8,572.12	8,572.13	---
99-2	509,023.29	2,218,624.20	8,551.12	8,551.01	8,550.98	8,550.96	8,551.00	8,550.98	8,550.97	8,550.99	8,550.97	---
S20	510,331.29	2,217,642.56	8,574.26	8,573.87	8,573.78	8,573.77	8,573.78	8,573.82	8,573.79	8,573.80	8,573.79	---
S21	510,581.75	2,214,956.87	8,489.90	8,489.22	8,489.35	8,489.39	8,489.48	8,489.45	8,489.41	8,489.42	8,489.41	---
S32	509,739.02	2,218,933.12	8,548.93	8,548.80	8,548.81	8,548.79	8,548.77	8,548.80	8,548.81	8,548.80	8,548.81	---
G-17	513,692.46	2,210,938.01	---	8,488.24	8,488.23	8,488.22	8,488.24	8,488.25	8,488.23	8,488.23	8,488.23	---
G-12	513,184.13	2,216,526.83	---	8,311.00	8,311.02	8,311.00	8,311.01	8,311.02	8,311.03	8,311.01	8,311.03	---
E1/4 36	513,118.57	2,214,340.00	---	8,280.66	8,280.65	8,280.61	8,280.61	8,280.64	8,280.60	8,280.62	8,280.60	Section cor.
S1/4 36	510,454.70	2,211,696.79	---	8,606.46	8,606.43	8,606.44	8,606.43	8,606.43	8,606.43	8,606.44	8,606.43	Section cor.
West Side Subsidence Line, Set in 2007												
1	509,702.03	2,211,401.87	---	8,702.64	8,702.59	8,702.60	8,702.61	8,702.62	8,702.63	8,702.61	8,702.63	W. side line
2	509,802.00	2,211,401.17	---	8,693.70	8,693.69	8,693.69	8,693.69	8,693.67	8,693.68	8,693.70	8,693.68	W. side line
3	509,905.87	2,211,391.89	---	8,684.35	8,684.35	8,684.36	8,684.34	8,684.35	8,684.37	8,684.37	8,684.37	W. side line
4	510,003.89	2,211,387.55	---	8,673.73	8,673.77	8,673.77	8,673.75	8,673.75	8,673.78	8,673.75	8,673.78	W. side line
5	510,100.53	2,211,381.55	---	8,663.92	8,663.94	8,663.94	8,663.92	8,663.94	8,663.92	8,663.91	8,663.92	W. side line
6	510,205.72	2,211,424.42	---	8,646.43	8,646.50	8,646.49	8,646.51	8,646.53	8,646.54	8,646.52	8,646.54	W. side line
7	510,305.04	2,211,417.01	---	8,635.74	8,635.70	8,635.68	8,635.70	8,635.69	8,635.70	8,635.72	8,635.70	W. side line
8	510,401.40	2,211,415.19	---	8,625.82	8,625.81	8,625.80	8,625.81	8,625.80	8,625.83	8,625.81	8,625.83	W. side line
9	510,505.66	2,211,402.20	---	8,614.38	8,614.39	8,614.39	8,614.38	8,614.38	8,614.39	8,614.37	8,614.39	W. side line
10	510,608.91	2,211,401.63	---	8,603.45	8,603.45	8,603.46	8,603.45	8,603.47	8,603.46	8,603.47	8,603.46	W. side line
11	510,709.16	2,211,393.00	---	8,596.31	8,596.29	8,596.29	8,596.30	8,596.28	8,596.30	8,596.30	8,596.30	W. side line
12	510,798.94	2,211,380.99	---	8,588.76	8,588.74	8,588.72	8,588.72	8,588.75	8,588.73	8,588.74	8,588.73	W. side line
13	510,898.92	2,211,375.38	---	8,576.09	8,576.10	8,576.09	8,576.09	8,576.11	8,576.09	8,576.12	8,576.09	W. side line
14	511,010.59	2,211,370.03	---	8,561.49	8,561.50	8,561.47	8,561.49	8,561.47	8,561.48	8,561.50	8,561.48	W. side line
15	511,112.19	2,211,366.93	---	8,548.90	8,548.83	8,548.81	8,548.81	8,548.82	8,548.80	8,548.83	8,548.80	W. side line
16	511,228.34	2,211,359.45	---	8,543.69	8,543.65	8,543.61	8,543.63	8,543.63	8,543.63	8,543.62	8,543.63	W. side line
17	511,338.04	2,211,366.01	---	8,542.64	8,542.59	8,542.57	8,542.60	8,542.59	8,542.58	8,542.57	8,542.58	W. side line
18	511,437.15	2,211,398.56	---	8,535.12	8,535.08	8,535.06	8,535.10	8,535.08	8,535.09	8,535.07	8,535.09	W. side line
19	511,553.98	2,211,419.93	---	8,526.12	8,526.05	8,526.02	8,526.04	8,526.05	8,526.03	8,526.06	8,526.03	W. side line
20	511,693.22	2,211,455.79	---	8,517.15	8,517.08	8,517.07	8,517.06	8,517.11	8,517.12	8,517.10	8,517.12	W. side line
21	511,807.12	2,211,469.85	---	8,512.56	8,512.50	8,512.49	8,512.47	8,512.52	8,512.50	8,512.50	8,512.50	W. side line
22	511,915.39	2,211,476.19	---	8,510.95	8,510.89	8,510.90	8,510.87	8,510.90	8,510.91	8,510.89	8,510.91	W. side line
23	512,092.42	2,211,408.58	---	8,505.00	8,504.98	8,504.98	8,504.93	8,504.95	8,504.98	8,504.95	8,504.98	W. side line
24	512,192.21	2,211,384.74	---	8,495.80	8,495.72	8,495.71	8,495.71	8,495.73	8,495.71	8,495.72	8,495.71	W. side line
25	512,292.93	2,211,375.13	---	8,483.93	8,483.94	8,483.94	8,483.94	8,483.92	8,483.92	8,483.95	8,483.92	W. side line
26	512,408.97	2,211,358.60	---	8,471.08	8,471.04	8,471.05	8,471.04	8,471.06	8,471.07	8,471.05	8,471.07	W. side line
27	512,515.37	2,211,308.35	---	8,462.95	8,462.90	8,462.89	8,462.91	8,462.92	8,462.90	8,462.91	8,462.90	W. side line
28	512,650.10	2,211,333.27	---	8,449.75	8,449.72	8,449.72	8,449.73	8,449.73	8,449.74	8,449.72	8,449.74	W. side line
29	512,873.07	2,211,295.54	---	8,430.09	8,430.05	8,430.03	8,430.06	8,430.04	8,430.04	8,430.06	8,430.04	W. side line
30	512,993.25	2,211,287.69	---	8,428.71	8,428.68	8,428.69	8,428.74	8,428.76	8,428.75	8,428.71	8,428.75	W. side line
31	513,091.16	2,211,285.96	---	8,427.18	8,427.16	8,427.15	8,427.18	8,427.20	8,427.20	8,427.19	8,427.20	W. side line
32	513,217.13	2,211,297.36	---	8,423.25	8,423.21	8,423.20	8,423.24	8,423.23	8,423.21	8,423.22	8,423.21	W. side line
33	513,353.03	2,211,313.87	---	8,425.43	8,425.38	8,425.38	8,425.40	8,425.39	8,425.40	8,425.41	8,425.40	W. side line
34	513,491.93	2,211,317.92	---	8,407.84	8,407.78	8,407.79	8,407.80	8,407.79	8,407.79	8,407.78	8,407.79	W. side line
35	513,607.49	2,211,335.06	---	8,406.22	8,406.17	8,406.17	8,406.18	8,406.18	8,406.16	8,406.16	8,406.16	W. side line
36	513,719.38	2,211,366.06	---	8,403.71	8,403.68	8,403.66	8,403.69	8,403.66	8,403.68	8,403.69	8,403.68	W. side line
37	513,810.83	2,211,402.93	---	8,400.29	8,400.24	8,400.26	8,400.26	8,400.25	8,400.27	8,400.30	8,400.27	W. side line
38	513,932.97	2,211,450.36	---	8,396.17	8,396.14	8,396.14	8,396.15	8,396.13	8,396.15	8,396.14	8,396.15	W. side line
39	514,038.94	2,211,462.97	---	8,394.29	8,394.25	8,394.24	8,394.26	8,394.25	8,394.25	8,394.26	8,394.25	W. side line

2014

Annual Report

GVH Status Update

Gob Vent Hole Status
2014 Annual Report

GVH #1

Drilled in 2005. Because GVH #1 was never included in the OSO agreement, and this hole was not considered necessary for future ventilation of the mine operation, it was plugged and the surface pad was reclaimed in 2009. In 2015 the five year vegetation inventory will be conducted and the GVH hole will enter into year five of the ten year reclamation clock.

GVH #2

Never Drilled, not permitted, no disturbance, eliminated from consideration.

GVH #3

Drilled in 2005. **Currently in Production** or capable of production by OSO/Blue Tip. Hole has drill collar with valves, telemetry tower, three solar cells with controller box, telephone pole, vertical CMP drain, and condenser-cooler structure. Site has been top-soiled, pocked and seeded.

GVH #4

Drilled in 2005. Hole has drill collar with valves, telemetry tower, three solar cells with controller box, telephone pole, some fencing structure, and condenser-cooler structure. Site has been top-soiled, pocked and seeded.

GVH #5

Drilled in 2005. Because GVH #5 was never included in the Oso agreement, and this hole was not considered necessary for future ventilation of the mine operation, it was plugged and the surface pad were reclaimed in 2009. In 2015 the five year vegetation inventory will be conducted and the hole will enter into year five of the ten year reclamation clock.

GVH #5A

Drilled in 2006. Has a drill collar with valve. Site has been top-soiled, pocked and seeded.

GVH #5B

Permitted but never drilled, no pad preparation. Eliminated from consideration. However was considered in the bonding.

GVH #6

Drilled in 2005. Hole has drill collar with valves, telemetry tower, three solar cells with controller box, telephone pole, vertical CMP drain, and condenser-cooler structure. Site has been top-soiled, pocked and seeded. Site was sprayed for cheat grass in early 2014 and re-seeded.

GVH #7

Drilled in 2006. **Currently in Production** or capable of production by OSO/Blue Tip. Hole has drill collar with valves, telemetry tower, three solar cells with controller box, vertical CMP drain, and condenser-cooler structure. Site has been top-soiled, pocked and seeded.

GVH #7A

Drilled in 2006 from GVH pad #7. On same pad as 7A. Has drill collar with valves surrounded by cattle fencing. Site has been top-soiled, pocked and seeded.

GVH #8

Drilled in 2006. Hole has drill collar with valves, telemetry tower, three solar cells with controller box, and condenser-cooler structure. Site has been top-soiled, pocked and seeded.

GVH #8A

Drilled in 2006. **Currently in Production** or capable of production by OSO/Blue Tip. Hole has drill collar with valves, telemetry tower, three solar cells with controller box, and vertical CMP drain. Site has been top-soiled, pocked and seeded.

GVH #9

Drilled in 2006. **Currently in Production** or capable of production by OSO/Blue Tip. Hole has drill collar with valves, telemetry tower, three solar cells with controller box, and vertical CMP drain. Site has been top-soiled, pocked and seeded

GVH #10

Permitted but never drilled, no pad preparation. Eliminated from consideration. However was considered in the $224,000 bonding.

GVH #10A

Permitted but never drilled, no pad preparation. Eliminated from consideration.

GVH #11

Drilled in 2008. Was considered in the $224,000 bonding. **Currently in Production** or capable of production by OSO/Blue Tip. Hole has drill collar with valves, telemetry tower, three solar cells with controller box, and vertical CMP drain. Site has been top-soiled, pocked and seeded.

GVH #11A

Proposed, conditionally approved but never drilled. No bonding.

GVH #12

Drilled in 2008. This GVH is no longer needed for future ventilation and was never tied into the ventilation network, was plugged in July of 2014 as per the approved BLM plugging

plan. The collar and all valves was removed and the pipe cut off 18" below ground level. This GVH was fenced and re-seeded to augment existing vegetation in September of 2014. This site is eligible for Phase I reclamation. The 10 year clock was not started in order to keep GVH's 12-17 on the same reclamation clock. However was considered in the $224,000 bonding.

GVH #12A

Proposed, conditionally approved but never drilled. No bonding.

GVH #13

Drilled in 2008. This GVH is no longer needed for future ventilation and was never tied into the ventilation network, was plugged in July of 2014 as per the approved BLM plugging plan. The collar and all valves was removed and the pipe cut off 18" below ground level. This GVH was fenced and re-seeded to augment existing vegetation in September of 2014. Before it is eligible for Phase I reclamation the vertical culvert (water drain) needs to be removed. Once removed the ten year reclamation clock will start. Was considered in the $224,000 bonding.

GVH #13A

Proposed, conditionally approved but never drilled. No bonding.

GVH #14

Drilled in 2008. This GVH is no longer needed for future ventilation and was never tied into the ventilation network, was plugged in July of 2014 as per the approved BLM plugging plan. The collar and all valves was removed and the pipe cut off 18" below ground level. This GVH was fenced and re-seeded to augment existing vegetation in September of 2014. Before it is eligible for Phase I reclamation the vertical culvert (water drain) needs to be removed. Once removed the ten year reclamation clock will start. Was considered in the $224,000 bonding.

GVH #14A

Proposed, conditionally approved but never drilled. No bonding.

GVH #15

The drilling pad was prepared but the hole was never drilled. This GVH was fenced and re-seeded to augment existing vegetation in September of 2014. Before it is eligible for Phase I reclamation the vertical culvert (water drain) needs to be removed. Once removed the ten year reclamation clock will start. Was considered in the $224,000 bonding.

GVH #15A

Proposed, conditionally approved but never drilled. No bonding.

GVH #16

The drilling pad was prepared but the hole was never drilled. This GVH was fenced and re-seeded to augment existing vegetation in September of 2014. Before it is eligible for Phase I reclamation the vertical culvert (water drain) needs to be removed. Once removed the ten year reclamation clock will start. Was considered in the $224,000 bonding.

GVH #16A

Proposed, conditionally approved but never drilled. No bonding.

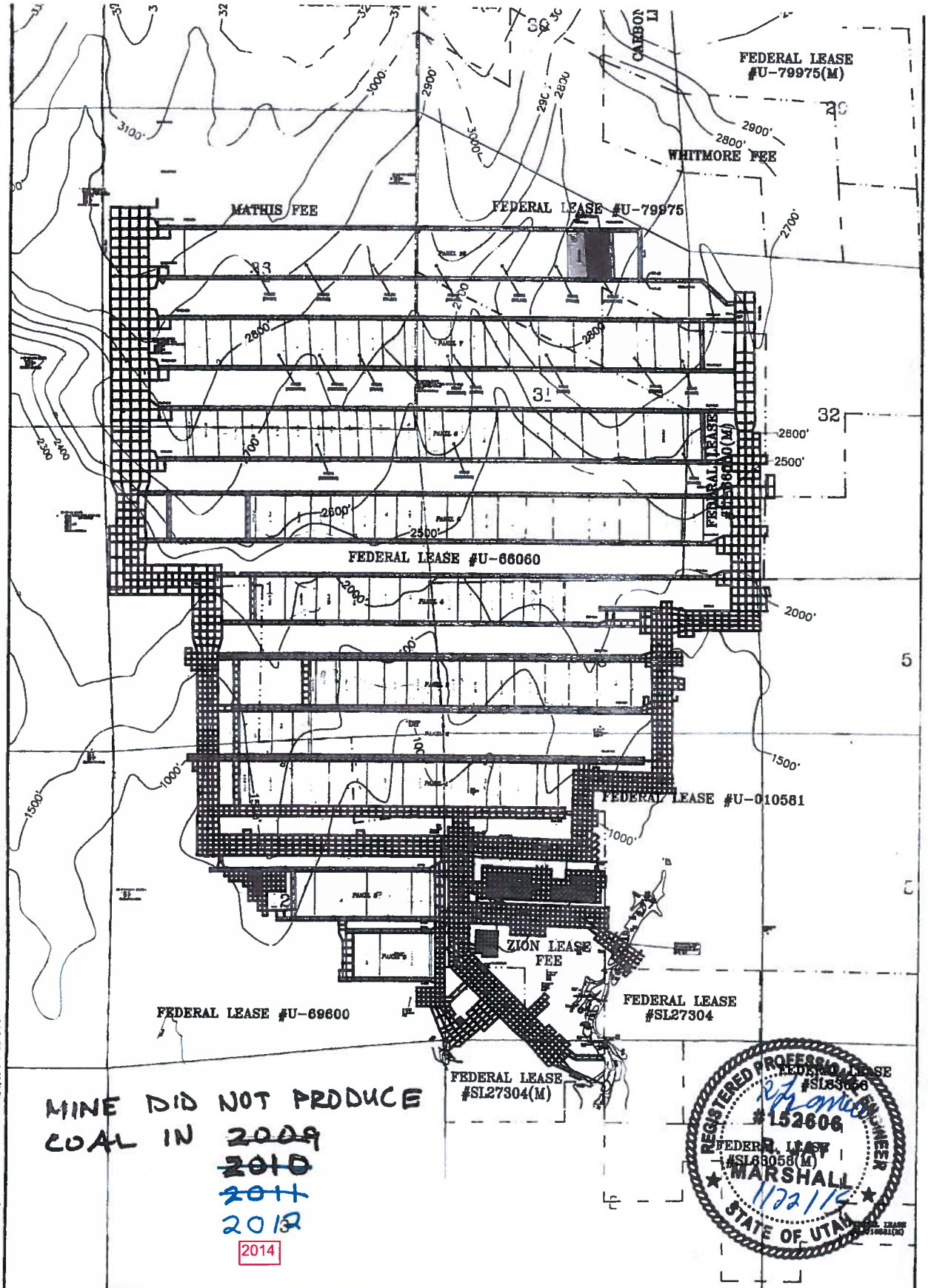
GVH #17

The drilling pad was prepared but the hole was never drilled. This GVH was fenced and re-seeded to augment existing vegetation in September of 2014. Before it is eligible for Phase I reclamation the vertical culvert (water drain) needs to be removed. Once removed the ten year reclamation clock will start. Was considered in the $224,000 bonding.

2014

Annual Report

Mine Map


FEDERAL LEASE #U-79975(M)
WHITMORE FEE
MATHIS FEE
FEDERAL LEASE #U-79975
FEDERAL LEASE #U-66060
FEDERAL LEASE #U-010581
ZION LEASE FEE
FEDERAL LEASE #U-69600
FEDERAL LEASE #SL27304
FEDERAL LEASE #SL27304(M)
FEDERAL LEASE #SL65056
FEDERAL LEASE #SL65056(M)
MINE DID NOT PRODUCE COAL IN 2009 2010 2011 2012 2014
REGISTERED PROFESSIONAL ENGINEER #152606 MARSHALL STATE OF UTAH 11/21/13
Strike N83°04'E Aberdeen Seam
Dip N 25° E 11%
N
CERTIFY THIS MAP TO BE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE
REGISTERED #6449581 PROFESSIONAL ENGINEER 5/6/09
MINE PRODUCTION LEGEND
LONGWALL GOB AREAS
JANUARY 2008 PRODUCTION AREA
FEBRUARY 2008 PRODUCTION AREA
MARCH 2008 PRODUCTION AREA
NOTE: MINE DID NOT PRODUCE COAL FROM
2008 MINE PRODUCTION AREAS
ANDALEX RESOURCES
ABERDEEN MINE
6750 AIRPORT ROAD
PRICE, UTAH 84501
MSHA MINE ID #42-02028
DRAWN BY PJ
SCALE 1" = 1500'
APPROVED BY DS
DATE 5 MAY 2009

C/007/0019
Received 3/25/15

Revegetation Monitoring Sites: GVH-01, GVH-05 & Reference Areas

2014

Centennial Mine
Carbon County, Utah

Prepared by

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

Patrick D. Collins, Ph.D.

for

ANDALEX RESOURCES, INC.
CENTENNIAL MINE
Post Office Box 902
Price, Utah 84501

March 2015

TABLE OF CONTENTS

INTRODUCTION 1

METHODS 2
- Transect Placement 2
- Cover, Frequency & Composition 2
- Density 2
- Photographs, Sample Location Map & Site Coordinates 2

RESULTS 3
- Site GVH-01 3
- Site GVH-05 4
- Reference Area: Aspen/Grass 5
- Reference Area: Sagebrush/Grass 6

SUMMARY & DISCUSSION 7
- Plant Species Establishment 7
- Total Living Cover 7
- Woody Species Density 7

CONCLUSIONS 8

DATA SUMMARY TABLES 10

SAMPLE LOCATION MAP ..... Attachment

INTRODUCTION

The Centennial Mine is located on the Book Cliffs Plateau, about 10 miles northeast of the town of Price, Utah. The coal mine went into 'temporary cessation' in 2008. Because it was a very deep mine, a number of boreholes had been drilled in strategic locations to vent "gob" gas as a safety precaution during mining operations. Since that time, several of these drill sites have been reclaimed.

In most cases, prior to land disturbance caused for drill pad construction, the existing vegetation was quantitatively measured along with "reference areas" that were left undisturbed to be used for final revegetation success standards following reclamation of the sites. However, some emergency borehole drill sites were constructed in the winter months, or before vegetation sampling could be conducted. *Reference areas* for those sites were chosen later. Reference areas are native plant communities similar to those that have been impacted by mine-related operations, then left undisturbed so they can be used later as standards for final revegetation success.

Constructed in the winter of 2005, GVH-01 and GVH -05 were two such emergency drill sites. The boreholes at these sites were used to vent gob gas as necessary, then reclaimed in 2009. The vegetation at these sites was sampled to monitor revegetation success in the growing season of 2014. This report provides the sample results as well as previous recorded data of the applicable reference areas for comparisons purposes.

METHODS

Transect Placement

Transect lines for quantitative sampling were randomly placed throughout the study areas. From these transect lines, sample locations were chosen using random numbers on both sides and at right angles to them.

Cover, Frequency & Composition

Cover estimates were made by ocular methods using meter square quadrats. Species composition and relative frequencies were also assessed from the quadrats. Plant nomenclature follows "*A Utah Flora*" (Welsh et al. 2008).

Density

Density estimates for the woody plant species on the reclaimed and reference areas were made employing a distance method called the point-quarter technique. In this method, random points were placed on the sample sites and divided 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. Final calculations resulted in the number of individual woody plants per acre.

Photographs, Sample Location Map & Site Coordinates

Color photographs were taken of the sample areas, some of which have been included in this report. An aerial image map showing the sample sites has also been included.

Coordinates of the study sites are shown below.

Revegetation Monitoring Sites (2014)		
SITE NAME	**GPS NAME**	**COORDINATES** (meters; NAD 27)
GVH-01	ANGVH1	12 S 523627 4397698
GVH-05	ANGVH5	12 S 523623 4398178
Aspen/Grass Reference Area	AGVH8R	12 S 522002 4398050
Sagebrush/Grass Reference Area	AGVHSR	12 S 522309 4398459

RESULTS

Site: GVH-01

GVH-04

In 2014, reclaimed site GHV-01 was dominated by western wheatgrass (*Elymus smithii*) by quite a large margin. Other important plant species in the sample quadrats were: smooth brome (*Bromus inermis*), Sandberg's bluegrass (*Poa secunda*) and sagebrush (*Artemisia tridentata*). For a list of all species encountered in the samples, refer to Table 1.

The total living cover at this site was estimated at 63.25%, and all of it was understory cover (Table 2-A). The composition of this cover was comprised mostly of grasses at 91.09%. Shrub and forbs made up the remainder at 8.41% and 0.50%, respectively (Table 2-B).

Woody species density was relatively low with a total of 272 individuals per acre (Table 3). The only two shrubs in the density measurements were sagebrush and rubber rabbitbrush (*Chrysothamnus nauseosus*).

Site: GVH-05

Reclaimed site GHV-05 was dominated by sagebrush, smooth brome, Sandberg's bluegrass and western wheatgrass (Table 4).

The total living cover at this site was 61.00% (Table 5-A); it was comprised of 64.94% grasses, 34.30% shrubs and 0.77% forbs (Table 5-B).

GVH-05

The total woody species density at GHV-05 was estimated at 3,658 plants per acre, all of which was sagebrush (Table 6),

Reference Area: Aspen/Grass

The aspen/grass reference area chosen for future standards was located in the vicinity of the disturbed aspen/grass communities. The only tree present in the overstory cover was aspen (*Populus tremuloides*). The dominant plants in understory cover were: snowberry (*Symphoricarpos oreophilus*), lupine (*Lupinus argenteus*), Kentucky bluegrass (*Poa pratensis*) low rabbitbrush (*Chrysothamnus viscidiflorus*) and aspen (Table 7).

Aspen/Grass Reference Area (2005)

The total living understory cover in this community was 52.00%, while the total combined overstory and understory cover was 76.25% (Table 8-A). Trees and shrubs dominated the cover composition at 58.95%, whereas forbs and grasses were equally represented at 20.79% and 20.26%, respectively (Table 8-B).

The total woody species density was estimated at 3,702 individuals per acre and was dominated by snowberry, broom snakeweed (*Gutierrezia sarothrae*) and aspen (Table 9).

Reference Area: Sagebrush/Grass

A native, undisturbed sagebrush/grass plant community was chosen to represent future revegetation success standards for similar communities that were impacted by the drilling activities, such as GVH-05.

The dominant plant species of this reference area by cover and frequency were big sagebrush and Kentucky bluegrass (Table 10).

This reference area has a total living cover estimated at 61.75% (Table 11-A). Within this total living cover measurement, 63.36% of was from shrubs, 26.70% from grasses, and 9.94% were forbs (Table 11-B).

Woody species density was estimated at 6,335 individuals per acre (Table 12) and was comprised of big sagebrush, viscid rabbitbrush (*Chrysothamnus viscidiflorus*), snowberry, and Wood's rose (*Rosa woodsii*).

Sagebrush/Grass Reference Area (2006)

SUMMARY & DISCUSSION

Gas vent sites GVH-01 and GVH-05 were reclaimed in 2009. In 2014, vegetation at the sites was quantitatively sampled to monitor the progress of plant establishment. Reference areas were sampled previously to represent revegetation success standards following reclamation. Results from the 2014 sample period have been provided in this report. Additionally, earlier datasets for applicable reference areas have been included herein to provide general comparisons to the reclaimed areas.

Plant Species Establishment

All plants present in the sample quadrats of **GVH-01** and **GVH-05** were desirable species with no "weedy", exotics.

Total Living Cover

The total living cover value of **GVH-01** was somewhat less, but getting close to the value of the **Aspen/Grass Reference Area**. In fact, when the understory values of the two areas were compared, the reclaimed site was higher than that of the reference area.

When to total living cover of **GVH-05** was compared to the **Sagebrush/Grass Reference Area**, the values were nearly identical.

Woody Species Density

When the total woody species density of **GVH-01** was compared to that of its reference area, the latter was significantly greater.

The woody species density of reclaimed site **GVH-05** was also less than its reference area, but not by as large of a margin. This difference may become less as the site becomes better established.

CONCLUSIONS

The reclaimed sites are progressing well as far plant establishment, especially when the species present and total living covers are considered. Woody species density especially in GVH-01, was significantly less than its reference area.

Because there are more reclaimed drill sites that will soon need to be studied, and because bond release considerations are forthcoming, it may be timely to review and assess the goals for final revegetation success at these drill sites. For example, a review of the language in the Mining & Reclamation Plan (MRP) regarding them, considerations for wildlife habitat and livestock grazing, determinations of which parameter(s) should be measured against reference areas and finally, the expectations of the landowners for the postmining land uses should be considered.

Table 1: Centennial Mine. Living Cover and Frequency by Plant Species (2014).

Reclaimed Area: GVH-01 **Aspen/Grass**			n=20
	Mean Percent	**Standard Deviation**	**Percent Frequency**
SHRUBS			
Artemisia tridentata	3.25	7.95	15.00
Chrysothamnus nauseosus	1.25	5.45	5.00
Purshia tridentata	0.50	2.18	5.00
FORBS			
Penstemon strictus	0.25	1.09	5.00
GRASSES			
Bromus inermis	9.25	8.98	65.00
Elymus smithii	37.50	19.65	90.00
Elymus trachycaulus	2.25	5.58	15.00
Poa secunda	9.00	17.51	25.00

Table 2: Centennial Mine. Total Cover and Composition (2014).

Reclaimed Area: GVH-01 **Aspen/Grass**		n=20
A. TOTAL COVER	**Mean Percent**	**Standard Deviation**
Understory	63.25	9.39
Litter	8.80	4.04
Bareground	17.70	8.92
Rock	10.25	4.87
B. % COMPOSITION		
Shrubs	8.41	15.49
Forbs	0.50	2.18
Grasses	91.09	15.37

Table 3: Centennial Mine. Woody Species Density (2014).

Reclaimed Area: GVH-01 **Aspen/Grass**	n=20
SPECIES	**Individuals/Acre**
Artemisia tridentata	200.56
Chrysothamnus nauseosus	64.59
TOTAL	**271.94**

Table 4: Centennial Mine. Living Cover and Frequency by Plant Species (2014).

Reclaimed Area: GVH-05 **Sagebrush/Grass**			n=20
	Mean Percent	**Standard Deviation**	**Percent Frequency**
SHRUBS			
Artemisia tridentata	23.25	21.64	65.00
FORBS			
Linum lewisii	0.50	2.18	5.00
GRASSES			
Bromus inermis	19.75	20.03	70.00
Elymus smithii	5.00	8.37	35.00
Elymus spicatus	2.00	8.72	5.00
Elymus trachycaulus	4.25	5.07	50.00
Poa secunda	6.25	16.80	15.00

Table 5: Centennial Mine. Total Cover and Composition (2014).

Reclaimed Area: GVH-05 **Sagebrush/Grass**		n=20
A. TOTAL COVER	**Mean Percent**	**Standard Deviation**
Understory	61.00	10.79
Litter	6.75	2.38
Bareground	22.75	10.30
Rock	9.50	5.45
B. % COMPOSITION		
Shrubs	34.30	29.75
Forbs	0.77	3.35
Grasses	64.94	30.82

Table 6: Centennial Mine. Woody Species Density (2014).

Reclaimed Area: GVH-05 **Sagebrush/Grass**	n=20
SPECIES	**Individuals/Acre**
Artemisia tridentata	3658.32
TOTAL	**3658.32**

Table 7: Centennial Mine. Living Cover and Frequency by Plant Species (2005).

Reference Area: Aspen/Grass			n=20
	Mean Percent	Standard Deviation	Percent Frequency
OVERSTORY			
Populus tremuloides	24.25	17.77	75.00
UNDERSTORY			
TREES/SHRUBS			
Artemisia tridentata	1.25	3.49	15.00
Chrysothamnus viscidiflorus	6.00	10.07	35.00
Populus tremuloides	6.50	11.84	35.00
Rosa woodsii	4.75	11.01	25.00
Symphoricarpos oreophilus	12.75	17.06	50.00
FORBS			
Achillea millefolium	0.25	1.09	5.00
Cynoglossum officinale	0.25	1.09	5.00
Lupinus argenteus	9.25	6.76	85.00
GRASSES			
Bromus carinatus	0.50	2.18	5.00
Elymus spicatus	1.50	4.50	15.00
Poa pratensis	8.25	13.44	50.00
Stipa columbiana	0.75	1.79	15.00

Table 8: Centennial Mine. Total Cover and Composition (2005).

Reference Area: Aspen/Grass		n=20
A. TOTAL COVER	Mean Percent	Standard Deviation
Overstory (o)	24.25	17.77
Understory (u)	52.00	13.55
Litter	27.10	14.70
Bareground	19.65	18.42
Rock	1.25	0.89
o + u	76.25	18.43
B. COMPOSITION		
Trees & Shrubs	58.95	28.06
Forbs	20.79	18.28
Grasses	20.26	19.17

Table 9: Centennial Mine. Woody Species Density (2005).

Reference Area: Aspen/Grass	n=20
SPECIES	**Individuals Per Acre**
Artemisia tridentata	185.12
Gutierrezia sarothrae	879.32
Populus tremuloides	833.04
Rosa woodsii	462.80
Symphoricarpos oreophilus	1342.12
TOTAL	**3702.40**

Table 10: Centennial Mine. Living Cover and Frequency by Plant Species (2006).

Reference Area: Sagebrush/Grass			n=20
	Mean Percent	Standard Deviation	Percent Frequency
TREES & SHRUBS			
Amelanchier utahensis	0.50	2.18	5.00
Artemisia tridentata	26.25	13.12	85.00
Chrysothamnus viscidiflorus	9.15	8.70	70.00
Rosa woodsii	0.85	2.59	10.00
Symphoricarpos oreophilus	2.75	5.12	25.00
FORBS			
Achillea millefolium	0.50	2.18	5.00
Astragalus sp.	0.50	1.50	10.00
Lupinus argenteus	3.75	5.89	35.00
Penstemon watsonii	1.00	2.55	15.00
Taraxacum officinale	0.25	1.09	5.00
GRASSES			
Festuca thurberi	0.25	1.09	5.00
Poa pratensis	16.00	8.89	100.00

Table 11: Centennial Mine. Total Cover and Composition (2006).

Reference Area: Sagebrush/Grass		n=20
A. TOTAL COVER	Mean Percent	Standard Deviation
Understory	61.75	7.79
Litter	16.75	6.18
Bareground	12.90	6.46
Rock	8.60	5.81
B. % COMPOSITION		
Shrubs	63.36	17.55
Forbs	9.94	10.59
Grasses	26.70	14.79

Table 6: Centennial Mine. Woody Species Density (2006).

Reference Area: Sagebrush/Grass	n=20
SPECIES	Individuals Per Acre
Artemisia tridentata	3880.37
Chrysothamnus viscidiflorus	1821.40
Rosa woodsii	237.57
Symphoricarpos oreophilus	395.96
TOTAL	**6335.30**

Sagebrush/Grass Reference
GVH-05
Aspen/Grass Reference
GVH-01
Revegetation Monitoring
Study Areas
2014
Centennial Mine
Carbon County, Utah
Mt. Nebo Scientific, Inc.
Springville, Utah
March 2015
Google earth