ANDALEX RESOURCES, INC.

APPENDIX X

CENTENNIAL PROJECT
GOB GAS VENT HOLES
GVH#1, GVH#2, GVH#5 AND GVH#6
C/007/019

Mine # C/007/0019
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FEBRUARY 2005

CHAPTER 1
LEGAL, FINANCIAL, COMPLIANCE AND RELATED INFORMATION

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110 MINIMUM REQUIREMENTS FOR LEGAL, FINANCIAL, COMPLIANCE AND RELATED INFORMATION

111 Introduction

This project is a "Ventilation Assistance Program", wherein hazardous "gob gas" from the longwall will be partially vented to the surface. The quantity and quality of the vented gas will be the same as that presently being discharged at the mine fan. The discharged "gob gas" will be of no commercial value. It should also be noted that GVH#1 has already been authorized under emergency permitting criteria (March 10, 2005). The same performance standards which are required for GVH#5 and GVH#6 also apply to GVH#1. GVH #'s 5 and 6 were approved by the Division on April 8, 2005. ARI is adding GVH#2 at this time.

The proposed project will start with 4 gob gas vent holes, 2 on the present longwall panel and 2 across the next projected longwall panel. The holes will be located on surface property owned by Dave R. and Mildred Cave, et al., and Mathis Land, Inc. The mineral rights are owned by Mathis Land, Inc. And the United States Government (B.L.M.) And are under lease by Andalex Resources, Inc. Hole #1 has already been approved by the Division as an emergency permitting action, due to safety concerns (DOGM task 2166.) and GVH #'s 5 and 6 were approved on April 8, 2005.

The proposed hole locations are described in Table 1-1 and are shown on Figure 1-1.

TABLE 1-1
Gob Gas Well Locations (see Figure 1-1)
Deadman Canyon, Utah Quadrangle, Salt Lake Meridian

Hole Number	Section	Township and Range
GVH-1	31	T.12S., R.11E.
GVH-2	31	T.12S., R.11E.
GVH-5	31	T.12S., R.11E.
GVH-6	31	T.12S., R.11E.

112 Identification of Interests

Refer to the same section of the approved M&RP.

112.100 Business Entity

Refer to the same section of the approved M&RP.

112.200 Applicant and Operator

Applicant and Operator: Andalex Resources, Inc
Tower Division
P.O. Box 902
Price, Utah 84501
Telephone: (435) 637-5385

Contact Person and
Resident Agent: Michael W. Glasson
Andalex Resources, Inc
Tower Division
P.O. Box 902
Price, Utah 84501
Telephone: (435) 637-5385

Responsibility: Andalex Resources, Inc. is responsible for submission of information and will pay abandoned mine reclamation fees.

112.300 Officers of the Applicant

Refer to the same section of the approved M&RP.

112.400 Coal Mining and Reclamation Operation Owned or Controlled

Refer to the same section of the approved M&RP.

112.500 Legal or Equitable Owner of the Surface and Mineral Properties

The legal and equitable owner of the surface and mineral properties to be affected by this operation during the duration of the permit period are listed below:

Surface Owners

David R. & Mildred Cave, et al.
144 South 1650 East
Price, Utah 84501

Mathis Land Co.
Sunnyside Star Route
Price, Utah 84501

Sub-Surface Owners

United States of America
Bureau of Land Management
Utah State Office
136 East South Temple
Salt Lake City, Utah 84111

Mathis Land Co.
Sunnyside Star Route
Price, Utah 84501

112.600 Owners of Record of Property Contiguous to Proposed Permit Area

Owners of record for surface and mineral properties contiguous to the proposed permit area are listed below:

Contiguous Surface Owners

David R. & Mildred Cave, et al.
144 South 1650 East
Price, Utah 84501

Mathis Land Co.
Sunnyside Star Route
Price, Utah 84501

F. and D. Shimmin
711 North 500 East
Price, Utah 84501

Contiguous Sub-Surface Owners

United States of America
Bureau of Land Management
Utah State Office
136 East South Temple
Salt Lake City, Utah 84111

State of Utah
School Trust Lands Administration
675 East 500 South
Salt Lake City, Utah 84102

Mathis Land Co.
Sunnyside Star Route
Price, Utah 84501

112.700 MSHA Numbers

Refer to the same section of the approved M&RP.

112.800 Interest in Contiguous Lands

Andalex Resources, Inc. has no interest in contiguous lands other than those currently owned as shown on Plate 1A of the approved M&RP.

112.900 Certification of Submittal Information

No information has changed in the approved M&RP because of this submittal. Refer to the same section of the approved M&RP.

113 Violation Information

Refer to the same section in the approved M&RP.

114 Right-of-Entry Information

Refer to the same section of the approved M&RP. A surface use agreement with the private surface owners is in place. A memorandum of this agreement is included in the MRP and is on record at the County Recorder's office. (See Appendix X-1)

Since each well site has not been finally located or surveyed in the field, an assumed disturbance of 1.0 acres is used as an estimate for each site.

See Table 1-2 for disturbed acreage for each well site. The actual disturbed acres will be added to the total disturbed acreage for the Centennial Project as each site is constructed.

TABLE 1-2
Disturbed Acres by Well Site

Well Site	Disturbed Acres
GVH-1	1.0
GVH-2	1.0
GVH-5	1.0
GVH-6	1.0

115 Status of Unsuitability Claims

Refer to the same section of the approved M&RP.

116 Permit Term

Refer to the same section of the approved M&RP.

117 Insurance, Proof of Publication, and Facilities and Structures Used in Common

The certificate of insurance(s) for each well will be obtained if required when the well is drilled. The certificate of insurance(s) will be included in Appendix B of the approved M&RP.

118 Filing Fees

Refer to the same section of the approved M&RP.

120 PERMIT APPLICATION FORMAT AND CONTENTS

This amendment submittal will comply with R645-301-120.

130 REPORTING OF TECHNICAL DATA

All technical data submitted in the amendment will be accompanied by the name or organization responsible for the collection and analysis of data, dates of collection and descriptions of methodology used. Technical analyses will be planned by or under the direction of a qualified professional in the subject to be analyzed.

140 MAPS AND PLANS

The maps and plans in the Mining and Reclamation Plan will correspond with the requirements in R645-301-140.

150 COMPLETENESS

Andalex Resources, Inc. believes the information in this permit application to be complete and correct.

ANDALEX RESOURCES, INC.

CENTENNIAL PROJECT
GOB GAS VENT HOLES
GVH#1, GVH#2, GVH#5 and GVH#6
C/007/019

FEBRUARY 2005

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SOILS

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210 INTRODUCTION

This chapter and associated attachments address the pertinent data required for the addition of the 4 degassification well sites for the Centennial Project (GVH#1, GVH#2, GVH#5 and GVH#6). Only those sections of the Division regulations that apply to the well sites have been addressed. The remainder of the regulations have already been addressed in the existing M&RP. The M&RP and this document contain pertinent information relating to the identification, management, and reclamation activities associated with the soil resources.

It should be noted that, at this time and due to winter conditions, no site-specific soils information is available for the proposed wells. Therefore, the data herein presented is general, and will be refined as conditions allow for field location and studies to be implemented. It should also be noted that GVH#1 has already been authorized under emergency permitting criteria. The same performance standards which are required for GVH#5 and GVH#6 also apply to GVH#1. GVH #'s 5 and 6 were approved by the Division on April 8, 2005.

220 ENVIRONMENTAL DESCRIPTION

The well sites range in elevation from approximately 8400 to 8600 feet. The well sites are located in the Summit Creek/Emma Park area of the Book Cliffs. General vegetation includes sagebrush-grass, aspen and oak brush communities.

221 Prime Farmland Investigation

Due to limiting terrain, lack of water for irrigation and no evidence of past cultivation of the sites, it is concluded that no prime farmland exists within the area of the well site disturbance.

222 Soil Survey

221.100 Soils Map

Site specific soils information will be provided for each site when conditions allow. An order I soil survey will be conducted of the area to help define the previous conditions at well

sites 1, 2, 5 and 6. This information will be used for final reclamation, as well as for the anticipated future gob gas vent wells.

222.200 Soil Identification

See Attachment 2-1, Order 3 Soil Survey

222.300 Soil Description

See Attachment 2-1, Order 3 Soil Survey

222.400 Soil Productivity

See Attachment 2-1, Order 3 Soil Survey

TABLE 2-1
Topsoil Volumes

Note: 2400 CY per Well is assumed until final surveys are done. Actual size of the pads could be less than 1 acre, in which case the volume stored will be reduced accordingly.

Well No.	Cubic Yards of Material
GVH-1	2400
GVH-2	2400
GVH-5	2400
GVH-6	2400

223 Soil Characterization

See attachment 2-1, Order 3 Soil Survey

224 Substitute Topsoil

Andalex Resources, Inc. does not plan to use substitute topsoil as growth media unless described in Section 222.400.

230 OPERATION PLAN

231 General Requirements

231.100 Removing and Storing Topsoil Methods

The topsoil will be removed (and replaced) to a depth of 18 inches where the thickness exists, stockpiled and protected with a berm and/or silt fence. A qualified person will be on site during soil salvage to monitor and supervise the operation for the purpose of maximizing salvage volumes. Prior to topsoil salvage shrubs/vegetation will be removed and placed/wind rowed along the inside perimeter of the disturbed area. Stockpiled topsoil will not be allowed to remain at the angle of repose (1h:1v) for a period of longer than two weeks. During contemporaneous reclamation, or after two weeks, the stockpiled topsoil slopes will be reduced to less than 2h:1v. The topsoil will then be immediately seeded after the proper angle in achieved. Reseeding will use the approved seed mixture found in ARI's

Mining and Reclamation Plan (page 3-21), or a mix recommended by the Division, and will be hand broadcast, raked in slightly and mulched with straw or alfalfa hay. Hand broadcasting requires twice the seed rate per acre as drilling.

After the topsoil is removed, the mud pit will be excavated and the soils from the mud pit excavation will be stored immediately adjacent to the mud pit. Mud pit excavation of subsoil will be approximately 110 CY at each well site. Generally, it is expected that mud pits will be excavated in an area roughly 200 square feet by 15 feet deep. A larger area is possible, should the depth not be achievable, or multiple pits may be employed . However a mud pit volume of roughly 3000 cubic feet per drill site is needed. A portable container for drilling fluids will be used if necessary, should there not be sufficient subsoil depth to excavate a mud pit (where bed rock is encountered).

Topsoil beneath the topsoil stockpiles will not be removed. Ribbon or a marking fabric will be placed on top of the topsoil prior to placement of the topsoil from the well pad area.

The volume of subsoil to be salvaged and used to create berms around the perimeter of the well including the topsoil stockpile perimeter is approximately 30 cubic yards.

231.200 Suitability of Topsoil Substitutes/Supplements

See Section 224.

231.300 Testing of Topsoil Handling and Reclamation Procedures Regarding Revegetation

Andalex Resources, Inc. will exercise care to guard against erosion during and after application of topsoil and will employ the necessary measures to ensure the stability on graded slopes. Erosion control measures will include silt fences, berms, seeding, straw bales, soil roughening, and mulching of the soils.

Topsoil will be redistributed and the original soil surface beneath the topsoil stockpile will be roughened as presented in Section 242.100 and seeded with the seed mix described in Chapter 3, Section 356.

231.400 Construction, Modification, Use, and Maintenance of Topsoil

Storage Pile

Topsoil removed from the drill pad sites will be stockpiled on the site. The estimated volumes of topsoil stockpile for each site are shown in Table 2-1. The stockpiles will be sized as shown in Table 2-2.

The slopes of the stockpile will be 1H:1V or approximately 45° during the construction phase. Soils in these areas generally have an angle of repose greater than 50 degrees, making a stockpile with 1:1 slopes feasible. The steeper slope also help minimize the area to be disturbed. During the operational phase the remaining topsoil will be stockpiled with slopes of 2H:1V.

TABLE 2-2
Topsoil Stockpile Dimensions*

Well No.	Length (ft)	Width (ft)	Height (ft)
GVH-1	100	40	16
GVH-2	100	40	16
GVH-5	100	40	16
GVH-6	100	40	16

* These are approximate dimensions of the topsoil stockpile and construction dimensions may vary.
Note: Sizes are based on the estimated 2400 CY from Table 2-1.

See section 234.200 for detailed information on the topsoil stockpile(s).

232 Topsoil and Subsoil Removal

232.100 Topsoil Removal and Segregation

All topsoil will be removed as a single layer with no segregation to a depth of 18 inches, where available. Topsoil will be removed using a dozer and/or loader. Refer to Section 231.100 for additional details.

232.200 Poor Topsoil

Not Anticipated

232.300 Thin Topsoil

Not Anticipated

232.400 Minor Disturbances Not Requiring Topsoil Removal

Not Anticipated

232.500 Subsoil Segregation

The B and C soil horizons will generally not be removed. However, in drill pad locations where the A horizon is 18 inches or less, up to six inches of sub-soil may be removed for the purpose of constructing a berm around the perimeter of the drill pad. Construction of this berm, which will be roughly triangular in shape and roughly one foot in height (1V:1H), will accumulate an additional storage of either lower A or possibly B horizon soil of approximately 800 cubic feet or 30 cubic yards of material, per site.

232.600 Timing

Topsoil removal will take place after all vegetation that could interfere with salvaging the topsoil has been grubbed.

232.700 Topsoil and Subsoil Removal Under Adverse Conditions

The topsoil will be removed first and stockpiled and the remaining soil horizons will be left in place, except where natural conditions render removal operations hazardous or detrimental to soils outside the disturbed area then topsoil will not be removed.

Conventional Machines - In locations where steep grades, adverse terrains, sever rockiness, limited depth of soils, or other adverse conditions exist that render soil removal activities using conventional machines hazardous, soils will not be salvaged and stockpiled. Such conditions are not likely to occur in these areas.

Substitute Topsoil - Importing of substitute topsoil is not anticipated (Section 224).

233 Topsoil Substitutes and Supplements

233.100 Overburden Materials Supplementing and/or Replacing Topsoil

No overburden material will be used.

233.200 Suitability of Topsoil Substitutes and Supplements

No substitute topsoil is planned.

233.300 Physical and Chemical Analyses

See Section 243

233.400 Testing of Substitute Topsoil

No substitute topsoil is planned.

234 Topsoil Storage

234.100 Topsoil Stockpiling

Topsoil will be stockpiled for later use in reclamation operations.

234.200 Topsoil Stockpile

Stable Stockpile Site - Stockpiled material will be placed on a stable site.

Protection from Contaminants and Compaction - To protect the topsoil from contaminants and unnecessary compaction that could interfere with vegetation, the stockpile will be isolated from the main surface area by a berm and/or silt fence. A sign designating "topsoil" will be installed on the stockpile.

The topsoil stockpile will be constructed in such a manner as to allow access for repair of the pile surfaces and diversion structures.

Wind and Water Erosion Protection - The topsoil stockpile will be protected from water erosion by berms, which trap sediment runoff from the stockpile. The berms have been designed to completely contain the 10-year 24-hour storm event (see Attachment 7-1). The stockpile will be surface pitted, gouged and/or roughened and revegetated using the seeds listed in Table 3-2 to prevent wind erosion.

Topsoil Redistribution - Stockpile soil will not be moved until redistribution during

contemporaneous or final reclamation operations unless approved by the Division.

234.300 Topsoil Stockpile Relocation

Stockpiles soil in jeopardy of being detrimentally affected in terms of its quality by drilling operations may be temporarily redistributed or relocated on approval by the Division and modification of this M&RP.

240 RECLAMATION PLAN

241 General Information

Reclamation of the sites (topsoil redistribution, amendments, and stabilization) is discussed in Sections 242, 243 and 244 respectively.

242 Soil Redistribution

242.100 Soil Redistribution Practices

The topsoil will be placed after recontouring of the site has occurred. Topsoil will be handled when loose or in a friable condition. The moisture content will be visually monitored and water will be added as needed to enhance the soil's condition for handling. The approximate amount of topsoil available for each site is shown in Table 2-1.

The topsoil will be distributed in two phases at each well site. The first phase will be the contemporaneous reclamation of a portion of the pad area used during well construction (see Figures 5-2). During contemporaneous reclamation topsoil from the stockpile will be distributed on each site in the depths shown in Table 2-3.

Final reclamation will occur at all well sites after venting of the gob gas is complete, venting equipment has been removed and the well has been plugged. The topsoil stockpile storage area and any access road required to be removed will be reclaimed during this final phase. If access roads were pre-existing, they will not be reclaimed. Refer to Section 341 for additional information.

Soil Thickness - The topsoil will be distributed during contemporaneous and final reclamation in the thickness shown in Table 2-3. (Note: A topsoil thickness of 18" is assumed for all sites until actual measurements can be taken.)

TABLE 2-3
Approximate Topsoil Distribution Thickness

Well Site No.	Topsoil Thickness (inches)
GVH-1	18
GVH-2	18
GVH-5	18
GVH-6	18

Compaction - Prior to the application of topsoil, compacted subsoils will be roughened or loosened for a depth of 18 to 24 inches. To prevent compaction of topsoil, soil moving equipment will refrain from unnecessary operation over spread topsoil. The topsoil will be in a loosened condition prior to seeding.

Following the drying of the mud pit materials, the dirt excavated to create the mud pit will be mixed with the drill cutting and returned to the pit to prevent a boundary of hard material from forming in the mud pit are that would hamper root penetration and then compacted to minimize settling.

Erosion - Care will be exercised to ensure the stability of topsoil on graded slopes to guard against erosion during and after topsoil application. Post reclamation (contemporaneous and final) erosion control measures will be surface roughing, mulching and seeding. Outslopes along all the access roads will be seeded with a fast growing type of seed, western wheatgrass grass for example. This will quickly establish an erosion control measure on the outslopes.

242.200 Regrading

The areas will be graded to their approximated original topographic configuration.

242.300 Topsoil Redistribution on Impoundments and Roads

The mud pits will be dismantled and filled following completion of drilling. See Section 242.100, Compaction for additional information. Mud pits will be covered with the same amount of topsoil as the rest of the site. The roads existing prior to starting the drilling

program will not be reclaimed. Access roads built to allow entrance to the drilling pads will be reclaimed and will receive topsoil in the same depth as their corresponding pad areas when gob gas venting is complete.

243 Soil Nutrients and Amendments

The soils will be analyzed directly following salvage to determine if amendments are needed. Testing of the topsoil will be done according to Table 6 of the Division's Topsoil and Overburden Guidelines. The topsoil will be tested at a minimum for the following parameters: Texture, pH, electrical conductivity, total carbon, SAR, water holding capacity, plant available nitrogen, and phosphorus. Results of these analyses will be incorporated into Attachment 2-2.

244 Soil Stabilization

244.100 Protection and Stabilization of Surface Area

All reclaimed areas will be stabilized to control erosion by application of mulch, tackifier, and roughening of the surface. The areas will be graded to the approximately original topographic configuration. Seeding will be accomplished with the application of seeds and mulch with a long fiber tackifier or broadcast. Methods of protection and stabilization are further discussed in Chapter 3, Section 341.

244.200 Mulch Application

Mulch/tackifier will be applied to stabilize the soil on all areas that have been regraded and covered with growth media. For further discussion of revegetation practices to be utilized, see Chapter 3, Section 341.

244.300 Rills and Gullies

Postmining Land Use and Revegetation - Rills and gullies that are approximately nine (9) inches in depth and disrupt the postmining land use or reestablishment of vegetative cover will be regraded and seeded.

Water Quality - There are no streams immediately adjacent to the well sites.

250 PERFORMANCE STANDARDS

251 Topsoil, Subsoil, and Topsoil Supplements Management

All topsoil, subsoil, and topsoil supplements will be managed as outlined in Sections 230 and 240.

252 Stockpiled Topsoil and Subsoil

All stockpiled topsoil and subsoil will be managed according to plans outlined in Sections 230 and 240.

ATTACHMENT 2-1
SOIL INVENTORY AND ASSESSMENT

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

The potential plant community on the Senchert family soil is 60 percent grasses, 25 percent forbs, and 15 percent shrubs. Among the important plants are Thurber fescue, mountain brome, slender wheatgrass, aspen peavine, and mountain big sagebrush.

Management practices that maintain or improve the rangeland vegetation include proper grazing use, a planned grazing system, and proper location of water developments. If the desirable forage plants are mostly depleted, brush management and seeding can be used to improve the rangeland vegetation. Suitable brush management practices include prescribed burning, chemical spraying, and mechanical treatment.

The suitability of the Senchert family soil for rangeland seeding is good. Plants suitable for seeding include adapted native plants and smooth brome, regar brome, alfalfa, and bitterbrush.

This map unit is in capability subclass VIe, nonirrigated. The Senchert soil is in the High Mountain Stony Loam (Engelmann Spruce) woodland site. The Senchert family soil is in the High Mountain Loam (Thurber Fescue) range site.

103—Senchert-Toze family complex. This map unit is on north, east, and west aspects of mountain slopes. It is in the vicinity of the Patmos Head, Mount Bartles, and Jump Creek. Slopes are 15 to 35 percent. The present vegetation is mainly aspen, white fir, and Douglas-fir. Elevation is 7,500 to 9,500 feet. The average annual precipitation is about 20 to 25 inches, the average annual air temperature is 36 to 38 degrees F, and the average freeze-free period is 40 to 60 days.

This unit is 50 percent Senchert loam, clayey substratum, 15 to 30 percent slopes; 30 percent Toze family loam, 15 to 35 percent slopes; and 20 percent other soils. The Senchert soil is in plane areas, and the Toze family soil is in concave areas. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent soils that are similar to the Senchert soil but are 40 to 60 inches thick; 5 percent Podo gravelly sandy loam, dry, 8 to 30 percent slopes, on canyon rims; 5 percent Trag clay loam in small sagebrush parks; and 5 percent soils that are similar to the Toze family soil but have slopes of 35 to 50 percent.

The Senchert soil is moderately deep and well drained. It formed in residuum and colluvium derived dominantly from sandstone and shale. Slopes are 300 to 400 feet long and are concave. Typically, the surface is covered with a mat of partially decomposed leaves, twigs, and needles about 1 inch thick. The surface layer is very dark grayish brown loam 4 inches thick. The subsoil is grayish brown clay loam about 14 inches thick. The substratum to a depth of 25 inches is light brownish gray silty clay over calcareous sandstone. Depth to bedrock ranges from 20 to 40 inches.

Permeability of the Senchert soil is moderately slow. Available water capacity is about 3.5 to 5.0 inches. Water supplying capacity is 8.5 to 12.0 inches. Effective rooting depth is 20 to 40 inches. The organic matter content of the surface layer is 5 to 10 percent. Runoff is slow, and the hazard of water erosion is moderate.

The Toze family soil is very deep and well drained. It formed in colluvium derived dominantly from sandstone, siltstone, and shale. Slopes are 200 to 400 feet long and are concave. Typically, the surface is covered with a mat of leaves, twigs, and needles about 1 inch thick. The upper 3 inches of the surface layer is dark grayish brown loam, and the lower 22 inches is dark grayish brown loam and gravelly silt loam. The next layer is grayish brown gravelly silt loam about 8 inches thick. Below this to a depth of 60 inches or more is pale brown very gravelly fine sandy loam. A layer of calcium carbonate accumulation is at a depth of about 24 inches.

Permeability of the Toze family soil is moderate. Available water capacity is about 6 to 9 inches. Water supplying capacity is 11 to 18 inches. The organic matter content of the surface layer is 3 to 5 percent. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used as rangeland, woodland, wildlife habitat, and recreation areas.

The potential vegetation on the Senchert and Toze family soils includes an overstory of Douglas-fir with a canopy of 60 percent. The understory vegetation is 10 percent grasses, 5 percent forbs, and 85 percent shrubs. Among the important plants are sedges, mountainlover, snowberry, Oregon-grape, and quaking aspen.

The site index for aspen is 50. Average yield is about 27,200 board feet per acre of trees 12 inches in diameter or more. The unit is moderately limited for producing and harvesting wood products because of the steepness of slope, the hazard of erosion, and plant competition during the regeneration of Douglas-fir.

Management practices that maintain or improve the rangeland vegetation on this unit include proper grazing use, a planned grazing system, and proper location of water developments. The suitability for grazing is poor because of the low forage production. If the Douglas-fir is thinned, the desirable plants present can be expected to increase for a short period before Douglas-fir revegetates the unit.

This map unit is in capability subclass VIIe, nonirrigated, and in the High Mountain Loam (Douglas-fir) range site.

104—Senchert family, 3 to 15 percent slopes. This moderately deep, well drained soil is on rolling ridges and plateaus. It is near Steer Ridge, Bruin Point, and Patmos Head. It in formed residuum and alluvium derived dominantly from sandstone and shale. Slopes are 3 to 15 percent, 200 to 300 feet long, and slightly concave to convex. The present vegetation is mainly

ANDALEX RESOURCES, INC.

CENTENNIAL PROJECT
GOB GAS VENT HOLES
GVH#1, GVH#2, GVH#5 and GVH#6
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CHAPTER 3
BIOLOGY

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310 INTRODUCTION

This chapter presents a description of the biological resources found on the Centennial Project gob gas vent hole sites GVH#1, GVH#2, GVH#5 and GVH#6. areas. It should be noted that the information herein presented is general in nature, since site-specific studies have not been completed. Details for each of the sites will be provided upon completion of required studies.

311 Vegetation, Fish and Wildlife Resources

Vegetative, fish, and wildlife resource conditions in and adjacent to the proposed degassification wells are discussed in Section 320 of this submittal and the approved M&RP.

312 Potential Impacts to Vegetative, Fish, and Wildlife Resources

Potential impacts to vegetative, fish, and wildlife resources and the associated mitigation plan is presented in Section 330 and 340 of this chapter.

313 Description of Reclamation Plan

The reclamation plan used to restore the vegetative, fish, and wildlife resources to a condition suitable for the post mining land use is presented in Section 340.

320 ENVIRONMENTAL DESCRIPTION

321 Vegetation Information

This section and the approved M&RP contain the environmental descriptions of the vegetation for the permit and adjacent areas. Since vegetation reference areas, typically used for reclamation plans, are not available for Gob Gas Vent Holes 1, 2, 5 and 6, the range site method will be used. For the range sites to be used for GVH hole numbers 1, 2, 5 and 6, ANDALEX has provided productivity values, ecological site descriptions (ESD) and determinations that the sites are in fair to better condition as estimated by NRCS methods. This Range site method is considered a Class III type survey and is included in Attachment 3-1

321.100 Plant Communities Within the Proposed Permit Area

Plate 19A of the M&RP shows the sites to be generally in the sagebrush-grass, aspen and oak brush communities. Vegetation specific to each of the sites will be provided when conditions allow access. ARI is committed to performing a qualitative vegetative inventory (analysis) during the summer of 2005, providing that 2005 is a normal precipitation year.

312.200 Land Productivity Prior to Mining

(see 312.100) Also, ARI will take photographs of the sites prior to disturbance. These photo locations will be identifiable and repeatable.

TABLE 3-1
Land Productivity
(To be determined)

Well No.	Productivity (lbs.) Per Acre
GVH-1	See Mountain Loam Range Site
GVH-2	See High Mountain Loam Range Site
GVH-2 (Alt)	See High Mountain Loam Range Site
GVH-5	See Mountain Loam Range Site
GVH-6	See High Mountain Loam Range Site

322 Fish and Wildlife Information

Fish and wildlife information associated with the degas wells is provided in this chapter. A summary of the fish and wildlife resource information for th permit and adjacent areas is contained in Section 322.100 through 322.200 of the approved M&RP.

322.100 Level of Detail

The scope and level of detail within the "Gob Gas Vent Holes" amendment are sufficient to design the protection and enhancement plan for wildlife and fish associated with the degas wells. Additional information pertaining to fish and wildlife in the permit area is located in the M&RP.

322.200 Site-Specific Resource Information

Raptors - An aerial raptor nest survey was done of the area by the Utah Division of Wildlife Resource personnel in 2004. The results of the survey are provided in Appendix D of the M&RP.

A raptor survey will be conducted of the well site areas, each year that the wells are in operation.

Bats - No known open mine shafts, caves, adits or other man made structures that might provide habitats for bats are known to exist in the degas project area. The sites are open and the lack of a food source would force the bats to seek habitat and nourishment elsewhere.

Threatened and Endangered Plant and Wildlife Species - There are no known federally or state listed threatened and endangered plant and wildlife species within the sites planned for degassification wells. This is based on research and analysis by Mt. Nebo

Scientific of Springville, Utah and EIS of Helper Utah. The Bureau of Land Management has also reviewed the access and drill sites and has stated that although this area represents important habitat for both Mule deer and Elk, it is not characterized as crucial or critical.

There are no known groundwater or surface water flows to the Colorado or Green Rivers with potential for impact by the drilling of the degas wells. Potential adverse affects to the four Colorado River endangered fish species (refer to table below) would not be likely since there is no direct route to the Colorado River or Green River from the proposed well locations. Per the Windy Gap Process consumption estimates for the degas wells: evaporation from ventilation - zero, drill holes will not intersect the coal seam being mined, therefore no access to mine ventilation until after area is sealed; coal preparation - zero, no coal preparation at degas sites (see Sections 522 and 523); sediment pond evaporation - zero, no sediment pond at degas sites (see Section 732.200); subsidence effects on springs - zero, no anticipated subsidence at degas sites (see Section 525); alluvial aquifer abstraction into mines - zero, no alluvial aquifer abstractions associated with degas drill holes (see Sections 513.500 and 600); postmining inflow to workings - zero, no workings for postmining inflow associated with degas wells (see Sections 513.500 and 600); coal moisture loss - zero, no coal therefore no moisture loss (See Sections 522 and 523). Mitigation will not be required since the estimated loss for the construction and reclamation of the degas holes is zero acre feet per year.

Federal and State Listed, Threatened, Endangered and Candidate Species
Plants and Wildlife
Carbon County, Utah
October, 2002

CARBON

Graham Beardtongue	*Penstemon grahamii*
Uinta Basin Hookless Cactus	*Schlerocactus glaucus*
Bonytail[4, 10]	*Gila elagans*
Colorado Pikeminnow[4, 10]	E *Ptychocheilus lucius*
Humpback Chub[4, 10]	*Gila cypha*
E Razorback Sucker [4, 10]	*Xyrauchen texanus*
E Bald Eagle [3]	*Haliaeetus leucocephalus*
T Mexican Spotted Owl [4]	*Strix occidentalis lucida*
T Western Yellow-billed Cuckoo	*Coccyzus americanus occidentalis*
Black-footed Ferret [6]	*Mustela nigripes*
E	

1 Nests in this county of Utah
2 Migrates through Utah, no resident populations.
3 Wintering populations (only five known nesting pairs in Utah).
4 Critical habitat designated in this county.
5 Critical habitat proposed in this county
6 Historical range.
7 Experimental nonessential population
8 Introduced, refugia population.
9 Candidate species have no legal population under the Endangered Species Act. However, these species are under active consideration by the Service for addition to the Federal List of Endangered and Threatened Species and my be proposed or listed during the development of the proposed project.
10 Water depletions from any portion of the occupied drainage basin are considered to adversely affect or adversely modify the critical habitat of the endangered fish species, and must be evaluated with regard to the criteria described in the pertinent fish recovery programs.

For additional information contact: U.S. Fish and Wildlife Service, Utah Field Office, 2369 West Orton Circle, Suite 50, West Valley City, Utah 84119 Telephone (801) 975-3330.

322.300 Fish and Wildlife Service Review

If requested, Andalex Resources, Inc. authorizes the release of information pertaining to Section 322 and 333 to the U.S. Fish And Wildlife Service Regional and Field Office for their review.

323 Maps and Aerial Photographs

Location of the well sites can be seen in Figure 1-1 of this submittal.

323.100 Location and Boundary of Proposed Reference Area

Reference areas for the well sites will be established during the vegetative studies. Gob Vent Holes 1, 2, 5 and 6 will employ range sites for determining vegetative success. Subsequent holes will use standard reference areas including baseline data.

323.200 Elevation and Locations of Monitoring Stations

N/A

323.300 Facilities for Protection and Enhancement

Section 333.300 and 358.500 of the approved M&RP contain additional discussion pertaining to protective measures to be taken by Andalex Resources, Inc.

323.400 Vegetation Type and Plant Communities

Vegetative types and plant communities will be outlined in the vegetative report in Attachment 3-1 upon completion.

330 OPERATION PLAN

331 Measures Taken to Disturb the Smallest Possible Area

The well sites will be sized to disturb the smallest acreage possible and still meet the requirements for the drilling equipment. The drainage control required will be built to satisfy the environmental requirements. Please refer to the typical proposed site plans for the gob gas wells which show estimated dimensions, location and type of sediment control, location of topsoill storage as well as approximate size and set-up of equipment.

332 Description of Anticipated Impacts of Subsidence

Refer to Section 525.

333 Plan to Minimize Disturbances and Adverse Impacts

General control and mitigation measures addressing potential related biological impacts will include the following. (All well sites will be fenced according to land-owner requirements and suitable for wildlife protection)

- Minimizing the total area of disturbance
- Design, construction, and operation of the well sites to minimize impacts
- Exclusion of wildlife from potentially hazardous areas, and
- Reclamation of disturbed areas when they are no longer needed.

All water associated with the drilling of these wells will be appropriated and hauled and/or pumped to the sites by a licensed contractor. Since the drilling of degas wells does not involve the mining of coal, the USWFS consumption requirements for underground operations do not apply (i.e., evaporation from ventilation, coal preparation, sediment pond evaporation, subsidence of springs, alluvial aquifer abstractions into the mine, postmining inflow to workings, coal moisture loss, direct diversions).

333.100 Minimize Disturbance to Endangered or Threatened Species

Andalex Resources, Inc. will apply all methods necessary to minimize disturbances or any adverse effects to threatened or endangered species. Note that T&E species are not anticipated to be discovered, however, should ARI determine that such species exist, the regulatory authority will be notified and appropriate remedial action taken. Also, See Section 322.200.

333.200 Species and Habitats

All species and habitats within the permit area will be protected to the best of Andalex Resources, Inc. ability. Note that T&E species are not anticipated to be discovered, however, should ARI determine that such species exist, the regulatory authority will be notified and appropriate remedial action taken.

333.300 Protective Measures

Refer to Section 333.300 of the approved M&RP. All well sites will be fenced and road construction will avoid habitat if discovered.

340 RECLAMATION PLAN

341 Revegetation

Revegetation of the sites will occur in two phases. The first phase is to redistribute topsoil and seed the well area not needed for access and operation of the gas exhaust blower. The second phase will consist of plugging the well and distributing the remaining topsoil and seeding on the remaining pad area. Refer to Section 242.100 for additional detail.

The short-term goal of this revegetation plan is the immediate stabilization of the disturbed sites through erosion control this objective will be achieved through controlled grading practices, proper seedbed preparation to encourage rapid plant establishment, inclusion of rapidly establishing species in the seed mixture to be planted, and mulch application.

The long-term goals are to establish useful, and productive range. These goals will be attained through the selection and placement of desirable and productive plant species and a commitment to monitor and maintain revegetated areas throughout the bond liability period.

The well sites will be fenced to discourage wildlife and livestock from grazing the reclaimed areas until bond release.

341.100 Schedule and Timetable

The reclamation timetable shown in Figures 5-6 of this submittal and the reclamation monitoring schedule is found in Chapter 2, R645-301-240 of the approved M&RP.

341.200 Descriptions

Species and Amounts of Seed - The well sites will be planted with the seed mix listed on Table 3-2. The seed mix will be used in both contemporaneous and final reclamation phases. The seed will be incorporated with a small amount of wood fiber mulch and applied by hydroseeding equipment or broadcast. Refer to Section 234.200 for topsoil stockpile seeding description.

Methods Used for Planting and Seeding - The degassification sites will be graded to final contour, then ripped to relieve compaction. The depth of ripping will be from 18 to 24 inches. Following ripping, topsoil will be applied to the ripped surface and left in a gouged and roughened state.

Mulching Techniques - Wood fiber mulch will be applied on top of the seed with hydroseeding equipment at the rate of 2,000 pounds per acre and anchored with a tackifier.

Irrigation, Pest, and Disease Control - No irrigation is planned and pesticides will not be used unless previously approved by the Division.

Measures Proposed for Revegetation Success - Refer to Section 356.

341.300 Greenhouse Studies, Field Trials, or Other Equivalent Studies

Refer to the Section 341.300 of the approved M&RP.

342 Fish and Wildlife

342.100 Enhancement Measures

Post bond release enhancement measure will include the establishment of vegetation for wildlife food, cover, and the break up of large blocks of monoculture to diversify habitat.

342.200 Plants Used for Wildlife Habitat

Nutritional Value - The nutritional value will be consistent with that of vegetation in the surrounding areas.

Cover - Cover will be comparable to the cover on the associated reference area.

342.300 Cropland

Cropland is not a postmining land use.

342.400 Residential, Public Service, and Industrial Land Use

No residential, industrial or public service use is planned.

350 PERFORMANCE STANDARDS

351 General Requirements

Andalex Resources, Inc. commits to conduct all operations in accordance with the plans submitted in Sections R645-301-330 through R645-301-340 of the permit application.

352 Contemporaneous Reclamation

Reclamation activities prior to final reclamation will, to the extent feasible, be performed contemporaneously. Contemporaneous reclamation will be performed at the well sites following construction of the wells. Refer to Section 341 for additional details.

353 Revegetation: General Requirements

A vegetative cover will be established on all reclaimed areas to allow for the designated postmining land use of grazing. Refer to Section 411 for additional information.

353.100 Vegetative Cover

The seed mix proposed for revegetation is intended to provide vegetative cover that will be diverse, effective, and permanent. The seed mixture was selected with respect t the climate, potential seedbed quality, erosion control, drought tolerance, and the mixture's ability for quick establishment and spreading.

Native Species - The reclamation vegetation mixture will be comprised of species indigenous to the area and capable of achieving the postmining land use. Diversity of species should allow utilization of plants by wildlife and domestic livestock. The recommended seed mix is comprised of native species.

Extent of Cover - The vegetative cover will be at least equal in extent to the cover at the designated reference areas.

Stabilizing - The vegetative cover mixture is capable of stabilizing the soil surfaces from erosion.

353.200 Reestablished Plant Species

Compatible - The reestablished plant species have been selected to ensure their compatibility with the approved postmining use.

Seasonal Characteristics - The revegetation plant species will have the same growing season as the adjacent areas.

Self-Generation - The reestablished plants are species capable of self-generation and plant succession.

Compatibility - The seed mix suggested for revegetation contains plants native to the area and compatible with the plant and animal species of the permit area.

Federal and Utah Laws or Regulation - The seed mix purchased to revegetate the degassification well sites will contain no poisonous or noxious plants (see Section 234.200). No species will be introduced in the area without being approved by the Division.

Table 3-2
Reclamation Seed Mix

The final reclamation seed mixture from the Centennial MRP will also be used for all interim, contemporaneous reclamation on the Gob Gas project sites and road slopes:

SPECIES	# PLS/acre
Grasses:	
Leymus cinereus Great Basin Wildrye	2.0
Agropyron spicatum Bluebunch Wheatgrass	2.0
Agropyron trachycaulum Slender Wheatgrass	2.0
Bromus inermis Smooth Brome	3.0
Oryzopsis hyminoides Indian Ricegrass	2.0
Poa sandbergii (secunda) Sandberg Bluegrass	0.25
Forbs:	
Artimisia ludoviciana Louisiana Sagebrush	0.1
Hedysarum borealis Northern Sweetvetch	1.0
Linum lewisii Lewis Flax	1.0
Penstemon strictus "Bandera" Rocky Mountain Penstemon	0.25
Shrubs:	
Amelanchier alnifolia Serviceberry	1.0
Artemisia tridentara vaseyana Mountain Big Sagebrush	0.2
Cercocarpus montanus True Mountain Mahogany	1.0
Cercocarpus ledifolius Curlleaf Mountain Mahogany	1.0
Chrysothamnus nauseosus albicaulis Whitestem Rubber Rabbitbrush	1.0
Purshia tridentata Bitterbrush	3.0
Symphoricarpos oreophilus Mountain Snowberry	1.0
Total	21.8

Rate is pounds Pule Live Seed per acre for drill seeding. Broadcast seeding is double the drill rate.

353.300 Vegetative Exception

Andalex Resources, Inc. does not require vegetative exception at this time.

353.400 Cropland

The permit area contains no land designated as cropland.

354 Revegetation: Timing

Andalex Resources, Inc. will follow the recommended guidelines for revegetation and planting during the first normal period for favorable planting conditions after replacement of the topsoil. In Utah the planting period is usually Fall due to the precipitation events.

355 Revegetation: Mulching and Other Soil Stabilizing Practices

Mulch and/or other soil stabilizing practices (roughing, etc.) Will be used on all areas that have been regraded and covered by topsoil (Section 341.200). Andalex, Resources, Inc. will exercise care to guard against erosion during and after application of topsoil.

356 Revegetation: Standards for Success

356.100 Success of Revegetation

The success of revegetation will be judged on the effectiveness of the vegetation for postmining land use, the extent of cover on each degassification well site compared to their respective reference areas. In the case specifically of Gob Gas Vent hole numbers 1, 2, 5, and 6, ANDALEX will employ the range site method for determining an area in the immediate vicinity of these holes which will act as a revegetation reference area appropriate for both interim and final reclamation. These range site(s) will be chosen by an expert in this field, approved by the Division. In the case of all other future gob gas wells, ANDALEX will use the traditional reference area method, which will include baseline data to be collected in the Spring/Summer of 2005.

Sampling Techniques - Andalex Resources, Inc. will comply with the standards for success, statistically valid sampling techniques for measuring success, and the approved methods outline in the Division's "Vegetation Information Guidelines, Appendix A" for sampling.

The sampling methods to be used during reclamation will be specific to the requirements at the time of reclamation. Nonetheless, according to the currently approved UDOGM guidelines, these sampling methods would be used: sample adequacy, cover (line interception), density (belt transects or plots) and productivity (clipping). The Jaccard's Community Coefficient will be used to calculate acceptable plant similarity and diversity.

Standards for Success - The standards for success will include criteria representative of undisturbed lands in the area of the degas wells as means to evaluate ground cover,

production and stocking of th reclaimed site.

356.200 Standards for Success

Standards of success will be applied in accordance with the approved postmining land use as described in this section.

Grazing Land and Pasture Land - The ground cover and production of living plants on the revegetated area will be at least equal to the reference area.

Cropland - There is no area designated as cropland within the degassification well sites.

Fish and Wildlife Habitat - The postmining land use for the degas well sites will be wildlife habitat on pre-existing roads. Pre-existing roads will be returned to their approximate original contour and compacted.

Industrial, Commercial or Residential - The postmining land use for the permit area is not designated for industrial, commercial, or residential use.

Previously Disturbed Areas - N/A

356.300 Siltation Structures

Siltation structures will be maintained until the disturbed areas have been stabilized and revegetated. For additional details on siltation structures, see Sections 542 and 763 of this amendment.

356.400 Removal of Siltation Structures

The land on which siltation structures are located will be revegetated in accordance with the reclamation plan discussed in Section 353 and 357. Refer to Section 763 for additional information pertaining to the removal of siltation structures.

357 Revegetation: Extended Responsibility Period

Andalex Resources, Inc. will be responsible for the success of revegetation for a period of 10 years following seeding of the reclaimed area or upon Diviison bond release.

357.100 Extended Period Begins

The period of extended responsibility will begin after disturbed areas have been reseeded.

357.200 Vegetation Parameters

Vegetation parameters will equal or exceed the approved success standard during the last 2 years of the responsibility period. The success standards are outlined in Section 356 of this application.

357.300 Husbandry Practices

The use of husbandry practices are not being requested.

358 Protection of Fish, Wildlife, and Related Environmental Values

Andalex Resources, Inc. will minimize disturbances and adverse impacts on wildlife and their related environments as outlined in Section 333 of the approved M&RP and Section 342 of this submittal. See Chapter 7, Section 731.100 of the approved M&RP for methods to protect water sources in the area.

358.100 Existence of Endangered or Threatened Species

The well sites will not be constructed or operated where they might jeopardize the existence of any endangered or threatened species. Refer to Section 322.200 and Attachments 3-1, 3-2 and 3-3 for additional information pertaining to threatened, endangered, and sensitive species.

State or federally listed endangered or threatened species will be reported to the Division upon its discovery.

358.200 Bald and Golden Eagles

Andalex Resources, Inc. understands that there is no permission implied by these regulations for taking of bald or golden eagles, their nest, or eggs. If found, nests will be reported to the Division.

358.300 Taking of Endangered or Threatened Species

Andalex Resources, Inc. understands that there is no permission implied by these regulations for taking of endangered or threatened species, their nest, or eggs.

358.400 Replacement of Wetland or Riparian Vegetation

The sites contain no wetland or riparian vegetation.

358.500 Manmade Wildlife Protection Measure

Electric Power Lines - No utilities will exist at the well sites.

Potential Barriers - No potential barriers will exist at any of the well sites. No ponds exist at the well sites. Refer to Section 231.100 and 242 for information pertaining to the mud pit.

ATTACHMENT 3-1
VEGETATION INVENTORY
NRCS LETTER

George S. Cook
Society for Range Management
Certified Professional in Range Management
#CPOL-371 Telephone: 435-637-0937
P.O. Box 505
Wellington, UT 84542

April 20, 2005

Andelex Resources, Inc.
Michael W. Glasson, P.G.
P.O. Box 902
Price, UT 84501

Dear Sir:

Range Site Information from the Carbon County Soil Survey GVH site #2 and #2 Alternate located on sheet number 10 of the Carbon County Soil Survey T.12 S. R. 11 E. Sec. 31.

GVH Site #2 is located in mapping unit number 105-Sencert Family-Sencert complex. GVH site #2 located on the Sencert Family of this mapping unit. The range site for the Sencert Family soil is High Mountain Loam (Thurber Fescue). The High Mountain Loam (Thurber Fescue) range site produces 1,800 pounds per acre. The range site is in fair condition.

GVH Site #2 Alternate is located in mapping unit 104 Sencert Family, 3 to 15 percent slopes. GVH Site #2 Alternate is located on104 Sencert Family site. The Range site for this soil is High Mountain Loam (Thurber Fescue). The productivity of this range site is 2,100 pounds per acre. The range site is in good ecological condition.

Sincerely,

George S. Cook

George S. Cook, CPRM

ANDALEX RESOURCES, INC.

CENTENNIAL PROJECT
GOB GAS VENT HOLES
GVH#1, GVH#2, GVH#5 and GVH#6
C/007/019

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CHAPTER 4
LAND USE AND AIR QUALITY

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LIST OF ATTACHMENTS

Attachment 4-1 Cultural Resource Survey and Inventory
Attachment 4-2 Surface Land Owner Notification

410 LAND USE

411 Environmental Description

A statement of the conditions and capabilities of the land to be affected by mining and reclamation operations follows in this section.

411.100 Premining Land Use

The area is utilized for the landowners private use, including hunting and as open range for livestock and wildlife.

411.110 Land Use Map and Narrative

Refer to the same section of the approved M&RP.

411.120 Land Capability

The major plant communities at well sites 1, 2, 5 and 6 are identified in Section 321. No cultivated lands lie within the well boundaries, due to the limiting terrain and lack of water for irrigation. Refer to Section 321.200, Table 3-1 of this submittal for forage production per acre for each well site.

411.130 Land Use Description

The wells are located on land administered by Dave R. & Mildred Cave, et al., and Mathis Land, Inc. and zoned by Carbon County for mining and grazing (MG-1).

No industrial or municipal facilities are located on or immediately adjacent to the well sites.

411.140 Cultural and Historic Resources Information

Archeological surveys will be conducted on any future proposed well sites as soon as weather and ground conditions allow. The Cultural Resource Survey will be included in Attachment 4-1 of this application. For Gob Gas Holes 1, 2, 5 and 6, preliminary research and file search has been conducted by Scenco-Phenix of Price, Utah for Gob Vent Holes 1, 2, 5 and 6 and the research indicates that there is a very low probability of the occurrance o f cultural resources at the proposed drill sites.

Andalex Resources, Inc. agrees to notify the Division and State Historical Preservation Office (SHPO) of previously unidentified cultural resources discovered in the course of operations. Andalex also agrees to have any such cultural resources evaluated in terms of NRHP eligibility criteria. Protection of eligible cultural resources will be in accordance

with Division and SHPO requirements. Andalex will also instruct its employees that it is a violation of federal and state low to collect individual artifacts or to otherwise disturb cultural resources.

411.200 Previous Mining Activity

Andalex Resource, Inc. has no knowledge of the removal of coal or other minerals in the well site areas.

412 Reclamation Plan

412.100 Postmining Land-Use Plan

All uses of the land prior to the wells construction/operation and the capacity of the land to support prior alternate uses will remain available throughout the life of the sites.

Andalex Resource, Inc. intends the postmining land use to be livestock and wildlife grazing and other uses as indicated by the land owner (hunting, etc.). Final reclamation activities will be completed in a manner to provide the lands to parallel the premining land use.

412.200 Land Owner or Surface Manager Comments

Surface lands are owned by Dave R. & Mildred Cave, et al., and Mathis Land, Inc. Appropriate landowner approvals have been obtained for the proposed wells. Required notification of drilling will be sent to the landowners prior to start. Copies of the notification letters will be included in Attachment 4-2.

413 Performance Standards

413.100 Postmining Land Use

Postmining land uses are discussed in Section 412.100. The postmining lands will be reclaimed in a timely manner and capable of supporting such uses (see Chapters 2, 3, 5 and 7).

413.200 Determining Premining Uses of Land

Refer t Section 411.100.

413.300 Criteria for Alternative Postmining Land Use

No alternative postmining land uses have been planned.

414 Alternative Land Use

No alternative postmining land uses have been planned.

420 AIR QUALITY

421 Air Quality Standards

Gob gas vent hole activities will be conducted in compliance with the requirements of the Federal Clean Air Act and the Utah Air Conservation Rules.

422 Compliance Efforts

See Fugitive Dust Control Plan, Section 424.

423 Monitoring Program

Refer to the same section in the approved M&RP.

424 Fugitive Dust Control Plan

Operational areas that are used by mobile equipment will be water sprayed to control fugitive dust. The application of water will be of sufficient frequency and quantity to maintain the surface material in a damp/moist condition unless it is below freezing.

425 Additional Division Requirements

Refer to the same section of the approved M&RP.

ATTACHMENT 4-1
CULTURAL RESOURCE SURVEY

SENCO-PHENIX

April 19, 2005

Mr. Mike Glasson
Andalex Resources, Inc.
Tower Division
P.O. Box 902
Price, UT 845501

Re: Gob Vent Holes, Aberdeen Mine Addendum

Dear Mike:

This letter supplements my letter of March 22, 2005, which recommended archeological clearance for your gob vent drill holes. The addition of a forth drill hole (GVH 2) and alternate (GVH 2 alt) in the same area does not alter my original recommendations.

SENCO-PHENIX feels that no historic properties will be affected and recommends archeological clearance without a class III walkover survey.

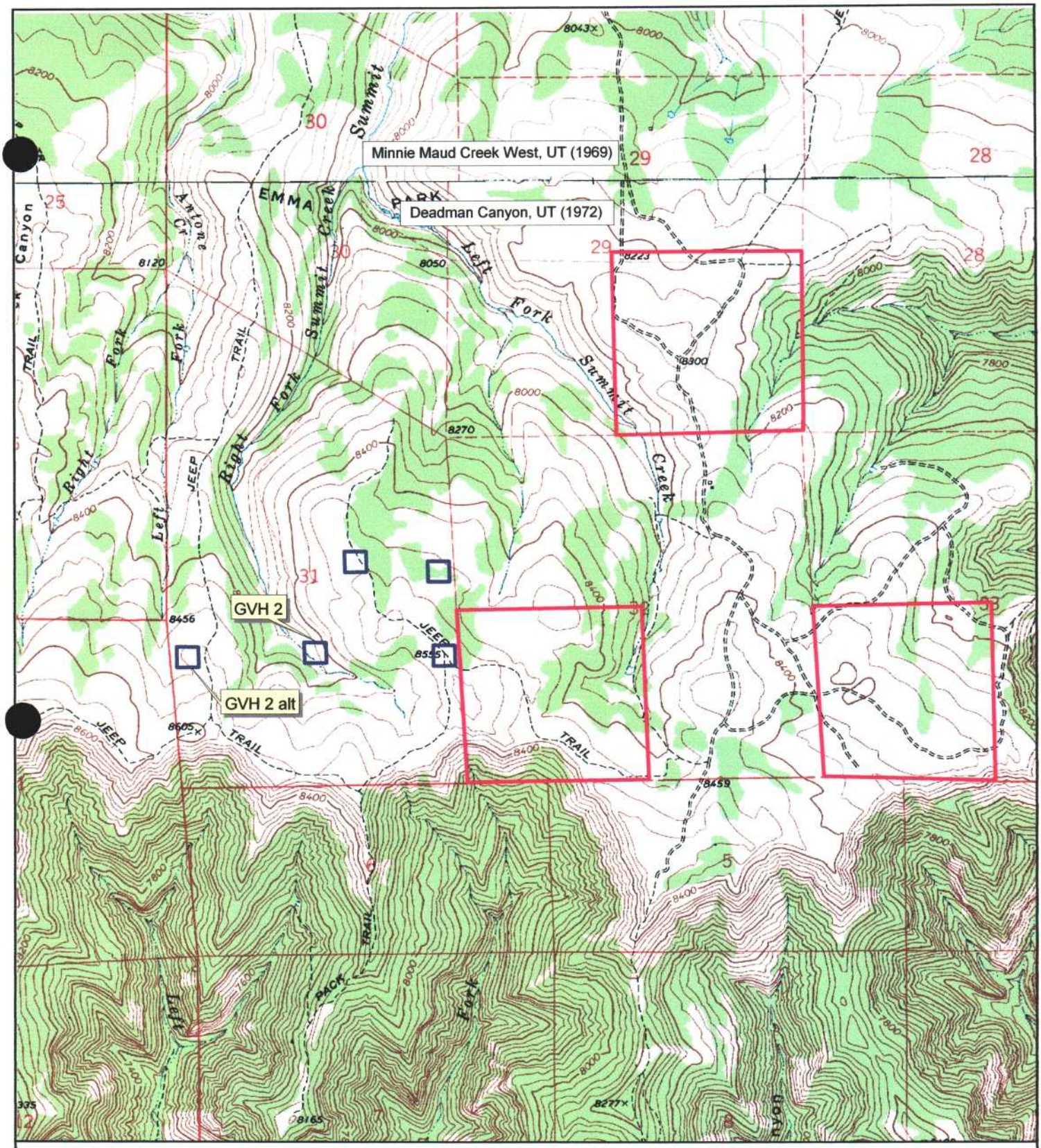
If we can be of further assistance please do not hesitate to contact us.

Sincerely,

John A Senulis

John A Senulis
Principal Investigator

Encl.



SENCO-PHENIX

N

Scale 1:24,000
1"= 2,000'

Proposed Drill Holes

Previous Survey

Eligible Sites

Ineligible Sites

Gob Vent Holes, Aberdeen Mine
Andalex Resources, Tower Division
Carbon County, Utah
Section 31, T12S, R11E
April 2005
SPUT-494

ANDALEX RESOURCES, INC.

CENTENNIAL PROJECT
GOB GAS VENT HOLES
GVH#1, GVH#2, GVH#5 and GVH#6
C/007/019

FEBRUARY 2005

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510 INTRODUCTION

This chapter provides a discussion of general engineering aspects, an operation plan, a reclamation plan, design criteria, and performance standards related to the degassification well sites. (#'s 1, 2, 5 and 6). The activities associated with the construction and reclamation of the well sites have been or will be designed, located, constructed, maintained, and reclaimed in accordance with the operation and reclamation plans.

Designs and other information herein presented will be of a general nature or in the form of typicals, since the proposed sites are not yet accessible for detailed surveying or studies. Site specific information will be provided in this chapter as it becomes available.

511 General Requirements

The permit application includes descriptions of construction, maintenance, and reclamation operations of the proposed well sites with maps and plans. Potential environmental impact as well as methods and calculations utilized to achieve compliance with the design criteria are also presented.

512 Certification

Where required by the regulations, cross sections and maps in this permit application have been prepared by or under the direction of, and certified by, qualified registered professional engineers or land surveyors. As appropriate, these persons were assisted by experts in the fields of hydrology, geology, biology, etc.

512.100 Cross Sections and Maps

Cross sections for the degassification well pads will be provided upon completion of surveys. Typical road cross sections are shown on Figures 5-5.

512.200 Plans and Engineering Designs

Excess Spoil - No excess spoil will be generated from the well sites.

Durable Rock Fills - No durable rock fills will exist at the well sites.

Coal Mine Waste - No coal mine waste will exist at the well sites.

Impoundments - Refer to Section 733.200 of this submittal.

Primary Roads - Short sections of road may be required to access certain well sites. Topsoil will be stripped from the road alignment and stored with the topsoil stripped from

the pad area prior to grading the new access road. When possible, well sites will be placed on existing roads.

Variance from Approximate Original Contour - No variance from approximate original contour is required for the well sites.

513 Compliance with MSHA Regulations and MSHA Approval

513.100 Coal Processing Waste Dams and Embankments

No coal processing waste dams and embankments will exist at the well sites.

513.200 Impoundments and Sedimentation Ponds

Refer to Section 733.200 of this submittal.

513.300 Underground Development Waste, Coal Processing Waste, and Excess Spoil

No underground waste, coal processing waste, and excess spoil will exist at the well sites.

513.400 Refuse Piles

No refuse piles will exist at the well sites.

513.500 Underground Openings to the Surface

The well will be equipped with a valve that will be closed and locked when not in use. A typical well head is shown in Figure 5-4.

513.600 Discharge to Underground Mine

No discharge to the underground mine will occur at the well sites.

513.700 Surface Coal Mining and Reclamation Activities

No surface coal mining, or reclamation activities associated with surface coal mining will occur at the well sites.

513.800 Coal Mine Waste Fire

No coal waste will be developed, therefore, no coal waste fires will occur at the well sites.

514 Inspection

514.100 Excess Spoil

No excess spoil will be stored at the well sites.

514.200 Refuse Piles

No refuse piles will exist at the well sites.

514.300 Impoundments

Refer to Section 7133.200 of this submittal.

515 Reporting and Emergency Procedures

515.100 Slides

Refer to Section 515.100 in the approved M&RP.

515.200 Impoundment Hazards

No impoundments will exist at the well sites.

515.300 Temporary Cessation of Operations

If temporary cessation of the mining operations does occur, the wells will remain open. Once liberation of the gob gas is completed, the wells will be sealed as discussed in Section 542.700 of this submittal.

520 OPERATION PLAN

521 General

Detailed maps will be provided of each of the well sites when conditions allow access.

521.100 Cross Sections and Maps

Existing Surface and Subsurface Facilities Features - No buildings are located on or within 1,000 feet of any of the well sites.

Landowner, Right-of-Entry, and Public Interest - The land which the wells will be drilled on is owned by Dave R. & Mildred Cave, et al., and Mathis Land, Inc. Andalex Resources,

Inc. has completed landowner agreements to allow access for the construction and drilling of the wells (see Attachment 4-2).

Mining Sequence and Planned Subsidence - Refer to Section 525.

Land Surface Configuration - Surface contours of undisturbed well sites will be included when completed.

Surface Facilities - No permanent surface facilities will exist at the well sites.

521.200 Signs and Markers

Mine and Permit Identification Signs - A mine and permit identification sign will be displayed at each well site. This sign will be a design that can be easily seen and read, will be made of durable material, will conform to local regulation, and will be maintained until after the release of all bonds for the well site areas. The sign will contain the following information:

- Mine name,
- Company name,
- Company address and telephone number,
- MSHA identification number, and
- Permanent program permit identification number

Perimeter Markers - The perimeter of all areas affected will be clearly marked before beginning drilling activities. The markers will be a design that can be easily seen and read, will be made of durable material, will conform to local regulations, and will be maintained until after the release of all bonds for the permit area.

Buffer Zone Markers - Stream buffer zone markers will not be required at any of the well sites.

Topsoil Markers - Markers will be placed on all topsoil stockpiles. These markers will be a design that can be easily seen and read, will b made of durable material, will conform to local regulations, and will be maintained until topsoil is redistributed on the well sites.

Construction Markers - Not applicable.

522 Coal Recovery

No coal recovery will be performed at the well sites.

523 Mining Methods

No mining will be performed at the well sites.

524 Blasting and Explosives

No explosives are to be used at the well sites.

525 Subsidence

No subsidence will occur at the well sites, as a result of drilling and development of the degassification well sites. Subsidence could occur at the well site because of underground mining see Section 525 of the approved M&RP.

526 Mine Facilities

526.100 Mine Structures and Facilities

No buildings exist or are proposed at the well sites; therefore, no existing building will be used in connection with or to facilitate this proposed coal mining and reclamation plan.

526.200 Utility and Support Facilities

No utilities are to be installed at the well sites. A portable exhaust unit will be temporarily installed to draw gob gas to the surface from the mined panel. The exhaust blower will be started by using propane from portable tanks. Once started and running, the unit will be powered by burning the extracted gas. Excess gob gas will be vented to the atmosphere. The blower is approximately 12-feet long by 6-feet wide and about 10-feet tall. It is not known how long the degassification of the longwall panel will take.

527 Transportation Facilities

527.100 Road Classification

Well sites 1, 2, 5 and 6 will be developed near existing private roads whenever possible. The new access roads will be classified as primary roads and will be maintained by the permitee. The access route will be by way of an existing road up the bottom of Deadman Canyon over a distance of 2 ½ miles. The existing road is suitable for access with the exception of widening approximately 4 turns and the installation of new 18-24 inch culverts at locations where road drainage was never previously installed by the road builder, during the construction sometime prior to 1977. It should be noted that silt fences will be installed along this road as an improvement while the road is being used by ARI. Any access roads which are no longer needed will be reseeded with the approved seed mixture at the appropriate season and as recommended by the Division. These measures will be monitored as necessary to determine success and/or the need for subsequent

treatment.

527.200 Description of Transportation Facilities

The well sites have been chosen close to existing roads whenever possible in the area to limit surface disturbance. The existing roads were constructed and are maintained by the land owner. The existing roads are approximately 16 feet wide. See Figure 5-5 for a typical cross section of the existing roads. This route is located in the bottom of Deadman Canyon north of the Centennial Project Minesite surface facilities. This road is a continuation of the paved Carbon County Road #299, which ends at the north ern end Centennial Minesite surface facilities. The access road, which was constructed by the surface owner, is capable of carrying heavy equipment to and from the site. This same road was used by ARI in 1989 for another surface drilling project. The road will require minor drainage control upgrades (18 and/or 24 inch culverts) and slight widening of several sharp turns enroute to the drilling sites. Given the present snow cover, existing roads will be located by using GPS methods and also, the surface owner will be present to assist.

528 Handling and Disposal of Coal, Excess Spoil, and Coal Mine Waste

No disposal of coal, excess spoil, and coal mine waste will occur at the well sites. It should be noted however, that drill cuttings (mud pits) will be covered upon final reclamation with a minimum of four feet of fill material followed by topsoil.

529 Management of Mine Openings

The perimeter of the sites, including the topsoil stockpiles will be fenced with gates on the access roads. The well casing will have a valve that is closed and locked. The valve will also prevent access by animals or other material. Mine openings will be monitored in accordance with Federal and State Regulations.

During the life of the wells, the sites will be inspected as needed by mine personnel to verify the continued operation of the pumping equipment and general site conditions.

530 OPERATIONAL DESIGN CRITERIA AND PLANS

531 General

This section contains the general plans for the construction of sediment controls and general construction and maintenance of the well sites.

The proposed well site locations are shown on Figure 1-1.

532 Sediment Control

Sediment control measures for the well sites are described in Sections 732 and 742 of this submittal. Runoff control structures at the well sites have been designed to convey runoff in a non-erosive manner. Sediment yields in the well permit area are minimized by:

- Disturbing the smallest practicable area during the construction of the well site and
- Contemporaneously reclaiming areas suitable for such reclamation.

533 Impoundments

No impoundments will exist at the well sites.

534 Roads

Refer to Section 527 of this submittal.

535 Spoil

No spoil will be generated at the well sites.

536 Coal Mine Waste

No coal mine waste will be stored at the well sites.

537 Regraded Slopes

537.100 Division Approval

No mining or reclamation activities will be conducted in the permit area that requires approval of the Division for alternative specifications or for steep cut slopes.

537.200 Regrading of Settled and Revegetated Fills

Upon completion of the well site, the areas not required for the exhaust blower will be regraded to approximate original contour. Because of the nature of the well site, settling is not anticipated. However, if settlement does occur, these areas will be regraded.

540 RECLAMATION PLAN

541 General

541.100 Commitment

Upon the permanent cessation of gob gas venting, Andalex Resources, inc. permanently reclaim all affected areas in accordance with the R645 regulations and this reclamation plan.

541.200 Surface Coal Mining and Reclamation Activities

Not applicable.

541.300 Underground Coal Mining and Reclamation Activities

Upon completion of the gob gas venting activities the wells will be reclaimed.

541.400 Environmental Protection Performance Standards

The plan presented is designed to meet the requirements of R645-301 and the environmental protection performance standards of the State Program.

542 Narratives, Maps, and Plans

542.100 Reclamation Timetable

A general timetable for the completion of each major step in the reclamation plan is presented in Figure 5-6.

542.200 Plan for Backfilling, Soil Stabilization, Compacting, and Grading

Following completion of the venting activities, the well site will be prepared for contouring and soil distribution. Details regarding topsoil placement and revegetation are provided in Section 242 and Section 353, respectively.

Sedimentation Pond Removal and Interim Sediment Control - See Section 542.500 of this submittal.

542.300 Final Surface Configuration Maps and Cross Sections

The sites will be regraded to the approximate original contour, the contours representing the pre-disturbance topography also represent the reclamation topography. Cross sections representing the final surface configuration will be included upon completion.

542.400 Removal of Temporary Structures

The well sites will not have surface structures.

542.500 Removal of Sedimentation Pond

No sedimentation pond will be constructed at the well sites.

542.600 Roads

The roads which existed prior to the drilling program will be retained after reclamation. The access roads established during the drilling program will be reclaimed after gob gas extraction has been completed. See Section 242 for additional detail concerning the reclamation plan.

542.700 Final Abandonment of Mine Openings and Disposal Areas

All openings will be sealed in accordance with Federal and State Regulations. The casings will be plugged at the bottom to hold concrete. A lean concrete mixture will be poured into the casing until the concrete is within five (5) feet of the surface. At that time the casing will be cut off at ground level and the rest of the casing will be filled with lean

concrete. The concrete will be allowed to harden before final reclamation is completed.

542.800 Estimated Cost of Reclamation

Refer to Appendix B of the existing M&RP. It is anticipated that the cost of reclamation of the well sites is adequately covered by the Centennial Project Reclamation Bond. Refer to Chapter 8 for additional detail.

550 RECLAMATION DESIGN CRITERIA AND PLANS

551 Casing and Sealing of Underground Openings

Permanent sealing is described in Section 542.700.

552 Permanent Features

552.100 Small Depressions

No permanent small depressions will be created as part of the well site construction and reclamation.

552.200 Permanent Impoundments

See Section 515.200 of this submittal.

553 Backfilling and Grading

553.100 Disturbed Area Backfilling and Grading

Approximate Original Contour - The well sites will be returned to their approximate original contour after reclamation is completed.

Erosion and Water Pollution - Sediment controls will consist of gouging the surface to create depressions and mounds which store and impede the movement of water. As vegetation becomes established on the reclaimed surface, erosion potential will be further minimized.

Post-Mining Land Use - The disturbed area will be reclaimed in a manner that supports the approved post-mining land use. Refer to Section 411 and 412 for additional detail.

553.200 Spoil and Waste

Spoil - No Spoil will be generated within the well sites. It should be noted however, that drill cuttings (mud pits) will be covered upon final reclamation with a minimum of four feet of fill material followed by topsoil.

Coal Processing Waste - No coal processing waste will be generated within the well sites.

553.250 Refuse Piles

No refuse piles will exist at the well sites.

553.300 Exposed Coal Seams, Acid and Toxic Forming Materials and Combustible Materials

No coal seams will be left exposed at the well sites. All wells will be sealed according to Federal and State regulations.

553.400 Cut and Fill Terraces

No unnecessary cut and fill terraces will be constructed at the well sites.

553.500 Highwall From Previously Mined Areas

No highwalls exist or will be built at the well sites.

553.600 Previously Mined Area

No previously mined areas exist at the well sites.

553.700 Backfilling and Grading - Thin Overburden

No surface mining and reclamation activities involving thin overburden will occur at the well sites.

553.800 Backfilling and Grading - Thick Overburden

No surface mining and reclamation activities involving thick overburden will occur at the well sites.

553.900 Regrading of Settled and Revegetated Rills

If settlement or rills occur at the well sites, they will be regraded and revegetated. Refer to Section 244.300.

560 PERFORMANCE STANDARDS

Performance of the well sites will be conducted in accordance with the approved permit and the requirements of R645-301-510 through R645-301-553.

ANDALEX RESOURCES, INC.

CENTENNIAL PROJECT
GOB GAS VENT HOLES
GVH#1, GVH#2, GVH#5 and GVH#6
C/007/019

FEBRUARY 2005

CHAPTER 6
GEOLOGY

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610 INTRODUCTION

This chapter presents a description of the geologic resources in the area of the Centennial Project. Most of this chapter has been compiled from the approved Geology section of the Centennial Project, Mining and Reclamation Plan.

611 General Requirements

The geologic resources in the Centennial Project area are discussed in Sections 621 through 627 of the M&RP. Information pertaining to the well sites is discussed below.

612 Certification

All maps, plans, and cross-sections presented in this chapter, required by the regulations, have or will have been certified by a professional engineer.

620 ENVIRONMENTAL DESCRIPTION

This section presents a description of the geologic resources in the Centennial Project well site areas.

621 General Requirements

This section presents the regional and site-specific geologic information for the Centennial Project wells sites.

622 Cross Sections, Maps and Plans

Refer to Plate 21 of the approved M&RP for geology associated with the entire permit area, including proposed well site locations.

623 Geologic Determinations

No acid or toxic forming materials will originate at the well sites.

624 Geologic Information

624.100 Regional Setting

Refer to Section 624 of the approved M&RP.

624.200 Test Boring and Drill Hole Data (overburden removed)

No test boring or drill cores are planned at the well sites.

624.300 Test Boring and Drill Hole Data (overburden not removed)

No test boring or drill cores are planned at the well sites.

625 Additional Geologic Information

It is not anticipated that any additional geologic data will need to be collected at the well sites.

625 Sampling Waivers

A sampling waiver is not requested at this time for the well sites.

627 Description of the Overburden Thickness and Lithology

Not applicable to this amendment.

630 OPERATIONAL PLAN

631 Casing and Sealing of Exploration Holes

Not applicable to this amendment.

632 Subsidence Monitoring

See Section 525 for additional information

640 PERFORMANCE STANDARDS

641 Exploration and Drill Holes

The performance standards used in the casing and sealing of all exploration holes and drill holes are outlined in the approved M&RP, Section 542.700.

642 Monuments and Surface Markers of Subsidence Monitoring Points

The performance standards used in the reclamation of all monuments and surface markers used in subsidence monitoring points are outlined in the approved M&RP, Section 525.

ANDALEX RESOURCES, INC.

CENTENNIAL PROJECT
GOB GAS VENT HOLES
GVH#1, GVH#2, GVH#5 and GVH#6
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FEBRUARY 2005

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HYDROLOGY

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710 INTRODUCTION

711 General Requirements

This chapter presents a description of the following:

- Proposed operations and the potential impacts to the hydrologic balance;
- Methods of compliance with design criteria and the calculations utilized to show compliance; and
- Applicable hydrologic performance standards.

Please note that information presented in this chapter at this time is general in nature, since the proposed sites GVH#1, GVH#2, GVH#5 and GVH#6, are not yet accessible for detailed study. Site-specific information for each site will be provided as soon as it is available.

712 Certification

All required maps, plans, and cross sections presented in this chapter have been or will be certified by a qualified, registered professional engineer.

713 Inspection

Inspections are not required since no permanent impoundments will exist at the well sites.

720 ENVIRONMENTAL DESCRIPTION

721 General Requirements

This section presents a description of the pre-mining hydrologic resources within the well pad and their adjacent areas that may be affected or impacted by the proposed coal mining and reclamation operations.

722 Cross Sections and Maps

722.100 Location and Extent of Subsurface Water

Section 724 of the approved M&RP provides baseline information. Appendix L of the M&RP includes Surface and Ground Water Inventories.

722.200 Location of Surface Water Bodies

Figures 4 & 5 in the approved M&RP (Appendix L: Surface and Groundwater Hydrologic

Inventory) show the locations of the surface-water bodies and existing or pending water rights. Section 724.200 of the approved M&RP provides baseline surface water conditions.

722.300 Locations of Monitoring Stations

Figure 6 and IV-II in the approved M&RP (Appendix L: Surface and Groundwater Hydrologic Inventory) shows the location of surface water and groundwater monitoring stations.

722.400 Locations and Depth of Water Wells

Refer to Section 722.400 of the approved M&RP for information pertaining to the groundwater monitoring wells.

722.500 Surface Topography

Surface topography features at the well sites and adjacent areas are shown on Figure 1-1.

723 Sampling and Analysis

Refer to Section 723 of the approved M&RP.

724 Baseline Information

Refer to Section 724 of the approved M&RP.

724.100 Groundwater Information

Refer to Section 724.100 of the approved M&RP.

724.200 Surface Water Information

Refer to Section 724.200 of the approved M&RP.

724.300 Geologic Information

Geologic information related to the well sites and adjacent areas is presented in Chapter 6 of this submittal and in th approved M&RP.

724.400 Climatological Information

Climatological information is provided in Section 724.400 of the approved M&RP.

724.500 Supplemental Information

Refer to Section 724.500 of the approved M&RP.

724.600 Survey of Renewable Resource Lands

Refer to Section 724.600 of the approved M&RP.

724.700 Alluvial Valley Floor Requirements

Information provided in Appendix L of the M&RP shows this area does not meet requirements for Alluvial Valley Floors.

725 Baseline Cumulative Impact Area Information

The CHIA currently in place for the Centennial Project covers the well sites. The hydrologic and geologic information required for the Division to develop a Cumulative Hydrologic Impact Assessment (CHIA) is presented in the approved M&RP.

726 Modeling

No groundwater or surface water modeling was conducted in support of this submittal

727 Alternative Water Source Information

Not applicable.

728 Probable Hydrologic Consequences

This section addresses the probable hydrologic consequences of construction and reclamation operations at the well sites. Mitigation measures are discussed generally in this section and in detail in Section 730 of the approved M&RP.

728.100 Potential Impacts of Surface and Groundwater

Potential impacts of the well sites in this area on the quality and quantity of surface and groundwater flow may include contamination from materials associated with the drilling of the wells. The potential impact is addressed in Section 728.300 of this submittal.

728.200 Baseline Hydrologic and Geologic Information

Baseline geologic information is presented in Chapter 6 of the approved M&RP. Baseline hydrologic information is presented in Section 724.100 and 724.200 of the approved M&RP.

728.300 PHC Determination

Potential Impacts to the Hydrologic Balance - Potential impacts of the Centennial Project on the hydrologic balance of the well sites and adjacent areas are addressed in the subsections of this submittal and the approved M&RP.

Acid and Toxic Forming Materials - No acid or toxic forming materials have been identified in the soils or strata of the Centennial Project (Chapter 6, Section 623 of this submittal). Additional information is located in Appendix E of the approved M&RP.

Groundwater - During drilling of the wells, the groundwater encountered will be affected. Drilling mud will be used to seal the groundwater aquifers. Once drilling is completed, the casing will be grouted in the well hole. This will seal the aquifers to prevent any groundwater from migrating down the outside of the casing into the mine.

Potential Hydrocarbon Contamination - Hydrocarbon products will not be stored at the well sites, however fuels, greases, and other oils may leak from equipment during drilling operations. Absorbent materials will be used for the collection of leaked fuels, greases, and other oils. The saturated absorbent materials will be disposed of at an appropriate landfill facility.

729 Cumulative Hydrologic Impact Assessment (CHIA)

The Cumulative Hydrologic Impact Assessment currently in place for the Centennial Project includes the well sites and adjacent areas.

730 OPERATION PLAN

731 General Requirements

731.100 Hydrologic - Balance Protection

Groundwater Protection - The effect on groundwater at the well sites is expected to be minimal. Groundwater encountered during drilling will be sealed off, refer to Section 728.300.

Surface Water Protection - To protect the hydrologic balance, construction, maintenance, and reclamation operations will be conducted to handle earth materials and runoff in a manner that prevents, to the extent possible, additional contributions of suspended solids to stream flow outside the permit are, and otherwise prevent water pollution.

During initial drilling, the sites will be graded to ensure that storm runoff will flow towards the berms surrounding the entire drilling pad area. The berms will direct the runoff to the lowest point(s) within the pad area where a silt fence and/or straw bale dike(s) will treat the runoff. The berm placed at the top of the drilling pad cut slopes will divert runoff

around the drilling pad. Thus reducing the runoff affected by the drilling pad.

After drilling, the pad size will be reduced for exhausting operations. The pad will be re-graded to cause the storm runoff to sheet flow towards a lilt fence and/or straw bale dike. A berm will be placed at the top of the fill slope to direct any runoff from the operational pad to the silt fence and/or straw bale dike. The silt fences and/or straw bale dikes will be periodically inspected, and accumulated sediment will be removed as needed to maintain functionality. The sediment from the silt fence an/or straw bale dikes will be piled on the pad and will be used for fill during final reclamation of the well site. During the drilling phase a berm and silt fence will be installed at the toe fo the fill slope to treat any runoff from the drilling pad. During the operational phase there will still be sediment control (silt fence) at the toe of the slope

731.200 Water Monitoring

No water monitoring will be conducted at the degas well sites. Refer to approved M&RP for a description of water monitoring.

731.300 Acid or Toxic Forming Materials

No acid or toxic forming materials are anticipated at the well sites. (see Section 728.300).

731.400 Transfer of Wells

Refer to Section 731.400 of the approved M&RP.

731.500 Discharge

No discharge to underground workings.

731.600 Stream Buffer Zones

Stream Channel Diversions - No stream channel diversions are planned at the well sites.

Buffer Zone Designation - None of the drilling sites are adjacent to a stream, therefore the establishment of a stream buffer zone is not necessary.

731.700 Cross Section and Maps

Not applicable.

731.800 Water Rights and Replacement

Refer to Sections 728.300 and 731.800 of the approved M&RP.

732 Sediment Control Measures

The sediment control measures within the well sites have been designed to prevent additional contributions of sediment to stream flow or to runoff outside the well sites. In addition, the well sites have been designed to minimize erosion to the extent possible.

The structures to be used for runoff control at the well sites are berms, silt fences and/or straw bale dikes. Please refer to the typical drawings provided with this Appendix (5-1, 5-2, 5-3, 5-4 and 5-5), found at the end of Chapter 5. These drawings show slope and location of sedimentation structures (silt fences, berms).

732.100 Siltation Structures

Berms, silt fences and straw bales dikes will be used to treat runoff.

732.200 Sedimentation Pond

The drilling sites will not have sedimentation ponds.

732.300 Diversions

Refer to Section 731.100 of this submittal.

732.400 Road Drainage

No diversion ditches will be constructed along the roads leading to the well sites. See Figure 5-5 for typical road cross section. Where needed roads accessing the drill sites will have a water bar constructed at the base of the road to divert water off the road prior to the runoff reaching the drill pad. The existing access road up Deadman Canyon to the locations will be equipped with silt fences in the Spring/Summer of 2005 to help control sediment. In addition to the water bars mentioned, 18-24 inch culverts will be installed on this private road and left in place at the owner's request.

733 Impoundments

733.100 General Plans

Not applicable.

733.200 Permanent and Temporary Impoundments

No permanent impoundments will exist at the well sites.

734 Discharge Structures

A berm will surround the entire drill pad at each well site during the drilling phase. The berm will divert undisturbed runoff around the drilling pad and direct runoff from the pad to a silt fence/straw bale dike at the lowest pont within the well pad disturbed area. A silt fence and/or straw bale dike will be the discharge structure for each of the well sites during the operational phase.

735 Disposal of Excess Spoil

There will be no excess spoil generated at the well sites.

736 Coal Mine Waste

There will be no coal mine waste generated or stored at the well sites.

737 Non-Coal Mine Waste

There will be no non-coal mine waste disposal at the well site.

738 Temporary Casing and Sealing of Wells

Refer to Section 542.700 of this submittal.

740 DESIGN CRITERIA AND PLANS

741 General Requirements

This submittal includes general well site plans that incorporate design criteria for the control of drainage.

742 Sediment Control Measures

742.100 General Requirements

Design - Sediment control measures have been formulated to prevent additional contributions of sediment to stream flow or to runoff outside the well site area; and minimize erosion to the extent possible.

Measures and Methods - Sediment control methods will include sit fence, berms, and straw bales to reduce runoff and trap sediment.

742.200 Siltation Structures

General Requirements - Additional contributions of suspended solids and sediment or runoff outside the well site area will be prevented to the extent possible using silt fence, berms, and straw bale dikes. Siltation structures (berms, silt fences and/or straw bale dikes) will be installed before the topsoil is removed from the well site. Construction activities will not occur during major precipitation events.

Design - All hydrology calculations will be made using the 10-year, 24-hour precipitation

event. Hydrology calculations will be completed as soon as site-specific data is available, and will be included in Attachment 7-1.

742.300 Diversions

No diversion ditches will be constructed as part of the drilling or operational phases.

742.400 Road Drainage

Refer to Section 732.400 of this submittal.

743 Impoundments

No impoundments will exist at the wells sites.

744 Discharge Structures

No discharge structures have been planned or designed.

745 Disposal of Excess Spoil

There will be no excess spoil generated at the well sites.

746 Coal Mine Waste

746.100 General Requirements

There will be no coal mine waste used at the well sites.

746.200 Refuse Piles

There will be no refuse piles at the well sites.

746.300 Impounding Structures

Refer to Section 733.200 of this submittal.

746.400 Return of Coal Processing Waste to Abandoned Underground Workings

No coal processing waste will be generated at the well sites.

747 Disposal of Non-Coal Mine Waste

All non-coal mine waste will be disposed of at an approved landfill.

748 Casing and Sealing Wells

Refer to Section 542.700 of this submittal.

750 PERFORMANCE STANDARDS

751 Water Quality Standards and Effluent Limitations

Water encountered during drilling and runoff water will be treated using silt fence and/or straw bale dikes prior to leaving the site. Should it become necessary the water encountered during drilling will be pumped into a tank and hauled form the site for disposal at a licensed facility.

752 Sediment Control Measures

All sediment control measures will be located, maintained, constructed and reclaimed according to plans and designs presented in Section 732, 742, and 760 of this submittal.

752.100 Siltation Structures and Diversions

Siltation structures will be located, maintained, constructed and reclaimed according to plans and designs presented in Section 732, 742, and 763 of this submittal.

752.200 Road Drainage

Refer to Section 732.400 of this submittal.

753 Impoundments and Discharge Structures

Refer to Section 733.200 of this submittal.

754 Disposal of Excess Spoil, Coal Mine Waste and Non-Coal Mine Waste

There will be no excess spoil or coal mine waste generated at the well sites. Refer to Section 747 of this submittal regarding non-coal waste disposal.

755 Casing and Sealing

Refer to Section 542.700 of this submittal.

760 RECLAMATION

761 General Requirements

A detailed reclamation plan for the well sites is presented in Section 540. No structures will exist at the well sites.

762 Roads

Refer to Section 542.600.

762.100 Restoring the Natural Drainage Patterns

The natural drainage patterns will be restored after degassification is completed.

762.200 Reshaping Cut and Fill Slopes

Cut and fill slopes will be reshaped at the well sites.

763 Siltation Structures

763.100 Maintenance of Siltation Structures

All siltation structures will be maintained until removed in accordance with the approved reclamation plan.

763.200 Removal of Siltation Structures

When a siltation structure is removed, the land on which the siltation structure was located will be regraded and revegetated in accordance with the reclamation plan presented in Section 540.

764 Structure Removal

A general timetable for the reclamation of the sites is presented in Figure 5-6.

765 Permanent Casing and Sealing of Wells

Refer to Section 542.700 of this submittal.

ANDALEX RESOURCES, INC.

CENTENNIAL PROJECT
GOB GAS VENT HOLES
GVH#1, GVH#2, GVH#5 and GVH#6
C/007/019

FEBRUARY 2005

CHAPTER 8
BONDING AND INSURANCE

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810 BONDING DEFINITIONS AND DIVERSION RESPONSIBILITIES

This chapter provides information regarding the bonding for reclamation of the proposed gob gas vent hole sites 1, 2, 5 and 6 at the Centennial Project. Andalex, Resources, Inc. has on file with the Division a bond payable to the Division for performance of all requirements of the State Program.

820 REQUIREMENTS TO FILE A BOND

A description of the disturbed area location for each well site is found in Chapter 1, Table 1-1. Reclamation of the disturbed area are discussed in Section 340 of this submittal. The performance bond period is for the duration of coal mining and reclamation operations including the extended period designated by the Division. The bond is in the form of a surety bond and is described in Section 860 of the M&RP.

830 DETERMINATION OF BOND AMOUNT

The present bond of $1,080,000 is considered sufficient to assure the completion of the reclamation plan. The increase in disturbed area and resulting reclamation costs for each of the proposed well sites will likely be minimal and should not require an adjustment in the performance bond. Detailed costs will be provided when site-specific data is available, and a bonding determination can be made at that time. The gob gas sites will consist only of a trailer mounted engine and blower. Removal of these structures is not a cost. Replacement of topsoil and revegetation of these roughly one acre (or less) sites will require one week of construction and reseeding activity at an estimated cost of $10,000 per hole. It is estimated that one gob gas hole per year will require reclamation beginning in approximately 2007. The contingency in the existing reclamation bond more than adequately covers this cost. Monitoring costs for success are adequately addressed in the existing bond. <u>However</u>, should it be determined that additional bonding is required, ANDALEX will provide the adequate amount either by increasing the existing bond or by filing a separate cash bond. It should be noted also, that all of the activities around this gob gas vent hole project will be located on private land. As such, at the surface owner's request, ARI would like the opportunity to leave structures such as access roads in place. ARI will advise the Division if such a request is made, understanding its required reclamation liabilities <u>and</u> associated post mining land use changes. Unless a post mining land use change is applied for and approved, ARI assumes the responsibility of

reclamation of all access roads which were not previously existing at the time of this Gob Gas Vent Hole project. Please refer to the new ammended changes in the Bond estimates which demonstrate that the existing bond is adequate.

840 GENERAL TERMS AND CONDITIONS OF THE BOND

Refer to Chapter 8 and Appendix B of the approved M&RP.

850 BONDING REQUIREMENTS FOR UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES

Refer to Chapter 8 of the approved M&RP.

860 FORMS OF BONDS

Refer to Chapter 8 of the approved M&RP.

870 REPLACEMENT BONDS

Refer to Chapter 8 of the approved M&RP.

880 REQUIREMENTS TO RELEASE PERFORMANCE BONDS

The applicant will comply with the requirements described in Section R645-301-880 of the Division regulations when applying for the release of performance bonds.

890 TERMS AND CONDITIONS FOR LIABILITY INSURANCE

Certificates of insurance issued for the Centennial Project are included in Appendix B of the approved M&RP.