

**R645-301-100.      GENERAL**

The proposed Mathis Tract and New Federal Summit Creek Lease boundary change is simply an extension of our underground mine workings and will in no way involve any new surface facilities or otherwise have any affect on the surface. It does not involve any new hydrologic basins. Refer to R645-301-200 through R645-301-800 for additional information.

**R645-301-110.      LEGAL, FINANCIAL, AND COMPLIANCE INFORMATION**

**Legal, Financial, Compliance and Information**

The objective of this chapter is to set forth all relevant information concerning ownership and control of Andalex Resources, Inc., the ownership and control of the property to be affected by mining activities and all other information and documentation required.

Please note that right-of-entry information for all new Leases is included in Appendix J, "Other Approvals". This includes the short form of the Mathis lease recorded at Carbon County.

**Compliance Information**

a)      Suspension and Revocation

Andalex Resources, Inc., affiliates or persons controlled by or under common control with Andalex haven't had a mining permit suspended or revoked within the last five years.

b)      Forfeiture of Bond

Andalex Resources, Inc., affiliates or persons controlled by or under common control with Andalex have not forfeited a mining bond or similar security in lieu of bond.

c)      History of Violations

Appendix B contains a listing of all violations received within the last three years prior to the date of this application by Andalex and affiliated companies.

Andalex Resources, Inc., in sublease agreement with AMCA Coal Leasing, Inc., currently holds approximately 5507.32 acres of private and federal coal leases in this permit area. The number will increase to 6517.53 acres with the addition of the remaining Mathis Tract and Federal Summit Creek Lease. Andalex basis its legal right to enter and conduct mining activities in the permit area pursuant to the language contained in the Federal Coal Leases, Section 2, Rights of Lessee as follows:

"The lessor, in consideration of any bonus paid (or to be paid if deferred), rents and royalties and other conditions hereinafter set forth, hereby grants and leases to the lessee the exclusive right and privilege to mine and dispose of all coal ... subject to the conditions, limitations and prohibitions provided in this lease and in applicable acts and regulations, the right to construct all works, buildings, structures, equipment, and appliances which may be necessary and convenient for the mining and preparation of the coal for market, and subject to the conditions herein provided, to use so much of the surface as may reasonably be required in the exercise of the rights and privileges herein granted..."

A similar right to enter and conduct underground mining activities is contained in the private lease agreement with the Zion Securities Corporation as follows:

"During the life of the lease, so long as lessee is not in default hereunder, it may freely prospect, mine and develop the lease premises, extract and sell such coal therefrom as it may elect, and use the surface and underground thereof for all lawful purposes including the exploration and mining to be conducted therein and thereon. It may also use the leased lands in connection with the mining and development of other lands which it may own, lease, or acquire as a part of its general mining operations in the area."

Legal right-of-entry information for the Hoffman Creek federal and fee leases as well as the Graves Lease has been inserted into Appendix J, "Other Approvals". Also included in this appendix is our legal right-of-entry to the right-of-way which was added for the Aberdeen facilities (#UTU-62045) and the Right-of-Entry information for the Mathis Tract. None of the leases' rights-of-entry is a subject of pending litigation.

The Federal Coal Leases are described as follows (please see Plate 4):

UTU-66060 (Graves Lease) is subject to the terms and conditions set forth in the Federal Coal Lease issued by the Bureau of Land Management October 3, 1994. Specifically, Part I, section 2 of the lease "grants and leases to the Lessee the exclusive right and privilege to drill for, mine, extract, remove, or otherwise process and dispose of the coal deposits in, upon, or under the lands described below" as Tract 1 (Original Lease) and Tract 2 (Modification).

ANDALEX estimates that there are approximately 518,000 recoverable tons included within the 160 acre lease modification. This number of recoverable tons however is subject to the mineability of the coal. That is, The Aberdeen coal seam pinches out in a north-easterly direction. Also, the depth of cover increases dramatically to the north which could restrict recovery.

#### New Federal Summit Creek Lease

T. 12 S., R. 11 E. SLM, Utah  
Sec. 29, SW $\frac{1}{4}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$   
Sec. 30, Lots 4, 12, 14, 15, 16  
Sec. 31, Lots 1, 2, 7 through 11  
Sec. 32, W $\frac{1}{2}$ NE $\frac{1}{4}$ , E $\frac{1}{2}$ NW $\frac{1}{4}$ , NW $\frac{1}{4}$ NW $\frac{1}{4}$ , NE $\frac{1}{4}$ SW $\frac{1}{4}$  Containing  
702.73 acres, more or less.

The private fee leases are described as follows:

#### The Mathis Tract - Fee Lease

T.12S., R.10E., SLM, Utah  
IBC: Section 36: S1/2S1/2, S1/2N1/2S1/2, containing 240 acres.

Section 36: N $\frac{1}{2}$ N $\frac{1}{2}$ S $\frac{1}{2}$ , N $\frac{1}{2}$ , containing 400 acres.

T.13S., R.11E., SLM, Carbon County, Utah  
Sec. 7: S1/2 NW1/4  
N1/2 SW1/4  
SE1/4 SW1/4 containing 200 acres, more or less

The name and address of the lessor is Zion Securities Corporation, 10 East South Temple Street, Salt Lake City, Utah. This lease was originally made and entered into between Zion's and Centennial Coal Associates on August 1, 1972. AMCA Coal Leasing Inc. acquired the lease in February, 1977.

T.13S., R.11E., SLM, Carbon County, Utah  
Sec. 9: SE1/4 NW1/4  
S1/2 NE1/4  
NE1/4 NE1/4  
N1/2 SE1/4 containing 240 acres, more or less

Permit Area

The following is a description of the Permit Area as shown on Plate 1-A, with descriptions for Federal and State Leases, Fee Leases and Private Land Easements.

Federal Leases

T.13S., R.11E., SLM, Carbon County, Utah (SL-027304)

Sec. 7: S $\frac{1}{2}$ SE $\frac{1}{4}$ , Lot 4

Sec. 18: NW $\frac{1}{4}$ NE $\frac{1}{4}$ , Lot 1, N $\frac{1}{2}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$

T.13S., R.11E., SLM, Carbon County, Utah (SL-063058)

Sec. 8: S $\frac{1}{2}$ SW $\frac{1}{4}$

Sec. 17: N $\frac{1}{2}$ NW $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$ , NE $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ , W $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$

Sec. 18: NE $\frac{1}{4}$ NE $\frac{1}{4}$ , E $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ , NW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ , SW $\frac{1}{4}$ NE $\frac{1}{4}$ , E $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$

T.13S., R.11E., SLM, Carbon County, Utah (U-010581)

Sec. 5: ALL

Sec. 6: ALL

Sec. 7: Lot 1, NE $\frac{1}{4}$ , NE $\frac{1}{4}$ NW $\frac{1}{4}$ , N $\frac{1}{2}$ SE $\frac{1}{4}$

Sec. 8: N $\frac{1}{2}$ , N $\frac{1}{2}$ S $\frac{1}{2}$ , S $\frac{1}{2}$ SE $\frac{1}{4}$

Sec. 9: W $\frac{1}{2}$ SW $\frac{1}{4}$

Sec. 17: N $\frac{1}{2}$ NE $\frac{1}{4}$ , S $\frac{1}{2}$ NE $\frac{1}{4}$ , N $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ , NE $\frac{1}{4}$ SE $\frac{1}{4}$ , N $\frac{1}{2}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$

T.13S., R.11E., SLM, Carbon County, Utah (U-52341)

Sec. 9: NE $\frac{1}{4}$ SW $\frac{1}{4}$

T.13S., R.11E., SLM, Carbon County, Utah (U-05067)

Sec. 4: S $\frac{1}{2}$

Sec. 9: NW $\frac{1}{4}$ NE $\frac{1}{4}$ , W $\frac{1}{2}$ NW $\frac{1}{4}$ , NE $\frac{1}{4}$ NW $\frac{1}{4}$

T.13S., R.10E., SLM, Carbon County, Utah (UTU-66060)

Sec. 1: Lots 1-4, S $\frac{1}{2}$ N $\frac{1}{2}$ , SE $\frac{1}{4}$

Sec. 12: Lot 1

T.12S., R.11E., SLM, Carbon County, Utah

Sec. 31: Lots 3-6, 12-22

Sec. 32: W $\frac{1}{2}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$

\*T.12S., R.11E., SLM, Carbon County, Utah (UTU-79975)

Sec. 29: SW $\frac{1}{4}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$

Sec. 30: Lots 4, 12, 14, 15, 16

Sec. 31: Lots 1, 2, 7-11

Sec. 32: N $\frac{1}{2}$ NW $\frac{1}{4}$ , W $\frac{1}{2}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$

Fee Leases

T.12S., R.10E., SLM, Carbon County, Utah (Zion Sec. Mathis)  
Sec. 36: S $\frac{1}{2}$ S $\frac{1}{2}$ , S $\frac{1}{2}$ N $\frac{1}{2}$ S $\frac{1}{2}$

\*T.12S., R.10E., SLM, Carbon County, Utah (Zion Sec. Mathis)  
Sec. 36: N $\frac{1}{2}$ N $\frac{1}{2}$ S $\frac{1}{2}$ , N $\frac{1}{2}$

T.13S., R.11E., SLM, Carbon County, Utah (Zion Sec.)  
Sec. 7: S $\frac{1}{2}$ NW $\frac{1}{4}$ , N $\frac{1}{2}$ SW $\frac{1}{4}$ , SE $\frac{1}{4}$ SW $\frac{1}{4}$

T.13S., R.11E., SLM, Carbon County, Utah (Sunedco)  
Sec. 9: SE $\frac{1}{4}$ NW $\frac{1}{4}$ , S $\frac{1}{2}$ NE $\frac{1}{4}$ , NE $\frac{1}{4}$ NE $\frac{1}{4}$ , N $\frac{1}{2}$ SE $\frac{1}{4}$

T.13S., R.10E., SLM, Carbon County, Utah (A.E.P. UTU69600)  
Sec. 1: SW $\frac{1}{4}$   
Sec. 12: Lots 2-11, W $\frac{1}{2}$ W $\frac{1}{2}$ , NE $\frac{1}{4}$ SW $\frac{1}{4}$

BLM RIGHT-OF-WAY

T.13S., R.11E., SLM, Carbon County, Utah (UTU-62045)  
Sec. 18: SE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$

BLM RIGHT-OF-WAY

T.13S., R.10E., SLM, Carbon County, Utah (UTU-64158)  
Sec. 13: Lot 1, (Portion of)

T.13S., R.11E., SLM, Carbon County, Utah  
Sec. 18: Lot 2, NE $\frac{1}{4}$ SW $\frac{1}{4}$  (Portions of)

Private Land Easements

T.13S., R.11E., SLM, Carbon County, Utah (Gladys Artman)  
Sec. 18: NE $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$  (Portion of)

\*Proposed Permit Expansion

Existing Permit Area	-	5507.32 Acres
Proposed Permit Expansion-		1010.21 Acres
		<hr/>
Total Permit Area	-	6517.53 Acres

**R645-301-200.**

**SOILS**

**R645-301-210.**

**INTRODUCTION**

As the **Mathis Tract and New Federal Summit Creek Lease**, boundary change is simply an extension of underground mine workings under roughly 2,600 to 3,000 feet of cover there will be absolutely no effect on soils.

**R645-301-211.**

**PREMINING SOIL RESOURCES**

The soils map, shown as Plate 18 in Volume II, is a combination of the information provided by both EEC and SCS. EEC performed the work on the north and south one-thirds of the disturbed area and the SCS performed the work on the one-third in the middle. This was for the original Pinnacle Mine approval on the Zion's Fee area (please see second half of Appendix M).

The acreages given by EEC in the soils report does not include the entire disturbed area since we know that the SCS surveyed roughly one-third of the disturbed or "to be" disturbed area. The correct acreages as planimetered by Andalex staff is 34.2 acres. This of course includes the area where the Aberdeen Mine has been developed. The area of disturbed Brycan is approximately 8 acres and the Datino is 4 acres within the SCS survey. EarthFax Engineering has performed the Order 1 soil survey for the left fork fan installation. (See Appendix M.)

**R645-301-212.**

**STOCKPILING AND REDISTRIBUTION**

**Topsoil Handling During Operations**

Removal

The area from which topsoil has been removed is 34.2 acres and includes poorly developed soils. Using dozers and front end loaders, the soil was scraped from the surface and dumped at a site near the facility location. The topsoil was removed as a separate operation from areas to be disturbed by surface installations such as roads and areas upon which support facilities are sited. The left fork topsoil will be salvaged according to EarthFax.

Storage

The topsoil storage areas are shown on Plate 6. The topsoil has been segregated, stockpiled, and protected from wind and water erosion and contaminants through revegetation and the use of berms.

Surveys conducted on the topsoil piles which were drawn into plans and profiles are now included in the plan in Volume II, Plates 37 and 36. This shows volumes stored currently.

R645-301-300.

BIOLOGY

R645-301-310.

INTRODUCTION

Vegetation Information

**Introduction**

Mountain-Brush, Desert Shrub, Pinion-Juniper Woodland, Sagebrush-Grass, Conifer-Aspen, and minor stream-side vegetative types cover the total mine plan area. Most of the area is covered by the Mountain-Brush type while the Pinion-Juniper Woodland type is predominant in the mine mouth area as well as the access routes and utility corridors; this area has been reseeded with a mixture as recommended by the U.S.D.A. S.C.S. (please see Soil Survey and Vegetation Inventory in Appendix M). Appendix M now also includes soils and vegetation information pertaining to the newly acquired AEP Lease. Because there will be no additional surface disturbance on the lease area, a First Order Survey is not deemed necessary.

As the **Mathis Tract and New Federal Summit Creek Lease** boundary change is simply an extension of underground mine workings under roughly 2,600 to 3,000 feet of cover there will be absolutely no effect on vegetation, fish or wildlife.

Andalex has selected and marked three reference areas in the field for vegetation. The Division has reviewed and approved these reference areas. Areas chosen include all types of vegetation conditions such as drainage areas, shallow slopes and steep slopes. Andalex contacted the SCS to help evaluate the condition of these sites. Please see SCS letter in Appendix M. It should be noted that Andalex does have the benefit of a revegetation test plot located on one of the topsoil piles. The drainage area reference area is the most adaptable to the left fork fan installation.

The revegetation map now shows the acreages for the three range types. Shrub clumps make up 2.15 acres, drainage areas make up 15.02 acres and steep slopes make up 17.03 acres. Total disturbed area, including the Aberdeen Mine left fork fan and road is 35.34 acres.

New vegetation mapping **has been** created for the entire permit area of the Centennial Mine including the **Mathis Tract and New Federal Summit Creek Lease** area. The mapping **was** done by Mt. Nebo Scientific, Inc. Springville, Utah. **See Plate 19A.**

The vegetation map will be created by using new and/or current available aerial photography with field work accomplished as a means for ground-truthing. Aerial photography used will be from appropriate periods of the growing season. Field verification work will be conducted during the growing season of 2002. The final vegetation map will be provided to the State of Utah, Division of Oil, Gas & Mining in December 2002.

R645-301-400.

LAND USE AND AIR QUALITY

R645-301-410.

**LAND USE**

As the **Mathis Tract and New Federal Summit Creek Lease** boundary change is simply an extension of underground mine workings under roughly 2,600 to 3,000 feet of cover there will be absolutely no effect on land use.

R645-301-411.

**ENVIRONMENTAL DESCRIPTION**

Due to the rugged topography and sparse rainfall, the land area is presently used only for grazing, wildlife habitat, and outdoor recreation. Historically, the land has also been used for coal mining.

R645-301-411.100.

**PREMINING LAND USE INFORMATION**

The initial development of the Book Cliffs Coal Field was started in the early 1890's. By the early 1900's practically the entire field had been prospected. Mines in the lease area were not active until the 1920's because the cliffs were less accessible and the coal beds were thinner.

The Knight-Ideal mines, now held by Andalex Resources are located adjacent to the Hoffman Creek lease area. Initial prospecting took place at this location in 1906 and extensive mining began in 1948 and ceased in 1958. During this period, 1,680,000 tons of coal were produced from the Gilson seam. The Knight-Ideal Mine is contiguous to our Sunedco leases (U-05067) in Hoffman Creek. By mining this lease, Andalex will recover all minable coal between Centennial and Knight-Ideal.

Three mines on or adjacent to the lease area in Deadman Canyon were the Zion, Olsen, and Sutton (Blue Flame) mines. The Zion was located on the Zion's fee lease and the Olsen and Sutton were on SL-027304. The first two produced from the Gilson seam and the last produced from the Aberdeen or Castlegate "A" seam. Production figures are not reliable but it is estimated that between 216,000 tons and 720,000 tons may have been produced from the Sutton mines. The Olsen mines produced about 18,000 tons and the Zion mine around 240,000 tons, between 1924 and 1944.

There was also a prospect entry driven in the Lower Sunnyside Seam (the Hileman) on lease U-010581 from which production was insignificant, approximately 1,400 tons. Mining ceased in the area in 1964.

R645-301-411.110.

**USES OF THE LAND AT THE TIME OF FILING APPLICATION**

The Deadman Canyon area as well as the Straight and Hoffman Canyons would fall into two land use categories: 1) Fish and

As the **Mathis Tract and New Federal Summit Creek Lease** boundary change is simply an extension of underground mine workings under roughly 2,600 to 3,000 feet of cover there will be absolutely no effect on air quality.

Air Pollution Control Plan and Compliance with Air Quality Laws  
**Existing Environment**

The permit area is located in a Class II air quality area.

**Air Quality Impact Analysis**

Please see the following section, section 3 re Emission Estimates.

**Emission Estimates**

Emission estimates are included as Appendix F in the form of an emission inventory. This inventory has been reviewed and approved by the Utah Bureau of Air Quality and the E.P.A. It has been re-approved to increase our production restriction on the basis the haul road has been paved by Carbon County. Air quality permit in appendix F.

**Proposed Controls**

Since this is an underground operation, no air quality problems are anticipated. The only changes in air quality will be attributable to minor road dust and exhaust mine dust. Methods of control are spray systems, chemical treatment, enclosures, pavement, and other fugitive dust control practices outlined in 30 CFR 817.95.

There will be no additional fugitive emissions or air pollution associated with the newly acquired AEP Lease.

**PSD Permit and Compliance with Air Quality Laws**

The Environmental Protection Agency has determined that this project does not need a PSD air quality permit. This is based on our fugitive and non fugitive dust emissions inventory which assumes facilities necessary for 1.5 mm tons per year production. Further, the mine is not subject to the PSD regulations because of the new definition of a major source. (Refer to letter dated March 21, 1980 in Appendix J). All applicable air quality laws will be complied with and fugitive dust control practices, as required under 30 CFR 817.95, will be followed.

Andalex has been issued a new approval order for the mines and the Wildcat Loadout for 1.5 million tons per year. These were inspected and met compliance during the summers of 1989-1992.

**R645-301-500.**

**ENGINEERING**

The **Mathis Tract and New Federal Summit Creek Lease** boundary change will not require any changes to engineering practices currently employed at the Aberdeen Mine. The change simply involves an extension of underground mine workings and does not involve the surface in any way. See 301-522 and 301-525 for additional comments on subsidence. See also IBC PHC, Appendix L.

**R645-301-510.**

**INTRODUCTION**

Most of the maps previously submitted as part of the Mining and Reclamation Plan are applicable. Where necessary, original maps have been revised to indicate the newly acquired lease area and these revisions are included with this submittal as figures or as plates in Volume II. Plates which have been changed to show the location of the incidental boundary change are included.

It should be noted that no man made surface or subsurface features are located in or around the Mathis Tract I.B.C. or on adjacent proposed Federal Lease Applications shown on Plate I-A.

All categories within this section have been addressed, primarily in Volume II of the MRP which contains most of the plates.

- a) Surface and subsurface ownership of lands contiguous to the permit area are shown on Plates 2 and 3.
- b) The leases for which we have the legal right of entry are shown on Plate 4.
- c) Andalex has submitted a permit modification to include the new AEP Lease recently acquired. Also, a permit will be sought in 1993 for a new fan installation immediately adjacent to Andalex's leases in the left hand fork in Deadman Canyon.
- d) There are no buildings within 1,000 feet of the permit area except those used as part of the mining operation. They are shown on Plates 6 and 7.
- e) There are no surface or subsurface man-made features within, passing through or passing over the permit area except the powerline, telephone cables, culverts, and etc., installed for the operation of this mine. See Plate 6 for their locations.
- f) These reference areas are shown on Plate 9 as R-1, R-3 and R-4. They are each 200 feet square approximately.
- g) The only user of surface water within this immediate hydrologic area is Andalex (Refer to Figure 5, Appendix L, which shows additional water use on Emma Park in the form of

**R645-301-600.**

**GEOLOGY**

As the **Mathis Tract and New Federal Summit Creek Lease** boundary change is simply an extension of underground mine workings under roughly 2,500 feet of cover there will be absolutely no effect on geology other than as we proceed further to the north, the depth of cover increases.

\* SEE ALSO APPENDIX E

**R645-301-610.**

**INTRODUCTION**

**R645-301-611.**

**GENERAL REQUIREMENTS**

**R645-301-611.100.**

**GEOLOGY WITHIN AND ADJACENT TO  
THE PERMIT AREA**

**Introduction**

The proposed permit area is in Book Cliffs which is the major physiographic feature in the region. The cliffs rise from a base at approximately 5,500 feet in elevation, to over 8,500 feet. Numerous canyons dissect the Book Cliffs. Soldier Creek and Coal Creek are the major area drainages. The permit area exhibits extreme topographic relief and is mountainous with steep cliffs and deeply incised drainages. With the exception of the Mancos Shale Formation, the Fiasco, Deadman, Straight Canyons, Hoffman Creek Canyon, Graves Lease and AEP Lease exhibit similar stratigraphic and topographic characteristics.

**Tectonic Setting**

The major coal seams of the Book Cliffs Coal Field lie within the Cretaceous Mesa Verde group which overlies the thick shales of the Cretaceous Mancos formation. The Mesa Verde group consists of the Star Point Sandstone, Blackhawk formation and Price River formation. The major coal seams lie within the Blackhawk formation.

The Tertiary Wasatch and Green River formations, along with the Price River formation, form the Roan Cliffs, the Tavaputs Plateau and the southern rim of the Uintah Basin. Lithologies present include fluvial, deltaic, and marine sandstones, mudstones, and shales.

**Geologic History**

During the Triassic and Jurassic periods, the area of the Book Cliffs was relatively stable, but gradually subsided and received sediments. The area, assumed to have been a relatively flat lowland, was occasionally covered by a shallow sea of short geologic duration. A thick red bed sequence suggests tropical conditions and the great thickness of sand accumulation suggests

Revised 03/04

**R645-301-700.**

**HYDROLOGY**

The **Mathis Tract and New Federal Summit Creek Lease** boundary change will not encroach into any new hydrologic basins which are not addressed in the existing MRP (see plate 29). Seeps located within this boundary change have been addressed in the new **Summit Creek and North Mathis** PHC. (see PHC for the entire lease area).

SEE ALSO APPENDICES L, N, AND O

**R645-301-710.**

**INTRODUCTION**

Water quality monitoring stations will be set up at the wells as shown on Figure IV-11, and also at the sedimentation pond discharge structures.

**R645-301-711.**

**GENERAL REQUIREMENTS**

Hydrologic Protection Facilities

**Sewage System**

The nature of the overburden in the area offers excellent drainage. As a result, a septic system with drain fields conforming to the state codes has been established to handle the waste water disposal from the bathhouse and office facilities. The drain fields are located in native material (valley fill) east of the bath houses in the parking area. Enclosed as Appendix G are the two septic system plans as designed by a Utah Registered Professional Engineer and approved by the State of Utah Department of Health.

**Water Treatment**

Based on the State of Utah, Department of Health review of the septic systems, water treatment is not needed. (Personal communication, Mr. Gerald Story, Utah Department of Health, Price, Utah).

**Drainage Control - Diversions, etc.**

See R645-301-512.240.

**Sediment Control**

See R645-301-512.240.

**R645-301-711.100.**

**EXISTING HYDROLOGIC RESOURCES**

Appendix L

**R645-301-711.200.      POTENTIAL IMPACTS TO THE  
HYDROLOGIC BALANCE**

Appendix L - Potential Hydrologic Consequences

**R645-301-711.300.      COMPLIANCE WITH HYDROLOGIC DESIGN  
CRITERIA**

**Protection of Hydrologic Balance and Compliance with Water  
Quality Laws**

Andalex will follow its approved "Sedimentation and Drainage Control Plan" and comply with the N.P.D.E.S. Permit No. UTG-040007 issued July, 1989 (see Appendix J). Please note this permit authorizes three discharge points; two from sedimentation ponds (001, 003) and one from the underground mine (002). See IV-11

Andalex has approval from the State Engineer, Division of Water Rights, to collect runoff water from the disturbed area for use as a dust suppressant in the underground mining operation. This runoff is a result of direct precipitation with the runoff area.

Andalex will comply with the Clean Water Act (33 U.S.C. Sec. 1251 et seq.) and all other applicable water quality laws and health and safety standards.

Surface and Groundwater Monitoring

Location of Monitoring Points

**Groundwater**

**Monitoring Plan for Proposed Permit Expansion**

This monitoring plan is based on the PHC determination presented in Appendix L. As discussed previously, the potential for detrimental impacts resulting from mining activities in the **North Mathis Tract and Summit Creek Federal Lease** is considered remote. However, to document that no impacts to the hydrologic balance occur, and to provide verification that temporal variations in groundwater and surface water discharge rates are the result of climatic and seasonal variability, we recommend the monitoring of two springs **within and north of the expansion area**, B362 and B261. The locations of these springs are shown on Figure IV-11 of the MRP (Groundwater and surface water monitoring locations).

Details on each of the proposed new sites are discussed in Appendix L, "Probable Hydrologic Consequences of Coal and Mining in the Summit Creek and North Mathis Tracts, Andalex Resources, Inc., Tower Mine.

The monitoring plan for the proposed expansion area is summarized in Tables a, b, and c below.

Table a		North Mathis Tract and Summit Creek Federal Lease Groundwater	Monitoring Plan
Spring	Protocol	Comments	
B362	A, 1	Flagstaff Limestone Spring in Antone Creek drainage.	
B261	A, 1	Flagstaff Limestone spring in Dep Canyon (Pace Spring)	

Table b	Monitoring protocols for springs in the expansion area
Water level and flow measurements:	
A Spring: quarterly discharge measurements when accessible.	
Water Quality:	
1 Spring: quarterly operational water quality measurements (Table 6 List) when accessible.	

Table c	Groundwater operational water quality parameters
Field Measurements	
	Reported as
pH	pH units
Specific Conductivity	pS/cm@25°C
Temperature	°C
Flow	gpm
Laboratory Measurements	
Total Dissolved Solids	mg/L
Carbonate	mg/L
Bicarbonate	mg/L
Calcium (dissolved)	mg/L
Chloride	mg/L
Iron (total)	mg/L
Iron (dissolved)	mg/L
Magnesium (dissolved)	mg/L
Manganese (total)	mg/L
Manganese (dissolved)	mg/L
Potassium (dissolved)	mg/L
Sodium (dissolved)	mg/L
Sulfate	mg/L

Groundwater monitoring sites are depicted on Figure IV-11, and include Well #1, S18-1 and S25-1. (The latter two are springs in the vicinity of the permit area, stratigraphically below any coal to be mined.) S25-1 is located in Hoffman Creek and has been monitored since the issuance of the emergency lease permit. This drainage also exclusively serves the new Sunedco Lease. Well #1 penetrates the first aquifer below the lowermost coal to be mined. The Aberdeen Sandstone is discussed in Appendix L.

The new AEP does not expose any new groundwater.

As stated earlier, the mines in this area are relatively dry. Like most any underground mine, minor "drippers" and some seepage is encountered. Such areas can accumulate moderate amounts of water underground, particularly in the areas of old workings. Such was the case when, in 1981, the new mine cut into some old works, releasing a surge of water that had to be discharged from the mine. Currently the mine "makes" enough water to discharge approximately 50% of the time via our approved UPDES point 002.

No flows presently exist underground that warrant monitoring; however, if significant flows are encountered underground, Andalex Resources will initiate monitoring according to the Division guidelines for groundwater baseline (and later, operational) monitoring. For the purpose of this section, "significant flows" shall be defined as: "Underground mining flows from a single source of 3 gpm or greater and sustained at a rate of 3 gpm or greater for a period of 30 days". If such flows are encountered, monitoring will be initiated. If the flow is being monitored and decreases below the above described "significant flow" amount, monitoring will be discontinued after a period of 60 days.

### **Surface Water**

It should be noted that there are four new surface water monitoring sites associated with the proposed expansion area.

Surface water monitoring sites are depicted on Figure IV-11 and Figure 6 and include 7-1, 8-1, 18-3, 18-4, 18-2, 25-2 and 12-1 and new sites AC-1, SC-1, B263 and Stock Pond 31-1. Proposed new sites are discussed further in Appendix L. 25-2 is located in Hoffman Creek and has been monitored since the issuance of the emergency lease permit (no flow to date). This drainage also exclusively serves the new Sunedco leases. A new surface water monitoring location (12-1) will be situated at the mouth of Alrad Canyon in T.13S., R.10E., section 12. The left fork of Deadman Canyon is already monitored at 18-3. These locations assure that all major drainages beneath the permit area are monitored. Also included in the surface monitoring are points 1, 2, 3, and 4 part of UPDES Permit #UTG-040007 also shown on Figure IV-11. New surface water monitoring stations will be set up as needed for all new lease additions.

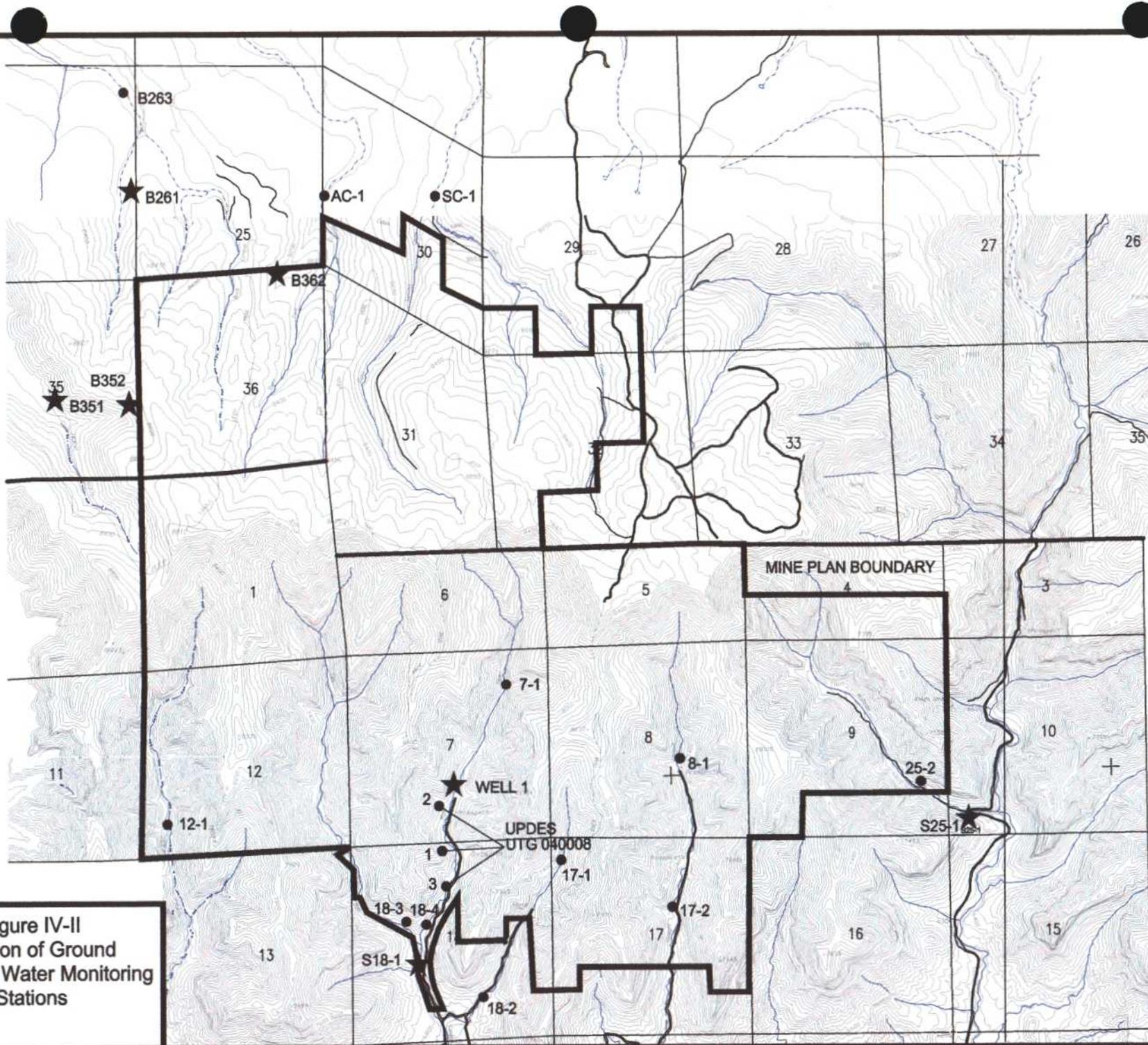


Figure IV-II  
Location of Ground  
& Surface Water Monitoring  
Stations

Scale: None

**R645-301-800.**

**BONDING AND INSURANCE**

As the **Mathis Tract and New Federal Summit Creek Lease** boundary change is simply an extension of underground mine workings under roughly 2,600 - 3,000 feet of cover there will be absolutely no effect to the surface and therefore has no influence on the reclamation bond already in place. ANDALEX is equipped with the required liability insurance.

**R645-301-810.**

**BONDING DEFINITIONS AND DIVISION RESPONSIBILITIES**

N/A -- DIVISION

**R645-301-811.**

**TERMS USED**

N/A -- DIVISION

**R645-301-812.**

**DIVISION RESPONSIBILITIES - BONDING**

N/A -- DIVISION

**R645-301-812.100.**

**FORMS**

N/A -- DIVISION

**R645-301-812.200.**

**REGULATION TERMS AND CONDITIONS FOR PERFORMANCE BONDS AND INSURANCE**

N/A -- DIVISION

**R645-301-812.300.**

**BOND AMOUNT**

N/A -- DIVISION

**R645-301-812.400.**

**SELF-BOND**

N/A -- DIVISION

**R645-301-812.500.**

**BOND RELEASE**

N/A -- DIVISION

**R645-301-812.600.**

**BOND FORFEITURE**

N/A -- DIVISION